Nasal packing is known as the primary treatment for moderately severe epistaxis since it was first documented by Hippocrates in the fifth century BC.\(^1\) Packing devices act by maintaining pressure on the damaged blood vessel within the nasal mucosa, allowing thrombus to form and become organized. Packing of the nasal cavity following surgery reduces the incidence of post-operative hemorrhage, decrease edema, provide internal support to bony parts, and increase septal flap apposition. But it may expose the patient to complications such as sinusitis or toxic shock syndrome which indicate prescribing patients prophylactic systemic antibiotics that may result in allergic reactions and emergence of highly resistant bacteria. The aim of the present study was to evaluate the necessity of nasal packing after meticulous nasal surgery, effective duration of hemostasis if needed, and its complications.

**Objective:** To evaluate the routine use of nasal packing after cosmetic and functional nasal surgery.

**Methods:** Prospective collection from 2005 to 2006 at King Abdulaziz University Hospital in Riyadh for 54 patients post-septorhinoplasty with and without submucous diathermy or lateralization of inferior turbinate were evaluated for efficacy and complications of nasal packing which kept for different duration.
Methods. This is a prospective study approved by the local internal review board and performed on 54 patients undergoing elective septoplasty, septorhinoplasty and non-destructive turbinate reduction procedure by same group of surgeon in Otorhinolaryngology Department at King Abdulaziz University Hospital, between 2005 and 2006. All patients signed an informed consent form and were scheduled to undergo the procedure under general anesthesia according to the standard preoperative assessment used in our department. Only patients with hemoglobin levels higher than 10 mg/dL, normal prothrombin, and normal partial thromboplastin times were eligible for surgery. Exclusion criteria were a history of renal and hepatic insufficiency, pregnancy, allergy, asthma, peptic ulcer, bleeding disorders and intolerance to nonsteroidal anti-inflammatory drug (NSAID). All patients undergoing surgery under general anesthesia were maintained according to the anesthesiologist’s preference. A hypotensive technique was used. In all cases, 2 mL of 2% lidocaine with 1:100,000 epinephrine were applied topically by gauze pledgets for 10 minutes at the beginning of surgery. The medial nasal wall (septum) was injected with 2% lidocaine bilaterally including the site of incision, rasping and osteotomy sites. Bipolar electrocautery was used only when a pulsatile bleeding artery was encountered. At the end of surgery the silastic sheets applied and fixed. Merocel packing was used in all patients after completion of surgery. Patients was analyzed with regard to demographic characteristics, medical history, previous surgeries, current surgical procedure, type of anesthesia, amount of intraoperative bleeding, incidence of nasal bleeding after removal of nasal pack after 6-hours in some patients and 24 hours in others and nasal pack complication and discomfort was also analyzed.

Statistical analysis was performed using SPSS 12.0 for Windows (SPSS, Inc., Chicago, IL). A probability value of <0.05 was considered significant. All patients remained hospitalized for one nights after surgery. They were instructed to sleep with their head elevated, to refrain from hot food and from blowing their nose, and to rinse their nose with normal saline and Otrivin nasal spray. Antibiotics were given for the duration of 10 days. Manual clearing of the nose in addition, silastic sheet and stitch removal at the first clinic visit (6 days after surgery).

Results. Fifty-four patients underwent septoplasty, septorhinoplasty and turbinate reduction surgery between January 2005 and December 2006. Age ranged from 8 to 42 years (mean age 20 years). Fifty-four patients (45 males and 9 females) fulfilled our criteria and enrolled into the study. The same surgeon and the same anesthetist performed all operations. Thirty-seven patients (68.5%) packed for 6 hours then removed, so minimal nasal bleeding (<5 ml) occur in 29 (78.1%) and moderate nasal bleeding (<25 ml) in 8 patients (21.9%). Seventeen patients packed for 24 hours, 14 (82.4%) had minimal bleeding and 6 (17.6%) had moderate bleeding with p-value of 0.87 (Figure 1). Thirty-five (64.9%) patients packed with size 8 slim Merocel, 30 (85.7%) with minimal bleeding and 5 (14.3%) had moderate bleeding. Fourteen (25.8%) packed with size 8 regular Merocel, 10 (71.4%) had minimal bleeding and 4 (28.6%) had moderate bleeding. And 5 (9.2%) packed with size 10 regular Merocel 1 (20%) had minimal bleeding and 4 (80%) had moderate bleeding (Figure 2). Thirty-six (66.7%) patients had in addition to main procedure inferior turbinate procedure (submucous diathermy SMD

Figure 1 - Relationship between severity of bleeding and duration of nasal pack.

Figure 2 - Relationship between severity of bleeding and size of merocel.
Nasal packing in cosmetic and functional nasal surgery ... Al-Swaibb

Figure 3 - Relationship between severity of bleeding and type of turbinate surgery.

Table 1 - Complications of nasal packing.

<table>
<thead>
<tr>
<th>Complication</th>
<th>Aetiology</th>
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<tr>
<td>Hemorrhagic shock</td>
<td>Failure to stop bleeding</td>
</tr>
<tr>
<td>Septic shock</td>
<td>Infection</td>
</tr>
<tr>
<td>Toxic Shock Syndrome</td>
<td>Infection</td>
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<tr>
<td>Nasal septum perforation</td>
<td>Pressure necrosis</td>
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<tr>
<td>Epiphora</td>
<td>Blockage of nasolacrimal duct</td>
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<tr>
<td>Sinusitis</td>
<td>Blockage of sinus drainage</td>
</tr>
<tr>
<td>Hypoxia</td>
<td>Blockage of nasal airway</td>
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<tr>
<td>Obstructive sleep apnea</td>
<td>Blockage of nasal airway</td>
</tr>
<tr>
<td>Neurogenic Syncope</td>
<td>Nasal reflex</td>
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<tr>
<td>Acute airway obstruction</td>
<td>Displacement of the nasal pack</td>
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Discussion. Nasal packing is routinely performed by many surgeons following nasal surgery such as septoplasty, rhinoplasty, septorhinoplasty, turbinate surgery, intranasal biopsy, endoscopic sinus surgery and submucosal resections. This has led to the development of various packing materials, including silastic-coated foam packs (Rhinotamps), self-expanding polyvinylacetate packs (Merocel), hydrogel-coated packs (Rhino-Force), oint-impregnated gauze strips (Tampoglass), and Telfa gauze. Nasal packing can provide hemostasis, prevent hematoma formation, support septal flap apposition, close dead spaces between cartilage and mucoperichondrial flaps, and prevent displacement of the cartilage or bony grafts. Furthermore, nasal packing may also be life saving in cases of epistaxis, when there is no hint of the need for a spot cauterization or when cauterization fails to control bleeding. It also prevents potential systemic toxicity and adverse reactions onto the nasal mucosa when silver nitrate is used for chemical cauterization. However, application of a nasal pack may result in severe complications. These complications are diverse and range from a relatively simple postoperative hemorrhage to life-threatening toxic shock syndrome (Table 1). To avoid some of the complications alternative methods suggested in many articles such as suturing the mucoperichondrial flaps to the septal cartilage, the use of silicon mesh, hemostatic dissolvable nasal packs, and nasal stents but still not without complications. Moumoulidis et al concluded that Merocel and Rapid Rhino nasal packs are effective, relatively easy to use and associated with minimal complications. We used Merocel pack in all of our patients to reduce the risk of postoperative oozing of blood, sometimes with significant blood loss, and the possibility of aspiration leading to pneumonitis. Coughing of blood in the recovery room puts nursing care workers at risk of being exposed to bloodborne infections thus, we used slim Merocel to reduce the nasal pack discomfort and compare it with regular size and we found better comfort and no significant difference in post-nasal pack removal bleeding. Decision to pack the nose during surgery for hemostasis is left to the operating surgeon and is usually not contested. Nasal packing was well described in the literature and there was no universal protocol regarding the ideal packing material and duration of its effective application. Several factor facilitates preventing postoperative bleeding, thus negating the need for packing include strict local anesthesia technique, application of local vasoconstrictors and minimal tissue damage. In our study, intraoperative bleeding is not sever with haemostatic measures (hypertensive anesthesia, nasal decongestant, epinephrine/zylcain injection and minimal mucosal manipulation) thus patients with unusual bleeding were excluded and the different kind of pack were used randomly for different duration and we found that the differences in postoperative bleeding in all group were not significant (Figure 1-3). Tierney et al evaluated tolerability of nasal packing after endonasal surgery and claimed that a short-term application of nasal packing increased tolerability to the packing. In contrast, Toffel reported that a long-term use of nasal packing had a positive effect on wound healing. Furthermore, early removal of nasal pack after insertion may cause recurrent bleeding, thus, many physicians leave nasal pack in place for 3-5 days. In this study, we demonstrated the safety and feasibility of early removal of both nasal tampons, even as early as 6 hours after insertion. Even though recurrent bleeding was uncommon, the benefits of early tampon
removal are numerous, including increased patient comfort, a reduction in the risk of infections (such as sinusitis and toxic shock syndrome), and a reduction in the risk of drug allergies and the development of resistant bacteria. A study on patient discomfort caused by nasal packs of various materials (Telfa, paraffin gaze, Merocel, BIPP) revealed no difference in discomfort between the materials. However, nose packs are uncomfortable; their removal is painful and can cause other complications such as bleeding, adhesions, septal perforations and rarely infections, in this review 20.4% had discomfort (pain and sleep disturbance) with no further complication.

In conclusion, we suggested that the routine use of nasal packs after nasal surgery is not justified; and this study has demonstrated that nasal pack for at least 6 hours in patients undergoing nasal surgery significantly reduces post-operative bleeding, which reducing patient discomfort and postoperative complications.

References


Supplements

* Supplements will be considered for work including proceedings of conferences or subject matter covering an important topic

* Material can be in the form of original work or abstracts.

* Material in supplements will be for the purpose of teaching rather than research.

* The Guest Editor will ensure that the financial cost of production of the supplement is covered.

* Supplements will be distributed with the regular issue of the journal but further copies can be ordered upon request.

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