SHORT-TERM CLINICAL OUTCOMES AFTER TRACHEOSTOMY IN COVID-19 PATIENTS SUPPORTED WITH ECMO: A SINGLE INSTITUTIONAL REVIEW

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Background:

Tracheostomy, a life-saving procedure, is frequently performed during acute respiratory failure amongst patients who need extended mechanical ventilation. However, the clinical data of this highly aerosolizing procedure in patients diagnosed with coronavirus disease 2019 (COVID-19) while supported on extracorporeal membrane oxygenation (ECMO) is limited.

Objective:

This study aims to present our experience with tracheostomy in COVID-19 patients supported on ECMO.

Methods:

We reviewed charts of all patients diagnosed with COVID-19 associated acute respiratory disease syndrome (ARDS) and supported with ECMO who underwent tracheostomy from March 2020 to September 2021, retrospectively. Patients without tracheostomy were excluded. A hybrid tracheostomy operation utilizing surgical and percutaneous dilational techniques to minimize the risk of transmission was performed. The primary endpoint of this study is to determine tracheostomy-related early complications. The secondary endpoint includes clinical outcomes regarding survival rates, influences on ECMO management strategies, and the risk of transmission to healthcare providers.

Results:

Of the 14 patients identified for this analysis, all patients' mean age and BMI were 44.9 ± 11.0 years and 33.4 ± 6.1 kg/m^2, respectively, with a 50% female cohort. Of these, 12 received veno-venous (VV) ECMO, one veno-arterial-venous (VAV) ECMO, and one veno-arterial (VA) ECMO. Mean PaO_2/FiO_2 ratio on the day of ECMO initiation was 123.1 ± 52.8. Total mean duration of ECMO support was 37.1 ± 17.9 days. The average time from endotracheal intubation and ECMO insertion to tracheostomy was 14.4 ± 7.5 and 7.6 ± 7.0 days, respectively. Tracheostomy post

ECMO cannulation was performed in 12 (85.7%) patients, whereas in the remaining two patients, it was performed simultaneously during ECMO insertion. A total of four (28.6%) patients were liberated from the ventilator, of whom three (21.4%) underwent tracheal decannulation at an average of 34.0 ± 6.1 days. Within 48 hours of tracheostomy, all patients required blood cell transfusion at least once. Early complications of tracheostomy such as tracheal obstruction and pneumothorax were observed in 4 patients (4 episodes) and eight patients (14 episodes), respectively. Two (14.3%) patients required revision of tracheostomy at an average of 4.5 ± 4.9 days. Overall, the in-hospital mortality rate was 21.4%, with five patients still in ICU, two discharged home alive, two discharged to acute rehab, and two transferred for a lung transplant. Additionally, we didn't notice any transmission of coronavirus amongst healthcare workers from this high-risk procedure.

Conclusion:

Based on our institutional experience, the short-term outcomes and survival rates following hybrid tracheostomy techniques looks favorable. Therefore, early tracheostomy should be a safe procedure for COVID-19 patients supported by ECMO and healthcare workers. However, future long-term studies are warranted to determine tracheostomy-associated late complications.