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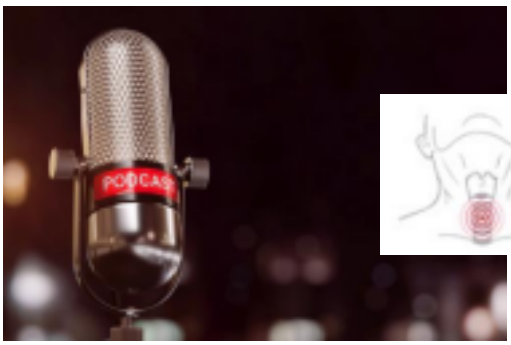

National Tracheostomy Safety Project

This month's top papers: May 2022

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

Please note that the comments below and on the podcasts represent the individual authors' opinions and do not reflect the opinions of any of the organisations that the authors work for. Please leave any comments in the chat function or via X.

This month's top papers

- Amplifying patient voices amid pandemic: Perspectives on tracheostomy care, communication, and connection
- The effect of tracheostomy on extracorporeal membrane oxygenation outcomes
- The Feasibility of Percutaneous Dilatational Tracheostomy in Immunosuppressed ICU Patients with or without Thrombocytopenia
- Common carotid artery distortion before percutaneous dilatational tracheostomy
- Tracheostomy Practices and Outcomes in Patients With COVID-19 Supported by Extracorporeal Membrane Oxygenation: An Analysis of the Extracorporeal Life Support Organization Registry.
- Improving tracheostomy delivery for trauma and surgical critical care patients: timely trach initiative
- Subjective Assessment of Motor Function by the Bedside Nurses in Mechanically Ventilated Surgical Intensive Care Unit Patients Predicts Tracheostomy.

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Amplifying patient voices amid pandemic: Perspectives on tracheostomy care, communication, and connection

Lay Summary:

This study looked at how the COVID-19 pandemic affected people with a tracheostomy (a breathing tube in their neck) and the doctors and families who care for them. The pandemic brought many new challenges, including fears about the virus, shortages of supplies, and difficulties with communication.

Researchers surveyed 191 people from 17 countries, including patients, family members, caregivers, and healthcare professionals. The survey found a big difference in how these groups experienced the pandemic. Patients and their families were much more concerned about:

- Being denied care: 38% of patients/families were worried they might not be prioritized for care if they got critically ill, compared to only 16% of healthcare professionals.
- Access to care: Patients and their families were more concerned about canceled appointments and not being able to get necessary supplies.
- Fear and anxiety: Patients and families reported higher levels of anxiety about getting sick with COVID-19 than healthcare professionals.

The study concludes that while doctors and nurses were focused on safety and resource shortages, patients and families were experiencing a deeper level of fear and anxiety. The authors recommend that to provide the best care, hospitals must involve patients and families in creating solutions that address these emotional and practical needs.

Summary for Healthcare Professionals:

This cross-sectional survey investigated the perspectives of patients, family members, caregivers (PFCs), and healthcare professionals (HCPs) on tracheostomy care during the COVID-19 pandemic. The survey was developed collaboratively by a multidisciplinary team and distributed to the Global Tracheostomy Collaborative's learning community. The study's objective was to identify barriers and facilitators to tracheostomy care and to compare the perspectives of PFCs and HCPs.

A total of 191 respondents from 17 countries participated, consisting of individuals with a tracheostomy (45%), caregivers (22%), and HCPs (33%). The results revealed a significant disparity in perceived risk and fear between the two groups.

- Perceived Risk: 38% of PFCs were concerned that patients with tracheostomies might not be prioritized for care, compared to 16% of HCPs ($p=0.002$).
- Anxiety: PFCs reported higher levels of anxiety about general tracheostomy care and the risk of infection than HCPs ($p=0.03$ and $p<0.001$, respectively).
- Access to Care: PFCs reported greater concern about cancelled appointments ($p=0.01$), not getting access to care ($p=0.005$), and not getting necessary supplies.

The survey also highlighted widespread issues with stress, fatigue, and lack of support among both groups. The authors conclude that PFCs with a tracheostomy perceived most risks more acutely than HCPs and that broad stakeholder engagement is necessary to develop patient-driven solutions. These solutions should focus on maintaining communication, connection, and access to care for this vulnerable population.

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The effect of tracheostomy on extracorporeal membrane oxygenation outcomes

Lay Summary:

This study looked at the safety and benefits of performing a tracheostomy (a breathing tube in the neck) on patients who are also on extracorporeal membrane oxygenation (ECMO), which is a life support machine that takes over for the heart and lungs. A tracheostomy is known to help patients move more, participate in their care, and use less sedation, but performing a surgery on a patient on ECMO can be risky.

Researchers reviewed the records of 54 patients who had both a tracheostomy and ECMO. They compared patients who received a tracheostomy while they were on ECMO to those who had the tracheostomy after they were taken off the machine. The study found that performing a tracheostomy while on ECMO is feasible and does not increase the risk of major complications or death. Patients who had their tracheostomy during ECMO did have more minor complications, but these did not affect their survival.

The study also found that a higher number of patients on a specific type of ECMO (VV ECMO) received a tracheostomy compared to those on another type (VA ECMO). The authors conclude that a tracheostomy can be a safe option for patients on ECMO, but more research is needed to figure out the best timing for the procedure based on the type of ECMO and the patient's condition.

Summary for Healthcare Professionals:

This retrospective single-institutional study investigated the feasibility and safety of performing a tracheostomy on patients receiving extracorporeal membrane oxygenation (ECMO). The study included 54 patients who underwent tracheostomy, comparing those who received the procedure during ECMO support (n=29) with those who received it after successful ECMO explantation (n=25). The study's objective was to assess surgical complications, survival, and patient outcomes.

Key findings include:

- Feasibility and Safety: Performing a tracheostomy during ECMO was feasible and did not result in major bleeding or decrease survival to hospital discharge. Minor complications were more frequent in the "tracheostomy during ECMO" group, particularly for patients on veno-venous (VV) ECMO, but these did not affect survival.
- ECMO Modality: A statistically significant greater proportion of patients on VV ECMO received a tracheostomy compared to those on veno-arterial (VA) ECMO (25.93% vs. 8.35%, $p \leq .0001$).
- ECMO Duration: Patients who received a tracheostomy during ECMO had a longer mean duration of ECMO support compared to those who received it after explant (488.45 vs. 259.72 hours, $p < .01$).
- Survival: There was no significant difference in survival to hospital discharge between the groups.

The authors conclude that tracheostomy during ECMO is feasible and safe, associated with only minor complications that do not impact survival. They recommend further research to establish evidence-based guidelines for optimal timing, considering ECMO configuration and patient comorbidities.

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The Feasibility of Percutaneous Dilatational Tracheostomy in Immunosuppressed ICU Patients with or without Thrombocytopenia

Lay Summary:

This study compares two types of tracheostomy procedures—percutaneous dilatational tracheostomy (PDT) and open surgical tracheostomy (OST)—in a specific group of patients: those with weakened immune systems and low platelet counts. These conditions can make surgery and recovery more complicated.

Researchers reviewed the records of 84 patients and found that 63 received a PDT and 21 received an OST. The study focused on two main outcomes: bleeding and infections at the stoma site, which is the opening in the neck.

- Infections: There was no significant difference in stoma site infections between the two groups. However, when infections did occur, those in the OST group were more likely to be severe.
- Bleeding: Post-procedure bleeding was significantly more common in the OST group than in the PDT group, and one case required emergency surgery.

The study concludes that PDT is a safe and practical option for patients with weakened immune systems and low platelet counts. It does not increase the risk of infections or bleeding complications, making it a viable alternative to open surgery for this vulnerable patient group.

Summary for Healthcare Professionals:

This retrospective study compared the feasibility and safety of percutaneous dilatational tracheostomy (PDT) versus open surgical tracheostomy (OST) in a cohort of 84 critically ill patients, predominantly those who were immunosuppressed and thrombocytopenic. The study aimed to analyze the rates of stoma site infections and bleeding complications between the two groups.

The cohort included 63 patients who underwent PDT and 21 who underwent OST. The two groups were comparable in baseline characteristics such as age, gender ratio, SAPS II score, ventilation time before tracheostomy, and preexisting hematooncological diseases. Patients who had undergone allogeneic stem cell transplantation (alloSCT) were significantly more likely to receive PDT than OST (p=0.033).

The study found no significant difference in stoma site infections between the PDT and OST groups (5 cases vs. 8 cases). However, moderate infections were significantly increased in the OST group (p=0.002), and all patients in the OST group with positive smears had signs of infection, while none in the PDT group did. Post-procedural bleedings were observed significantly more often in the OST group (p=0.001), leading to emergency surgery in one case.

The authors conclude that PDT is a feasible and safe procedure in this patient cohort without an increased risk for stoma site infections or bleeding complications. These findings suggest that PDT can be safely performed in this vulnerable population, offering a viable alternative to OST.

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Common carotid artery distortion before percutaneous dilatational tracheostomy

Lay Summary:

This paper describes a unique case of a 78-year-old woman who needed a tracheostomy (a breathing tube in the neck) but had an unusual blood vessel in her neck that could have made the procedure very dangerous. A tracheostomy is a surgery to create an opening in the windpipe, and normally doctors can perform it safely. However, this patient's right common carotid artery, which is a major artery in the neck, was found to be distorted and running across the front of her windpipe.

The doctors used an ultrasound to discover this abnormality and immediately decided to stop the planned procedure. Instead, they performed a more complex open surgery where the artery was carefully moved out of the way before the tracheostomy was done. The surgery was successful with no bleeding problems.

The authors highlight the importance of careful evaluation, like using an ultrasound, before a tracheostomy to identify any hidden risks. This case shows that even though such vascular abnormalities are rare, they can be life-threatening if not identified beforehand. The paper concludes by emphasizing the need for standardized pre-surgery evaluations to prevent complications.

Summary for Healthcare Professionals:

This case letter describes a 78-year-old female patient with hypoxic ischemic encephalopathy who required a tracheostomy but was found to have a distorted right common carotid artery (RCCA) that crossed the trachea anteriorly. Initial percutaneous dilatational tracheostomy (PDT) was planned but was aborted after a pre-procedural ultrasound identified the aberrant vessel. Subsequent carotid angiography confirmed that the innominate artery covered the position between the first and second tracheal rings, compressing the trachea.

The tracheostomy was then performed via an open surgical technique under direct vision after the RCCA was separated. The surgery was completed without complications, and the patient was successfully weaned off the ventilator.

The authors emphasize that cervical vascular variations are a rare but significant risk for tracheostomy. They highlight the importance of a thorough pre-incision evaluation, including ultrasound, to identify abnormal blood vessels and prevent life-threatening hemorrhage. The paper concludes that while PDT is a safe bedside procedure in many cases, a standardized pre-procedure evaluation is crucial to mitigate the risks associated with anatomical anomalies and ensure patient safety

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Tracheostomy Practices and Outcomes in Patients With COVID-19 Supported by Extracorporeal Membrane Oxygenation: An Analysis of the Extracorporeal Life Support Organization Registry.

Lay Summary:

This study looked at how doctors used tracheostomies (a breathing tube in the neck) for critically ill COVID-19 patients who were on a special life support machine called extracorporeal membrane oxygenation (ECMO). The study compared these practices to those used for patients with a different type of severe pneumonia before the pandemic.

Researchers analyzed data from over 7,000 COVID-19 patients and 729 pre-COVID-19 patients from hospitals around the world. They found that:

- Usage: Doctors performed tracheostomies on COVID-19 patients on ECMO at a similar rate (32%) as the pre-COVID-19 patients (28%).
- Timing: For COVID-19 patients, the procedure was performed later—a median of 10 days into the ECMO run, compared to 6.7 days for the pre-COVID-19 patients.
- Benefits: In both groups, having a tracheostomy was linked to increased patient mobilization, meaning they were more able to sit up or exercise in bed.
- Risks: COVID-19 patients who received a tracheostomy had more bleeding complications (9% of patients).
- Survival: The study found that having a tracheostomy did not affect a patient's overall chance of survival.

The authors conclude that tracheostomy practices for COVID-19 patients on ECMO were similar to previous practices, but with a slight delay in timing. The procedure was found to be associated with increased patient mobilization, and overall survival was similar whether or not a tracheostomy was performed.

Summary for Healthcare Professionals:

This retrospective cohort study, utilizing data from the Extracorporeal Life Support Organization (ELSO) Registry, aimed to characterize tracheostomy practices, complications, and outcomes in ECMO-supported patients with COVID-19-related acute respiratory failure. The study compared 7,047 COVID-19 patients on venovenous (VV) ECMO with a comparator cohort of 729 pre-COVID-19 viral pneumonia patients.

Key findings include:

- **Tracheostomy Rates**: The frequency of tracheostomy performed during ECMO was similar in both cohorts, with 32% of COVID-19 patients and 28% of pre-COVID-19 patients receiving the procedure.
- **Timing**: The median time to tracheostomy was significantly later in COVID-19 patients (10.0 days) compared to pre-COVID-19 patients (6.7 days, $p < 0.001$).
- **Complications**: More bleeding complications occurred in patients who received a tracheostomy, with 9% of COVID-19 patients having surgical site bleeding. This rate was also higher when normalized per 1,000 ECMO hours.
- **Outcomes**: Receipt of a tracheostomy during ECMO was associated with increased patient mobilization in both cohorts. However, overall hospital mortality was similar between those who did and did not receive a tracheostomy in both the COVID-19 and pre-COVID-19 cohorts.

The authors conclude that tracheostomy practices in COVID-19 patients on ECMO were performed at similar rates to pre-COVID-19 viral pneumonia patients, but later in the course of ECMO. They emphasize that while tracheostomy was associated with increased patient mobilization, overall mortality did not differ between the groups.

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Improving tracheostomy delivery for trauma and surgical critical care patients: timely trach initiative

Lay Summary:

This study looked at how a quality improvement project at a trauma center helped to reduce the time it takes for seriously injured patients to receive a tracheostomy (a breathing tube in the neck). A tracheostomy is recommended within seven days of intubation for patients with severe brain injuries or those needing long-term breathing support.

The hospital found that before their project, about 85% of tracheostomies were performed much later than recommended, at a median of 14 days after intubation. To fix this, they introduced two main interventions:

1. Educational Meetings: They held regular educational sessions for residents and staff to teach them about the benefits of early tracheostomy.
2. Digital Guidelines: A treatment plan for patients with head injuries was published in a mobile app, making it easily accessible to staff.

The results showed that these interventions were very effective. The median time to tracheostomy for all patients was cut from 14 days to 8 days. For trauma patients, the time decreased from 10 days to 6 days after the app was published. The study also found that the average hospital stay for all patients decreased from 38 days to 24 days. The authors conclude that a combination of education, digital guidelines, and improved communication can successfully standardize and improve the timing of tracheostomy.

Summary for Healthcare Professionals:

This quality improvement report describes a project aimed at decreasing the time to tracheostomy to ≤7 days after intubation for eligible patients in a surgical intensive care unit (SICU). The initiative was undertaken at an American College of Surgeons-verified level I trauma center, where a baseline analysis from January 2017 to June 2018 revealed that 85% of tracheostomies were performed later than recommended, with a median time of 14 days after intubation.

The interventions included:

1. Educational Roll-out: Monthly educational meetings were initiated in July 2018 for SICU residents and staff, focusing on society guidelines and the benefits of early tracheostomy.
2. Digital Guideline: A tracheostomy algorithm for patients with head injuries was published in an institutional mobile app in July 2019 to standardize practice.

The project resulted in a significant reduction in the median time to tracheostomy for all patients, from 14 days to 8 days ($p \leq 0.001$). For trauma patients, this time decreased from 10 days to 6 days following the publication of the algorithm ($p=0.03$). This was associated with a decrease in median hospital length of stay (LOS) for all patients, from 38 days to 24 days ($p<0.001$). A root cause analysis identified that family meetings and communication were a key cause of delay. The authors conclude that regular educational meetings, combined with digitally published guidelines and strategic communication, are an effective approach to standardizing and improving tracheostomy timing.

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Subjective Assessment of Motor Function by the Bedside Nurses in Mechanically Ventilated Surgical Intensive Care Unit Patients Predicts Tracheostomy.

Lay Summary:

This study looked at whether a tracheostomy (a breathing tube in the neck) can be predicted by how strong a patient's muscles are. It's a common practice for nurses in the Intensive Care Unit (ICU) to subjectively assess a patient's muscle function, and this study tested if that simple assessment could help predict the need for a tracheostomy.

Researchers looked at the records of over 9,600 patients. They found that a patient's inability to move their arms and legs against gravity 24 hours before they were taken off a ventilator was strongly linked to a higher chance of needing a tracheostomy within 30 days. This risk was even higher for patients who had been on a ventilator for more than seven days. The study concludes that this simple, subjective assessment by nurses is a valuable tool. It suggests that a patient's muscle weakness can be an important sign that they may have trouble breathing on their own, and a tracheostomy might be needed to help them recover.

Summary for Healthcare Professionals:

This retrospective observational study investigated whether a subjective assessment of motor function by Intensive Care Unit (ICU) nurses could predict the need for a tracheostomy. The study analyzed data from 9,609 adult, mechanically ventilated surgical patients. The subjective motor assessment, known as the Subjective Motor Assessment Routine (SMART), was performed every four hours by bedside nurses.

The study's primary finding was that a patient's inability to move and hold extremities against gravity within 24 hours prior to extubation was a significant, independent predictor of a 30-day tracheostomy requirement. This association was robust even after controlling for known risk factors such as acute disease severity and delirium risk. The adjusted odds ratio (OR) for a 30-day tracheostomy was 1.56 (95% CI 1.27-1.91, $p<0.001$) for patients unable to hold against gravity compared to those with normal motor activity.

The effect was magnified in patients who were mechanically ventilated for more than seven days, with an adjusted absolute risk difference of 21.8% ($p=0.015$). The authors conclude that this subjective nursing assessment provides important, independent information that should be considered during interprofessional rounds and integrated into clinical decision-making regarding tracheostomy. The findings highlight the value of frontline nursing observations in predicting patient outcomes.

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Scientific abstracts and references

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Am J Otolaryngol. 2022 Jun 7;43(5):103525. doi: 10.1016/j.amjoto.2022.103525. Online ahead of print.

Amplifying patient voices amid pandemic: Perspectives on tracheostomy care, communication, and connection.

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OBJECTIVE: To investigate perspectives of patients, family members, caregivers (PFC), and healthcare professionals (HCP) on tracheostomy care during the COVID-19 pandemic. METHODS:

The cross-sectional survey investigating barriers and facilitators to tracheostomy care was collaboratively developed by patients, family members, nurses, speech-language pathologists, respiratory care practitioners, physicians, and surgeons. The survey was distributed to the Global Tracheostomy Collaborative's learning community, and responses were analyzed. RESULTS: Survey respondents (n = 191) from 17 countries included individuals with a tracheostomy (85 [45 %]), families/caregivers (43 [22 %]), and diverse HCP (63 [33.0 %]). Overall, 94 % of respondents reported concern that patients with tracheostomy were at increased risk of critical illness from SARS-CoV-2 infection and COVID-19; 93 % reported fear or anxiety. With respect to prioritization of care, 38 % of PFC versus 16 % of HCP reported concern that patients with tracheostomies might not be valued or prioritized ($p = 0.002$). Respondents also differed in fear of contracting COVID-19 (69 % PFC vs. 49 % HCP group, $p = 0.009$); concern for hospitalization (55.5 % PFC vs. 27 % HCP, $p < 0.001$); access to medical personnel (34 % PFC vs. 14 % HCP, $p = 0.005$); and concern about canceled appointments (62 % PFC vs. 41 % HCP, $p = 0.01$). Respondents from both groups reported severe stress and fatigue, sleep deprivation, lack of breaks, and lack of support (70 % PFC vs. 65 % HCP, $p = 0.54$). Virtual telecare seldom met perceived needs. CONCLUSION: PFC with a tracheostomy perceived most risks more acutely than HCP in this global sample. Broad stakeholder engagement is necessary to achieve creative, patient-driven solutions to maintain connection, communication, and access for patients with a tracheostomy.

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The effect of tracheostomy on extracorporeal membrane oxygenation outcomes.

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INTRODUCTION: The optimal timing for pursuing tracheostomy in patients with prolonged mechanical ventilation with either veno-arterial (VA) or veno-venous (VV) extracorporeal membrane oxygenation (ECMO) is a discussion of risk versus benefit. Depending on the etiology, cardiothoracic surgical patients carry some of the highest risk for respiratory failure postprocedure. Given that patients with end-stage cardiopulmonary status may be fraught with substantial comorbidities, it is critically important to manage the risk-benefit profile of performing a tracheostomy procedure on a patient requiring ECMO support. These cohorts have risk factors that may depend on each patient's inflammatory state, lung de-recruitment peri-procedure and postprocedure and bleeding requiring transfusions to name a few. We provide a descriptive analysis of ECMO patients on both VA and VV configurations who survived to hospital discharge receiving tracheostomy either during or after their ECMO course. METHODS: A retrospective single-institutional study collected all consecutive patients age 18 and above who received any form of ECMO between 2016 and 2020. Five hundred forty-five patients were screened based on having received ECMO. Patients with mixed EMCO modality were excluded due to heterogeneity of disease process. A total of 521 patients received either VV or VA ECMO. A total of 54 patients received tracheostomy and had sufficiently clean data for analysis. Tracheostomy patients were compared based on survival to discharge, tracheostomy surgical complications, ECMO duration, ECMO configuration, inotrope and vasopressor use, transfusion rates, total ventilator days, total days on intravenous sedation, and history of cardiotomy or heart transplant were assessed. Baseline characteristics of race, age, gender, and body mass index (BMI) were also collected. RESULTS: A total of 54 patients received tracheostomy. Twenty-nine of those patients received tracheostomy during the course of their ECMO, of whom 13 were on VV ECMO, 16 on VA ECMO. Another 25 patients underwent tracheostomy after successful ECMO explant; 8 of those were VV ECMO with the remaining 17 were on VA ECMO before explantation, with mean delay to tracheostomy, 10 and 19 days after explant between both modalities, respectively. A statistically significantly greater proportion of VV ECMO patients received a tracheostomy at any point versus VA ECMO patients (25.93% vs. 8.35%, $p \leq .0001$). No statistically significant difference was noted in timing of tracheostomy when stratified by EMCO modality (VA 51.51% after explant vs. VV 38.10% after explant, $p = .33$). There was a greater frequency of minor tracheostomy complications in patients who were on ECMO at the time of their tracheostomy ($p = .014$) than in those who received their tracheostomy after being explanted. However, these minor complications did not contribute to a

change in survival to hospital discharge (p = .58). Similarly, the small number of major complications (n = 13) did not impair survival to hospital discharge (p = .84). Finally, mean duration of ECMO was longer in those who received tracheostomy during ECMO versus after ECMO. (488.45 vs. 259.72 h, p < .01). CONCLUSIONS: Tracheostomy is known to increase patient mobility, clinical participation, and overall decrease in sedation use. Pursuing tracheostomy during ECMO is feasible, does not result in major bleeding, and is associated with only minor complications that overall do not decrease survival. While there is an increased duration of ECMO support in the tracheostomy cohort, this may be due to existing patient conditions, and may not be causal. Research is needed to further determine the external patient factors and specific timing to optimize both VV and VA ECMO courses. CLINICAL IMPLICATIONS: We hope that our analysis will pave the initial pathway for an evidence-based guideline on optimal timing of tracheostomy in ECMO patients, whether initiated during or after ECMO and taking into consideration ECMO configuration, its expected duration, and patient comorbidities.

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The Feasibility of Percutaneous Dilatational Tracheostomy in Immunosuppressed ICU Patients with or without Thrombocytopenia.

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BACKGROUND: Percutaneous dilatational tracheostomy (PDT) has become the preferred method in several intensive care units (ICUs), but data on PDT performed in immunosuppressed and thrombocytopenic patients are scarce. This study aimed to analyze the feasibility of PDT in immunosuppressed and thrombocytopenic patients compared to conventional open surgical tracheostomy (OST). METHODS: We retrospectively analyzed the charts of patients who underwent PDT or OST between May 2017 and November 2020. Our outcomes were stoma site infections and bleeding complications. RESULTS: 63 patients underwent PDT, and 21 patients underwent OST. Distribution of gender ratio, age, SAPS II, time of ventilation before tracheostomy, and preexisting hematooncological diseases was comparable between the two groups. After allogeneic stem cell transplantation (alloSCT), patients were more likely to undergo PDT than OST (p=0.033). The PDT cohort suffered from mucositis more frequently (p=0.043). There were no significant differences in leucocyte or platelet count on the tracheostomy day. Patients with coagulation disorders and patients under immunosuppression were distributed equally among both groups. Stoma site infection was documented in five cases in PDT and eight cases in the OST group. Moderate infections were remarkably increased in the OST group. Smears were positive in six cases in the PDT group; none of these patients had local infection signs. In the OST group, smears were positive in four cases; all had signs of a stroma site infection. Postprocedural bleedings occurred in eight cases (9.5%) and were observed significantly more often in the OST group (p=0.001), leading to emergency surgery in one case of the OST group. CONCLUSION: PDT is a feasible and safe procedure in a predominantly immunosuppressed and thrombocytopenic patient cohort without an increased risk for stoma site infections or bleeding complications.

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Conflict of interest statement: The authors declare that they have no conflicts of interest.

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Common carotid artery distortion before percutaneous dilatational tracheostomy.

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NTSP Podcast Series

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Tracheostomy Practices and Outcomes in Patients With COVID-19 Supported by Extracorporeal Membrane Oxygenation: An Analysis of the Extracorporeal Life Support Organization Registry.

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OBJECTIVES: The use of extracorporeal membrane oxygenation (ECMO) in patients with COVID-19 has been supported by major healthcare organizations, yet the role of specific management strategies during ECMO requires further study. We sought to characterize tracheostomy practices, complications, and outcomes in ECMO-supported patients with acute respiratory failure related to COVID-19. DESIGN: Retrospective cohort study. SETTING: ECMO centers contributing to the Extracorporeal Life Support Organization Registry. PATIENTS: Patients 16 years or older receiving venovenous ECMO for respiratory support for: 1) COVID-19 in 2020 and 2021 (through October 2021) and 2) pre-COVID-19 viral pneumonia in 2019. INTERVENTIONS: None. MEASUREMENTS AND MAIN RESULTS: We identified 7,047 patients who received ECMO support for acute respiratory failure related to COVID-19. A total of 32% of patients were recorded as having a tracheostomy procedure during ECMO, and 51% had a tracheostomy at some point during hospitalization. The frequency of tracheostomy was similar in pre-COVID-19 viral pneumonia, but tracheostomies were performed 3 days earlier compared with patients with COVID-19 (median 6.7 d [interquartile range [IQR], 3.0-12.0 d] vs 10.0 d [IQR, 5.0-16.5 d]; $p < 0.001$). More patients were mobilized with pre-COVID-19 viral pneumonia, but receipt of a tracheostomy during ECMO was associated with increased mobilization in both cohorts. More bleeding complications occurred in patients who received a tracheostomy, with 9% of patients with COVID-19 who received a tracheostomy reported as having surgical site bleeding. CONCLUSIONS: Tracheostomies are performed in COVID-19 patients receiving ECMO at rates similar to practices in pre-COVID-19 viral pneumonia, although later during the course of ECMO. Receipt of a tracheostomy was associated with increased patient mobilization. Overall mortality was similar between those who did and did not receive a tracheostomy.

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Improving tracheostomy delivery for trauma and surgical critical care patients: timely trach initiative.

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BACKGROUND: Tracheostomy is recommended within 7 days of intubation for patients with severe traumatic brain injury (TBI) or requiring prolonged mechanical ventilation. A quality improvement project aimed to decrease time to tracheostomy to ≤7 days after intubation for eligible patients requiring tracheostomy in the surgical intensive care unit (SICU). LOCAL PROBLEM: From January 2017 to June 2018, approximately 85% of tracheostomies were performed >7 days after intubation. The tracheostomy was placed a median of 10 days after intubation (range: 1-57). METHODS: Quality improvement principles were applied at an American College of Surgeons-verified level I trauma centre to introduce and analyse interventions to improve tracheostomy timing. Using the electronic health record, we analysed changes in tracheostomy timing, hospital length of stay (LOS), ventilator-associated pneumonia and peristomal bleeding rates for three subgroups: patients with TBI, trauma patients and all SICU patients. INTERVENTIONS: In July 2018, an educational roll-out for SICU residents and staff was launched to inform them of potential benefits of early tracheostomy and potential complications, which they should discuss when counselling patient decision-makers. In July 2019, an early tracheostomy workflow targeting patients with head injury was published in an institutional Trauma Guide app. RESULTS: Median time from intubation to tracheostomy decreased for all patients from 14 days (range: 4-57) to 8 days (range: 1-32, p≤0.001), and median hospital LOS decreased from 38 days to 24 days (p<0.001, r=0.35). Median time to tracheostomy decreased significantly for trauma patients after publication of the algorithm (10 days (range: 3-21 days) to 6 days (range: 1-15 days), p=0.03). Among patients with TBI, family meetings were held earlier for patients who underwent early versus late tracheostomy (p=0.008). CONCLUSIONS: We recommend regular educational meetings, enhanced by digitally published guidelines and strategic communication as effective ways to improve tracheostomy timing. These interventions standardised practice and may benefit other institutions.

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Subjective Assessment of Motor Function by the Bedside Nurses in Mechanically Ventilated Surgical Intensive Care Unit Patients Predicts Tracheostomy.

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OBJECTIVE: In many institutions, intensive care unit (ICU) nurses assess their patients' muscle function as part of their routine bedside examination. We tested the research hypothesis that this subjective examination of muscle function prior to extubation predicts tracheostomy requirement. METHODS: Adult, mechanically ventilated patients admitted to 7 ICUs at Beth Israel Deaconess Medical Center (BIDMC) between 2008 and 2019 were included in this observational study. Assessment of motor function was performed every four hours by ICU nurses. Multivariable logistic regression analysis controlled for acute disease severity, delirium risk assessment through the confusion assessment method for the ICU (CAM-ICU), and pre-defined predictors of extubation failure was applied to examine the association of motor function and tracheostomy within 30 days after extubation. RESULTS: Within 30 days after extubation, 891 of 9609 (9.3%) included patients required a tracheostomy. The inability to spontaneously move and hold extremities against gravity within 24 h prior to extubation was associated with significantly higher odds of 30-day tracheostomy (adjusted OR 1.56, 95% CI 1.27-1.91, $p < 0.001$, adjusted absolute risk difference (aARD) 2.8% ($p < 0.001$)). The effect was magnified among patients who were mechanically ventilated for >7 days (aARD 21.8%, 95% CI 12.4-31.2%, p-for-interaction = 0.015). CONCLUSIONS: ICU nurses' subjective assessment of motor function is associated with 30-day tracheostomy risk, independent of known risk factors. Muscle function measurements by nursing staff in the ICU should be discussed during interprofessional rounds.