

Silastic button Insertion for nasoseptal perforation: A 20 years' experience between two tertiary centres

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ABSTRACT

Objective: Silastic septal button is a valid treatment option to reduce the incidence of whistling, crusting, and bleeding from an anterior septal perforation. However, the compliance remains questionable as some patients cannot tolerate this prosthesis. The aim of our study was to investigate the compliance and improvement in symptomatology following button insertion.

Methods: Retrospective chart review of patients who had Silastic button insertion for nasoseptal perforation over 20 years (1999-2019). The patients were identified from theatre-log of two tertiary referral centers in Scotland.

Results: A total of 156 patients (male=65, female=91) with a mean age of 52 years (range 19-95) were identified. Of the 156, 18 patients requested removal of the button and 27 patients required replacement because of the button extrusion. Overall, patients reported improvement in their symptoms and tolerated the prosthesis well.

Conclusions: Silastic button insertion is a useful and acceptable treatment modality. We recommend that this treatment should be discussed and offered to all symptomatic patients.

Keywords: Silastic button, Nasoseptal perforation, Compliance, Septal prosthesis.

INTRODUCTION

Nasal Septal perforation (NSP) is a defect extending through bony or cartilaginous nasal septum and its overlying mucosal coverings. When NSP is present there is an increased airflow velocity and greater shear stress secondary to the turbulent airflow, leading to a disruption of the humidification process which in-turn can lead to intranasal crusting, recurrent epistaxis, discharge, pain and whistling [1]. With a larger NSP loss of dorsal and caudal support may arise. This may induce aesthetic or functional sequelae (e.g. saddle nose deformity, nasal tip collapse, vestibular stenosis) [2]. Many aetiologies have been attributed to this condition but these can be broadly classified into idiopathic, iatrogenic, irritant, inflammatory, infective, traumatic and neoplastic [3].

Management of NSPs is usually reserved for symptomatic patients, typically commencing with non-surgical measures, such as saline irrigation and ointment application to ensure that the perforation site is kept moisturised [4]. This approach is generally preferred if the symptoms are mild and if there is an ongoing systemic condition causing the perforation such as Granulomatosis with polyangiitis, Sarcoidosis

or a continued intranasal drug abuse. For patients with persistent symptoms despite conservative measures, silastic button insertion or surgical repair with vascularized flaps with or without graft materials are considered [1]. There are numerous surgical approaches to repair a septal perforation, however, they are all technically challenging and the rate of residual perforation is high [5].

Prostheses are an extremely attractive option for patients who are poor surgical candidates or who wish to avoid surgery. They can close the defect mechanically without requiring tissue disruption [4]. They may be placed under local anaesthesia or general one depending on patient specific factors, surgeon's preference and type of prosthesis used. With proper care and nasal saline irrigation, prostheses may provide years of symptom relief. However, they remain foreign bodies and may carry several potential side effects including crust deposition, recurrent epistaxis and chronic discomfort and pain [6]. The Aims of our study were to investigate the compliance of our patients and improvement of their symptomatology after silastic button insertion for symptomatic nasoseptal perforation.

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METHODS:

The patients who underwent a silastic button insertion for a symptomatic nasoseptal perforation, between 1999-2019, were identified from theatre logbooks including the electronic database. Twenty-years data was provided from, Aberdeen Royal Infirmary. However, a single surgeon's data obtained from Southern General Hospital, Glasgow was available for 2003-2012 only.

This is a retrospective review of a prospectively maintained departmental database. No formal ethical approval was required as this exercise was regarded as an audit of practice.

Data collection included demographics, presenting symptoms and signs, recorded size of the nasoseptal perforation, frequency of follow up, complications and their management.

Due to the nature of the study accurate recording of the size of the perforation was not available for all of the patients in the study group. The exact dimensions of the perforation were available for only a few patients. However, these were calculated and presented in our results into 3 groups (small, medium and large). The outcome data was collected from the clinic letters. No quantitative measurement of improvement was deemed necessary as the patients were either happy with the button or not. If they could not tolerate the prosthesis then they requested removal of the button because of no symptom improvement or side effects like pain, ongoing crusting or a foreign body sensation in the nose.

The patients with nasoseptal perforation associated with malignancy and connective tissue disease were excluded.

Microsoft Excel and SPSS (Statistical package for the social sciences) were used to collect and analyse the data.

RESULTS:

A total of 156 patients were identified. There were 91(58%) females and 65 (42%) males. The average age was 52 years (range [19-95]).

When comparing our two groups there were 32 patients in the Glasgow cohort (19 females and 13 males) with a mean age of 57 years (range = 19-90). There were 124 patients (72 females and 52 males) in the Aberdeen group with the mean age of 50 years (range =19-95). All of the patients in this study suffered from anterior septal perforations. The most common reported symptom was crusting (76.28%); followed by nasal blockage (62.17%), intermittent epistaxis (44.23%) and whistling at less than 10%. History of nasal surgery was noted in 54 (34.6%) and 11 (7.05%) patients sustained nasal trauma in the past.

The majority of cases (132 cases; 84.6%) were happy with improvement in their symptoms with septal button. Of the 132 cases, 27 patients required replacement of their septal button due to displacement and loose fit.

Of the total 156, 18 (12%) underwent removal of the septal button with no subsequent button reinsertion. Main causes of button removal were: pain in 10 cases (55.55%), severe crusting in three cases (16.66%); in five cases (27.77%) the perforation was too big and the button fell out soon after insertion.

There were 196 interventions for these patients. The majority of the patients (71%) underwent only one intervention for septal button insertion. 35 interventions were documented as Septal biopsy and button insertion, with 6 procedure having turbinate cautery carried out at same time of button insertion.

There were 93 anaesthetic interventions recorded from the total of 196 interventions. A combination of general and local anaesthesia was used in 46 cases (49%), general anaesthesia alone in 22 cases (24%) and procedures were carried out under local anaesthetic alone in 25 patients (27%).

Size of perforation was recorded for a total of 55 patients, with a mean circumference of 1.8 cm, with a circumference range of (0.4 – 4 cm). Small perforations refer to those with a diameter of ≤ 0.5 cm; medium perforations with a diameter ranging between 0.5-2 cm; large perforations with a diameter > 2 cm summarised in (Table I).

Table I: Distribution of nasal-septal perforations

Size	No. Patients (%)
Small (< 0.5cm)	1 (1.812)
Medium (0.5-2 cm)	38 (69.09)
Large (2cm)	16 (29.09)

Follow up was carried out at different intervals, however, a mean follow-up of 21 months (Range 2 -100 months), before patients were discharged back to primary care.

Discussion:

While NSP is often an incidental finding, the majority of patients are asymptomatic and therefore require no further treatment [7,8]. However, symptomatic NSPs can vary in presentation and may mimic other common nasal conditions (e.g. chronic rhinosinusitis, allergic rhinosinusitis, deviated nasal septum) [8]. The size of the perforation and its location in the septum are relevant to the degree of symptomatology. The anterior septal perforations are much more likely to cause symptoms compared to posterior septal perforations. Whistling is more commonly associated with small anterior perforations whereas bleeding and crusting are usually associated with larger nasal septal defects [7]. In our current study we have noted that patients with anterior septal perforations were most symptomatic with nasal crusting, local discomfort and nasal blockage.

Nasal septal perforations alter nasal airflow, creating



turbulence which causes mucosal dryness predisposing it to crusting. Disturbance in laminar airflow can also cause subjective nasal obstruction or audible whistling noticeable during rest, sleep, or exercise [9,10]. Irritation or simple trauma to the septum causes mucosal crusting, often prompting nose-picking and further trauma to the septum, leading to ulceration and finally perforation [11]. Recreational intranasal drug, abuse of vasoconstrictor substances such as cocaine tend to reduce blood supply to the septum and are an important aetiological factors. Certain systemic inflammatory conditions are also associated with NSP (e.g. Sarcoidosis, Granulomatosis with polyangiitis, systemic lupus erythematosus). However, iatrogenic causes remain one of the main culprits in causing NSPs [10,11]. In our cohort the majority of the patients had an established nasal septal perforation and would not necessarily require investigations unless there is a concern about any underlying systemic disease. We, however, specifically investigated our patients for any previous nasal surgery. We noticed that 35.25% of our patients had previous septal surgery in the form of (septoplasty, closed or open septorhinoplasty).

The initial steps in managing nasal septal perforation is to check if a specific cause can be discerned, it should be removed before any additional intervention is considered [12]. For example, lifestyle modification may prevent septal perforation in high-risk individuals such as cocaine users. The conservative measures included humidification, saline douching and emollients use to keep the septal perforation edges moist are sufficient in most patients with a NSP. In the remaining symptomatic patients, NSP can be repaired surgically or blocked by inserting a silastic button. This is in order to restore the intranasal physiology and laminar airflow leading to symptomatic relief.

The successful closure of the NSP with surgery is variable and should carefully be chosen depending on the defect's size [13]. Numerous surgical techniques have been used, without consensus as to the most effective method [10]. Another potential problem is the fact that an unsuccessful operation can result in a larger perforation [14]. Also, in some instances, surgery may be contraindicated on account of the patient's age, general medical condition, or underlying pathology. In cases like this, a nasal septal prosthesis may be used as temporary or definitive alternative treatment. In our institution, the patients with NSP are offered medical and conservative treatment first. These patients are followed up in a clinic to check on their progress. If they remain symptomatic with nasal blockage, crusting or intermittent epistaxis consideration is given to insert a silastic button to occlude the NSP. Very rarely, surgical closure of the NSP is attempted by the specialist Rhinologist in the team after thorough counselling of the patient. The advantages of nasal septal prostheses include easy insertion under LA or GA; a quick day case procedure which is reversible and can be a permanent solution of a very difficult problem. Mechanical closure

of the NSP has been achieved with various prosthetic materials including rubber, acrylic, resin and silicone obturators, either standard or individually shaped [15]. Patients should be informed that the prosthesis may loosen and dislodge on sneezing. Depending on the prosthesis type, this may require a further visit for replacement and re-insertion. Mahalingappa et al, observed this event in 19 of 72 (26%) cases [16]. Pallanch et al, observed this event occurring 39 times in 171 patients (23%) [17].

Based on our experience, conservative measures are very effective for NSP and should be recommended before undertaking any surgical intervention [18]. If we have to try an intervention for symptomatic patients then a least invasive option with limited potential side effects like silastic button for NSP should be considered.

CONCLUSION:

Based on our results it would appear that a silastic button is well tolerated by the patients with a symptomatic nasal septal perforation. The high compliance rate, minimal side effects and significant patients' reported improvement in their symptomatology makes it an attractive option when dealing with NSP.

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Compliance with ethical standards

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