

2017 Annual Meeting, Toronto, CA

Peter Gilgan Centre for Research and Learning (PGCRL)

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2017 SENTAC Learning Objectives and CME Information

Learning Objectives

This activity is designed for physicians, speech-language pathologists, audiologists, nurses, researchers and others:

- Implement interdisciplinary, evidence-based practices in the care of children with ear, nose and throat disorders.
- Evaluate programs, resources and clinical approaches for use in ear, nose and throat practices.
- Recognize the role of the interdisciplinary health care team in the care of children with ear, nose and throat disorders.

CONTINUING MEDICAL EDUCATION CREDIT INFORMATION

Accreditation

This activity has been planned and implemented in accordance with the Essential Areas and Policies of the Accreditation Council for Continuing Medical Education (ACCME) through the joint providership of the American College of Surgeons and Society for Ear, Nose, Throat Advances for Children. The American College of Surgeons is accredited by the ACCME to provide continuing medical education for physicians.

AMA PRA Category 1 Credits™

The American College of Surgeons designates this live activity for a maximum of **17.25** *AMA PRA Category 1 Credits™*. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

ASHA



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Accreditation Council for Continuing Medical Education*



SENTAC is approved by the Continuing Education Board of the American Speech-Language-Hearing Association (ASHA) to provide continuing education activities in speech-language pathology and audiology. See course information for number of ASHA CEUs, instructional level and content area. ASHA CE Provider approval does not imply endorsement of course content, specific products or clinical procedures.

This course is offered for 1.65 ASHA CEUs (Intermediate level, Professional area).

Disclosure Information

In compliance with the ACCME Accreditation Criteria, the American College of Surgeons, as the accredited provider of this activity, must ensure that anyone in a position to control the content of the educational activity has disclosed all relevant financial relationships with any commercial interest. All reported conflicts are managed by a designated official to ensure a bias-free presentation. Please see the insert to this program for the complete disclosure list.

2017 SENTAC Program Committee/Abstract Judges

Program Chair: Yell Inverso

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Poster Judges

Jareen Meinzen-Derr

Udayan Shah

Robert V. Harrison

Panels

Modern ART (Airway Reconstruction Team):
A Multidisciplinary Approach to Managing Children
with Complex Airway Disorders

Evan Propst
Mike Apkon
Peter Cox
Shailendra Das
Osami Honjo
Claire Miller
Philippe Monnier

The role of genetic testing in hearing loss:
The SickKids experience

Karen Gordon
Raveen Basran
Nada Querci
Sharon Cushing
Jill Liberman
Bob Harrison

CHARGE Syndrome: Multidisciplinary Considerations

Claire Miller
Daniel Choo
Ashley O'Neill
Yell Inverso
Catherine Hart
Susan Wiley

AAP Sponsored Panel 2017
Cytomegalovirus in developmental hearing loss

Sharon Cushing
Blake Papsin
Ari Bitnun
Albert Park
Bob Harrison
Melissa Polonenko
Vicky Papaioannou

Vocal fold paralysis in children:
A multifaceted therapeutic approach

Eileen Raynor
Patrick Barth
Hilary Bartholomew
SLP TBD

Lunch Breakouts

A: The use of public health and publically available datasets to address pediatric ENT research questions.
Jareen Meizen-Derr

B: Ethics in Medicine and Multidisciplinary Practice.

Peggy Kelley
Robert Ward

Awards

Robert Ruben Scientific Achievement Award

Robert Harrison

Sylvan Stool Teaching Award

Richard Seewald

SENTAC Lifetime Achievement Award

Phillippe Monnier

Travel Award

To be determined at the meeting

Quality Award

Poster Awards

To be determined at the meeting

First place

Second place

Third Place

*Quality and podium awards will be given during SENTAC banquet Friday

Poster Awards will be awarded at the business meeting Sunday Morning

Podium Presentations: 62

Poster Presentations: 69

EXHIBITORS

2017

Cochlear Canada Inc.
Preceptis Medical
Arbor Pharmaceuticals
Grace Medical, Inc.
PENTAX Medical
Bryan Medical Inc.
Olympus
Cook Medical
Smith & Nephew

Thursday 11/30/2017

- 2:00–5:00pm Board Meeting (Board members only) Chelsea Hotel/Newtown**
- 6:30-8:30pm Welcome Reception with Exhibitors PCCRL/Level 2 Gallery**
Wine/Beer –Hor d’Oeuvres

Friday 12/1/2017

- 6:45-7:30 Registration/Breakfast with Exhibitors PCCRL/Level 2 Lobby**
- 7:30-7:45 Welcome by Program Chair and SickKids ORL Chair PGCRL/Auditorium**
- 7:45-8:29 Keynote Address Pr. Phillippe Monnier PGCRL/Auditorium**
Laryngotracheal Stenosis in Infants and Children - From Past To Future
Q&A
- 8:30-8:40 President Presentation of SENTAC Lifetime Achievement Award**
- 8:41-8:50 President’s Welcome and Remembrances**
- Session #1 AIRWAY PGCRL/Auditorium Moderator**
Evan Propst
- 8:51-8:58 AIRWAY ANOMALIES IN PATIENTS WITH CRANIOSYNOSTOSIS**
Fasil Mathews (fasil.mathews@pitt.edu)
- 8:59-9:06 IMMATURE THYROID TERATOMA CAUSING AIRWAY OBSTRUCTION IN A**
PREMATURE INFANT
Adam R. Szymanowski (adamszy2020@gmail.com)
- 9:07-9:14 DEVELOPMENT AND IMPLEMENTATION OF A TRACHEITIS ALGORITHM TO**
DIAGNOSE AND TREAT TRACHEITIS IN VENTILATOR-DEPENDENT INFANTS
Winston Manimtim (wmmanimtim@cmh.edu)
- 9:15-9:50 Modern ART (Airway Reconstruction Team) Evan Propst**
Mike Apkon
Peter Cox
Shailendra Das
Osami Honjo
Claire Miller
Philippe Monnier
- 9:50-9:59 Moderated Q&A**
- 10:00-10:25 Coffee Break with Exhibitors PCCRL/Level 2 Lobby**
- Session #2 HEARING LOSS/AUDIOLOGY PGCRL/Auditorium**
Moderator Yell Inverso
- 10:27-10:34 IMPROVING PATIENT ACCESS TO TIME-SENSITIVE EVALUATIONS**
Barbra Novak (bjnovak@texaschildrens.org)

- 10:35-10:42 CURRENT PERCEPTIONS OF CHILDREN WITH VISIBLE HEARING AIDS BY THEIR PEERS AND ADULTS
Neil Chadha (nchadha@cw.bc.ca)
- 10:43-10:50 IS AUDITORY BRAIN RESPONSE TESTING REQUIRED IN CHILDREN WITH AUTISM SPECTRUM DISORDER?
Kathleen L Sawaya (kathleen.sawaya@nemours.org)
- 10:51-10:58 AUDITORY BRAIN STEM RESPONSES: EFFICACY OF MELATONIN IN CHILDREN WITH AND WITHOUT COMORBIDITY
Natalie Loudon (natalie.loundon@aphp.fr)
- 10:59-11:06 IMPAIRED BINAURAL HEARING IN CHILDREN WITH HEARING LOSS WHO USE BILATERAL HEARING AIDS
Karen Gordon (karen.gordon@utoronto.ca)
- 11:07-11:50 The role of genetic testing in hearing loss: The SickKids experience
Karen Gordon
Raveen Basran
Nada Querci
Sharon Cushing
Jill Liberman
Bob Harrison
- 11:50-12:00 Moderated Q&A
- 12:00-12:14 Pick up lunch and go to Breakout Sessions PCCRL/Level 2 Lobby**
- 12:15-1:00 LUNCH BREAKOUTS**
- Breakout A:** THE USE OF PUBLIC HEALTH AND PUBLICALLY AVAILABLE DATASETS TO ADDRESS PEDIATRIC ENT RESEARCH QUESTIONS.
Moderator: **Jareen Meinzen-Derr**
LOCATION: **PCCRL/ Level 2 Event Rooms 2A & 2B**
- Breakout B:** ETHICS IN MEDICINE AND MULTIDISCIPLINARY PRACTICE
Moderator: **Peggy Kelley**
Robert Ward
LOCATION: **PCCRL/ Level 3 Event Rooms 3A & 3B**
- Session #3 Laryngology/Bronchoesophagology/SLP PGCRL/Auditorium**
Moderator Abby Nolder
- 1:10-1:17 PEDIATRIC SIALENDOSCOPY: ARE WE LOOKING IN THE RIGHT PLACE?
Javan Nation (javan.nation@gmail.com)
- 1:18-1:25 NATURAL HISTORY AND RISK OF RESPIRATORY INFECTION IN ASPIRATION WITHOUT COUGH IN INFANTS <51 WEEKS POST-MENSTRUAL AGE
Johnathan E. Castaño (johnathan.castano@chp.edu)
- 1:26-1:33 ASSESSING REFLUX AS A RISK FACTOR FOR VOCAL FOLD NODULES IN A PEDIATRIC POPULATION
Thomas Townes (gtownes@gmail.com)
- 1:34-1:41 EFFECT OF STANDARDIZATION OF CARE ON EARLY OUTCOMES IN PEDIATRIC TRACHEOSTOMY
Annabelle Tay Sok Yan (sok_yan_tay@nuhs.edu.sg)

- 1:42-1:49 WHAT DID YOU SEE? WHAT DID YOU HEAR? UNRECORDED ENDOSCOPIC EXAMINATIONS
Robert J. Shprintzen (robert.shprintzen@vcfscenter.com)
- 1:50-1:57 SWALLOWING PARAMETERS VIEWED VIA FIBEROPTIC ENDOSCOPIC EVALUATION OF SWALLOWING (FEES) IN A COHORT OF PATIENTS WITH CHARGE
Claire Kane Miller (claire.miller@cchmc.org)
- 1:58-2:05 LARYNGOPLASTY IN PEDIATRIC PATIENTS WITH UNILATERAL VOCAL FOLD PARALYSIS
Nikolaus Wolter (nikolaus.wolter@mail.utoronto.ca)
- 2:05-2:12 Moderated Q&A
- 2:13-2:53 Vocal fold paralysis in children:
A multifaceted therapeutic approach
PGCRL/Auditorium
Eileen Raynor
Patrick Barth
Hilary Bartholomew
SLP TBD
- 2:53-3:13 Coffee Break with Exhibitors PCCRL/Level 2 Lobby**
- 3:14-3:18 Introduction Stool Teaching Awardee (Yell Inverso)
- 3:19-3:51 Lecture by Stool Teaching Awardee Richard Seewald
SUPPORTING CHILDREN AND FAMILIES AROUND THE WORLD: THE WORK OF THE HEAR THE WORLD FOUNDATION
- Session #4 Otology (1) PGCRL/Auditorium**
Moderator Bill Parkes
- 3:52-3:59 MANAGEMENT OF PAEDIATRIC CHOLESTEATOMA BASED ON PRESENTATIONS, COMPLICATIONS AND OUTCOMES
Shazia Peer (Shazia.Peer@uct.ac.za)
- 4:00-4:07 VESTIBULAR INJURY AS A CAUSE FOR DELAYED RECOVERY IN CONCUSSED PEDIATRIC STUDENT-ATHLETES
Danielle Smith (smithd6@uthscsa.edu)
- 4:08-4:15 MANAGEMENT OF PEDIATRIC CHOLESTEATOMA: AUDIT OF WORKFLOW IN A CHILDREN'S HOSPITAL
Colin Leonard (cgl22col@googlemail.com)
- 4:16-4:23 THE USE OF BONE-ANCHORED HEARING AIDS IN PATIENTS WITH UNILATERAL CONGENITAL AURAL ATRESIA
Ankita Patro (apatro@bcm.edu)
- 4:24-4:31 COCHLEAR NERVE APLASIA WITH INTACT EFFERENT NERVE FUNCTION: A NEW FORM OF AUDITORY NEUROPATHY SPECTRUM DISORDER
Peter R Dixon (peter.dixon@utoronto.ca)
- 4:32-4:39 Moderated Q&A
- 6:00-6:14 Meet outside Lobby of Hotel Chelsea for Bus Transportation to Hockey Hall of Fame**
- 6:15 PM First Bus Departs Chelsea Hotel for Hockey Hall of Fame
- 6:40 PM Second Bus Departs Chelsea Hotel for Hockey Hall of Fame
- 7:00-9:30 **Dinner, Awards and Remarks by Curtis Joseph**
- 9:30PM First Bus Departs Hockey Hall of Fame for Chelsea Hotel
- 10:00 PM Second Bus Departs Hockey Hall of Fame for Chelsea Hotel

Saturday 12/2/2017

- 7:00-8:00** **Members Business Meeting** **PGCRL/Auditorium**
- 7:00-7:55** **Breakfast with Exhibitors** **PCCRL/Level 2 Lobby**
- 8:00-8:02** **Morning Announcements** **PGCRL/Auditorium**
- 8:03-8:33** **Invited Lecture** **James O’Leary**
WHAT DO RECENT HUMAN STUDIES TELL US ABOUT THE ASSOCIATION
BETWEEN ANAESTHESIA IN YOUNG CHILDREN AND NEURODEVELOPMENTAL
OUTCOMES
- Session #5** **Otology (2)** **PGCRL/Auditorium**
Moderator **Rodrigo Silva**
- 8:34-8:41** **RENAL ANOMALIES IN MICROTIA AND AURAL ATRESIA PATIENTS AT A
TERTIARY PEDIATRIC CENTER**
Ankita Patro (apatro@bcm.edu)
- 8:42-8:49** **IMPLEMENTATION OF CONGENITAL CYTOMEGALOVIRUS SCREENINGS IN THE
WELL BABY POPULATION**
Barbra Novak (bjnovak@texaschildrens.org)
- 8:50-8:57** **DETECTION OF ABNORMALLY SHAPED EARS IN NEWBORNS**
Neil Chadha (nchadha@cw.bc.ca)
- 8:58-9:05** **THE PREVALENCE OF SPATIAL PROCESSING DISORDER IN CHILDREN WITH CLEFT
PALATE**
Jenna MacDonald (JennaMacDonald@Dal.Ca)
- 9:09-9:13** **EXCEPTIONALLY EARLY TYMPANOSTOMY TUBE PLACEMENT**
Pedram Goel (pedramgo@usc.edu)
- 9:14-9:21** **Moderated Q&A**
- 9:38-10:18** **CHARGE Syndrome: Multidisciplinary Considerations** **Claire Miller**
Daniel Choo
Catherine Hart
Yell Inverso
Ashley O’Neill
Susan Wiley
- 10:20-10:40** **Coffee Break with Exhibitors** **PCCRL/Level 2 Lobby**
- Session #6** **Cochlear Implants** **PGCRL/Auditorium Moderator**
Barbara Novak
- 10:42-10:49** **EARLY ACCESS TO HIGH FREQUENCIES PROMOTES SYMMETRIC SPEECH
PERCEPTION IN BIMODAL AND BILATERAL COCHLEAR IMPLANT USERS**
Melissa Jane Polonenko (melissa.polonenko@mail.utoronto.ca)
- 10:50-10:57** **SPATIAL HEARING ABILITIES IN CHILDREN USING BIMODAL DEVICES AND
BILATERAL COCHLEAR IMPLANTS**
Melissa Jane Polonenko (melissa.polonenko@mail.utoronto.ca)
- 10:58-11:05** **PEDIATRIC COCHLEAR IMPLANT PATIENTS: OBSTACLES TO FULL-TIME
UTILIZATION**
Paula a. Tellez (andy.tellez@gmail.com)
- 11:06-11:13** **WHY PATIENTS REFERRED FOR COCHLEAR IMPLANT ASSESSMENT ULTIMATELY
DO NOT RECEIVE A COCHLEAR IMPLANT: WHO SAID NO TO WHOM?**

- Paula a. Tellez (andy.tellez@gmail.com)
 11:14-11:21 DOES PERFORMANCE ON LANGUAGE OUTCOME MEASURES CORRELATE WITH QUALITY OF LIFE IN CHILDREN WITH COCHLEAR IMPLANTS?
 Judith E Lieu (lieujudithe@wustl.edu)
 11:22-11:29 THE USE OF THERAPEUTIC HONEY GEL IN COCHLEAR IMPLANT ASSOCIATED SKIN WOUNDS
 Anya Costeloe (anyacosteloe@gmail.com)
 11:30-11:37 CLINICAL INDICATORS OF ADMISSION FOR PEDIATRIC COCHLEAR IMPLANT PROCEDURES
 Terral Patel (patterra@musc.edu)
 11:38-11:45 Moderated Q&A

- 11:46-11:49** Introduction Ruben Scientific Awardee (Albert Park)
11:50-12:12 Ruben Scientific Achievement Award- *Robert Harrison* **PGCRL/Auditorium**
 ALMOST ALL HEARING LOSS INVOLVES AUDITORY NEUROPATHY
12:13-12:20 **Pick up lunch and return to the PGCRL Auditorium**

12:21-1:20 **2017 American Academy of Pediatrics (AAP) Sponsored Panel**

Introduction by AAP Representative

Cytomegalovirus in developmental hearing loss

Sharon Cushing

Blake Papsin

Ari Bitnun

Albert Park

Bob Harrison

Melissa Polonenko

Vicky Papaioannou

Session #7 Outcomes & Professional Practice PGCRL/Auditorium

Moderator Cedric Pritchett

1:21-1:28 THE USE OF PEDIATRIC DATABASES IN OTOLARYNGOLOGY: ARE WE DILUTING OUR QUALITY OF EVIDENCE?

Andrew Walls (andrew.walls@yale.edu)

1:29-1:36 ADDRESSING PATIENT CONCERNS LEADING UP TO SURGERY THROUGH AUTOMATED TEXT MESSAGES AND VIDEOS

Mark Michael (mark.michael@bcm.edu)

1:37-1:44 PARENT PERSPECTIVES ON MULTIDISCIPLINARY CARE

Ursula M. Findlen (ursula.findlen@nationwidechildrens.org)

1:45-1:52 DON'T CALL US, WE'LL CALL YOU - A PROACTIVE APPROACH TO POST-OPERATIVE CALL MANAGEMENT

Christopher Grindle (chrisgrindle@gmail.com)

1:53-2:00 OTOLARYNGOLOGY EVENING OFFICE HOURS: PRODUCTIVITY AND DETERMINANTS OF USE

Adam P Vasconcellos (Adam.Vasconcellos@Jefferson.edu)

2:01-2:08 ACCURACY OF VIDEO PNEUMATIC OTOSCOPY IN DETERMINING OTITIS MEDIA WITH EFFUSION FOR USE IN TELEMEDICAL APPLICATIONS

Erin Wynings (wyningem@evms.edu)

2:09-2:16 A PRACTICAL ASSESSMENT OF HIGH LEVEL DISINFECTION FOR FLEXIBLE RHINOLARYNGOSCOPES IN A BUSY PEDIATRIC OTOLARYNGOLOGY PRACTICE

Kristyn Beyer (Kristyn.Beyer@nationwidechildrens.org)

2:16-2:24 Q&A

Session #8 Rhinology, Paranasal Sinus Disease & Allergy PGCRL/Auditorium

Moderator Jess Levi

2:25-2:32 USE OF MOMETASONE ELUTING STENTS IN COMPLEX PEDIATRIC SINUS DISEASE

- 2:33-2:40 Anthony Sheyn (asheyn@uthsc.edu)
RADIOLOGIC AND ENDOCRINE FINDINGS IN PEDIATRIC PATIENTS WITH SOLITARY CONGENITAL NASAL PYRIFORM APERTURE STENOSIS
- 2:41-2:48 James M. Ruda (james.ruda@nationwidechildrens.org)
PREDICTIVE ABILITY OF BEDSIDE NASAL ENDOSCOPY TO DIAGNOSE INVASIVE FUNGAL SINUSITIS IN A PEDIATRIC POPULATION
- 2:49-2:56 Carolyn L. Mulvey (mulvey.carolyn@gmail.com)
RISK FACTORS FOR EARLY ONSET OF CATARACTS AND/OR GLAUCOMA - ARE INTRANASAL CORTICOSTEROIDS SAFE?
- 2:57-3:04 Dianne Valenzuela (diannevalenzuela@gmail.com)
A MISSED DIAGNOSIS OF ORAL-FACIAL-DIGITAL SYNDROME IN THE CONTEXT OF PRE-IMPLANTATION GENETIC SCREENING
- 3:04-3:12 Tanner Fullmer (tanner.fullmer@bcm.edu)
Moderated Q&A

3:13-3:28 Coffee Break with Exhibitors PCCRL/Level 2 Lobby

Session #9 Tonsils & Adenoids PGCRL/Auditorium

Moderator Tim Martin

3:29-3:36 TONSILLAR MICROBIOME OF PATIENTS WITH PEDIATRIC AUTOIMMUNE NEUROPSYCHIATRIC DISORDER ASSOCIATED WITH STREPTOCOCCUS (PANDAS)
Sallie Martin Long (sml259@georgetown.edu)

3:37-3:44 INCIDENCE OF POST-OPERATIVE HEMORRHAGE FOLLOWING TOTAL TONSILLECTOMY VERSUS COBLATION INTRACAPSULAR TONSILLECTOMY
Giriraj K. Sharma (sharmagk@uci.edu)

4:45-4:52 POST-TONSILLECTOMY HEMORRHAGE: 3 YEAR RESULTS FROM A TERTIARY CHILDREN'S HOSPITAL WHERE 3 DIFFERENT TECHNIQUES ARE UTILIZED
Craig Derkay (craig.derkay@chkd.org)

4:53-5:00 VALUE OF INTRANASAL CORTICOSTEROID PREOPERATIVE USE IN CHILDREN WITH OSAS UNDERGOING ADENOTONSILLECTOMY
Yousif Alammar (Yaalammar@gmail.com)

5:01-5:08 PEDIATRIC POST-TONSILLECTOMY HEMORRHAGE: WHO NEEDS INTERVENTION?
Jesse Jennings (greenbergj4@upmc.edu)

5:09-5:17 Moderated Q&A

5:17-5:20 Announcements

5:35-7:30 **Wine and Cheese Poster Reception PCCRL/Level 2 Gallery**

Sunday 12/3/2016

7:00-7:59 Breakfast with exhibitors PCCRL/Level 2 Lobby

8:00-8:05 Morning Announcements PGCRL/Auditorium

8:06-8:25 Poster Session Awards PGCRL/Auditorium

Session#10 Tracheostomy/Neck Infections PGCRL/Auditorium Moderator

Nikolaus Wolter

8:26-8:33 A STANDARDIZED, CLOSED-LOOP SYSTEM FOR REPORTING AND REDUCING PEDIATRIC TRACHEOSTOMY RELATED ADVERSE EVENTS
Mallory McKeon (mallory.mckeon@childrens.harvard.edu)

- 8:34-8:41 AUGMENTATIVE COMMUNICATION FOR PEDIATRIC PATIENTS UNDERGOING A TRACHEOSTOMY: A RETROSPECTIVE REVIEW TO GUIDE SERVICE DELIVERY
Rachel Santiago (rachel.santiago@childrens.harvard.edu)
- 8:42-8:49 MULTIDISCIPLINARY TEAM APPROACH DECREASES TIME TO FIRST TRACHEOSTOMY CLASS FOR FAMILIES WITH TRACHEOSTOMY PATIENTS
Margaret McCasland (jmmccasland@aol.com)
- 8:50-8:57 ESTABLISHMENT OF A TRACHEOSTOMY CARE INDEX FOR QUALITY IMPROVEMENT
Sarah Begue (sarah.creech@nationwidechildrens.org)
- 8:57-9:02 MICROBIOLOGY OF DEEP SPACE NECK INFECTIONS IN CHILDREN
Michael Kubala (mekubala@uams.edu)
- 9:03-9:10 EXTRA-PULMONARY TUBERCULOSIS (EPTB) OF THE HEAD & NECK AT RCCH, CAPE TOWN, SOUTH AFRICA: A 5 YEAR RETROSPECTIVE REVIEW
Shazia Peer (Shazia.Peer@uct.ac.za)
- 9:11-9:22 Moderated Q&A

Session #11 Sleep Disorders/Miscellaneous

PGCRL/Auditorium

Moderator Tony Hughes

- 9:25-9:32 UTILIZATION OF POLYSOMNOGRAPHY IN CHILDREN WITH DOWN SYNDROME: RATE AND SEVERITY OF OBSTRUCTIVE SLEEP APNEA
Christine H. Heubi (christine.heubi@cchmc.org)
- 9:33-9:40 OBSTRUCTIVE SLEEP APNEA IN CHILDREN WITH DOWN SYNDROME: ANALYSIS OF SLEEP STUDY SCREENING RATE AND COMPLIANCE WITH GUIDELINES
Adam Hsieh (adam.hm.hsieh@gmail.com)
- 9:41-9:48 PREDICTIVE FACTORS FOR OBSTRUCTIVE SLEEP APNEA AFTER CLEFT PALATE REPAIR
Mathieu Bergeron (mathieu.bergeron@cchmc.org)
- 9:49-9:56 THE IMPACT OF DRUG-INDUCED SLEEP ENDOSCOPY ON SURGICAL DECISION MAKING IN HEALTHY CHILDREN WITH SLEEP DISORDERED BREATHING
Malak Jamal Gazzaz (malakgazzaz@yahoo.com)
- 9:57-10:04 NEAR-COMPLETE EXTERNAL EAR AVULSION REPAIRED WITH PRIMARY CLOSURE AND HYPERBARIC OXYGEN: HOW TO OPTIMALLY MANAGE?
Jonathan Grischkan (grischkan@gmail.com)
- 10:05-10:12 LOW-COST, HIGH-PRECISION 3D PRINTED MODELS FOR SURGICAL SIMULATION IN PEDIATRIC TEMPORAL BONE SURGERY
Monika E. Freiser (freiserme@upmc.edu)
- 10:13-10:20 MULTIDISCIPLINARY PERIOPERATIVE CARE OF CLEFT PATIENTS
Adam B Johnson (ajohnson5@uams.edu)
- 10:21-10:35 Moderated Q&A
- 10:40--11:00 Closing remarks and changing of the guard

Posters

Presenting Author

Title of Poster

1	Jason E. Cohn	THE USE OF PALATE SURGERY IN NON-SYNDROMIC, NEUROLOGICALLY INTACT CHILDREN WITH OBSTRUCTIVE SLEEP APNEA
2	Nigar N. Ahmedli	CASE PRESENTATION: POSTERIOR SUBGLOTTIC SCAR BAND FORMATION FOLLOWING INTUBATION
3	Kim Donner	GONORRHEA POSITIVE SINUS CULTURES IN 15-YEAR OLD WITH ALLERGIC FUNGAL SINUSITIS (AFS)
4	Adam Michael Kravietz	FEASIBILITY OF MICROLARYNGEAL BIPOLAR RADIOFREQUENCY ABLATION-ASSISTED MANAGEMENT OF PEDIATRIC OBSTRUCTIVE AIRWAY DISEASE
5	Alexandra Fonseca	THE RARE CASE OF A TRAUMATIC PSEUDOANEURYSM OF THE SUPERFICIAL TEMPORAL ARTERY
6	Arturo Eguia	PEDIATRIC LATERAL FLOOR OF MOUTH DERMOID CYST EXCISED BY TRANSORAL APPROACH: CASE REPORT AND LITERATURE REVIEW
7	Lauren Galinat	ENDOSCOPIC EXCISION OF A CONGENITAL INTRATYMPANIC MEMBRANE CHOLESTEATOMA
8	Michael Weinstock	WHAT'S THAT MASS: STERTOR, DYSPHAGIA, AND SHORTNESS OF BREATH IN A 10 YEAR OLD?
9	Brandon Esianor	AN ALTERNATIVE TREATMENT FOR SUPRASTOMAL STENOSIS IN PATIENTS WITH DECREASED BENEFIT FROM LARYNGOTRACHEAL RECONSTRUCTION
10	Jeremie D. Oliver	PRIMARY CERVICAL LEIOMYOMA: A RARE CAUSE OF A POSTERIOR NECK MASS IN A PEDIATRIC PATIENT
11	Renata E Husnudinov	IATROGENIC ANTLANTOAXIAL INJURY IN CHILDREN WITH TRISOMY 21
12	Andrew Blucher	BRAINSTEM HERNIATION INTO A BULBOUS INTERNAL AUDITORY CANAL: SERIAL IMAGING FINDINGS
13	Aren Bezdjian	MEDIALIZED TYMPANOSTOMY TUBES: WHAT TO DO? A SURVEY OF PEDIATRIC OTOLARYNGOLOGISTS
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AIRWAY ANOMALIES IN PATIENTS WITH CRANIOSYNOSTOSIS

Fasil Mathews

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Objectives:

- 1) Characterize the spectrum of airway anomalies in patients with craniosynostosis.
- 2) Identify clinical characteristics of these patients that may be associated with the development of airway anomalies.

Methods:

This study is a retrospective case series assessing the type, frequency, and severity of airway anomalies in all patients with craniosynostosis seen at a tertiary-care children's hospital between 2000 and 2016. Clinical characteristics examined included demographics and additional neurologic and craniofacial abnormalities. Subgroup analyses were performed to identify differences in airway anomalies dependent on location of suture fusion, presence of multisutural fusion, and presence of syndromic craniosynostosis.

Results:

Four hundred sixty patients with craniosynostosis (83.5% white, 64.1% male; 36.5% metopic, 45.7% sagittal, 27.0% coronal, 5.6% lambdoid) were included. Notable prevalences of airway anomalies included the following: 23.3% adenotonsillar hypertrophy (ATH), 8.7% laryngomalacia, 7.0% tracheomalacia, 6.7% subglottic stenosis (SGS), 4.1% bronchomalacia, 3.9% laryngeal cleft, and 1.5% vocal fold paralysis. Multisutural craniosynostosis patients (n=84) were more likely to have tracheomalacia ($p<0.01$), SGS ($p<0.001$), ATH ($p=0.01$),

obstructive sleep apnea (OSA) ($p=0.03$), epiglottic/tongue base collapse ($p<0.001$), bronchopulmonary dysplasia ($p=0.02$), and chronic respiratory failure ($p<0.01$) and require tracheostomy ($p<0.001$) and mechanical ventilation ($p=0.01$). Syndromic craniosynostosis patients ($n=30$) were more likely to have laryngomalacia ($p=0.01$), tracheomalacia ($p=0.048$), SGS ($p<0.01$), ATH ($p=0.04$), and OSA ($p<0.001$) compared to non-syndromic patients.

Conclusion:

Airway anomalies are prevalent in patients with craniosynostosis; patients with multisutural or syndromic types have an increased risk of developing certain abnormalities. There should be a lower threshold for referral for airway evaluation in these populations.

IMMATURE THYROID TERATOMA CAUSING AIRWAY OBSTRUCTION IN A PREMATURE INFANT

Adam R. Szymanowski (M.D.)

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Introduction: Immature thyroid teratoma is a rare tumor occurring mainly in newborns. The location of the mass and degree of differentiation of the tumor determine prognosis and management.

Objectives: (1) Present airway management of a premature infant with airway obstruction at birth from a prenatally undiagnosed neck mass. (2) Review the literature on the diagnosis and treatment of immature thyroid teratoma.

Methods: A 29-week gestation neonate was born with a large, firm, neck mass in acute respiratory distress. Subsequent review of the case, pathology, and current literature were completed.

Results: Acute airway management in a premature neonate with an unexpected neck mass requires availability and understanding of options for securing the airway. In our patient, an endotracheal tube over a rigid Hopkins rod was used to locate the larynx and intubate the baby. Once the airway was secure, CT and MRI were helpful in defining the neck mass and planning for surgery. After surgical excision, the patient was evaluated and treated by a multidisciplinary team to assess for metastatic disease.

Discussion: Immature thyroid teratoma is a rare entity that occurs mainly in newborns. Location of the mass in the head and neck may lead to airway compromise. Airway endoscopy using a Hopkins rod as a guide for visualizing the airway and advancing the endotracheal tube is a useful technique in locating and establishing the airway. Post-operatively a multidisciplinary approach is needed to determine the character of the lesion and need for metastatic work-up.

DEVELOPMENT AND IMPLEMENTATION OF A TRACHEITIS ALGORITHM TO DIAGNOSE AND TREAT TRACHEITIS IN VENTILATOR-DEPENDENT INFANTS

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Background: Limited data is available regarding diagnosis and treatment of bacterial tracheitis in neonates and infants who are chronically ventilated. As a result, many infants are inappropriately diagnosed with tracheitis, leading to unnecessary exposure to antibiotics and potential emergence of antibiotic resistant organisms.

Objectives: Develop and implement a modified clinical pulmonary infection score (mCPIS) to objectively evaluate, diagnose and treat tracheitis in ventilator-dependent infants.

Methods: Prospective cohort quality improvement project focusing on ventilator-dependent infants at high risk for respiratory bacterial infections. The mCPIS was based on the following clinical factors: fever, WBC and differential count, change in amount and character of tracheal secretions, chest x-ray findings, tracheal aspirate gram stain and culture, and escalation of respiratory support. The algorithm dictates antimicrobial treatment based on the total mCPIS.

Results: Baseline data consisted of 121 ventilator-dependent infants treated for tracheitis from 2008-2014. Only thirty-five percent (42/121) met the mCPIS definition of tracheitis. Potentially 65% of these infants were treated inappropriately with antibiotics. Since implementation of this project in September 2016 to date, 20 infants have been evaluated for suspected tracheitis. Based on the mCPIS and tracheitis algorithm, only 10/20 (50%) were diagnosed and treated with antibiotics. No clinically significant adverse events were seen in either group of patients. The overall use and duration of antibiotic treatment for tracheitis was decreased by at least half.

Conclusion: By using a continuous quality and process improvement (CQPI) methodology, bacterial tracheitis is now being diagnosed and managed more objectively in ventilator-dependent infants in our NICU.

IMPROVING PATIENT ACCESS TO TIME-SENSITIVE EVALUATIONS

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BACKGROUND AND OBJECTIVE:

Early Hearing Detection and Intervention (EHDI) programs recommend outpatient (OP) screens by one month of age. The goal of early detection of hearing loss and intervention is to maximize communication outcomes. Prior to the onset of this research at our facility, the average patient age at OP screen was 55 days. The initial goal of this quality improvement (QI) research was to change referral and scheduling processes, and, during the initial four months, we were able to reduce the average patient age at OP screen from 55 to 46 days. The purpose of the current research is to determine the sustainability of the process changes leading to improved patient access.

METHODS:

During the initial course of the research, intervention cycles were systematically initiated to improve outpatient referral and scheduling processes. Data was collected from the state EHDI database and hospital electronic medical record. Data collection will continue through October 2017.

RESULTS:

Process changes were incorporated into clinic workflow, enabling ongoing evaluation to determine if improvements were sustainable. As of May 2017, the average patient age at OP screen was 29 days and the average patient age at physician referral decreased from 13 days to 5 days. November and December 2016 data showed increased patient age at physician referral and OP screening.

CONCLUSION:

The process changes demonstrated improvement with sustainability. Low cost interventions resulted in improved patient access to time-sensitive evaluations. The increased patient age in November and December is hypothesized to be due to holiday clinic schedules.

IS AUDITORY BRAIN RESPONSE TESTING REQUIRED IN CHILDREN WITH AUTISM SPECTRUM DISORDER?

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BACKGROUND: With newborn hearing screening(NBHS), hearing loss is routinely identified within the first few months of life. Autism Spectrum Disorder(ASD) is characterized by impaired social interactions and delayed communication, with manifestations around 18 months of age that may mimic hearing loss. There is little data indicating that children with ASD who pass newborn hearing screening and condition for limited audiometry develop hearing loss.

MATERIALS AND METHODS: A retrospective chart review was performed on all children with suspected or confirmed ASD undergoing auditory brain response(ABR) testing with sedation or anesthesia in the last two years. Demographic, clinical, NBHS status, pre-ABR audiometry, and ABR results were recorded.

RESULTS: 49 children with ASD underwent ABR testing including 41(83.7%) males and 8(16.3%) females with a mean age of 3.7 ± 1.9 years. 81.6% of children passed, 2.0% referred, and 16.3% had unknown status for the NBHS. Speech awareness thresholds(SAT), soundfield audiometry, or otoacoustic emissions were measurable in 39/49(79.6%) patients prior to ABR. No audiometry could be obtained in four(10.3%) patients, and suspicion for hearing loss was present in six(12.2%) children. Hearing loss was identified in a single(2.0%) child at four months of age following a referred newborn screen. No children who passed NBHS or tested normally with SAT or soundfields were identified with hearing loss by ABR.

CONCLUSIONS: Newborn hearing status and available behavioral audiometry are predictive of hearing status in children with ASD. The risks of sedation and anesthesia in this at risk population must be carefully examined prior to recommending ABR.

AUDITORY BRAIN STEM RESPONSES: EFFICACY OF MELATONIN IN CHILDREN WITH AND WITHOUT COMORBIDITY

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Objective

The aim of this study is to evaluate the efficacy of Melatonin as compared to other options in children with and without co-morbidities.

Patients and Methods

Retrospective study in tertiary care centre. 83 children with co-morbidities and 54 children without comorbidity performed ABR under either Pentobarbital (GPentco) or Melatonin (GMelco/GMel) were included. Rectal Pentobarbital was given at a 5mg/kg dose. Oral Melatonin was given at 2 different doses depending on the age (5 mg/10mg to be repeated). Success rate, defined as completed binaural investigation, delay and duration of sleep, and side effects, were compared between groups.

Results

There were 56 patients in GMelco, 54 patients in GMel and 27 in GPentco. Success rate was 76.8% in GMelco, and 88.8% in GPentco ($p=0.24$) and 91% in GMel, mean delay to sleep was 35 minutes in GMelco, 33 minutes in GMel and 54 minutes ($SD=47$) in GPentco ($p=0.16$), sleep duration was 23 minutes in GMelco, 30 minutes in GMel and 153 minutes in GPent ($p<0.0001$). One episode of vomiting was reported in GPent.

Discussion

Melatonin can be used successfully for patients that need medication for sleep in ABR and does not require post procedure monitoring. Duration of sleep is significantly shorter in the Mel group but success rate remain high even in children with co-morbidities, independent of the hearing status. Further studies with different dosing regimen may improve the success rate in neurologically impaired patients.

IMPAIRED BINAURAL HEARING IN CHILDREN WITH HEARING LOSS WHO USE BILATERAL HEARING AIDS

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Hearing prostheses are fit to each ear to improve access to sounds, including speech, but these fittings do not ensure proper binaural hearing. In the present study, we asked whether children fit with bilateral hearing aids develop normal perception of binaural cues. Children (ages 6-18) who wear bilateral hearing aids (n=18, average age=11.56 ± 3.15) were compared to children with normal hearing (n=17, average age=12.47 ± 3.56) across different binaural listening tasks. We presented 250-Hz click trains of 36ms at 1Hz to both ears through 3A insert earphones either unilaterally or bilaterally with interaural level or timing differences. Participants were asked to indicate whether the sound came from the left or right (lateralization), and, in a separate task, whether they heard one sound or two (binaural fusion). Six blocks of stimuli for each task and condition were presented. Accuracy and reaction times were recorded for each stimulus trial.

Results indicated that children who use hearing aids lateralize interaural level differences similarly to normal hearing peers but have impaired lateralization of interaural timing cues. The hearing aid group also reported hearing two sounds rather than one more often than the normal hearing group for bilateral input, indicating poorer binaural fusion. Longer reaction times in the hearing aid group relative to peers with normal hearing suggests that these listening tasks were more challenging. Overall, these findings are the first to indicate that binaural hearing is not normally developed in children using bilateral hearing aids and highlights gaps in present clinical treatment protocols.

PEDIATRIC SIALENDOSCOPY: ARE WE LOOKING IN THE RIGHT PLACE?

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Objectives: This study aimed to better characterize pediatric patients undergoing sialendoscopy (SE), in order to identify clinical and imaging predictors to improve preoperative decision making.

Methods: Five-year retrospective chart review of pediatric patients presenting with recurrent salivary gland swelling having undergone SE.

Results:

49 SE procedures were performed on salivary glands, including 38 parotids and 11 submandibular glands (SMGs). The average age at time of procedure was 9.65 years-old, with SMG patients being older than parotid patients (14.8 vs 8.15, $p < 0.001$).

Preoperative imaging was obtained in 52.7% parotids versus 90.9% of SMGs. The imaging findings were useful for identifying a stone or stricture and guiding surgical management in 45.5% of SMGs versus 2.6% of parotids ($p < 0.001$).

Sludge was a common SE finding in both parotid and SMG glands. A stone was found in 45.5% of SMGs and no parotids ($p < 0.001$). A SE intervention such as balloon dilation, stone removal, or sialodochoplasty was performed in 72.7% of SMGs and 5.3% of parotids ($p < 0.001$).

Conclusion:

Preoperative imaging and SE is high yield in SMG sialadenitis with 83.3% of imaging findings being useful and 72.7% (13.1x OR) of SEs resulting in an intervention. In contrast, SE is low yield in parotid sialadenitis with only 5.6% of imaging findings being useful and 5.3% of SEs resulting in an intervention. For parotid sialadenitis, SE is likely best for recalcitrant cases to rule out strictures or stones, but clinicians should consider a different first line intervention such as ductal catheterization with lavage and steroid injection.

NATURAL HISTORY AND RISK OF RESPIRATORY INFECTION IN ASPIRATION WITHOUT COUGH IN INFANTS <51 WEEKS POST-MENSTRUAL AGE

Johnathan E. Castaño (M.D.)

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Introduction: Dysphagia with aspiration remains a common and serious problem in babies less than 51 weeks post-menstrual age (<51PMA), especially in a NICU setting. We previously reported that modified barium swallow (MBS) is inappropriate to diagnose "silent aspiration" in this age group as the laryngeal cough reflex (LCR) is developmentally absent. A clinical feeding evaluation (CFE) supplants MBS to assess these young infants. We report the natural history of "silent aspiration" and the risk of lower respiratory tract infection (LRI) in this cohort.

Methods: We retrospectively reviewed the charts of 254 infants with MBS. Infants with "silent aspiration" at <51PMA and follow-up MBS were included.

Results: Forty-eight, 59, and 65 infants underwent follow-up MBS prior to 3, 6, and 12 months corrected age. Resolution of "silent aspiration" occurred in 16/48 (33.3%) by 3 months, 21/59 (35.6%) by 6 months and 39/65 (60.0%) by 12 months. The median number of LRIs in this cohort was 0 with approximately 2/3 (67.7%) never diagnosed. Chi-squared and Wilcoxon-rank sum tests comparing the LRI prevalence and incidence in infants with and without resolution by each time point revealed no significant differences.

Conclusion: Aspiration without cough is a developmental variant of normal in babies <51PMA. A CFE is first line in evaluating these children. The natural history of aspiration without cough in these babies is spontaneous resolution in most children, and most are never diagnosed with LRI, rendering the risk/benefit assessment even more favorable for our proposed clinical pathway which is detailed in this presentation.

ASSESSING REFLUX AS A RISK FACTOR FOR VOCAL FOLD NODULES IN A PEDIATRIC POPULATION

Thomas Townes (M.D.)

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Objective

To assess the relationship between presence of reflux and vocal cord nodules in children with voice complaints. The reflux symptom index (RSI) assessed via parental survey and reflux finding score (RFS) assessed via laryngoscopy were used to determine presence of reflux, and evaluation for vocal nodules was performed via laryngoscopy as well.

Design

Case series with chart review of children evaluated in a voice clinic, and blinded assessment of laryngoscopic and stroboscopic exams performed on these patients.

Setting

Tertiary specialized children's hospital

Subjects and Methods

The medical records of 102 patients age 9 months to 17 years who presented to a voice clinic with a complaint of dysphonia from 2014 to 2017 were reviewed. Parental reporting of reflux symptoms was assessed using the RSI. Exam for vocal cord lesions and reflux findings was performed via laryngoscopy, and reflux findings were standardized using the RFS.

Results

Of the 102 patients evaluated for voice complaints in clinic, 39 were found to have vocal fold nodules. Among these dysphonic patients, the RSI was lower in patients with vocal fold nodules, and this result reached statistical significance ($p=0.042$). The RFS was also lower, although this result did not reach statistical significance.

Conclusions

Among dysphonic patients, reflux is not a strong predictive factor for presence of vocal fold nodules, and in fact, more symptomatic reflux is actually a predictor for causes of dysphonia other than vocal fold nodules.

EFFECT OF STANDARDIZATION OF CARE ON EARLY OUTCOMES IN PEDIATRIC TRACHEOSTOMY

Joshua R. Bedwell (M.D.)

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Objective: Compare the effect of operative technique and post-operative care standardization on early outcomes in children undergoing tracheostomy.

Methods: Retrospective review of a consecutive series of patients undergoing tracheostomy before and after the implementation of a standardized tracheostomy protocol. Standard protocol included recommendations for stomal maturation and against suturing the tracheostomy tube in place, and the use of a standard dressing (Mepilex Ag) until first change. Measured outcomes included overall and post-tracheostomy length of stay (LOS), use of paralysis, mortality, accidental decannulation, stoma breakdown, mucus plugging, and bleeding from the tracheostomy.

Results: 140 patients were included. There were no demographic differences between the groups. Stomal maturation significantly increased over the study period (30 vs 82% $p < 0.01$) and the use of sutures to secure the trach tube decreased (66 vs 13% $p < 0.01$). Total LOS (141 vs 150 days $p = 0.7$) and post-tracheostomy LOS (92 vs 81 days $p = 0.5$) were similar. Use of and duration of paralysis increased (39 vs 57% $p = 0.02$), (2.3 vs 3.5 days $p = 0.02$). There was no difference in the rate of any of the measured complications.

Conclusion: There was good adoption of the protocol, as measured by stomal maturation and trach suturing. Children received more paralysis after

standardization (due to comorbid conditions). Early complications after tracheostomy were rare. Standardization of care did not significantly alter the LOS or rate of adverse events. Improvement in team dynamics and communication are difficult to measure retrospectively, and highlight the importance of prospective data collection for quality improvement initiatives.

WHAT DID YOU SEE? WHAT DID YOU HEAR? UNRECORDED ENDOSCOPIC EXAMINATIONS.

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Flexible nasopharyngoscopy assessing speech, respiration, and deglutition have been available since the 1970s. Endoscopes have become thinner with better optics. High definition video/sound recording can be inexpensive and easy. Data storage is inexpensive. Nonetheless, many clinicians do not record office endoscopies, or they record video without sound thereby rendering later review impossible. Moreover, the interpretation of endoscopic studies is variable leading to possible false positive/negative findings affecting treatment recommendations. If not recorded, the value of the study is questionable. Reviewing 1,525 consecutive nasopharyngoscopies with recorded video and sound resulted in 598 surgical recommendations including velopharyngeal reconstruction, adenoidectomy, and/or tonsillectomy and surgical airway management. In all cases, surgery was based on review of recorded studies by the surgeon and endoscopist, and often by other clinicians and students. In a subset of 200 consecutive reviewed by three or more clinicians, we found that interpretation disagreements occurred in 48% of cases. Disagreements were relevant to treatment decisions in 94%. Group reviews eventually resulted in consensus agreement. Efficacy was measured by surgical outcomes for velopharyngeal insufficiency and obstructive airway procedures (94% and 95% respectively). Because we currently consult on cases from the U.S. and overseas, we often request copies of endoscopic videos; 296 requests have been made since 2012, 221 from the U.S., 75 from Europe. Of these, 48% from the U.S. and 39% from overseas had available video recordings with less than one-third of the videos having sound. The inability to review completed studies may lead to treatment error, unacceptable for imaging procedures.

SWALLOWING PARAMETERS VIEWED VIA FIBEROPTIC ENDOSCOPIC EVALUATION OF SWALLOWING (FEES) IN A COHORT OF PATIENTS WITH CHARGE

Claire Kane Miller (PhD)

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Purpose

Cranial nerve dysfunction is a primary feature of CHARGE Syndrome, affecting the motor and sensory components necessary for safe and efficient feeding and swallowing. The specific nature of pharyngeal swallowing deficits was explored in a retrospective review of FEES examinations performed in a cohort of pediatric patients with CHARGE Syndrome.

Methods

A retrospective review was completed in a sample of 34 patients with CHARGE who underwent FEES between December 2016-June 2017. Age, sex, nutritional intake, oral sensorimotor status, and respiratory history were documented. Swallowing parameters were coded, including secretion management ability, overall swallow onset time, adequacy of hypopharyngeal clearance, and ability to achieve and maintain airway protection with swallowing.

Summary of Results

The age range of the population was 4 months to 13 years, with a mean age of 4 years. The majority of the sample was dependent on tube feedings at least in part to meet nutritional needs. Impaired secretion management was observed in 76% of the sample; lack of a swallowing response was noted in 47%. Delayed swallow onset time and subsequent aspiration occurred in 70% of the sample

Persistent hypopharyngeal residue following swallowing efforts was predominant, occurring in 88% of the sample.

Conclusions

Dysfunction of cranial nerves is reflected in both oral sensorimotor and pharyngeal swallowing deficits in patients with CHARGE. The use of FEES as an objective swallowing measure is advantageous in that secretion management and spontaneous swallowing efforts may be directly assessed, in addition to other sensory and motor aspects of the pharyngeal swallow.

LARYNGOPLASTY IN PEDIATRIC PATIENTS WITH UNILATERAL VOCAL FOLD PARALYSIS

Nikolaus Wolter (M.D.)

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Purpose: To describe the impact of laryngoplasty in pediatric unilateral vocal fold paralysis (UVFP) and determine the impact of etiology and technique on voice and swallowing.

Methods: A retrospective review was conducted of all children with UVFP undergoing laryngoplasty at a pediatric hospital (2010 - 2017). Data including demographics, etiology, subjective voice quality, and swallowing function were collected.

Results: The median age at first surgery among 25 patients with UVFP was 10.8 years (range 1.2 - 25.3). The cause of UVFP was iatrogenic (76%), congenital (16%), or idiopathic (8%). A total of 38 laryngoplasties (24 injections, 11 silastic implants, 3 gortex) were performed. Post-operatively, 78% reported improvements in voice and 81% swallowing. The median duration of voice improvement was 1.0 years (range 0.1 - 10.2), with no significant difference by etiology ($p=0.68$) or laryngoplasty technique ($p=0.42$). Patients who reported voice improvement were older at surgery than those without improvement (median 14.7 vs. 6.7 years; $p<0.01$).

Conclusion: UVFP has a significant impact on health and quality of life. In this study we found that laryngoplasty is an effective way to address both voice and swallowing in pediatric UVFP. A greater proportion of children with improved voice quality were older at injection. Surprisingly, there was no difference in duration of voice improvement between permanent and absorbable materials. This may represent the challenges of managing UVFP in the growing larynx of the pediatric population. Injection laryngoplasty with absorbable materials may serve as an adequate method of addressing UVFP in this population.

MANAGEMENT OF PAEDIATRIC CHOLESTEATOMA BASED ON PRESENTATIONS, COMPLICATIONS AND OUTCOMES

Shazia Peer (M.D.)

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Objectives: To determine the appropriate management of paediatric cholesteatoma in a developing world setting.

Methods: A retrospective audit was conducted of paediatric cholesteatomas that underwent tympanomastoid surgery between 2008 and 2012 at the Red Cross Children's Hospital in Cape Town. The following was audited: initial presentation; cholesteatoma complications; types of surgery, intraoperative findings and outcomes of surgery in terms of hearing, otorrhoea and recidivism; and the reliability of follow-up and how this might influence the type of surgery

Results: 57 children aged 2 -13 years with 61 cholesteatomas (4 bilateral) were reviewed. Fifty-five mastoidectomies were done; 11% presented with complicated cholesteatoma. Referrals from primary care were significantly delayed (>6 months) in 76%. Canal wall down surgery was done in 71%. Forty-five percent had improved hearing (within 15dB of better hearing ear) and a further 15% had no or only mild hearing loss. Ossicular chain involvement and ossicles encased in inflammatory tissue were associated with poorer hearing outcomes. Sixty-four percent of ears remained dry. Forty-five percent of the canal wall up, and 23% of canal wall down mastoidectomies had recidivism. Twenty-six percent of patients were lost to follow-up.

Conclusions: Children are likely to present with advanced cholesteatoma with ossicular chain involvement. The children present with high rates of complications, poor pre-operative hearing and have high recurrence rates post-surgery. Referral from primary health care is delayed. Canal wall down procedures are appropriate in a setting where patient follow-up is unreliable and access to operating theatre is limited.

VESTIBULAR INJURY AS A CAUSE FOR DELAYED RECOVERY IN CONCUSSED PEDIATRIC STUDENT-ATHLETES

Danielle Smith (M.D.)

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Introduction: The clinical diagnosis of concussion has garnered significant media attention in recent years. Current standard of care for concussed patients involves careful, graduated return to play, after a 24 hour period of rest. Following the current concussion guidelines, patients should be free of symptoms in 1-2 weeks. Up until this point, most of the medical literature about concussion has come from the specialties of neurology and sports medicine. This study was undertaken to focus the neurotological evaluation of concussed pediatric student-athletes.

Methods: We hypothesized that vestibular concussion and resultant vestibular dysfunction would be a cause of delayed recovery after concussion in pediatric student-athletes who have failed to respond significantly to standard therapy directed to improve central concussion. We performed a retrospective chart review of patients between the ages of 4 and 23 who presented to a single neurotologist at one neurotology clinic from a single local referral source between January 1, 2004 and April 1, 2015. All patients had sustained their concussion while participating in a sport. They had been determined by the referring sports physician to have suffered delayed recovery from concussion. 24 patients were identified for inclusion.

Results: We found that 20 patients (80%) sustained a peripheral injury that was identifiable through vestibular testing. Only 4 patients had any identifiable central component of their concussion remaining upon presentation to the clinic.

Conclusion: Our results strongly suggest a connection between vestibular injury and delayed recovery in concussed pediatric student-athletes.

MANAGEMENT OF PEDIATRIC CHOLESTEATOMA: AUDIT OF WORKFLOW IN A

Colin Leonard (M.D.)

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AIMS: Cholesteatoma often exists undetected or undiagnosed for months before extensive involvement of the middle ear occurs or complications develop. Early detection of cholesteatoma in children could reduce burden of disease at presentation and therefore hearing outcomes and extent of middle ear / mastoid surgery. We aim to identify process delays which could be addressed to reduce initial burden of disease.

METHODS: Patients were identified through a retrospective case note review of children up to 16 years of age having tympanomastoid surgery after 2009. Exclusion criteria were primary surgery before the audit period or chronic otitis media without cholesteatoma. Process factors (waiting time for clinic appointment after referral, radiological investigation or definitive surgical intervention) and outcome (burden of disease and audiological outcomes) were assessed.

RESULTS: 81 children underwent 124 tympanomastoid procedures between January 2009 and December 2016. The mean time from referral to diagnosis was 31 months. 78% had CT scan prior to surgery with an average waiting time of 3 months; average wait from diagnosis to surgery was 7 months. Mills' staging of cholesteatoma demonstrated an average site score of 3, ossicular status of 1 and a complication score of 0. Four tone average hearing thresholds were 38dB pre-operatively and 46dB following completion of treatment.

CONCLUSION: Diagnosis of cholesteatoma in children is difficult and frequently delayed with extensive disease and ossicular destruction. Process factors should be targeted and workflow efficiencies improved with re-audit to evaluate for reduced burden of disease at time of diagnosis and better outcomes following treatment.

THE USE OF BONE-ANCHORED HEARING AIDS IN PATIENTS WITH UNILATERAL CONGENITAL AURAL ATRESIA

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INTRODUCTION: Microtia and congenital aural atresia (CAA) are rare but severe conditions in the pediatric population. The resulting hearing loss is treated with surgical reconstruction or osseointegrated bone conduction hearing devices (BCHD). While bilateral cases are often managed with the BCHD, unilateral cases have more variable management. Recent data show that the BCHD provides better audiologic outcomes than reconstruction in the pediatric population.

OBJECTIVES: This study examines the use of BCHD in patients with unilateral CAA (UCAA) at a tertiary pediatric center.

METHODS: Medical records of 87 children were reviewed from 2003 through 2017. Only patients with UCAA were included, and demographics, ear laterality, and treatment data were collected.

RESULTS: Of the 87 children, 41 (47%) were right, 26 (30%) were left, and 20 (23%) were bilateral cases of CAA. Surgical implantation of BCHD was performed in 13 (19%) of the 67 UCAA patients. Five (38%) of the 13 BCHD patients were under two years of age. Males (n = 9, 69%) were the majority of those receiving a BCHD.

CONCLUSION: UCAA is not predominantly treated with the BCHD. Given the variable treatment options, further research is recommended to standardize management and to help improve hearing within the critical auditory period.

COCHLEAR NERVE APLASIA WITH INTACT EFFERENT NERVE FUNCTION: A NEW FORM OF AUDITORY NEUROPATHY SPECTRUM DISORDER

Peter R Dixon (M.D.)

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Background

Cochlear nerve aplasia (CNA) may present with features of auditory neuropathy spectrum disorder (ANSND), having detectable otoacoustic emissions (OAE) but profound hearing loss. We propose that some children with CNA have a distinct form of afferent-ANSND in which efferent cochlear nerve function can be detected using contralateral suppression of OAE.

Methods

Children were prospectively enrolled from a multidisciplinary ANSD clinic with MRI and ABR evidence of unilateral CNA, a normal contralateral ear and detectable OAE bilaterally. Distortion product OAE (DPOAE) levels were recorded in real time with default primary tone settings of $f_2 = 4.5\text{kHz}$, $f_2/f_1 = 1.22$, with $L_1 = 65\text{dB SPL}$ and $L_2 = 55\text{dB SPL}$ using a customized device (LD-DPS; Liodigital Corp). Recordings were made over 2 minutes with simultaneous application of an intermittent contralateral broadband noise stimulus at 60dB SPL.

Results

Three girls, ages 4.5, 7, and 8 years, participated with IRB approval and parental consent. Suppression of DPOAE of between 0.15 - 1.3 dB was detected in all

three CNA ears in response to CBBN stimulation. No response was detected in the normal ears.

Conclusions

Contralateral suppression of OAE is mediated by a neural pathway between the two ears so can be used to evaluate activity of cochlear nerve efferents. Using this technique, we have shown that some children presenting with unilateral ANSD have normal efferent cochlear nerve function despite MRI evidence of ipsilateral cochlear nerve aplasia. The importance of these findings for newborn hearing screening, cochlear implantation and haircell regeneration research is discussed.

RENAL ANOMALIES IN MICROTIA AND AURAL ATRESIA PATIENTS AT A TERTIARY PEDIATRIC CENTER

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INTRODUCTION: Microtia and congenital aural atresia (CAA) are severe pediatric conditions that affect quality of life. Microtia is associated with renal anomalies and several genetic syndromes involving the kidneys. Recent data suggest performing a renal ultrasound only with the presence of preauricular pits, cup ears, and other ear anomalies with dysmorphic features but not isolated microtia and atresia.

OBJECTIVE: To characterize the prevalence of renal anomalies among microtia and/or CAA patients at a tertiary pediatric center.

METHODS: A retrospective review of 87 children was conducted from 2003 through 2017. Patients were categorized as either syndromic or non-syndromic. Data included renal ultrasounds performed, results, and treatment.

RESULTS: Of the 87 children, 80 (92%) had microtia and CAA, 5 (6%) had isolated microtia, 2 (2%) had isolated CAA, and 10 (11%) were syndromic. Renal ultrasounds were performed on 36 (41%) patients, and 4/36 (11%) were syndromic. Anomalies were reported in 8/36 (22%) patients, all of whom had both microtia and CAA. These anomalies included renal agenesis, pelviectasis, abnormal locations, and duplicating collecting systems. Two patients with renal anomalies required prophylactic antibiotics for vesicoureteral reflux, one of whom was syndromic (Goldenhar). Seven of the eight patients with abnormal results were non-syndromic. Three were followed by nephrology. Of the patients not receiving an ultrasound, six were syndromic.

CONCLUSION: A risk of structural renal anomalies exists in patients with microtia and CAA, including in those without a diagnosed syndrome. Careful consideration should be given to performing a screening renal ultrasound in microtia and CAA patients.

IMPLEMENTATION OF CONGENITAL CYTOMEGALOVIRUS SCREENINGS IN THE WELL BABY POPULATION

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BACKGROUND AND OBJECTIVE:

Congenital cytomegalovirus (CMV) is believed to be the leading non-genetic cause of hearing loss in children in the US. The only way to reliably identify congenital CMV is CMV testing within the first two weeks of life. Early and accurate identification of children with congenital CMV is key to improved outcomes for the children. In 2013, we implemented a congenital CMV screening protocol for the well baby population at our facility. The objective of the congenital CMV screening protocol was to identify and implement treatment for well babies who would otherwise go undiagnosed.

METHODS:

The congenital CMV screening was linked with the failure of the newborn hearing screening. When a well baby failed the second attempt of the newborn hearing screening (AABR) (unilateral or bilateral), the congenital CMV screening was immediately ordered. The urine and/or saliva sample was then collected before the patient was discharged from the hospital. Data was collected from hospital electronic medical records. Data collection is ongoing.

RESULTS:

Of the 17,605 well babies screened during the course of this research, 96 failed the newborn hearing screening (unilateral or bilateral). For the patients who tested positive for congenital CMV, treatment was initiated. For the patients

with congenital CMV, serial Auditory Brainstem Response (ABR) tests revealed beneficial effects of the treatment.

CONCLUSION:

In the absence of universal congenital CMV screening, we successfully implemented a congenital CMV screening protocol that was linked to failed newborn hearing screenings.

THE PREVALENCE OF SPATIAL PROCESSING DISORDER IN CHILDREN WITH CLEFT PALATE

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Background: Spatial processing disorder (SPD) is characterized by inability to utilize binaural cues to selectively attend to sounds from one direction while suppressing sounds from another direction. Early fluctuating conductive hearing loss may contribute to the formation of SPD. Otitis media with effusion is common in children with cleft palate but the relationship with SPD has not been established. The objective of this study was to determine the prevalence of SPD in children with cleft palate.

Methods: Children with cleft palate and possible SPD were recruited. The Listening in Spatialized Noise-Sentences (LiSN-S) test was used to diagnose the presence of SPD. The LiSN-S is a virtual reality test that measures the ability of participants to use the spatial cues that normally help differentiate a target talker from distraction speech sounds.

Results: Twenty children (mean age 9 years) were enrolled. Eight participants scored below the cutoff when assessing overall spatial advantage on the LiSN-S test, indicating the presence of SPD. When spatial advantage was assessed in terms of signal-to-noise ratio (SNR) in decibels, 13 children had SNR decibel loss compared to age related norms. Most (70%) participants scored within normal limits for talker advantage, which suggests that poor spatial advantage is the main cause of the LiSN-S results.

Conclusion: Many children in this study had poor spatial processing abilities. Although SPD is not a well-known disorder, clinicians who treat children with cleft palate should be aware of SPD since there is a remediation software-training program that can reverse this disorder.

DETECTION OF ABNORMALLY SHAPED EARS IN NEWBORNS

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Introduction: Many children are born with abnormally shaped ears, including protruding ears or oddly shaped outer ears. While the majority are benign, they can cause significant issues with self-esteem and bullying. Molding can resolve some of these abnormalities, avoiding the need for future corrective surgery. However, newborns with these abnormalities are rarely identified early, within the first few days of life, when molding is most effective. In this study, we investigate whether a trained non-specialist can correctly identify ear abnormalities in newborns.

Methods: A non-specialist (medical student) was trained on normal and abnormal ear anatomy using photographs and descriptions. Newborns <72 hours of age were recruited from the maternity wards. Newborns' ears were photographed and photographs were assessed by two specialists and the non-specialist. External ear shape was classified as either normal or abnormal based on pre-determined criteria.

Results: A total of 661 ears of 334 newborns were photographed and assessed. High inter-rater agreement was achieved in both double-blinded and non-blinded assessments with a kappa statistic of 0.863 (SE 0.078) and 0.892 (SE 0.044), respectively. The non-specialist detected abnormally shaped ears with a sensitivity and specificity of 90.9% and 91.1% double-blinded, and 96.4% and 98.7% non-blinded, respectively.

Discussion: Our study illustrates that a trained non-specialist can accurately detect newborn ear abnormalities, providing a cost-effective means of ensuring that these children's health care needs are met in a timely fashion. Specifically, we recommend the integration of ear shape assessment into currently established programs such as the newborn hearing screening program.

EXCEPTIONALLY EARLY TYMPANOSTOMY TUBE PLACEMENT

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Background: Eustachian tube dysfunction (ETD) and otitis media with effusion (OME) are nearly universal in children with a cleft palate (CP). Tympanostomy tubes (TT) are usually inserted in these patients from 3 to 18 months of age. We have been performing TT placement within the first 8 weeks of life at the time of cleft lip repair; an exceptionally early time. The aim of this case series is to describe the feasibility of exceptionally early TT placement in children with CP.

Methods: A retrospective review of patients who received TT before 3 months of life at a major children's hospital was conducted between July 2016 and March 2017. Patients with less than 6 months of follow-up following TT placement were excluded. Outcomes investigated included perioperative complications and incidence of OME.

Results: A total of 12 patients underwent TT placement within 3 months of life with a mean follow-up time of 10.1 months. One patient experienced a venous air embolus; the only operative complication. Post-operative complications were limited to OME [1 case (8.3%)], otorrhea [8 cases (66.7%)], tube extrusion [1 case (8.3%)], acute otitis media [1 case (8.3%)], and respiratory distress likely due to plugged nasal stents [2 cases (16.6%)].

Conclusion: In children with CP, exceptionally early TT placement within 8 weeks of age is feasible and limits the number of times in the operating room by combining TT placement with repair of the cleft lip.

EARLY ACCESS TO HIGH FREQUENCIES PROMOTES SYMMETRIC SPEECH PERCEPTION IN BIMODAL AND BILATERAL COCHLEAR IMPLANT USERS

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Purpose: To determine whether children with asymmetric hearing develop speech perception that is symmetric and comparable to their peers with bilateral cochlear implants.

Methods: Speech perception with bilateral devices was collected using age-appropriate tests in 122 simultaneous and 113 sequential bilateral implant users and 59 bimodal users. Percent correct scores were adjusted for number of test items into a rationalized arcsine transform unit (RAU) and then further corrected for guessing in closed-set tests.

Results: Accuracy in quiet varied by group and ear tested ($F(4,582)=38.3$, $p<0.001$). Bimodal and sequential bilateral CI users favoured their first implanted ear by 14.2 ± 2.7 ($z=5.2$, $p<0.001$) and 25.4 ± 2.0 ($z=12.8$, $p<0.001$) RAU respectively. Bilateral speech perception was similar across groups. Monaural scores correlated with each other for simultaneous ($R=0.65$, $p<0.001$) and sequential ($R=0.39$, $p<0.001$) bilateral CI users, but not for bimodal users ($R=0.04$, $p=0.76$). Speech perception in bimodal users depended on access to high frequencies in each ear independently. Scores with the hearing aid increased with better 2-4 kHz thresholds ($R=-0.44$, $p=0.03$), whereas scores with the cochlear implant decreased with better 0.5 kHz thresholds ($R=0.22$, $p=0.05$). This may reflect the delay to implantation of those with better low frequency hearing ($R=-0.28$, $p=0.04$), as CI scores also worsened with later implantation ($R=-0.45$, $p<0.001$).

Conclusions: Many children develop symmetric speech perception with bimodal use, but continued hearing aid use may not suffice with limited high frequency hearing. In these cases bilateral CIs could provide better high frequency hearing bilaterally, thereby providing benefit for speech perception on both sides.

SPATIAL HEARING ABILITIES IN CHILDREN USING BIMODAL DEVICES AND BILATERAL COCHLEAR IMPLANTS

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Purpose: To determine the consequences of asymmetric development on the ability of children to use both ears for improved listening in noise.

Methods: Thresholds for speech detection (at 0° azimuth) were measured with noise at 0° and ±90° azimuth in 24 bimodal and 96 bilateral cochlear implant (CI) users (n=37 simultaneous, n=37 sequential). Spatial unmasking was calculated as the benefit obtained when the noise was spatially moved away from speech noise at 0° - noise at ±90°).

Results: Speech detection in noise was poorest in bimodal users ($F(2,117)=18.3$, $p<0.001$). Thresholds improved when noise was spatially separated from speech; this occurred when noise moved toward either the left ($p<0.001$) or right ear ($p<0.001$) in bilateral CI users and when noise moved to the non-implanted ear ($p<0.001$) in bimodal users ($F(4,234)=3.0$, $p=0.02$). Spatial unmasking differed by group and direction of noise ($F(2,117)=3.7$, $p=0.028$). Specifically, both bimodal and simultaneous bilateral CI users developed symmetric spatial unmasking, whereas sequential users derived more benefit when noise was moved to the second CI than the first CI ($p=0.045$), reflecting a preference for detecting speech when the first implanted ear has the best signal to noise ratio.

Conclusions: Bimodal users had poorer speech detection in noise than bilateral CI users; but, like simultaneous users, they derived symmetric benefit when

noise was moved to either ear, indicating no functional ear preference. In contrast, children who had a period of unilateral CI use developed asymmetric spatial unmasking with better performance when the first ear received the better signal.

PEDIATRIC COCHLEAR IMPLANT PATIENTS: OBSTACLES TO FULL-TIME UTILIZATION

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Introduction: The majority of children with cochlear implants (CI) are full time users. However, some choose to use it occasionally or to discontinue use despite being considered appropriate candidates for implantation. The factors leading to this decision are not well understood.

Objectives: The aim of this study was to determine the proportion and characteristics of pediatric CI patients who are currently partial or non-users, as well as factors contributing to less than full-time use.

Methods: To identify partial or non-users, audiology and medical records were reviewed for patients who had received a CI at our pediatric tertiary hospital prior to May 31, 2014 (at least 2 years of device use), and were under 18 years of age as of June 30, 2016. A follow up telephone survey was completed with this population to determine hours of device use and barriers to full-time use.

Results: Charts of 150 patients were reviewed and 35 patients were identified as either partial or non-users. Thirty families were subsequently interviewed (86% response rate), yielding 21 part-time users, 4 non-users, and 5 full-time users. Main factors implicated in decreased/non-use were additional medical conditions (including developmental delay, autism, and visual impairment), physical barriers, lack of support services, parental desire for American Sign Language bilingualism, and perceived lack of benefit.

Conclusion: Partial and non-use were reported by a significant proportion (25/150, 16.7%) of CI users at our institution. Though multifactorial, a key barrier to device use is additional medical comorbidities and the interplay with poor speech perception.

WHY PATIENTS REFERRED FOR COCHLEAR IMPLANT ASSESSMENT ULTIMATELY DO NOT RECEIVE A COCHLEAR IMPLANT: WHO SAID NO TO WHOM?

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Objectives: Review the past 8years referrals to a Pediatric Cochlear Implant Centre and establish why patients ultimately did not receive a cochlear implant (CI).

Methods: Medical charts of patients referred to the Pediatric Cochlear Implant Team (CIT) were retrospectively reviewed. Number of patients turned down by the CIT vs. number of patients/families who refused CI and the reasons for both were explored.

Results: 241 patients were referred to the CIT over the study period with the majority referred by audiologists. 224 charts were reviewed (93%). 141 patients (63%) went on to implantation and 83 (37%) were not implanted. In the non implanted group, 59/83 patients were declined by the CIT: 7 were considered inappropriate referrals and 52 were not considered good candidates for CI because there was significant benefit with hearing aids (HA), absence of bilateral cochlear nerves and too much residual hearing as the main reasons. 24/83 patients were not implanted because of patient's or family preference being the most common reasons preference of a HA, perception of "enough" residual hearing, family history of hearing loss and desire to use american sign language.

Conclusions: Reasons why patients at our institution did not receive an implant are diverse. The two main reasons for being rejected by the CIT are too much residual hearing with good benefit with HA and the absence of cochlear nerves. The main reason why parents/families elected not to pursue implantation is perception of enough hearing and the desire to use hearing aids instead.

DOES PERFORMANCE ON LANGUAGE OUTCOME MEASURES CORRELATE WITH QUALITY OF LIFE IN CHILDREN WITH COCHLEAR IMPLANTS?

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Previous research has demonstrated that children with hearing loss often perceive a lower quality of life (QOL) when compared to their normal hearing peers. The goal of this study was to examine how children with cochlear implants (CI) perceive their QOL compared to other children with varying degrees of hearing loss and amplification. Furthermore, we investigated whether QOL correlated with various demographic, language and/or suprasegmental outcome measures in these CI recipients. 90 children with bilateral hearing loss and at least one CI (ages 7-12 years old) were assessed using the Hearing Environments and Reflection of Quality of Life (HEAR-QL) questionnaire along with various language and suprasegmental measures. These children had three device configurations: bimodal device (one hearing aid, one CI), sequentially implanted bilateral CIs, or simultaneously implanted bilateral CIs. Preliminary analysis revealed that the QOL of children with CIs did not differ compared to other children with hearing loss and amplification such as hearing aids. When compared on their device configuration, no significant differences in QOL were found between the CI groups. Weak correlations were identified between multiple demographic factors, language and suprasegmental outcome measures and the overall HEAR-QL scores, as well as the various subscale scores within the questionnaire. The results revealed a large range of variability among the children's scores, and a lack of correlation with certain language measures that previously have been assumed to be related to quality of life. Analysis is ongoing to examine additional factors that may impact the children's perception of their QOL.

THE USE OF THERAPEUTIC HONEY GEL IN COCHLEAR IMPLANT ASSOCIATED SKIN WOUNDS

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OBJECTIVE: To describe the role of honey wound gel as an adjunct topical treatment in the management of cochlear implant associated wound dehiscence.

METHODS: Three patients, with a total of four wounds over the cochlear implant, were included in this case series. These wounds developed 3 days to 3 years postoperatively. All patients were treated aggressively with wound debridement and intravenous antibiotics with poor local clinical response. Honey wound gel was then added to the treatment regimen.

RESULTS: Four dehiscent wounds overlying the cochlear implant receiver-stimulator were initially treated conventionally with processor free period, oral then intravenous antibiotics, and local wound care consisting of antibiotic ointment and serial peroxide debridement. One patient presented to the operating room for debridement and closure with subsequent repeat breakdown. After failure of conventional treatment, honey wound gel was added in place of the aforementioned local wound care. There was marked improvement with spontaneous wound debridement and successful closure of the cochlear implant associated wounds primarily or secondarily with the addition of honey wound gel in all four patients.

CONCLUSION: Wound dehiscence with or without infection is a known complication after cochlear implantation. The addition of medical grade honey for treating a wound overlying a cochlear implant receiver-stimulator promoted wound healing, thus avoiding explantation in this case series.

CLINICAL INDICATORS OF ADMISSION FOR PEDIATRIC COCHLEAR IMPLANT PROCEDURES

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A portion of pediatric cochlear implant (CI) patients are admitted for observation post-implantation, but there is little data on prognostic indicators. Our goal is to review national data to identify variables associated with admission post-implantation and identify effects on postoperative outcomes. We retrospectively analyzed data from the 2012-2015 American College of Surgeons' National Surgical Quality Improvement Program-Pediatric. The database was queried for patients undergoing CI. Demographics, comorbidities, anesthesia time, total operation time, 30-day complications, and 30-day readmission were compared between ambulatory and admitted patients. 2943 CI patients (507/2436 inpatient/outpatient) were included, with 17.2% admitted post-implantation. Single variable analysis showed patients with longer anesthesia time, longer operation time, age < 12 months, premature birth, asthma, esophageal/gastric/intestinal disease, cardiac risk factors, seizure disorders, and CNS abnormalities were more likely to be admitted post-implantation. Multivariable logistic regression showed patients with asthma were 2.2 times ($p < 0.001$; OR = 1.484-3.227) and those with structural CNS abnormalities 2.1 times ($p < 0.001$; OR = 1.584-2.706) more likely to be admitted. Younger age ($p = 0.002$; OR = 0.995-0.999) and longer operation time ($p < 0.001$; OR = 1.003-1.006) were significant, but weak predictors. Interestingly, 216 patients lacked any of these factors but were admitted. They had similar outcomes to ambulatory healthy patients ($p=0.269$ and $p= 1.000$). We identified factors associated with post-CI admission and higher readmission rates. 60% of admitted patients lack any of these factors and have comparable outcomes to corresponding ambulatory patients. Asthma and CNS abnormalities are strong predictors of admission post-implantation.

THE USE OF PEDIATRIC DATABASES IN OTOLARYNGOLOGY: ARE WE DILUTING OUR QUALITY OF EVIDENCE?

Andrew Walls (M.D.)

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Objective: To evaluate the use of electronic databases in pediatric literature in three major otolaryngology journals.

Study Design: Literature Review

Methods: Our group reviewed three major otolaryngology journals for original pediatric research articles. The frequency of all pediatric database studies utilizing SEER, P-NSQIP, National Ambulatory Database, National Electronic Injury Surveillance System and National Ambulatory Database were obtained from the years 2010 to 2017. The quality of evidence for each article was obtained from each article.

Results: Over the study interval, there has been an increased use of articles utilizing data from pediatric databases. From 2010 to 2014 there was no significant difference in the overall percentage of pediatric database publications (6.4, 4.3, 3, 6.9, 6.1), respectively. However, from 2015 to 2017 the percentage of database articles increased significantly (22.4, 20.1, 34.8) based on Chi Square test ($P < 0.05$). Furthermore, the overall number of pediatric publications remained consistent over the study period (47, 46, 53, 52, 49, 58, 53, 43) and the mean quality of evidence (QOE) also did not significantly change ($P > 0.05$). All pediatric database studies consisted of low quality of evidence (Levels 3-4). The mean, median and mode QOE for each year was obtained.

Conclusion: The proportion of publications utilizing pediatric database studies has increased since 2010. Furthermore, the pediatric otolaryngology literature continues to maintain an overall low quality of evidence during this time period. In order to improve our clinical management, a greater emphasis should be placed on prospective cohort studies and randomized controlled trials.

ADDRESSING PATIENT CONCERNS LEADING UP TO SURGERY THROUGH AUTOMATED TEXT MESSAGES AND VIDEOS

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Background: Between a clinic visit and the day of surgery, patients frequently have additional questions and concerns about their procedure and how to prepare for it. Having these concerns addressed is important to successfully preparing for surgery, decreasing cancellation rates, and increasing patient satisfaction. We approached this challenge by engaging patients with text messages and easy-to-understand video content.

Objectives: The goal of this project is to reiterate important instructions for preparing for surgery and address patients' common concerns through videos that can be requested by text message.

Methods: An SMS chatbot was used to, upon receiving a text message from a patient, send perioperative informational videos about tonsillectomy and adenoidectomy surgery. Topics covered in the videos include when to stop eating, anesthesia, and what to expect after surgery. At surgery clinic, patients were provided with the chatbot phone number in addition to the other instructional materials. The patients were instructed to text the number for additional information about their upcoming surgery. Whether each patient texted the chatbot, and whether he or she watched the informational video, was recorded.

Results: Of the eighty-five patients who texted the chatbot for additional information about their upcoming surgery, sixty-three (74%) watched at least part of the instructional videos sent to their phones.

Conclusion: Patients request and consume supplemental information related to their upcoming procedures. Video instructions delivered by text message may be a promising strategy to distribute easy-to-understand instructions in a way that is convenient for both the patient and the provider.

PARENT PERSPECTIVES ON MULTIDISCIPLINARY CARE

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The multidisciplinary team model has been advocated for pediatric hearing healthcare for several decades. Traditional multidisciplinary teams involve multiple providers meeting with patients and families over the course of one long appointment while more modern models tend to use a combination of multi-provider appointments and multidisciplinary team meetings for care plan formulation. Family-centered healthcare demands that families provide input regarding the care of their children, however very little is known about how families perceive their experience in multidisciplinary team models.

In this study, a parent survey explored the family experience in a traditional multidisciplinary team model for treating children with hearing loss. The team included an otolaryngologist, nurse practitioner, audiologist, speech/language pathologist, and social worker. Questions regarding overall experience, the diagnosis process, treatment plan formulation, communication about additional testing, and information about available resources were surveyed through written and electronic means. Results revealed a majority of parents felt positively about the quality of information shared by providers; however many were overwhelmed by the number of providers seen and information shared. These results along with qualitative feedback helped to formulate changes in the care model away from a traditional multidisciplinary team model to a more modern interdisciplinary team approach.

Family experience data reveals that a traditional multidisciplinary approach to hearing healthcare may not provide families with the experience they seek and may add confusion to their child's care plan. A modern multidisciplinary model to facilitate communication among providers will be reviewed. Advantages and disadvantages of this modern approach will be discussed.

OTOLARYNGOLOGY EVENING OFFICE HOURS: PRODUCTIVITY AND DETERMINANTS OF USE

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Importance: Health care providers are practicing at an time in medicine where there is increased attention on patient satisfaction and improved healthcare access and yet scrutiny surrounding health care spending. Offering improved physician availability through off-hours clinics seeks to improve healthcare access. To our knowledge, no publication has examined the productivity of Otolaryngology evening office hours as compared to daytime clinics.

Objectives: To compare RVUs generated and surgical cases scheduled in daytime clinics versus evening clinics, and to examine whether certain patient populations are more likely to utilize evening office hours.

Methods: A 13-month retrospective review was performed on a sample of daytime and evening clinic visits for the pediatric otolaryngology practice at our academic institution from January 1, 2015 through February 29, 2016. Patient demographics, office RVUs, and surgery RVUs were analyzed.

Results: Among the 821 patients, 410 patients (mean [SD] age 6.39 [4.72] years) presented to evening clinic and 411 patients (6.29 [4.86] years) to daytime clinic. No significant differences were observed for surgery RVUs generated from evening clinic visits versus daytime clinic visits (0 [2.01] median [interquartile range (IQR)] vs 0 [2.01]; $p=0.44$) or office-based RVUs generated from evening clinic visits (1.42 [0.91] vs 0.97 [0.91]; $p=0.21$). A higher percentage of commercial versus Medicaid insurance use was observed among evening clinic patients ($p=0.004$).

Conclusions: Our data supports the utility of evening clinics in pediatric otolaryngology, as evening hour productivity, measured by office-based and surgery RVUs, is comparable to daytime clinic productivity.

ACCURACY OF VIDEO PNEUMATIC OTOSCOPY IN DETERMINING OTITIS MEDIA WITH EFFUSION FOR USE IN TELEMEDICAL APPLICATIONS

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Background: Otitis media evaluation using telemedical applications has been suggested for those living in rural or underserved areas. Prior research has shown that review of the outside records can identify patients that are candidates for ear tube placement on the same-day as their initial evaluation. However, it is critical to determine the presence of fluid within the middle ear per AAOHNS guidelines. The purpose of this study is to determine if videos collected via digital pneumatic otoscopy accurately diagnose otitis media with effusion (OME) for use in telemedical consultation.

Methods: Twenty-two participants ages 0-17 undergoing myringotomy were selected and consented for participation. Preoperative digital otoscopic videos of the tympanic membrane were collected using the Welch Allyn Digital MacroView™ Otoscope in the operating room. Forty-one digital pneumatic videos were collected. Thirty-seven de-identified videos were sent to three pediatric otolaryngologists via a Qualtrics survey. Each otolaryngologist's response was compared to the operative report detailing the presence or absence of fluid.

Results: Preliminary data demonstrated that the presence or absence of fluid behind the tympanic membrane was correctly identified with an average accuracy of 67% (64.9%, 62.2%, 72.9%, respectively).

Conclusion: Preliminary data demonstrates that otolaryngologists were able to correctly identify the presence or absence of OME using digital otoscopy on average 67% of the time. Future research is needed to discover methods for improving accuracy in order to make this a usable tool for virtual consultations.

A PRACTICAL ASSESSMENT OF HIGH LEVEL DISINFECTION FOR FLEXIBLE RHINOLARYNGOSCOPES IN A BUSY PEDIATRIC OTOLARYNGOLOGY PRACTICE

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Purpose: Endoscope reprocessing has become an increasing focus of accreditation site visits in order to ensure that the transmission of pathogens to patients by improperly reprocessed endoscopes does not occur. In 2015, the Association for the Advancement of Medical Instrumentation (AAMI) released guidelines for precleaning, leak testing, high level disinfection (HLD) and storage of gastrointestinal (GI) endoscopes, flexible bronchoscopes, and flexible rhinolaryngoscopes. While much of the current scientific literature focuses on the challenges of reprocessing endoscopes with instrument channels such as flexible GI endoscopes, there is much less evidenced-based knowledge for best practice guidelines for reprocessing flexible rhinolaryngoscopes.

Methods: In an effort to ensure compliance with both AAMI standards and organizational policies for HLD, a collaborative team approach was utilized in a busy pediatric otolaryngology practice to improve current processes. After completing a gap analysis to determine program strengths and weaknesses, a systematic plan for process change was implemented in an effort to standardize HLD practices across multiple office locations for both outpatient and inpatient use.

Summary of Results: The results of this analysis identified a need for a multifactorial approach to maximize patient outcomes by redefining scope processes from start to finish. Process improvements, such as changes in resident and staff training and competency assessments, a thorough review of device specific manufacturer recommendations, proper identification of clean versus dirty scopes, and improved facility design were initiated. Utilizing the most-evidenced based guidelines available for HLD ensures both regulatory compliance as well as improved patient care.

USE OF MOMETASONE ELUTING STENTS IN COMPLEX PEDIATRIC SINUS DISEASE

Anthony Sheyn (M.D.)

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Introduction: Mometasone eluting stents have been shown to be an effective method of reducing inflammation, polyp formation and post-operative adhesion formation when used following endoscopic sinus surgery. Most studies have been limited to adults. There is also complex sinus disease in the pediatric population, specifically allergic fungal sinusitis and chronic sinusitis secondary to cystic fibrosis. We propose that the use of steroid eluting stents are safe to use in the will improve outcomes and decrease disease recurrence.

Methods: IRB approval was obtained. So far 11 patients have underwent ESS with placement of Propel stents. ESS was performed in the usual standard fashion. Patients were then followed at regular intervals of 1 month, 2 months, 4 months, 6 months, and 12 months post-operatively. Nasal endoscopy was performed at all post-operative visits.

Results: Five patients had cystic fibrosis, four patients had allergic fungal sinusitis and two had chronic sinusitis with nasal polyps. 4 of 11 had prior sinus surgeries and all have improved symptom control with the stents in place. On follow-up 10/11 continue to have no evidence of disease with improved senses of smell and taste and improved quality of life.

Conclusion: Mometasone eluting stents appear to be safe and effective at controlling symptoms in pediatric patients with complex sinus disease. Use of stents appears to increase time to further intervention when compared in the same patients without previous stent placement.

RADIOLOGIC AND ENDOCRINE FINDINGS IN PEDIATRIC PATIENTS WITH SOLITARY CONGENITAL NASAL PYRIFORM APERTURE STENOSIS

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Introduction: Congenital nasal pyriform aperture stenosis (CNPAS) is an uncommon condition frequently causing respiratory distress and neonatal nasal obstruction. It presents as either solitary disease (sCNPAS) or with a single-central maxillary mega-incisor (SCMMI) that can be associated with midline brain defects such as holoprosencephaly or pituitary/endocrine abnormalities. Our study sought to review the MRI and endocrine findings in pts with sCNPAS.

Methods: Retrospective chart review

Results: From 2006-2017, sCNPAS was identified in 14/27(52%) pts and CNPAS with SCMMI in 13/27 (48%) pts at our institution by CT imaging. Dual-brain MRI scans were subsequently performed in 10/14 sCNPAS pts with 6/10 MRI scans negative and 3/10 scans with suspected unrelated abnormalities(shunted hydrocephalus, pars intermedius cyst, germinal matrix hemorrhage). No sCNPAS pt had any identified pituitary/hypothalamic abnormalities, holoprosencephaly, central diabetes insipidus. In 1/10 pts, dual-brain MRI identified a hypothalamic hamartoma associated with the only endocrinopathy amongst the sCNPAS pts. Endocrine consultation obtained in 2 other sCNPAS pts was negative. Genetic testing in 7/14 sCNPAS pts revealed only 2 pts with Noonan Syndrome or partial monosomy of 7q/partial trisomy of 9q(hypothalamic hamartoma pt), and normal microarrays/karyotypes in the remaining 5/7 pts. Serial neonatal glucose and bilirubin levels were normal in all sCNPAS pts.

Conclusion: In our sCNPAS pts, no pituitary, hypothalamic, or endocrine abnormality was identified on brain MRI or endocrinologic evaluation except

when a chromosomal abnormality existed. This study may challenge the need for routine brain MRI imaging or endocrine evaluation in all sCNPAS pts presenting without a SCMMI or chromosomal abnormality.

PREDICTIVE ABILITY OF BEDSIDE NASAL ENDOSCOPY TO DIAGNOSE INVASIVE FUNGAL SINUSITIS IN A PEDIATRIC POPULATION

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Purpose: Invasive fungal sinusitis (IFS) is a rare but deadly clinical entity that occurs in immunocompromised patients. Diagnosis in children typically requires general anesthesia, which has significant risk. Findings on bedside endoscopy (BE) can be used with history, exam, and imaging to determine the need for surgery, however the accuracy of this tool has not been established among pediatric patients.

Methods: Patients who underwent BE for evaluation of IFS were identified using CPT codes and retrospective chart analysis.

Results: Fourteen patients were evaluated for IFS by BE over a seven year period. Six were confirmed to have IFS. Of these, three had debris or crusting seen on BE, one had darkened mucosa, and two had copious, thick and/or purulent secretions. All six patients were immediately taken to the OR for directed biopsies and debridement. Eight patients were found to be negative for IFS. Of these, six had edema, mucous without purulence, or normal findings. Of these six patients, two underwent operative biopsy despite negative endoscopy. The seventh was found to have eschar and decreased sensation; biopsies revealed necrotizing pseudomonal sinusitis. The eighth patient had copious crusting and pallor; biopsies showed superficial fungal organisms without invasion.

Conclusions: Four of six IFS patients had classic findings identified on BE including discoloration and crusting. Four patients avoided operative procedures based on negative exams. No patient with normal findings on BE was found to have IFS. While suspicion for IFS in immunocompromised children must remain high, BE is feasible and useful in its assessment.

RISK FACTORS FOR EARLY ONSET OF CATARACTS AND/OR GLAUCOMA - ARE INTRANASAL CORTICOSTEROIDS SAFE?

Dianne Valenzuela (M.D.)

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Objective: The objective of this study is to compile a list of craniofacial and other syndromes which are associated with early onset of cataracts and glaucoma.

Methods: We performed a general review of related literature pertaining to genetic syndromes which carry an increased risk for the development of cataracts and glaucoma. Selected syndromes were also reviewed during clinical encounters in our tertiary Pediatric Otolaryngology clinic. We then created a table which lists these syndromes with their respective incidence rates, and its associated level of evidence relating to early onset ocular disease.

Results: We identified ten craniofacial syndromes with early onset cataract and glaucoma (including Trisomy 21, Turner, Kabuki and Goldenhar syndromes and CHARGE association); and one non-craniofacial syndrome (Wilson's disease).

Discussion: We believe that many clinicians would benefit from this table of syndromes before considering intranasal corticosteroid (INCS) therapy. Likewise, we believe that a family history of early-onset of cataracts or glaucoma (before 50 years of age) should be identified before considering INCS therapy - at least until higher-level data regarding the ocular side effects of INCS in a pediatric population is available. Further studies, using large population data-sets, are in progress.

A MISSED DIAGNOSIS OF ORAL-FACIAL-DIGITAL SYNDROME IN THE CONTEXT OF PRE-IMPLANTATION GENETIC SCREENING

Tanner Fullmer (M.D.)

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Oral-facial-digital syndrome (OFDS) describes a rare group of genetic disorders characterized by congenital deformity of the oral cavity, face, and hands or feet. OFDS type 1 also commonly presents with brain abnormalities and polycystic kidney disease (PKD) that appears similar to, but is histologically, genetically, and phenotypically different from common forms of PKD associated with mutations in PKD1 or 2 genes. A seven-week-old female presented to the Otolaryngology clinic with a chief complaint of ankyloglossia and poor weight gain. She was conceived via in-vitro fertilization and surrogate pregnancy. On examination, the patient has complete fusion of the tongue to the floor of mouth with large anterior lingual hamartomas, flat nasal bridge, and duplication of the hallux. Careful questioning revealed that her mother had complex tongue surgery as a neonate, chronic foot disorders, an asymptomatic brain malformation, and phenotypically mild and atypical PKD. Due to her PKD, her mother had limited genetic testing that found a heterozygous missense mutation of unknown significance in the PKD1 gene, and her parents elected pre-implantation genetic embryo screening against this PKD mutation. OFDS was never considered in the mother's evaluation. The patient was diagnosed clinically with OFDS and referred for genetic testing with plans for tongue surgery in the near future. An MRI brain showed a small glioma, and orthopedic surgery has been deferred to age one. This case highlights the spectrum of OFDS, important genetic principles, and reinforces the need for a thorough history and physical examination.

TONSILLAR MICROBIOME OF PATIENTS WITH PEDIATRIC AUTOIMMUNE NEUROPSYCHIATRIC DISORDER ASSOCIATED WITH STREPTOCOCCUS (PANDAS)

Sallie Martin Long

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Background: Pediatric Acute-onset Neuropsychiatric Syndrome (PANS), of which PANDAS is a subset, is a controversial diagnosis involving a post-infection obsessive compulsive and tic disorder through an autoimmune mechanism. This study aims to compare the tonsillar microbiome of patients with PANDAS to that of controls. To our knowledge, there is no available literature that characterizes this association.

Methods: Study design was a prospective cohort study. Samples were collected from the deep tonsillar space from 59 patients with PANDAS and sent for DNA analysis. Core tonsillar cultures taken from 28 patients without PANDAS served as controls. Patients were 2-18 years and underwent a medically indicated tonsillectomy with or without adenoidectomy.

Results: There were significantly more Caucasians and fewer African Americans in the PANDAS group ($p < 0.0001$). There were no other significant demographic differences. The PANDAS group had an average of 6.5 isolates per patient while the control averaged 2.6, but this difference was not significant. There were no isolates of Group A streptococcus in the PANDAS group and 3 in the control ($p = 0.0309$). There were more *Staphylococcus aureus* isolates in the control (57.1% vs. 18.6%, $p < 0.0005$).

Conclusions: The difference in microbiome isolation between the two groups is a limitation, but based on these comparisons there are significant differences in

the PANDAS microbiome compared with non-PANDAS controls. The absence of Group A streptococcus in the PANDAS group suggests that either another infectious agent is responsible for PANDAS, consistent with PANS, or that Group A streptococcus is merely the inciting pathogen.

INCIDENCE OF POST-OPERATIVE HEMORRHAGE FOLLOWING TOTAL TONSILLECTOMY VERSUS COBLATION INTRACAPSULAR TONSILLECTOMY

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Objective:

Coblation intracapsular tonsillectomy (CIT) is a relatively newer tonsillectomy technique which is gaining popularity. Studies on the advantages of CIT in the pediatric population remain sparse. However, CIT has been shown to result in decreased post-operative pain and post-operative hemorrhage (POH) rates when compared with electrocautery total tonsillectomy (TT). Within this subset of literature, most large-scale studies collate complication rates from multiple institutions and/or surgeons, thus introducing selection bias or operator bias based on surgical experience and expertise. In this study, three surgeons performed TT for at least 2 years and then changed to CIT. The objective of this study was to compare CIT and TT POH rates for each surgeon separately.

Methods:

A retrospective cohort study was performed at a single quaternary care pediatric institution. All consecutive primary tonsillectomies performed by three surgeons in patients ≤ 18 years age between November 2012 and April 2017 were reviewed. Outcomes measured included primary POH (≤ 24 hours) and secondary POH (>24 hours).

Results:

A total of 693 patients (mean age 6.8 years) underwent tonsillectomy. Incidence of primary and secondary POH following TT was 0% and 6.8% for Surgeon A (n=88), 0.9% and 8.3% for surgeon B (n=108) and 0.7% and 5.4% for Surgeon C

(n=132), respectively. Surgeons A, B and C performed CIT on 100, 170 and 95 patients respectively; all three surgeons had a POH rate of 0% with CIT.

Conclusion:

CIT is a safe surgical technique with a lower incidence of POH in children when compared to TT.

POST-TONSILLECTOMY HEMORRHAGE: 3 YEAR RESULTS FROM A TERTIARY CHILDREN'S HOSPITAL WHERE 3 DIFFERENT TECHNIQUES ARE UTILIZED

Craig Derkay (M.D.)

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Objective: We have sought to compare the rates of post-tonsillectomy hemorrhage requiring both return to the OR and management in the ED, in a large cohort of children at a tertiary care Children's hospital via three different surgical techniques.

SUBJECTS and METHODS: 4395 children ranging in age from 1-18 who underwent tonsillectomy or adenotonsillectomy via electrocautery (EC), coblation (CO) or microdebrider intracapsular (MIT) techniques over a 36 month period. An additional focused analysis was performed of the 17 bleeds from one surgeons cohort of 1181 children.

RESULTS: The overall rate of post-tonsillectomy hemorrhage requiring return to the OR was 41/4395 (0.93%) and for management in the ED 51/4395 (1.16%). While 60% of the total procedures were done with EC, this instrument accounted for 78% of bleeds that required return to the OR (RTOR) and 73% managed in the ED (RTED). Coblation accounted for 11% of total procedures; 17% of RTOR and 23% of RTED. In contrast, MIT accounted for 29% of total procedures but only 0.2% of RTOR and 0.2% of RTED ($p < .001$). Bleed rates did not differ between academic (2.1%) and private practice surgeons (1.9%). BMI >95% was present in 39% of RTOR and 30% RTED.

CONCLUSION: In this tertiary Children's hospital where three different techniques for tonsillectomy are performed in the setting of resident training, differences in post-tonsillectomy bleed rates point to instrumentation, obesity and technique as key factors in influencing post-operative bleeding requiring treatment in both the OR or the ED.

VALUE OF INTRANASAL CORTICOSTEROID PREOPERATIVE USE IN CHILDREN WITH OSAS UNDERGOING ADENOTONSILLECTOMY

Yousif Alammam (M.D.)

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Objectives/Hypothesis:

The aim of this study is to assess the value of preoperative intranasal corticosteroid usage on tonsillectomy and /or adenoidectomy success in children with OSAS.

Study Design:

A retrospective chart review.

Methods:

Charts of children with OSAS who underwent tonsillectomy and /or adenoidectomy at a tertiary Otolaryngology- Head and Neck surgery center were reviewed. Data related to age, gender, history of intranasal corticosteroid usage, history of allergic rhinitis, history of gastroesophageal reflux (GERD), BMI, tonsils size, adenoid size and type of surgery were collected. OSAS success was defined as improvement in apnea hypopnea index (AHI) greater than or equal to 50%. Logistic regression analysis was performed to identify variables that affected OSAS success.

Results:

Thirty-three children, 18 males and 15 females with OSAS who underwent tonsillectomy and /or adenoidectomy were tested using polysomnography before and after surgery. AHI reached a statistical significant improvement after

tonsillectomy and /or adenoidectomy ($p = 0.048$), tonsillectomy and /or adenoidectomy was successful in less than half of the study subjects (45.45 %). Twenty-two children (66.6%) used intranasal corticosteroid preoperatively and AHI did not show a significant improvement in this group ($p = 0.2$). On the other hand, 11 children (33.3%) did not use intranasal corticosteroid preoperatively and AHI did show a significant improvement ($P= 0.03$).

Conclusions:

Although intranasal corticosteroid is a known treatment option in children with mild OSAS, the preoperative usage was not related to OSAS success. However, further studies are warranted.

PEDIATRIC POST-TONSILLECTOMY HEMORRHAGE: WHO NEEDS INTERVENTION?

Jesse Jennings (M.D.)

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Objectives:

- 1.) Describe demographic and clinical characteristics of pediatric patients with post-tonsillectomy hemorrhage (PTH) without active bleeding on exam.
- 2.) Define characteristics associated with increased risk of rebleeding after initial evaluation.
- 3.) Analyze current model of disposition of pediatric patients with PTH.

Methods:

A retrospective chart review was performed including patients ages 0-18 years presenting to a tertiary care pediatric hospital from 2013-2015 with PTH without active bleeding on exam. Characteristics including gender, age, BMI, indication for tonsillectomy, post-op day, amount and duration of bleeding, hemoglobin, coagulopathy, dehydration, and oropharyngeal exam were collected. Outcomes included rebleeding episodes and need for operative control. Of 3866 tonsillectomies, 285 were included using a conservative definition of PTH. Statistical analysis used Fisher's exact test for categorical variables and Wilcoxon rank-sum for continuous variables.

Results:

The bleed rate was 7.4%, with a 14.7% rate of rebleeding. Increasing age ($p < 0.001$) and infectious indication for tonsillectomy ($p = 0.015$) were associated with higher rebleeding rates, but also higher rates of discharge from the emergency department ($p = 0.014$ and 0.003 respectively). Decreasing age

($p=0.018$) and lower initial hemoglobin ($p=0.026$) were associated with the need for operative control of rebleeding.

Conclusion:

Older children with infectious indication for tonsillectomy were more likely to be discharged home after PTH, but had higher rates of rebleeding. Younger children with lower hemoglobins were more likely to require operative control. This is a platform to develop a risk profile to identify patients at low risk for rebleed or severe bleed who may be appropriate for outpatient management.

A STANDARDIZED, CLOSED-LOOP SYSTEM FOR REPORTING AND REDUCING PEDIATRIC TRACHEOSTOMY RELATED ADVERSE EVENTS

Mallory McKeon

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Improvement of neonatal and pediatric ICU care has increased the need of chronic care interventions, including tracheostomy. It is well established that children with tracheostomy are high risk for adverse events, many of which are preventable. Despite this, there is no standardized method of tracking and preventing tracheostomy-related adverse events.

Aim: To describe a standardized, closed-loop system for reporting and addressing tracheostomy adverse events at a tertiary pediatric center.

Methods: A "Tracheostomy-Related" category was established within the hospital-wide adverse event reporting system in January 2015. Monthly reports of tracheostomy-related events are supplied to the multidisciplinary tracheostomy team (MDT) with descriptions of event type, severity [0-5] and preventability ['not preventable', 'possible preventable', 'preventable']. The MDT reviews events, categorizes them into subcategories, and discusses appropriate follow up procedures. The frequency of events is standardized by inpatient tracheostomy days (ITD) using an automatically generated list of ITD per month, and tracked by the MDT using a control chart.

Results: Since January 2015, there have been 84 reported tracheostomy events, averaging 5.86 events per 1000 ITD. These include: accidental decannulation, tube obstruction, and incorrect supplies. We observed a decrease in 'preventable', and 'possibly preventable' events, and 'minor' events. Moderately severe and major events have maintained a combined frequency of <1 per 1000 ITD (n=9).

Conclusion: There is much need for improved reporting of tracheostomy events. This standardized method of tracking/recording pediatric tracheostomy-related events, modeled after reporting systems for other ICU events, decreases minor and preventable events without adversely affecting low rates of severe events.

AUGMENTATIVE COMMUNICATION FOR PEDIATRIC PATIENTS UNDERGOING A TRACHEOSTOMY: A RETROSPECTIVE REVIEW TO GUIDE SERVICE DELIVERY

Rachel Santiago (SLP)

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Introduction - Access to augmentative and alternative communication (AAC) strategies enhances communication for patients with tracheostomies who are temporarily or permanently non-speaking. No current data supported guidelines exist to support consultation and implementation of AAC strategies for children with tracheostomies throughout the recovery continuum.

Objective - To define service delivery guidelines for AAC assessment and intervention of pediatric patients with tracheostomies throughout the continuum of recovery, including pre- and postoperative inpatient and outpatient consultations.

Methods - A retrospective review was conducted of new tracheostomy patients who were admitted to a tertiary referral center and followed by inpatient AAC clinicians between 2013 and 2016. Data was analyzed to identify trends in patient care related to time of consult, baseline status, types of AAC interventions, and follow-up in a multi-disciplinary tracheostomy clinic.

Results - Of the 83 total patients with new tracheostomies, 33 patients (39%) had baseline speech and language disorders, 47 patients (57%) were consulted preoperatively, and 36 patients (43%) were consulted postoperatively. Speech-generative devices (SGD) were accessed by 58 patients (70%) postoperatively, while 53 patients (64%) accessed low-tech or non-SGD strategies. Additionally, unaided strategies were supported for 65 patients (78%). Of patients seen preoperatively, 39 (83%) were intubated or otherwise nonspeaking at time of

consult. Patients discharged with long-term tracheostomies were followed through an outpatient multi-disciplinary Tracheostomy Clinic for continued consultation.

Conclusion - Patients have varied communication needs at different points of care following a tracheostomy. Guidelines are recommended for service delivery of communication enhancement strategies for children with tracheostomies.

MULTIDISCIPLINARY TEAM APPROACH DECREASES TIME TO FIRST TRACHEOSTOMY CLASS FOR FAMILIES WITH TRACHEOSTOMY PATIENTS

Margaret McCasland

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Pediatric patients who require tracheostomy were noted to have an extended length of stay (LOS). We formulated a multidisciplinary team that included Physicians (Otolaryngologists, Neonatologists, Intensivists and Pulmonologists), Registered Nurses (RN), Registered Respiratory Therapists (RRT), Clinical Nurse Specialist (CNS), Otolaryngology Advanced Practice Providers, Speech Language Pathologists and Social Workers (SW) to identify barriers to discharge. One factor that contributed to LOS was early identification of primary caregivers and the time between Tracheostomy Placement (TP) and time to the First Tracheostomy Class (FTC) attended by primary caregivers.

Methods:

The population includes patients requiring tracheostomy placement. A teaching team consisting of RRT, RN, CNS and SW met with families to establish primary care givers, provide counseling and assess barriers to discharge home. A journey map is given to all families that lists what the expectations over the next few weeks, including tracheostomy surgery, tracheostomy classes, CPR class, and independent demonstration of all tracheostomy cares. After the primary care givers were identified, tracheostomy surgery and education classes were scheduled.

Results:

There were 78 patients in the pretreatment group and 41 patients in post treatment group. Time from TP to FTC pretreatment was 18 days and was decreased to 4.5 days in the post treatment group.

Conclusions:

Multidisciplinary team that promotes early involvement of primary care givers to focus on tracheostomy care and family teaching reduced the time from TP to FTC.

ESTABLISHMENT OF A TRACHEOSTOMY CARE INDEX FOR QUALITY IMPROVEMENT

Sarah Begue

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Introduction: Pediatric tracheostomy patients are a complex population and consistency of care is a challenge. A Pediatric Tracheostomy Care Index (PTCI) was created to monitor and drive quality improvement measures at our institution.

Methods: PTCI for new tracheostomy patients was established at our institution in October 2015, consisting of 9 metrics: 1) Tracheostomy-related pressure injury, 2) Tracheostomy APN consultation/teaching, 3)EMR documentation of tracheostomy tube type/size and pertinent clinical information, 4) CPR training, 5) Home-care set-up, 6) Clinic visit scheduled before discharge, 7) Clinic visit actually occurred within 60 days of discharge, 8) family brought emergency bag to clinic visit, 9) Endoscopic airway visualization every 12 months at a minimum. Based on the PCTI scores, the number of missed opportunities per patient was tracked from October 2015 to June 2017. Baseline retrospective data was obtained from January 2014 to September 2015. Quality improvement interventions through a "Plan-Do-Study-Act": approach have been performed.

Results: There was a reduction in the PTCI, quantified as missed opportunities per patient, from baseline of 4 to 2. A key driver diagram and run chart of the PTCI data will be presented, as well as the specific quality improvement process interventions will be discussed.

Conclusion: The establishment of a PTCI has been successful at our institution at standardizing, quantifying, and monitoring the care provided to this complex patient population. A 50% reduction of missed care opportunities per patient has been achieved, and continued surveillance will drive future interventions to provide optimal care.

MICROBIOLOGY OF DEEP SPACE NECK INFECTIONS IN CHILDREN

Michael Kubala (M.D.)

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Outcome Objectives: 1) Describe the microbiology of pediatric deep space neck infections (DNI) managed surgically at our tertiary care institution. 2) Determine if initial medical antibiotic management was altered based on bacterial culture speciation and antibiotic sensitivity (C/S) results obtained during surgical drainage.

Methods: IRB approval was obtained for a retrospective case series review of pediatric (≤ 18 years old) DNIs from January 2006 to August 2016. ICD and CPT codes for cervical (C), submandibular/submental (SM), parapharyngeal (PP), and retropharyngeal (RP) infections were used to identify patients who underwent surgical intervention.

Results: A total of 158 patients who underwent surgical drainage for a DNI (C=68, SM=24, PP=27, RP=39) were included. Cultures were taken in 91.8% of cases and positive 76.6% of the time with no significant difference between groups ($p=0.06$ and 0.20 , respectively). Initial antibiotic treatment changed 36.9% of the time (C=25.9%, SM=36.8%, PP=58.8%, RP=47.6%, $p=0.06$), resulting in an increased total length of stay (5.5 d vs 3.4 d, $p=0.01$). Staphylococcus aureus was the most common single species cultured at 56.9% (C=72.2%, SM=68.4%, PP=29.4%, RP=42.9%). Methicillin resistant Staphylococcus aureus was present in 38.8% of positive cultures (C=46.3%, SM=36.8%, PP=11.8%, RP=52.4%).

Conclusion: This retrospective review suggests that obtaining cultures remains an important step in the management of children undergoing surgical drainage

of DNIs. In our review, antibiotic management was changed 36.9% of the time based on culture results resulting in a significant increase of hospital length of stay. *Staphylococcus aureus* was the most common single species identified in all subsites.

EXTRA-PULMONARY TUBERCULOSIS (EPTB) OF THE HEAD & NECK AT RCCH, CAPE TOWN, SOUTH AFRICA: A 5 YEAR RETROSPECTIVE REVIEW.

Shazia Peer (M.D.)

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Introduction

Tuberculosis (TB) is the second commonest infectious cause of death. The risk of developing active TB or advanced forms, decreases with age. Extrapulmonary TB (EPTB) occurs in 1 in 5 TB cases (20%), rising to 50% of HIV infected individuals, and increasing to 80% in severe immunosuppression. Confirming the diagnosis of EPTB is challenging, frequently results in delays, since EPTB is often asymptomatic and can imitate other diseases.

Objective

To retrospectively review children with cervico-facial EPTB, diagnosed and managed at Red Cross Children's Hospital (RCCH) over 5 years.

Methods

A folder review from 1st June 2012 to 31st May 2017, was performed. All children managed at RCCH, and TB positive in any head and neck location were included.

Results

One hundred patients were identified. 40% were girls and 60% boys. The mean age at diagnosis was 5,12 years (SD ± 3,66). The mean time between first visit & date of diagnosis was 29,82 days (SD ± 39,90). Children presented with cervical

lymphadenopathy (57,0%), submandibular abscess (14,0%), ear (9,0%) and larynx (3,0%). Coughing was the most common symptom (36,0%). Thirty-six percent of children were asymptomatic. Eight percent were HIV positive, 77% negative, and 15% not done.

Conclusion

This is one of the first reviews of cervico-facial TB in a high endemic population. The most common site is cervical lymphadenopathy, consistent with the literature. Almost 40% of children were asymptomatic highlighting the possible cause for the observed diagnostic delay. Clinicians should be aware of EPTB in the asymptomatic child.

UTILIZATION OF POLYSOMNOGRAPHY IN CHILDREN WITH DOWN SYNDROME: RATE AND SEVERITY OF OBSTRUCTIVE SLEEP APNEA

Christine H. Heubi (M.D.)

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Introduction: Polysomnography (PSG) is the gold standard for diagnosis of obstructive sleep apnea (OSA) in children which is reported to occur in 30-50% of children with Down syndrome (DS). However, severity of OSA for those undergoing in-lab overnight PSG has not been well studied. Our primary objective was to determine the prevalence of OSA and severity of disease in patients with DS who present to Otolaryngology.

Methods: Retrospective review of medical records of all patients with DS undergoing PSG, based upon otolaryngology referral at a tertiary pediatric hospital from 2010-2015. Patients who underwent previous otolaryngologic surgery were excluded.

Results: 212 patients were included; 54.3% male, 75% Caucasian, 29.3% had public insurance. Median age at the time of PSG: 6.6 years (1 month-18.7 years). Most common indication for PSG was DS (93%), with 35% reportedly having sleep-disordered breathing. Diagnoses made on PSG included: OSA (78%), hypoventilation (17.2%), non-apneic hypoxemia (7%), snoring (5.7%), periodic limb movements in sleep (1.3%), central apnea (1.8%); 10% had a normal study. OSA severity was reported as severe (19%), moderate (25.8%), and mild (54.5%). OSA was found in 91% of children <48 months, 69% in children 48 months to 10 years, and 87.5% in children 11-18 years of age.

Conclusion: Our very high rate of OSA in children with DS (78%) suggests that previous studies may have significantly underestimated the prevalence of OSA, and PSGs are likely necessary at additional time points beyond those recommended by existing guidelines.

OBSTRUCTIVE SLEEP APNEA IN CHILDREN WITH DOWN SYNDROME: ANALYSIS OF SLEEP STUDY SCREENING RATE AND COMPLIANCE WITH GUIDELINES

Adam Hsieh

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Background: Obstructive sleep apnea (OSA) is a condition that affects a high proportion of children with Down syndrome (DS). OSA can cause serious clinical manifestations, thus early detection using sleep study is critical. In 2011, the American Academy of Pediatrics (AAP) advised that physicians refer all children with DS for a sleep study by age 4 years to assess for OSA, regardless of the presence of OSA signs and symptoms. We undertook this study to determine effect of and compliance with these guidelines at our institution.

Methods: A retrospective chart review was conducted of patients 0-18 years of age with DS seen at a tertiary care center during 2006-2016 (n=136). Sleep study referral pattern was investigated, and compared pre-and post-guideline publication.

Results: In total, only 32% (44/136) children with DS were referred for sleep study. While guidelines had no effect on overall referral frequency, frequency of sleep study completion by age 4 years improved after publication (25%, 17/69) versus before (0%, 0/67, $p<0.0001$). The average age at time of sleep study was 5.8 years old and the average number of sleep studies completed was 1.5.

Conclusion: Taken together, our findings indicate that not all children with DS are being referred for sleep study by age 4 years per AAP guidelines. Although sleep study completion rate by 4 years of age has increased, not enough change has occurred for compliance with guidelines. Therefore, OSA is under-detected in children with DS - a high-risk group that warrants better, standardized detection of OSA.

PREDICTIVE FACTORS FOR OBSTRUCTIVE SLEEP APNEA AFTER CLEFT PALATE REPAIR

Mathieu Bergeron (M.D.)

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INTRODUCTION: It is hypothesized that cleft palate repair (palatoplasty) can worsen or induce obstructive sleep apnea (OSA). The goal of this study was to assess the baseline demographic and polysomnographic (PSG) factors predictive of worsening of OSA after palatoplasty.

MATERIALS and METHODS: Retrospective case series of children who underwent palatoplasty between January 2008 and December 2016 at a tertiary pediatric medical center. Children who underwent both preoperative and postoperative PSG were included.

RESULTS: We studied 70 children (49% female) with a mean age of 2.0 ± 2.8 years (range 0.6-16.4). Pierre-Robin sequence was the most common comorbidity (67.1%, 47/70). After palatoplasty, there was no significant change in the mean apnea-hypopnea index (AHI), obstructive AHI (oAHI), or saturation nadir (all $P > 0.05$). However, 24 children (34.3%) had significant worsening of their mean oAHI by 11.4 ± 20.7 events/hour (range 1.2-99.3, $P = 0.01$) and saturation nadir by $7.6 \pm 6.3\%$ (range 2-23.8, $P = 0.001$). Syndromic status (e.g. Treacher-Collins, OR: 3.4, 1.1-10.2, $P = 0.03$) and time with $\text{CO}_2 > 50 \text{ mmHg} > 4\%$ of total sleep time (OR: 8.2, 1.1-58.5) were predictive of worsening oAHI after palatoplasty. Saturation nadir, sex, age and other comorbidities were not associated with worsening of oAHI.

For the entire cohort, a higher pre-operative oAHI ($r=0.81$, $P<0.0001$) was highly correlated with worsening of the oAHI.

CONCLUSION: Overall, mean AHI, oAHI and saturation nadir were unchanged after palatoplasty. For all patients, a higher preoperative oAHI correlated with worsening of the oAHI after surgery. For the 24 children with worsening of OSA, syndromic status, and time spent with CO₂ more than 50 mm Hg were predictive of worsening oAHI.

THE IMPACT OF DRUG-INDUCED SLEEP ENDOSCOPY ON SURGICAL DECISION MAKING IN HEALTHY CHILDREN WITH SLEEP DISORDERED BREATHING

Malak Jamal Gazzaz

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Background: Adenotonsillectomy (AT) is considered the first line surgery for paediatric sleep disordered breathing (SDB). However, it fails in more than 30% of patients. Drug-induced sleep endoscopy (DISE) has been proposed as a solution. Our objective is to estimate the agreement between surgical planning based on DISE versus clinic physical exam findings in surgically naive, healthy children with SDB.

Methods: A prospective cohort study was undertaken at a tertiary centre. Children (3-17 years old) with persistent SDB after appropriate medical treatment and who were candidates for surgery were eligible. We excluded children undergoing AT for other indications, and neurologically impaired, dysmorphic and syndromic children. The primary outcome was the degree of agreement between a DISE and clinic based surgical decision (Cohen's Kappa). Three options of treatment were scored; AT and its variants, AT combined with non-AT surgery, and non-AT options.

Results: After excluding 45 patients, 106 were included over an 18 months period. Mean age 6.65 ± 3.14 (3-16), male:female 0.8:1. The overall agreement between DISE and clinic based surgical decision was poor $K=0.129$, $SE=0.045$ [95%CI 0.040-0.218]. The agreement on adopting AT only, combined AT and non-AT surgery, and non-AT options was moderate (0.5, 95%CI 0.398-0.602), fair (0.29, 95%CI 0.051-0.697) and poor (0.08, 95%CI 0.025-0.194), respectively.

Conclusion: DISE demonstrates frequently non-AT surgical targets and changes the permutations of AT surgery in children with SDB. In the absence of a standardised evidence based method for surgical decision making, DISE should be considered to guide the process.

NEAR-COMPLETE EXTERNAL EAR AVULSION REPAIRED WITH PRIMARY CLOSURE AND HYPERBARIC OXYGEN: HOW TO OPTIMALLY MANAGE?

Jonathan Grischkan (M.D.)

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Introduction: Near-total ear avulsion is a rare and challenging problem to manage with many techniques described; primary repair is an attractive option but is not always successful. Healing may be augmented with post-operative hyperbaric oxygen therapy (HBOT), but this technique is under-reported and an ideal regimen is not known. Moreover, the use of HBOT in pediatric patients has been rarely described. The study objective is to discuss the role HBOT in the management of ear avulsion by reviewing a 2 cases.

Methods: Case reports and review of the literature. A Pubmed search using the terms ear avulsion and postoperative hyperbaric oxygen was performed.

Results: We describe 2 patients treated recently for near-complete external ear avulsion. Primary re-attachment was performed followed by adjuvant hyperbaric oxygen therapy (HBOT). We discuss the management algorithm and options for management of this rare problem, including the use of HBOT in children.

Discussion: There is no consensus on the management of near-total ear avulsion. Primary repair is ideal from a cosmetic and ease-of-operation standpoint, but does not always yield viable tissue. Additional options include microvascular repair, subcutaneous cartilage banking, or secondary reconstruction options. The use postoperative HBOT is an attractive option that may boost success rates, but the ideal HBOT regimen is unknown. This series represents a successful application of this technique in pediatric patients.

LOW-COST, HIGH-PRECISION 3D PRINTED MODELS FOR SURGICAL SIMULATION IN PEDIATRIC TEMPORAL BONE SURGERY

Monika E. Freiser (M.D.)

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Purpose: To develop a high resolution, multi-colored pediatric temporal bone model using a consumer-grade stereolithography 3D printer.

Methods: A temporal bone cat scan from a ten-year-old was obtained. Bony structures were then segmented using 3D Slicer and 3D meshes were prepared using the modeling software Meshmixer and Blender. Models were printed on a commercial, desktop stereolithography 3D printer (Formlabs Form 2, Boston, MA). The facial nerve was modeled as a hollow cavity which was filled with paint and sealed. Ten models were drilled and evaluated by attending and resident physicians.

Results: The time for segmentation of the relevant anatomy and CAD modeling was 3.0 hours. The print time for the models was 4 hours and 22 minutes with a median total raw material cost of \$20 per model. The resolution was as high as 0.025mm, limited only by the CT scan resolution. The facial nerve was accurately represented by the paint without gaps. If the nerve canal was entered while drilling, the paint would leak indicating the violation had occurred. The model was favored for surgical simulation and training.

Significance: We present a novel method for creating a low-cost, high resolution pediatric temporal bone model for surgical simulation and training.

MULTIDISCIPLINARY PERIOPERATIVE CARE OF CLEFT PATIENTS.

Adam B Johnson (M.D.) (PhD)

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Background:

Complete and excellent care of the cleft lip and palate patient requires precision planning and a multidisciplinary approach. Although this seems to be well understood, it remains difficult to accomplish coordination and execution of care for this population. Here we present our experience on with interdisciplinary and collaborative care of patients with cleft lip and palate as directed by an otolaryngology service.

Methods:

We performed a retrospective assessment of our multidisciplinary cleft team via expert opinion and examination of the processes of all personnel and services involved. Highlights, rational, and pitfalls are detailed to understand and share how to run a successful multidisciplinary cleft team.

Results

Service collaboration through direct communication and simultaneous patient review allows for the adequate and accurate sharing of professional opinions on patients. Physician, nursing, and ancillary service time, outside of the normal clinical practice, is necessary to organize patient care. A dedicated coordinator and nursing personnel are needed to maintain team communication during intervals between meetings. Specialty services required include otolaryngology, audiology, plastic surgery, oral surgery, speech pathology, otology, dental, orthodontics, genetics, psychiatry, and nutrition, to various degrees and at

different intervals during the development of a cleft patient. Timing and order are described along with total expected patient operative hours.

Conclusion:

Multidisciplinary Cleft Lip and Palate teams are necessary to completely care for the patient in the perioperative period. Herein we describe the commitment required from all services along with details of the administrative and nursing piece required for success.

THE USE OF PALATE SURGERY IN NON-SYNDROMIC, NEUROLOGICALLY INTACT CHILDREN WITH OBSTRUCTIVE SLEEP APNEA

Jason E. Cohn

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Purpose: To highlight the role and effectiveness of palate surgery in the management of isolated pediatric obstructive sleep apnea (OSA).

Methods: A retrospective chart review was conducted to identify non-syndromic, neurologically intact pediatric patients who underwent either uvulectomy or uvulopalatopharyngoplasty (palate surgery) in combination with other sleep surgeries for OSA from 2011 through 2017. Apnea-hypopnea index (AHI) and oxygen saturation nadir (OSN) were used to measure improvements in OSA severity.

Results: After exclusion criteria, a total of twelve (n=12) patients were identified. Four children (33.3%) received combination uvulectomy, seven children (53.3%) received combination uvulopalatopharyngoplasty and one child (8.3%) received uvulopalatopharyngoplasty alone. Overall, 11 (91.7%) patients undergoing palate surgery had improved OSA severity while only 1 (8.3%) patient worsened in severity. Palate surgery significantly decreased mean AHI from 37.98 pre-operatively to 8.91 post-operatively (t=2.70, 95% CI 6.75-51.40, p=0.013). Palate surgery also improved mean OSN from 76% to 83.08%, however, this was not statistically significant (p=0.091). Palate surgery resulted in a greater degree of mean AHI improvement (18.24) compared to adenotonsillectomy (-3.89), however, this was not statistically significant (p=0.193). Palate surgery also resulted in a greater degree of mean OSN improvement (3.86%) compared to

adenotonsillectomy (-0.71%), however, this was not statistically significant ($p=0.478$).

Conclusions: Existing research on palate surgery has only been conducted for syndromic or neurologically impaired children with OSA. In our study, palate surgery significantly improved isolated pediatric OSA severity evidenced by lower mean AHI.

CASE PRESENTATION: POSTERIOR SUBGLOTTIC SCAR BAND FORMATION FOLLOWING INTUBATION

Nigar N. Ahmedli (M.D.)

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INTRODUCTION

An 8 month-old male with GERD and a history of an occipital encephalocele status post repair in which he was intubated twice with 3.5 cuffed ETT and extubated within 36 hours presented with biphasic stridor. Flexible laryngoscopy demonstrated severe laryngomalacia with prominent arytenoids and a partially seen circumferential subglottic narrowing.

METHODS

Case report analysis of one patient.

RESULTS

We describe the formation, diagnosis and treatment of a posterior subglottic scar band following intubation in an infant presenting with biphasic stridor.

Direct laryngoscopy revealed a posterior subglottic scar band and bilateral scar tissue immediately distal to the true vocal cords in addition to an omega shaped epiglottis, redundant arytenoid mucosa, and post cricoid edema and erythema. 0.1cc (4mg) of Kenalog was injected into the posterior subglottic scar band and straight microlaryngeal scissors were used to divide the scar band. Balloon dilation of the scar band was performed using a 6mm balloon to 10 atm until SaO₂ reached 90% (approximately 30 seconds) to gently push the scar tissue

laterally. Repeat direct laryngoscopy revealed grade 1 lateral shelving (not formally sized) of the subglottis.

DISCUSSION

The formation of the posterior subglottic scar band is the likely result of laryngopharyngeal reflux, prone positioning during repair of the occipital encephalocele, and positioning of the endotracheal tube adjacent to the true vocal cords. Given the biphasic nature of the presenting stridor and its subsequent improvement status post division and dilation of the scar band, the original presentation could not singularly be attributed to arytenoid prolapse.

GONORRHEA POSITIVE SINUS CULTURES IN 15-YEAR OLD WITH ALLERGIC FUNGAL SINUSITIS (AFS)

Kim Donner

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Objectives:

To discuss the importance of a multidisciplinary approach in handling difficult medical and social situations in pediatric ENT patients.

Methods:

We examine a case of a 15 year old female who underwent endoscopic sinus surgery for Allergic Fungal Sinusitis (AFS). Bacterial cultures were positive for neisseria gonorrhoeae. This diagnosis presented us with challenges, including discussing results with the patient and her family without damaging the relationship with her surgeon, which could affect her long term follow up.

Results:

Social Work and REACH (Referral and Evaluation of at Risk Children) clinic were consulted prior to discussing the results with the patient. When the patient returned to clinic with her father, she was taken to a separate room. With the help of a social worker, the results were discussed and further history was taken to determine if her partner was under 18 years of age and whether sexual contact was consensual. Her permission was taken to discuss results with her father. The patient was later evaluated at REACH clinic for further evaluation and treatment. She and her father have returned for their follow up ENT visits for AFS. Consultation with Infectious disease was also required, as the patient was allergic to cephalosporins. The Infectious Disease team also helped with reporting to the Health Department.

Conclusion:

Utilizing ancillary services such as social work and if available, complex care teams, is vital in handling difficult patient situations. Delivering difficult news to patients and their families require thoughtful preparation for the Otolaryngologist.

FEASIBILITY OF MICROLARYNGEAL BIPOLAR RADIOFREQUENCY ABLATION-ASSISTED MANAGEMENT OF PEDIATRIC OBSTRUCTIVE AIRWAY DISEASE

Adam Michael Kravietz

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Objectives

To review the feasibility of a microlaryngeal bipolar radiofrequency ablation (MBRA) device in treating pediatric cases of obstructive airway disease.

Methods

Retrospective chart review of pediatric cases of laryngotracheal obstructive disease for which MBRA was utilized. Setting: Tertiary-care pediatric otolaryngology private practice with academic affiliation with four fellowship-trained pediatric otolaryngologists.

Results

Ten cases of pediatric laryngotracheal disease were identified for which MBRA was utilized. MBRA was utilized in the following ways: 1) Primary treatment modality for Grade II subglottic stenosis (n=3): resolution of symptoms in all subjects; 2) Primary treatment for glottic disease (n=2): one case of unilateral vocal fold paralysis with resolution of stridor; one case of laryngeal web with recurrence; 3) Primary treatment for large suprastomal granulomas (n=3): all patients were subsequently decannulated; 4) Adjunctive treatment to remove obstructing scar and granulation tissue after open laryngotracheal reconstruction (n=1); 5) Adjunct treatment for severe proximal tracheal stenosis (n=1). There were no instrument-related complications.

Conclusion

MBEA was found to be a feasible technique for assisting with endoscopic management of a variety of surgical disease processes affecting the pediatric

larynx and trachea. The instrument has the advantage over laser therapy of not being associated with ignition of airway fires, and has the advantage over balloon dilatation of being able to remove granulation tissue, fibrosis, and cartilage. The most appropriate role for this instrument in the overall management algorithm of pediatric laryngotracheal obstructive disease is still evolving.

THE RARE CASE OF A TRAUMATIC PSEUDOANEURYSM OF THE SUPERFICIAL TEMPORAL ARTERY

Alexandra Fonseca

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Objective: To describe an unusual case of a traumatic pseudoaneurysm of the superficial temporal artery.

Methods: Case report and review of the literature.

Results: A 14-year-old male presented with a non-tender soft tissue mass of the right temple, initially referred by outside physicians as an intracranial aneurysm. Diagnostic workup with ultrasound and MRI demonstrated arterial dilatation outside of the cranial vault with findings suspicious for pseudoaneurysm of the superficial temporal artery. Detailed questioning revealed a history of trauma to the area occurring 5 months previously. Doppler ultrasound was used to identify the path and branching of the right superficial temporal artery prior to sharp dissection and ligation of the artery with excision of the pseudoaneurysm. The patient experienced no complications after surgery and the lesion did not recur.

Conclusions: Pseudoaneurysms to the superficial temporal artery are a rare occurrence, with approximately 200 documented cases in the literature. They represent less than 1% of all pseudoaneurysms and most commonly result from blunt or penetrating trauma to the head. Physicians should be advised to ask specifically about a history of trauma in the case of soft tissue masses suspicious for a pseudoaneurysm. Compelling images will be provided.

PEDIATRIC LATERAL FLOOR OF MOUTH DERMOID CYST EXCISED BY TRANSORAL APPROACH: CASE REPORT AND LITERATURE REVIEW

Arturo Eguia

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Objective: To present a rare case of a lateral floor of mouth dermoid cyst resected via transoral approach.

Methods: Case report, Review of literature

Case report: An otherwise healthy 8-year-old girl presented with a submandibular mass that had been present most of her life. Physical exam showed a 4 x 3 cm, well-circumscribed mass that did not move with movement of the tongue. CT demonstrated a well-circumscribed, hypodense cystic mass deep to the left mylohyoid muscle measuring 3.8 x 3.1 cm with mean attenuation of 4 Hounsfield units, consistent with a ranula. Transoral excision was pursued, however, intraoperatively the mass was identified to be in the submandibular space, and more consistent with a dermoid cyst as later confirmed by pathologic evaluation. The post-operative course was uncomplicated and follow-up visit at 1 month showed resolution without recurrence or nerve deficits.

Conclusions: Dermoid cysts typically present as midline masses. To date, there are approximately 15 reports of lateral dermoid cysts in the floor of mouth, 2 of which were in pediatric patients who both had tumors excised transcervically. Our case demonstrates that a transoral approach is a feasible option in patients with lateral floor of mouth dermoids. We advocate that these lesions can be approached in this manner, as it provides a good cosmetic and functional result, while potentially decreasing complications.

ENDOSCOPIC EXCISION OF A CONGENITAL INTRATYMPANIC MEMBRANE CHOLESTEATOMA

Lauren Galinat (M.D.)

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Background: Congenital intratympanic membrane cholesteatoma is a rare, poorly understood entity. We describe the endoscopic management of a case requiring canalplasty without tympanoplasty.

Clinical Case: A 2-year-old male was incidentally noted to have a lesion of the medial left external auditory canal (EAC) during a well visit. He did not have a history of otitis media or otologic surgery. On exam, a sessile, pearly-white lesion was observed in the inferomedial EAC adjacent to the tympanic membrane (TM), which was otherwise unremarkable. Audiometric assessment was normal apart from an As tympanogram on the left. Computed tomography of the temporal bones revealed a 5x5x4 mm lesion that appeared contiguous with the TM and associated scalloping of the inferomedial EAC. He was taken to the operating room for trans-canal, endoscopic excision. A tympanomeatal flap was elevated, and a clear plane was established between the squamous and fibrous layers of the TM during the en bloc excision. The fibrous layer remained intact, so tympanoplasty was not required. To flatten the remodeled bony EAC, endoscopic canalplasty was performed with a curved, protected shaft and a 1 mm diamond burr. Pathology was consistent with cholesteatoma.

Conclusion: Congenital intra-tympanic membrane cholesteatoma can result in bony remodeling of the medial EAC. An endoscopic approach facilitates complete excision with preservation of the underlying fibrous layer and can also allow for canalplasty when indicated.

WHAT'S THAT MASS: STERTOR, DYSPHAGIA, AND SHORTNESS OF BREATH IN A 10 YEAR OLD?

Michael Weinstock (M.D.)

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Introduction: Synovial Sarcoma is a rare soft tissue malignancy originating from mesenchymal tissue. It frequently afflicts patients under the age of 45, however it only rarely strikes the head and neck region. We present a rare case of oropharyngeal synovial sarcoma growing into the airway of a 10 year old male patient.

Case: A 10 year old male presents to the ED for emergent evaluation of a cystic lesion in the back of the throat. He had worsening dysphagia, stertor, muffled voice, and difficulty breathing at night for the previous 9 months. He attempted to use a PPI without resolution of symptoms. Upon presentation, a 3x4 cm lesion was noted in the oropharynx, extending to the epiglottic ridge. Direct Laryngoscopy revealed the lesion to be emanating from the right posterior lateral oropharyngeal wall. It was debulked in the OR to stabilize the airway. PET CT and MRI have revealed no metastatic disease. The patient is planned to undergo surgical resection with flap reconstruction of the neo-pharynx.

Conclusion: Dysphagia and stertor, while common symptoms that often point to benign disease, especially in the young, may be key clinical findings in the rare patient with malignancy. Practitioners should consider fiberoptic and/or mirror laryngoscopy in any patient with dysphagia, stertor, and voice changes, regardless of age.

AN ALTERNATIVE TREATMENT FOR SUPRASTOMAL STENOSIS IN PATIENTS WITH DECREASED BENEFIT FROM LARYNGOTRACHEAL RECONSTRUCTION

Brandon Esianor

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Objective: To describe an alternative approach in the management of pediatric suprastomal stenosis and provide context on medical decision making in similar cases

Methods: Case report

Results: A 4-year-old male with history of 24-week prematurity, spastic quadriplegic cerebral palsy, neurological devastation necessitating tracheostomy dependence, and previously excised suprastomal granuloma presented for surveillance endoscopy of the airway after developing new onset failure to tolerate Passy Muir Valve (PMV) trials. Inspection with a 0-degree telescope revealed complete suprastomal stenosis with a widely patent airway distal to the tracheostomy. Because of the patient's neurologically devastated state and need for long-term tracheostomy in addition to the severity of medical comorbidities, laryngotracheal reconstruction was deferred. However, the child had serious airway distress after a previous accidental decannulation, so as an alternative, relief of the obstruction was performed endoscopically with scissors, excision of granulation and scar tissue, and balloon dilation. This resulted in a widely patent airway. The child has tolerated PMV utilization without difficulty, and has tolerated short periods of decannulation during tracheostomy tube changes without respiratory distress.

Conclusion: Patients with suprastomal stenosis who are poor surgical candidates for traditional laryngotracheal reconstruction may benefit from endoscopic scar debridement and balloon dilation. Maintaining a patent suprastomal airway is frequently a necessity when a formal permanent stoma is not present, as seen in laryngotracheal separation. Compelling photographs and video are provided.

PRIMARY CERVICAL LEIOMYOMA: A RARE CAUSE OF A POSTERIOR NECK MASS IN A PEDIATRIC PATIENT

Jeremie D. Oliver

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BACKGROUND: Less than 1% of all leiomyomas are found in the head and neck. Diagnosis is determined by pathological analysis, with surgical excision as definitive management. To our knowledge, this is the first case reported in the literature of a patient of any age group with primary leiomyoma in the neck.

METHODS: A 13-year-old male was referred to our clinic for evaluation of a right-sided posterolateral neck mass. The mass had first been noted approximately four years prior to presentation; an incisional biopsy two years ago at an outside hospital was suggestive of a benign lymph node. Recent growth and increased pain prompted referral to our tertiary care center.

RESULTS: MR imaging revealed a densely calcified mass in the right posterior paraspinous muscles with intense enhancement following contrast on MRI. The mass measured approximately 5 cm x 2.8 cm x 4.6 cm. Incisional biopsy was repeated and showed leiomyoma with extensive dystrophic calcifications. Definitive surgical resection was performed via a right cervical approach and confirmed the preliminary pathologic analysis. The procedure and immediate postoperative period were uncomplicated.

CONCLUSION: We report a novel presentation of a primary cervical leiomyoma in a pediatric patient. Definitive diagnosis of leiomyoma can be confirmed via histopathological and immunohistochemical analysis following incisional biopsy preoperatively.

IATROGENIC ANTLANTOAXIAL INJURY IN CHILDREN WITH TRISOMY 21

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Purpose

Children with trisomy 21 are at a greater risk for atlantoaxial instability (AAI) than the general population. These patients frequently require airway manipulation and otolaryngological procedures, creating a risk for cervical spine injury. Our purpose was to review the current literature describing iatrogenic AAI in children with trisomy 21 and develop safety recommendations.

Methods

A comprehensive review of literature was conducted using PubMed, Scopus, Ovid, and Google Scholar. Search terms included: trisomy 21, atlantoaxial/atlandooccipital/craniocervical instability, intra/postoperative complications.

Results

14 cases of iatrogenic AAI were reported. Preoperative screening was reported in four cases. Three injuries occurred during otolaryngological surgeries, 10 occurred during sedation for intubation and one occurred while restraining a child. Symptoms were noted immediately in 5 cases but were often delayed a median of 5 days (range 1-730 days) from intervention. No cases resolved spontaneously and 13 required surgical stabilization. Two cases declined further surgical intervention due to neurological compromise. No intraoperative precautions were used in any of the reported cases.

Conclusion

Instances of iatrogenic AAI in pediatric Trisomy 21 are rare but are likely under-reported. Nevertheless the neurological consequences are severe and surgical intervention is required. The role of preoperative screening remains controversial and therefore all pediatric Trisomy 21 patients undergoing surgery should be considered at risk for AAI. It is imperative not to discount the possibility of spinal cord injury secondary to head and neck procedures. However, it is clear that neck manipulation of any sort during sedation puts these children at risk for injury.

BRAINSTEM HERNIATION INTO A BULBOUS INTERNAL AUDITORY CANAL: SERIAL IMAGING FINDINGS

Andrew Bluher (M.D.)

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The internal auditory canal (IAC) carries vital structures including the facial nerve, vestibulocochlear nerve, vestibular ganglion, and labyrinthine artery. There have been reports of IAC enlargement in children and young adults in the context of sensorineural hearing loss. Masses are sometimes observed within the IACs; differential diagnosis for these include congenital, vascular, benign, malignant and metastatic lesions. We report a case of unilateral brainstem herniation into a bulbous IAC in an otherwise healthy 5-year-old male, resulting in a mass effect, sensorineural hearing loss and facial paralysis. Symptoms eventually improved after placement of a ventriculoperitoneal shunt. Brainstem herniation into a bulbous IAC is well-demonstrated on serial T2-weighted MR imaging. This represents one of the first reported cases of brainstem herniation into the IAC, and the first to include serial imaging findings both before and after the insult.

MEDIALIZED TYMPANOSTOMY TUBES: WHAT TO DO? A SURVEY OF PEDIATRIC OTOLARYNGOLOGISTS

Aren Bezdjian

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Tympanostomy tube placement is the most commonly performed surgical procedure in children. Medial migration of a tympanostomy tube is a rare occurrence where the tube migrates into the middle ear space as opposed to a normal lateral extrusion into the external auditory canal. 128 pediatric otolaryngologists that are members of ASPO completed the 12-question survey. 90.6% of respondents had experienced at least one case of a medialized tube. The majority of patients (82.0%) were asymptomatic. 57.8% of respondents indicated that they would not remove a medialized tube in an asymptomatic patient. However, 7.0% of those respondents clarified that they would proceed to surgical removal if the patient were undergoing general anesthesia for another surgery. 30.5% of respondents indicated that they would surgically remove the tube even if the patient were asymptomatic. 80.5% of respondents who opted for surgical removal did not experience any complications, while 62.5% of those who elected observation did not encounter complications. In our survey, complications associated with surgical removal were tympanic membrane perforation (3), otorrhea (1) and retraction pocket (1). Otolaryngologist who elected to observe a MTT noticed middle ear inflammation (4), recurrent otitis media (3) and tympanic membrane perforation (2). The low complications associated with removing a medialized tube and the risk of leaving a foreign object in the middle ear make removal of a medialized tube a practical and safe management option. An observational approach may also be elected following a shared decision between the otolaryngologists and parents.

TO TRANSFUSE OR NOT--THAT IS THE QUESTION: JEHOVAH'S WITNESSES AND PEDIATRIC POSTOPERATIVE HEMORRHAGE

Andrew Redmann (M.D.)

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Objectives: 1) Discuss the management of postoperative hemorrhage in patients with parents of the Jehovah's Witness (JW) faith 2) Describe a framework for decision making in this population.

Methods: A review of pediatric otolaryngology patients with parents of the JW faith and postoperative hemorrhage was performed over a year. The existing literature on transfusions for JW minors was reviewed.

Results: Two patients were identified. The first patient had a severe post-tonsillectomy hemorrhage requiring multiple emergency operative interventions and erythropoietin (EPO) administration. The child had a hemoglobin of 5.2 and received a court-approved transfusion against parents' wishes and subsequently did not require further intervention. The second patient hemorrhaged after supraglottoplasty and was administered EPO and iron infusion but did not require transfusion (hemoglobin nadir 7.9). In both cases hematology was consulted, and extensive discussion with the families and the JW liaison committee occurred regarding goals of care.

Conclusions: The risks of hemorrhage must be discussed with JW patients undergoing even routine otolaryngologic surgery. In these cases, early shared decision making with family, JW liaisons, and hematology was pursued regarding mutually acceptable interventions. Aggressive non-transfusion based

resuscitation was carried out to minimize the likelihood of transfusion in accordance with the JW faith. In the first case, danger to the patient's life eventually necessitated transfusion in accordance with previous case law and the ethical principle of beneficence, indicating a limit to shared decision making centered on patient autonomy. A defined framework involving all stake-holders in the event of postoperative hemorrhage is critical.

STREPTOCOCCAL GLOSSAL MYONECROSIS IN A PEDIATRIC PATIENT AFTER PRE-ORTHODONTIC DENTAL EXTRACTION - IT'S NOT LUDWIGS!!!

James M. Ruda (M.D.)

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Group A Streptococcus (GAS) is a common organism frequently associated with recurrent tonsillitis and superficial and deep soft tissue infections of the skin and pharynx. Uncommonly, it can be associated with serious, fulminant infections such as necrotizing myositis, fasciitis(NF), pyomyositis, and Toxic Strep Syndrome. These latter infections are frequently mediated through the production of multiple exotoxins as well as release of streptolysin, proteinases, and hyaluronidase that can trigger respiratory distress, multi-organ failure/shock, and DIC.

GAS has been reported to cause myonecrosis (MN) of infected sites of the lower limb musculature and abdominal wall after seemingly minor trauma. Streptococcal MN has also been reported with tongue involvement in 2 patients, one of which was pediatric and partially immuno-compromised. We present a case of an immuno-competent pediatric patient who developed streptococcal glossal MN after pre-orthodontic dental extraction. Within 12-15 hours post-dental extraction, she presented to our ER with R facial/cheek and tongue swelling, drooling, and respiratory distress initially suspicious for Ludwig's angina. She required immediate operative trans-nasal intubation and heroic ICU stabilization for 1 week and was later diagnosed with GAS bacteremia/septic shock. CT imaging showed patent lingual arteries and anterior tongue necrosis without free air present. Upon attempted extubation 1 week later, significant anterior tip and central tongue necrosis was noted intra-operatively and conservatively debrided. Tracheostomy placement and 2 additional operative debridements were required with eventual primary closure of the partial glossectomy defect. She was decannulated prior to hospital discharge and subsequent outpatient evaluation showed a well-healed tongue and satisfactory speech.

VINCRIStINE-RELATED VOCAL FOLD IMMOBILITY IN CHILDREN

Anne Hseu (M.D.)

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Introduction: Vincristine is clinically used as a therapeutic drug in the treatment of hematologic neoplasms and malignancies. While vincristine associated vocal fold paralysis or paresis is a well-known entity, there have few documented cases in the pediatric population.

Objective: To better characterize the presentation and clinical findings of children with a history of vincristine related vocal fold immobility. A secondary goal is to add to the limited body of literature on the natural history of this disease process.

Methods: A retrospective chart review was conducted of all patients seen at a tertiary pediatric hospital with a history of vincristine related vocal fold immobility between Jan 2005-Dec 2015. Data including demographics, severity of respiratory, swallowing, and voice handicaps, laryngoscopies, and medical and surgical treatments were collected.

Results: Five patients (3 male and 2 female) were identified. Ages at the time of vocal fold immobility diagnosis ranged from 2 to 11 years. Presenting symptoms for the vocal fold immobility included hoarseness (n=3) and noisy breathing (n=3). 4 patients were on vincristine at the time of diagnosis. Two patients had bilateral vocal fold involvement. Only 1 patient had persistent immobility and/or symptoms at his last follow-up. One patient required tracheotomy but also had subglottic stenosis.

Conclusion: There have been a total of 19 cases of documented vincristine induced vocal fold paralysis in children. This study adds an additional 5 cases to the body of literature on this topic.

THE DIAGNOSIS AND MANAGEMENT OF NON-PRIMARY SALIVARY GLAND MASSES IN THE PEDIATRIC POPULATION

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Purpose: Although salivary gland neoplasms are uncommon in children, the differential diagnosis broadens significantly when masses of non-primary salivary origin are included. We assess the presentation, pathology, and clinical outcome of non-primary salivary gland masses (SGMs) in the pediatric population.

Methods: A retrospective chart review was conducted of all patients less than 17 years of age who underwent parotidectomy or submandibular gland excision over a twelve-year period (2005-2017).

Results: 72 patients were identified who underwent parotidectomy (n=50;69%) or submandibular gland excision (n=22;31%). Fifty-five of these procedures were performed due to a glandular mass. Overall, 44/55 (76%) SGMs were benign. The principal study group included 27/55 non-primary SGMs. Of these, 85% (23/27) were benign lesions. The median (interquartile range) age at diagnosis was 12 (7-16.8) years. Primary SGMs generally presented in patients older than 10 years of age, whereas non-primary SGMs presented at all ages. The most common non-primary SGMs included branchial cleft anomalies (n=6), follicular hyperplasia (n=3), keratocystoma (n=3), and Castleman's disease (n=2). Four non-salivary gland malignancies were identified including lymphoma (2), rhabdomyosarcoma, and NUT carcinoma. With a median (interquartile range) follow-up duration of 0.6 (0.2-1.6) years, no recurrences or mortalities were identified.

Conclusion: Given the rarity of salivary gland masses in children, their management can be challenging. Although the majority of non-primary SGMs were benign and managed by surgical excision, four non-salivary malignancies requiring multimodal therapy were identified. Our findings provide insight into the nature and outcomes of patients with non-primary SGMs.

PEDIATRIC OTOLARYNGOLOGY CLINICAL BURDEN AND SURGICAL CAPACITY IN POST-GENOCIDE RWANDA

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Introduction: Following the 1994 Rwandan genocide and devastation of medical infrastructure, the government of this east African country has prioritized rebuilding their healthcare system with increasing access to clinical and surgical care. Twenty years later, the national university teaching hospital graduated its first class of Otolaryngology residents in 2014.

Objective: Review pediatric Otolaryngology clinic visits and surgical cases from a consecutive 12-month period to determine the experiences of the first graduating class of Otolaryngology residents, and to examine the discrepancy between the present surgical need and the surgical capacity at one of the nation's three public tertiary referral hospitals.

Methods: Otolaryngology clinic and surgical log entries for pediatric patients seen May 1, 2012 through April 30, 2015 were respectively collected and analyzed. The study population consists of pediatric Rwandan patients (<18 years) presenting to the Otolaryngology clinic and/or receiving surgical care at the tertiary referral hospital.

Results: 1417 unique pediatric Otolaryngology clinic visits and 236 surgical procedures occurred at the referral hospital over the study period. Otologic complaints (27.2%) and oropharyngeal issues (27.3%) made up the majority of clinic visits. The most common surgical procedures included foreign body endoscopy (37.7%) and tonsillectomy and/or adenoidectomy (31.8%).

Conclusion: This study highlights discrepancies between pediatric Otolaryngology clinical needs and present surgical capacity in the public referral teaching hospital in Rwanda. Reframing global health as a means of achieving equity has allowed research in service delivery to also focus on improving access to care in resource-limited settings through health systems strengthening.

RISK FACTORS FOR OBSTRUCTIVE SLEEP APNEA IN CHILDREN WITH DOWN SYNDROME: IMPLICATIONS FOR DIAGNOSIS AND MANAGEMENT

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Purpose: Children with Down syndrome (DS) are at an increased risk for developing Obstructive Sleep Apnea (OSA). Early referral for sleep studies in DS children is essential to the diagnosis and management of this disorder. Previous studies have focused on risk factors for the development of OSA in children, however, scant data exists regarding risk factors unique to children with DS.

Methods: Retrospective chart review of children with DS who presented to one academic medical center between 2006-2016.

Results: In total, 136 DS children underwent sleep studies and 74.4% were diagnosed with OSA (32.6% severe). Fifty three percent of children were female and 35.3% were Hispanic. Children diagnosed with OSA were more likely to be obese (38.7% vs. 20% non-OSA), have hypothyroidism (23.1% vs. 12.5% non-OSA), and require adenotonsillectomy surgery (69.2% vs. 0% non-OSA). Children with OSA were less likely to have hypertension (15.4% vs. 50% non-OSA) or gastroesophageal reflux disease (GERD) (30.8% vs. 50% non-OSA).

Conclusions: Due to the increased prevalence of OSA in DS children, practitioners should maintain a higher suspicion for OSA in this population. We identified several risk factors for OSA in DS children. Further investigation is needed to determine ideal management in these patients.

COMPLICATION OF COMPLICATED SINUSITIS SECONDARY TO A NASAL FOREIGN BODY: A CASE REPORT AND REVIEW OF THE LITERATURE

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Purpose: Present an unusual case of complicated sinusitis secondary to a nasal foreign body in a pediatric patient and review available literature on the topic.

Methods/ Summary of Results: A 2 year-old male was admitted to the hospital with acute onset of left eyelid swelling and fever. After 72 hours of antibiotic treatment, symptoms had progressed. Ophthalmologic examination revealed significant periorbital edema, inability to tolerate visual acuity testing, and elevated intraocular pressure. CT scan of the sinuses and orbit revealed left preseptal cellulitis and subperiosteal abscess with concern for a mass in the left nasal cavity. While planning for surgical intervention, Otolaryngology examination revealed unilateral purulent nasal drainage and an approximately two-centimeter piece of Polyurethane foam that was removed from the nose. Follow-up nasopharyngoscopy revealed no additional foreign body. After foreign body removal, with nasal toilet and continued appropriate antibiotic therapy the infection resolved without the need for surgical intervention. No similar cases involving the orbit are reported in Pubmed review, however there are several cases of complicated sinusitis due to nasal foreign body. In a review of 1875 nasal foreign bodies in pediatric patients, Cetinkaya et al (2015) found 16 cases of secondary sinusitis but did not report complicated sinusitis.

Conclusions: Nasal foreign bodies are common in children, and protracted contact increases risk of complication. To our knowledge, this is the first case reported of an orbital subperiosteal abscess caused by a nasal foreign body. Identification of the foreign body and bedside removal prevented operative intervention.

GUNSHOT TO THE NECK: AN INTRAORAL APPROACH

Crystal Nwannunu

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Objective:

To determine if or when the removal of a bullet/bullet fragment from a gunshot wound (GSW) to the neck injury is the appropriate medical action.

To evaluate the risks and benefits of the procedure.

Method:

Case report and literature reviews

Case Description:

A 13-year old female presents with a GSW to the neck. Patient suffered a grade 4 vascular injury of the vertebral artery at C1- C2 with the bullet embedded in the right parapharyngeal space. With no neurological or functional deficits, bullet removal was not the choice of immediate medical action. The patient was prescribed aspirin to treat the vascular injury and was reevaluated at a later date.

Discussion:

The removal of foreign bullet fragments in the neck is controversial. Some authors favor removal due to risk of migration and the corrosive effects of the metal to surrounding structures. Nevertheless, surgical removal carries its own risk to neurovascular structures in the neck. Delayed bullet removal are usually performed on patients to treat chronic infections, symptomatic foreign bodies and for cosmetic reasons. In this case, the bullet was removed due to patient's

symptoms and concern for future migration. This also allowed early detection and drainage of a subclinical infection and purulence within the capsule surrounding the bullet in the parapharyngeal space. The patient experienced no complications associated with the procedure.

A CASE REPORT: ESOPHAGEAL FOREIGN BODY: A DELAYED PRESENTATION WITH STRIDOR.

Denna Zebda (M.D.)

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Objective: To discuss an atypical presentation of an esophageal foreign body with stridor and to review the literature on management of aerodigestive foreign bodies

Method: Case presentation and literature review

Description: An eight-month old female presented to the emergency room two days after an unwitnessed foreign body (FB) ingestion. She was playing with a necklace that broke, and began to cough vigorously with noisy breathing. The necklace was made from two different bead types, a larger flat bead and smaller round bead. A CXR was obtained, revealing air trapping concerning for FB. She underwent bronchoscopy, but no FB was found. She returned one week later with stridor. A CT confirmed the presence of a FB in the upper thoracic esophagus. She underwent esophagoscopy and the FB was to be adherent to the mucosa and removed. Her respiratory symptoms resolved postoperatively.

Discussion: A majority of esophageal FB present within 24 hours with emesis and poor oral intake. However, they can present with isolated respiratory symptoms because infants have smaller-sized tracheas and are more susceptible to extrinsic compression. Patients with suspected airway FB may also benefit from esophagoscopy if the bronchoscopy is negative, especially if the source object

has many parts. This does not prolong the procedure significantly and prevents repeat exposure to anesthesia. It should be considered in patients with airway symptoms out of proportion to history or persistent respiratory symptoms or feeding difficulties.

LATE POST-TONSILLECTOMY HEMORRHAGES: DO THEY REALLY OCCUR MORE OFTEN AT NIGHT?

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Objective: Evaluate if there is any significance to a particular time block during which late post-tonsillectomy hemorrhage occurs for patients seen at a tertiary care pediatric medical center.

Methods: Retrospective chart review of post tonsillectomy patients seen at a tertiary care pediatric medical center from 2012-2017. Analyses were performed to determine when patients first bled, notably by documentation of family phone calls to the pediatric ENT service, as well as chart review of notes from the encounters. This took into account patient sex, age, date from original surgery, time of day when patient's family contacted the ENT department/on-call physician, when the patient presented to the ED, time of day as well as length of time from presentation in ED for patient to be taken to the OR, and if further bleeding that required additional treatments occurred. We have also evaluated whether or not a resident surgeon was involved in the initial surgery.

Results: Sample size was N=155. 48% were female with mean age of 9.1yrs and 52% male with mean age of 8.4yrs. Bleeding was noted 5.75 days on average from date of original surgery. 40% of all phone calls were received between 9pm and 3am. Average time from presentation in ED for patient to be taken to OR was 176 minutes. Resident surgeon was involved in the initial surgery in 45% of bleeds.

Conclusions: A statistically significant majority of late post-tonsillectomy bleeds at our tertiary care pediatric medical center occurred in the evening/overnight between 9pm and 3am.

A NOVEL SURGICAL TREATMENT FOR POSTERIOR GLOTTIC STENOSIS USING THYROID ALA CARTILAGE - A CASE REPORT AND LITERATURE REVIEW

Megan M. Gaffey (M.D.)

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Posterior glottic stenosis (PGS) describes a laryngeal disorder in which worsening degrees of scarring limit abduction of the vocal folds and/ or arytenoids. It can be congenital or acquired. Generally, the acquired form is the result of chronic endotracheal tube trauma to the posterior larynx.

Symptoms of acquired PGS usually begin four to eight weeks after extubation, and present as gradually worsening stridor and shortness of breath as the laryngeal obstruction becomes more severe. Without intervention, PGS can cause total obstruction and respiratory failure. The mainstay of treatment for PGS is surgery.

We present a case in which an infant patient with PGS was treated with a posterior cricoid split and insertion of a thyroid ala graft. The graft was bolstered in place with an appropriately-sized endotracheal tube during a six-day period of postoperative intubation. We report this as a novel surgical approach, as a literature review did not uncover that this technique has been previously described. Our patient has had excellent airway and voice outcomes. His swallow outcomes have been difficult to assess, as the patient has shown signs of global delay.

SUBGLOTTIC CAUTERIZATION FOR ATYPICAL OR CRESCENDO CROUP

Lyndy Wilcox (M.D.)

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Objectives:

- 1) Describe a novel approach for the management of atypical or crescendo croup.
- 2) Report results in a series of patients who underwent subglottic cauterization for atypical or crescendo croup.

Methods: Patients with atypical or crescendo croup who underwent subglottic cauterization over a 10-year period were identified. Atypical or crescendo croup was defined by a significant number of recurrent episodes occurring in children outside the expected age group or croup episodes that increased in severity and/or frequency with age, respectively. The severity of symptoms was compared pre- and post-operatively.

Results: Four patients with atypical or crescendo croup who underwent at least one procedure during which subglottic cauterization was performed were identified. All patients had a decrease in the severity and/or frequency of their croup. One patient required two episodes of subglottic cauterization. Of the three patients who underwent only one procedure for cauterization of the subglottis, there was a significant reduction in the number of croup episodes from a mean of 5.33 per year preoperatively to 0.33 per year postoperatively ($p=0.038$). The fourth patient, who required a second procedure, continues to be followed for improvement. There were no complications of subglottic stenosis noted.

Conclusions: The goal of subglottic cauterization is to cause scarring of the subglottic mucosa down to the cricoid cartilage resulting in a decreased ability of the mucosa to swell during croup episodes. This method can be effective in reducing the number and severity of croup episodes in patients with severe cases of atypical or crescendo croup.

THE OTHER TONSIL

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The lingual tonsil can be an important contributor to obstructive sleep apnea (OSA) in the pediatric population. Here we present a case of a 14-year-old female with a history of trisomy 21 and OSA. The patient underwent adenotonsillectomy at 2 years of age and was lost to follow up with ENT. A sleep study in January 2016 revealed persistent severe OSA with an apnea hypopnea index of 62.4, oxygen saturation nadir of 86% and CO₂ elevated to 55mmHg. Continuous positive airway pressure was trialed during the sleep study but she did not tolerate it. She underwent elective dental procedure in July 2016 and was noted to be a difficult intubation. Per anesthesia she was a grade IV view with no visualization of epiglottis with redundant tissue and required 4 intubation attempts. On physical examination during ENT clinical follow up visit palatine tonsils were absent, patient was a Mallampati II, with obstructive lingual tonsils. She was taken to the operating room for drug induced sleep endoscopy (DISE). The obstructive lingual tonsils were removed with the coblator. At follow up, her symptoms had improved significantly and she is scheduled for her postoperative sleep study.

Evaluation of the lingual tonsils should be considered in cases of persistent OSA. DISE can be a useful adjunct in diagnosing the level of persistent obstruction. Trisomy 21 patients are at risk for persistent OSA post adenotonsillectomy and should undergo a postoperative sleep study with close follow up. Tonsil hypertrophy can contribute to difficult intubation in these patients.

FOXTAIL INGESTION IN AN ASYMPTOMATIC CHILD: A TRUE EMERGENCY?

Bharat Panuganti (M.D.)

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Foreign body ingestion is a common complaint in the pediatric population. Decisions regarding intervention are made based on the characteristics of the foreign body (e.g. batteries for their corrosive potential) and their location. The management of more atypical ingestions is less definitive. We present the case of an otherwise asymptomatic three year old female who arrived in our Emergency Department several hours after reportedly swallowing a foxtail, a plant dispersal unit usually manifesting as a spikelet or grass cluster. Indeed, the veterinary literature very clearly delineates the potential significant harm that migrating foxtails can incur, particularly in the canine population (e.g. intracranial penetration after being lodged in the nasal turbinates, or intestinal perforation following ingestion). Flexible laryngoscopy and tongue depression in our patient facilitated atraumatic removal of the foxtail at the bedside. We posit that foxtail ingestion should at least prompt consideration of comprehensive endoscopy (direct laryngoscopy, bronchoscopy, and/or upper gastrointestinal endoscopy) to garner removal and prevent sequelae.

COMPOSITE HEMANGIOENDOTHELIOMA: RARE PRESENTATION IN THE PEDIATRIC PATIENT.

Cedric Pritchett (M.D.)

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Purpose: To describe the presentation and management of composite hemangioendothelioma, a rare malignant vascular tumor, in a pediatric patient.

Methods: Presentation of a single index case and review of relevant literature

Summary of Results: Successful diagnosis and multidisciplinary management of an extremely rare vascular tumor.

Composite hemangioendothelioma (CH) are rare vascular neoplasms with a complex mixture of benign and malignant components. The clinical course in CH is variable; treatment is typically surgical, though optimal treatment is debatable. Metastasis is reported, but infrequently occurs. First described in 2000, less than 40 cases, nearly all adults are described in the literature. Of the ten reported in the head and neck region, only one of those is in a pediatric patient. Two cases in the literature describe scalp disease, but no reports exist of scalp manifestation in a child.

We describe the presentation and management of CH in the scalp of an adolescent female. Initial diagnosis, additional diagnostic evaluations, and ultimate treatment course is outlined. Review of the published pediatric cases of CH identified in the head and neck region are discussed. We conclude that while pediatric cutaneous neoplasms are infrequently malignant, a thoughtful approach to the surgical management is necessary. In the case of a rare tumor multidisciplinary discussion and close clinical follow up are advisable.

IMMATURE TERATOMA OF THE TONGUE: A CASE REPORT

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Introduction: Teratomas are neoplasms that originate from pluripotent cells. Based on the histologic degree of differentiation, teratomas are classified as mature or immature. Tongue teratomas are rare. To date, 21 cases of tongue teratomas have been reported. Only four have been classified as immature teratomas. The present case report describes the first case of grade 3 immature tongue teratoma.

Methods: A case report of the patient's presentation and management was described. Additionally, a literature review on diagnostic and treatment outcomes of tongue teratomas was performed.

Results: A 4-day-old female, born at 40 weeks gestation following an uncomplicated pregnancy, presented for evaluation of a tongue mass. A 2.3 x 1.9 x 1.5 cm polypoid mass was noted on the posterior portion of the tongue dorsum. MRI demonstrated a heterogeneously enhancing mass with minimal cystic components. The patient had difficulty with breastfeeding, but did not have respiratory distress. The tongue mass was excised without complication. Pathology demonstrated a grade 3 immature teratoma with a predominance of neuroglial cells. No lymphovascular invasion, perineural invasion, or malignant germ elements were noted. Difficulty with breastfeeding resolved following surgery. The postoperative course was uncomplicated.

Conclusions: Tongue teratomas are rare. The present case report describes the first case of grade 3 immature tongue teratoma. With early monitoring and adequate surgical excision, positive outcomes can be achieved.

EVALUATION OF CHILDREN WITH DIZZINESS: OUR APPROACH TO DIAGNOSIS AND TREATMENT AND EFFICACY OF VESTIBULAR PHYSICAL THERAPY

Melissa Scholes (M.D.)

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INTRODUCTION: Dizziness in the pediatric population is not a well understood problem with significant morbidity and mortality. Pediatric vestibular therapy can be an effective treatment modality for these children.

OBJECTIVES: We will present our multidisciplinary approach to children with vestibular and balance complaints with a focus on pediatric vestibular therapy.

METHODS: Patients that presented to our multidisciplinary Pediatric Balance Disorder Clinic were screened for balance dysfunction through clinical examination with an otolaryngologist, neurologist and vestibular physical therapist as well as the Dizziness Handicap Index (DHI). The DHI is a validated 25-item self assessment inventory designed to assess the perceived handicap from dizziness. There is both a pediatric (ages 5-12 years) and an adult (ages 13 years and above) version. We present data on nine patients in whom we used this index to categorize their symptom severity. We will report outcomes after physical therapy including post-treatment DHI scores and other objective and subjective measures of improvement.

RESULTS: Nine patients had complete data available to review. On initial examination all had abnormal clinical vestibular examinations. 2 of the patients reported no handicap on the DHI, two reported mild handicap, five reported moderate handicap, and none reported severe handicap. After physical therapy all patients scored in the mild or normal range on the DHI.

CONCLUSION: Children with vestibular dysfunction can be challenging to diagnose and manage. A multidisciplinary approach and application of pediatric vestibular therapy can help the patients achieve improvement and/or resolution of their symptoms even when the diagnosis is uncertain.

DESIGN OF CONTROLLABLE FLEXIBLE INSTRUMENTS TO FACILITATE ENDOSCOPIC EAR SURGERY

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Background: Transcanal endoscopic ear surgery (TEES) has undergone a surge of enthusiasm in recent years due to the benefits of minimally invasive surgery and clearer access to the tympanic membrane and recesses of the tympanic cavity. However, due to the one-handed surgical technique required for TEES, the surgery is challenging especially in children. Existing instruments have not been designed to accommodate this challenge.

Objective: To design instruments to facilitate the challenges experienced during TEES.

Methods: A needs analysis questionnaire was sent to otologists internationally to evaluate the nature of limitations in currently available surgical instruments for TEES. A prototype instrument was developed to overcome the principle limitations and was evaluated in virtual and 3D printed temporal bone models. Models were constructed from 6 pediatric cases in which TEES removal of cholesteatoma from the mastoid antrum was challenging.

Results: We received responses from 22 endoscopic ear surgeons. The surgical difficulty of “reaching structures visualized by the endoscope” scored an average of $83\% \pm 4\%$ need for new instrumentation. ANOVA with a 95% confidence interval showed that there was no significant effect of TEES experience on the difficulty experienced. A novel instrument with controllable flexion was developed and found to improve surgical access to the mastoid antrum.

Conclusion: We present a novel tool that can reach into the mastoid antrum through TEES atticoantrostomy, addressing a principle limitation of current surgical instrumentation. It is anticipated this tool will allow a greater proportion of pediatric cholesteatoma to be treated with TEES.

CO2 LASER TREATMENT OF CHRONIC SUPRAGLOTTITIS

Matthew Smith (M.D.)

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Introduction: Acute epiglottitis is now a rare entity in the pediatric and adult population secondary to the introduction of the Hib vaccine in the 1980s. Chronic epiglottitis/supraglottitis is now primarily associated with autoimmune disorders, gastroesophageal reflux disease, or angioedema. Described as a treatment for laryngeal sarcoidosis in 2010 by Sandhu et al, CO2 laser epiglottis resurfacing has been effective in reducing epiglottic edema. We present a rare case of non-granulomatous chronic supraglottitis and the successful surgical treatment of the disease.

Description of case and technique: An otherwise healthy 15 year old male presented to the emergency department with a 4 month history of odynophagia, dysphagia, increased snoring, dyspnea on exertion and a 10 pound weight loss. Initial flexible laryngoscopy revealed a severely edematous epiglottis. Initial labs only demonstrated elevated C-reactive protein. He was discharged from ED on amoxicillin, ranitidine and dexamethasone with limited benefit. The patient then underwent two separate biopsies of the epiglottis which demonstrated only chronic inflammatory infiltrates without granulomas. Comprehensive allergy and rheumatology workups were negative. He then underwent five separate CO2 laser epiglottis and arytenoid resurfacing procedures spaced 2-3 weeks apart. A CO2 laser was used to place separate 1-1.5mm fenestrations on a setting of 5 watts, utilizing the pepper-pot technique, with tissue penetration till edema fluid flowed out from the fenestrations. Sequential improvement was noted after each procedure until complete resolution of symptoms after last procedure.

Conclusion: CO2 laser epiglottis resurfacing is an effective treatment of chronic edema and inflammation of the epiglottis.

TYMPANOSTOMY TUBE INSERTION PRACTICE IN THE SOUTH AFRICAN PRIVATE HEALTHCARE SECTOR

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Background: The reported rates of tympanostomy tube insertion (TTI) in children vary significantly internationally. Lack of adherence to evidence based clinical guidelines may contribute to these differences.

Objective: To study the rates of TTI in South Africa in the private healthcare sector, both nationally and regionally, in children <18 years old; to compare it with international TTI rates; and to determine the use of preoperative audiometry and tympanometry.

Methods: A retrospective analysis was done of data obtained from the Discovery Health database. The rates of TTI were analysed nationally and regionally and in different age groups, as was the use of tympanometry and audiograms.

Results: The South African TTI rates were much higher than published international rates except for the 0-1yr age group in Canada and Denmark, and the 0-15yr age group in Denmark. There was a statistically significant regional variation in TTI rates as well as in employment of preoperative audiometry and tympanometry.

Conclusion: South African private sector TTI rates are high by international standards. Significant regional variations may indicate over-servicing and/or underservicing in certain regions. Further investigation of causes for the high TTI rate and regional variations is recommended. Education of healthcare professionals of recognised indications for TTI may improve patient selection for surgery.

COMPARISON OF LASER VERSUS COLD-STEEL SUPRAGLOTTOPLASTY IN PEDIATRIC LARYNGOMALACIA

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Objectives: To compare patient outcomes for supraglottoplasty using cold steel or CO2 laser for the treatment of pediatric laryngomalacia in terms of symptom resolution, peri-operative complications, and the need for revision surgery.

Methods: This was a retrospective case series review of a single surgeon Supraglottoplasties performed at a tertiary care Aerodigestive center during a period of three years. Patients were stratified based on method of supraglottoplasty either with microlaryngeal instrumentation or with the use of CO2 laser. The pre-operative symptoms and post-operative symptom status were reviewed and compared between the two SGP method cohorts, as was the need for revision surgery.

Results: A total of 53 supraglottoplasties were reviewed over a period of 3 years. Out of these 33 were performed using cold steel while 20 were performed using CO2 laser. The patient demographics and preoperative symptomology were not statistically different in the 2 groups. Cases earlier in the series were performed using cold steel with later cases being increasingly performed with the laser. 1 case in the laser group required revision supraglottoplasty. No laser related complications were reported.

Conclusion: Multiple methods of supraglottoplasty exist, including the use of cold steel and CO2 lasers. Based on the results of this retrospective review, no statistical difference in post-operative symptom resolution or need for secondary procedure exist between the two aforementioned methods. Laser supraglottoplasty is a safe and effective method for treatment of moderate to severe laryngomalacia.

THE USE OF LARYNGEAL MASK AIRWAY FOR ADENOIDECTOMY

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Background: Airway management during adenoidectomy is traditionally performed through endotracheal intubation (ETT). Laryngeal mask airway (LMA) may be less stimulating to the airway and allow for shorter overall anesthetic time. Previous studies report LMA use during adenotonsillectomy with conversion rates to ETT of up to 17 percent. There has been no prior evaluation of LMA use during adenoidectomy alone.

Objectives: Identify the rate and contributing factors of LMA failure during adenoidectomy.

Methods: All pediatric patients undergoing adenoidectomy between January 1, 2016 and June 30, 2017 were reviewed. Demographic and clinical data were collected and analyzed to determine need for conversion to ETT and complication rates.

Results: Our study revealed 139 pediatric patients who underwent adenoidectomy with anesthesia being administered using an LMA during the study period. Two patients (1.4 percent) required conversion to ETT because the LMA did not allow for appropriate visualization of the nasopharynx. There were no complications such as laryngospasm.

Conclusions: The use of an LMA in adenoidectomy may be a safe and effective alternative to ETT. More study is required to determine overall complication rates.

ASSESSMENT OF NURSING AND RESPIRATORY THERAPIST EXPERIENCE AND CAREGIVER COMFORT IN CARING FOR TRACHEOSTOMIZED CHILDREN

Uma Ramaswamy (M.D.)

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Background: Care of a tracheostomized child can be challenging to parents. Caregiver education is important for preventing and handling complications that may occur after discharge. Nurses and respiratory therapists (RTs) play a key role in training parents to care for their child's tracheostomy prior to discharge home. The purpose of our study is to evaluate nurse and RT experience with tracheostomy teaching, and assess caregiver comfort in caring for their tracheostomized child prior to discharge.

Methods: Questionnaires were designed to evaluate nurse and RT experience and assess caregiver comfort after the fresh tracheostomy period. Responses included answers on a scale of 1 (not comfortable) to 5 (very comfortable) for questions regarding experience, as well as answers to open-ended quality improvement questions.

Results: To date, 23 nurses and RTs, and 1 caregiver, have completed the questionnaire. Average provider experience of our study sample is 9.1 years (SD = 8.4). When asked how prepared providers felt about their tracheostomy education, mean response was 4.8 (SD = 0.51). Nurses and RTs scored preparedness of parents on discharge at 4.4 (SD = 0.86). When asked how to improve caregiver education, providers suggested hands-on training with a mannequin, videos, and refresher courses. One caregiver reported they received 4 teaching sessions and scored their comfort level at 4 one week after the fresh tracheostomy period.

Conclusion: Our questionnaire will be useful in identifying areas upon which our institution's current pediatric tracheostomy care can be improved so that we can increase quality of care and patient/caregiver satisfaction.

ROLE OF 5-FLUOROURACIL AND TRIAMCINOLONE FOR THE TREATMENT OF PEDIATRIC TRACHEOSTOMY HYPERTROPHIC SCARS AND KELOIDS

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Introduction

Peristomal keloids and hypertrophic scars are problematic in pediatric tracheostomy patients. The most frequently used treatment is an intralesional steroid (triamcinolone) and/or excision of the keloid. 5-fluorouracil (5-FU), a pyrimidine analogue, has been increasing in popularity for the general treatment of keloids and hypertrophic scars, but there is a lack of literature amongst pediatric tracheostomy patients.

Methods

This was a retrospective case series, examining all patients who underwent 5-FU/triamcinolone injection for hypertrophic scar or keloid from 2016-2017. Medical records were queried for demographics, patient reported symptoms, description of lesions, and clinical notes. Keloids were treated with primary excision followed by a series of ten 5-FU/triamcinolone injections (90 mg/8mg - 2 ml). Hypertrophic scars were treated with a series of ten 5-FU/triamcinolone injections (90 mg/8mg - 2 ml).

Results

Two subjects underwent treatment of three different lesions (one hypertrophic scar, two keloids). A staged approach was taken for treatment of the peristomal keloid, first the right side, then then left. Both subjects prior to treatment complained of peristomal pain and difficulty with tracheostomy changes which resolved following treatment. The average amount of 5-FU/triamcinolone injected during a treatment for keloids was 1.9 ml. The average amount of 5-FU/triamcinolone injected during a treatment for hypertrophic scars was 1.3 ml.

All subjects had resolution of their hypertrophic scars and keloids and were asymptomatic at the end of treatments.

Conclusion

Treatment of pediatric tracheostomy hypertrophic scars and keloids with 5-FU/triamcinolone is an effective modality and should be considered in the current treatment algorithm.

SUBGLOTTIC HEMANGIOMA IN PHACE SYNDROME: IS OPEN RESECTION AND LARYNGOTRACHEAL RECONSTRUCTION THE RIGHT ANSWER?

Laura Petrauskas

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Introduction: Prior to the standardization of propranolol, children with subglottic hemangiomas were managed either with tracheostomy or open submucosal resection with laryngotracheal reconstruction. Even though propranolol is the treatment of choice for subglottic hemangiomas, recent reports have suggested adverse complications with the use of propranolol in children with PHACE syndrome

Description: We describe a one month old infant with PHACE syndrome who underwent successful management of subglottic hemangioma by open resection and laryngotracheal reconstruction (LTR) using a thyroid ala graft. The child had cerebral and cervical vascular anomalies making her at an increased risk of stroke with the use of propranolol.

Conclusion: While discussing the potential reported complication of the use of propranolol in patients with PHACE syndrome, we describe the successful management of subglottic hemangioma by open resection and LTR and conclude that open resection of a subglottic hemangioma should be considered as an option for the management of subglottic hemangioma in children with PHACE syndrome who are otherwise at high risk for stroke with the use of propranolol.

STEREOTACTIC NAVIGATION AS A USEFUL ADJUNCTIVE MODALITY IN TRACKING NASAL DERMOID CYSTS

Matthew Marget

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Objective: To describe the use of stereotactic navigation as a helpful adjunctive modality for locating congenital nasofrontal dermoid cysts.

Methods: Case report

Case report: A 5 year old male presented to our institution for evaluation of a suspected nasal dermoid cyst. A small pit overlying the glabella with extruding hair was noted on examination. CT scan demonstrated a 2.6 x 2 cm mass between two aerated frontal sinus cells in the skull, consistent with dermoid cyst, in addition to a small defect in the posterior table. MRI was inconclusive for intracranial extension. Excision of the nasal pit via midline nasal incision was performed. During dissection, the tract was noted to extend upward to the skull consistent with CT findings. Stereotactic navigation was used to carefully map the identified dermoid cell contained within the skull. The anterior table was removed over this area and the complete dermoid cyst was excised from the cell. No posterior table defect was noted on endoscopic examination and palpation.

Conclusions: Nasal dermoid cysts can be difficult to track once they enter the outer table of the skull. With unusual presentations like this case, stereotactic navigation can be a useful adjunctive modality to locate and track extension of the cyst or sinus tract. Compelling CT images and intraoperative photographs will be provided.

INTRAOPERATIVE ISQ SCORES AND TRANSDUCER COUPLING TIME FOR BONE ANCHORED HEARING IMPLANTS

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Bone anchored hearing implants have been implanted safely in children with success rates of 90% or higher. Although early coupling of the sound processor is warranted, there is no consensus or clear indicator of the optimal coupling time for bone anchored hearing implants. To attach the vibrating sound processor to the percutaneous implant, the bone-implant interface must be sufficiently osseointegrated. A literature review was conducted to identify early coupling protocols that have been implemented in bone anchored hearing implant rehabilitation. The current literature suggests a postoperative coupling time of 6 weeks is safe and recommended. However, studies have coupled as early as one week postoperatively. A prospective case series assessed if intraoperative ISQ scores could monitor osseointegration and serve as a predictor for transducer coupling time. 22 patients with etiologies such as ear atresia (8) and SNHL (6) underwent surgery for bone anchored hearing implant. Children (<16 yo) had significantly lower intraoperative ISQ scores when compared to adults. Also, children showed a significantly higher ISQ score two weeks after surgery compared to intraoperative score. The results of this study using ISQ scores as a quantitative assessment tool suggest coupling at 2 weeks postoperatively. However, timing of coupling should be based on a paradigm that comprises more than implant stability alone. Patient-specific characteristics and other perioperative findings should be considered when evaluating coupling time. Due to its non-invasive nature and clinical value, the application of perioperative ISQ scores could be applied in bone conduction implantation practice.

POTENTIAL EFFECT OF LOSING FEDERAL COVERAGE THROUGH AFFORDABLE CARE ACT ON EAR TUBE PLACEMENTS AT AN URBAN CHILDREN HOSPITAL

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PURPOSE: 15-31% of the population in a large Mid-western city is between 100-400% of the Federal Poverty Level, thus qualifying for health care coverage under the Affordable Care Act (ACA). Coverage for their children would potentially be available under Children's Health Insurance Program (CHIP) or Medicaid programs. Loss of funding for these programs could be devastating for this community.

METHODS: We retrospectively reviewed 1162 charts of pediatric patients with tympanostomy tube (TT) placement pre-ACA from November 2012 to December 2013 and 1606 charts post-ACA from January 2014 to July 2015. We filtered demographics by health insurance (Medicaid/CHIP/Other), residential zip codes, identified race/ethnicity within those zip codes as well as gender and age of patients getting TT during these periods.

RESULTS: Bivariate analysis of these demographics between the two periods showed statistical significance ($p=0.0098$) between White Hispanic/Latino children receiving ear tubes (pre-ACA=3.8%, post-ACA=6.4%). However, there was no statistical significance for insurance enrollment (Medicaid or non-Medicaid) and other races (White-not Hispanic/Latino (nHL), African American, Other/Unknown/Refused) with respect to TT placement. Using pre-ACA period and White nHL females as reference, a multivariate logistic regression showed that patients requiring TT surgery were equally likely to be covered on Medicaid either before or after ACA.

CONCLUSION: We demonstrated that Medicaid coverage for TT surgery pre and post ACA did not change. Underserved children did not obtain other forms of insurance during this time. This demonstrates a potentially harmful loss of coverage for children should Medicaid/CHIP benefits be lost to sole coverage under the ACA.

NEUROGENICALLY ACQUIRED LARYNGOMALACIA IN A PEDIATRIC PATIENT WITH MOYAMOYA: A CASE REPORT AND LITERATURE REVIEW

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Acquired laryngomalacia in the pediatric population is rare, especially when considering cases with a presumed neurogenic cause. This case report describes a pediatric patient who experienced an abrupt, severe worsening of laryngomalacia following a neurologic insult. A proposed pathophysiologic pathway for this disease course is reviewed. Finally, the few instances in the literature of acquired laryngomalacia ascribed to a neurologic cause are reviewed and compared the case presented.

TITANIUM TYMPANOSTOMY TUBE RETENTION IN CHILDREN: LONGITUDINAL SINGLE SURGEON EXPERIENCE

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Background

The retention rate of tympanostomy tubes (TT) in pediatric patients is unclear. This study examines a single surgeon's experience in the retention rate and removal of titanium TT along with conditions associated with long-term retention in order to assess the need for routine longitudinal follow-up.

Methods

Retrospective chart review of children with initial bilateral titanium TT insertion (TTI) within a single calendar year (Jan. 2012-Dec. 2012) from a single physician provider at a tertiary care institution. Presence and removal of TT were systematically reviewed along with detailed otologic conditions. Both clinic and intraoperative results were examined.

Results

One hundred forty-three children received initial bilateral TTI with mean age of 2.3 years (range: 0.4-12.6 years) and 53.2% male (N=76). Of 112 patients who followed-up, 133 (59.4%) of 224 TT were reported retained, with 1.1 years (mean) between surgery and identification of retention. Patients were relieved

of TTs (N=174) through removal in clinic (26.4%, N=46) 0.8 months (mean) post-identification of retention and surgical removal (25.9%, N=45) 1.2 months (mean), with otitis media with effusion (34.1%, N=31) and acute otitis media (14.3%, N=13) as the most common presenting symptoms. Eighty-three TTs (47.7%) migrated out of the ear unassisted after 5.4 months (mean). Under examination during surgical removal, middle ear effusion was present in 48.9% (N=22) of ears.

Conclusion

Approximately 60% of titanium TT are retained in the canal or tympanic membrane over a year after placement. Over fifty percent of those placed are symptomatic requiring subsequent removal in clinic or operating room.

MINIMALLY INVASIVE PONTO SURGERY: OUR PRELIMINARY EXPERIENCE IN A RETROSPECTIVE COHORT

Luhe (Lotus) Yang

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Introduction: Osteointegrated bone conduction hearing devices (BCD) has been first described in the 1970s. Since then, the popularity of BCDs in helping patients with conductive hearing loss has increased significantly. Traditionally, many patients undergoing BCD implantation go through general anesthesia and a procedure that involves a skin incision +/- soft tissue reduction, or a skin flap. In recent years, minimally invasive ponto surgery (MIPS™) has been introduced in North America.

Objective: To describe MIPS technique and to report short-term post-operative outcomes.

Study design: A retrospective cohort of 17 patients undergoing MIPS at our center between January 2016 and March 2017 including both adults and pediatric patients.

Method: We collected patients' demographic, co-morbidities, operative factors, operative time, and anesthesia type. Local anesthesia benefits were discussed with the patient prior to procedure and patients decided for local or general anesthesia. We also evaluated postoperative outcomes and audiological outcomes.

Results: The MIPS technique is associated with a short operative time and safety under local anesthesia. In post-operative healing outcomes, only one patient had granulation at the site of surgery with no patients having any skin complications requiring abutment removal.

Conclusion: MIPS is a novel minimally-invasive technique that is associated with a short operative time and safety under local anesthesia in adults and children older than 14 years of age.

TRENDS IN TONGUE TIE & LIP TIE: INCREASING PUBLIC INTEREST AND DECREASING SCIENTIFIC INQUIRY

Johnathan E. Castaño (M.D.)

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Introduction: Tongue tie and lip tie are common problems seen by pediatric otolaryngologists. Surgical division of the tethered lingual or labial frenulum, or frenulotomy, is a simple and well-established treatment option which is being performed with increasing frequency in younger children. We aim to quantify public interest through examining Google search trends for the terms “tongue tie,” “lip tie,” and “ankyloglossia,” as well as to examine recent trends in scientific inquiry on these topics using PubMed.

Methods: Web-based search using publicly available databases (Google Trends and PubMed).

Results: Using Google Trends, the relative frequency (Interest/Time) of Google searches performed for the terms “tongue tie,” “lip tie,” and “ankyloglossia,” between July 2012 and July 2017 was evaluated. Making the assumption that a high frequency of Google searches directly correlates with public interest, it is clear that the public interest in tongue tie and lip tie is steadily increasing, whereas searches for the more technical term “ankyloglossia” have remained relatively constant. Google Trends can also be used to further categorize these data by geographic location throughout the United States. Performing a search for the same terms on PubMed, the number of relevant PubMed IDs was seen to peak in 2014 with 50 PubMed IDs, and has declined to 34 PubMed IDs in 2015, and 25 PubMed IDs in 2016.

Conclusion: There appears to be a disconnect between public interest in tongue tie and lip tie, and academic interest in these subjects.

STREAMLINING MICROTIA AND ATRESIA MANAGEMENT: COMBINATION OF RECONSTRUCTIVE SURGERY WITH PLACEMENT OF A BAHA® ATTRACT SYSTEM

Anna Bakeman (M.D.)

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Introduction: Congenital abnormalities of the ear are associated with both reconstructive and functional challenges. Many patients with microtia have concurrent external auditory canal (EAC) atresia leading to conductive hearing loss (CHL). Historically, microtia repair has been followed by either canaloplasty or Bone Anchored Hearing Aid (BAHA) to address CHL. More recently, efforts have been made to combine BAHA percutaneous osseous implant with one of the stages of microtia repair. We propose incorporating placement of a Baha® Attract magnetic implant with microtia reconstruction.

Methods: We describe three cases of microtia repair that were combined with concurrent placement of a Baha® Attract System. All three patients had their first surgery in 2016 and underwent three stages of microtia repair, two patients with ENT and one with plastic surgery as the primary team. All three patients had placement of the Baha® Attract System by ENT during the elevation stage of the repair. The patients were followed post-operatively in ENT clinic as well as by audiology.

Results: All three patients had good aesthetic results and tolerated surgery well. Our elevation stage incision site modifications allow for magnet placement at an appropriate distance from the incisions. There were no wound complications or device failures reported. Hearing improvement in the cohort was comparable to patients who underwent BAHA placement as a separate procedure.

Conclusion: Combining the elevation stage of microtia repair with Baha® Attract System placement is technically feasible, limits episodes of general anesthesia, and expedites restoration of hearing.

THE ROLE OF CT AND MRI FOR PREOPERATIVE COCHLEAR IMPLANTATION WORK-UP IN ACADEMIC INSTITUTIONS

ART AMBROSIO (M.D.)

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Objective: The goal of the study is to investigate the predictive nature of pertinent preoperative temporal bone computed tomography (CT) and brain magnetic resonance imaging (MRI) results on intraoperative surgical findings and complications reported in academic settings.

Methods: This is a retrospective review of cochlear implant patients who received a pre-operative temporal bone CT and MRI of the brain between 2005 and 2012 at academic pediatric otolaryngology practices within Children's Hospitals in the United States and France. Scans were reviewed in a double-blinded fashion and compared to intraoperative findings.

Results: 91 patients were analyzed (mean age 5.54 /- 0.58 years). A small facial nerve recess identified on CT was associated with difficult insertion of electrodes ($p=0.0003$). A prominent sigmoid sinus found on CT was predictive of difficult insertion of electrodes ($p=0.01$), tegmen dehiscence ($p=0.005$), as well as difficult round window access ($p=0.025$). No specific CT finding was found to be predictive of external auditory canal injury, perilymphatic gusher, or iatrogenic facial nerve injury. MRI findings were not predictive of surgical outcomes in our

data set, yet gave helpful information about cochlear nerve status and absence of brain abnormalities.

Conclusions: Preoperative CT and MRI remain an important planning tool for cochlear implantation in academic institutions. The findings of our study demonstrate that a detailed assessment of both preoperative CT and MRI are valuable for teaching and surgical planning of pediatric cochlear implantation.

EVALUATION OF THE EFFECT OF PRE-OPERATIVE ORAL MIDAZOLAM ON POST-OPERATIVE ORAL FLUID INTAKE AFTER TONSILLECTOMY

Cynthia M. Schwartz

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Introduction

The objective of this study was to determine if pre-operative oral midazolam administration decreased post-operative oral fluid intake after tonsillectomy with or without adenoidectomy, due to the concerns that the sedative effect of midazolam could lead to lowered oral fluid intake.

Methods

A retrospective chart review identified 104 patients who were not given midazolam and 182 who were given midazolam. Oral fluid intake was calculated by determining the time of return to the floor from surgery and summing the documented oral fluid intake for the next 12 hours. Oral fluid intake per kg per hour was then calculated. The amount of midazolam given was documented.

Results

There was no significant difference in oral fluid intake by group when adjusting for age and weight, $F(1, 282)=.383, p=.537$. Also, there was no significant difference in ml/kg/hr by group when adjusting for age and weight, $F(1, 282)=2.813, p=.095$.

Conclusions

There was no significant difference in oral fluid intake between the no midazolam and midazolam groups, indicating that clinicians can continue to use their judgement in administering midazolam to select anxious patients prior to tonsillectomy with or without adenoidectomy. Future work could include multi-center retrospective reviews or a randomized placebo-controlled trial to examine more carefully the effects of midazolam on post-operative oral fluid intake. The association of midazolam with re-admission for dehydration could also be examined.

MELANOTIC NEUROECTODERMAL TUMOR OF INFANCY PRESENTING AS A RAPIDLY EXPANDING MAXILLARY MASS

Tyler Mingo (M.D.)

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Daughter

Objectives: To acquaint otolaryngologists with melanotic neuroectodermal tumor of infancy (MNTI), a rare benign maxillary mass of infancy often mistaken for other pathologic entities.

Case report: A 4 month-old female presented to our pediatric otolaryngology clinic for evaluation of a swelling of the upper lip, thought by the referring physician to be a mucocele. However, the lesion was deep within the soft tissues and had no cystic component at the mucosal surface. It was otherwise asymptomatic, and observation was recommended. Upon re-evaluation, the soft tissue component of the mass was found to have enlarged considerably, and by palpation seemed to involve the anterior maxilla in the midline. The possibility of malignancy was considered. Computerized tomography demonstrated a 2 cm mass of the maxilla, suggestive of an odontogenic lesion. At surgical excision, the anterior maxilla was egg-shelled. The mass was removed along with an involved tooth, and the cavity was curetted. Pathologic review revealed glandular structures, melanin-containing cells, and neuroblastic cells, identifying the lesion as a MNTI. The patient had an uncomplicated post-operative course with no evidence of recurrence at last follow-up.

Conclusions: MNTI is a rare maxillary tumor that mimics other pathology common in infancy. The lesion recurs at a rate of 10-15% and also has malignant potential. As a result, otolaryngologists who treat infants should be familiar with this disorder.

PEDIATRIC SALIVARY MASSES: A DATABASE EVALUATION OF HOSPITAL COURSE AND PERIOPERATIVE COMPLICATIONS

Julian Richardson

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Objectives: To describe the frequency of pediatric salivary gland masses from the years 2000-2012 with consideration of demographic factors, hospital admission factors and, medical/surgical treatment approach in regards to patient hospital course and perioperative outcomes

Methods: The Kid's Inpatient Database (KID) was assessed for patients with salivary gland masses between the years of 2000 and 2012. Patient entries were examined for demographics, procedure performed, complications, length of stay, and associated charges.

Results: Of 1085 admissions in the dataset, 736 patients underwent a surgical procedure. Of patients undergoing a procedure, 47.2% were for a benign mass, 49.1% were for a malignant mass, and 3.7% were for a mass of uncertain behavior. In children between the ages of 1-11 years old, 80% of cases were malignant. Patients outside of this age range were more likely to have benign disease. Sialoadenectomy comprised 90% of the procedures, 70% of were for benign disease. Length of stay was longest with malignant lesions with an average stay of 2.67 days ($p < 0.05$). Malignant lesions represented an increased hospital charge by \$12,000.

Conclusion: This data demonstrates an increased rate of malignant lesions in children, which is consistent with the current literature. The data also highlights the need for increased suspicion for malignancy in children aged 1-11. Fine needle aspiration was identified as an underutilized tool in the diagnostic workup in the pediatric population. This study can serve to help reassess the most beneficial and cost-efficient methods in the diagnosis and management of these conditions in the pediatric population.

PAEDIATRIC TRACHEOSTOMY CARE PRACTICE PATTERNS ACROSS CANADA

Sunita Rai (M.D.)

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Objectives: To investigate variability in paediatric tracheostomy care practice patterns and access to resources across Canada.

Methods: Canadian paediatric otolaryngologists-head & neck surgeons evaluated their own practice patterns for children with tracheostomies using a web-based, 29-item multiple choice and short answer questionnaire. Domains investigated included tracheostomy team membership, inpatient care practices, caregiver education, homecare resources, speech and communication, as well as assessments of emergency tracheostomy kits.

Results: The response rate was 86% (38 of 44). Most respondents care for children with tracheostomies as part of a multidisciplinary team (n=25; 69%) and arrange routine follow-up with a speech and language pathologist (n=22; 61%). However, the majority (n=23;68%) of respondents do not formally reassess caregiver competencies (i.e. CPR, emergency tracheostomy care). Notably, respondents were also unsure of how frequently Shiley tracheostomy tubes should be washed and reused with majority (n=18; 48.6%) reporting never but 36% (n=13) were unsure. Similarly, majority (n=15; 41.7%) of respondents were also unsure of reuse recommendations for Bivona tubes. A third (n=12; 33%) of respondents indicated being unsure of government-funded homecare provided in their communities for children with tracheostomies.

Conclusion: There is much variability in paediatric tracheostomy care practice patterns across Canada. Results suggest that evidence-based guidelines may help to streamline care provided to children with tracheostomies.

DELAYED COCHLEAR IMPLANTATION IN A CHILD WITH SKELETAL DYSPLASIA, ARTHROGRYPSOSIS, GRADE 1 MICROTIA AND FACIAL NERVE ANOMALY

Vanina M Chavarri (M.D.)

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Purpose:

Infants born with multiple congenital abnormalities and hearing loss can present a challenge to clinicians during initial evaluation. Our objective is to present a delayed diagnosis of sensorineural hearing loss (SNHL) and subsequent cochlear implantation in a child born with skeletal dysplasia, arthrogryposis, and bilateral grade I microtia/minor aural atresia.

Methods:

This patient was born with multiple congenital anomalies and initial auditory brainstem response testing suggested a moderate to severe hearing loss with a maximum conductive component. The degree of SNHL was not clear. The patient was treated with pressure equalization tubes for chronic effusions and fitted for appropriate amplification. At 4 years of age, the child had no verbal language acquisition and a cochlear implant evaluation was pursued. A literature review was conducted to evaluate for the association of SNHL in patients with microtia or arthrogryposis.

Results: During evaluation for a cochlear implantation, middle ear and facial nerve anomalies were noted. A cochlear implant was performed using a supra-meatal approach with closure of the external auditory canal. There were no complications and the patient is regularly wearing her implant. SNHL is rarely associated with outer/middle ear abnormalities and has not been reported in other cases of arthrogryposis.

Conclusion: Severe to profound SNHL is rarely associated with microtia/atresia due to the different embryological origins of these structures. Regular and repeat audiometric testing may prevent a delay in appropriate therapy, and it is important to evaluate specifically for the degree of sensorineural and/or mixed hearing loss in this context.

RECOVERY TIME FROM FACIAL PARALYSIS CAUSED BY OTITIS MEDIA; A SYSTEMATIC REVIEW ANALYZING AVAILABLE TREATMENT STRATEGIES

Farid F Ibrahim (M.D.)

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Introduction: Facial nerve paralysis (FP) secondary to Otitis Media (OM) is a common complication. The treating strategies include antibiotics, steroids and surgery. The objective of this systematic review was to analyze the most efficient treatment with minimal recovery time.

Methods: A comprehensive search on relevant articles pertaining to the subject was carried out within ten electronic databases. The articles published in English until January 2016 were eligible for review. Using predefined inclusion criteria, published articles on the outcomes of the management of facial nerve paralysis secondary to otitis media, were selected, reviewed, and their findings synthesized

Results: Fifteen studies met the inclusion criteria for this review. This resulted in a total of 30 patients who underwent similar treatments. The shortest recovery time was observed in patients who received a myringotomy as soon after being performed. Only two patients fully recovered from solely antibiotics. It was noted that many patients required a myringotomy procedure at follow up when antibiotics were not satisfactory. Therefore, treatment should be accustomed to the severity of the FP, which could be graded based on the House-Brackmann scale. Other treatment modalities include corticosteroids administered with antibiotics and in more severe cases of Otitis Media, a mastoidectomy should be done for nerve decompression.

Conclusion: This review recommends administering antibiotics to treat the infection and a myringotomy if the FP is not fully recovered. In more severe cases, a mastoidectomy may be necessary.

ENDOBONCHIAL INFLAMMATORY MYOFIBROBLASTIC TUMOR: REPORT OF TWO CASES, TWO DIFFERENT SURGICAL APPROACHES

Wen Jiang (M.D.)

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Outcome Objectives:

We describe two cases of endobronchial inflammatory myofibroblastic tumor (IMT) with similar clinical presentation and pathologic features, yet different endoscopic and radiographic appearances. The anatomic location of the tumors dictated dramatically different surgical approaches for each patient.

Methods:

Case Series

Results:

Two female children, aged 9 and 3, presented with several months history of intermittent cough and wheezing. The 9 year-old patient was admitted for worsening shortness of breath and a left pneumothorax. A chest CT revealed a large endobronchial lesion involving the distal trachea and left mainstem bronchus extending into the posterior mediastinal space. Endoscopy revealed a smooth hypervascular lesion causing near complete obstruction of the distal trachea densely adherent to the posterior tracheal wall. Biopsy was not feasible due to bleeding and risk of airway compromise. She ultimately required radical resection through a right thoracotomy on cardiopulmonary bypass with a complex airway reconstruction.

The chest CT of the 3 year-old patient revealed a discrete 1cm endobronchial lesion at the distal left mainstem bronchus with post-obstructive atelectasis. Endoscopically, it appeared fleshy with papillary projections very similar to

respiratory papilloma. The lesion was completely removed endoscopically with minimal bleeding.

Conclusion:

IMT is a rare, benign tumor that typically affects children and young adults. Complete surgical excision is essential as the tumor may be locally destructive and recurrence is common. The anatomic locations in these two cases highlighted dramatically different surgical approaches for this disease.

DESMOID FIBROMATOSIS OF THE HEAD AND NECK IN VERY YOUNG CHILDREN: THE PATIENT-CENTERED COLLABORATIVE APPROACH

Zachary Bennett

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INTRODUCTION: Desmoid fibromatosis (DF) of the head and neck is a rare benign neoplasm characterized by extremely rare metastatic potential, aggressive local invasion, and high recurrence rates. Treatment paradigms remain controversial, particularly in the head and neck and in young children.

METHODS: Retrospective analysis of patients under age 4 with DF of the head and neck cared for by a multidisciplinary pediatric head and neck tumor program in a tertiary care children's hospital since January 1, 2016.

RESULTS: Three patients < age 4 (range 18 -29 months) were diagnosed with DF of the head and neck. Two patients presented with rapidly enlarging, externally visible mandible masses, while the third patient presented with 8 months of otalgia due to a mandibular neck/condyle mass enlarging medially toward the skull base. Due to tumor location, the third patient was treated with neoadjuvant chemotherapy with methotrexate and vinblastine. All three patients underwent hemimandibulectomy with free fibula reconstruction. One patient had recurrence near the skull base 7 months later and was treated with several neoadjuvant regimens prior to resection.

CONCLUSION: This series highlights treatment considerations in the head and neck in very young children and emphasizes the coordinated, multidisciplinary approach essential to appropriate care.

AN UNCOMMON LOCATION OF A COMMON LESION

David Kasle (M.D.)

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Hamartomas, benign malformations composed of the same tissue in which it grows, are rare in the head and neck region. Understandably, few reports have been published discussing the local effects it may have on the patient and surrounding structures. Here, we present a 14 year-old girl with a chief complaint of an “enlarged tonsil” that was noticed in December of 2014. New symptoms prompting presentation included facial fullness and respiratory distress during exercise.

Other medical, surgical, family and social history was negative. On physical exam, she was noted to have fullness of her left cheek, and a pedunculated smooth-walled lesion extending from the left superior tonsillar fossa. It was soft and compressible, non-pulsatile, and mobile from off of its pedicle. Findings on MRI were consistent with a “fat-containing mass along the left oropharyngeal wall, which may represent a lipoma or dermoid/teratoma.”

The lesion was removed in the operating room with significant soft palate asymmetry noted. A biopsy was taken from the tissue of stalk origin. Final pathology showed a hamartomatous polyp with a deep margin consistent with normal pharyngeal tissue.

Our goal is to present an unusual presentation of a benign mass in the head and neck region, and to discuss the unique effects it may have on a young patient. This includes not only obvious symptoms, including airway distress, but more subtle ones such as tissue distortion that, if ignored, may affect pediatric patients as they continue to grow.

A SAFETY CHECKLIST TO DECREASE PERI-OPERATIVE TONSILLECTOMY MORBIDITY AND MORTALITY

Luhe (Lotus) Yang

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Introduction: A checklist makes up for inevitable human inadequacies and builds on existing knowledge and to make sure it is applied correctly each time. Although tonsillectomy is one of the most common procedures performed on children in the US with >530,000 surgeries yearly, significant morbidity and mortality can be associated due to surgical, anesthesia, and opioid-related complications. An evidence-based checklist for tonsillectomies is much needed to reduce peri-operative adverse events.

Objective: To develop an evidence-based tonsillectomy safety checklist to decrease peri-operative morbidity and mortality. To determine whether the checklist is effective in detecting causes of complication through a small pilot study.

Study design: observational study

Method: A 3-part checklist was compiled consisting of pre-operative, intra-operative, and post-operative sections based on a review of tonsillectomy morbidity and mortality, as well as litigation databases from Jan 2000 to Jun 2017, and was implemented on 168 cases of pediatric tonsillectomy +/- adenoidectomy cases at an academic hospital.

Results: The checklist allowed the detection of risk factors with potential to cause peri-operative morbidity and mortality in 19 cases out of 168 tonsillectomy +/- adenoidectomy cases.

Conclusion: The checklist is effective in detecting and preventing peri-operative risk factors for tonsillectomy in children. Multi-institutional trial is needed to determine its long-term effect on complication rates across various operating room environments.

FACTORS AFFECTING PERSISTENT TYMPANIC MEMBRANE PERFORATION AFTER TYMPANOSTOMY TUBE REMOVAL IN CHILDREN

Clarice Brown (M.D.)

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Objectives: Evaluate and compare the rates of tympanic membrane (TM) perforations between short-term vs long-term tubes. In addition, determine which demographic, anatomical, and physical factors affect ear drum healing after tympanostomy tube (TT) removal and paper patch myringoplasty (PPM) in children.

Study Design: Retrospective chart review at tertiary care children's hospital

Methods: Charts were reviewed from the children's hospital and pediatric otolaryngology clinic electronic medical record. Data was retrieved for patients 0 to 18 years old who underwent surgical removal of a TT and PPM between January 2005 and January 2017.

Results: 203 out of 432 patients met the inclusion criteria. Age, number of sets of tubes, length of intubation, size of perforation, type of tube (Armstrong grommet vs long term tubes) were significant variables that contributed to persistent perforation after PPM. There was no significant difference between each type of long term tube.

Conclusion: Our data showed, there was a 87% closure rate after surgical removal of the TT and PPM. The rate of persistent perforation with short term tubes and long term tubes, were 9% and 20% respectively. Our data also suggest patient's with long term tubes are often older, have chronic ear disease, have had multiple sets of ear tubes, and length of intubation is longer. Variable factors such as: middle ear effusion, retraction, tympanosclerosis, atrophy and granulation tissue did not affect closure rates.

IMPACT OF OBESITY ON ADENOTONSILLECTOMY FOR OBSTRUCTIVE SLEEP APNEA IN CHILDREN

Patrick Scheffler (M.D.)

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Background: Adenotonsillectomy is a highly effective first line treatment for obstructive sleep apnea (OSA). However, recent studies suggest a reduced efficacy of this intervention in obese children. The current study aims to pool the data from the current literature to estimate the efficacy of adenotonsillectomy for OSA in obese children.

Methods: A retrospective literature review from 1995 to 2017 was performed. Ten studies with 408 children met criteria and were included. Baseline demographics as well as pre- and postoperative sleep study results were extracted from these studies and meta-analyzed.

Results: Following adenotonsillectomy OSA resolved in 171 children (42.14%). The mean apnea hypopnea index (AHI) improved from 22.89 to 8.14 postoperatively ($P < 0.001$). The mean oxygen saturation nadir (SaO₂) improved from 78.43 to 86.97 following adenotonsillectomy ($P < 0.001$). No significant heterogeneity was found across studies.

Discussion: Compared with success rates in nonobese children, adenotonsillectomy was found to be less successful at resolving OSA in obese children. However, a significant reduction in AHI and SaO₂ still resulted from this procedure. These results imply that adenotonsillectomy is useful in this patient population to reduce OSA severity, but is less likely to serve as single modality cure.

CURRENT CHARACTERISTICS OF STAPHYLOCOCCUS AUREUS INFECTIONS IN PEDIATRIC NECK ABSCESSSES

Ankita Patro

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INTRODUCTION: Bacterial lymphadenitis (BL) is initially treated with antibiotics to cover *Staphylococcus aureus*. Since the methicillin-resistant *S. aureus* (MRSA) epidemic in the 1990s, clindamycin has been a common treatment. Recent data support increasing clindamycin resistance in pediatric *S. aureus* isolates, with a nationwide rate of 17% in 2014 and 19% per our hospital's 2016 antibiogram.

OBJECTIVES: To characterize *S. aureus* isolates and antibiotic susceptibilities for BL drained transcervically at a tertiary pediatric center and to examine outcomes (e.g. length of stay, hospitalization events).

METHODS: A retrospective review of 133 children was conducted from 2014 through 2016. Only *S. aureus* isolates were included. Patients were further categorized either as community-acquired (CA) or, if hospitalized in the prior year, as community-onset healthcare associated (CO-HCA). Data included demographics, hospitalization, antibiotics, and microbiology.

RESULTS: Of 115 cultures with growth, 83% (n = 96) grew *S. aureus*, with 53/115 (46%) methicillin-susceptible *S. aureus* (MSSA) and 43/115 (37%) MRSA. Resistance to clindamycin in all *S. aureus*, MSSA, and MRSA was 18%, 25%, and 9%, respectively. One MSSA variant was resistant to clindamycin and trimethoprim-sulfamethoxazole but was susceptible to tetracyclines and vancomycin. Seven patients were hospitalized in the last year (MSSA n = 3, 1 clindamycin resistant; MRSA n = 2, 0 clindamycin resistant). No significant differences were found in symptoms, length of stay, or reoperation.

CONCLUSION: MSSA and MRSA are the predominant isolates in pediatric BL. Rising resistance to clindamycin and other antibiotics warrants frequent reassessments of microbiology and susceptibilities to achieve optimal initial empiric treatment.

MASSIVE INFANTILE MYOFIBROMATOSIS OF THE UPPER LIP CAUSING AIRWAY DISTRESS IN A NEWBORN: CASE REPORT AND LITERATURE REVIEW

Steven M Andreoli (M.D.)

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Background: Infantile myofibromatosis is a rare condition characterized by benign spindle cell tumors most commonly involving the head, neck, and chest. Infantile myofibromas may be either solitary or multicentric. Spontaneous regression may occur, but surgery with or without chemotherapy is required for large tumors or extensive visceral involvement. We present a newborn with a large upper lip infantile myofibroma resulting in acute airway obstruction.

Case history: An infant female with a prenatal diagnosis of a large facial mass was delivered via Cesarean at 34 weeks. Sparse prenatal care was received; however, a presumed diagnosis of teratoma was made. Following delivery, the neonate was found to have an 8cm ulcerative mass involving the right upper lip. Respiratory distress developed, and bag mask was difficult secondary to the size of the mass. The patient was successfully intubated after numerous attempts and then transferred to our children's hospital. In the subsequent days, the newborn developed consumptive coagulopathy concerning for Kasabach-Merritt Syndrome raising suspicion for Kaposiform hemangioendothelioma. Additional imaging demonstrated similar masses within bilateral iliopsoas and gluteal muscles, and her right gastrocnemius. A biopsy confirmed infantile myofibromatosis. At two weeks of life, she underwent resection with bilateral myocutaneous advancement flaps and successful extubation on postoperative day one. She received adjuvant vinblastine and methotrexate for her pelvic disease with excellent response.

Conclusion: Infantile myofibromatosis is the neonatal presentation of multiple myofibroblastic tumors. Although airway obstruction has been previously described in oropharyngeal myofibromas, we present the first case of airway distress secondary to myocutaneous involvement.

CREATION OF A STANDARDIZED TRACHEOTOMY WOUND DOCUMENTATION SYSTEM

Christopher Tsang (M.D.)

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Previous literature has consistently demonstrated that post-operative peristomal wound breakdown/infection is the most common complication after pediatric tracheotomy. There is, however, no standardized classification system for the evaluation of peristomal wound complications. Development of a system requires consistent documentation and assessment of wound status. There is no such system to date, as the current pressure ulcer grading system may not be entirely applicable for the evaluation of tracheotomy wounds. We describe in this study a photodocumentation process for tracheotomy wound analysis. Image acquisition is detailed, with analysis of images using a proposed point-based grading system for tracheotomy wounds. Inter-rater reliability is assessed, and recommendations are made for further development of a standardized tracheotomy wound classification process. A standard methodology for evaluating tracheotomy wounds should promote safer tracheotomy care for children.

RECURRENT HEMIFACIAL SPASM AND CHIARI I MALFORMATION IN A PEDIATRIC PATIENT

Arturo Eguia

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Objective: To present a case of recurrent hemifacial spasm in a pediatric patient with a known Chiari I malformation (CIM).

Methods: Case report

Case report: An 8-year-old girl presented with a history of absence seizures, CIM, right sided pre-auricular pit, and multiple episodes of right sided facial paresis initially diagnosed as recurrent Bell's palsy. A thorough workup with neurology and infectious disease failed to find a cause for the patient's recurrent facial paresis. The patient's first episode was two weeks long, followed by two more acute episodes in subsequent years. Each episode has lasted longer than the previous and patient's facial function never returned to baseline. Patient's family endorsed right eye and right lower lip spasm, and denied facial swelling. Physical exam was significant for tighter closure of the right eye compared to the left eye, and reduced movement of the right orbicularis oris suggestive of hemifacial spasm.

Discussion: Hemifacial spasms rarely occur in patients <30 years old and are usually associated with other conditions. Literature review revealed that hemifacial spasms and CIM have been shown to occur together but thus far have only been described in adults. We report a case of hemifacial spasms in a pediatric patient with CIM who initially presented with recurrent Bell's palsy. We recommend that hemifacial spasm remain in the differential for patients who have known CIM. Accurately diagnosing and treating these patients can improve quality of life. This is especially important in children for alleviating the difficulties with interpersonal relationships and social adaptation.

PARENTALLY PERCEIVED HEALTHCARE DISPARITIES IN THE CARE OF A TRACHEOSTOMIZED CHILD

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Introduction: There are significant healthcare disparities in the management of tracheostomy-dependent children. No study to this date has aimed to specifically evaluate the parental perception of these healthcare disparities in regards to how they affect the care of their tracheostomized children.

Objectives: To report parentally perceived disparities in the healthcare of children with tracheostomies in order to better understand the areas of care that are in most need of improvement and to adopt a systematic strategy to addressing these disparities.

Methods: This study began with a prospective data collection via questionnaire, which had both epidemiologic questions, as well as questions on perceived healthcare disparities rated on a Likert scale from "strongly disagree" to "strongly agree." The questions on disparities addressed various components of tracheostomy care, from pre-operative counseling, post-operative tracheostomy training, to local access to necessary medical supplies and professional guidance for home tracheostomy care. The questionnaire was sent to Louisiana families with children in the home who are trach-dependent, and the results of the questionnaire were analyzed.

Results: Louisiana families completed the questionnaire, and significant disparities were identified in the care of tracheostomy-dependent children as perceived by their primary in-home caregivers. One area in particular that

consistently showed statistically significant disparity was access to trach-related medical supplies.

Conclusion: This study serves as a guide to assess parentally-perceived disparities in the healthcare of tracheostomized children in order to implement system-based changes in their care to narrow these disparities.

A CONDITIONAL SURVIVAL ANALYSIS AND COMPETING RISKS MODEL IN CHILDHOOD AND ADOLESCENT RHABDOMYOSARCOMA OF THE HEAD AND NECK

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Background: Rhabdomyosarcoma (RMS) is the most common soft tissue sarcoma in children and adolescents aged <20 years. Clinical trials have reported increases in overall survival from 25% in 1970 to 73% in 2001. The goal of this study is to determine whether survival from pediatric rhabdomyosarcoma of the head and neck has improved over the last four decades at the population level.

Methods: A population-based cohort study of 718 patients in the National Cancer Institute Surveillance, Epidemiology, and End Results (SEER) registry who were diagnosed with rhabdomyosarcoma of the head and neck from 1973-2013. Survival rates at 1-, 5-, and 10-years after diagnosis and subdistributional hazards for overall survival, conditional survival beyond 1 year after diagnosis, and death within the first year after diagnosis were calculated for clinical and pathological factors.

Results: 718 cases were identified for analysis. Survival rates at 1-, 5-, and 10-years after diagnosis were 91.2%, 73.2%, and 69.4% respectively. Survival rates at 1 year after diagnosis increased from 82.1% for patients diagnosed in 1973-1983 to 93.5% in 2003-2013. In the subdistributional hazard analysis there was a significantly decreased disease-specific risk of death in the first year after diagnosis over the study period. Overall risk of death did not improve significantly.

Conclusions: The analysis in this cohort showed that disease-specific survival improved in the first year after diagnosis, but overall survival did not significantly improve during the study period. Future studies should examine the causes of treatment failure and opportunities for intervention following diagnosis and initial treatment.

PEDIATRIC OTOLARYNGOLOGY INVOLVEMENT IN BRIEF RESOLVED UNEXPLAINED EVENTS

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Purpose

To investigate what role otolaryngologists play in the evaluation of brief resolved unexplained events (BRUE).

Methods

A retrospective chart review was performed. All admissions for children <1-year-old admitted for BRUE from December 2009 through December 2015 were included for a total of 863 cases.

Summary of Results

A brief resolved unexplained event (BRUE) is a sudden episode involving cyanosis, marked change in tone, absent or decreased breathing, or altered level

of responsiveness. By definition, these occurrences are without clear etiology. In this study, no definitive cause was identified in 44.6% (n=385) of cases. Gastroesophageal reflux (30.0%, n=259) was the most commonly identified cause of BRUEs.

An inpatient consult to Otolaryngology was placed in only 3.4% of cases (n=34). Flexible fiberoptic laryngoscopy was performed in 31 of 34 patients, most commonly revealing reflux related changes or laryngomalacia. Additional inpatient workup was recommended in 64.7% (n=22) cases, and direct laryngoscopy with bronchoscopy (DLB) was performed in 14 of these 22 cases (64%). In total, Otolaryngology led workup identified new upper aerodigestive tract pathology in 22 of 34 cases (64.7%), with laryngomalacia or tracheobronchomalacia accounting for 82% (n=18) of these diagnoses. 8.8% of patients seen by Otolaryngology, and 0.3% of all patients, had further surgical intervention (1 supraglottoplasty, 1 adenoidectomy, 1 laryngotracheal reconstruction).

Although not essential for routine workup of BRUEs, Otolaryngologists should be consulted during inpatient admission when clinicians suspect an underlying upper airway disorder.

KIKUCHI-FUJIMOTO DISEASE: AN ANALYSIS OF 11 PEDIATRIC CASES OVER 16 YEARS

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Background: Kikuchi-Fujimoto Disease (KFD), otherwise known as histiocytic necrotizing lymphadenitis, is a rare cause of lymphadenitis that is most typically seen in Asian countries. Occurrence is rare in the United States and reported cases typically appear in the literature as small case reports.

Purpose: Our goal was to evaluate a series of patients with KFD seen at a North American tertiary care children's hospital to better understand presenting symptoms, clinical course, treatment outcomes and recurrence rate of the disease outside of the Asian continent.

Methods: This was a retrospective review of all patients diagnosed with KFD over a 16-year period (2001-2017) at a North American tertiary care children's hospital. The electronic medical record was studied for demographic, clinical and laboratory data.

Results: Eleven histopathologically confirmed cases of KFD were identified. The mean age was 13.7 years and 6 (55%) of the patients were female. Only two patients (18%) were of Asian descent. Cervical lymphadenopathy was present in all eleven patients and was predominantly unilateral (64%). Fever was the most common presenting symptom (73%) with other presenting symptoms including pain, fatigue, night sweats and loss of appetite. Neutropenia was present in 36% of patients. The mean time from presentation to diagnosis was 21.8 days. There were three episodes (27%) of recurrence.

Conclusion: In the largest reported series of KFD outside of Asia, we discuss the clinical course of this disease entity in our pediatric population. Although rare, Kikuchi-Fujimoto disease should be considered in the differential diagnosis in children with cervical lymphadenopathy.

MASTOID PRESSURE DRESSING FOLLOWING COCHLEAR IMPLANT SURGERY - PRACTICE AMONGST CANADIAN PEDIATRIC OTOLARYNGOLOGISTS

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Background

Mastoid Pressure Dressing (MPD) has routinely been used following major ear surgery to prevent postoperative wound complications. To date, controlled studies have suggested no difference in the incidence of wound complications following MPD use. However, there is a variation in the practice of MPD use across Pediatric Otological centers. In this study, we aimed to identify the most common type of postoperative dressing management after cochlear implantation and the factors in the decision-making process for post-surgical care amongst Canadian Pediatric Otolaryngologists.

Methods

Canadian Otolaryngologists who perform pediatric cochlear implant (CI) surgery were identified (n=18) and contacted via email to complete a short online questionnaire regarding current post-operative head dressing practice following CI surgery. Descriptive statistics were used to analyze the response data.

Results

100% of the recipients completed the survey. 376 cases of CI were completed in 2016 with an average of 21 cases per surgeon. 61% of participants routinely used MPDs following surgery justified by reasons such as wound protection, standard of care, and physician's original training practice. Of note, decisions to admit patients overnight included patient age, behavioral complications, parental preference, and time of operation.

Conclusion

There is no clear consensus on the use of MPDs amongst centers and reasons for MPD use are mainly based on previous training and hospital standards. Since the current evidence in the literature suggests no difference in wound complication incidence post-surgery when an MPD is used, a change in practice may be justified. Further prospective controlled studies may be warranted.