

Research Article

Management of Nasal Septal Perforation: Grampian Experience

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Abstract

Objective: To establish the most common treatment option used for nasal septal perforation management at our tertiary referral centre.

Study Design: Observational study.

Place and duration of study: The study was conducted in 2011 at a tertiary referral centre in the North East of Scotland, UK.

Methodology: Retrospective chart review of all patients over 4 years (2006-2010) who were identified to have a nasal septal perforation. Along with demographics, data were collected on symptoms, site and size of perforation, co-morbidities, preceding history of nasal trauma or surgery, treatment employed and frequency of clinical review. Microsoft excel was used to collect and analyse the data.

Results: A total of 220 patients were identified. Common symptoms were nasal obstruction, crusting and nasal bleeding. Septal perforation was recorded as large (70/220=32%), medium (18/220=8%) and small (49/220=22%). The treatments used included: Saline douches, Vaseline, Bactroban ointment, Naseptin cream, Silastic splints, Silastic button insertion, perforation enlargement, cautery and surgical repair. Repair was attempted in 28 patients (13%). The outcome of surgical repair remained disappointing as the success rate was 11/28 = 40%.

Conclusion: Septal perforation remains a common problem in rhinology. Almost 77% of our cohort was successfully managed with conservative measures alone. Few patients proceed to surgical repair and the results of this approach remain disappointing with a high failure rate on long-term follow-up.

Keywords: Nose; Septal perforation; Management

Introduction

Nasal septal perforation is a clinical condition where there is an anatomic defect in any part of the mucosal and cartilaginous tissues of the nasal septum. There are many associated aetiological factors which can be broadly separated into trauma, infection, irritants, neoplasms, and idiopathic (Table 1). The most frequent cause of perforation is iatrogenic injury but commonly due to nasal septal surgery [1].

Septal perforations disturb the natural laminar airflow through the nose, creating turbulence and disrupting normal humidification [2]. This process can cause a range of symptoms including recurrent epistaxis, crusting, discharge, nasal obstruction, anosmia, pain, and whistling [3]. The structural support of the nose may be compromised in larger perforations, causing external deformities [2] saddle nose deformity, Broad bulbous nasal tip. The clinical presentation can vary greatly between patients depending on the size and location of the perforation. Larger and more anterior perforations are thought to be the most likely to cause symptoms and explains why some patient remain asymptomatic while others experiencing debilitating symptoms [3,4].

Treatment can either be conservative or surgical and is only indicated if the patient is symptomatic. Conservative methods involve irrigating the nose with saline rinses and the application of topical creams and ointments to ensure the area is kept moisturised [2]. This approach is generally preferred if the patient's symptoms are mild, but also if there is an ongoing systemic condition causing the perforation such as Wegner's disease, Sarcoidosis or there is continuing drug abuse [2]. If these treatments fail, surgical closure is then considered. There are numerous ways of surgically repairing a septal perforation, however they are all technically challenging the rate of re-perforation is high [4]. Some approaches include mucosal flap, inferior turbinate flap, grafts from conchal cartilage, temporalis fascia and alloderm [5]. Alternatively a silastic septal button may be inserted although this carries the problems of foreign bodies and is not always effective in reducing symptoms [4]. Overall, there is no standardised way of treating a nasal septal perforation and no one method has been shown to be most effective.

The aim of this study was to report our experience of management of nasal septal perforation at a tertiary referral centre, compare our findings with the published literature and explore areas of improvement in patient care.

Table 1: Aetiology of Nasal Septal Perforation [15].

Trauma	Infection
Intranasal trauma	Septal abscess
Nasal septal surgery	Tuberculosis
Nasal packing	Syphilis
Bilateral cauterisation	Wegener's granulomatosis
Nasal gastric intubation	Lupus erythematosus
Cryosurgery	Sarcoidosis
Nose picking	Rhinoscleroma
Extranasal trauma with septal haematoma	
Inhalant irritance	Neoplasms
Cocaine abuse	Carcinoma
Caustic fumes	Lethal midline granuloma
	Idiopathic

Methodology

Patients

All patients who attended our department over a 4-year period (2006-2010) with a nasal septal perforation. All the patients who were reviewed either in the outpatient department or presented as an emergency with epistaxis were included in this analysis. Regardless of the mode of presentation and frequency of attendance, each patient was counted only once in the study. These patients were identified from the hospital electronic records of consultations. Log books from the relevant theatres were also audited to identify the patients who required a trip to theatre for the management of their nasal septal perforation.

Setting

A tertiary referral centre in the North East of Scotland with a population of 500,000 people in the catchment area.

Study design

Observational study.

Data

Data were collected on demographics, presenting symptoms and signs including the site and size of nasal septal perforation, any known underlying aetiological factors, investigations, and management including frequency of follow ups in the clinic. Microsoft Excel was used to collect and analyse the data.

Because of the retrospective nature of the study, accurate recording of the size of the perforation was not available for all of the patients in the study group and where it was recorded; exact dimensions were available for only a few patients. Mostly, the perforation was described as a small, medium, large and very large. This determination of the size of perforation was based on the subjective assessment by the examining doctor and no objective measurement was carried out by the doctor. However, the surgeons in the department were consulted and it was agreed that the majority would regard a nasal septal perforation as small if it is up to 1cm; medium perforation was up to 2cm; large perforation was up to 3cm and if larger than 3cm the perforation was regarded as a very large

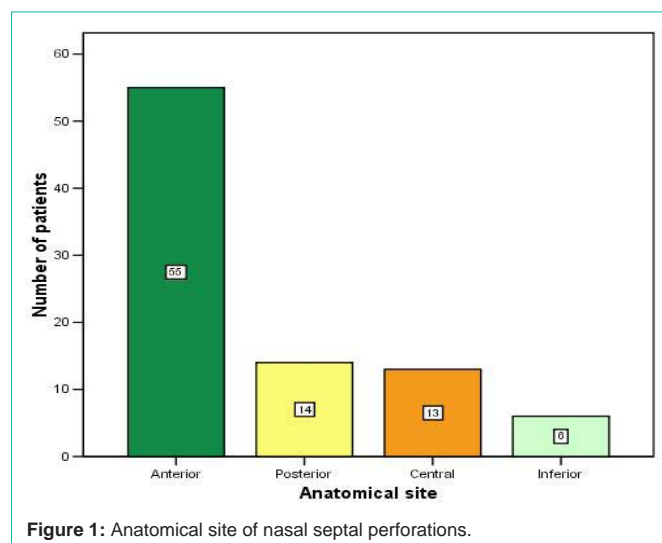


Figure 1: Anatomical site of nasal septal perforations.

perforation. The same terminology has been used in this paper in the result section.

Main outcome measures

The term surgical repair has been specifically used in this paper if the closure of the nasal septal perforation was attempted by any technique but excluding septal button insertion or enlargement of the perforation. The term success of conservative treatment has been used to indicate that the patients remained relatively happy with the control of their symptoms by using conservative treatment options.

Results

A total of 220 patients were identified. There were 101 male and 119 female patients with an average age of 57 years (range was 23 – 97 years). Out of the 220 patients identified as having a nasal septal perforation, 166 (75.4%) were symptomatic and required some active treatment. The most common symptoms reported were crusting, epistaxis and nasal obstruction. Previous history of nasal surgery was reported in 75 patients (34%) and 16 patients (7%) had sustained a nasal injury in the past. With regards to location of perforation, anterior was the most common site (55 patients) (Figure 1). The size of perforations were recorded as small in 49 patients (22%), medium in 18 (8%) and large to very large in 70 of the patients (32%).

Blood tests including immunology screen (i.e. auto antibody screen and cANCA) were carried out for 32 (15%) patients and 24 patients (11%) underwent biopsy of the septal perforation edges. Apart from 2 patients who were clinically suspected to have Wegener's granulomatosis, the blood tests for the remaining patients were normal and all the biopsies were benign as well.

The conservative treatments used included: saline douches, Vaseline, Bactroban, and Naseptin cream instillation into the nose to keep the edges of the perforation moist to minimize the crusting and associated nasal blockage. Other conservative interventions included nasal cautery for acute bleeding from the edges of the perforation.

To help improve the symptoms caused by the septal perforation, 19 patients (9%) were noted to have received a silastic nasal septal button to plug the hole with good effect; few patients were given Silastic intra nasal splints for 3 weeks, on either side of the septum

Table 2: Number of clinical consultations over 4 year period.

Number of clinical consultations	Number of patients
1	140
2	43
3	16
4	8
5	5
6	4
7	3
10	1

to help improve the moisturization and epithelialization of the edges; and 4 patients underwent enlargement of the perforation as a last resort to keep the edges of the perforation moist.

The vast majority, 77% of patients were managed successfully using only conservative measures; the patients' symptoms were bearable and the patients managed to cope with their nasal septal perforation very well as transpired from the documentation of clinic consultations. Surgical repair was attempted in only 28 patients (13%). Various repair techniques and graft materials including acellular dermis were utilized but the success rate was only 40%. These patients generally required a higher number of consultations with one patient being seen 10 times during the study period. The average number of consultations needed for all patients was 1.8 (Table 2).

Discussion

While relatively uncommon, nasal septal perforation has a varying presentation that may mimic conditions like allergic rhinitis, septal deviation and especially chronic rhinosinusitis, with which it may frequently coexist [6]. Indeed, it is often an incidental endoscopic finding [6]. The recreational abuse of vasoconstrictor substances such as cocaine that reduce blood supply to the septum is an important causal factor [7]. Irritation or simple trauma to the septum causes mucosal crusting, often prompting nose-picking and further trauma, leading to ulceration and finally perforation [8]. Inflammatory diseases such as Wegener's granulomatosis are also associated with septal perforation [3] but iatrogenic damage remains the most common aetiological factor, involving procedures like cryosurgery or cautery for epistaxis [1,8]. This is reflected in our chart review, which found that a significant proportion of patients had a history of nasal surgery.

Injury to the mucous membrane that covers the septal cartilage significantly impairs septal blood supply and the contraction that occurs during the healing of a small perforation can widen the opening [8]. The symptoms of epistaxis, nasal crusting, nasal obstruction, purulent discharge and whistling [3] may all in fact, occur in the absence of a perforation [6]. Nasal obstruction is one of the most common symptoms -as reflected in our chart review- and is attributable to the loss of laminar airflow, creating turbulence and a subsequent reduction in the total air volume travelling to the nasopharynx [7,8].

It is our practice to investigate the patients presenting with a nasal septal perforation depending on the history. Other than full blood count and routine biochemistry no investigations are

performed if there is a clear history of prior nasal surgery. In other cases, C-reactive protein, ESR, cANCA and autoimmune screen is performed while the biopsy of the septal perforation edge is reserved for suspicious lesions involving the septal perforation. The selected patients need to be screened for involvement of kidney and lungs in systemic inflammatory disease and may require referral to the relevant specialists.

The need for treatment depends on whether the patient is experiencing symptoms and indeed asymptomatic cases generally require no intervention [9]. The size and location of the perforation are important factors: whistling is often caused by smaller perforations while larger ones are prone to bleeding and crusting [9]. The underlying cause should first be assessed and removed before any intervention is taken and the prevention of septal perforations in high-risk individuals (such as cocaine users) should be considered [9,10]. Surgery should be avoided before the underlying cause is remedied, to avoid recurrence [10].

In symptomatic patients, conservative medical therapy including saline sprays, irrigation and topical antibiotics can be effective enough without surgery [10]. Other conservative alternatives to surgical intervention involve the use of a prosthetic button to artificially close the perforation [9]. These can be made of various materials such as silicone or plastic, and can even be inserted by the patient at home [11]. But while these options are effective at relieving symptoms, patients may be averse to their long-term use, making surgery more attractive for many [8]. However, the numerous surgical techniques available are unreliable and -as highlighted in our chart review- often associated with poorer outcomes.

Nasal septal perforation can be a difficult condition to treat and this is reflected in the numerous different surgical approaches available. There has been much research into the effectiveness of each of these, but all have their own benefits and risks [7,12-14] and evidence is lacking as to the superior method. Future research could aim to establish a standard technique, providing optimum outcomes for patients eligible for surgery. A limitation of our study was that information on the surgical method used was not available in all cases. However, overall, our experience of nasal septal perforation repair suggests that conservative management is more effective than surgical methods. The number of follow up consultations was much lower for those treated conservatively, showing a higher level of patient satisfaction. These findings highlight the significant deficiencies in the surgical options for septal perforation treatment. Patients with all sizes of perforation were treated successfully with conservative methods, making it an appropriate option for all patients. In addition, this approach has obvious advantages as it avoids the risk of further injury from invasive procedures.

Conclusion

Our experience of the management of nasal septal perforation shows that conservative methods proved much more effective and were successful in treating the majority of our patient population. Our results are comparable to the published literature. The outcome of surgical repair remains disappointing with a high failure rate on long term follow up.

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