A Novel Way of Trans-Septal Splint Suturing Without Nasal Packing for Septoplasty

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Received: 19 July 2014 / Accepted: 4 August 2014 / Published online: 10 August 2014
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Abstract Nasal packing has evolved over the years. Though effective in preventing postoperative bleeding complications, they are associated with significant morbidity and pain. In recent years nasal splints have been used to reduce the duration of nasal packs. The aim of this study is to compare the postoperative results in 200 nasal surgeries where in nasal packing was replaced by trans-septal splint suturing. Two hundred cases of septoplasties were prospectively studied over a period of 5 years at Adichunchanagiri Institute of Medical Sciences. In 100 cases (group A) nasal packing was done postoperatively whereas in other 100 (group B) trans-septal splint suturing was done. Post operatively patients were followed up in both groups regarding the presence of pain, bleeding, crusting and synechiae for a period of 6 months. Two hundred patients were prospectively studied over a period of 5 years with a male–female ratio of 1.35:1 and the mean age was 31. In group A out of 100 patients followed postoperatively, ten had mild bleeding on second day after pack removal none of which required repacking, 22 patients had mild pain on second and third day, 18 had moderate crusting on day 4, 12 had synechiae after 2 weeks. In group B, out of 100 patients, minimal bleeding was noted in 13 patients on day 1 and 2, mild discomfort was noted in the nose in 34 patients till day 7 (day of splint removal), crusting was noted in six patients, synechiae was noted in one patient. Elimination of pain and discomfort for the patients and absence of complications like synechiae. Also the hospital stay is less than with nasal packing. Therefore,

suturing of the nasal septum with a splint after septoplasty should be a preferred alternative to nasal packing.

Keywords Septoplasty · Nasal packing · Trans-septal splint suturing

Introduction

Septoplasty is one of the most common operations in otorhinolaryngology, either done alone or in combination with other procedures such as inferior turbinoplasty, endoscopic sinus surgery and rhinoplasty. Nasal packing is used primarily to control bleeding in all endonasal surgery. Packing also facilitates internal stabilization following operations on the cartilaginous/bony skeleton of the nose. Apart from hemostasis, packing helps in preventing complications of septal surgery like hematoma [1], infection, abscess formation, and perforation. There are no generally accepted standards regarding the materials that should be used for nasal packing, how long the packing should be left in place, or the indications for nasal packing [2]. Many physicians do not use packing due to the low incidence of heavy bleeding following septoplasty. Of those who use packing, some remove it on the day after surgery [2], others remove it 5 days postoperatively. Most sources describe experience with different kinds of packing methods and packing materials. Materials are produced in several brands and authors have their preferences. The most common packing method is the use of nasal packing materials, such as: paraffin gauze, vaseline gauze, bismuth iodoform paraffin paste, glove fingers, silastic sheets, gelfoam, merocel, gauzes impregnated with different antibiotics, and fibrin glue [3]. Other packing methods are pneumatic balloons left in place for various amounts of time. Some

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complications in endonasal surgery are induced by nasal packing, these are the result of increased swelling causing a disturbance in endonasal lymph and venous drainage. These complications are: mucosal injury and septal perforation; sleep respiratory disturbances; decreased arterial oxygen saturation during sleep; displacement and aspiration of various packing materials; allergy; toxic shock syndrome [4]; eustachian tube dysfunction; and paraffin-induced granuloma [4]. Nasal packs are uncomfortable while they are in place and cause pain and bleeding when they are removed. Many complications due to nasal packing have been noted, which raises questions about the wisdom of using this type of packing method.

Materials and Methods

Here in this study we conducted a randomized clinical trial to evaluate the necessity for nasal packing and septal splint use after septoplasty. From 2007 to 2012, 200 patients enrolled in this study. The patients, for whom septoplasty was considered because of septal deviation and ensuing nasal obstruction, underwent a classic septoplasty operation performed by the author. The groups (packing and non-packing) were designed using the four block randomization method. Surgery proceeded using the submucosal approach to the deviated segment of the septum via a closed approach starting with a hemitransfixion incision and correction of the deviated segment with minimal excisions, trying to reshape and mould the most deviated parts. In the final stages of the operation, after correction of the septal deviation and closure of the incision line, the assistant surgeon was informed to record whether the patient had been allocated to the packing or non-packing group through the method of four block randomization. If the patient was enrolled in the packing group, intranasal antibiotic impregnated gauze was packed in both nasal cavities. If the patient was in the non-packing group, silicon septal splints were inserted into both nasal cavities and fixed by figure of eight shaped trans-septal sutures with 3–0 Ethilon suture which made sure that both flaps are approximated correctly with sufficient pressure to keep the corrected septum in midline. Neosporin ointment was smeared into both the sides of the splint covered septum and no antibiotic gauze packs were used. On the first postoperative day, the patient was asked to determine the degree of pain using a VAS (visual analogue score of 1–10 depending on pain severity). In the packing group, the antibiotic gauze packs were removed after 48 h. In the non-packing group the splints were removed after 1 week. All the patients were given saline nasal sprays following antibiotic pack removal or splint removal and were advised to use for 15 days. Follow up was advised at the end of the

first and third week, and the second, sixth and twelfth month after the operation. The complications of septoplasty were elicited during these examinations and were recorded in the patient medical files. Patients who did attend follow-up were excluded from the study (the only exclusion criteria). This led to the loss of 16 patients. There were 90 patients in the packing group and 94 patients in the non-packing group for the final comparison. All analyses were done using SPSS 11 and the level of significance was always set at 0.05.

Results

After completion of follow-up, 184 patients were eligible for final analysis (16 of 200 patients were excluded because they did not attend follow-up). There were 90 patients in the packing group and 94 patients in the non-packing group. X^2 and Student's t tests were used to obtain information and analyze data. 110 patients were male and 74 female. The mean age was 31 years. Of the 184 patients studied, septal spur was seen in 106 patients and caudal septum dislocation in 68 patients. 152 patients had anterior septal deviation, 54 had posterior deviation and 66 had both anterior and posterior deviation. Postoperative septal hematoma was not detected in either group. In group A (packing group) out of 90 patients followed postoperatively, 10 had mild bleeding on second day after pack removal none of which required repacking, 22 patients had mild pain on second and third day, 22 had moderate crusting on day 4, 12 had synechiae after 3 weeks. In group B, out of 94 patients, mild bleeding was noted in 13 patients on day 1 and 2, minimal discomfort was noted in the nose in 34 patients till day 7 (day of splint removal), crusting was noted in six patients, synechiae was noted in one patient. The comparison of postoperative pain and discomfort, revealed that the average VAS score was 5 in the packing group and 2.1 in the non-packing group ($p = 0.01$). Group A had more crusting (22 patients, 24 %) than group B (6 patients, 6 %) (p value < 0.05). Group A had more synechiae (12 patients, 13 %) than group B (1 patient, 1 %), p value—0.0001).

Discussion

Pain is a major factor in any type of surgery and is usually one the deciding factors for the choice and type of surgery. Today, patients want to return to their regular life and work soon after any type of surgery. So methods which would reduce the postoperative stay and discomfort are a welcome sign for any hospital promotion. Changing some routine surgical techniques may minimize the patient's

postoperative discomfort. Intranasal packing is used to prevent nasal hemorrhage, to prevent septal hematoma and to reduce complications after nasal surgery [3]. Intranasal packing produces some quality-of-life problems for patients. These include problems with nasal respiratory function that can cause degrees of hypoxia [4], mouth dryness and sore throat. Serious infections, aspiration and cardiologic complications may also occur. Considering such complications, several studies have been conducted to evaluate the usefulness of nasal packing. In the current study of 184 septoplasty operations, postoperative antibiotic gauze packing and intranasal septal-splint suturing were done randomly in 90 patients and 94 patients respectively. The results of this study did not show septal hematoma in either group. This result is similar to that of LEMMENS and LEMKENS [5]. Evaluating the other complications, in a comparison of septal perforation between the two groups, showed there were no cases of septal perforations. In a comparison of postoperative nasal purulent secretions and crusting, there was no significant statistical difference ($p > 0.05$) between the two groups. This result was in accordance with the study by KAYGUSUZ et al. [6], although in their study a significant statistical difference was demonstrated in the infection rate of the packing group. The incidence of mucosal adhesions and synechiae revealed significant differences between two groups ($p = 0.0001$); which was not similar to the other results [1, 5]. In evaluating the patient's satisfaction from airway improvement, the two groups showed no significant differences. The VAS results revealed significant statistical differences in the amount of the pain and discomfort after the operation; the patients with no packing had less severe pain and discomfort compared with the packing group ($p = 0.01$); the average VAS was 5 in the packing group and about 2.1 in the non-packing group. This was in accordance with the results of NUNEZ [7] in which the averages were 4 and 3 in the packing and non-packing groups, respectively. The patients in the non-packing group had a better nasal respiratory situation than those in the packing group in the first few days. This was observed by

JENSEN et al. [8] in the form of nocturnal hypoxia during the first and the second nights after the operation.

Considering the results of this study and comparing them to others, using intranasal septal splint suturing will have similar results to those from the nasal packing group from crusting and complication point of view, but the former results in less pain and discomfort for the patient. This study also confirmed that intranasal packing would result in increased incidence of adhesions and synechiae than the trans-septal through and through splint suturing technique. Moreover, the septal surgery procedure could be carried out on a day-surgery basis if trans-septal splint suturing is used. Readmission of a patient was never necessary. The major disadvantage of nasal packing is patient discomfort—usually necessitating hospital stay—and the need to administer antibiotics. Based on these observations the septal suturing technique is a valid alternative to intranasal packing following septal surgery.

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