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# Management of Upper Aerodigestive Tract Bleeding in Patients on ECMO.

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## INTRODUCTION

Bleeding complications on extracorporeal membrane oxygenation (ECMO) are often encountered. In a review of our own series, it was found that upper aerodigestive tract bleeding was common and management was often difficult.

## CASE REPORT

A 66 year-old-female was placed on veno-arterial ECMO (VA ECMO) for profound cardiogenic shock. On ECMO day 6, a bedside transesophageal echocardiography (TEE) probe was placed. Oropharyngeal bleeding was noted immediately after the procedure.

- ENT was consulted and conservative management was attempted with Oxymetolazone and packing.
- Patient continued to bleed, her hemoglobin count dropped and she required multiple transfusions. At this time, the patient's PTT was in the range of 37-53 seconds and there was no bleeding from any other source. A decision was made to take the patient to the operating room.
- By the time this decision was made, the patient had received 16 units of PRBCs, 50 Units of platelets and 2 units of fresh frozen plasma and the ENT team had seen the patient over 10 separate times.
- In the operating room, the patient was found to have a laceration to her adenoid pad close to the midline, which was not visualized at the bedside.
- The patient was successfully weaned from ECMO the following day and required no further blood transfusions after this point.

## METHODS

A retrospective chart review was performed for all ECMO patients from July 2010 to July 2011. Incidence of upper aerodigestive tract bleeding that required an otolaryngology consultation was recorded. Their notes were further reviewed to determine location of bleed, chronological time line after instrumentation, and procedures performed to stop the bleeding.

## Upper Aerodigestive Tract Bleeding

Hold or lower anticoagulation  
Limit instrumentation  
Use softer suction catheters

Persistent Bleed?

## Nasopharyngolaryngoscopy

Nares:  
Spray with Oxymetolazone  
Pack with Merocel gauze

Oral Cavity:  
Pack with Merocel gauze

Persistent Bleed?

Repeat NPL  
Continue conservative management

24-36 hours total  
Continued need for transfusions?

Operating Room for Hemostasis

## RESULTS

Our institution had 37 consecutive patients on ECMO from July 2010- July, 2012, of which 11 (30%) had upper aerodigestive tract bleeding events.

- Of these 11, 64% were secondary to an iatrogenic incident
- 64% were from the nose or nasopharynx, 36% were from the oropharynx
- Otolaryngology consultation was obtained within 12-18 hours
- All patients were anticoagulated with intravenous heparin at the time of the bleeding with an averaged PTT of 45secs (range 28-72). Anticoagulation was initially held for 12-24 hours or longer.
- All patients underwent bedside ENT procedures including Oxymetolazone spray in 100% and Merocel packing in 73%.
- Repeated bleeding after initial otolaryngology procedure was observed in 36%.
- Operative procedure was performed in 27% and none of them re-bled.

## DISCUSSION

Algorithm of upper aerodigestive tract bleeding in patient on ECMO.

- If a patient develops upper aerodigestive tract bleeding, anticoagulation profiles should be reduced to 1.3-1.4 times aPTT, limited interventions should be performed and suctioning should be done with softer red rubber catheters rather than traditional nasotracheal suctioning devices
- If bleeding continues, NPL should be performed. Once bleeding is identified, Oxymetolazone and direct pressure via packing can be initiated.
- If conservative management fails to control the bleeding, the patient continues to require transfusions and it's been longer than 24-36hrs, exploration in the operating room may be warranted.

## CONCLUSIONS

- In the ECMO patient, the incidence of upper aerodigestive tract bleeding was as high as 30%.
- Conservative management should be performed first, but if bleeding continues for greater than 24-36 hours and the patient demonstrates continued blood transfusion requirements, surgical intervention may be necessary.