

ENT Research Review™

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Issue 3 - 2022

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Abbreviations used in this issue:

CI = confidence interval
COVID-19 = coronavirus disease 2019
CT = computed tomography
ENT = ear, nose and throat
HR = hazard ratio
mSv = millisievert
OS = overall survival
PTH = parathyroid hormone

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Welcome to Issue 3 of Ear, Nose and Throat (ENT) Research Review.

In a North American study we discover that the presence of pharyngocutaneous fistula after salvage laryngectomy for recurrent laryngeal cancer is associated with an increased risk of distant metastases. In a study from the Netherlands, 15% of patients had persistent hypoparathyroidism after total or completion thyroidectomy. Other topics covered in this issue include hearing screening of infants born after maternal COVID-19 infection, 5-year recurrence of benign paroxysmal positional vertigo, fungal otitis externa and tympanic membrane perforation, cough suppression therapy and voice disorder severity, and auto-inflation in children with otitis media with effusion.

We hope you find our selection for ENT Research Review stimulating reading and we welcome your feedback. Furthermore, if you have discovered or been involved in what you think is significant global research in this field please let us know and we will consider it for inclusion next time.

Kind Regards,

Associate Professor Joanne Rimmer

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Association of pharyngocutaneous fistula with cancer outcomes in patients after laryngectomy: A multicenter collaborative cohort study

Authors: Davies JC et al.

Summary: This North American multicentre, retrospective cohort study examined whether pharyngocutaneous fistula (PCF) after salvage laryngectomy in 550 patients (mean age 64 years; 85% male) with recurrent laryngeal cancer was associated with locoregional and distant control, disease-free survival (DFS), and/or overall survival (OS). PCF occurred in 127 (23%) patients and the difference in locoregional control between PCF (75%) and the non-PCF (72%) patients was 3% (95% CI -6 to 12). There was an 8% difference (95% CI -2% to 20%) in the rate of OS between those with and without PCF (44% vs 52%); the difference in DFS was 6% (95% CI -4% to 16%). Multivariate analysis suggested patients with PCF had a 2-fold higher rate of distant metastases (HR 2.00; 95% CI 1.22-3.27), and a 13% (95% CI 3-21) difference in 5-year distant control.

Comment: PCF after laryngectomy is a surprisingly common complication; a recent meta-analysis reported rates of 10-25%. Previous studies have focused on patient and perioperative factors that increase the chance of developing a PCF, which include radiotherapy and positive surgical margins. This retrospective review of 550 salvage laryngectomies, with a 23% PCF rate, looked at it from another angle. Is PCF formation associated with worse cancer outcomes? One might assume that local recurrence would be more likely, given the association with positive surgical margins, but in fact there was no difference in locoregional control rates, DFS or OS. However, there was a higher rate of distant metastasis in the PCF patients at 5 years. This should be considered in the long-term follow-up of this group of patients.

Reference: *JAMA Otolaryngol Head Neck Surg.* 2021;147(12):1027-1034

[Abstract](#)

Persistent post thyroidectomy hypoparathyroidism in the Netherlands

Authors: Lončar I et al.

Summary: This Dutch retrospective, multicentre, cohort study assessed the incidence of postoperative hypoparathyroidism in 200 patients (71.5 % female; mean age 49.0 years) after total or completion thyroidectomy. In total, 30 (15.0%) patients developed persistent hypoparathyroidism; the incidence varied depending on the definition with 14.5% requiring calcium and active vitamin D 1-year post-surgery.

Comment: Whilst recurrent laryngeal nerve injury is widely regarded as one of the worst complications that can occur after thyroid surgery, there is significant morbidity associated with permanent hypoparathyroidism. It results in the need for lifelong vitamin D and/or calcium supplementation, with a well-documented negative impact on quality of life. A recent review reported rates of 30-60% in the literature, which makes this study's rate of 15% seem reasonable in comparison. The authors' main conclusion is that further efforts need to be taken to reduce this rate. The parathyroid glands should be identified *in situ* and care taken to preserve them, with autotransplantation if needed. Early identification of hypoparathyroidism with postoperative measurement of PTH levels as well as serum calcium is recommended, with standardised evidence-based treatment guidelines for those patients found to be hypocalcaemic.

Reference: *JAMA Otolaryngol Head Neck Surg.* 2021;147(11):959-965

[Abstract](#)

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Newborn hearing screening results of infants born to mothers who had COVID-19 disease during pregnancy: A retrospective cohort study

Authors: Oskovi-Kaplan ZA et al.

Summary: This single-centre, retrospective case-control study examined the risk of neonatal hearing loss after maternal COVID-19 infection (n = 458; 8 in first trimester, 126 in second trimester, 127 in third trimester but not within 15 days of delivery, 197 positive at delivery) versus non-infection (n = 339) during pregnancy. Incidence of a failed primary and repeat Automated Auditory Brainstem Response or Transient Evoked Otoacoustic Emission screening test was 1.3% in the COVID-19 infected group and 2.9% in controls. Second screening failure occurred in 3 (2.4%) infants of mothers infected in the second trimester, 1 (0.8%) infected in the third trimester, and 2 (1.0%) infected at delivery.

Comment: Whilst there have been multiple COVID-19-related papers published in ENT journals in the last 2 years, most relate to the nose and nasopharynx as a route for viral entry into the body, or to upper respiratory symptoms such as anosmia. This retrospective case-control review was undertaken in response to a small (n = 73) controlled study suggesting that COVID-19 infection during pregnancy was associated with reduced cochlear function. The incidence of failed newborn hearing screening in babies born to 438 women with a history of COVID-19 infection during pregnancy (1.3%) was not significantly different to that in babies born to 339 women in the pre-COVID era (2.9%), which is a reassuring statistic.

Reference: *Ear Hear.* 2021;43(1):41-44

[Abstract](#)

Recurrence rate and risk factors of recurrence in benign paroxysmal positional vertigo: A single-center long-term prospective study with a large cohort

Authors: Kong TH et al.

Summary: This 5-year, single-centre, prospective study aimed to assess the long-term recurrence rate and potential risk factors in 548 patients with benign paroxysmal positional vertigo (BPPV). Overall, 121 (22.1%) patients experienced ≥ 1 recurrence within 5 years, 78 (54.5%) patients had 1 recurrence and 43 (45.5%) patients experienced ≥ 2 recurrences. Recurrence within 1 year occurred in 82 (67.8%) patients. Head trauma ($p = 0.015$), Meniere's disease ($p = 0.016$), the number of canalith repositioning procedures ($p = 0.037$), and number of previous vertigo attacks ($p = 0.038$) were risk factors for BPPV recurrence.

Comment: Dizzy patients are frequently seen in general ENT practice, often with multifactorial aetiologies. A diagnosis of BPPV has defined management options in the form of the Epley manoeuvre and/or Brandt-Daroff exercises, with or without the input of a vestibular physiotherapist. Patients often ask what the likelihood of the vertigo recurring in the future is, and this large study of 548 patients with BPPV answers that question. The 5-year recurrence rate was 22%, with 70% of recurrences occurring within the first year. Recurrence was significantly more likely in those with a history of head trauma, ipsilateral Meniere's disease, a greater number of canalith repositioning procedures, and more previous vertigo attacks.

Reference: *Ear Hear.* 2021;43(1):234-241

[Abstract](#)

Navigation and non-navigation CT scan of the sinuses: Comparison of the effective doses of radiation in children and adults

Authors: Villemure-Poliquin N et al.

Summary: This retrospective cohort study compared the effective doses of radiation between 3D navigation (n = 68) versus standard (n = 47) protocols for sinus CT scans in 84 adults and 31 paediatric patients. Overall, there was a 6-fold increase in radiation with 3D scanning; mean effective dose in the standard CT scans was 0.37 mSv and in the 3D navigation scans was 2.33 mSv (mean difference 1.97 mSv; CI 95% -2.1 to -1.83; $p < 0.0001$). This difference was identical in paediatric and adult subgroups.

Comment: Radiation exposure from CT scanning is a source of concern for patients and for parents of paediatric patients. It should also be something that doctors consider when requesting imaging and is a reason that low-dose protocols have been developed. However, when navigation or stealth-protocol scans are requested prior to endoscopic sinus surgery, the radiation dose is significantly higher, this study found a 6-fold increase in both adults and children when comparing standard and navigation protocols. Whilst navigation systems are undoubtedly useful, and even essential in many cases, we should remember this, especially in children, and only request such scans if navigation is required.

Reference: *J Otolaryngol Head Neck Surg.* 2021;50(1):66

[Abstract](#)

Fungal otitis externa and tympanic membrane perforation: Four-year experience at a Victorian hospital

Authors: Tan H et al.

Summary: In another single-centre, retrospective analysis, researchers examined the incidence of fungal otitis externa (FOE) and persistent tympanic membrane perforation (TMP) in 87 patients (93 ears) over 4 years. In 58 (62.4%) ears where a swab result was recorded, *Aspergillus niger* was the most common pathogen; fungal spores occurred in 66 (71%) ears. More than 1 topical agent was required to achieve infection resolution in 59 (63.4%) ears. Persistent TMP occurred in 19 (28.4%) ears after acute TMP and possible chronic TMP occurred in 22 (84.6%). In total, 40 (43%) ears had recurrence of FOE, and 3 (3.2%) ears had recurrent TMP.

Comment: FOE can be particularly recalcitrant to treatment, and this Australian review was prompted by a lack of literature on the topic, with particular focus on associated tympanic membrane perforations. Over 60% of cases required more than 1 topical agent to control the infection, the choice of which can be difficult when many antifungal agents are contraindicated in the presence of a perforation. Persistent TMP was common after FOE, perhaps not surprisingly more so in those with a chronic perforation (84.6%) compared to those with an acute perforation (28.4%). Treatment should include regular aural toilet, and the risks associated with topical antifungals in the presence of a perforation should be remembered.

Reference: *Aus J Otolaryngol.* 2021;4:28

[Abstract](#)



ENT Research Review™

Independent commentary by Associate Professor Joanne Rimmer

A/Prof Joanne Rimmer works as a rhinologist and skull base surgeon at Monash Health and St Vincent's Hospital Melbourne, and is an Associate Professor at Monash University. She has fellowship training in rhinology, anterior skull base surgery and facial plastic surgery.

Jo has an active research interest and has published over 65 peer-reviewed articles in the scientific literature. She has also authored over 15 book chapters in her areas of expertise. She is an investigator in a number of local, national and international clinical trials in the field of rhinology. She is a regular invited speaker at national and international meetings. She supervises Victorian ENT trainees as well as teaching on rhinology and sinus surgery courses. She sits on the Editorial Boards of Rhinology Journal, the Australian Journal of Otolaryngology, and Frontiers in Allergy (Rhinitis). She is a peer-reviewer for multiple international journals.

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References: 1. Bachert C *et al.* Efficacy and safety of dupilumab in patients with severe chronic rhinosinusitis with nasal polyps (LIBERTY NP SINUS-24 and LIBERTY NP SINUS-52): results from two multicentre, randomised, double-blind, placebo-controlled, parallel-group phase 3 trials. *Lancet* 2019; 394(10209): 1638–50. 2. Australian Approved Product Information for DUPIXENT (dupilumab). 17 August 2021.

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SANOFI GENZYME

Effects of cough suppression therapy on voice disorder severity

Authors: LaTour D et al.

Summary: Yet another retrospective analysis that assessed cough suppression therapy (CST; median 3 treatment sessions; range 1-13 sessions), administered by a licensed speech-language pathologist, and self-assessed changes in chronic cough and voice disorder severity in 43 adult patients assigned to a cough (C; n = 27) group or a cough-voice (CV; n = 19) group based on the severity of their Voice Handicap Index-10 (VHI-10) scores. Cough severity improved across both groups and voice severity improved in the CV group; VHI-10 scores did not change for the C group. Changes in severity and number of treatment sessions were not correlated.

Comment: Chronic cough is a frequent presenting symptom to ENT, with or without associated dysphonia which is present in approximately 55% of cases. It can be due to a sensory neuropathy within the larynx when it is often difficult to treat. Cough suppression therapy is a specific type of voice therapy provided by a speech pathologist, using behavioural modifications with or without medication. This study assessed patients with chronic cough, with or without vocal symptoms, and found a significant improvement in subjective cough severity in both groups after such therapy. Voice problems also improved in the group with comorbid dysphonia, but speech pathologists can offer symptomatic improvement in chronic cough even when there is no dysphonia.

Reference: *Laryngoscope* 2021;131(2):2747-2751

[Abstract](#)

Pain management following otological surgery: A prospective study of different strategies

Authors: Dahm V et al.

Summary: This prospective nonrandomised consecutive cohort study assessed pain and associated analgesic consumption in 125 adult patients undergoing ambulatory otologic surgery (cochlear implantation and endaural middle ear surgery) receiving acetaminophen (paracetamol) 500 mg plus ibuprofen 400 mg versus acetaminophen (paracetamol) 500 mg plus codeine 30 mg. All patients experienced mild-to-moderate pain, with reduction of pain from day-to-day by an average 0.26. Pain control was achieved with both drug regimens with no difference in pain levels. Only 50% of patients prescribed opioids used them; median tablet intake was 3 tablets, while only 10-20 tablets were prescribed. Most patients (97%) did not dispose of their drugs safely.

Comment: The prescribing of opioids following surgery is an off-debated subject due to the associated risks and potential dependency. This study reviewed 125 adults who underwent cochlear implantation or endaural middle ear surgery, all of whom reported mild-moderate pain post-operatively. There was no difference in pain control with simple analgesia (paracetamol and ibuprofen) compared to paracetamol and codeine. Only half the patients prescribed codeine used any at all, and in those who did the median number of tablets taken was three, from a box of 20. It appears that opioid analgesia does not need to be prescribed regularly after this type of otological surgery, and if it is required then only small numbers of tablets should be dispensed, which is reassuring from both a safety and potential dependency point of view.

Reference: *Laryngoscope*. 2022;132(1):204-211

[Abstract](#)

Improving the pediatric floor discharge process following tonsillectomy

Authors: Yang CJ et al.

Summary: This prospective observational quality improvement study aimed to increase the paediatric patient discharge rate following tonsillectomy before 11 am ("timely discharge") on postoperative day 1 to ≥50% within 1 year. Using tools including a process map, Ishikawa diagram, and Pareto chart, specific target areas for improvement were identified including electronic health record-based handoff text prompt, discharge checklist, automated discharge instructions, encouragement to place discharge orders by 9 am and implementation of early postoperative day 1 rounds. Within 12 months, discharges before 11 am increased to 44.9% and before 1 pm increased to 83.8%, with sustained improvement. Mean length of stay decreased while 7-day readmission rates did not change.

Comment: Healthcare expenditure, bed occupancy rates and overall hospital efficiency can be improved by prompt discharge after surgery. This study shows that such improvement can be achieved by focusing on specific areas. The authors noted that only 10% of their paediatric tonsillectomy patients were being discharged by 11am on the first postoperative day. By implementing discharge protocols and criteria-led discharge plans they were able to increase this to 45% within 12 months, sustained into the following year. Education and the use of appropriate discharge checklists and instructions seem to be the key.

Reference: *Laryngoscope*. 2022;132(1):225-233

[Abstract](#)

Use of an autoinflation device does not lead to a clinically meaningful change in hearing thresholds in children with otitis media with effusion

Authors: Cooper HE et al.

Summary: This English, pragmatic, retrospective study examined whether the Otovent auto-inflation device was an effective intervention in 463 children with otitis media with effusion versus 513 controls. There was an improvement in hearing thresholds in auto-inflated children versus controls; however, improvements were minimal with small effect sizes. There was no difference in tympanometry improvement. More children in the auto-inflation group were referred to an ENT specialist after their second appointment versus controls.

Comment: A previous Cochrane review concluded that it was reasonable to consider an auto-inflation device such as the Otovent balloon whilst awaiting natural resolution in otitis media with effusion in children, with some evidence that it improved hearing thresholds. This pragmatic retrospective study of almost 1000 patients used historical controls and found a statistically significant improvement in thresholds in the group that used the Otovent device. However, the effects sizes were small with no clinically meaningful improvement and no change in tympanometry results. Perhaps it is something to suggest while waiting for ventilation tubes to be inserted rather than as a treatment in its own right? Further prospective studies might be helpful.

Reference: *Clin Otolaryngol*. 2022;47(1):160-166

[Abstract](#)

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