

Nasal septal perforations: use of Silastic button in 108 patients

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SUMMARY

Between June 1972 and November 1977, 108 patients had medical-grade Silastic buttons inserted transnasally into a perforation of the nasal septum. This nonsurgical technique was done as an office procedure with use of 5% cocaine applied topically in 97 of the 108 patients. The Silastic button has remained in place in 70.4% of the patients, with follow-up ranging from 9 months to 6 years. This mechanical device is inserted easily and has reduced crusting and bleeding considerably in many patients. The failures frequently were related to patient intolerance or poor mechanical fit and occurred in the first few days or first few months after insertion.

Numerous surgical techniques to close nasal septal perforations have been reported (Fomon, 1939; Cottle, 1958; Ismail, 1964; Denecke and Meyer, 1967; Johnson, 1968; Papangelou, 1969; Skolnik et al., 1969; Montgomery, 1971; Tardy, 1973; Walter, 1973). Nevertheless, the total number of patients for each technique described frequently is small and the follow-up may be incomplete. Surgical closure of septal perforations may be difficult and time-consuming. The thrust of this communication is to reemphasize the nonsurgical technique of closure of nasal septal perforations and to report the results of this procedure in 108 patients. Insertion of the siliconized rubber (Silastic) buttons was done as an office procedure in most of the patients. In only 11 patients, the buttons were inserted in the operating room because an associated intranasal procedure was to be done concomitantly. Our initial report (Kern et al., 1977) described our experiences with 45 patients. Since that initial report, we have modified the Silastic button and reported on our experience (Facer and Kern, 1979). The number of patients has now increased to 108, and the length of follow-up has increased.

METHODS AND MATERIALS

From June 1972 to November 1977, 108 Mayo Clinic patients (66 female and 42 male patients, ranging in age from 10 to 85 years) with nasal septal perforations were fitted with nasal septal buttons. Only those patients with symptomatic perforations who had not been satisfactorily treated medically were fitted with the Silastic button (Table 1). We searched for etiologic factors meticulously; however, we were unable to determine the cause of the perforation in 43 patients (Table 2).

Table 1. Symptoms of Nasal Septal Perforations.

symptom	no. of patients *
Crusting	98
Epistaxis	80
Difficulty breathing	61
Whistling	21
Headache	8
Postnasal discharge	7
Rhinorrhea	4
Anosmia	4

* Some patients had more than one symptom.

Table 2. Etiologic Factors.

cause	no. of patients
Nasal trauma	56
Surgical	29
Digital	14
External	8
Cautery for epistaxis	5
Unknown or undetermined	43
Lupus erythematosus	3
Nasal sarcoidosis	3
Wegener's granulomatosis	2
Nonspecific collagen disease	1

After a patient had been selected for insertion of the Silastic button, in our early experience a template of the perforation was made by placing a piece of paper in one nasal chamber and outlining the margins of the perforation with a cotton carrier dipped in thimerosal (Merthiolate). Initially, the button was carved manually from a block of medical-grade Silastic, with the template being used as a pattern. This was a tedious procedure, and the edges of the button often were irregular. A mold was then developed, from which a durable Silastic button with an outside diameter of 3 cm could be cast. Each of the two flanged sides is about 1 mm thick. The central axle has a diameter of 5 mm and

is 3 mm wide. These buttons can be trimmed to fit a perforation greater than 5 mm and less than 3 cm. Use of a template is no longer necessary for obtaining the exact size and configuration of the perforation. The perforation can be measured with an angled applicator, and this can easily be used as a guide for trimming the size of the button to be in excess of the diameter of the perforation. This procedure has been published previously (Kern et al., 1977).

The Silastic button was inserted as an office procedure in 97 of the 108 patients. Topically administered 5% cocaine was used as the anesthetic agent. In 11 patients, the button was inserted while the patient was in the operating room undergoing another intranasal procedure, such as lysis of adhesions or intranasal biopsy to exclude Wegener's granulomatosis or sarcoidosis.

RESULTS

The results were obtained either through a questionnaire mailed to the patient or by follow-up examination and direct questioning. The follow-up ranges from 9 months to 6 years. The Silastic buttons have remained in place in 76 of the 108 patients (70.4%); in the remaining 32 patients (29.6%), the buttons extruded, were sneezed out, or were removed at the request of the patient. These cases were categorized as failures (Tables 3 and 4). Most of the failures (in 22 of 32 patients) occurred within the first 6 months after insertion. Com-

Table 3. Results of Insertion of Silastic Button (June 1972 through November 1977).

button remained in place		button removed or blown out	
months in place	no. of patients	months in place	no. of patients
6-12	3	0-6	22
12-24	11	6-12	7
24-36	19	12-24	2
36-48	27	>24	1
48-60	11		—
60-72	5	Total	32
Total	76		

Table 4. Causes of Failure.

cause	no. of patients
Blown out	9
Not tolerated	9
Breathing problem	4
Cracked or torn	4
Infection	4
Bleeding	1
Odor	1

pared with the subsequent buttons that were used, the initial buttons were more easily torn and did not fit the perforation as well; therefore, they were subject to extrusion. Use of the Silastic button considerably decreased the occurrence of crusting and epistaxis and improved nasal respiration by reducing turbulence.

Among the group classified as treatment failures, four patients had difficulty breathing because the perforation was high on the septum and the Silastic button interfered with the valve area. In these patients, the button was removed. Four patients had recurrent infections and one had recurrent bleeding that necessitated removal of the button. Seven patients requested that the button be removed because of intolerance caused by itching, sneezing, or a sensation of pressure. Two patients requested that the button be removed and subsequently underwent surgical closure of the perforation. Early in the series, some buttons were blown out or came out because they were cracked and torn. These were not replaced. With the development of a mold and use of a more durable Silastic, the fit has been improved and the frequency of extrusion has decreased. In the last 15 months, only two patients have blown the button out. This may have been related to trimming the button without allowing for an adequate margin beyond the size of the perforation.

DISCUSSION

Denecke and Meyer (1967) stated, "In 1951, independently of each other, Link and Meyer described a simple procedure for the closure of septal perforations. Link has *obturators* of Supramide made for the perforations, while the two-layered obturator by Meyer is made of nylon." The follow-up and results, however, are not described.

Van Dishoeck and Lashley (1975) reported a technique in which essentially a wax impression of the perforation is prepared so that an obturator of rather flexible plastic material can be created. They reported that use of this technique was successful in 30 patients. Ginsberg and van Blarcom (1972) also described a wax-impression technique but did not detail the results.

Gray (personal communication) has used the handmade Silastic button for several years and introduced this technique to us. He has not seen any significant complications in approximately 30 patients. No patient in his series or in ours has aspirated or swallowed the button. In one patient in our series, the button dislodged posteriorly and had to be removed from the nasopharynx. This has not occurred since we have used a stronger grade of Silastic.

It is important to search diligently for the cause of the septal perforation. Specific causes of septal perforations – including Wegener's granulomatosis, syphilis, lupus erythematosus, sarcoidosis, cocaine addiction, inhalation of acid fumes, and nasal tumors – need to be considered before proceeding with in-

sersion of a Silastic button.

Generally, it is not necessary to incise the nose internally or externally for insertion of the Silastic button. Occasionally, a button larger than 3 cm is needed. A 5-cm button has been handmade and inserted to close a septal defect. The button also can be tailored to make one flange thicker and wider for closing a septal perforation and narrowing the airway in a patient with perforation and associated atrophic rhinitis.

The use of a prosthesis for septal perforations has been mentioned in the literature (Denecke and Meyer, 1967; Ginsberg and van Blarcom, 1972; van Dishoeck and Lashley, 1975); however, our study includes both a large number of patients and the detailed results of a nonsurgical method of closure of nasal septal perforations.

A preformed Silastic button with a diameter of 3 cm which can be trimmed to various sizes provides a simple method of nonsurgical closure of nasal septal perforations.* The success in 76 of 108 patients (70.4%) who have been followed up for a range of 9 months to 6 years indicates that this method offers a reasonable alternative to surgical closure of nasal septal perforations. We would like to emphasize that only symptomatic patients should be considered for insertion of Silastic buttons.

RÉSUMÉ

Les auteurs proposent d'utiliser un bouton de Silastic pour lutter contre les symptômes gênants des perforations de la cloison nasale. Ils donnent les indications nécessaires pour la confection de cette prothèse qui peut être posée simplement au cabinet de consultation dans presque tous les cas. En 5 ans, 108 patients ont bénéficié de ce procédé. Avec un recul de 9 mois à 6 ans, la prothèse reste en place dans 70,4% des cas. La plupart des échecs apparaissent dans les 6 premiers mois. Cet article comprend une brève revue de la littérature et deux tableaux concernant les symptômes et l'étiologie de ces perforations septales.

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* A 3-cm medical-grade Silastic button is now commercially available from Xomed, 8641 Baypine Road, Jacksonville, FL 32216.

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