Otolaryngology: Open Access

Doddi et al., Otolaryngol (Sunnyvale) 2016, 6:2
http://dx.doi.org/10.4172/2161-119X.1000233

Research Open Access

Evaluation of Silastic Splints following Endoscopic Sinus Surgery

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Received date: Feb 17, 2015; **Accepted date:** April 28, 2016; **Published date:** April 30, 2016

Abstract

Middle meatal adhesions are considered the most common complication of Functional Endoscopic Sinus Surgery (FESS), ranging in incidence from 1 to 36%. Consequently the recurrence and persistence of symptoms increase, resulting in revision surgery in up to 25% of the cases. Although different methods have been attempted to prevent adhesions, each procedure involves some disadvantages and no standard method has been proposed.

This study evaluates the efficacy of a 0.85 mm thick polymeric Silastic splint, in preventing middle meatal synechiae, in postoperative FESS patients. 12% of patients with splint had adhesions while 19.2% of patients without splint had adhesions.

Splints do not appear to have a statistically significant advantage in preventing middle meatal synechiae following FESS. However, larger studies are needed to confirm this.

Keywords: Syneciae; FESS; Silastic spints

Introduction

The formation of synechiae is the most common complication following Functional Endoscopic Sinus Surgery (FESS). The incidence of middle meatal synechiae rages in literature from 1-36% [1]. The formation of synechiae between the middle turbinate and lateral nasal wall can obstruct the outflow of the maxillary, ethmoid and frontal sinuses leading to persistence or recurrence of symptoms and thus necessitating revision surgery. Stamberger reported an 8% rate of synechiae following FESS, with 20% of those becoming clinically significant and negatively impacting patient response to surgery [2].

Numerous materials, both absorbable and nonabsorbable, like Floseal, Merocel, Gelfoam, fibrin glue, hyaluronic acid, mitomycin C have been evaluated for their role in preventing middle meatal adhesions. We aim to evaluate the efficacy of 0.85-mm thick polymeric Silastic sheet, in preventing middle meatal adhesions.

Our objectives are:

To know the incidence of synechiae between the middle turbinate and the lateral nasal wall following FESS, in our series of 51 patients.

To know the incidence of clinically significant synechiae.

To evaluate the role of silastic splint in prevention of synechiae.

To subjectively evaluate the patient compliance of silastic splints.

Materials and Methods

Fifty one patients who underwent FESS between January and June 2010 have been enrolled in this retrospective study. The surgery was done for chronic rhinosinusitis with or without nasal polyposis that was resistant to medical therapy, in accordance with the Europian position paper on Rhinosinusitis and nasal polyps 2007. FESS involved uncinectomy, middlemeatal antrostomy, anterior ethmoidectomy ± posterior ethmoidectomy ± polypectomy.

The patients were divided into 2 groups. Group 1 consisted of 25 patients who had a silastic splint in the middle meatus. It is a fan shaped, soft and pliable, 0.85 mm thick polymeric Silastic sheet of 2 different sizes (Height / length 31/65 mm and 27/60 mm) (Figure 1).

Figure 1: Silastic splint (To be inserted near 'Materials and methods').

It is placed between the middle turbinate and lateral nasal wall under the direct vision of a straight, 4 mm, 0° endoscope (Karl Storz GmbH & Co KG, Tuttlingen, Germany) and secured to the columella with a non absorbable suture. The silastic splint was removed in the

outpatient department 14 days post operatively. The patients had oral antibiotic cover for the 14 days when the splint was in situ.

Group 2 consisted of 26 patients who did not have a silastic splint. 14 of these 26 patients in group 2 had merocel (Kennedy) pack in the middle meatus postoperatively for 24 hours for haemostasis while the other 12 patients did not have anything.

One year after the surgery both groups were evaluated for the presence of synechiae between the middle turbinate and the lateral nasal wall using a 4 mm, 0° endoscope. The discomfort, pain and nasal block due to the silastic splints in Group 1 patients has been evaluated using a visual analogue scale from 0 (none) to 10 (maximum) and graded as mild (1-4), moderate (5-7) and severe (8-10).

This study has the approval of the Audit department for Betsi Cadwaladr University Health board.

Results

Fifty one patients underwent FESS between January and June 2010. Group 1 consisted of 25 (49%) patients who had a silastic splint in the middle meatus. Group 2 consisted of 26 (51%) patients who did not have a splint. 8 (15.7%) of the 51 patients in total had synechiae in the middle meatus. Only 1 (12.5%) of them had clinically significant symptoms of nasal blockage. The patient however, continued to be symptomatic even after release of adhesions. The incidence of synechiae was 3 (12%) in group I and 5 (19.2%) in group II (p=0.45) (Table 1).

	Group 1 (Silastic splint)	**Group 2 (No splint)**
n	25	26
Middle meatal synechiae	3 (12%)	5 (19.2%)

Table 1: Incidence of middle meatal synechiae (p=0.45).

On subjective evaluation of the patient compliance of the silastic nasal splint using a visual analogue scale, 16 (64%) patients of group I had mild pain, while the remaining 9 (36%) patients had moderate to severe pain. 12 (48%) of the group 1 patients complained of mild discomfort and nasal block while 13 patients (52%) had moderate to severe discomfort and nasal block (Table 2). None of Group I patients had postoperative infection when the splint was in situ.

	Mild (1-4)	**Moderate–severe (5-10)**
Pain	16 (64%)	9 (36%)
Discomfort	12 (48%)	13 (52%)
Nasal block	12 (48%)	13 (52%)

Table 2: Subjective assessment of patient compliance to splint (Group 1).

The discomfort, pain and nasal block in patients of Group II who had packs, was significant. 9 (60%) of the 14 patients who had packs had moderate to severe discomfort, pain and nasal block while 3 patients (20%) said they had no discomfort from the packs.

Discussion

Following endoscopic sinus surgery, the most common objective apart from haemostasis, is postoperative healing that avoids adhesion formation and lateralization of middle turbinate. However there is little agreement on how this is achieved. Various interventions like removable nasal packing, absorbable nasal packs or no packing at all, are all widely debated. Adhesions can cause occlusion of sinus drainage pathway resulting in recurrence of symptoms and subsequent surgical failure. Studies show that 25% of patients who have adhesions will require revision surgery in the future [3].

Miller et al. (Table 3) compared the removable packs; Merocel and Merogel (Hyaluronic acid) in their double blind randomised control trial of 37 patients and found that both packing agents had an adhesion rate of 8% at 8 weeks post operatively [4]. Bugten et al. however found that Merocel caused less adhesions (7 of 62) compared to no packing (29 of 54) at the end of 14 weeks post operatively [5].

Splint	**Adhesion rate**
Merocel (Miller et al.)	8%
Merogel (Miller et al.)	8%
Merocel (Bugten et al.)	11.2%
Floseal (Shrime et al.)	18.9%
Silicone (Shikani AH)	0
Silicone (Lee et al.)	6%
No splint (Shrime et al.)	6.7%

Table 3: Lateral synechiae rates of various common splints in literature.

Floseal is a commonly used absorbable biomaterial in the post-operative period. Though it is a very effective haemostatic agent, a statistically significant higher incidence of adhesion formation has been noted with floseal (18.9%) compared to no packing (6.7%; p = 0.009) [3].

Stents are devises made of exogenous material and are placed in the middle meatus to keep wound surfaces apart, preventing adhesions. Shikani used a silicone stent for 10-14 days postoperatively [6]. After 8.2 months of follow up, he did not find any adhesions in any of the 50 patients compared to 30% adhesions in the control side. Lee et al. noticed synechiea in 6% of the sides with silastic splint compared to 44% in the control group without silastic splint [7].

Conclusion

For the purpose of preventing adhesions, silastic splints do not appear to have a statistically significant benefit over nonabsorbable packs, absorbable packs or no packing. This study serves for good hypothesis generation and larger studies are needed to confirm this. Basic research needs to be aimed at developing a haemostatic pack that prevents adhesion formation.

References

1. Anand VK, Tabaee A, Kacker A (2004) The role of mitimycin C in preventing synechia and stenosis after endoscopic sinus surgery. Am J Rhinol 18: 311-314.

2. Stammberger H (1991) Operative techniques. In Functional Endoscopic Sinus Surgery: The Messerklinger Technique. Philadelphia: BC Decker p: 466.
3. Shrime MG, Tabaee A, Hsu AK (2007) Synechia formation after endoscopic sinus surgery and middle turbinate medicalization with and without Floseal. Am J Rhinol 21: 174-179.
4. Miller RS, Steward DL, Tami TA (2003) The clinical effects of hyaluronic acid ester nasal dressing (Merogel) on intranasal wound healing after functional endoscopic sinus surgery. Otolaryngol. Head Neck surg 128: 862-869.
5. Bugten V, Nordgard S, Skogvoll E (2006) Effects of nonabsorbable packing in middle meatus after sinus surgery. Laryngoscope 116: 83-88.
6. Shikani AH (1994) A new middle meatal antrostomy stent for functional endoscopic sinus surgery. Laryngoscope 104: 638-640.
7. Lee JY, Lee SW (2007) Preventing lateral synechia formation after endoscopic sinus surgery with a silastic splint. Arch Otolaryngol Head Neck surg 133: 776-779.