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Original Article

Application of new packing material in endoscopic nasal surgery

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Abstract: Objective: To show the efficacy and comfort of pneumatic bag packing after the endoscopic nasal surgery. Pneumatic bag packing may be recommendable in terms of comfort and efficacy after endoscopic nasal surgery. Significant findings: There were statistical significant differences between the pneumatic bag packing and the expansive sponge packing regarding subjective symptoms and objective findings after surgery. Conclusions: Pneumatic bag packing may be recommendable in terms of comfort and efficacy after endoscopic nasal surgery.

Keywords: Nasal packing, endoscopic nasal surgery, pneumatic bag, expansive sponge

Introduction

Nasal packing after endoscopic nasal surgery is a traditional effective method to control bleeding and prevent adhesion formation and restenosis [1, 2]. Nasal packing materials contained non-absorbable nasal packing and absorbable nasal packing. Non-absorbable nasal packing was uncomfortable for the patients for some reasons; the nasal packing leaded to nasal airway obstruction, headache and rhinalgia, its removal was painful and might cause rebleeding. In addition, complications such as septal perforation and foreign body granuloma might happen [2]. Various absorbable materials had been introduced to overcome the disadvantages of nonabsorbable nasal packing. They included porcine gelatin [3], topical antifibrinolytics [4], hyaluronic acid [5], et al. Absorbable nasal packing showed effect in eliminating a painful removal procedure and preventing postoperative bleeding and adhesion [5, 6]. No packing has been tried after FESS because it might be most physiologic. No packing might have some advantages such as decreased sinonasal discomfort, less postoperative complication and no cost for packing material associated with packing [6].

However, compared with middle nasal meatus operation, no packing and absorbable nasal packing were not fit for patients underwent endoscopic submucous correction of nasal septum, because of the complications such as hematoma of nasal septum and perforation of nasal septum. It was showed that expansive sponge had obvious effects not only on the hemostasis, but also on the reduction of complication compared with the absorbable alginate dressings and vaseline gauze strip [7]. Bilateral nasal packing and non-absorbable nasal packing were necessary for patient underwent endoscopic submucous correction of nasal septum and bilateral inferior turbinate plasty. The purpose of the present study is to determine the efficacy of pneumatic bag packing on comfort and bleeding after endoscopic nasal surgery in comparison with expansive sponge packing in the same patients.

Materials and methods

We conducted a study at the department of otolaryngology in our hospital, from April, 2013 to May, 2014, 240 adult patients for 480 nasal cavities with deviation of nasal septum and chronic rhinitis scheduled to endoscopic submucous correction of nasal septum and bilateral inferior turbinate plasty were included in this study. The exclusion criteria were age under 18 or over 65 years, history of significant cardiac, hepatic, renal or hematological disease, sinusitis, nasal

Table 1. Post-operative pain score (mm) and the amount of bleeding

Group	6 hours	24 hours	Removal	Bleeding
Pneumatic bag group	36.35±5.99	26.35±4.81	45.52±5.28	2.02±0.62
Expansive sponge group	41.25±7.47	33.65±7.27	57.40±8.99	3.04±0.96

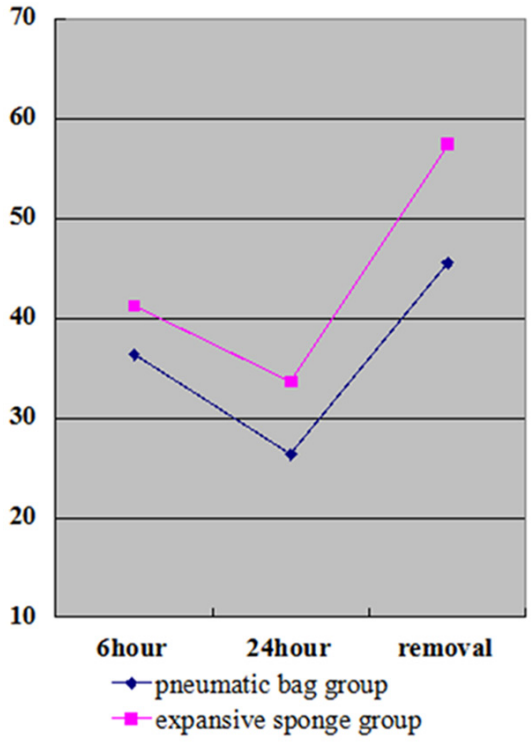

Figure 1. Post-operative pain score. The difference between the pain score at the same time and the amount of bleeding of the two materials was statistically significant ($P < 0.05$) The pain difference between the hours with the same materials was statistically significant ($P < 0.05$).

polyp, nasal tumor. All patients were informed and provided informed consent. The study was approved by the Ethics Committee of our Hospital. The patients and the nurse who would record the results were both blinded to the treatments in the surgery. Before operation, the nurse told the patients how to use the visual analog scale (VAS, 100 mm). The patients got the intravenous injection of Flurbiprofen Axetil (50 mg), a kind of nonsteroidal analgesics 30 minutes before the operation. The patients were randomized to packing the right or left side of the nasal cavity with pneumatic bag (7.5 cm, ArthroCare Co., USA), leaving the opposite side packed with expansive sponge (8 by 2 by 1.5 cm, Yingjia Medical Materials Co., Beijing, China). The operations were performed under local anesthesia, the technique of anesthesia and operation was same, by the same anesthesiologist and surgeon. In all cases, the packing material was placed in the common nasal meatus at the end of the surgical procedure. The patients self-rated the severity of nasal airway obstruction and headache separately for the right and left sides. After the nasal cavities were packed, the operative time was registered. No analgesic was used after the operation. Postoperative pain was assessed by VAS (100 mm). The research nurse recorded the pain scores 6 hours and 24 hours after the operation, respectively. All the packing materials were removed 48 hours after the operation and the pain scores were recorded immediately in order to access the pain of removal. The amount of bleeding was measured from the nasal packed to 2 hours after the removal, one tampon (1.5 cm×1.5 cm) soaked by blood was considered as 1 ml. Endoscopic nasal treatment was performed every week after the removal which lasted for two months.

Statistical analysis was performed with SPSS 16.0 for Windows (SPSS Inc, Chicago, IL, USA). ANOVA was used to compare the differences of pain and the amount of bleeding between the two kinds of materials (the pneumatic bag group and the expansive sponge group) and the pain difference between the hours with the same materials. A P value of less than 0.05 was defined as statistically significant.

Results

During the research, 240 adult patients were included. The postoperative pain and the removed pain were compared between the two materials. The difference between the pain score at the same time and the amount of bleeding of the two materials was statistically significant ($P < 0.05$) (**Table 1**; **Figure 1**). The pain difference between the hours with the same materials was statistically significant ($P < 0.05$) (**Table 1**; **Figure 1**). There was no obvious postoperative hematoma of nasal septum, perforation of nasal septum, rebleeding or adhesion of nasal cavity in all patients.

Discussion

Endoscopic nasal surgery was an important innovation of otorhinolaryngologic surgery. Non-

absorbable nasal packing after endoscopic nasal surgery is a traditional effective method to control bleeding and prevent adhesion formation and restenosis [1, 2]. However, non-absorbable nasal packing is very uncomfortable for the patients for some reasons; the nasal packing leads to nasal airway obstruction, headache and rhinalgia, its removal is painful and may cause rebleeding [2]. Some researches showed that absorbable nasal packing was more comfortable than the non-absorbable nasal packing [8]. Postoperative nasal packing is often very painful and uncomfortable for the patient, while nasal packing is essential especially in patients performed endoscopic submucous correction of nasal septum and bilateral inferior turbinate plasty. The space needed to pack is much bigger than that performed middle nasal meatus operation. Non-absorbable nasal packing is recommended for these patients. The expansive sponge is widely used in nasal packing after the endoscopic nasal operation. It shows obvious effects not only on the hemostasis, but also on the reduction of complication compared with the absorbable alginate dressings and vaseline gauze strip [7]. We investigated the effect of nasal packing with pneumatic bag and expansive sponge on patient comfort based on a self-rated visual analogue scale in our study. Statistically significant differences were found between the pneumatic bag packed side and the expansive sponge packed side at the same time. After the operation, the pain score showed a downtrend, but the pain score was high at the moment of removal, the pain score was obviously lower in pneumatic bag packing group than that in expansive sponge packing group. The pneumatic bag packing showed benefits in lightening the postoperative discomfort and bleeding. During the pneumatic bag was packed and removed, the amount of bleeding was less than that packed by expansive sponge.

Pneumatic bag is a new non-absorbable nasal packing material. The volume can be regulated during the packing process and can become smaller by extracting the air in the bag before the removal, so the pain is slight. In one word, pneumatic bag is a recommended non-absorbable nasal packing for patients who underwent the endoscopic nasal surgery and had better use the non-absorbable nasal packing material.

Disclosure of conflict of interest

None.

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