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PROSPECTIVE COMPARATIVE STUDY OF PEAK AND COBLATION PEDIATRIC TONSILLECTOMY AND ADENOIDECTIONY
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Objective: To compare post-operative pain medication consumption, pain severity and complications for pediatric adenotonsillectomy with Coblation vs. PEAK technology.

Study Design: Prospective, non-randomized, non-blinded comparative cohort study.

Methods: Patients aged 3 to 12 years old undergoing adenotonsillectomy were assigned to surgery with either Coblation or PEAK instrumentation. The following data were obtained via telephone contact daily for 14 post-operative days: validated proxy pain scale score, number of analgesic medication doses consumed (narcotic and non-narcotic), and occurrence and severity of hemorrhage.

Results: One-hundred adenotonsillectomy subjects were enrolled (50 coblation and 50 PEAK). Pain scores were significantly decreased in the PEAK group from post-operative days 7 to 11, and were equivalent to Coblation on all other days. Number of non-narcotic and narcotic analgesic doses were similar between the two groups, with the exception of less acetaminophen being consumed in PEAK patients on post-operative days 9, 10, and 12. Post-operative hemorrhage episodes resulting in re-operation and/or hospitalization were equivalent between the two study groups. Coblation patients were 2.33 times more likely to experience minor bleeding events at home (that did not require medical intervention) compared to PEAK subjects (95% confidence intervals: 1.19 to 4.58).

Conclusions: Coblation and PEAK are both effective techniques for pediatric adenotonsillectomy. During the 2nd week of recovery, there were 5 days with less post-operative reported pain and 3 days with less acetaminophen usage with PEAK. There was more secondary bleeding reported with Coblation compared to PEAK, although most of these episodes were minor and did not require medical attention.
AUDIT OF POST-DISCHARGE PAIN MANAGEMENT FOR PEDIATRIC TONSILLECTOMY/ADENOIDECTOMY

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A recent audit at a tertiary pediatric centre found that children who underwent day-case tonsillectomy experienced significant pain 48 hours after surgery. A multidisciplinary collaborative strategy was created specifically targeted to the tonsillectomy population. This included a preventative multimodal pain pathway for inpatient perioperative analgesia and a discharge pain management document that gave precise at-home analgesic administration instructions. The aim of this study was to determine if these changes have improved pain management for our adenotonsillectomy population.

With research ethics board approval and written informed consent, we recruited children undergoing tonsillectomy and/or adenoidectomy. Surgical, anesthetic and postoperative data were reviewed to determine child demographics, analgesic medications received and postoperative pain scores. Care-providers were phoned 48 hours and 14 days after surgery to obtain information on pain assessment and management.

Clinical data have been collected from 142 children of median (range) age 6 years (1-15). Self-reported pain scores indicate 47% of children are in significant (moderate/severe) pain at 48 hours after surgery. Parental reports indicate 82% of children undergoing tonsillectomy experience significant pain lasting a median of 8 days post-surgery. In children with significant pain in the first 48 hours postoperatively 42% did not receive acetaminophen/ibuprofen as instructed at discharge.

Results indicate that pain management is not adequate for many children undergoing adenotonsillectomy. Despite specific perioperative and postoperative instructions, further improvements can be made to improve compliance. A disconnect between the information given to care-providers and the subsequent administration of analgesia medications needs to be explored to eliminate the barriers to effective analgesia at home following adenotonsillectomy.
Outcome Objectives: To compare the post-adenotonsillectomy course of children under age 3 clinically diagnosed with sleep disordered breathing (SDB) to those diagnosed with obstructive sleep apnea (OSA) based on polysomnography (PSG) findings.

Methods: Case series of 365 children <3 years of age who underwent adenotonsillectomy at a tertiary care children’s hospital. The post-operative respiratory complication rate, hospital stay length, and hospital course were compared between those who had clinically diagnosed SDB and those with OSA diagnosed with PSG.

Results: Children with OSA were younger (26 vs 29 months p<0.01) then those with SDB and had a longer hospital stay (p<0.001). 25% (n=40) of those with OSA had at least one recorded post-operative desaturation <90% (p<0.001) compared to 27 (13.0%) of those with SDB. Children with desaturations were younger, 25 versus 29 months (p<0.0001). There was no significant difference between groups in the need for oxygen supplementation. The most common non-respiratory complication was poor PO intake (11.0% SBD group) versus 6.0% (OSA group, p=0.05). There was no difference in hemorrhage rates, re-admission, ER visits or re-operative rates (acute). No difference was found in post-operative resolution of symptoms (snoring, apneas, etc.).

Conclusion: Children under the age of 3 years who undergo T&A require a 23 hour post-operative hospital stay. Obtaining a PSG in young children with SDB may not be necessary because it will not significantly alter the postoperative course. In this study, children with OSA on PSG had a slightly higher rate of postoperative respiratory complications, perhaps secondary to age.
ROLE OF B-CELLS IN PATIENTS DIAGNOSED WITH PEDIATRIC AUTOIMMUNE NEUROPSYCHIATRIC DISORDER ASSOCIATED STREPTOCOCCUS

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Objective: To determine if patients diagnosed with Pediatric Autoimmune Neuropsychiatric Disorder Associated with Streptococcus demonstrate a significantly different number of B-Cells or markers of activity when compared to non-affected control cohorts.

Study Design: Prospective Cohort Study

Study Setting: Academic University Hospital

Methods: Tonsil tissue was collected from twenty-two patients and organized into three groups. Ten clinically diagnosed PANDAS, six Group A Streptococcus and six Obstructive Sleep Apnea patients were included in this study. Each tissue sample was extracted with MSD Tris Lysis Buffer and protein lysates were analyzed for CD 19, B-Cell Activating Factor and B-Cell Activating Receptor by western blot methods.

Results: Based on ANOVA analysis, there was no significant difference in the expression of B-Cell Activating Factor, B-Cell Activating Receptor or CD 19 when comparing the three study groups by western blot analysis methods.

Conclusions: It appears that PANDAS patients may not demonstrate increased number of B-Cells, expression of B-Cell Activating Factor or B-Cell Activating Receptor when compared to Group A Streptococcus or Obstructive Sleep Apnea patients. As a result, further evaluation of the cell-mediated immune system may be warranted in order to obtain further insight into the pathophysiology of PANDAS. In addition, it is necessary to investigate if PANDAS patients only demonstrate increased B-Cell number or activity when undergoing an acute Tic/OCD exacerbation.
OBJECTIVES: The ectopic accessory parotid system connotes an extra parotid tissue, independent of the main parotid gland and its drainage, that opens externally as a saliva-draining fistula near the oral commissure. We describe the clinical, imaging and surgical aspects of this rare disorder through presentation of a representative case, and explore its origin from an embryologic perspective.

METHODS: Case study and literature review.

RESULTS: A four-year-old boy with right-sided pre-auricular appendages presented with a small pit 15 millimeters from his right oral commissure through which saliva egressed especially during feeding. Magnetic resonance fistulogram and sialogram revealed two separate salivary drainage pathways. The ectopic accessory parotid was distinct from the main parotid gland, opening as a fistulous tract in the cheek, isolated from the Stensen’s duct. The ectopic parotid and the fistulous tract were excised by external approach. The child was without any recurrence at six-month’s follow-up.

CONCLUSIONS: The ectopic accessory parotid system is an extremely rare congenital anomaly - to date only 15 cases have been reported in the English-language indexed literature. The glandular tissue remains in variable positions with masseter and the line joining the oral commissure and tragus. This is the first report describing the use of magnetic resonance fistulography in tracking the ectopic salivary system. It is almost always associated with ipsilateral pre-auricular appendage(s), and occasionally with ipsilateral mandibular hypoplasia. Consequently, it might have its origin from the first and second pharyngeal arch apparatus, and is presently being considered as a component of the oculo-auriculo-vertebral spectrum.
STUDY IN AIR- AND BONE-CONDUCTION AUDITORY BRAIN-STEM RESPONSE IN CHILDREN WITH CONGENITAL EXTERNAL AUDITORY CANAL ATRESIA

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Objective: To study the clinical value of air- and bone-conduction auditory brain stem responses(ABRs) in children with congenital external auditory canal atresia. Methods: Air- and bone-conduction click-evoked ABRs in 38 children with congenital external auditory canal atresia were compared to those in 34 normal-hearing children. Results: ABR threshold was 66.53 ± 7.12 dBNHL for air conduction and 12.55 ± 6.96 dBNHL for bone conduction in children with congenital external auditory canal atresia; and 25.32 ± 2.66 dBNHL and 10.71 ± 4.51 dBNHL respectively in normal hearing children. There was statistical difference between the two groups in air-conduction ABR thresholds. While the air-bone ABR threshold gap was greater in children with external auditory canal atresia than in normal hearing children, bone-conduction ABR wave latencies were not statistically different between the two groups. Conclusion: Bone conduction ABR is valuable in assessing function of cochlea auditory nerve and brainstem in individuals with congenital external auditory canal atresia. It has important clinical value in objective differential diagnosis of conductive deafness with combined application of Air- and bone-conduction ABRs.
Objective: To create and examine a disease specific instrument to measure the psychosocial effect of infantile hemangiomas on the quality of life of their parents and families in infants aged 24 months and under.

Methods: Institutional review board (IRB) approval was obtained for this prospective, non-randomized investigation of a novel, non-validated, disease-specific infantile hemangioma quality of life instrument (IH-QOL). Infants and newborns diagnosed with infantile hemangiomas from birth to 24 months of age were recruited between September 7, 2014 to August 1, 2015 and asked to complete the created survey (IH-QOL).

Results: Eleven patients completed the IH-QOL. No incomplete surveys were encountered, and no families declined to participate. There were 9 girls and 2 boys. The mean age at the time the survey was completed was 6.9 months. All lesions were focal in nature, and all but one patient affected in the head and neck region. Seven patients had single lesions and 4 had multifocal lesions. Ten of the eleven (90.9%) patients chose to undergo active treatment -- six with propranolol and four with timolol. The mean total score of the IH-QOL for those patients was 9.7 [range 2 - 27, maximum = 60], with the primary quality of life affect on the cosmetic aspect. Of the six that chose propranolol, two did not achieve a satisfactory clinical response for the family and underwent surgical excision. All of the patients that underwent timolol therapy had focal, superficial type infantile hemangiomas.

Conclusions: Although this is a study of a small number of patients with infantile hemangiomas, it supports that the families of newborns and infants with infantile hemangiomas are affected in their quality of life. Appropriate counseling and referrals is recommended. Given that the location of the lesions were primarily in the head and neck area, is reiterates prior studies demonstrating that this location may be associated with higher rates of patients and families seeking treatment.
CONSIDERATIONS FOR MANAGEMENT OF HEAD AND NECK LYMPHATIC MALFORMATIONS IN CHILDREN

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Objective: There exist inherent problems with previously described classification schemes for head and neck lymphatic malformations in children and lack of guidance for management. A organization scheme and management recommendations are proposed.

Study design: Consecutive case series with chart review of children with head and neck lymphatic malformations in children.

Setting: Tertiary-care, academic children’s hospital.

Subjects and Methods: Children with lymphatic malformations of the head and neck were included. A proposed organization/staging system for head and neck lymphatic malformations in children was developed and compared to two others currently predominantly used, de Serres and Cologne Disease Score (CDS).

Results: Seventeen patients were identified, 7 boys and 10 girls. The mean age was 64.4 months [range 0.89 - 185.5]. Nine (52.9%) were managed expectantly, 5 (29.4%) with sclerotherapy with one awaiting treatment (5.9%), and 2 (11.8%) with surgical excision. All children who underwent active treatment with surgery or sclerotherapy were managed successfully. No treatment related complications were encountered, and no children managed with watchful waiting/expectant management experienced failure. The proposed staging system differed in de Serres stage in 11 children, with 9 (81.8%) being down staged and 2 (18.2%) up staged. CDS ranged from 2 - 10, with only 1 (5.9%) patient with a score of 3 or less (severe-disease).

Conclusions: Treatment recommendations in children with head and neck lymphatic malformations should be individualized. Weaknesses of currently used staging systems are discussed, and considerations for management decisions are discussed.
MODIFYING THE COCHLEAR™ BAHA® 4 ATTRACT SURGICAL TECHNIQUE IN CHILDREN

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Objectives: To describe and discuss the clinical impact and technical considerations of modified placement of the COCHLEAR™ BAHA® 4 Attract bone-anchored hearing aid in pediatric patients, including revisions to the recommended incision and “retro-fitting” the device onto a pre-existing bony implant.

Methods: Report of two cases and literature review.

Results: We present two pediatric cases of modified Baha® Attract placement, the first of which involved modification of the standard incision and the second involving both incision modification as well as retrofitting to a prior implant for the indication of previous soft tissue complications. In both cases, our modified approach resulted in favorable audiological outcomes, with optimally sited incision lines and no recurrence of keloid or infection in the retrofitted case.

Conclusion: The Baha® Attract system has become an increasingly popular choice for bone-anchored hearing aids. This is particularly true in the pediatric population, with less abutment-related morbidity. We show that in pediatric patients, particularly males with short hair, the standard semicircular incision recommended within the Cochlear™ surgical guidelines may be amenable to modification to achieve superior cosmetic outcomes. In addition, within this report we demonstrate the ability to eliminate existing abutment site complications in a pediatric patient, via abutment removal and “retro-fitting” of a Baha® Attract magnet to the existing bony implant. It is our belief that these modifications resulted in superior aesthetics without sacrificing surgical exposure or functional outcomes.
CHARACTERISTICS OF SLEEP APNEA IN PIERRE-ROBIN SEQUENCE INFANTS: IMPROVEMENT DUE TO MANDIBULAR DISTRACTION OR ADVANCING AGE?

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Objectives

To investigate changes in obstructive sleep apnea (OSA) and central sleep apnea (CSA) in infants with Pierre-Robin sequence (PRS) with advancing age and after mandibular distraction osteogenesis (MDO).

Methods

Charts from 141 infants with PRS that presented to our tertiary-care children’s hospital between 2005 and 2015 were retrospectively reviewed. Forty-five patients received a polysomnogram (PSG) prior to surgical intervention. Linear regression was utilized to compare age at pre-operative PSG with apnea-hypopnea index (AHI), obstructive apnea-hypopnea index (OAHI), and central apnea index (CAI). We then analyzed a subset of 9 patients who underwent MDO with pre- and post-operative PSGs. Wilcoxon signed-rank test was utilized to examine differences in pre- and post-operative OSA and CSA scores.

Results

Forty-five patients received pre-operative PSGs. Of these, 80.0% demonstrated severe sleep apnea (AHI >10), 68.9% demonstrated severe obstructive sleep apnea (OAHI >10), and 55.6% demonstrated central sleep apnea (CAI >1). There was no significant decrease in AHI, OAHI, and CAI with increased age up to 1 year. Among the 9 patients who underwent MDO with pre- and post-operative PSGs, significant reductions in AHI, OAHI, CAI, and percentage of total sleep time with arterial oxygen saturation (SaO2) <90% and significant increases in SaO2 nadir were identified after MDO.

Conclusions

Contrary to previously examined literature in non-PRS patients, we did not find a decreased severity of central or obstructive sleep apnea with advancing age. Infants with PRS who underwent MDO demonstrated significant decreases in both obstructive and central apnea indices.
OBJECTIVES:-

Is to validate three scoring systems (Velum, Oropharynx, Tongue and Epiglottis (VOTE), Drug-Induced Sleep Endoscopy (DISE) and Chan’s classification) utilizing overnight polysomnography in cases of pediatric sleep disturbed breathing.

METHODOLOGY:-

This is a prospective, observational study involves 50 children, with age ranging between 1-12 years. All of them presented with obstructive sleep apnea symptoms and planned for Adeoindectomy and/or Tonsillectomy. Everyone of the children is planned for preoperative and postoperative Polysomnography. Drug-Induced Sleep Endoscopy is to performed as well and recorded at the time of anaesthesia induction. Intraoperative endoscopy recording is to be assessed by 4 raters blinded to patient’s information by utilizing the 3 scoring systems suggested in the literature. The raters are requested to suggest an alternative procedure based on the recording. A postoperative Polysomnography is to be done to assess the change in the OSAS score and whether the suggested procedure by the raters is needed or not. The internal reliability and validity of each of the scoring systems will then be statistically evaluated.

RESULTS:-

Currently all of 50 children underwent the preoperative evaluation including the Polysomnography. All of the cases underwent the planned surgical procedure as well as the drug-induced sleep endoscopy. Currently about 25% of the children underwent postoperative Polysomnography, with the rest are expected to do it within 1 month. At the end we can provide our complete results within 2 months about the validation of the three scoring systems based on an objective tool which is Polysomnography.
INFECTED THIRD BRANCHIAL CLEFT CYST WITH VOCAL CORD PARALYSIS IN A 2 WEEK-OLD

Benjamin Yang

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Objective: To describe an unusual presentation of branchial anomalies in newborns

Methods: Case report

Introduction: Branchial anomalies represent roughly 20% of congenital pediatric neck lesions. Third and fourth branchial anomalies are significantly less common than second anomalies and represent 2-8% percent of branchial anomalies. Vocal paralysis is unusual in the presentation of these lesions. We present an unusual case of a two-week-old with a recurrently infected third branchial anomaly, severe airway obstruction, and complete left vocal cord paralysis.

Case report: A one week-old full-term female presented with a rapidly enlarging left-sided neck mass causing left vocal cord paralysis and stridor requiring emergent intubation and raising clinical suspicion for malignancy. After CT identified a large cystic mass, needle aspiration confirmed an infected branchial anomaly. One week later, rapid regrowth of the cyst necessitated re-intubation and definitive surgical excision within a week. Postoperatively the left vocal cord showed no evidence of return of function. The patient successfully passed an objective swallow study postoperatively.

Conclusions: Branchial anomalies most commonly occur in the adolescent population, but are rare in neonates. Third branchial anomalies are much less common and rarely present this early in life. Vocal fold paralysis is highly atypical in branchial anomalies, and in the context of a rapidly enlarging newborn neck mass with tracheal deviation, raises the suspicion for malignancy. We recommend caution and maintenance of a high level of suspicion for branchial cleft anomalies even in neonates who present with this picture.
Objective: To quantify changes in the sinonasal quality of life for children with chronic nasal congestion after outfracture of inferior turbinates and concomitant inferior turbinoplasty.

Background: Chronic nasal congestion is a common pediatric symptom often refractory to use of intranasal steroid, systemic antihistamines, and leukotriene receptor antagonists. Symptoms often persist despite negative allergy testing. Inferior turbinoplasty (IT) outfracture are more common in adults and rarely reported in children. The Sinus and Nasal Quality of Life Survey (SN-5) is a validated survey used to report changes in symptoms and overall quality of life after these procedures.

Methods: Retrospective summary was performed on 37 patients (13 females, 24 males, mean age 11.5 years, range, 4.8 - 17.6 years) who underwent submucous inferior turbinoplasty (without bony resection) and outfracture performed by a single pediatric otolaryngologist between January 2014 - May 2015. Demographics, medication use pre and post procedures, baseline and post-operative SN-5 scores at 4-6 weeks after surgery were reviewed.

Results: Decrease in SN-5 scores reported in every domain: sinus infection (-2.6, p<0.01), nasal obstruction (-3.59, p<0.01), allergy symptoms (-2.28, p<0.01), emotional distress (-2.22, p<0.01), activity limitation (-1.76, p<0.01), and overall quality of life (+3.45, p<0.01). SN-5 scores correlated to proportional decrease in snoring (72%, p<0.01), nasal congestion (92%, p<0.01), rhinorrhea (41%, p<0.01) and decreased use of intranasal steroids (54%, p<0.01), antihistamine (54%, p<0.01), and leukotriene receptor antagonists (32%, p<0.01).

Conclusion: Outfracture and inferior turbinoplasty in children with chronic nasal congestion, even without atopy, improves sinonasal quality of life, decreases nasal symptoms, and decreases medication use.
ANKYLOGLOSSIA SUPERIOR SYNDROME: CASE REPORT AND UPDATED LITERATURE REVIEW

Sophie Shay (M.D.)

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Introduction: Ankyloglossia superior (palatoglossal adhesion) is an extremely rare congenital condition with only 10 previously reported cases. When found in conjunction with other congenital abnormalities, such as cleft palate, gastrointestinal malformations, limb malformations, this anomaly is considered part of Ankyloglossia Superior Syndrome.

Methods: Case report

Case presentation: We present a case of a newborn female found to have ankyloglossia superior. Prenatal ultrasound discovered a left transverse foot deficiency, which at the time of discovery was thought to be secondary to amniotic band syndrome. Surgical repair is also described.

Conclusions: Ankyloglossia superior syndrome is recognized as a rare and sporadic event. We review the available literature and discuss theories regarding the etiology of ankyloglossia superior syndrome. Clinicians should have a high degree of suspicion for other congenital anomalies when a neonate is found to have ankyloglossia superior.
Background: Hemangiopericytoma is a rare malignant tumor of vascular pericytes that usually occurs in adults. Only 10% of hemangiopericytomas occur in children, with one-third of these cases comprising the congenital, or infantile, form. Congenital hemangiopericytomas are generally more benign in behavior than the adult counterpart.

Methods: We describe the case of a neonate female who was found at birth to have a 3 cm spherical anterior tongue mass. Prenatal history was unremarkable. Surgical resection of the tongue mass was performed on day of life 2.

Results: Histology showed hemangiopericytoma of the tongue.

Conclusions: Hemangiopericytomas are exceedingly rare in children < 1 year old, particularly in neonates. Our case represents only the second case reported of a congenital tongue hemangiopericytoma diagnosed at birth. Prenatal diagnosis is exceptionally difficult and unreliable. Prompt airway management and early consideration in the differential diagnosis are crucial to ensure good outcomes.
A QUALITATIVE ASSESSMENT OF PREFERENCES, EXPERIENCE, AND ATTITUDES REGARDING TREATMENT OF PERSISTENT PEDIATRIC OSA

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Objectives: To assess family preferences, experiences, and attitudes regarding treatment of persistent pediatric obstructive sleep apnea (OSA).

Methods: We qualitatively analyzed two moderated focus group sessions with families of patients with persistent OSA who were seen in a multidisciplinary upper airway clinic at a tertiary pediatric hospital. Transcripts of these sessions were reviewed by 2 reviewers, who identified common themes. These transcripts were again reviewed by 2 reviewers, who classified comments from families according to identified themes. All discrepancies in coding were resolved by consensus between reviewers.

Results: The 4 most common themes were (1) concern regarding quality of life and health outcomes, (2) interest in the etiology and consequences of OSA, (3) desire for shared decision-making, and (4) interest in education regarding OSA management options. The outcomes most commonly deemed important to families were their child’s daytime and nighttime behavior, the effects of OSA on their child’s cognition, and family stress; families recognized the importance of objective measurement of these parameters. Participants also expressed interest in education regarding the risks of untreated OSA and the relative cure rates for available treatment options.

Patients liked the multidisciplinary approach to management and felt that having a unified plan at the end of their clinic appointment was ideal.

Conclusions: Our qualitative analysis suggested that behavior and cognition were considered the most important patient outcomes by families. They were interested in better understanding the etiology and consequences of OSA and valued shared decision making as well as education regarding management options.
OBJECTIVE/HYPOTHESIS: Ewing's sarcoma of the paranasal sinuses (EPS) is a rare diagnosis especially in those under ten years of age and so data regarding management is limited. A case report of EPS of the ethmoid sinus with intraorbital involvement and cranial base erosion in a six year old is presented to aid in the limited understanding of this disorder.

STUDY DESIGN: Case-report and literature review

METHODS: This is a detailed case report of the presentation, diagnostic work-up and treatment of a six year old with an EPS centered in the left ethmoid as well as a review of the available literature.

RESULTS: Treatment regimens for EPS have been described but not standardized and include variations of surgery, chemotherapy, and radiation. Our patient underwent successful treatment with triple modality therapy in a clinical trial that consisted of twelve weeks of induction chemotherapy followed by endoscopic resection and proton beam irradiation.

CONCLUSIONS: Successful management of our patient included triple modality therapy and the results discussed add to the limited available literature regarding this malignancy in the paranasal sinus location and in the pediatric population.

KEYWORDS: Ewing's sarcoma, paranasal sinuses, pediatric population
EMERGENCE AGITATION IN PEDIATRIC PATIENTS FOLLOWING GENERAL ANESTHESIA FOR AMBULATORY ADENOIDECTOMY AND/OR TONSILLECTOMY

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Background: Emergence agitation (EA) is a state of aggressive agitation that can occur temporarily in the process of emerging from anesthesia in children exposed to volatile or intravenous anesthetics. Emergence agitation is typically assessed by nurses who care for the patient in the post-anesthesia care unit (PACU) and can be documented using the published and validated pediatric emergence delirium (PAED) scale. Due to some variation in properties between sevoflurane and desflurane for maintenance of anesthesia after standard sevoflurane induction, we designed a prospective study to examine potential differences in emergence behavior of children undergoing elective adenoidectomy and/or tonsillectomy.

Methods: 46 children aged 12 months to 7 years were randomly assigned to receive either sevoflurane (n = 23) or desflurane (n = 23) for maintenance of general anesthesia. All patients were extubated awake in the OR, and upon arrival in the PACU, PAED scores were assessed every 15 minutes until discharge from the PACU (Phase I). In addition to PAED scores, time to tracheal extubation, emergence behavior, pain scores, and recovery complications were recorded.

Results: We found no statistically significant difference in peak PAED scores between sevoflurane and desflurane groups (12 [0-18] versus 12 [0-20]). However, the desflurane group experienced a shorter time to discharge from the PACU (31.0 ± 10.8 min versus 39.3 ± 14.9; P <0.05).

Conclusion: The incidence of EA did not differ between desflurane and sevoflurane for maintenance of anesthesia, but the use of desflurane was associated with a shorter time to discharge from the PACU.
ATYPICAL MYCOBACTERIUM INFECTION MIMICKING FLESH EATING BACTERIA
Renae Van Wyhe

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Study Objectives:

Atypical Mycobacterial, or non-tuberculous mycobacterium, infections in the pediatric otolaryngology population have largely been observed in our field to be limited to lymph nodes of the head and neck. In these situations the node has a characteristic violaceous color and can often cause fistula formation from the underlying resulting abscess. Rarely do we consider an atypical mycobacterial infection in rapidly spreading epidermal microabscesses of the face causing disfiguration.

The objectives of this study are:

1- Understand what atypical mycobacterium infections are and their different manifestations
2- Correctly identify and treat atypical mycobacterial infections

Methods:

A previously healthy 14 year-old male was admitted with a rapidly sloughing and spreading face lesion encompassing almost the entire left face and measuring 14 x 10cm. The differential diagnosis at the time included necrotizing facitis versus a drug-resistant suprainfection.

Results:

The patient was taken to the operating room multiple times for debridements, biopsies, and cultures. Photodocumentation was also extensively taken. A multi-disciplinary approach was used to aid in the conclusive diagnosis of a cutaneous atypical mycobacterial infection. The patient was treated successfully with a combination of antituberculous and macrolide antibiotics and local wound care, and was able to avoid further spread and disfigurement.

Conclusion:

Atypical mycobacterial infections in the head and neck do not solely manifest as infected lymph nodes but can also present as cutaneous infections. A suspected infection should be cultured and biopsied for a conclusive diagnosis. A multi-disciplinary approach is necessary for its complete clearance and to prevent further disfigurement.
PALATAL MOTION AFTER PRIMARY AND REVISION FURLOW PALATOPLASTY: DOES PALATAL REPAIR NEGATIVELY AFFECT MUSCLE FUNCTION?

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Objectives:

1. Review how the double opposing z-plasty technique reorients muscle fibers of the levator

2. Discuss how such muscle repositioning should disrupt palatal function when a Furlow palatoplasty is performed on a normal or previously repaired levator complex.

3. Compare palatal function scores following primary and revision soft palate repair.

Methods: The database of an urban academic pediatric otolaryngology practice performing cleft and craniofacial surgeries was used to identify subjects whom had undergone primary and secondary Furlow palatoplasty. Subjects with adequate postoperative nasopharyngoscopy video footage were randomized and two blinded reviewers assessed soft palate motion in each video using an abbreviated version of the Golding-Kushner scale. Reviewers' ratings were averaged and a mean palatal motion score was generated for each subject. Comparisons were made between primary and secondary groups.

Results: Over a four-year period there were 20 subjects with adequate postoperative nasopharyngoscopy footage to allow for evaluation (12 primary repairs and 8 secondary repairs). Golding-Kushner soft palatal motion scores (range: 0.0-2.0) were similar between groups (average primary group = 1.61 (range: 0.5-2.0); average revision group 1.53 (range 0.75-2.0), p=0.74), with no significant difference identified in this study powered to detect a 25% difference in palatal motion between groups.

Conclusion: While surgeons agree that Furlow palatoplasty lengthens the palate, some have concern that reorientation of muscle fibers during secondary repair could negatively affect palatal function. While underpowered to detect minor differences, this series would suggest that there are no major deleterious effects on palatal elevation following secondary Furlow palatoplasty.
CERVICAL LYMPHADENOPATHY LEADING TO INTERNAL JUGULAR COMPRESSION AND RESULTANT FACIAL EDEMA IN A CHILD

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Lymphadenopathy is a common chief complaint for the pediatrician and pediatric otolaryngologist. The differential diagnosis of bilateral cervical lymphadenopathy includes infection, such as viral or streptococcal pharyngitis, Kawasaki’s disease, lymphoma, collagen vascular disease or medication reaction. It is most commonly self-limited and only rarely requires treatment. However, further workup and treatment are indicated in complicated cases of lymphadenopathy. Complications of lymphadenitis commonly include abscess formation, skin drainage and fistula formation, and rarely, compression of adjacent structures.

Here, we present a rare case report and literature review of a complication of bilateral cervical lymphadenopathy. PubMed and Google Scholar were used to complete a review of recent literature on complications of bilateral cervical lymphadenopathy.

In this case, cervical lymphadenopathy caused by Kawasaki’s disease led to compression of both internal jugular veins. The resultant venous congestion led to notable facial edema. With steroid and IVlg treatment, the lymphadenopathy improved and facial edema slowly resolved.

Facial edema has a broad differential diagnosis including, rarely, venous congestion. Here we presented a patient with severe bilateral compression of head and neck drainage patterns caused by bilateral lymphadenopathy. This case highlights the importance of keeping a broad differential diagnosis for facial swelling. Furthermore, it is important to consider complications of lymphadenopathy, particularly when bilateral and severe, as they can be striking.
TRENDS IN TONGUE-TIE: A RETROSPECTIVE STUDY OF PATIENTS REQUIRING REPEAT FRENOTOMY

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Objectives: Ankyloglossia or tongue-tie is a congenital condition of the tongue that can limit tongue movement and lead to breastfeeding difficulties. Frenotomy is the most common correction procedure, but frequently needs to be repeated to see successful results. This study is aimed at determining if certain patient characteristics are associated with the need for a repeat procedure.

Methods: The study patients were selected based on the need for a primary frenotomy. Specific patient characteristics were gathered - gender, race, type of ankyloglossia, and age at first procedure. The patients were divided into two groups based on the need for a repeat frenotomy. The groups were analyzed independently for the frequency of these characteristics and then compared quantitatively by odds ratios.

Results: A total of 1366 patients were included in this study. The initial group was 62% male and 38% female. Of those patients, a total of 11% required revisions. Patients with type 3 (OR 1.53, p=0.02) and type 4 (OR 2.48, p<0.01) ankyloglossia had a significantly higher risk of needing a repeat procedure. The other characteristics showed no significant difference between the two groups.

Conclusions: This study demonstrates that characterizing the type of ankyloglossia is the best predictive factor for determining the need for a revision frenotomy. Patients with the posterior forms of tongue tie, type 3 and type 4, are more likely to need a second procedure. It is important for these patients to be identified because they are at risk for more severe, prolonged symptoms and ultimately, long term negative outcomes.
Objective

To demonstrate a cost-effective, quick, and easily reproducible three-dimensional sticky note model to enhance the understanding and conceptualization of the geometry and steps of the pharyngeal flap and sphincter pharyngoplasty.

Methods

The method involves making specified incisions and rearrangements of readily available components, including disposable clear plastic cups, yellow and pink sticky notes, and white paper. Once assembly is complete, further incisions and remodeling are performed to simulate a pharyngeal flap or sphincter pharyngoplasty.

Results

The cost of the materials to make one model was $0.94. Average construction time was less than 10 minutes.

Conclusion

This three-dimensional model is an efficient, interactive, and simple visual aid to teach surgical trainees the geometry and steps of the pharyngeal flap and sphincter pharyngoplasty.
Ingested esophageal foreign bodies are commonly seen in the pediatric population. Rarely do they perforate the esophagus and even a smaller fraction migrate through neck fascial planes asymptptomatically. In such events, foreign bodies are generally sharp in nature and symptoms present shortly after ingestion. We present a case of an otherwise healthy eleven year old with sudden onset dysphagia that based on MRI and CT findings was most consistent with an esophageal duplication cyst. However upon surgical neck exploration, a blue circular disk consistent with a childhood game piece was identified adjacent to the esophagus in the location of the presumed cystic mass. Given the patient’s age and no reports of purposeful ingestion, it is most likely the patient had ingested this small disk game piece in early childhood, leaving her asymptomatic for eight years prior to presentation.
Objective: Pediatric patients who have undergone the Fontan procedure are often on a long term aspirin regimen which can complicate perioperative management. In high risk procedures such as adenotonsillectomy, hemorrhage can be a significant complication and aspirin use may increase the risk. There is a need for evidence-based protocol on how to manage aspirin intake in the perioperative period for Fontan patients. We report the case of a patient with Fontan palliation who underwent adenotonsillectomy and presented with postoperative hemorrhage.

Methods: PubMed was searched for guidelines, case reports, and reviews on pediatric Fontan patients, adenotonsillectomy, and perioperative aspirin cessation.

Results: Current literature lacks a consensus on perioperative management of aspirin for patients on a long term aspirin regimen. Pediatric patients who have undergone the Fontan procedure are at an increased risk of thrombosis which suggests that aspirin should be continued perioperatively, except during high risk procedures where there is increased risk of hemorrhage. Hemorrhage is a significant but uncommon complication of adenotonsillectomy and does not appear to be increased in high-risk patients with comorbid conditions. However, there is need for more updated evidence-based literature on aspirin and bleeding complications following adenotonsillectomy.

Conclusion: The current literature does not offer guidance regarding the ideal perioperative management of aspirin for patients with aspirin dependent cardiac conditions, such as those status post Fontan repair. Retrospective evaluation of current management and prospective protocols should be studied to aid in the management of this growing population.
Introduction: Nasal gliomas are rare but well-described benign congenital masses traditionally presenting as nasal or anterior skullbase lesions described most commonly in the pediatric population. However, there is little published data describing this pathology in the nasopharynx.

Case Description: We report the case of a 49 day-old female who presented to our institution with failure to thrive, projectile emesis and a history of stertor present since birth. Witnessed apneas and desaturations upon presentation and during admission prompted a thorough workup including a sleep study and an upper airway evaluation, which discovered an unusual presentation of a nasopharyngeal mass radiographically consistent with glioma. Operative resection provided pathological diagnosis as well as therapeutic relief of obstructive apneas and hypoxic events. The child has since made great improvements clinically with breathing and feeding.

Discussion: Nasal gliomas are often described as intranasal, extranasal, or a combination of the two. However, there are few accounts in the literature describing presentation of this benign tumor in the nasopharynx. The work-up, management and clinical course in our patient were largely similar to that of intra- or extranasal gliomas. One notable difference was the presence of obstructive sleep apnea which prompted urgent surgical treatment of the disease.
VOCAL FOLD IMMOBILITY IN PRETERM INFANTS: ESTIMATE OF PREVALENCE AND ANALYSIS OF FACTORS ASSOCIATED WITH ITS DEVELOPMENT

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Objective:

Estimate the prevalence of vocal fold immobility (VFI) in preterm infants at a single neonatal intensive care unit (NICU) and identify risk factors for the development of VFI in this population.

Methods:

This is a case control study of all surviving preterm infants (<37 weeks' gestation) admitted to the NICU at Children's Hospital of Wisconsin from 2006-2012, comparing those with and without VFI. Records were reviewed and multivariate analysis was performed to identify factors significantly associated with VFI.

Results:

Of 2083 patients included, 73 (3.5%) had VFI, including 17.7% of all infants <26 weeks' gestation. Immobility was bilateral in 16 (21.9%) patients. VFI resolution occurred in 17 (23.9%) patients after median follow-up of 25.7 months. On multivariate analysis, VFI development was associated with PDA ligation (p<0.001, OR 15.9, 95% CI 8.9-28.1), history of invasive ventilation (p=0.008, OR 4.5, 95% CI 1.5-13.6), and black vs non-black race (p=0.001, OR 2.5, 95% CI 1.5-4.3). With PDA ligation patients excluded, repeat multivariate analysis in the remaining 22 VFI patients and 1828 non-VFI patients demonstrated ventilation history to be the only significant risk factor (p=0.02, OR 12.3, 95% CI 1.4-104.4).

Conclusion:

In this single-center study, a considerable portion of preterm infants developed VFI, especially those requiring mechanical ventilation and PDA ligation. Given the substantial morbidity associated with VFI, pediatric otolaryngologists should spearhead early detection and multidisciplinary management of those affected and support efforts to decrease PDA ligation and invasive ventilation in preterm infants.
Objective: Assess exposure to, and clinical application of, the otolaryngology component of the Choosing Wisely® initiative.

Background: Choosing Wisely® is an educational initiative of the American Board of Internal Medicine targeting both physicians and patients to eliminate unnecessary medical testing and therapy through promotion of evidence-based practice. The American Academy of Otolaryngology Head and Neck Surgery Foundation (AAO-HNSF) Choosing Wisely® list includes many scenarios common to pediatric clinical practice.

Methods: Members of a local pediatric society completed an internet-based survey regarding awareness of Choosing Wisely® and AAO-HNSF recommendations, as well as application of these recommendations to clinical scenarios.

Results: 154 local pediatric society members were available for participation. Overall response rate was 46.8% (n=72) with 70.8% (n=51) of surveys fully completed. Of those who responded only 26.4% (n=14) reported familiarity with Choosing Wisely® and only 11.8% had read the AAO-HNSF Choosing Wisely® recommendations. When presented with clinical scenarios, practitioners without exposure to Choosing Wisely® answered in agreement with recommendations 79.5% of the time, as compared to 88.6% in those familiar with the Choosing Wisely® recommendations (p=0.09).

Conclusions: Despite dedicated efforts, pediatricians remain unfamiliar with Choosing Wisely® and the AAO-HNSF Choosing Wisely® recommendations. Exposure to Choosing wisely was associated with a non-significant improvement in performance on clinical questions.
Objective: Lingual tonsillar hypertrophy is a common cause of persistent OSA in children. Despite being performed for many years, little has been reported about the complications, postoperative course and effectiveness of lingual tonsillectomy (LT) in children. Our objective was to review the safety and effectiveness of LT in children with persistent obstructive sleep apnea (OSA).

Methods: Retrospective review of children undergoing LT from January 2009 to January 2014 at a tertiary care children’s hospital. Complications and postoperative course were recorded for all patients. Polysomnographic (PSG) outcomes were recorded for patients with both preoperative and postoperative studies.

Results: 173 children underwent LT (mean age 8.8±4.2 years, 43.3% female, 26.6% with Down syndrome). Fifty-two percent had comorbid conditions. The bleeding rate was 4.5%(n=67) in children who underwent LT alone and 6.4%(n=173) overall. One child (0.6%) required operative control of hemorrhage. One patient (0.6%) required re-intubation, 5(2.9%) reported voice changes and 10(5.6%) required readmission. PSG outcomes were available for 64 children. The mean and median apnea-hypopnea index (AHI) decreased from 11.2 to 9.3 and 7.0 to 3.9 events/hour respectively (p=0.058). The mean and median obstructive AHI also decreased from 10.2 to 9.0 and 6.4 to 3.3 events/hour, respectively (p=0.2). In children with an AHI>5 events/hour at baseline, OSA resolved to <5 events/hour in 31% (n=14/40,p=0.0008).

Conclusions: Bleeding occurred in 4.5% of children who underwent LT alone and appears to be safe in children with persistent OSA. AHI and OI improved and a significant proportion of children saw resolution of OSA after surgery.
OUTCOMES IN CLEFT PALATE REPAIR: A COMPARISON OF EARLY VERSUS STANDARD REPAIR

Travis D. Reeves (M.D.)

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Introduction:

Orofacial clefting is a common craniofacial defect, occurring in 1 of 700 live births. It may present as cleft lip (CL), cleft palate (CP), or both (CL/CP). Definitive care of CP requires palatoplasty, but timing has been a matter of debate, since the risks and benefits are currently not fully understood.

Methods:

A retrospective chart review was performed of CL/CP patients that have undergone repair at our institution. Patients' electronic medical records (EMR) were accessed, and all pertinent data was recorded in Excel. Patients were divided into early (<6 months) and standard repair groups (>6 months).

Results:

A total of 130 children were initially reviewed and 73 met criteria for inclusion. Fistula development occurred in 12/44 (27%) children in the early repair group and 5/29 (17%) children in the standard repair group. Chi-square analysis showed no significant difference (p=0.985). Pediatric Intensive Care Unit (PICU) admission was significantly greater in the early repair group with 29/44 (66%) children spending at least one night in the PICU compared to 4/27 (15%) in the standard repair group (Chi-square analysis; p=0.00003). Rates of articulation errors were higher in the population repaired at an age >6 months, but this was not statistically significant.

Conclusion:

PICU admission occurs more frequently when CP repair is performed at a younger age. Our current prospective study, along with a larger cohort of infants and children, are needed to definitively determine whether differences exist in fistula rate and speech outcomes depending on timing of surgical repair.
PHARMACOKINETIC (PK) STUDY OF TOPICAL MOXIDEX OTIC SOLUTION IN PEDIATRIC PATIENTS FOLLOWING TYMPANOSTOMY TUBE SURGERY

Zorik Spektor (M.D.)

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Objective: Describe the pharmacokinetics of moxifloxacin and dexamethasone after administration of Moxidex Otic solution in pediatric patients immediately after tympanostomy tubes surgery.

Design: Single center, open-label, single arm, single-dose, pharmacokinetic study administering four drops of moxifloxacin/dexamethasone solution per ear, instilled directly into the tube following surgical insertion of tympanostomy tubes. Blood was collected at specific intervals for 6 hours and analyzed for moxifloxacin concentrations using a validated ultra performance liquid chromatography and for dexamethasone concentrations using a high performance liquid chromatography tandem mass spectrometry.

Setting: The study was conducted at a tertiary referral pediatric otolaryngology practice with actual surgical procedures performed in an ambulatory care center.

Patients: Twelve patients randomly selected, 1-2 years of age (mean age,1), receiving tympanostomy tubes.

Results: Peak moxifloxacin plasma levels were observed at about 1h, with a mean concentration (Cmax) of 8.20 ng/mL and an estimated half life of 4.6 hours. Peak dexamethasone plasma levels were observed between 1-2 h with a mean concentration (Cmax) of 1.43 ng/mL and an estimated half life of 3.8 hours.

Conclusion: These results indicate low systemic exposure of moxifloxacin and dexamethasone following topical otic administration in pediatric patients. These results are consistent with prior PK studies on dexamethasone and provide first time information on pharmacokinetics of moxifloxacin in otic application.
Objectives: To report the parameters of otherwise healthy children with symptoms of swallowing dysfunction and airway compromise.

Method: This was a retrospective study of children attending a tertiary multi-disciplinary aspiration clinic over 31 months. Children (≤17 years) without neurological, genetic, or other major system disorder were eligible. Data collected includes presenting symptoms, risk factors, developmental status, swallowing assessment results, and interventions. We report the findings upon airway and gastrointestinal endoscopy, and overnight pulse oximetry.

Results

Ninety-three patients with complete records met inclusion criteria (55 boys, age 17.7±22.9 months (0.5-124.2). Twenty-seven presented with chronic wheezing, 23 with recurrent pneumonia, 12 cyanotic spells, and 7 life threatening events. Premature birth was present in 19 and failure to thrive in 10. At baseline assessments (endoscopic evaluation of swallow (49); modified barium swallow (55)) 47 demonstrated laryngeal penetration, 20 aspiration (silent in 19 cases). Fifty-two were screened for sleep disordered breathing, 19 demonstrated abnormal McGill scores. Furthermore, 55 underwent full airway endoscopy and 18 gastrointestinal endoscopy. Findings included laryngomalacia (20), laryngeal dyskinesia (6), laryngeal paralyses (3) and subglottic stenosis (3). Surgical interventions included supraglottoplasties (17), endoscopic laryngeal cleft repair (15), and laryngeal cleft augmentations (20). Medical interventions included modified oral diet (63) and tube feeding (10). At the latest follow-up (mean 8.8±9.0 months (0.5-47.4)) 65 responded to management (35 total symptom resolution; 49 resumed normal diet or reduced thickening).

Conclusions:

This is one of the largest studies documenting the parameters of healthy children with swallowing and breathing disorders.
Outcome objective:

1. Describe the symptoms and image study of a case of isolated agnathia.

2. Discuss the airway and feeding management for patients with isolated agnathia.

Method: This is a single case report from a tertiary care center of an infant born full term with prenatally diagnosed mandibular agnathia. Patient’s medical record was reviewed from birth until 10 months old with focus on his airway and feeding management.

Result: Agnathia is a rare congenital malformation characterized by the absence of the mandible, low-set ears, microstomia, and tongue aplasia or hypoplasia. Patients with agnathia are often found to have other anomalies, including holoprosencephaly, synotia and situs inversus upon diagnosis. The exact cause of agnathia is unknown and appears to be sporadic, however there are several studies currently looking into a possible genetic cause. In line with this hypothesis, patients with aganthia-otocephaly carry mutations in PRRX1 gene. Case reports of isolated agnathia are very rare, with most infants stillborn; although there are three case reports of hypoplastic mandible patients who survived into infancy with a tracheostomy and feeding gastrostomy. Here, we report a case of isolated agnathia with microstomia and tongue aplasia in an infant. His birth history was complicated by intubation difficulty and thus a tracheostomy was placed. He also had a subsequent gastrostomy tube placed for feeding issue. We will focus the discussion on postnatal airway and feeding management.

Conclusion: Isolated agnathia is a rare malformation which requires multidisciplinary approach for airway and feeding management.
Objective: To review experience with endoscopic anterior skull base surgery in children in order to determine the characteristics of patients treated successfully and the requirement for multi-subspecialty surgical teams.

Method: Review of a ten year experience at a tertiary-quaternary pediatric center. Cases were identified from a prospective database and supplementary demographic, surgical and outcome data were obtained from chart review.

Results: 52 endoscopic anterior skull base surgeries were identified, i.e. nearly one every 2 months, of which 4 required revision (3 for recurrent or persistent pathology; 1 for cerebrospinal fluid leak). All were otherwise completed successfully with no significant complications. Ages ranged from 7 weeks to 17 years. 23 different diagnoses were encountered. Cases included meningo/encephaloceles (11%), angiofibroma (11%), other sino-nasal tumour (17%), other sino-nasal diagnosis (19%). Combined neurosurgery cases included pituitary tumour (15%), craniopharyngioma (11%), other intracranial tumour (13%). In conjunction with a pediatric otolaryngologist, pediatric +/- adult neurosurgeons participated in 38% of surgeries and an adult endoscopic skull base surgeon in 28%.

Conclusion: A diverse range of anterior skull base pathologies can be treated successfully endoscopically. Sino-nasal tumour resection under 12 months of age is feasible. Repair of skull base defects is feasible under 2 years. A collaborative multi-subspecialty surgical team approach is appropriate as even in a large pediatric facility, the case load is too small to develop and maintain sufficient surgical skills to safely manage the full range of cases.
Objective: To present a rare case of tracheal keloid causing obstruction of the subglottis

Methods: Case Report.

Results: A 19-year-old female with severe CP, seizures and developmental delay since birth requiring tracheostomy and ventilator dependence was evaluated for excision of a pedunculated skin mass on the inferior aspect of her tracheostoma. She has a history of keloid formation on her neck and at the stoma site. During routine airway endoscopy at the time of stomal revision, she was found to have extension of her keloid through her stoma, superiorly, where it was visualized extending across the glottis. Through a combined trans-stomal/endoscopic approach, a 2 cm by 2 cm by 7 cm keloid extending 3 cm outside the tracheostomy stoma with superior extension across the glottis was excised. Kenalog was injected into incision boundaries. Surgical pathology results confirmed a keloid.

Conclusion: Only one other case of tracheal obstruction from endotracheal keloid has been reported in the English-language literature to our knowledge. Surgical excision and kenalog injection is a successful intervention for treating keloids. Pathogenesis and management of keloids in the airway will be discussed.
CASE REPORT: SURGICAL MANAGEMENT OF BILATERAL SECOND BRANCHIAL CLEFT ANOMALIES IN A 3 YEAR-OLD BOY

Benjamin Yang

Purpose: To present a rare case of a non-syndromic, otherwise healthy 3 year-old boy with bilateral second branchial anomalies and a novel surgical consideration for fistula delivery.

Methods: Case report, Description of surgical approach, Review of literature

Description: A 3 year-old non-syndromic, otherwise healthy male presented with bilateral neck masses and persistent drainage from the right neck. He was found to have a left-sided branchial cleft fistula tracking into the ipsilateral tonsillar fossa and a right-sided branchial cleft cyst also tracking to the ipsilateral tonsillar fossa. A novel approach was taken to excise the right fistula by bluntly dissecting around the fistula tract, suturing a red rubber catheter to the tract, and transoral delivery through traction on the red rubber catheter. Any suspicious remnants of the tract were obliterated with bipolar cautery and both tonsillar pillars were closed to prevent future recurrence.

Results: Excision of bilateral branchial anomalies without complications

Conclusion: Although second branchial anomalies are the most common, less than 2-3% occur bilaterally. Even rarer, our patient presented without concomitant congenital malformations or family history typical of bilateral presentation. Additionally, a novel approach using a red rubber catheter allowed for full dissection of the fistulous tract from underlying tissue, introducing a simple and practical new method to remove large branchial cleft fistulae.
INTRODUCTION: Oral synechiae is a rare craniofacial condition with less than 60 cases reported in the literature. Oral synechiae rarely occur as an isolated finding; they are usually associated with other congenital defects or syndromes such as cleft palate lateral synechiae syndrome.

CASE DESCRIPTION: A 1 day-old female twin was transferred to our hospital for further airway management. The patient had poor respiratory effort at birth and was not intubated because the laryngoscope could not bypass an intraoral anomaly. Initial ENT bedside evaluation revealed micrognathia, a presumed tongue adhesion to the palate, and an otherwise normal larynx on flexible laryngoscopy. The patient was taken to the operating room where awake nasal intubation was performed. On closer oral inspection, ENT and Plastic Surgery found an oral synechia connecting the floor of mouth and hard palate at midline. The synechia was released superiorly with cautery, which allowed return of the tongue back to its native position and revealed a U-shaped cleft palate. The patient was extubated 3 days later and has been followed closely since discharge.

DISCUSSION: This case highlights a unique patient with an oral synechia who required prompt airway and surgical management. Early diagnosis and treatment of this condition is crucial, given that respiratory distress and feeding difficulty are the major causes of morbidity. No previous case reports have addressed airway management experience regarding oral synechiae. In the case of our patient, initial upper airway evaluation and a smoothly coordinated awake intubation were essential for successfully securing her airway.
Purpose: The purpose is to compare the rates and severity of postoperative hemorrhage in pediatric tonsillectomy.

Setting: The setting is in a tertiary care pediatric otolaryngology service.

Methods: A retrospective chart review of pediatric tonsillectomies with or without adenoidectomy. Clinic and operative notes were analyzed for age, gender, indication for surgery, surgical technique and postoperative bleeding.

Postoperative hemorrhage was recorded as grade 0 for no bleeding; grade 1 for bleeding that did not require intervention; grade 2 for bleeding managed in the office; grade 3 for bleeding managed in the operating room.

Results: There were 250 children who underwent surgery in the study period by two pediatric otolaryngologists. Surgeon A performed 160 coblation tonsillectomies with or without adenoidectomy and surgeon B performed 90 monopolar cautery tonsillectomies with or without adenoidectomy. In the coblation group there were 4 episodes of grade 1 bleeding, 3 episodes of grade 2 bleeding and 2 episodes of grade 3 bleeding. In the cautery group there was 1 episode of grade 1 bleeding, 1 episode of grade 2 bleeding and 7 episodes of grade 3 bleeding.

Conclusions: Coblation and cautery tonsillectomy techniques resulted in similar rates of postoperative hemorrhage ($p=0.4$); however cautery techniques had a statistically significant higher rate of more severe bleeding ($p=0.03$).
SYMPTOMATIC OSTEOMAS OF THE EXTERNAL EAR CANAL IN ADOLESCENTS

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Objectives: As symptomatic external ear canal osteomas are essentially unknown in the pediatric population, to the clinical presentation, imaging, and histopathology of two adolescents. And, to highlight the differential diagnosis, clinical decision-making before and during surgery, surgical technique and histopathological findings.

Study Design: Retrospective case series.

Methods: Review of data.

Results: A 14-year old male had an osteoma arising from the tympanomastoid suture line and a 15-year old female had an osteoma of the tympanosquamous suture line. Neither case preoperatively had CT findings read as osteoma.

Conclusion: Symptomatic osteomas external ear canal are essentially unknown in the pediatric population. Imaging studies may not be helpful. The differential diagnosis and clinical decision-making before and during surgery, and surgical techniques, require contemplation.
Background: Accidental ingestion of single-use laundry detergent pods in children have become increasingly common. This phenomenon has not been described in the otolaryngology literature.

Objectives: To describe the range of clinical presentations of accidental detergent ingestion in the pediatric population and to discuss management options.

Study Design: Case series.

Methods: Retrospective chart review at a tertiary care children’s hospital.

Results: Ten cases of detergent ingestion were reviewed. The average age at presentation was 29 months (range, 11-52 months). The majority of children (n=8) ingested laundry detergent pods. Patients presented with emesis (n=8), respiratory distress (n=5), drooling (n=3), foaming from the mouth (n=3) and concomitant injury to the eyes (n=1). Three patients were admitted to the hospital and underwent esophagogastroduodenoscopy, four were observed overnight without intervention and three were sent home directly from the Emergency Department. One child required intubation secondary to acute bilateral vocal fold palsy.

Conclusions: Injuries to the upper aerodigestive tract after detergent ingestion range widely from mild mucosal injury to vocal fold immobility. Clinicians should have a low threshold for endoscopic evaluation in symptomatic children due to the risk of serious complications.
Background: Mucoepidermoid carcinoma, though rare, is the most common salivary gland malignancy in children. Accurate diagnosis can be difficult as it has a spectrum of histological appearances. Early diagnosis is essential in determining prognosis and guiding treatment.

Case Presentation: Here we present the case of a 14-year old girl with high-grade, recurrent sebaceous variant mucoepidermoid carcinoma (MEC). Though initially diagnosed as benign sebaceous adenoma, fine needle aspiration performed for suspected recurrence revealed MEC. After total parotidectomy confirmed this finding, a substantial defect remained and reconstruction using an anterolateral thigh (ALT) free flap was successfully performed. Adjuvant radiation was also considered and implemented.

Methods: A review of the literature pertaining to MEC misdiagnosis, adjuvant radiation in the pediatric population, and pediatric ALT flap reconstruction was performed.

Conclusions: Great care must be taken to obtain accurate histological diagnosis in salivary gland malignancies. Once diagnosed, resection and consideration of adjuvant radiation should be considered in the pediatric patient. Parotidectomy for treatment of MEC often results in complex defects. In the case presented here, buried ALT flap reconstruction was used to successfully correct such a defect. Furthermore, radiation, a proven supplemental treatment in adults, is also thought to have played a beneficial role in the successful outcome of this patient.
PROVIDING HIGH VALUE CARE THROUGH PREOPERATIVE VIDEO EDUCATION

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Background: Healthcare delivery systems are focusing on promoting high-quality outcomes and incorporating cost-effective methods. Adequate patient and parent education prior to surgery have beneficial perioperative effects. Traditionally preoperative education was provided by the physician and nursing staff. This method is time consuming and not accessible after the office visit. We studied the effect of a preoperative instructional video in comparison to traditional teaching by health care providers.

Objectives: Provide higher efficiency care by standardizing parental preoperative teaching.

Making preoperative information more accessible to parents.

Methods: Patients were seen by a Pediatric Otolaryngologist. If an adenotonsillectomy was clinically indicated parents qualified to enroll in the study. Participants were divided into two groups of 25 based on location of visit. Clinic A parents underwent traditional verbal presurgical education and given standard handouts. Clinic B parents underwent the same traditional education. They then viewed a video and completed a post video survey. They were given access to the video at home. Both groups were called 14 days after surgery and underwent a telephone survey.

Results: Both groups agreed that the verbal instructions were sufficient and recovery went as expected (14% video control vs. 19% test group). The majority (75%) had no preference to the method of information delivery. Majority of test group preferred verbal information at time of initial visit.

Conclusion:

The video did not impact overall postsurgical outcomes. The creation of other videos to aid with patient education would continue to improve patient care by enhancing accessibility of information.
ELECTRICAL STIMULATION FROM A COCHLEAR IMPLANT SHIFTS THE PERCEPTION OF VISUAL VERTICAL TOWARD NORMAL IN CHILDREN

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Objective: Because many children with profound sensorineural hearing loss (SNHL) who use cochlear implants (CI) have associated vestibular dysfunction, we aimed to identify: 1) whether they abnormally perceive the vertical plane, a sign of utricular dysfunction (measured by the Subjective Visual Vertical [SVV]), and 2) whether CI stimulation affects their perception of the visual vertical.

Methods: Forty-six unilaterally (n=5) or bilaterally (sequential, n=35; simultaneous, n=6) implanted participants (mean age 15.2 years) were recruited. The SVV was measured using the Visual VerticalTM (Clear Health Media, Wonga Park, Australia) application on an iPod fastened to the bottom of a bucket. Testing was done in the dark, and the bucket completely filled the field of view, eliminating external visual cues. SVV measurements were collected first without CI stimulation and then while stimulating at 5.1 Hertz from an apical or basal electrode.

Results: In the absence of stimulation, 54% (25/46) of participants had a normal SVV score (i.e., deviation <2° to the left or right of zero). With electrical stimulation, the SVV shifted toward centre; the degree and direction of shift were significantly correlated with the degree and direction of initial tilt from centre for both right and left stimulation (Right: R²=0.44, p<0.01; Left: R²=0.36, p<0.01). The proportion of participants with normal scores improved to 76% (35/46) with stimulation (Fisher’s exact test, p=0.01).

Conclusion: Electrical stimulation helps to correct the abnormal perception of verticality in children with SNHL. Stimulation of the utricle with current from the CI may be responsible for this effect.
**UPDATED HEARING SCREEN GUIDELINES IN A LEVEL IV NEONATAL INTENSIVE CARE UNIT: A QUALITY IMPROVEMENT PROJECT**

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Introduction: Hearing loss is the most common congenital birth defect. It is common in neonates admitted to the NICU and is associated with long term disability. Early detection and intervention improve developmental outcome. The American Academy of Pediatrics (AAP) updated its recommendation to screen by 1 month of age, diagnostic evaluation by 3 months and enrollment in early intervention by 6 months. Prolonged stay in the NICU is a significant risk factor for hearing impairment. Our goal is to develop and implement a new hearing screen algorithm for all patients in the NICU based on the updated AAP guidelines.

Method: Quality improvement (QI) project with first Plan-Do-Study-Act (PDSA) cycle focused on newborns >34 weeks gestation. Baseline data established compliance rate based on the original and new AAP recommendation. Specific goal is to improve compliance rate by 20% after 3 months of implementation through multidisciplinary team education and monitoring.

Result: Compliance rate was 100% based on universal hearing screen before hospital discharge. However, applying the new recommendation, compliance rate dropped to 69%. Major contributor for noncompliance was hearing screen done after 1 month of age. Screening ABR was used as opposed to OAE. Follow up screening and diagnostic testing were not uniformly performed.

Conclusion: Using QI methodology, a comprehensive hearing screen algorithm can be developed and implemented in the NICU to comply with the new AAP hearing screen guidelines. Multidisciplinary team supported by Audiologists and ENT specialists is essential to detect hearing loss early in high risk NICU population.
Case Series of Non-infectious Parotitis in Infants with Bronchopulmonary Dysplasia.

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Background: Salivary gland inflammation is rare during the neonatal and infancy period. The pathogenesis in this age group is not fully understood. Risk factors for parotitis include: low birth weight, oral trauma, immune suppression, ductal obstruction, sepsis, malnutrition and dehydration.

Objective: We report three extremely premature infants with severe bronchopulmonary dysplasia (BPD) who had tracheostomy for prolonged mechanical ventilation and presented with non-infectious parotitis while in the NICU.

Method: Retrospective review

Results: The 3 infants were born at 24-25 weeks gestation with severe BPD and had tracheostomy at 36-43 weeks post menstrual age (PMA) and were diagnosed with parotitis between 42-50 weeks PMA, 2 were bilateral. All 3 did not present with fever, 1 had leukocytosis at the time of parotitis. All 3 had prolonged use of systemic steroids and chronic diuretics for BPD. All 3 were exclusively G tube fed without feeding by mouth. Two were diagnosed by CT and one by ultrasound. All 3 had full work up to exclude infectious etiology that were all negative. Two infants were treated with empiric course of antibiotics. Two infants had immunologic evaluation and were immune-suppressed. Two had recurrent parotitis. There were no other complications following parotitis.

Conclusion: Non-infectious parotitis can complicate the clinical course of tracheostomized and ventilator-dependent infants with BPD. Multiple factors including immune suppression, prolonged steroid exposure, chronic diuretic use, non-oral feeding and tracheostomy may play a role in its pathogenesis. While there was recurrence in 2 cases, the clinical course appeared to be self-limited.
Background: Chiari II malformation is associated with reduced life expectancy. Major causes of death include severe apnea, cardiac arrhythmias and vocal cord paralysis. We report short-term functional outcomes of 7 infants with Chiari II who received tracheostomy for home mechanical ventilation.

Method: Retrospective review

Results: Over 5 years, total of 39 infants with Chiari II were discharged from the NICU. Of these, 7 (18%) had tracheostomy for home mechanical ventilation. All born at term, 4 males. Myelomeningocele repaired and VP shunt placed at median age of 1 day (range 1-5 days) and 5 days (1-46 days) respectively. Tracheostomy placed within 3 months of age (1-3 months), all but one due to central apnea and vocal cord paralysis. All infants were provided chronic ventilation at parent’s request. Current ages range 2 months to 5 ½ years. Of the 7, 1 is decannulated and 6 remain tracheostomy-dependent. Of these 6, 2 weaned off the ventilator, 3 receive nocturnal ventilation, and the youngest, 2 month old is ventilator-dependent 24 hours/day. All 7 are gastrostomy tube-dependent for nutrition, and 5 are urinary catheter-dependent for neurogenic bladder. 6 of the 7 are now >2 years and are wheelchair-bound, and have speech/language delay and receiving physical, occupational and speech therapies.

Conclusion: In a series of 7 infants with Chiari II malformation, only 1 is successfully decannulated. All continue to have complex medical needs with significant functional delays. These results underscore the ongoing morbidities, neurodevelopmental impairments, and risk for mortality faced by this vulnerable population.
RADIOGRAPHIC ASSESSMENT OF THE MASTOID AFTER CANAL WALL UP CHOLESTEATOMA SURGERY WITH OR WITHOUT MASTOIDECTOMY

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Objectives:

1) Assess whether or not mastoid ventilation normalizes after canal wall up (CWU) cholesteatoma surgery

2) Compare mastoid ventilation after canal wall up cholesteatoma surgery with or without mastoidectomy

Methods:

Magnetic resonance imaging (MRI) was obtained for cholesteatoma surveillance a mean of 4 years after CWU surgery on 35 children. Scans demonstrating rhinosinusitis, otitis media with effusion, or recurrent cholesteatoma were excluded. Mastoid opacification was assessed in both ears using an ordinal scale from 0 (no opacification) to 6 (completely opacified). The primary outcome measure was presence of normal mastoid ventilation, defined by evaluation of non-operative ears as a score of <3. The presence of normal ventilation and opacification scores were compared according to type of cholesteatoma surgery: (1) transcanal, without mastoidectomy, (2) combined approach tympanomastoidectomy (CAT).

Results:

Mastoid ventilation was normal in 18 post-operative ears (51%). There was no statistically significant difference in the proportion of normally ventilated mastoids in the CAT (n=17) and transcanal (n=18) groups (p=0.318; Fisher's Exact). However, mastoid opacification scores were significantly higher in the CAT group than in the transcanal group (p=0.036; Mann-Whitney U).

Conclusion:

The mastoid frequently fails to become normally ventilated after cholesteatoma surgery. Cortical mastoidectomy does not increase the likelihood of normal mastoid ventilation after CWU cholesteatoma surgery. MRI provides a non-invasive tool to assess mastoid function, which contributes to the current debate on optimal surgical strategies for management of the mastoid in cholesteatoma surgery.
ANAPHYLACTIC SHOCK AFTER SUSPENSION LARYNGOSCOPY DUE TO A RUBBER TOOTH GUARD

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Intro:

Anaphylaxis is an allergic reaction that occurs within seconds to minutes of allergen exposure due to rapid release of histamine and inflammatory mediators. Anaphylaxis often presents with skin rash, edema, diarrhea, nausea, and/or anxiety. Anaphylactic shock is an extreme form of anaphylaxis consisting of circulatory collapse leading to severe hypotension, bradycardia, and hypoxia. There is less than a 1% risk of latex allergy in the general population, but a 68% risk in patients with spina bifida. Many institutions, including our own, report being latex free. Onset of anaphylactic shock can occur almost instantly when allergen contacts mucosal surfaces. Indeed, this is what occurred with our patient, a healthy 16 year-old girl, who underwent suspension laryngoscopy. Almost immediately after a black natural rubber tooth guard was placed in the patient’s mouth, she experienced refractory hypotension, hypoxia and bradycardia.

Methods:

Recognition of anaphylactic shock as a source of extreme hypotension was made promptly based on symptoms and elevated tryptase levels. A latex allergy was suspected and confirmed after a literature search and education on what constitutes latex.

Results:

Latex and natural rubber are the same thing. Our patient required vasopressors for two days in the intensive care unit but made a full recovery.

Conclusion:

As Otolaryngologists we are more familiar with anaphylaxis in the form of edema or bronchoconstriction, and less so cardiovascular symptoms. Prompt recognition is the key in these situations. Rubber tooth guards, which contain latex, are a preventable source of anaphylaxis and should be removed from laryngoscopy sets.
Background: The Auditory Brainstem Response (ABR) test is used to measure hearing thresholds of children who cannot be tested using standard behavioral hearing testing methods. The test is typically conducted with the use of a general anesthetic, with its inherent risks and costs. Since 2004, ABRs have been routinely conducted at our tertiary care institution in an ambulatory care setting under oral chloral hydrate sedation.

Objectives: The aim of this retrospective study was to assess the effectiveness and safety of nurse-led sedation with chloral hydrate for ABR testing at our tertiary pediatric center.

Methodology: ABR records were reviewed for children aged 6 months to 17 years from 2004 to 2012. We noted the dosage of drug used, condition of the child after chloral hydrate administration, adverse effects, audiological results, patients’ vital signs, and the effectiveness of sedation. Frequency distributions were derived for adverse outcomes.

Results: 725 ABR records encompassing 635 children were reviewed. The majority of sedated ABR’s (80.4%) were completed without incident. Significant events [apnea and/or bradycardia], minor complications [vomiting, hypoxemia, prolonged sedation, and/or tachypnea] and restlessness were noted in 3.4%, 6.2%, and 5.0% of the cases, respectively. In 96.1% of ABRs, chloral hydrate was successful in sedating the child adequately.

Conclusions: Based on our results, the use of chloral hydrate in the presence of a sedation nurse was a safe and reliable method of performing ABR in infants and children. This may be of significant value to centres worldwide exploring alternatives to general anesthesia for ABR testing.
Introduction: Congenital laryngeal cystic lesions are extremely rare. Vast array of surgical procedures have been proposed to manage saccular cysts adequately. However, some controversy still exists in literature concerning different therapeutic strategies.

Methods: A comprehensive search for relevant articles was carried out on ten different electronic databases. Articles published in English until March 2015 were eligible for review. Using predefined inclusion criteria, published articles on surgical outcomes in the management of laryngeal saccular cyst, were selected, reviewed, and their findings synthesized.

Results: Twenty-two studies met the inclusion criteria for this systematic review comprising a total of 55 patients who underwent 152 surgeries. Better outcomes were observed with endoscopic excision for small cysts and external approach for large cysts versus aspiration, drainage and marsupialization.

Conclusion: This review recommends removing small saccular cysts endoscopically and larger cysts externally.

Keywords: Larynx, cyst, saccular, pediatric, excision, unroofing, marsupialization, uncapping, aspiration, drainage, stridor, airway obstruction, hoarseness.

Running head: Laryngeal Saccular Cyst Management.
Thyroglossal duct cyst (TGDC) is one of the most common congenital anterior midline neck masses in pediatric population. Sistrunk operation considered as the corner stone in TGDC removal. Nevertheless, 5 to 7 % of patients have been reported to show a recurrence even after ample resection has been achieved. On the other hand, less invasive modalities are sometimes used, and doxycycline sclerotherapy is one such method. However, using sclerotherapy as TGDC treatment is controversial because such cases that have been successfully treated with sclerotherapy are rare, and there are no enough published data about recurrence of symptoms post treatment. In our case, we review a successfully treated recurrent TGDC using sclerotherapy with doxycycline. This report shows very encouraging results with sclerotherapy in treatment of recurrent thyroglossal duct cyst.

Keywords: thyroglossal, cyst, recurrent, sistunk, sclerotherapy, doxycycline.
Introduction: The platinum compounds Cisplatin and Carboplatin are two of the most widely-used chemotherapy drugs available. They are highly effective against a variety of soft tissue neoplasms. However, their use is limited by their ototoxic side effects. There is currently no prediction, prevention or treatment for ototoxicity. Given the growing incidence of platinum-induced hearing loss and associated costs, there is a need to discover biomarkers capable of identifying individuals who are susceptible to developing ototoxicity.

Objectives: Our objectives were to study the impact of genetic variants TPMT, COMT, and ABCC3 on the susceptibility to platinum-induced ototoxicity and to determine the impact of these genes on hearing loss progression among the patients that have developed hearing loss.

Methods: A randomized-controlled study was designed to recruit patients from McGill University Health Centre treated with platinum-based chemotherapy. Audiometry tests, using the American Speech Language Hearing Association criteria to compare baseline and post-therapy, and baseline and follow-up tests used to determine the ototoxicity incidence. A preliminary evaluation was completed using blood samples and audiology data. Logistical regression was used to test the association between presence of genetic variants and ototoxicity.

Results: Polymorphisms of the TPMT, COMT and ABCC3 genes did not show any correlation to ototoxicity (P > 0.05). However, ABCC3 rs1051640 variant was associated with hearing-loss progression after treatment (P ≤ 0.05).

Conclusion: The results of this study contribute to the establishment of a standard genetic profile for susceptibility to platinum-induced ototoxicity. Only ABCC3_rs1051640_CT_R showed significant correlation to hearing loss progression in hearing loss cases.
Background: Shared decision-making is recognized as an integral part of informed consent, especially in the case of elective medical care. Decision aids are practical tools that can be used to facilitate shared decision-making, and have been shown to result in a number of favorable outcomes. There are currently few empirically designed and tested decision aids available in pediatric otolaryngology.

Methods: Using the process recommended by the International Patient Decision Aids Standards, we developed and refined a decision-aid for tonsillectomy for pharyngotonsillitis and sleep disordered breathing. We conducted a needs assessment including video observations and interviews with surgeons and parents of patients. We conducted a scoping literature review to populate the decision aid, constructed a prototype of the tool, and gathered feedback on the prototype from surgeons, nurses, decision experts, and parents.

Results: In the needs assessment, parents and providers both indicated a desire for tools to facilitate shared decision-making and identified areas to be included in the tool (description of treatment options, risks and benefits of treatment options, values clarification). In review of the prototype, parents and providers found the decision aid to be visually appealing and perceived it to be useful. Wording and presentation recommendations were suggested and incorporated into a revised version.

Conclusions and Future Directions: We used a systematic process to develop a protocol of a decision aid that parents and healthcare providers found to be accessible and useful. Further field testing and a trial testing the efficacy of our tool are in process.
Nasal chondromesenchymal hamartoma is a very rare benign tumor of the nasal cavity and paranasal sinuses that usually presents in infancy. These tumors may be expansile and locally destructive. The etiology is unclear but it has been linked to pleuropulmonary blastoma and the mutations in the DICER-1 gene. We present a rare adolescent presentation within the inferior turbinate and a review of the literature to date. Although quite rare, awareness of this lesion is important to avoid confusion with malignancy and prevent overaggressive treatment, as well as guide genetic counseling.
INFREQUENT DIAGNOSIS OF SYMPTOMATIC CONGENITAL CYTOMEGALOVIRUS INFECTION IN BRITISH COLUMBIA

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Objective. To evaluate the number and presentation of congenital cytomegalovirus (cCMV) infections diagnosed in a large Canadian province.

Study Design. Data were reviewed for all infants <3 weeks old tested for CMV at the British Columbia provincial reference laboratories between September 1, 2006 and June 30, 2014. Chart review was performed to characterize the clinical presentation of those infants diagnosed with cCMV. The number and presentation of cCMV cases identified in BC were compared with those reported by prospective population-based studies of cCMV.

Results. During the study period 701 newborns were tested for cCMV. Of these, 14 (2.0%) were positive, representing 4.2 cases of cCMV diagnosed per 100,000 live births in BC during the same time period. Medical records were available for review for 13 (93%) cases diagnosed of which ten (77%) evaluable patients had global developmental delay and/or sensorineural hearing loss.

Conclusion

Despite a relatively large number of newborns tested, fewer then 10% of the expected number of cases of symptomatic cCMV infection were diagnosed in BC. Those infants that were diagnosed had severe disease. Strategies are needed to more effectively identify infants with symptomatic cCMV infection that would benefit from current interventions.
Rett Syndrome (RS) is a neurodegenerative disorder that afflicts females and is characterized by rapid neurologic regression in early childhood and potentially life-threatening respiratory abnormalities. Much is reported on the respiratory dysfunction during wakefulness, but only recently has sleep disordered breathing been examined in these patients. We present a retrospective review of polysomnographic data on children with RS at our institution, highlighting a six year old girl with particularly interesting results. This is only the second report in the literature that details perioperative polysomnographic data in a patient with RS who underwent adenotonsillectomy. After surgery, our patient’s predominantly central apnea nearly resolved, as her apnea-hypopnea index (AHI) decreased from 18.3 to 0.4 events per hour. Interestingly, the improvement was transient as several months later her AHI was 16.5. In addition to differences noted in results of this patient, our data reveal marked variability between patients. Central apnea was the predominant cause of sleep apnea in nine patients (60%), but obstructive hypopnea indices were also significant in ten patients (67%). We suggest that multiple polysomnograms should be obtained as part of the evaluation of patients with RS who are suspected of having sleep disordered breathing, as the type and severity of apnea may fluctuate with progression of the disease. Furthermore, while its role merits continued study, adenotonsillectomy should be considered in these patients.
PETROUS APICITIS IN A PREVIOUSLY HEALTHY 8-YEAR-OLD FEMALE: A CASE PRESENTATION AND REVIEW OF THE LITERATURE

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Introduction: Petrous apicitis, resulting from extension of acute otitis media into a pneumatized petrous apex, is a rare but serious sequela. Complications include cranial nerve palsies, meningitis, labyrinthitis, intracranial abscess formation, retropharyngeal abscess, venous sinus thrombosis, and death.

Case Report: We present an 8-year-old female who presented with blurred vision, headache, and sixth cranial nerve palsy. Symptoms began with two weeks of left posterior occipital headache and intermittent subjective fevers. Vital signs were normal and she had no leukocytosis although her differential showed a neutrophilic predominance; ESR/CRP were elevated. Physical examination revealed medial deviation of left eye and inability to adduct past midline. Head CT showed opacification of the left middle ear cavity. MRI showed abnormal enhancement extending from the left orbital apex to the left petrous apex and Meckel's cave. She underwent left myringotomy with PE tube insertion, from which culture was negative. She was discharged on ceftriaxone and ciprodex drops. One month later, inflammatory markers remained elevated and she had a persistent left abducens nerve palsy, but by two months, ESR/CRP had normalized and her palsy resolved.

Discussion: The signs of petrositis include deep-ear pain, otorrhea, retroorbital pain, and abducens nerve paralysis. However, the classic Gradenigo's triad is rare. S. pneumoniae, H. influenzae, and P. aeruginosa are the most commonly found bacteria. Traditionally treated with mastoidectomy and when necessary decompression of the petrous apex, the current trend, as in this case, is more conservative management with myringotomy and high dose broad-spectrum antibiotics, reserving surgery for refractory cases.
SUBMANDIBULAR APPROACH TO ANTERIOR C2-C4 DISC SPACE IN THE MANAGEMENT OF ANEURYSMAL BONE CYST

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Outcome Objectives:

We describe a challenging trans-cervical approach in the pediatric population for direct access of anterior C2-C4 disc space.

Methods:

Case Report

Results:

A 10-year old female presented to the emergency room with a progressively enlarging posterior neck mass. Magnetic resonance imaging (MRI) revealed a large aneurysmal bone cyst. Patient initially underwent resection of the tumor through a posterior approach and required subsequent anterior fusion and instrumentation of C2-C4.

The anterolateral approach was performed through the submandibular triangle. A curvilinear incision was made along the inferior edge of the submandibular gland to the midline hyoid. The hypoglossal nerve was identified deep to the digastric muscle as the superior extent of the exposure. Transection of the infra-hyoid muscles provided further exposure superiorly and medially. The lateral extent of the exposure was the external carotid artery. The superior thyroid artery and the superior laryngeal nerve were both identified and skeletonized at the inferior extent of the surgical field. This allowed direct anterior access to C2 to C4 for anterior cervical discectomy with placement of interdisc spacers using iliac crest autograft and instrumentation between C2-C4 to achieve anterior fusion.

Conclusion:

Pathology that requires anterior access to C2-C4 cervical spine is rare, especially in the pediatric population. We describe a trans-cervical submandibular approach to the anterior C2-C4 disc space that is safe and effective, and provides our neurosurgical and orthopedic spine colleagues with excellent visualization for direct access to the C2-C4 disc space with a surprisingly large operative field for instrumentation.
Purpose

For the last two years, there has been an institutional initiative to increase patient access to pediatric specialists and to reduce long wait time. We conducted this study to evaluate the seasonal variability in new patient wait time in a busy pediatric otolaryngology clinic. Specifically, potential barriers to medical care were evaluated to identify discrepancies in timeliness and equality of access.

Methods

Retrospective chart review was conducted using electronic appointment records to evaluate new patient wait time in days from the date the scheduling to the date of visit. These appointments were taken from the first complete week of every month in 2014 as a representative sample of the entire month. Appointment wait times were then grouped by type of insurance, and language preference. The wait times for each group were assessed for statistical significance by ANOVA analysis. IRB waiver was obtained as the project meets criteria for quality improvement to increase access.

Results

Significant seasonal variability was seen in the wait time. No statistically significant difference was found based on types of insurance or English as second-language patients. Although, an increased wait time was seen for Medicaid patients compared to PPO patients in the peak months, this was not found to be statistically significant.

Conclusions

Patients are able to obtain timely access to a busy pediatric otolaryngology clinic despite barriers to care. During peak season, we need to be cognizant of barriers created by insurance and language to ensure equal access.
POSTERIOR PHARYNGEAL WALL AUGMENTATION WITH HYALURONIC ACID IN A CLARINETIST WITH STRESS VELOPHARYNGEAL INCOMPETENCE

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Introduction: Stress velopharyngeal incompetence (SVPI) is the inappropriate coupling of the oral/nasal cavities during high-demand tasks requiring elevated intraoral air pressure. SVPI is described in the literature and typically occurs in musicians who play certain woodwind and brass instruments that can require up to 30 times the oral pressure typically produced during speech.

Case Details: We report the case of an 18-year old pre-professional clarinetist who began gradually developing stress VPI at the age of 13. When she presented to our institution, the patient had progressively experienced difficulties with extended practice sessions and during performances. Videoendoscopic and videofluoroscopic evaluation of velopharyngeal closure both during speech production and while playing the clarinet demonstrated small bilateral leaks located on either side of the adenoids only while playing clarinet. She underwent directed posterior pharyngeal wall augmentation with hyaluronic acid. On postoperative visit, she reported no leakage subjectively and videoendoscopic/videofluoroscopic examination confirmed velopharyngeal competence while playing the clarinet in the low and high registers.

Conclusion: Posterior wall augmentation is a relatively safe procedure for certain cases of stress VPI secondary to small gaps in velopharyngeal closure. Hyaluronic acid has been used as a bulking agent in the treatment of incontinence, vocal cord paralysis, and in speech velopharyngeal incompetence. There is currently no existing literature reporting the use of hyaluronic acid in stress VPI in musicians. This low-morbidity procedure appears to have good utility in these cases while causing little discomfort or sequelae.
Objective: To determine the long-term prognosis of children with vocal fold mobility impairment (VFMI) after cardiac surgery, with respect to time to normal feeding and incidence of admissions.

Methods: A retrospective chart review was conducted of all neonates who had otolaryngology exam as part of a feeding evaluation protocol prior to oral feeding after cardiac surgery at a tertiary children’s hospital from May 2007 through May 2008. Charts were reviewed until December 2013.

Results: There were a total of 94 patients included in the study, 17 of whom had vocal fold immobility. The mean time to follow up for all patients was $4.2 \pm 2.2$ years. Of the 17 patients with VFMI, 9 neonates had restricted diet at time of discharge and the mean time to regular diet was $1.3 \pm 1.67$ years. Of the 77 patients with normal vocal fold mobility, 15 had restricted diet at time of discharge and the mean time to normal diet was $1.8 \pm 1.9$ years. This difference was not statistically significant. For those patients with restricted diet at discharge, 52% returned to full feeds within a year. Of all inpatient hospitalizations admissions for patients with VFMI, 47% were related to aspiration, pneumonia, or feeding difficulties, compared to only 17% in patients with normal vocal fold mobility. This was statistically significant.

Conclusions: It does appear that there is increased risk for hospitalization with respect to aspiration, pneumonia and feeding difficulties. The overall prognosis for time to oral feeding is good.
Objective

Childhood haemoptysis is an uncommon presentation to the otolaryngologist but has varied and potentially life-threatening aetiology. We performed a systematic review to assess paediatric otolaryngologists’ experience with haemoptysis, the aetiology involved, investigations performed and management provided. We present an evidence-based treatment algorithm to guide clinicians.

Method

A systematic literature review of PUBMED, EMBASE and Cochrane Collaboration using the search terms 'paediatric', 'child', 'neonate', 'adolescent', 'haemoptysis', 'coughing blood', 'spitting blood' and 'otorhinolaryngology'.

Results

Five articles were retrieved including 106 patients (age range 3 weeks to 18 years). The 3 commonest aetiologies were bronchitis (n=9), idiopathic/ no cause found (n=9) and pneumonia (n=7). Flexible bronchoscopy was the commonest investigation performed in non-active cases whilst rigid bronchoscopy was performed for active haemoptysis to provide therapeutic interventions. Chest x-ray was performed as a screening investigation rather than CT scan, which was reserved to assess pathology further, in recurrent cases and when x-ray was inconclusive.

Conclusion

Haemoptysis aetiology is varied and non-cancerous in this patient population but may be life-threatening in cases of pulmonary agenesis and vascular abnormalities. No cause may be found. There is no difference between otolaryngologists' and respiratory physicians' experience.
PAEDIATRIC BRONCHOSCOPY SAFETY IN A NON-TERTIARY CENTRE

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Purpose

Paediatric rigid bronchoscopy is an important diagnostic procedure and adjunct to therapeutic airway intervention. It is only performed occasionally in our hospital. We assessed the issues surrounding the performance and safety of paediatric bronchoscopy and how these would influence future practices.

Method

Retrospective review of hospital trust's coding department records, mortality and morbidity data and patients' medical records to assess numbers performed between May 1996 and December 2014 inclusive. The specialties involved, indication, complications and mortality resulting from the procedure were assessed.

Summary of results

Eighty-six bronchoscopies were performed during the study period by 4 different specialties with otolaryngology performing the most (n=36). Thirty-three percent were performed on an emergency basis; only 4 were performed with a therapeutic airway procedure. The number performed annually was highly variable (range 1-13) with the trend showing reduction over time. No complications or mortality were recorded.

Conclusions

The low and falling volume is concerning. Individuals' ability to perform emergency airway assessment and intervention can be questioned because exposure and training opportunities are limited. Patients may benefit from expertise being concentrated in 1 department or 1 or 2 specialists. Otolaryngologists may benefit from formal training in flexible bronchoscopy.
BALLOON DILATATION TO TREAT SIALADENITIS IN YOUNGER CHILDREN

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Purpose

Sialadenitis is rare in the pre-adolescent child population. A variety of techniques have been described to treat paediatric sialadenitis including more recently balloon dilatation of the salivary ducts. We describe a series of pre-adolescent children successfully treated with balloon dilatation, previously only described in adolescents.

Methods

Case series of patients in a single institution (n=2)

Summary of results

Both patient in this series reported improvement in their symptoms from sialadenitis following balloon dilatation and remained symptom free at three month follow-up.

Conclusions

Balloon dilatation of the salivary ducts to treat sialadenitis can be recommended in children as well as adolescents. Balloon dilatation avoids the need for a general anaesthetic in this patient group and can be safely performed in the younger child.
Background: Otitis media (OM) is one of the most common childhood diseases. Its pathophysiology is complex and multifactorial. The role of specific mucin glycoprotein subtypes in OM is only recently being elucidated.

Objective: To determine the relationship between middle ear fluid mucins and clinical variables of patients needing tympanostomy tubes (TT).

Methods: Middle ear effusions (MEE) from children receiving TT were collected over a 2 year period. Western blot characterization of mucins MUC5B and MUC5AC along with chart review of age, gender, effusion viscosity, hearing loss >30dB, history of allergies, and/or respiratory disease was performed.

Results: MEE samples from 58 patients were available for analysis. Overall, MUC5B was significantly more often detected in middle ear fluid relative to MUC5AC (90% vs. 51%, p=0.005). While mucoid effusions were always positive for MUC5B presence relative to serous effusions (100% vs. 57%, p=0.0064), MUC5AC presence was not significantly different in mucoid and serous fluid (55.1% vs. 37.5%, p=0.447). Patients younger than 48 months were more likely to present with mucoid effusion, compared to those older than 48 months of age (p=0.038). Finally, patients with effusions positive for MUC5B were younger than those with effusions negative for MUC5B (35.1 vs. 76 months, p=0.045). No other variables correlated to either effusion viscosity or specific mucin content.

Conclusion: Patients younger in age needing TT placement are more likely to present with mucoid effusions, predominantly containing MUC5B mucin. As such, we postulate a distinct pathophysiology for mucoid and serous effusions across ages in children with chronic OM.
A GLOBAL CHOKING PREVENTION INITIATIVE: AN UPDATE AND APPEAL FOR FURTHER COLLABORATION IN PUBLIC HEALTH EDUCATION

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Purpose: To review the educational website www.dontchoke.ubc.ca (as well as the results of a pilot study regarding its effectiveness in high school students); and to share recent global website usage data and explore future educational and research directions.

Methods: Building on previous studies on choking prevention education from Crete, Isreal and Canada, dontchoke.ubc.ca was constructed with layers of text, images and video concerning physiological and cultural aspects of choking. 122 grade 11/12 students were administered a 30-item questionnaire (using a 5-point Likert scale) before and after introduction to the website by their science teachers. A paired t-test was used to determine if exposure to the website affected the students' perspectives on various aspects of choking. Global usage of the website over the last 21 months was measured via Google Analytics.

Results: Prior perspectives of high school students on awareness of choking hazards and prevention were both completely transformed (p<0.0001) to those consistent with the principles of science through exposure to dontchoke.ubc.ca. Over the last 21 months, 9,448 website visits have occurred; with more than half within the last 3 months. Although Mandarin, Spanish, French, Portuguese and Arabic translations have been posted over the last 6-15 months, more than 40% of website visits have occurred from the U.S. and Canada (followed by Saudi Arabia, Brazil, France, China, Columbia, Mexico and the U.K.).

Conclusions: dontchoke.ubc.ca appears to be educationally effective in high school students; long-term international analysis is needed, as well as further strategies to disseminate the website to schools and care-providers.
Introduction

Seventy-five percent of child abuse cases involve injuries to the head and neck.

Methods: A systematic review of the literature was performed for cases of child abuse that involved the speciality of otolaryngology.

Results: 41 papers pertaining to child abuse were identified from this review that dealt with either the involvement of an otolaryngologist or injuries were otolaryngological in nature. That majority of the cases that were found were sustained to the hypopharynx and larynx followed by otological injuries.

Discussion: The index of suspicion for child abuse must remain high for any unusual injury to the hypopharynx and ears in an infant or child. Otolaryngologists although specialists by definition, can be primary care physicians for the majority of child abuse cases. Through their knowledge as specialists, otolaryngologists can test the plausibility of a parent/caregivers story while recognizing symptoms that may mimic abuse in children.
Introduction: Laryngeal webs are rare and either present congenitally or are acquired primarily to due trauma. We present a patient with VACTERL syndrome with a congenital laryngeal web occluding 95% of her larynx repaired on day five of life.

Case Presentation: A 2 day old female with VACTERL syndrome had repair of an imperforate anus with the anesthesiologist reporting difficulty intubating the patient. For the surgery the tip of the endotracheal tube was placed at the laryngeal inlet. Three days later the otolaryngology service was consulted as the patient had an abnormal cry and intermittent biphasic stridor. Direct laryngoscopy in the operating room noted a thick type IV congenital laryngeal web occluding 95% of the infants larynx.

Management and Outcome: Following tracheotomy, the web was lysed along the idling and a cricoid split and laryngofissure with a keel insertion was undertaken. Following removal of the keel, minor granulation tissue was noted along the surface of the vocal chord. The vocal chords subsequently healed nicely with a small anterior web. The patient has required no further intervention over the past 15 years.

Discussion: This case presents a rare clinical finding of type IV laryngeal web successfully repaired five days post delivery with a keel and subsequent long term follow up (15 years) during an era when it was suggested that repair be delayed until 18 months of age at the earliest.
As high as 86% of pediatric Cystic Fibrosis (CF) patients are affected by chronic rhinosinusitis with sinonasal polyps (CRSwNP). Nasal glucocorticoids are the most common medical management option for polyposis; recurrence is common and it can be contraindicated in certain contexts. Endoscopic sinus surgery is the effective and preferred method for removing polyp burden; polyp regrowth is often evident at the first follow-up visit after surgery and repeated general anesthetics pose additional risks for pulmonary deterioration in CF.

Using a novel intraoperative application of topical interferon gel and periperative interferon-saline irrigation, we report two cases of dramatic improvement in the natural course of recurrent polyposis. In both cases, the patients had undergone more than four ESS surgeries for polyposis, both requiring at least two surgeries annually for complete nasal obstruction. Treatment resulted in both patients sustaining effects with nasal patency, decreased antibiotic usage and minimal polypoid change for 2 years.

This novel treatment is the subject of an ongoing prospective drug study, and has promise for decreasing symptom severity and the frequency of necessary surgical intervention in patients with CF-related or allergic polyposis conditions.
Auditory neuropathy spectrum disorder (ANSD) is a hearing disorder where there is disruption of the signal from the inner hair cells to the cochlear nerve. Hearing loss caused by ANSD can range from mild to profound, can fluctuate, and basic auditory testing might not be completely accurate in assessing true hearing function in these patients. Electrophysiological tests such as Brainstem Auditory Evoked Response is required for diagnosing this disorder, but it is unable to quantify the amount of hearing loss. Also, the etiology of ANSD is quite varied and it may include auditory nerve hypoplasia, prematurity, hyperbilirubinemia, anoxia, congenital brain anomalies, ototoxic drug exposure and genetic factors.

We present a case of identical twins born at 35 weeks with ANSD. One of the twins failed their newborn hearing screening (NBHS) and diagnostic testing revealed ANSD. He has bilateral profound hearing loss and had normal imaging studies. Interestingly, his twin had mixed results of his NBHS but due to his brother’s diagnosis, he had a diagnostic ABR which also revealed bilateral auditory neuropathy. They are both being evaluated for bilateral cochlear implantation as hearing aids are not always beneficial.

We will discuss the need to reinforce our philosophy of universal newborn hearing screening with automated auditory brainstem response (AABR) screening instead of otoacoustic emissions (OAE) so as not to miss normal healthy infants with ANSD. We will discuss the heterogeneous nature of this population and the need for case by case review of treatment options for patients with ANSD.
Ingestion, aspiration, and impaction of button batteries account for over 3,300 annual exposures and can result in morbid and even fatal sequelae. Invasive procedures are often required to avoid or minimize injury from caustic exposure, electrical injury, and pressure necrosis.

As a result of a patient’s case with unilateral vocal cord paralysis secondary to button battery ingestion that we presented previously, an introspective evaluation was conducted to assess complications experienced in our military population. As a result we present a series of eight patients with button battery impactions managed at a single military tertiary care center from 2008 to 2015 with two highlighted cases demonstrating morbid long-term complications. The first is a case of a persistent perforated nasal septum following impaction in the nasal passage for greater than 48-hours. The second case expounds on the aforementioned patient with unilateral vocal cord paralysis and an esophageal stricture that required multiple cord medialization and esophageal dilation procedures. This case series demonstrates a moderate-to-severe complication rate of 25%, which is higher than recent data from the National Poison Data System that reports a range of 2.4 to 3.2%.

Our experience demonstrates the persistent need to report these events and complications in order to educate our colleagues as well as the lay population and press about the danger of button batteries. We submit this case series from the perspective of a military treatment facility to provide information on uncommon presentations and unique long-term sequelae associated with button battery ingestion.
Second branchial cleft anomalies are the most common branchial cleft anomaly. They frequently present as a cyst along the anterior border of the sternocleidomastoid muscle with or without a sinus tract. Fistulas are rare occurrences and traditionally present with an external opening in the anterior neck over the lower one third of the sternocleidomastoid muscle and travel along the carotid sheath between the external and internal carotid arteries, deep to cranial nerve VII and superficial to cranial nerves IX and XII, and terminate with an internal opening at the ipsilateral middle constrictors or tonsillar fossa. We present a case report of a 1 year old female who presented with recurrent drainage from a skin pit over the right angle of the mandible. Magnetic resonance imaging (MRI) with fistulogram revealed a sinus tract that began at the cutaneous pit, communicated with a 1.9 x 2.3 cm cyst in the submandibular space, and suggested extravasation into the oral cavity at the right floor of the mouth. The patient underwent successful surgical excision of the cyst and sinus tract. No evidence of intraoral connection was found intra-operatively and the area of extravasation noted on the MRI fistulogram appeared to be through the cyst wall into the muscle of the tongue only. Pathology revealed a squamous lined cyst consistent with a branchial cleft remnant. This case report raises awareness to the variability in presentation of second branchial cleft anomalies and highlights the utility of pre-operative MRI with fistulogram.
The original technique for implantation of the cochlear implant (CI) receiver/stimulator (R/S) in both adult and pediatric patients included drilling a bony well posterior and superior to the mastoid. In the young pediatric patient undergoing cochlear implantation, the traditional technique of drilling a bony well poses a risk for underlying dural injury due to thin calvarium. Longer skin incisions and larger soft tissue flaps used in the traditional technique also pose a risk for flap infection, hematoma or seroma formation, skin necrosis, and delayed healing. Recent literature has shown successful outcomes with less invasive techniques to secure the R/S in young pediatric patients including the subperiosteal pocket technique without drilling a bony well, using smaller skin incisions, and smaller subperiosteal flaps. Our group presents a new technique in which a rotational Palva flap is used to secure the R/S in a subperiosteal pocket. The tension band created by the flap prevents anterior displacement of the implant in the early postoperative period. The advantages of this technique include its simplicity which adds minimally to operative time, and enhanced stability. Risk of dural injury from calvarial bone drilling is avoided without increased risk of hematoma formation. The rotational Palva flap is an efficient, safe, highly reproducible technique that ensures stability of the R/S in the subperiosteal pocket. It is particularly well suited to young pediatric patients with thin calvaria in whom calvarial drilling poses a risk of dural injury.
PEDIATRIC INVASIVE FUNGAL RHINOSinusitis: AN INVESTIGATION OF 17 PATIENTS

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Purpose: To investigate the demographics, presentation, surgical management, and outcomes of pediatric patients at a single institution with invasive fungal rhinosinusitis (IFRS).

Methods: All pediatric patients at a large tertiary children’s hospital diagnosed with IFRS confirmed by surgical pathology from 2009-2015 were retrospectively reviewed. 17 patients were identified. Demographics, underlying diseases, symptoms, antifungal therapy, pertinent labs, surgical management, and outcomes were analyzed.

Results: The cohort’s average age was 8.7 years, 53% male. Hematologic malignancy was the most common (n=13) underlying disease. The most common presenting symptoms were fever (82%) and congestion (41%). 15 patients had severe neutropenia (Absolute Neutrophil Count (ANC) < 500) within 2 weeks prior to diagnosis. The average ANC at time of diagnosis was 1420. Sixteen patients were treated with serial nasal endoscopy and debridement, while 1 patient was treated with an open approach. All were concurrently on combination antifungals. The most common genus cultured was Fusarium (n=6). The average number of surgical interventions was 3.4, with the average interval between interventions 6.2 days. 12 patients (70.6%) were cured of their disease. Overall mortality of the group was 11 (64.7%), with 4 of 17 (23.5%) partially attributable to invasive fungal disease.

Conclusion: Pediatric IFRS is a life-threatening disease that requires a coordinated surgical and medical approach. Despite a relatively high cure rate, overall mortality remains disappointingly high, reflecting predisposing medical conditions that underlie the disease. Further investigation is necessary to reveal optimal management with regards to antifungal therapy, surgery, and utility of labs.
Kniest dysplasia is a type II collagen disorder that arises from a genetic mutation of the COL2A1 gene. This uncommon inherited disorder results in short stature, midface anomalies, tracheomalacia, and hearing loss. Disruption of the normal collagen pathway can lead to many changes given its critical role in the body, and can cause complications with respect to wound healing. We present a case in which a patient with Kniest dysplasia successfully underwent multiple procedures in the head and neck region including tracheotomy, cochlear implantation, mandibular distraction, and laryngotracheal reconstruction. All procedures did not have any associated complications with respect to wound healing, indicating that surgery in this population can take place as indicated.
A BLEEDING SUBGLOTTIC HEMANGIOMA IN A PRETERM BABY WITH COEXISTING CHORISTOMA:
TREATMENT AND MANAGEMENT DILEMMAS

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An ex 33week baby was transferred intubated from the neonatal unit following respiratory arrest at 20 days of life, actively bleeding via the endo-tracheal tube.

Laryngobronchoscopy revealed a bleeding subglottic hemangioma. MRI confirmed a subglottic and tongue base hemangioma; with a second tumor in the post nasal space. The infant (<1.9kg) was commenced on propranolol, steroids and tranexamic acid. Bleeding resolved in 24hrs.

A week later microlaryngoscopy bronchoscopy revealed resolution of the subglottic hemangioma and reduction in the tongue base hemangioma. An examination revealed the choristoma within the PNS. Following further medical treatment, the choristoma was removed and the infant successfully extubated one week later. Remaining on propranolol, 6 weeks later is well with resolution of the subglottic hemangioma.

Discussion
An active bleeding subglottic hemangioma in a pre-term infant has not previously been described with evidence for optimal treatment in preterms is lacking. Surgical management in a pre-term would be technically difficult. Medical management with propranolol or tranexamic acid in a pre-term infant, has not been described and optimal dose controversial. However the propranolol controlled the active bleeding avoiding need for surgical control. The use of steroid as an adjunct was controversial due to significant risks in pre-terms.

Choristoma, a rare second pathology, contributed to the airway obstruction and needed treatment to allow successful extubation.

Conclusion
This is the first described case of a bleeding subglottic hemangioma in a preterm neonate. It presented a number of challenges to multi-disciplinary team in the acute and subsequent management with a successful outcome.
Objective: Many studies have shown that the development of otitis media with effusion (OME) in children was correlated with Allergy and inflammation at pharyngeal and nasal including adenoid hypertrophy (AH), tonsil hypertrophy, recurrent throat infection, chronic rhinosinusitis(CRS) and allergic rhinitis(AR). However, it was few debated the risk factors of the children at different ages for OME. In this study, our aim was to identify the role of the risk factors associated with OME in children at different age stages.

Methods: The study subjects were divided into three age groups to evaluated: 2~4 years, 5~7 years, and >7 years. All patients underwent accurate history taking for documentation of recurrent throat infections in the previous year, physical examination, fiberendoscopy of the nasopharynx and nasal cavity for grading AH and CRS, percentage of eosinophils and immunoglobulin E (IgE) in peripheral blood association of allergic rhinitis, otoscopy and hearing evaluation in order to determine OME. Multivariate logistic regression analyses were performed to identify its risk factors.

Results: 241 patients with OME and 282 children without OME as controls were evaluate in this study: 174 aged 2~4 years; 200 aged 5~7 years; 149 aged 7~9 years. Statistical analysis show that CRS and AH were associated with the development of OME in all groups and the recurrent of throat infection was another risk factor in lower age group and AR in older age group (p<0.05).

Conclusions: Our study showed that the risk factors for OME in children were varied at different age. It would be conducive to detect high-risk groups of OME in different old children.
Background: Hypertrophic scarring (HTS) can be a socially disabling feature of the already vulnerable cleft lip population. This study aims to identify the incidence of HTS and the factors that influence formation, as well as describe scar progression and treatment options.

Methods: The medical records and postoperative photographs of 84 cleft lip patients were reviewed, noting demographic factors, completeness and laterality of cleft, surgical technique, and incidence of HTS. Two reviewers graded the scar severity of these patients at 6- and 12-months follow up on a 10-point scale. Multivariate logistic regression analysis, t-test, and MacNemar, were used to evaluate several potential risk factors and the natural history of HTS.

Results: Median age at surgery was 3.8 months (range 2-22.5). Rates of HTS were 37.7% (n=77) and 33.3% (n=63) at 6 and 12 months, respectively (p=0.031). Compared to other ethnicities, African-Americans exhibited an odds ratio (OR) of 4.3 (p=0.03) for HTS; bilateral cleft lips (BLCL) had an OR of 3.6 (p<0.05). Nasoalveolar molding (NAM) reduced 6-month scarring in BLCL with an OR of 0.74 (p=0.08). Significant improvement in cosmesis was seen over six months (p<0.001 for both reviewers); reviewers showed slight-fair agreement by Cohen’s kappa. Scar management included kenalog injections, cortisone cream, flurandrenolide taping, and anticipating scar revision or spontaneous improvement.

Conclusion: African-Americans and BLCL are at higher risk for HTS following cleft lip surgery. NAM was underpowered in this study. Patients may improve spontaneously over time and so conservative treatments, rather than premature surgical revision, are preferred.
QUALITATIVE INVESTIGATION OF THE USE OF BEADED TRACHEOSTOMY TUBE TIES

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Background: Skin breakdown from tracheotomy tube ties is a common complication of tracheostomy. The breakdown is most often caused by friction, tension and/or moisture. This is not surprising given the incidence of sialorrhea, stoma secretions, humidification, and the necessity to utilize moisture retaining ties. Barrier dressings and creams, as well as the use of ties composed of a wicking foam material can help keep moisture from the cutaneous surface. Unfortunately, for some patients with excessive moisture or sensitive skin, such methods are insufficient, and beaded ties are gaining in patient popularity as an alternative. A small cohort independently has acquired beaded tracheostomy tube ties, with subsequently improved skin integrity.

Methods: Three families from our institution agreed to be interviewed to relate their experience. Aaron’s tracheostomy Facebook site was utilized.

Results: Beaded tracheostomy ties are at this time, either purchased from Transtracheal Systems, Etzy, or handmade. The main advantage was the decrease in skin breakdown. The families stated that the beaded ties did not retain moisture, and freely rolled, decreasing friction. Cost savings was also cited given their reuse. All families carried a wire cutter in case of emergency; none had needed its use. However, while there are reported advantages, homemade ties are not upheld to safety and quality standards; incorrect lengths and snapping of the wires were reported.

Conclusion: The use of beaded tracheostomy ties holds promise in a select population with significant skin integrity compromise; however, given the lack of regulation, there exists potential safety concerns.
Gorham-Stout syndrome (GSS) is a rare disease characterized by idiopathic, progressive, localized proliferation of lymphatic channels in bone that precipitates osteolysis. We report a case of a child with GSS that presented with CSF otorrhea.

Case Report:

15 year-old presented with left otorrhea, tinnitus, headaches, and dizziness. Fluid was beta-2 transferrin positive. Imaging confirmed GSS involving left mandible, skull base, occiput, and clivus with left encephalomeningocele through tegmen tympani.

Surgical correction confirmed CSF leakage through the tegmen. Closure included eustachian tube packing, middle ear obliteration via abdominal fat graft, and external auditory canal oversewn with temporalis fascia and muscle.

At 3 months, patient reported otorrhea resolution but headaches and facial swelling, and treatment was augmented with sirolimus and zoledronic acid. At 11 months, patient had facial pain and swelling, seizures, post-nasal drip, and erythema nodosum secondary to sirolimus overdose.

At 14 months, patient reported continued seizures with decrease in memory and school performance. fMRI revealed left temporal lobe dysfunction with language and memory deficits. Patient then underwent encephalocele repair via left temporal lobe craniotomy. At 16 months, patient reported CSF post-nasal drip and headache, but improvement in memory, speech, and comprehension.

Literature review of 4 cases of GSS with CSF otorrhea all requiring mastoid obliteration and reoperation and craniotomy in 2 cases. All cases had resolution of otorrhea.

Conclusion: GSS with CSF otorrhea should be evaluated for other skull base defects and encephalocele. While obliteration may be considered, patients should be monitored for disease progression and need for further intervention.
MIDLINE POSTERIOR GLOSSECTOMY AND LINGUAL TONSILLECTOMY IN OBESE AND NON-OBESE CHILDREN WITH DOWN SYNDROME

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PURPOSE: To examine success rates following midline posterior glossectomy plus lingual tonsillectomy in children with Down syndrome and determine predictors for success and failure.

METHODS: Patients who previously underwent tonsillectomy and adenoidectomy, had persistent obstructive sleep apnea, and could not tolerate positive airway pressure therapy were evaluated by physical examination and sleep/CINE MRI. Patients with macroglossia / glossoptosis / lingual tonsil hypertrophy underwent midline posterior glossectomy with lingual tonsillectomy.

RESULTS: 13 children (8 male, 5 female), mean age 14.2 (4.0) years (range 7.2-19.4 years), all with Down syndrome, underwent midline posterior glossectomy plus lingual tonsillectomy. Sixty-two percent of patients were obese (BMI > 95%) or at risk of becoming obese (BMI 85-95%) preoperatively. All patients underwent pre- and post-operative polysomnography. Overall, the mean obstructive AHI dropped only from 44.3 to 34.1, which was nonsignificant. Interestingly, the oAHI fell significantly in normal weight individuals (47.0 to 5.6; P<.05) but not in at-risk or obese patients. Four of 13 (31%) patients improved their severity category (2 severe to none; 1 severe to mild; 1 severe to moderate) following surgery, which was more common in normal weight individuals.

CONCLUSIONS: Obesity and severity of obstructive sleep apnea are predictors for failure following midline posterior glossectomy plus lingual tonsillectomy in children with Down syndrome. Preoperative planning should include weight loss programs to assist with patient selection for surgery.
Importance  The evolution of indications for pediatric tracheostomy over the past century has been well described and a variety of techniques have been recently developed to obviate the need for tracheostomy secondary to laryngotracheal pathologies.

Objective  To identify the current epidemiology and public health impact of pediatric tracheostomy in the United States.

Design, Setting, and Participants The 2000 and 2012 Kids’ Inpatient Databases were used to gather data on a sample of all pediatric discharges in the United States during the respective years. Children having undergone tracheostomy were identified by corresponding ICD-9 codes. Database analyses generated national estimates of summary statistics and comparison of trends over the twelve-year period.

Interventions  Database analysis.

Main Outcomes and Measures  National health care trends according to year. End points assessed included prevalence, age, sex, total hospital charges and length of hospital stay.

Results  The estimated prevalence of pediatric tracheostomy in the United States has remained essentially stable at 4442(95%CI:3935, 4948) admissions in 2000 and 3951(95%CI:3472,4430) in 2012 with a male predominance. However, the mean age has decreased from 6.24(95%CI:5.69,6.79) to 5.17(95%CI:4.79,5.55) years. The mean length of stay increased from 54.8(95%CI:49.6,60.0) to 71.7(95%CI:67.4,76.0) hospital days. Total inpatient charges for children undergoing tracheostomy increased from $858,000,000 to $3,130,000,000 with a mean charge per admission increasing from $219,335(95%CI:$196,219,$242,451) to $820,879(95%CI:$751,063:$890,696).

Conclusions and Relevance Despite advances in airway management techniques, pediatric tracheostomy remains a procedure associated with a considerable public health burden and increased utilization in terms of hospital stay and charges over the past decade.
Background: Skin integrity in the tracheostomy patient is a common concern; a majority of patients have erythema of the cutaneous surface surrounding the stoma and around the neck, and up to 10% of patients will experience granulation tissue. Most skin concerns are self-limiting; unfortunately, skin breakdown caused by moisture, tension, friction, and obstructive granulomas can lead to significant morbidity. Intensive care unit (ICU) nurses are at the forefront of maintaining skin integrity; however, a recent survey of ICU nurses indicated discomfort in assessing and providing intervention these issues. In response, we developed a brief, online pictorial educational module addressing skin care in the tracheostomy patient.

Methods: All ICU nurses completed our module. IRB-approved, pre and post-module surveys were sent to ICU nurses, who were able to complete anonymously. Knowledge questions were identical in both surveys. Post-survey included satisfaction and comfort level queries.

Results: Overall, 98% of respondents felt the module was beneficial; the most commonly cited benefit was the pictures with descriptions. Overall, nurses scored higher in their comfort level following the module (p=0.0003). Tested knowledge improved following this module; more nurses were able to identify causes and therapies of erythema, more identified moisture assessment and application of a barrier cream/dressing as a first line therapy (83% of respondents to 95%), able to identify granulation, and differentiate from fibroma (12% of respondents to 35%).

Conclusion: This study demonstrates that a brief, online pictorial educational module was effective in increasing knowledge and comfort of ICU nurses in skin assessment.
DETECTION OF CONGENITAL CYTOMEGALOVIRUS (CCMV): AUDIOLOGIC CONSEQUENCES AND IMPLICATIONS FOR SCREENING

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Purpose: Polymerase chain reaction (PCR) testing, applied to the neonatal dried blood spot (DBS), can be used to detect cCMV beyond the early post-natal period. This study aims to describe the clinical characteristics and determine the prevalence of children presenting to a hearing loss clinic with PCR detected cCMV in their DBS.

Methodology: Neonatal DBS were obtained for 131 children presenting with hearing loss. Real time PCR was performed to detect CMV DNA.

Results: cCMV was confirmed by DBS PCR testing in 18/131 (14%) children. Of these 18 children, 11 (61%) had bilateral profound SNHL, 6 had asymmetric hearing loss, including 2 with normal hearing in the contralateral ear, 1 child had a maximal conductive loss from unilateral atresia, and 4 (22%) had progression of SNHL. The majority of these 18 children were treated with cochlear implants (12 bilateral, 3 unilateral). Magnetic resonance (MR) imaging was performed in all but one child, with the majority 15/17 (88%) demonstrating imaging changes consistent with a diagnosis of cCMV.

Conclusion: cCMV was a common cause of hearing loss in children presenting to our clinic. The characteristics of their hearing loss were varied and MR imaging generally supported the diagnosis of cCMV. DBS PCR testing is felt to be highly specific but poorly sensitive suggesting that a significant proportion of children with hearing loss due to cCMV may be missed. Early screening of neonates for cCMV using more sensitive techniques would be beneficial; therefore, a protocol for screening is currently in development.
COCHLEAR IMPLANT DATALOGGING REVEALS THE PRACTICAL CHALLENGES OF CI USE IN CHILDREN: THE FREQUENT 'COIL-OFF'

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Purpose: Until recently, reports of cochlear implant (CI) use in children have often relied on caregivers’ observations or the CI users themselves. The new datalogging feature in Cochlear’s Nucleus 6 speech processor allows tracking of CI use objectively over time, and additionally provides information on variables that are difficult to accurately quantify by observation (e.g., the number of times the CI coil detaches in a day). The objective of this study was to track CI use in children who used at least one CI, using the datalogging feature.

Method: In our study sample of 146 children, 102 children were bilateral CI users who either received both their CIs in the same surgery (n=77) or at different times (n=24). The remaining children were either bimodal users (n=41) or used only one CI (n=4). The majority of children were under 5 years of age. CI use was tracked over an average of 49±52 days.

Results: Average CI use per day varied from 0.08 to 16.7 hrs/day (mode =13 hrs/day), with use time increasing steeply from infancy until a more consistent pattern was reached beginning at ~5 years of age. The average number of times the CI coil detached per day decreased from ~90 times/day in children <5 years of age to ~37 times/day in older children. The number of coil-offs recorded was as high as ~542 times/day in a 2 year old child.

Conclusions: Datalogging feature offers objective and clinically useful information on CI use that was previously difficult to quantify.
OBJECTIVE/HYPOTHESIS: To review the most common histopathologic diagnoses from tonsillectomy specimens and determine whether routine pathologic exam is necessary.

STUDY DESIGN: Retrospective chart review

METHODS: Pathology reports of patients undergoing tonsillectomy from 2005 to 2014 at our pediatric tertiary care hospital were reviewed. Histopathologic diagnoses were recorded with special attention to identification of malignancy.

RESULTS: A total of 8,807 tonsil specimens were sent to pathology over a 10-year course. Microscopic histopathologic analysis was performed on 612 (6.95%) specimens with all but one demonstrating strictly reactive lymphoid hyperplasia. A single specimen (0.16%) demonstrated follicular hyperplasia with focal necrotizing granulomatous lymphadenitis without organisms identified on special staining. The surgeon requested pathologic diagnosis to rule out lymphoma in 4 (0.05%) of the specimens. No malignancies were identified.

CONCLUSIONS: Microscopic analysis of tonsil specimens is rarely performed and unlikely to identify true pathology. This study suggests that neither gross nor microscopic routine pathologic examination of tonsillectomy specimens is necessary. Histologic analysis of tonsils should be requested only on a case by case basis when clinical suspicion for malignancy is high. Avoiding routine pathologic exam of tonsils may improve otolaryngology cost savings in today’s medical climate.
Background: Cochlear implantation (CI) is the standard of care for children with severe-to-profound bilateral hearing loss who do not benefit from hearing aids. Complications can be classified as early or late, major or minor, and the overall complication rate is approximately 10%. The purpose of this study was to conduct a systematic review of the literature to describe the frequency of CI complications.

Methods: The PubMed database was searched for English language articles reporting CI complications in the pediatric population with adequate time date. A weighted meta-analysis of proportions using a random effects model was performed on the pooled studies to describe the rate of postoperative complications.

Results: Twenty-eight articles were identified. Rate of overall complications was 15.7% (95% CI, 11.8-20.3). Overall rate of major complications was 5.9% (95% CI, 3.5-8.9), with early major complications representing 3.2% (1.4-5.6) and late major 2.4% (1.5-3.6). Minor complications were 6.9% (4.5-9.9), with early minor representing 4.8% (2.9-7.1) and late minor 2.5 (1.7-3.6). The most common minor complications were vestibular or flap related (hematoma, seroma, etc.). The most common major complications were flap related.

Conclusion: CI is a safe operation. Perioperative vestibular and flap issues are the most commonly encountered complications but can be expectantly managed. Careful observation is necessary for late flap problems such as infection or necrosis, which require prompt treatment.
Objective: Cockayne syndrome (CS) is a rare, autosomal recessive disorder characterized by short stature, progeria, photosensitivity, and impaired neurological development, including progressive sensorineural hearing loss (SNHL) and loss of vision. The mechanism of hearing loss in CS patients varies, and includes both peripheral and central components. To date, a single series of CS patients undergoing cochlear implant (CI) placement has been reported; this study reports on additional CI recipients, including previously unreported pediatric recipients.

Setting: Tertiary-care, academic, pediatric hospital.

Methods: Retrospective chart review of patients with CS who underwent CI placement. Review of previously reported CS patients who underwent CI was also included.

Results: Two patients with CS and progressive, bilateral SNHL underwent CI placement, at age 16 and age 19. Subjective benefits were noted early after activation in both patients, including increased confidence in social settings, telephone-use capability and speech awareness at 20-25 dB HL. Speech perception scores improved over time as well, varying from 42-70% (versus 1-12% prior to CI placement in best-aided condition). Similar findings (both subjective and speech-perception benefits) were reported in one of two previously reported patients.

Conclusions: Cochlear implantation in pediatric patients with CS can be effective in the management of SNHL. Subjective and speech-perception benefits can occur, despite both the peripheral and central auditory impairment that occurs in these patients.
LONG TERM FEEDING OUTCOMES OF INFANTS WHO RECEIVED TRACHEOSTOMY AT < 24 MONTHS OF AGE

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Background: Advancements in critical care have allowed improved survival of extremely premature and medically complex infants, an increasing number of whom are tracheostomy and ventilator dependent and are successfully managed at home. A significant proportion of these infants are at high risk for developing feeding and swallowing difficulties. There is limited information on the long term feeding status of this population.

Methods: A retrospective review of medical records of 135 infants who received a tracheostomy before 24 months of age. Modes of feeding were recorded at the time of discharge and at 12, 24, 36, and 48 months of age.

Results: At hospital discharge, 67% (90/135) of infants were non-oral feeders, only 19% were able to orally feed. By 1 year of age, 53% remained feeding tube dependent, 46% had some oral feeding intake. After 2 years of age, more than half (55%) of patients are able to orally take liquids and solid foods. Of patients who remained tracheostomy dependent after 3 years of age, 48% remained non-oral feeders, 52% were able to take solid foods and liquids by mouth.

Conclusions: Feeding and swallowing dysfunction are significant problems in infants who receive tracheostomy in the first 2 years of life. Oral feeding remains a challenge for these medically complex children long term. There is a need for establishing a consistent approach in the evaluation and therapeutic intervention for safe oral feeding in this unique group of patients.
ADHERENCE TOWARD PEDIATRIC VOICE THERAPY: A TELEHEALTH MODEL  
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Objectives:  
To describe patterns of adherence for data obtained from a feasibility study designed to deliver pediatric voice therapy via synchronous and asynchronous telehealth methods.

Methods:  
Ten pediatric patients (5 males; 5 females; age range= 9-14 years) participated in a prospective telehealth feasibility study. Participants received 8 synchronous telehealth voice therapy sessions and used an asynchronous Web-portal for daily practice. Data for attendance, parent-reported adherence for the Web-portal, and actual Web-portal data were collected. Select data for attendance and completion of daily therapy exercises from a second, larger face-to-face pediatric voice therapy outcomes study will be presented for comparative purposes.

Results:  
In the telehealth study 100% of the children recommended for therapy initiated the course of voice therapy. Parents reported their child used the Web-portal “a lot” (5-point Likert scale) for homework. Actual usage data via the portal revealed children used it less than the levels reported by their parents (27-100%). Participants logged onto the Web-portal daily for an average of 14 minutes (range=10-25) and accessed the Web-portal 0-14 times per week across 8 weeks. Comparison of these data will be made to self-reported adherence data from the face-to-face study.

Conclusion:  
This is the first study to describe adherence to pediatric voice therapy via telehealth. The study indicates that adherence using the telehealth model is similar to or exceeds the traditional face-to-face model. Adherence to pediatric voice therapy encompasses a myriad of factors including self-efficacy, goal commitment, family burden, and patient-clinician relationship. Further investigation into these factors is warranted.
Cornelia de Lange Syndrome (CdLS) is a rare congenital developmental disorder with varied phenotypic presentations that has been reported to manifest in multiple different organ systems. These patients are typically treated by a variety of specialists including but not limited to cardiology, gastroenterology, and neurology. Pediatric otolaryngology may be involved to address hearing loss, airway concerns, and craniofacial abnormalities.

We present the case of a 19-month old male with CdLS who is actively managed by our multidisciplinary aerodigestive team consisting of pediatric otolaryngology, pediatric pulmonology, pediatric gastroenterology, audiology, nutrition, and speech therapy. He has been treated medically and surgically for mixed hearing loss, dysphagia, micro-aspiration, gastroesophageal reflux, and failure to thrive.

CdLS is a rare disease process with many known physical, cognitive, and medical aspects. Our case highlights the benefits of a multidisciplinary approach to the challenges CdLS can present. We submit this case presentation and review of the literature on an uncommon disorder with attention to the otolaryngologic manifestations.
HANDICAPPING EFFECTS OF BILATERAL VOCAL FOLD LESIONS ACROSS CHILDHOOD: DOES AGE MATTER?
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Objective:
To investigate the function of age on the functional, physical and emotional domains in children with bilateral vocal fold lesions, using the pediatric voice handicap index (pVHI).

Methods:
Prospective data collection of the pediatric Voice Handicap Index (pVHI) in children with and without bilateral vocal fold lesions. A total of 182 parents filled-out the pVHI; 60 parents of children with no voice disorder and 122 with bilateral vocal fold lesions diagnosed via endoscopy. Data were examined for 4 age groups, preschool (3-4), young child (5-8), child (9-12), and adolescent (13-18).

Results:
Children with bilateral vocal fold lesions showed significantly higher handicapping effects in all 3 domains of the pVHI: functional (p < .001), physical (p < .001), and emotional (p < .001), compared to controls. Differences in the means for the disordered group for the 3 domains were noted as a function of age: functional 5.3, 7.4, 8.5, 5.6 (range 0-23), physical, 13.9, 14, 15.7, and 13.3 (range 0-30), and emotional 1.9, 4.7, 5.7,9 (range 0-23). No significant difference was noted in talkativeness between the control and disordered groups.

Conclusions:
This study shows in what way the impact of a voice disorder may change as a function of age. These results highlight how the needs of children with a voice disorder differ at different stages of development and therefore may require different intervention approaches. This information is important for voice professionals in order for them to adapt evaluation and therapy strategies accordingly.
Objective: Oral-Facial-Digital (OFD) syndrome is a rare condition affecting the oral cavity, hands and feet of newborns that can have significant effects on feeding and growth. We describe a case of this unusual entity and discuss management options.

Methods: Case report

Results: A 2 month old baby presented for evaluation of hearing loss and a “split tongue”. On evaluation, the child was noted to have hypertelorism, a bifid anterior tongue with bilateral masses, right hand webbed 3rd and 4th digits and left webbed toes. The diagnosis of OFD was made. Because the child has been feeding well, the decision for urgent surgical intervention was deferred for now with plans for tongue repair and removal of hamartomas in the future. The patient was referred to Genetics for further evaluation as the Otolaryngology service first made the diagnosis.

Conclusion: OFD syndrome is a constellation of variable findings usually associated with brain and intellectual abnormalities, hypertelorism, cleft lip or palate, tongue hamartomas, and abnormalities of the digits. It occurs in 1:50,000-1:250,000 live births. It is associated with abnormalities in expression of the OFD-1 gene. Otolaryngologic manifestations are variable but include hamartomas on the tongue with clefting of the lip, palate and tongue causing feeding issues. Numerous subtypes of OFD have been described and may include issues with renal development. Awareness of OFD is important as Otolaryngologists are often first to make the diagnosis based on the constellation of physical findings. We discuss the management of otolaryngologic issues in this rare disorder.
STANDARDIZATION OF CARE OF TRACHEOSTOMY PATIENTS IN A TERTIARY CARE CHILDREN'S HOSPITAL
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Purpose:

To improve care for children who have a tracheostomy through identification and reduction of unnecessary variation in clinical practice.

Setting: A 600 bed, academic, tertiary care children’s hospital in a major metropolitan area.

Method:

Patients are identified through query of the inpatient electronic medical records. All patients are seen at least weekly by an otolaryngology service advanced practice practioner who is trained in tracheostomy care. All newly admitted patients and any patients with active, tracheostomy-related issues are evaluated on weekly rounds by an interdisciplinary team that includes specialists from otolaryngology, critical care medicine, pulmonology, speech therapy, respiratory therapy, and nursing. The date of placement and reason for tracheostomy, size and type of tracheostomy tube, candidacy for a speech valve, date of last clinic visit, and date of last bronchoscopy are documented using a standard template. Recommendations are communicated to the managing service during tracheostomy team rounds.

Results:

Approximately 70 tracheostomies are performed each year by one of 16 pediatric otolaryngologists who are in two separate practice groups. On any day there are typically 30-40 inpatients with tracheostomy. Extensive provider-dependent variability in surgical technique, postoperative care, parent and caregiver education, tracheostomy tube selection, and timing of follow up care were identified. Frequency of specific tracheostomy-related complications were recorded.

Conclusions:

Consensus was achieved on standardization of pre- and post-operative caregiver education, surgical technique, timing of tracheostomy tube change, postoperative care, and follow-up bronchoscopy. Structured interdisciplinary inpatient rounds allowed a systematic approach to process improvement.
Objectives: To review the postoperative management and care needs of children undergoing endoscopic type 1 laryngeal cleft repair.

Methods: Retrospective chart review of patients undergoing endoscopic type 1 laryngeal cleft repair from November 2006 to July 2015 at a single institution was performed. Data collected on intraoperative and postoperative management was reviewed to assess complications, airway needs, and postoperative care.

Results: A total of 41 patients met selection criteria. No patients required postoperative intubation, 7 had brief desaturations, and only 2 were transferred to the floor with O2. The mean time to adequate oral intake was 5.27 hours. Only 29% of patients were discharged with oral narcotics. No patients required care in the intensive care unit, and 10 were discharged home on the day of surgery. Those discharged home the day of surgery were significantly older than those who were kept for observation; mean 4.16 vs 1.45 years (p < 0.0001). The presence of comorbidities was not related to length of stay or complications.

Conclusion: Endoscopic type 1 laryngeal cleft repair is a safe and well-tolerated procedure. Most patients can be managed with an overnight stay on a regular nursing floor. Select patients with adequate oral intake and absence of respiratory compromise may be safely discharged on the day of surgery.
RESPIRATORY COMPLICATIONS IN CHILDREN UNDERGOING ADENOTONSILLECTOMY: A LOOK AT RISK FACTORS REQUIRING POSTOPERATIVE ADMISSION

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PURPOSE: To identify meaningful predictors of post-operative respiratory compromise in patients undergoing tonsillectomy.

METHODS: A retrospective chart review was done on children who underwent polysomnography and subsequent tonsillectomy with or without adenoidectomy for obstructive sleep apnea. Patients with craniofacial anomalies or significant cardiopulmonary comorbidities were excluded.

RESULTS: There was a statistically significant relationship between an AHI of greater than 40 and respiratory complications (OR = 5.313, 95% CI=1.24-22.82, p = .03). AHI of greater than 25 was marginally significant (OR = 4, 95% CI=.91-17.60, p = .067) associated with complications and AHIc10 could not be further analyzed, as the logistic regression model does not converge. In addition, no significant association was found between the occurrence of complications and BMI (p = .20) or O2 nadir (p = .09).

CONCLUSION: Our results indicate an association between an AHI of greater than 40 and respiratory complications following an adenotonsillectomy. An association between BMI or O2 nadir and post-operative respiratory complication was not identified. These data support the importance of AHI as a predictor of post-operative complications in children undergoing tonsillectomy for OSA. Further studies are needed to more clearly delineate the ideal AHI threshold for admission to limit the risk of post-operative respiratory compromise while avoiding unnecessary hospital admission.
Background: Pediatric Autoimmune Neuropsychiatric Disorder Associated with Streptococcus (PANDAS) is a rare but important condition for pediatric otolaryngologists to recognize. Several treatment options have been discussed including tonsillectomy, antibiotic treatment/prophylaxis, intravenous immunoglobulin (IVIG), and psychiatric medications/therapy.

Method: A systematic review of the PubMed, EMBASE, and Scopus databases was performed in English, searching for articles focusing exclusively on the aforementioned treatment modalities in the PANDAS population. Review articles, single patient case reports, and studies examining the natural history or diagnostic strategies were excluded.

Results: Five articles regarding tonsillectomy treatments with level of evidence (LOE) 4 were found but no clear benefit could be determined. Three articles were selected involving the use of antibiotic therapy. One prospective study and one double-blind randomized control trial (DB RCT) showed supporting evidence but a separate DB RCT showed no benefit for antibiotics. Two selected articles described the use of IVIG: one unblinded RCT and one retrospective study. Although benefit was observed, IVIG is not without serious risk and should be reserved for the immunocompromised or most severe cases. One prospective study on cognitive-behavioral therapy (CBT) showed benefit in PANDAS.

Conclusion: There is a paucity of high-level studies regarding this rare disorder. Currently, there is no preferred treatment option. Tonsillectomy should only be performed in those who meet criteria per current guidelines. CBT remains a low-risk option. Several clinical trials are underway that may further elucidate optimal treatment for this special pediatric population.
DEVELOPING A LOW-COST, OPEN-SOURCE MYRINGOTOMY TRAINING SIMULATOR WITH VISUAL AND AUDITORY FEEDBACK ON OPERATOR ERRORS

Molly Knewtson

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Introduction:

Myringotomy is one of the first procedures taught to junior residents in otolaryngology but requires previously unpracticed microsurgical skills. In many developing countries, untreated middle ear diseases pose a significant need to teach this basic procedure. Training on real patients can increase likelihood of trauma to the external auditory canal, middle ear and increase operative time. Simulation-based training is an effective way for residents to gain experience and enhance basic psychomotor skills with less time, cost, and trauma to patients. However, hospitals in developing countries may not have budgets for expensive training devices. Therefore, we developed a surgical simulation device that surgeons can assemble themselves.

Methods:

Our iterative design process included consideration of assembly time, assembly complexity, material cost, and material availability to make the device as accessible as possible. The final design includes a simplified model of the external auditory canal and tympanic membrane, and a simple electronic circuit, including an audible buzzer and light-emitting diode (LED), to provide feedback to the trainee.

Results:

The final version can be assembled with commonly available materials for under $10 (USD). The device provides real-time objective feedback to users on errors (i.e. contacting the external auditory canal with the surgical instrument).

Conclusion:

Developing a low-cost, open-source myringotomy simulator is feasible and holds promise for surgical education both domestically and internationally. The assembly manual is available as an open source document, offering residents widespread access to a simulation training aid providing hands-on practice in myringotomy psychomotor skills without risk to patients.
LIPOBLASTOMA PRESENTING AS AN ORAL CAVITY MASS IN A NEWBORN

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A 39 week gestational age female was noted to have an oral cavity mass filling approximately a third of the oral cavity at birth. She was without respiratory distress and had intact facial movement. She underwent an MRI of the face revealing a large fat-containing infiltrative lesion arising in the left buccal space extending into the oral cavity. The patient underwent excision of the lesion which appeared to be extending through the mucosa near Stensen’s duct. Histology was consistent with lipoblastoma. Lipoblastoma is a benign, encapsulated neoplasm of embryological fat cells and typically presents before the age of three, most commonly in the trunk and extremities and is rarely seen in the head and neck. Locations in the head and neck that have been described include the cervical region, parotid gland, cheek, skin, and orbit. To date, only three cases of lipoblastoma arising from the parotid gland have been described in the English literature none involving extrusion through Stenton’s duct. While complete surgical excision is curative, in the head and neck region where vital structures are in close proximity, conservative surgical resection with preservation of structure and function is commonly recommended. Recurrence rates in the head and neck region vary from 15-27%, with some cited recurrences occurring over 10 years after initial resection. While neither metastatic nor malignant transformation has been reported in these lesions, lipoblastoma tumors may impinge on surrounding structures, may reoccur, and are histologically difficult to distinguish from myxoid liposarcoma and other malignant lipomatous tumors.
Objectives: The most common diagnoses that prompt thyroid surgery in the pediatric population are papillary thyroid carcinoma (PTC), multinodular goiters, branchial cleft anomalies, MEN2A syndrome and Graves’ disease. This study seeks to identify complications after pediatric thyroidectomy for the abovementioned diagnoses and compare rates of complications.

Methods: A retrospective chart review was performed on CPT-coded unilateral thyroid lobectomy (UL) and total thyroidectomy (TT) operations performed by a single pediatric otolaryngologist between 2005 and 2015 in patients between 1-18 years of age. The patients were grouped according to their final diagnosis, and the complications of post-operative vocal fold paresis (VFP) and hypocalcemia were recorded.

Results: The study cohort included 33 patients. The majority of the patients had a final diagnosis of PTC (24%), followed by multinodular goiter (21%) and branchial cleft anomaly (18%). 50% of the patients with benign pathology post UL had a VFP as compared to 0% of the UL branchial cleft anomaly patients (p=0.1). 50% of the PTC TT patients had hypocalcemia versus 25% of the MEN2A TT patients (p=0.5) and 33% of Graves’ TT patients (p=1.0).

Conclusions: Though pediatric thyroid surgery is uncommon, this study demonstrated a wide range of diagnoses that prompt thyroid surgery in the pediatric population. There was not a significant difference in VFP and hypocalcemia among the different diagnoses, demonstrating that complications can occur independent of the disease process. This emphasizes the need for adequate counseling of the risks prior to any pediatric patient receiving thyroid surgery.
Purpose

The utility of fiberoptic endoscopic evaluation of swallowing (FEES) for the assessment of dysphagia has been established in pediatric patients, but the utility and safety has not been described in neonatal intensive care unit (NICU) patients. The goal of this study is report outcomes of FEES examination performed in a population of pre-term and term NICU patients.

Methods

Retrospective review of all FEES examinations completed in a tertiary-care NICU over a five year period, performed collaboratively by an Otolaryngologist and Speech-Language Pathologist.

Results

Twenty-two examinations were performed on 21 patients. The mean age at time of examination was 9.5 weeks (range 1-25 weeks), with mean adjusted gestational age 46.97 weeks (range 38-65 weeks). The principle diagnosis at time of FEES examination was classified as: genetic syndrome in 45.5%; aerodigestive tract lesion in 22.7%; neurologic diagnosis in 22.7%; gastroenterologic disorder in 4.5%; and pulmonary disease in 4.5%. FEES examination was completed without limitations in 21 of 22 examinations (95.4%). No adverse events occurred. FEES examination identified laryngopharyngeal abnormalities in 38% of examinations, most commonly laryngomalacia (14%) and vocal fold motion abnormalities (14%). Only 14% of the studies exhibited normal feeding. Impaired secretion management was present on 57.1% of the studies.

Conclusions

The use of FEES provides immediate and pertinent information regarding laryngopharyngeal anatomy, airway protection, and swallowing function pre-term and term infants in the NICU. It is a safe procedure, well-tolerated by infants with complex medical issues, and has benefits in providing specific information pertinent to treatment planning.
Purpose: Describe relationship between lingual tonsil hypertrophy (LTH) and dysphagia initially suspected on Videofluoroscopic Swallow Study (VFSS) in patients who present with solid food dysphagia of recent onset. Lingual tonsillectomy can lead to resumption of "normal" swallowing.

Procedure: To our knowledge, most reports of LTH in pediatrics relate to obstructive sleep apnea (OSA). A few studies focus on surgical interventions for LTH related to dysphagia. No studies were found to describe utility of VFSS in identifying possible LTH as basis for dysphagia. A case study from our institution is presented to raise awareness of relationship of LTH and dysphagia found on VFSS in selected pediatric patients.

Results with case example: 14-year-old boy with no history of dysphagia until he presented to pediatric otolaryngologist with "problem swallowing in past 2-3 months." Palatine tonsils were noted on visual inspection and referral was made for VFSS. Lateral view revealed irregular surface along tongue base that appeared to have added bulk with minimal valleculae - suspicious for LTH as basis for swallowing problem. Residue was noted after swallows of thick puree and solid food. He returned to otolaryngologist. Following flexible nasopharyngoscopy, he underwent lingual tonsillectomy with coblation. Dysphagia improved. No further follow-up was needed.

Conclusion: When a child reports food getting "stuck in my throat: or needs to use liquid wash to clear solid foods, VFSS findings may be useful in delineating the source of dysphagia. We have described the impact of LTH that resulted in lingual tonsillectomy and resolution of dysphagia.
EVALUATING ROUTINE AUDIOLOGIC TESTING IN PATIENTS WITH PREAURICULAR LESIONS.
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Objective: Prior studies have suggested the need for audiologic testing in patients with preauricular lesions. This study aims to describe the relationship between isolated preauricular lesions and hearing impairment.

Methods: Retrospective chart review of patients seen by seven pediatric otolaryngologists at a tertiary academic hospital between 2008 and 2014. All patients with the diagnosis code of 744.1, 701.9, 744.46, 744.89 were included in this study. Medical records were reviewed for clinical, demographic, audiologic, surgical, and pathologic data.

Results: Ninety-eight patients with preauricular lesions were identified. Forty-eight patients underwent audiologic testing. Nine were found to have abnormal audiology testing results. Two patients had SNHL HL with a history of enlarged vestibular aquaducts. One patient developed cholesteatoma and a resulting CHL. One patient had unilateral CHL in an ear with a thickened TM and apparent middle ear effusion. One patient demonstrated absent OAE and an abnormal tympanogram as well as mild HL on sound field testing. The remaining four patients all had a history of eustachian tube dysfunction, CSOM, or recurrent AOM requiring placement of tympanostomy tubes.

Conclusion: Nine out of forty-eight patients tested for hearing loss showed some degree of hearing loss. However, none of the abnormal audiometric data can be directly linked to presence of preauricular lesions alone. Each of these nine patients had another potential cause for hearing loss. In this population, there is a higher incidence of HL associated with concomitant ETD/CSOM/cholesteatoma than expected, suggesting there may be an association between preauricular lesions and eustachian tube dysfunction.
Infection with nontuberculous mycobacteria is the most common cause of chronic cervical lymphadenitis in previously healthy children under 5 years of age. There has been significant variation in the diagnosis as well as medical and surgical treatment of this disease, with the majority of prior studies comprised of retrospective analyses with cohorts up to 50-100 subjects at individual institutions. Here, we provide a literature review and the first meta-analysis of all English-language articles within the past 20 years. A PubMed literature search was performed using the search terms "atypical mycobacteria neck", "nontuberculous mycobacteria children", and "treatment nontuberculous mycobacterial cervical". All abstracts from English-language articles published from 1995 to 2005 were reviewed. Twenty-one articles were selected for further review, and an additional 5 were identified from references for these articles as being relevant for review. The following criteria were selected for further statistical analysis: rate of PPD test positivity, findings on imaging modality (CT, MRI, or ultrasound), rate of fine needle aspiration performed and positive culture, type of surgical excision performed, type of antibiotic treatment given, duration of time to first surgical intervention, duration of time to resolution of disease, and adverse side effects from treatment such as facial nerve paresis or inability to tolerate antibiotics. Despite surgical excision being associated with the fastest resolution of disease, the majority of physicians wait an average of 90 days to consider this. Additional physician education regarding the prevalence of this disease and best practices regarding treatment may help shorten the time to definitive treatment in the future.
ENDOBRONCHIAL CARCINOID TUMOR IN A 16 YEAR OLD FEMALE: A CASE REPORT

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Introduction: Carcinoid is the most common malignant pediatric pulmonary tumor in children and adolescents, with most cases occurring during the teenage years. These tumors can be asymptomatic in 25% of cases but symptoms usually include hemoptysis, cough, and recurrent pulmonary infections.

Case Report: A 16 year old female presented to the emergency room with a 3 month history of worsening hemoptysis, shortness of breath, and left-sided pleuritic chest pain. A chest x-ray in the emergency room revealed left lower lobe collapse and a subsequent CT scan showed complete effacement of the left lower lobe bronchus and left lower lobe atelectasis. She underwent bronchoscopy, which revealed an endobronchial mass completely occluding the left lower lobe bronchus with pus in the affected segment of the lung. A biopsy of the mass was positive for carcinoid tumor. She underwent sleeve bronchioplasty with left lower lobectomy and mediastinal lymph node sampling. Final pathology was consistent with a Stage 1 (T2aN0) atypical carcinoid tumor of the left lower lobe bronchus. There was no additional role for radiation or chemotherapy treatments. She will have continued follow-up and a repeat CT scan in 6 months to evaluate for possible recurrence.

Conclusion: Primary pulmonary malignancies are rare in children. Carcinoid tumor is the most common pathologic type and can present in adolescents with an endobronchial mass. Treatment is complete surgical resection.
ANALYSIS OF THE EFFECT OF SALIVA ON THE DEGRADATION RATE OF ABSORBABLE SUTURES
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This study investigates the effect of saliva exposure on the rate of degradation of absorbable sutures. Industry-provided degradation rates are measured through in-vivo studies following implantation in internal soft tissues. However, when sutures are used in the oral and pharyngeal environments, they are continually exposed to saliva, which contains digestive and proteolytic enzymes that may impact degradation rates of absorbable suture. The goal of this project was to quantify the loss of tensile strength and mass over time of three common sutures in complete artificial saliva (CAS), a salt solution containing α-amylase, lysozyme, acid phosphatase, and lubricating mucins.

90 samples each of 3-0 Monocryl, 3-0 Vicryl, and 3-0 Chromic sutures were prepared. Half of the samples were submerged in the CAS solution and the other half in saline. Six samples were then removed from the solutions at regular time intervals and breaking force was determined by pulling samples to failure on an Instron machine.

All three types of sutures lost strength at a faster rate in saliva than in saline. Monocryl degraded the fastest, reaching 50% of its original breaking strength after 8 days in saliva and 11 days in saline. Vicryl and Chromic, when soaked in saliva, reached 50% of their initial breaking strength after 18 and 26 days, respectively. In saline neither Vicryl nor Chromic reached 50%. The saliva did not cause degradation to begin at an earlier time, but rather enhanced the amount of degradation once the suture strength began to decrease.