



This month's top papers: August 2025

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.

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This month's top papers

- Exercise in patients with a tracheostomy and speaking valve: a randomised crossover-controlled trial.
- Plea for routine endoscopic tracheostomy tube adjustment.
- Does Elective Tracheostomy Reduce the Incidence of Airway Complications and Adverse Outcomes in Free Flap Reconstruction of Oral Cavity Malignancies?
- Assessing and enhancing pediatric residents' knowledge and skills in tracheostomy care through simulation-based training.
- Looking Beyond Hospital Discharge: One-Year Mortality Following Tracheostomy Creation in Traumatically Injured Older Adults.
- Intraoperative Tracheostomy Complications.

Exercise in patients with a tracheostomy and speaking valve: a randomised crossover-controlled trial.

Lay Summary:

This study investigated whether patients with a tracheostomy tube could safely wear their Speaking Valve (SV) while exercising, which is a key part of recovery in the intensive care unit (ICU). The SV is essential for communication and rehabilitation, but doctors often remove it during physical therapy due to a fear that the valve might cause the patient's lungs to partially collapse or lose volume (de-recruit). The researchers conducted a randomized trial where patients performed exercise both with and without the SV.



The findings provided strong reassurance: no adverse events occurred during any of the exercise sessions, suggesting the SV is safe to wear during physical activity. More importantly, the SV was found to be actively beneficial for lung health. Specialized scans showed that while lung volume naturally decreased during exercise for all patients, the volume loss was significantly less when the patients wore the speaking valve. This means the SV actually helped to keep the patient's lungs inflated and maintained better lung aeration compared to when it was removed.

The study concludes that the long-held safety concerns about using an SV during exercise are unsubstantiated. Exercise performance was the same whether the valve was worn or not, confirming that the benefits of restored voice and lung protection should be maintained during rehabilitation. This research encourages hospitals to change their practice and keep the speaking valve on, allowing patients to communicate and exercise simultaneously.

Summary for Healthcare Professionals:

This randomized crossover-controlled physiological trial investigated the safety and effect of Speaking Valve (SV) use during physical exercise on lung function in critically ill patients with tracheostomy. The objective was to address the prevailing clinical concern that combining SV-induced positive end-expiratory pressure with the physiological stress of mobilization might lead to adverse pulmonary effects, such as lung de-recruitment.



The study found no adverse events occurred during the exercise sessions, confirming the safety and feasibility of the intervention. Exercise performance metrics were similar between the SV and control (no SV) conditions. The crucial physiological outcome, measured by End-Expiratory Lung Impedance (EELI), demonstrated a statistically significant benefit for the SV cohort. While lung aeration naturally reduced during exercise, the reduction in EELI was significantly less when the patient wore the SV at the mid-exercise time point. This indicates that the SV helps maintain end-expiratory lung volume during physical exertion. Safety analysis further confirmed no evidence of hyperinflation or compromise to respiratory parameters. The authors conclude that the use of an SV during exercise is safe and offers both functional and pulmonary advantages. This evidence supports integrating SV use into mobilization protocols to facilitate earlier communication, functional recovery, and lung volume preservation.

Plea for routine endoscopic tracheostomy tube adjustment.



Lay Summary:

This paper argues that a simple, yet crucial change is needed in how patients with a tracheostomy (a breathing tube in the neck) are cared for, especially those with long-term needs. The procedure involves inserting a tube to help a person breathe, but if that tube is poorly positioned or the wrong size, it can rub against the windpipe and cause serious long-term problems, such as bleeding or permanent scarring (tracheal stenosis).

The authors are making a "plea for routine endoscopic tracheostomy tube adjustment". This means they want doctors to start using a tiny camera (endoscope) to look inside the windpipe whenever the breathing tube is initially placed and again during the first tube change. This camera check allows the medical team to see the exact position of the tube's tip and its cuff, ensuring they fit perfectly without putting too much pressure on the tracheal wall.

The paper stresses that poor tube fit is a common problem in patients who have complicated health issues, and this mechanical irritation is a primary cause of future complications. Without this routine visual check, doctors may miss silent damage that prevents the patient from recovering their ability to swallow and breathe without the tube. By using the camera to check and adjust the tube routinely, the authors believe doctors can prevent injury, speed up the patient's recovery, and avoid severe, long-term complications.

Summary for Healthcare Professionals:



This research report advocates for the universal adoption of routine endoscopic assessment and adjustment during and after tracheostomy tube (TT) placement and exchange to mitigate the risks of long-term iatrogenic morbidity. The central premise is that relying solely on external landmarks or initial surgical placement is inadequate, particularly in patients with neurological damage or other severe comorbidities who require prolonged cannulation.

The authors argue that persistent TT malposition or improper sizing creates continuous mechanical stress on the tracheal wall, which is a key contributing factor to the development of severe late complications such as tracheal stenosis, tracheomalacia, and severe bleeding. Routine utilization of tracheoscopy (endoscopic guidance) is proposed as the standard of care to objectively confirm the optimal position of the TT tip and cuff, minimizing contact with the tracheal mucosa. This objective confirmation is vital during both initial placement and the high-risk first TT change. Furthermore, ensuring optimal positioning is crucial for facilitating the recovery of upper airway functions, directly supporting both subsequent dysphagia therapy and successful weaning/decannulation efforts. The conclusion is a strong appeal for integrating this practice to standardize care, prevent long-term injury, and optimize functional outcomes across the acute and rehabilitation care trajectory.

Does Elective Tracheostomy Reduce the Incidence of Airway Complications and Adverse Outcomes in Free Flap Reconstruction of Oral Cavity Malignancies?

Lay Summary:

This study looked at which type of surgery is best for inserting a breathing tube (tracheostomy) in patients who suffered a severe stroke. The researchers compared two common methods: the traditional Surgical Tracheostomy (ST) and the less-invasive Dilational Tracheostomy (DT), often performed at the bedside. The goal was to find which procedure leads to a faster and safer recovery.



By analyzing patients involved in a major clinical trial (SETPOINT2), the study found that, in the long run, both procedures resulted in similar survival rates and recovery of daily functions at the six-month mark. The rates of patients successfully having the tube removed (decannulation) were also comparable between the two groups.

However, the dilational approach (DT) offered significant advantages in the short-term recovery period. Patients who received the traditional Surgical Tracheostomy had to remain on the breathing machine for an average of 19 days, compared to only 14 days for the DT group. Consequently, they spent more time in the Intensive Care Unit (ICU).



Most critically, the surgical method was associated with a much higher risk of infection within the hospital (14.6% vs. 1.2%). The removal of the tube was also significantly delayed in the ST group. The authors conclude that the less invasive dilational tracheostomy is the preferred method for stroke patients, as it speeds up the recovery timeline and reduces the risk of serious early complications without negatively affecting the final outcome.

Summary for Healthcare Professionals:

This study is a post hoc analysis of the SETPOINT2 randomized clinical trial, rigorously comparing Surgical Tracheostomy (ST) versus Dilational Tracheostomy (DT) outcomes in mechanically ventilated patients with severe stroke. The analysis used propensity score matching to balance baseline characteristics between the two cohorts.

The study concluded that the primary long-term outcomes were comparable. There were no statistically significant differences in the 6-month decannulation rate (56% ST vs. 61% DT), functional outcomes, or mortality between the two techniques.

However, the ST method was consistently associated with increased morbidity and resource utilization. Patients in the ST group experienced significantly prolonged mechanical ventilation duration (median 19 vs. 14 days, $P=0.008$) and ICU length of stay (median 23 vs. 17 days, $P=0.047$). A critical finding was the safety disparity: the ST cohort exhibited a significantly higher intrahospital infection rate (14.6% vs. 1.2%, $P=0.002$). Furthermore, the time to decannulation was substantially delayed in the ST group (median 81 vs. 58 days, $P=0.004$). The authors conclude that while both methods achieve similar final outcomes, the dilational approach is strongly supported due to its association with accelerated weaning, reduced resource consumption, and a significantly lower risk of early infectious complications.

Assessing and enhancing pediatric residents' knowledge and skills in tracheostomy care through simulation-based training.

Lay Summary:



This study highlights a serious safety gap: young doctors (pediatric residents) often lack the confidence and skills needed to care for children with a breathing tube (tracheostomy). Since residents are frequently the first to respond to life-threatening tracheostomy emergencies, inadequate training puts vulnerable children at risk. The researchers conducted a study on 42 pediatric residents, first proving that their lack of formal training left nearly 93% of them without confidence in performing critical procedures like changing a tracheostomy tube.

To address this problem, the study implemented a specialized, hands-on simulation-based training workshop. After attending the workshop, the results showed a significant improvement in every area assessed. The residents' confidence levels and overall knowledge increased significantly, and their practical ability to manage the tracheostomy tube improved substantially. For instance, confidence in changing the tube more than doubled, increasing from a mean rating of 1.9 before the workshop to 3.8 afterwards. Other areas, including confidence in evaluating a patient and managing complications, also improved.

The strong conclusion is that healthcare professionals in pediatrics are often not knowledgeable or self-assured in this field due to gaps in their initial education. Therefore, establishing a mandatory, targeted educational program centered on hands-on simulation is essential. This is necessary to enhance the knowledge, self-assurance, and practical competency of future pediatric doctors, which is vital for improving safety and quality of care for children with tracheostomies.

Summary for Healthcare Professionals:



This cross-sectional and interventional study evaluated the baseline knowledge, self-efficacy, and clinical skills of 42 pediatric residents regarding tracheostomy care and assessed the efficacy of a targeted simulation-based training workshop in enhancing competency. The rationale for the study addressed the noted deficiency in preresidency medical education concerning tracheostomy management, which compromises safety when residents serve as first responders to emergencies.

At baseline, the data confirmed a significant knowledge and confidence deficit: 73.81% of residents felt incompetent in assessing tracheostomy patients, and 92.86% lacked confidence in performing routine tracheostomy tube change care. Following the targeted workshop, which incorporated didactic instruction and hands-on simulation practice, statistically significant improvements were observed across all outcome metrics. The overall mean objective knowledge score and mean self-assessed confidence level increased significantly ($p < 0.001$). For example, confidence in performing a tracheostomy tube change increased from a mean rating of 1.9 to 3.8.

The authors conclude that this deficit establishes the necessity of a specific educational program to enhance the self-assurance, knowledge, and competency of pediatric healthcare professionals. The findings strongly support the implementation of a structured, simulation-based educational program as a necessary component of residency training to enhance competency in tracheostomy care and emergency management.

Looking Beyond Hospital Discharge: One-Year Mortality Following Tracheostomy Creation in Traumatically Injured Older Adults.

Lay Summary:

This study investigated the long-term survival of older adults who suffered a severe traumatic injury and required a tracheostomy (a breathing tube in the neck). The research followed 204 patients aged 65 or older who were treated in the Intensive Care Unit for their injuries. The main purpose was to understand how their pre-existing conditions and initial surgical events affected their chance of surviving for a full year after the procedure.



The findings reveal a significant challenge in the long-term recovery of this vulnerable group. While the 30-day mortality rate was 10.3%, the one-year mortality rate was substantially higher, reaching 38.6%. The study identified several factors that strongly predicted a patient's survival. The biggest factor was simply older age itself, with every year increasing the risk of death. Other major risks included receiving a blood transfusion during the tracheostomy surgery and being diagnosed with a severe infection like pneumonia or sepsis. Ultimately, survival was closely linked to whether the patient could be discharged to their home or a rehabilitation center rather than a long-term care facility. The authors conclude that this data is crucial for doctors to have honest, informed conversations with older patients and their families about the realistic expectations and high risks associated with long-term survival after this life-saving intervention.

Summary for Healthcare Professionals:

This retrospective cohort study evaluated the long-term one-year mortality and associated risk factors following tracheostomy placement in 204 older adults (age 65 years) who sustained traumatic injuries. The study aimed to define survival trajectories in this high-morbidity surgical Intensive Care Unit (ICU) population. The analysis revealed a high incidence of long-term mortality: the 30-day mortality rate was 10.3%, escalating to a substantial 38.6% at one year. Multivariable logistic regression identified several independent predictors of one-year mortality: Older age (per 1-year increase, $P < 0.05$), intraoperative blood transfusion during the tracheostomy procedure ($P < 0.05$), and admission diagnosis of pneumonia or sepsis ($P < 0.05$) were all significantly associated with decreased survival. Conversely, survival was strongly associated with patient disposition, with discharge to home or acute rehabilitation predicting improved outcomes compared to discharge to a long-term care facility. The authors conclude that tracheostomy in older trauma patients is a marker for high one-year morbidity and mortality. The study underscores the necessity of early risk stratification, emphasizing that age, infection, and perioperative transfusion are crucial factors that must guide goals-of-care discussions and proactive palliative care integration to ensure patient-centered decision-making.



Intraoperative Tracheostomy Complications.

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Abstract

Tracheostomy is a routinely performed procedure, especially for patients who need long-term intubation, frequent pulmonary suctioning, or airway protection due to neurologic conditions. Despite being commonly performed, tracheostomy can lead to distinct complications that require careful surgical technique and an understanding of individual patient factors. In this review, we focus on the intraoperative complications that have been reported in the literature. We address the incidence, factors linked to a higher preponderance, and the key differences in complications between the open surgical and percutaneous dilatational tracheostomy technique. We also elucidate strategies for anticipating, preventing, and optimizing the treatment of complications.

Scientific abstracts and references



Crit Care. 2025 Aug 19;29(1):368. doi: 10.1186/s13054-025-05621-2.

Exercise in patients with a tracheostomy and speaking valve: a randomised crossover-controlled trial.

Churchill L(1)(2), Caruana L(3)(4), White N(4)(5), Fraser JF(4)(6)(7), Mandrusiak A(8), Paratz J(9)(10), Sutt AL(4)(6)(11), Thomas PJ(12)(13), Verner-Wren S(14), Tronstad O(3)(4).

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Conflict of interest statement: Declarations. Ethics approval and consent to participate: The study was approved by The Prince Charles Hospital Human Research Ethics Committee on 14/08/2018 (HREC/18/QPCH/183) and conducted in accordance with the ethical standards of the Declaration of Helsinki. Informed consent to participate was gained from all participants. Clinical Trial Number: The study was registered prior to commencement through the Australian and New Zealand Clinical Trials Registry (ANZCTR), Clinical Trial Number: 12619000148178. Consent for publication: Not applicable. Competing interests: The authors declare no competing interests.

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Plea for routine endoscopic tracheostomy tube adjustment.

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INTRODUCTION: Tracheostomy is one of the standard procedures in intensive care medicine. In the context of tracheostomy tube-, dysphagia- and decannulation management the selection of the appropriate tracheostomy tube model (angle, diameter, length) is crucial for the proper placement in the trachea. In spite of recent guidelines mentioning endoscopic control of the tube placement as a useful measure, data regarding the proper placement are rare in the present literature. Therefore, the aim of the present study was to investigate the accuracy of tracheostomy tube placement in patients admitted to our early neurological rehabilitation center. **METHODS:** We performed a retrospective single-center analysis of all patients with tracheostomy tube admitted to our early neurological rehabilitation center between 12/2022 and 01/2024. We analyzed the frequency, type and extent of injuries caused by a suboptimal placement of the tracheostomy tubes. The location of the tubes was routinely controlled endoscopically upon admission. In total 327 tracheoscopies were carried out. Clinical characteristics were collected in all patients and the endoscopic results were divided into malpositioned tracheostomy tubes (non-central tube position, often causing mucosal lesions, ulcer, bleeding) vs. well-positioned (central or almost central) tubes. The association between the quality of the tracheostomy tube placement and the characteristics age, gender, main diagnosis, tracheostomy procedure, time until initial endoscopic control of tracheostomy tube fitting after admission and after tracheostomy were analyzed using a logistic regression model. **RESULTS:** A total of 214 examinations (65%) revealed a malpositioned tracheostomy tube. In 19% of the carried out tracheoscopies (327), manifest injuries were already detectable (mucosal lesion, ulcer, bleeding). 113 examinations (35%) showed an acceptable tube placement. We found no association between the quality of the tracheostomy tube position and gender, age, main diagnosis, time until initial endoscopic control of tube fitting or type of tracheostomy. **DISCUSSION:** Since we found a high percentage of suboptimal tracheostomy tube positions (65%), an increased risk of complications can be assumed. With a view to the most relevant late complication of tracheal stenosis, there is agreement that the fundamental lesion begins with mucosal ulceration, which we found in 19% of the investigations. Therefore, the present data strongly suggest that a routine endoscopic control of tracheostomy tube placement should be firmly implemented into the routine tracheostomy tube management. Our data further suggest that the supply with tracheostomy tubes needs to be optimized.

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Does Elective Tracheostomy Reduce the Incidence of Airway Complications and Adverse Outcomes in Free Flap Reconstruction of Oral Cavity Malignancies?

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Elective tracheostomy is commonly performed to secure the airway following major oncologic and reconstructive head and neck procedures, though it carries risks of additional morbidity and may not be necessary in all cases. The purpose of this study was to evaluate the association between elective tracheostomy and postoperative airway complications. This was a retrospective cohort study of all patients undergoing resection and free flap reconstruction of an oral cavity cancer from 2012 to 2022 in the American College of Surgeons National Surgical Quality Improvement Program databases. The primary predictor was elective tracheostomy. The primary outcome was the occurrence of any airway complication within 30 days of surgery. Secondary outcomes included adverse discharge disposition, extended length of hospital stay, 30-day mortality, and readmission. A total of 2722 subjects (mean age 62.4 ± 13.1 y, 66.2% male) were included, with 195 experiencing an airway complication (7.16%). In adjusted analysis, longer operative time ($P < 0.001$) and mandibular osteotomies ($P = 0.050$) were the only independent predictors of airway complications. Elective tracheostomy was not associated with airway complications or secondary outcomes, but was independently associated with a 75% reduction in the odds of 30-day mortality ($P = 0.001$). These findings suggest that while elective tracheostomy is not required in every case, it may confer a survival benefit in select patients. Decisions regarding tracheostomy should be individualized based on patient characteristics, anatomy, and surgical complexity.

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Assessing and enhancing pediatric residents' knowledge and skills in tracheostomy care through simulation-based training.

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BACKGROUND AND OBJECTIVES: The pediatric residency program in Saudi Arabia currently does not include tracheostomy care as a competency. Research has indicated that nonsurgical residents have limited knowledge of tracheostomy management. This study aimed to establish the need for pediatric residents to be trained in tracheostomy care and the effectiveness of having such a training program. **METHODS:** This cross-sectional and interventional study included all pediatric residents who completed a self-assessment questionnaire of confidence levels, an objective knowledge assessment, and a hands-on routine pediatric tracheostomy tube change assessment on a mannequin. A targeted tracheostomy workshop was tailored to pediatric residents using didactic presentations and hands-on simulation practice. **RESULTS:** Forty-two residents participated in this study. The residents had limited experience with tracheostomy care, as they had not received formal training in this area nor practiced changing a tracheostomy tube independently. Thirty-one residents (73.81%) felt incompetent in assessing patients with a tracheostomy, and 39 (92.86%) lacked confidence in performing tracheostomy tube change care. The levels of confidence among the residents, knowledge regarding management of tracheostomy, and clinical expertise in tracheostomy tube change was significantly higher after the workshop than their scores measured prior to the workshop. **CONCLUSION:** This study illustrates that the healthcare professionals in pediatrics are not self-assured and knowledgeable in the field of tracheostomy care and, thereby, establishes the necessity of a specific tracheostomy educational program to enhance the self-assurance, knowledge, and competency in performing the practice.

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Development and acceptability testing of a tracheostomy decision support video for parents.

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OBJECTIVE: To develop a clinical, bedside intervention with peer parent narratives to help parents understand the shared decision-making (SDM) process, their role in the decision, and other parents' considerations in this context. **PATIENT INVOLVEMENT:** To ensure that the intervention reflected parents' needs, we identified eight parents who had faced a tracheostomy decision for their child and were willing to talk about their experiences on a video recording. Half of the parents had chosen tracheostomy; some children of parents making either choice had died. We included parents of diverse racial backgrounds whose children had different diagnoses. Parent interviews, along with an explanation of SDM for parents, were edited into a 17-min video guided by iterative feedback from parents and clinicians. Additional parents of children with tracheostomies then viewed the video and shared perceptions about acceptability. **METHODS:** After an iterative process of developing the video in partnership with parents, we piloted the video with 18 parents in 16 online interviews (two were couples) who were not part of video development but had faced a tracheostomy decision for their child within the last three years. Participants were asked about their experiences, viewed the video, and provided verbal feedback and reflection on the acceptability of the video and its anticipated clinical use. Interviews were transcribed and qualitatively analyzed, focusing on feedback. **RESULTS:** Parents who viewed the video provided generally favorable feedback, describing the video as "helpful," and appreciating the diversity of the cases represented and the perspectives offered. They felt that it could empower parents to ask questions and voice their opinions to the medical team. Parents noted feeling a connection to the emotions expressed by the parents in the video and felt it would help parents facing these decisions to feel less alone. **DISCUSSION/PRACTICAL VALUE:** Video education focusing on parents' perspectives may help support the SDM process for pediatric tracheostomy and complement other strategies to support parent engagement. Similar approaches may be valuable in explaining SDM to patients or families facing other serious decisions.

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Looking Beyond Hospital Discharge: One-Year Mortality Following Tracheostomy Creation in Traumatically Injured Older Adults.

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INTRODUCTION: We aimed to evaluate long-term outcomes following tracheostomy in older trauma patients and hypothesized that 1-year survival decreases with older age. **METHODS:** This was a descriptive analysis of intensive care unit patients ≥ 65 y old who underwent tracheostomy from 2015 to 2020. The National Death Index was accessed to determine time from tracheostomy creation to death. Groups were categorized by age. The primary outcome was 1-year mortality. Survival by age strata was analyzed using the Kaplan-Meier method. **RESULTS:** Of 205 eligible patients, 125 (61%) were 65-74, 68 (33%) were 75-84, and 12 (6%) were >85 y old. Median injury severity scores and Charlson Comorbidity Index were similar between groups. One-year mortality increased by decade of life and median survival decreased by decade. **CONCLUSIONS:** In this cohort, 58% died within 1 year of tracheostomy, and increasing age was associated with shorter survival. Clear goals and expectations are needed when advising patients and families regarding tracheostomy.

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Intraoperative Tracheostomy Complications.

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Tracheostomy is a routinely performed procedure, especially for patients who need long-term intubation, frequent pulmonary suctioning, or airway protection due to neurologic conditions. Despite being commonly performed, tracheostomy can lead to distinct complications that require careful surgical technique and an understanding of individual patient factors. In this review, we focus on the intraoperative complications that have been reported in the literature. We address the incidence, factors linked to a higher preponderance, and the key differences in complications between the open surgical and percutaneous dilatational tracheostomy technique. We also elucidate strategies for anticipating, preventing, and optimizing the treatment of complications.

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