Rhinology

Retrospective analysis of 697 septoplasty surgery cases: packing versus trans-septal suturing method

Analisi retrospettiva di 697 casi sottoposti a settoplastica: tamponamento nasale versus sutura tran-settale

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SUMMARY

The trans-septal suturing method has been developed in septoplasty as an alternative to packing. This study was carried out to compare the postoperative results of trans-septal suturing with the anterior Merocel packing technique. The study involved 697 patients who underwent septoplasty. Following surgery, patients were randomly divided into two groups, one with trans-septal suturing and the other with Merocel packing. Patients were asked to record pain levels using a visual analogue scale. Postoperative symptoms and complications were compared. A total of 697 nasal operations were evaluated in the postoperative period considering pain, bleeding, haematoma, septal perforation synechiae and septal perforation. The results for haemorrhage, haematoma, synechiae and perforation were not statistically different ($p > 0.05$) between groups. In contrast, the level of postoperative pain in patients undergoing trans-septal suturing was significantly less than in the group who received Merocel packing ($p < 0.05$). Patients with Merocel packing had significantly more pain and nasal discomfort when assessed 1 week after intervention. Therefore, the trans-septal suturing technique may be the preferred option to provide higher patient satisfaction.

KEY WORDS: Septoplasty • Trans-septal suturing • Nasal packing

RIASSUNTO

La sutura transettale è stata proposta nell'ambito della chirurgia del setto nasale quale alternativa al tamponamento. L'obiettivo di questo studio è stato confrontare i risultati nel post-operatorio della sutura trans-settale rispetto al tradizionale tamponamento nasale con Merocel®. Sono stati studiati 697 pazienti sottoposti a settoplastica, i quali sono stati suddivisi in due gruppi, quelli in cui è stato effettuato un tamponamento tradizionale con merocel e quelli in cui è stata effettuata una sutura trans-settale. La significatività statica è stata assunta per valori di $p < 0,05$. Il dolore post-operatorio è stato monitorato attraverso scala analogica visiva. Nei due gruppi sono stati confrontati sintomi e complicanze, ed in particolare sono stati presi in considerazione dolore, sanguinamento, sinechie, ematomi e perforazioni del setto. Fra i due gruppi non è stata riscontrata una differenza statisticamente significativa riguardo le emorragie, gli ematomi, le sinechie e la perforazione ($p > 0,05$). Il livello di dolore, invece, riferito dai pazienti sottoposto a sutura trans-settale era significativamente inferiore rispetto ai pazienti sottoposti a tamponamento nasale ($p < 0,05$). Concludendo i pazienti sottoposti a tamponamento nasale dopo settoplastica riferivano una sintomatologia dolorosa significativamente maggiore, per cui la sutura tran-settale può essere considerata una valida alternativa allo stesso considerando l'alto livello di soddisfazione riferito dai pazienti.

PAROLE CHIAVE: *Settoplastica • Sutura trans settale • Tamponamento nasale*

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Introduction

Septoplasty is one of the most widely used techniques in patients with septal deviation. Packing the nose after septoplasty is common practice to ensure stabilization of post-nasal septoplasty, and to prevent postoperative complications such as bleeding, adhesion formation, apposition of mucosal flaps, and subsequent septal haematoma and septal cartilage perforation [1-3]. Systemic complications induced by nasal packing include decreased sleep quality, respiratory problems and decreased oxygen saturation, in addition to circulatory system problems, and toxic shock syndrome [4-7]. In order to avoid complications introduced by packs, nasal septum or nasal suture splint application techniques have been used. However, these methods have not been assessed in detailed studies [8-12]. Therefore, we conducted a retrospective, randomized comparison of the incidence of postoperative symptoms and complications in 697 patients undergoing septoplasty.

Materials and methods

Laboratory tests were carried out on patients before surgery, and systemic diseases were not present in any case. The study was conducted between 2006 and 2010 and included 697 patients, with an age between 17 and 72 years (mean 28.9 years); of these, 430 (61.7%) were male and 267 (38.3%) female. Patients who had turbinate or paranasal sinus pathologies were not included. Patients were randomly divided into two groups. In total, 423 patients were operated under general anaesthesia, while 274 were operated under local anaesthesia. Choice of method of anaesthesia was guided by the patient's general condition and/or by the will of the patient. At the beginning of anaesthesia, 2 ml Jetocaine® (lidocaine HCl 20 mg/ml, epinephrine hydrochloride 0.0125 mg/ml) was administered to all patients to aid haemostasis. A hemitransfixion incision was used in 21 patients, and a Killian incision in 610 patients. The incision was confined to the anterior of localized nasal spurs in 66 patients. All incisions were sutured using 4-0 Vicryl® rapid.

In the septal suture group (Group I), we used a separate suture technique, and sutures were placed according to elevated parts of the mucoperichondrium. Single transfixion sutures (4-0 Vicryl® rapid) were made starting from the posterior side to achieve stabilization of mucoperichondrial flaps, and the reimplanted morselized cartilage was placed between two sides mucoperichondrial fleps using a needle-holder in the form of a bayonet (Karl Storz needle holder 515217) (Figs. 1-4).

Merocel packing was applied to 334 patients (Group II), and was removed after 48 h. After surgery, broad-spectrum antibiotics were recommended to all patients for 5 days, and oral decongestant-analgesic non-steroidal nasal sprays, nasal saline lavage and anti-inflammatory treatment was used as needed.

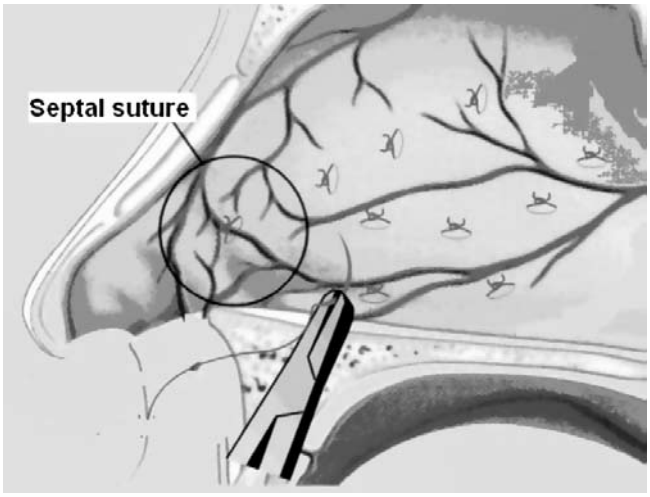

Fig. 2. Technique of septal suturing.

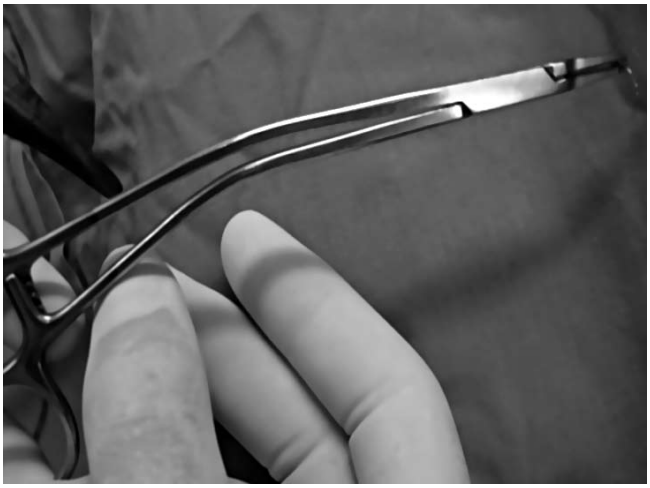

Fig. 3. Needle holder used for trans-septal suturing.

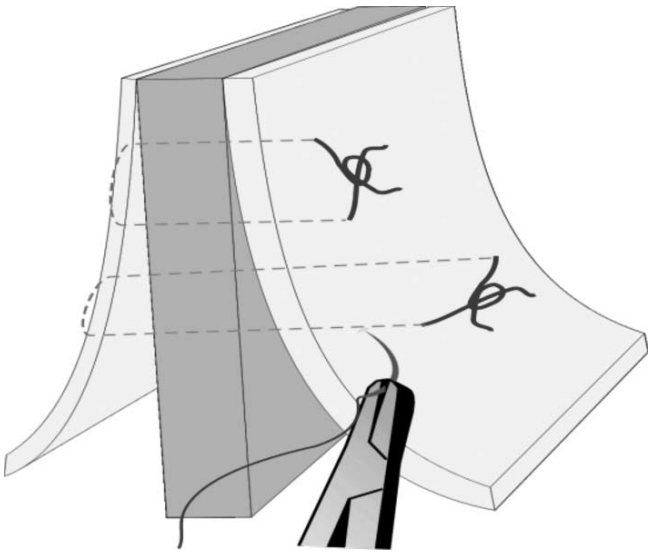

Fig. 1. Diagram of septal suturing technique.

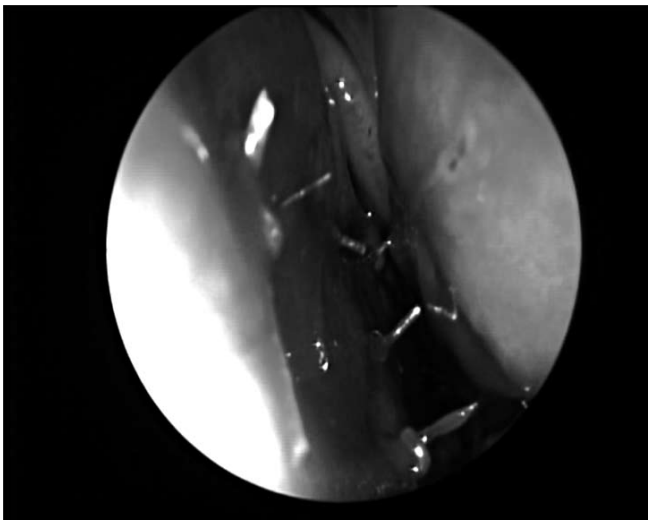

Fig. 4. Septal suturing after surgery.

On the first day after surgery and 48 h after surgery, patients were asked to assess the level of pain using a VAS (visual analogue scale; a scale between 1 and 10; 1 minimal, 10 unbearable). In addition, on the first and seventh days and one month after surgery, patients were examined for bleeding, haematoma, and septal perforation synechiae. Statistical analyses were performed with the SPSS 16 program. For comparison purposes, the chi-square test and Student's *t*-test were used. A $p < 0.05$ was considered statistically significant.

Results

Between 2006 and 2010, a total of 697 patients, aged 17-72 years (mean 28.9 years), 430 (61.7%) male and 267 (38.3%) female, underwent septoplasty. Patients were randomly divided into two groups. The first group (n = 363) had trans-septal suturing and the second group (n = 334) had Merocel packing after surgery. Post-surgical pain, bleeding, synechiae, septal perforation and haematoma results are shown in Table I.

The reported pain levels were 2.3 and 4.8 in Group I and Group II, respectively ($p < 0.05$). This clearly indicates that the septal suturing group felt less pain than the packing group. As Table I shows, postsurgical bleeding (4 in Group I and 6 in Group II), synechiae (7 in Group I and 5 in Group II), and septal perforation (8 in Group I and 11 in Group II) were observed in both groups. Septal haematoma was not observed in either group. The overall results between the two groups were not statistically significant ($p > 0.05$).

Discussion

Septoplasty is one of the most widely used surgical methods for correction of septal deviation [3-5]. Nasal packing after septoplasty has been used to approximate septal mucopericondrial flaps mechanically, to prevent bleeding and septal haematoma, to support the septum, to stabilize the repositioned cartilage and bone fragments, and to prevent synechiae between the septum and lateral nasal wall [9]. Numerous packing materials are available including ribbon gauze, fingerstall packs, polyvinyl acetate sponge (Merocel, Medtronic Xomed, Jacksonville, FL, USA), cellulose sponges, and carboxymethyl-cellulose [8-10].

Table I. Postoperative complications in patients undergoing septal suturing (Group I) or nasal packing (Group II).

	Group I (n = 363)	Group II (n = 334)	p-value
Pain	2.3	4.8	< 0.05
Bleeding	4 (1.1)	6 (1.8)	NS
Synechiae	7 (1.9)	5 (1.5)	NS
Septal perforation	8 (2.2)	11 (3.2)	NS
Septal haematoma	0	0	NS

NS: not significant; percentages in parentheses.

The possible complications of nasal packing inevitably lead to pain. In addition, removal of postsurgical packing also causes pain and discomfort, and pain-reducing methods must be used. The most severe pain is experienced after surgical removal of the bumper [8-13].

Packing also restricts nasal respiration and respiratory function in patients, with a negative impact on quality of sleep. Patients can have concomitant hypoxia, dry mouth, sore throat, aspiration problems and even circulatory disorders. It has been postulated that bilateral nasal packing causes a decrease in nocturnal PaO_2, due to inadequacy of oral breathing and causes hypoxia to be felt more intensely. In such cases, obstructive sleep apnoea, chronic obstructive pulmonary disease and systemic problems become apparent, particularly in elderly patients with ischaemic heart disease [14-16].

Nasal packing after septoplasty is often performed for suppression of bleeding, bleeding control, and mechanical pressure, but also to prevent hematoma formation after surgery. A review of the literature revealed no difference either in bleeding or in septal haematoma formation if different packing materials are used or if no packing is used [9-11 17]. In our study, four patients in Group I and six patients in Group II suffered post-septoplastic bleeding, but the difference between groups was not statistically significant. There was also no difference between the two groups with regard to formation of haematoma. For mechanical and structural reasons, nasal packing irritates the nasal mucosa and adversely affects mucosal ciliary activity. In their study on sheep, Shaw and co-workers [18] showed that nasal packing caused a 50-68% loss of mucosa cilia. As a consequence, intranasal infections can develop. Along these lines, Lee and Vukovic reported a case of pyogenic granuloma caused by nasal packing [19].

The most serious complication due to infection is toxic shock [14]. In parallel to these results, patients who underwent suturing preserved mucosal ciliary activity, but packing-dependent reactions were not observed. Consequently, the tendency for infection is reduced.

In a series of rhinoplasties, Camirand observed that no complications develop unless packing is applied inside the nose [17]. Lemmens and Lemkens applied the suturing technique to 226 patients [9]. They reported that complications such as bleeding, septal haematoma and septal perforation, but synechiae were not recorded. In our study, seven patients in Group I and five patients in Group II developed nasal synechiae. The incidence of septal perforation in Group I was 8 (2.2%), whereas in Group II, 11 (3.2%) cases were observed. Significant differences were not found between the two groups with respect to the formation of synechiae and septal perforation, in agreement with literature findings.

In conclusion, the suturing technique used in septoplasty presents minimal pain and complications after surgery, and patients return to normal daily life in a very short period of time. Furthermore, postoperative bleeding is not an issue with this method. This study confirmed that the routine use of nasal packing is not justified, and also showed a positive impact on patient comfort after surgery for septoplasty using the suturing technique.

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