NTSP Podcast series

National Tracheostomy Safety Project

This month's top papers: August 2021

Welcome to the latest blog in the literature podcast from the NTSP. We try to bring you a quick roundup of what is hot in the world of tracheostomy and laryngectomy publications by scouring internationally recognised journals and media and bringing you the highlights.

The papers we will discuss this month are detailed below, along with an automated transcript of the podcast. Please note that the transcript is generated by AI and so may not be totally accurate.

You can find the links to the podcast on www.tracheostomy.org.uk and by searching for NTSP on your favourite podcast platform. Some of the podcasts are also uploaded to YouTube if you prefer to get your news that way. Check out the NTSP YouTube channel at https://www.youtube.com/c/NationalTracheostomySafetyProject. Please follow us and/or subscribe to keep up to date! https://x.com/NTSP_UK

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This month's top papers

- The impact of pediatric tracheostomy on the quality of life of caregivers
- Shielding, hospital admission and mortality among 1216 people with total laryngectomy in the UK during the COVID-19 pandemic: A cross-sectional survey from the first national lockdown
- Assessment of knowledge regarding tracheostomy care and management of early complications among healthcare professionals
- Identification of patients for a delayed extubation strategy versus elective tracheostomy for postoperative airway management in major oral cancer surgery: A prospective observational study in seven hundred and twenty patients

NTSP Podcast Series

The impact of pediatric tracheostomy on the quality of life of caregivers

Lay Summary:

This study looked at how having a child with a tracheostomy tube at home affects the quality of life for their primary caregivers. A tracheostomy is a tube placed in a child's windpipe to help them breathe, and it requires constant care from a family member.

The study found that caring for a child with a tracheostomy has a big impact on the caregiver's life. Caregivers reported lower quality of life scores overall compared to parents of healthy children. They particularly struggled with emotional and social aspects of their lives. Major problems for caregivers included emotional distress, sleep being disturbed, and difficulties with everyday family activities like eating meals together. Many caregivers also had to change their work or career plans.

The study noted that caregivers of younger children (under 6 years old) and those whose children had other long-term health problems like neurological diseases experienced an even greater negative impact on their quality of life. The authors conclude that caring for a child with a tracheostomy places a heavy emotional and social burden on families, highlighting the need for more support systems for these caregivers.

Summary for Healthcare Professionals:

This study investigated the impact of caring for a child with a tracheostomy on the quality of life (QoL) of primary caregivers. The combined retrospective and prospective cohort study included 85 caregivers of children younger than 16 years who had completed a minimum of 6 months of home tracheostomy care. The PedsQL v 4.0 Family Impact Module was used to assess caregiver health-related quality of life (HRQOL) and family functioning across various domains.

The results indicate a significant and profound negative impact on caregiver QoL. The mean caregiver HRQOL score was 59.3, and the mean total family impact score was 54.7, both of which were significantly lower than normative data for parents of healthy children ($p<0.0001$). Caregivers showed particular deficits in emotional functioning (mean score: 53.28) and social functioning (mean score: 56.94). Major concerns reported by caregivers included emotional disturbance, interference with daily family activities, and sleep disturbance.

Subgroup analysis revealed that caregivers of children with co-existing chronic neurological or cardiopulmonary diseases had significantly worse total family impact scores, caregiver HRQL, and family functioning scores ($p=0.001$, $p=0.001$, and $p=0.016$, respectively). Furthermore, caregivers of children ≤6 years of age also showed significantly worse HRQL and family functioning scores ($p=0.002$ and $p=0.005$). The study concludes that the biopsychosocial consequences of pediatric tracheostomy are profound, underscoring the emotional and social burden placed on caregivers and highlighting the need for multidisciplinary support.

NTSP Podcast Series

Shielding, hospital admission and mortality among 1216 people with total laryngectomy in the UK during the COVID-19 pandemic: A cross-sectional survey from the first national lockdown

Lay Summary:

This study investigated how the first national lockdown in the UK during the COVID-19 pandemic affected people who have had their voice box surgically removed (a total laryngectomy). These individuals, sometimes called "neck-breathers," breathe through a permanent opening in their neck called a stoma. The study aimed to understand their COVID-19 infection rates, how they were advised on and practiced shielding, their hospital admission rates, and their overall death rate.

Researchers collected data from 1,216 people across 26 UK medical centers. They found that a very small percentage of the total group (2%) tested positive for COVID-19. About a third of people with a total laryngectomy were advised to shield, though some chose not to, and a number of those who weren't advised still chose to self-isolate.

The overall death rate during the six-month study period was 4%. This was not higher than the expected death rate for this group based on previous years' data. However, the study found that if a person with a total laryngectomy did get COVID-19 and was admitted to the hospital, their risk of dying was high, with half of those who tested positive dying, and eight of those deaths occurring within 28 days of the positive test. The study highlights that there is a need for better national data on this group of patients to make better comparisons and provide them with clearer guidance in the future.

Summary for Healthcare Professionals:

This cross-sectional survey and case note review, conducted during the first UK national lockdown, examined the outcomes for people with a total laryngectomy (PTL) during the COVID-19 pandemic. The study aimed to report on COVID-19 prevalence, shielding practices, hospital admissions, and mortality in this population. The rationale for the study was the hypothesis that the altered anatomy of PTL, who breathe through a neck stoma, might increase their susceptibility to SARS-CoV-2 infection.

The audit collected data from 1,216 PTL from 26 centers across the UK. The average age was 70 years, and 81% were male. The study found that a small proportion of the total sample (2%) tested positive for COVID-19, and testing was limited, with results recorded for only 12% of the sample. Approximately one-third of PTL received advice to shield, either by a government letter or a healthcare professional.

Overall mortality for the total PTL sample was 4% (41 patients) over the audit's 6-month period, which was comparable to the estimated pre-pandemic death rate of 4.2% for the same time frame. However, among the 24 PTL who tested positive, 50% died, with eight deaths occurring within 28 days of the positive test. This mortality rate for COVID-19-positive PTL was high and is of clinical significance. PTL who were admitted to the hospital with COVID-19 had a median length of stay of 26 days, which is considerably longer than the 8 days reported for the general UK population during the same period. One-third of these COVID-19-positive PTL admissions required intensive care, compared with 12.5% for the general population.

The study highlights a lack of routine national data for this patient group, which limited comparisons with historical figures and may lead to marginalization of the PTL population. The authors recommend further investigation into the optimal testing method for PTL (i.e., tracheal and nasopharyngeal aspirates) due to their unique anatomy and a call for clear national guidelines on shielding for this patient population.

NTSP Podcast Series

Assessment of knowledge regarding tracheostomy care and management of early complications among healthcare professionals.

Lay Summary:

This study looked at how much doctors and nurses know about taking care of patients with a tracheostomy, which is a tube placed in the windpipe to help with breathing. The researchers gave a questionnaire to 254 healthcare workers to see how well they understood the care and management of these patients, particularly in emergency situations.

The results showed that while a slight majority of the staff (52%) had what the study considered to be "good knowledge" about tracheostomy care, there were some significant gaps. The weakest areas of knowledge were how to respond if the tube becomes blocked (only 31.1% of staff answered correctly), the proper pressure for the cuff (38.9%), and the correct pressure for suctioning (39.4%). These are all critical skills for preventing serious complications.

The study also found no link between knowledge levels and factors like age, gender, or how long someone had been practicing. The authors conclude that these gaps in knowledge are a concern, as they can lead to preventable complications. They recommend creating clear, easy-to-access guidelines and providing more training, such as workshops and hands-on exercises, to ensure all healthcare professionals are well-prepared to care for these patients.

Summary for Healthcare Professionals:

This cross-sectional observational study assessed the knowledge of 254 doctors and nurses in four tertiary care hospitals regarding tracheostomy care and the management of early complications. The objective was to identify knowledge gaps to inform the development of standardized, institution-based guidelines and training.

The study found that 52% of the participants demonstrated good knowledge (scores > 50%) about various aspects of tracheostomy care. However, significant gaps in knowledge were identified in several critical areas. The lowest-scoring areas were:

- **First response to tube blockade**: Only 31.1% of participants answered correctly.
- **Minimum adequate time for removal of stay sutures**: Only 34.6% of participants answered correctly.
- **Adequate cuff pressure**: 38.9% answered correctly.
- **Adequate suction pressure**: 39.4% answered correctly.
- **Earliest sign of stomal infection**: Only 31.5% answered correctly.

The study found no statistically significant association between knowledge scores and age, gender, professional qualification, or years of practice. The authors emphasize that these knowledge deficits are a concern, given that a substantial number of tracheostomy-related complications are preventable. They recommend developing and implementing bedside management algorithms and continuing medical education programs that include simulation-based exercises to improve competence and standardize practice among healthcare professionals.

NTSP Podcast Series

Identification of patients for a delayed extubation strategy versus elective tracheostomy for postoperative airway management in major oral cancer surgery: A prospective observational study in seven hundred and twenty patients.

Lay Summary:

This study compares two ways to manage a patient's breathing after major oral cancer surgery: either by performing a tracheostomy (a breathing tube in the neck) or by using a temporary breathing tube that is kept in place overnight before being removed (delayed extubation). The main goal was to see if delayed extubation is a safe option and to figure out which patients are good candidates for it.

The researchers followed 720 patients and found that delayed extubation was used in about 58% of cases, while a tracheostomy was performed in 42%. The study found that delayed extubation was a safe alternative, with no patients having major breathing problems after the tube was removed.

Patients who had delayed extubation also experienced fewer complications overall (4.3% vs. 22.5%) and specifically fewer breathing-related problems (1.7% vs. 8.7%) compared to those with a tracheostomy. They also had a much shorter hospital stay (an average of 7.2 days vs. 11.5 days) and were able to eat and speak sooner. The study developed a set of guidelines to help doctors choose which patients are suitable for delayed extubation, based on factors like the size of the tumor and the extent of the surgery.

Summary for Healthcare Professionals:

This prospective observational study investigated the safety and efficacy of a delayed extubation (DE) strategy versus elective tracheostomy (TT) for postoperative airway management in 720 patients undergoing major oral cancer surgery. The study's primary objective was to determine the safety of DE and identify independent predictors for a successful outcome.

The cohort was divided into a DE group (n=417, 58%) and a TT group (n=303, 42%) based on institutional practice. All patients in the DE group were successfully extubated and maintained a patent airway post-extubation. Multivariate logistic regression identified several independent predictors for a safe DE strategy: T1-T2 tumor stage, absence of extensive resection, primary closure or reconstruction with a fasciocutaneous flap, no preoperative radiation, and shorter duration of anesthesia.

Patients in the DE group had significantly lower rates of overall complications (4.3% vs. 22.5%, p=0.000) and airway complications (1.7% vs. 8.7%, p=0.000) compared to the TT group. Furthermore, DE was associated with a shorter hospital stay (7.2 vs. 11.5 days), and a faster return to oral intake and speech. The study highlights that while airway-related complications in the DE group occurred in a closely monitored PACU, a majority of complications in the TT group were detected in the hospital wards, where close monitoring may be less consistent. The authors conclude that DE is a safe and effective alternative to TT in a select group of patients, leading to improved outcomes and a faster recovery.

NTSP Podcast Series

Scientific abstracts and references

Int J Pediatr Otorhinolaryngol. 2021 Jul 27;149:110854. doi: 10.1016/j.ijporl.2021.110854.

The impact of pediatric tracheostomy on the quality of life of caregivers.

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OBJECTIVE: Pediatric tracheostomy is a challenge in otolaryngology practice and it is associated with greater morbidity and mortality than in adults; hence, constant vigilance by the designated family caregiver is critical. This study was designed to assess the impact of on quality of life of caregivers in a homecare setting as a result of the presence of child with a tracheostomy. METHODS: This was a combined retrospective and prospective cohort study with caregivers of children younger than 16 years who had undergone a tracheostomy, had been discharged home with a tracheostomy tube and completed 6 months of domiciliary tracheostomy care. The consenting primary caregivers were assessed for their quality of life based on the PedsQL v 4.0 questionnaires across various domains. RESULTS: We identified the primary caregivers of 85 children who had undergone a tracheostomy during the study period. The children's median age was 3.5 years (range, 9 months to 14 years). The mean caregiver health-related quality of life (HRQOL) score was 59.3, the mean family functioning score was 62.8, and the mean total family impact score was 54.7 with relative deficits seen in caregiver's social functioning (56.9) and emotional functioning (53.2). Good or average quality of physical and social function was seen among 74 % and 65 % of caregivers respectively while only 55 % were reported having good or average emotional function. Emotional disturbance, interfering with everyday family activities, and sleep disturbance were the major concerns among caregivers. CONCLUSION: The biopsychosocial consequences of caring for a child with a tracheostomy are profound for the family, affecting the quality of life of caregivers and adding to the emotional and social burden of the child's family.

Int J Lang Commun Disord. 2021 Aug 5. doi: 10.1111/1460-6984.12656.

Shielding, hospital admission and mortality among 1216 people with total laryngectomy in the UK during the COVID-19 pandemic: A cross-sectional survey from the first national lockdown.

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BACKGROUND: People with a total laryngectomy (PTL) rely on a permanent opening in their neck (stoma) to breathe. This altered anatomy may increase susceptibility to contracting and transmitting SARS-CoV-2. AIMS: To report on (1) the frequency and characteristics of PTL who tested positive for COVID-19, (2) the receipt of advice regarding shielding and patient self-reports of shielding, (3) hospital admissions and length of stay, and (4) mortality rates in this group during the first UK national lockdown. METHODS & PROCEDURES: This is a cross-sectional survey and case note review. National Health Service (NHS) centres providing care to PTL were invited to participate via the Royal College of Speech and Language Therapists' (RCSLT) Head & Neck Clinical Excellence Networks and through social media. PTL were reviewed by their speech and language therapist either in person or via telehealth between 30 March and 30 September 2020. Data were collected within the time frame covered by the Control of Patient Information (COPI) notice issued for COVID-19 and included information on COVID-19 testing, shielding, hospital admissions, length of stay and deaths. Information was submitted to the lead NHS site using a custom designed data-capture worksheet. Analysis was performed using descriptive statistics, including proportions and frequency counts. Pearson's Chi squared tests were used to compare categorical data using a 5% significance level. OUTCOMES & RESULTS: Data were obtained from 1216 PTL from 26 centres across the UK. A total of 81% were male; mean age was 70 years (28-97 years). Of the total group, 12% received a COVID-19 test. A total of 24 (2% of total sample) tested positive for COVID-19. Almost one-third of PTL (32%) received a government letter or were advised to shield by a healthcare professional. During the data collection time frame, 12% had a hospital admission (n = 151) with a median length of stay of 1 day (1-133 days), interquartile range (IQR) = 17 days. A total of 20 of these admissions (13%) had tested positive for COVID-19 with a median length of stay of 26 days, IQR = 49 days. The overall mortality was 4% (41 patients), with eight deaths occurring within 28 days of testing positive for COVID-19. CONCLUSIONS & IMPLICATIONS: This study highlighted the lack of routine national data for neck-breathers with which to compare the current findings. Greater testing in the community is necessary to understand the prevalence of COVID-19 in PTL and if this group is indeed more susceptible. The potential for nasopharyngeal and tracheal aspirates to show differing results when testing for COVID-19 in neck-breathers requires further investigation. WHAT THIS PAPER ADDS: What is already known on the subject? People with total laryngectomy (PTL) have an altered anatomy for breathing and speaking. The presence of a neck stoma poses an additional virus entry point aside from the nose, mouth and conjunctiva. This could increase the susceptibility to COVID-19 for PTL. What this paper adds? This is the first national audit to provide data on shielding, hospital admissions and mortality for patients with total laryngectomy in the UK over the pandemic. The overall mortality in PTL over the first lockdown did not appear to be higher than the "best case" estimates from previous years. However, one in three PTL who acquired COVID-19 and were admitted to hospital, died within 28 days of

testing positive. These findings are relevant to the current care and management of PTL over the pandemic but also highlights important knowledge gaps. What are the potential or actual clinical implications of this work? This study highlights gaps in the collection of baseline information on hospital admissions, length of stay and mortality for people with laryngectomy in the UK, restricting comparisons between the current data and historical data. The need for further research on whether neck-breathers should be tested via both nasopharyngeal and tracheal aspirates is important not just currently, but also in case of any future respiratory epidemics.

NTSP Podcast Series

Braz J Otorhinolaryngol. 2021 Aug 6:S1808-8694(21)00135-X. doi: 10.1016/j.bjorl.2021.06.011.

Assessment of knowledge regarding tracheostomy care and management of early complications among healthcare professionals.

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INTRODUCTION: Tracheostomy is commonly performed surgical procedure in ENT practice. Postoperative care is the most important aspect for achieving good patient outcomes. Unavailability of standard guidelines on tracheostomy management and inadequate training can make this basic practice complex. The nursing staff and doctors play a very important role in bedside management, both in the ward and in the intensive care unit (ICU) setup. Therefore, it is crucial that all healthcare providers directly involved in providing postoperative care to such patients can do this efficiently. OBJECTIVES: The objective of this study is to assess the knowledge regarding identification and management of tracheostomy-related emergencies and early complications among healthcare professionals so as to improve practice and further standardization. METHODS: Cross-sectional observational study included two hundred and fifty-four doctors and nurses from four large tertiary care hospitals. The questions used were simple and straightforward regarding tracheostomy suctioning, cuff care, cuff management, tube blockage, and feeding management in patients with tracheostomy. RESULTS: Based on evidence from our study, knowledge level regarding tracheostomy care ranges from 48% to 52% with knowledge scores above 50% being considered satisfactory. Significant gaps in knowledge exist in various aspects of tracheostomy care and management among healthcare professionals. CONCLUSION: Our findings demonstrated an adequate knowledge level among health care professionals ranging from 48% to 52% with knowledge scores above 50% being considered satisfactory and revealed that gaps in knowledge still exist in various aspects of tracheostomy care and management.

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Identification of patients for a delayed extubation strategy versus elective tracheostomy for postoperative airway management in major oral cancer surgery: A prospective observational study in seven hundred and twenty patients.

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OBJECTIVES: Tracheostomy (TT) and delayed extubation (DE) are two approaches to postoperative airway management in patients after major oral cancer surgery. We planned a study to determine the safety of overnight intubation followed by extubation the next morning (DE) compared to elective TT and to identify factors that were associated with a safe DE (maintenance of a patent airway). MATERIAL AND METHODS: We conducted a prospective observational study in a tertiary referral cancer care center. We included adult patients undergoing elective major oral cancer surgery under general anesthesia with tracheal intubation. The decision regarding postoperative airway management using either TT or DE was made according to the usual practice at our center. RESULTS: We screened a total of 4477 patients, 720 patients were included. DE was performed in 417 patients (58.4%) and TT in 303 patients (42.4%). On multivariable analysis, T1-T2 tumor stage, absence of extensive resection, primary closure or reconstruction using fasciocutaneous flap, absence of preoperative radiation, no neck dissection or unilateral neck dissection and shorter duration of anesthesia were independent predictors for a safe DE. Overall complications (4.3% versus 22.5%, p = 0.00) and airway complications (1.7% versus 8.7%, p = 0.00) were lower in the DE compared to the TT group respectively. DE was associated with a shorter hospital stay (7.2 ± 3.7 versus 11.5 ± 7.2 days, p = 0.00), time to oral intake and speech compared to TT. CONCLUSIONS: A DE strategy after major oral cancer surgery is a safe alternative to TT in a select group of patients.

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