

SHOUT Airway Risk Tool: A tool to identify Anterior Neck Hematoma

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Introduction

- Anterior neck hematoma (ANH) is a rare but well recognised event following anterior neck surgery, with a reported incidence of 0.2%-1.9%¹.
- Post-operative ANH is a **time-critical airway emergency**. Airway management can be extremely challenging
- Clinical presentation may initially go undetected even in a specialist centre. Delayed recognition may result in catastrophic outcome, including cerebral anoxia and death

Background

- The 'SHOUT airway risk tool' was devised after delayed recognition of a post operative ANH resulted in a near-fatal outcome
- We perform 60+ anterior cervical decompressions (ACDs) annually, with the last ANH occurring five years previously, confirming this as a rare complication at our institution (1 in 300)
- A Root Cause Analysis identified '*delayed bedside recognition*' and '*late senior clinician review*' as key modifiable factors
- As a tertiary neurosciences center we experience frequent turnover of junior staff who may not appreciate or have experience of the signs of ANH
- A tool to aid future recognition required three components:
 1. Clinical features associated with ANH
 2. Ease of use by any health professional
 3. Clear indications for senior escalation

SHOUT AIRWAY RISK TOOL	
This patient has had anterior neck surgery. Their airway may be at risk.	
S	Swelling of Neck <i>or</i> Stridor
H	Hoarseness <i>or</i> Voice Changes
O	Esophageal discomfort: Swallowing Difficulty <i>or</i> Drooling
U	Unusual behaviour <i>or</i> Agitation
T	Tachypnoea <i>or</i> Difficulty Breathing
If any SHOUT symptoms present within 24 hours post op contact a SENIOR NEUROSURGEON immediately	

Conclusion

- SHOUT is a simple, non invasive bedside assessment tool for ANH. It requires minimal training and can be used by any health professional, yet is incorporated into routine post op observations. *It facilitates and legitimizes timely senior review.* Importantly it *generates awareness of a rare but life threatening and time-critical complication.*
- Some symptoms occur in the absence of ANH after ACD, e.g. dysphagia (3%) or hoarseness (1%)² which may result in a lower specificity but a higher sensitivity. Neurosurgical assessment is essential
- It will be difficult to validate SHOUT due to the rarity of ANH although expansion to multiple centers could facilitate this
- We propose the routine use of SHOUT after anterior neck surgery to facilitate early identification of ANH after anterior neck surgery

Methods

- We used a PubMed search to identify key presenting features of ANH
- Esophageal symptoms (dysphagia, drooling) and respiratory symptoms (tachypnea, dyspnea, hypoxia) were most frequently cited
- We created "SHOUT", adding "AIRWAY RISK TOOL" to highlight both the *purpose* of using SHOUT, as well as the *risk posed to the airway* from anterior neck surgery
- A SHOUT adhesive sticker is placed on the Postoperative Observations Chart for all patients undergoing anterior neck surgery. It is visible to anyone reviewing observations post operatively
- Nursing staff perform routine observations but additionally assess for features of SHOUT. A referral pathway is clearly indicated
- The anaesthesiologist is contacted if suspicion is confirmed after neurosurgical review

Results

- SHOUT was introduced by email, posters and bedside education
- Looking for new, not pre-existing features when using the tool was a factor initially resulting in frequent calls to neurosurgeons
- A recent spot check identified excellent compliance with its use and staff who were happy with its 'usability'

References

1. Palumbo A, Caiati J et al. Airway Compromise Due to Wound Haematoma Following Anterior Cervical Spine Surgery. Open Orthop J. 2012;
2. Nanda et al. Surgical Complications of Anterior Cervical Discectomy and Fusion for Cervical Degenerative Disk Disease. World Neurosurg. 2013