

Nasal packing for epistaxis: an evidence-based review

Nasal packing is a commonly used but seldom taught technique for management of epistaxis. When used by non-ear, nose and throat specialists with minimal training and limited knowledge of nasal anatomy nasal packs are often placed incorrectly, leading to multiple attempts, unnecessary discomfort and wasted resources.

Epistaxis is a common emergency. A non-ear, nose and throat specialist with limited knowledge of the equipment and technique for nasal packing is often most heavily involved in the initial management. Often the junior doctor working in accident and emergency can be presented with a difficult epistaxis at the very beginning of a job before an ear, nose and throat induction may have taken place. This often leads to a call to the ear, nose and throat team with 'a patient who is bleeding through' an inappropriately placed nasal pack. These patients frequently require re-packing which leads to further discomfort and trauma to the nasal mucosa, making identification and cautery of the bleeding point more difficult.

Several excellent articles already exist detailing the general assessment and initial ABC management of the patient with epistaxis (Tassone and Syed, 2006; Osman and Swift, 2007). However, there is limited reference to the practical aspects of pack insertion, management of patients with nasal packs and of any problems that may arise once the pack is in situ. This article describes the correct technique and discusses potential risks and pitfalls, as well as common mistakes to avoid and tips to place an adequate pack. By describing these the authors hope to highlight the number of rare but potentially catastrophic sequelae, reduce the learning curve associated with nasal packing and increase the confidence of both junior trainees and non-ear, nose and throat specialists alike.

Literature review

Literature searches using the Medical Index Subject Heading (MeSH) terms nasal packing, adverse events, complications, alar necrosis and displaced packs were carried out on Medline, EMBASE, CINAHL, AMED and Business Health Elite databases.

Anterior nasal packing

There is a variety of nasal packs commonly used in UK hospital practice (Tassone and Syed, 2006; Osman and Swift, 2007). These are readily available, convenient and relatively easy to site with a basic knowledge of nasal anatomy. However, 'walrusing' or partial insertion of the pack superiorly toward the skull base is frequently encountered in clinical practice (Figure 1). Several packs (e.g. Rapid Rhino) use a balloon which can be inflated with air to increase the tamponade effect. This can be

topped up over time as tolerated. Frequently these poorly placed packs control bleeding through the partial tamponade of Little's area, the most common site of epistaxis, leaving the user with the mistaken impression of competency. CSF leaks have been documented secondary to poorly placed Rapid Rhino packs (Edkins et al, 2012).

Figure 2 illustrates the correct orientation of the nasal pack relative to the hard palate during insertion. Note how little of the pack is visible at the nares (Figure 2b). Rarely posterior displacement of packs has been reported leading to bowel obstruction requiring laparotomy (Hashmi et al, 2004). Securing the strings or balloon of the pack to the face with tape reduces the risk of pack migration. A correctly placed pack or packs will control bleeding in most cases of epistaxis (Yang et al, 2012). After insertion, check the oropharynx for continued posterior bleeding or the presence of a clot which may represent an aspiration risk.

Figure 1. Patient with bilateral poorly positioned packs which are not adequately secured.



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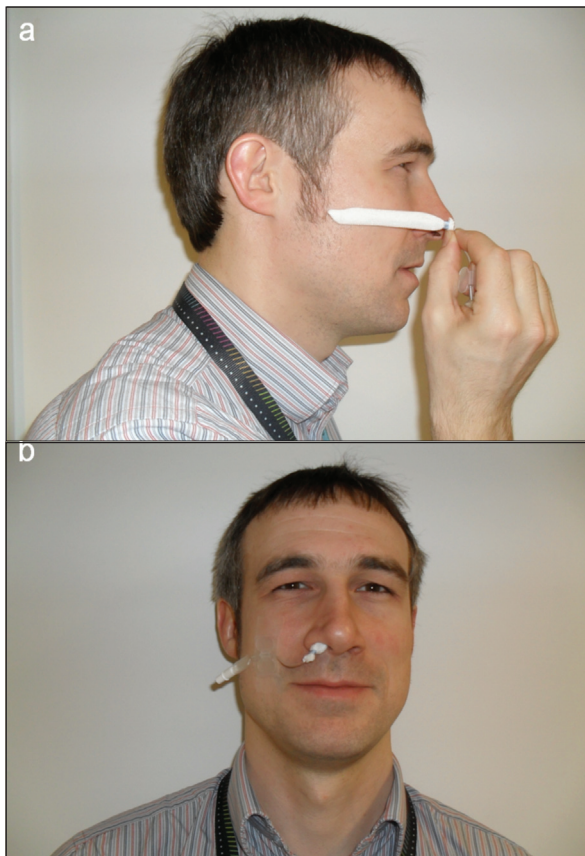
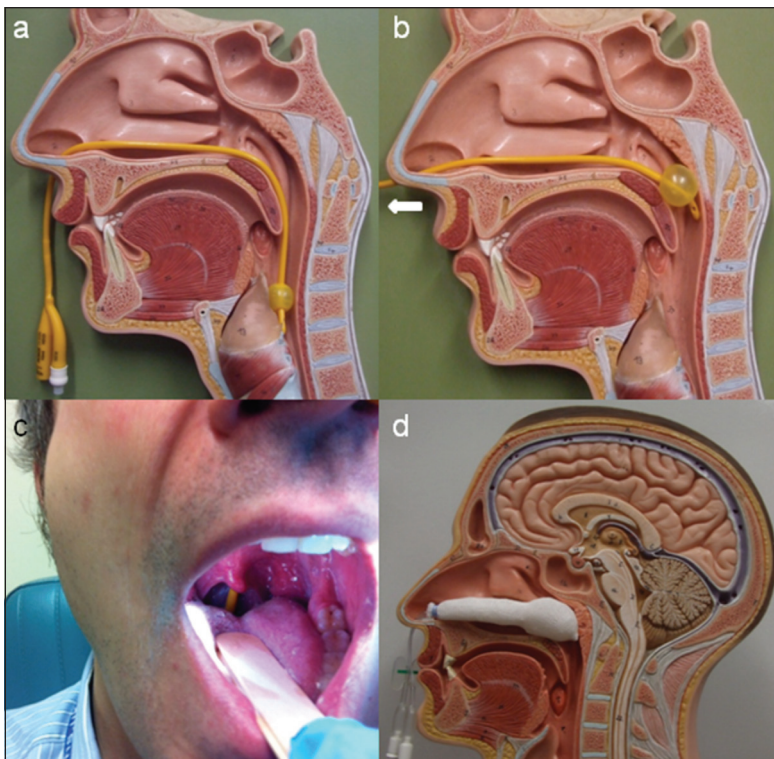


Figure 2. a. The relative position of the nasal pack to the hard palate. b. Correct taping of the nasal pack.

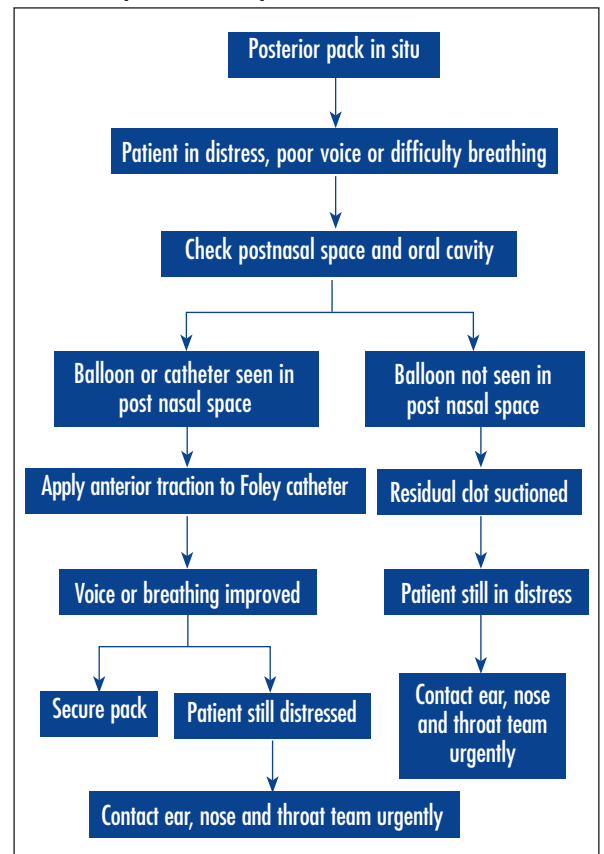
Figure 3. a. Foley catheter migrating into the larynx. b. Balloon in correct position with traction. c. Foley catheter visible through oral cavity suggesting posterior migration of the catheter. d. Double lumen Rapid Rhino.



Posterior nasal packing

Posterior nasal packing is required to control a refractory bleed which has not responded to conservative measures or anterior nasal packing as per a stepwise approach. Traditionally posterior packs rely on a female Foley catheter, with adequate continuous anterior traction of the balloon in the postnasal space, and insertion of a length of ribbon gauze, soaked in bismuth iodoform paraffin paste (BIPP) applied in layers. A single length of ribbon gauze should be used with the free ends protruding from the nares. Multiple pieces of ribbon gauze should be avoided as they may be aspirated (Koudounarakis et al, 2012). Placing ribbon gauze in the anterior nasal cavity can be challenging. Alternatively, Rapid Rhino or Merocel packs can be used. Inadequate traction on the Foley's catheter can lead to the balloon migrating into the oropharynx or rarely into the larynx, affecting the patient's voice, potentially compromising the airway and failing to arrest the bleed (Figure 3a, c). The position of the Foley catheter can be checked through the oral cavity and the balloon should not be visible with adequate anterior traction (Figure 3b). If posterior displacement of the pack is suspected either anterior traction should be applied or the catheter removed immediately (Figure 4). This can be avoided by using a gate or umbilical clamp attached to the catheter anteriorly.

Figure 4. Algorithm for management of patient with respiratory distress and posterior nasal pack.



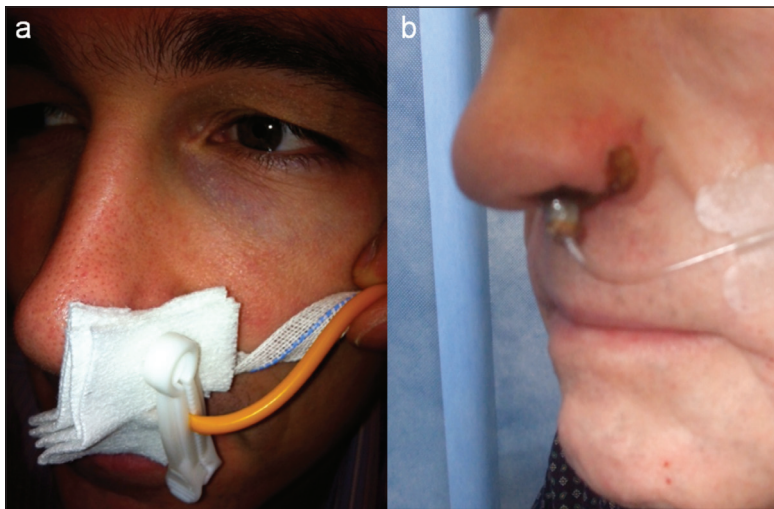
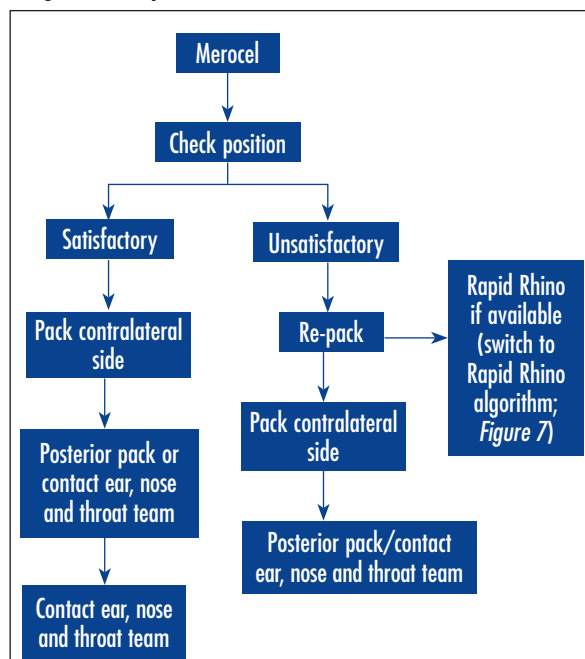


Figure 5. a. Correct technique for protecting the nasal alar and (b) the consequence of inadequate protection of the alar rim.

The nasal alar is at risk from a cosmetically unsightly pressure necrosis leading to notching if the Foley catheter is allowed to exert excessive pressure (Civelek et al, 2000). This notching is notoriously difficult to correct and may have medicolegal implications (Schultz-Coulon, 1984). Therefore the catheter should be well padded with a gauze swab which should be changed regularly (Figure 5). Blood-soaked swabs can harden and cause necrosis. Necrosis can occur in a short space of time between reviews by the medical team, so good communication with the nursing team is essential. Increasing pain should suggest possible skin trauma and dressings should be removed to ensure that there is no alar necrosis. Several novel methods have been used including fashioning of a

Figure 6. Algorithm for the management of patient with epistaxis using a Merocel pack.



‘cushion’ from the catheter port (Judd and Gaskin, 2009) and an eye pad with the regulator unit from an infusion set (Eliashar et al, 1997). The authors advocate the use of double lumen nasal packs as an alternative (Figure 3d). They are easier to use and better tolerated with a lesser chance of alar necrosis (Gudziol et al, 2005).

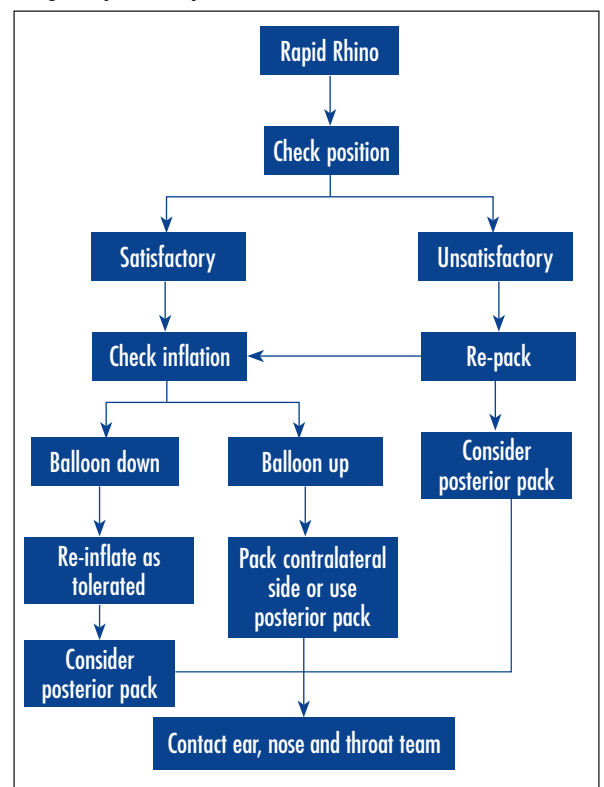
Bleeding with a pack in situ

Occasionally patients will continue to bleed after initial pack placement. In this instance the pilot balloon should be checked and more air added as tolerated. The contralateral side can be packed to increase the tamponade effect. The algorithms in Figures 6 and 7 describe the authors’ approach to bleeding with the pack in situ. A meta-analysis has shown Rapid Rhinos to be better tolerated by patients during insertion and removal with equivalent haemostatic efficacy and therefore if repacking is required the authors recommend siting a Rapid Rhino if available (Yang et al, 2012).

Removal of nasal packs

The authors advocate a staged removal of bilateral nasal packs starting with the contralateral side from the suspected bleeding point (Figure 8). If Rapid Rhinos are used packs should be deflated and left in place before removal to allow for re-inflation should bleeding recur. All the equipment needed for nasal examination, packing and cautery should be available before removal. It is the authors’ practice to remove packs during the day,

Figure 7. Algorithm for management of patient with epistaxis using a Rapid Rhino pack.



with adequate senior cover available on site. The patient is advised that repacking may be necessary if bleeding should recur and be too brisk to cauterize effectively.

Conclusions

Nasal packing is a necessary skill for both junior ear, nose and throat and non-ear, nose and throat trainees, although opportunities to become competent in their use can be limited for those rotating through a 4-month accident and emergency job. This article provides tips for ensuring an adequate pack is placed at the first attempt and how to avoid pack-associated morbidity. The authors also advocate using mannequins to teach the technique of nasal packing to new trainees at induction to the speciality. **BJHM**

Figure 8. Use of multiple nasal packs to control epistaxis. Staged removal of the contralateral side is advocated.



Conflict of interest: none.

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KEY POINTS

- The majority of nasal packing is carried out by the non-ear, nose and throat specialist.
- Use the minimum required pack to achieve haemostasis.
- Adequate documentation of the side from which the bleeding started is essential.
- A correctly placed pack will control all but the most recalcitrant of bleeds.
- Multiple attempts at inserting a pack can lead to trauma and can make identifying the bleeding point difficult.
- Pack removal should be via a staged approach and with adequate senior cover available.

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