CLINICAL CONTRIBUTION Rhinology, 27, 63-66, 1989

Septorhinoplastic procedures versus submucous resection of the septum, using septum perforation as an indicator

U. Schønsted-Madsen, P.E. Stoksted and K.E. Outzen

Dept. of O.R.L., University of Odense, Denmark

SUMMARY

Comparison of the results following submucous resection (SMR) and septoplastic surgery has shown that significantly more perforations of the nasal septum develop after the latter than the former procedure. However, submucosal resection of the septum is a rapid, but traumatic surgical method, which has its merits in duration and tradition. It has been described in textbooks from edition to edition in an unchanged form. The main drawbacks are that SMR leads to mucosal atrophy, a high rate of septum perforation, and conchal hypertrophy.

Septorhinoplastic procedures are more time-consuming and require considerable study, training and knowledge of various surgical approaches. However, the advantages of these procedures in the long-term are in the light of the above mentioned drawbacks, evident.

INTRODUCTION

Submucous septum resection was introduced at the turn of the century by Killian (1899) and Freer (1902), and was soon adopted by most E.N.T. specialists all over the world. The surgical procedure consists of a meticulous dissection of the mucosal flaps from the septal skeleton, followed by removal of deviated parts of the cartilage and bone; thus respecting the integrity of the mucosal membranes. Struts of cartilage are retained under the nasal bridge and behind the columella to ensure stability of the nasal pyramid.

More conservative methods have been developed in the last 25 years especially by Cottle (1960), with preservation of the mucosal blood supply and rebuilding and reimplantation of the removed cartilage and bone; and the same time permitting simultaneous septal surgery with reconstruction of the nasal pyramid and valve area.

RESULTS

The major faults of septal resection (SMR) are: 1. inability to correct anterior dislocations; 2. frequent septal perforations; 3. thin, flaccid septum; 4. changes in the shape of the nasal pyramid; 5. crust formation; 6. hypertrophy of the turbinates, and 7. difficulty in performing revision operations.

Bewarder and Pirsig (1978) made a comprehensive list of studies of SMR. They were, however, difficult to compare because the complications were listed in different ways and the time between surgery and follow-up examination varied considerably.

The diagnosis of one complication is, however, very simple, and may be employed as an indicator of the fitness of the method as well as of the surgeon's skill and experience, i.e. the number of perforations of the septum. The great majority of surgeons attempt to avoid this complication as the size, location and the inconvenience to the patient are rather unpredictable and closing a perforation can be very difficult.

As shown in Table 1 the average percentage of patients developing perforation after SMR was 6.90, while that following septo- and rhinoplastic surgery was only 0.86 (Table 2). These differences are significant. Chi-square = 99.0035 with Yates' correction. Degree of freedom = 1. $P < 0.0001$.

DISCUSSION

SMR and septo- and rhinoplastic surgery are based on two entirely different principles; the first on removal of parts of the septal skeleton, and the second on reconstruction and reshapening of the nasal structures. The fact that resection promotes fusion of the mucosal flaps makes it sometimes impossible, or at least

Table 1. Number and percentage of patients developing septal perforation after submucous resection

year	name	no. of patients	follow-up period	perforations	
				%	no.
1904	Menzel	15	up to 12 months	6.6	1
1914	Heermann	301	up to 4 years	2.7	8
1916	Hayton	31	not stated	0.0	0
1942	Ombredanne	50	up to 5 years	12.0	6
1957	Borg and Siemens	800	14 days	5.0	40
1976	Sloth and Køhlendorf	118	3 to 6 months	16.9	20
1977	Tuschen	51	24 months	14.0	7
1978	Meinel	104	6 to 24 months	3.0	3
1978	Bewarder and Pirsig	250	1 to 19 years	9.0	23
1978	Thomas	48	24 months	10.4	5
1981	Peacock	53	6 years	24.5	13
Total		1821		6.91	126

Table 2. Number and percentage of patients developing septal perforation after septo- and rhinoplastic surgery

year	name	no. of patients	follow-up period	perforations	
				%	no.
1964	Jennes	8	3.5 to 8 years	0.0	0
1969	Stoksted	100	6 to 12 months	5.0	5
1971	Masing	641	not stated	0.2	1
1971	Salus and Wehner	127	12 months	0.0	0
1974	Maran	200	not stated	1.0	2
1974	Pirsig and Knahl	92	2 to 36 months	0.0	0
1977	Shermann	157	12 months	0.0	0
1977	Tuschen	45	16 months	2.2	2
1978	Stoksted and Vase	286	5 to 49 months	1.4	4
1987	Schønsted-Madsen	334	5 years	1.3	4
1987	Pirsig and Konigs	100	18 months	0.0	0
Total		2090		0.86	18

very difficult, to carry out revision operation. If the latter is attempted, the mucous membranes are likely to be damaged.

The use of septal perforations as an indicator of the success of septo- and rhinoplastic surgery as compared to SMR is permissible, as this is a complication that can hardly be overlooked and one which all surgeons try to avoid.

Stoksted and Vase (1978) showed that suturing of all lacerations in the mucosa reduced the percentage of perforations from 5.0 to 1.4. They used a 4–0 chromic catgut suture, double armed with round needles and a small angled needle-holder.

Further, Nolst Trenité (1984) demonstrated that roughly 80% of rabbits subjected to removal of the middel third of the septal cartilage developed perforations, while reimplantation of the septal cartilage prevented perforations in all cases.

In conclusion, we recommend a training programme in order to ensure sufficient anatomical and physiological knowledge, together with adaptation of the various septo- and rhinoplastic procedures as well as the ability to suture dilacerations of the mucous membranes. In our opinion SMR should only be used in those rare cases where there are only minor deformities of the central part of the septum.

REFERENCES

1. Bewarder F, Pirsig W. Spätergebnisse nach submuköser Septumresektion. Z Lar Rhinol Otol 1978; 57:922–931.
2. Borg RE, Siemens BWL. Submucous septum correction. Practica Oto-Rhino-Lar 1957; 19:316–320.
3. Cottle MH. Corrective surgery. Nasal septum and external pyramid. Chicago: American Rhinologic Society, 1960.

4. Freer OT. The correction of the nasal septum with a minimum of traumatism. J Am Med Ass 1902; 38:636–642.
5. Hayton CH. An investigation into the results of the submucous resection of the septum in children. J Laryngology 1916; 30:132–138.
6. Heermann VJ. Über Septumresektion im Kindesalter und über Verhütung der Perforation und des Flatterns. Z Laryngol Rhinol 1914; 6:239–249.
7. Jennes ML. Corrective nasal surgery in children: Long-term results. Archs Otolar 1964; 79:245–251.
8. Killian G. Einleitung zu der Diskussion über die operative Therapie der Septumdeviationen. Verhandlung der Geselschaft deutscher Naturforscher und Ärtze. 71 Versammlung zu München, 1899; 392–393.
9. Maran AGD. Septoplasty. J Lar Otol 1974; 88:393–405.
10. Masing H. Die Behandlung der Stenosen der Nase. Arch Klin Exp Ohr-Nas-Kelhlk Heilk 1971; 199:173–217.
11. Meinel J. Über klinische Symptome und Befunde bei Strukturveränderungen der Nasenseptum und Operationsergebnisse nach submuköser Septumresektion. Diss, Hamburg 1978.
12. Menzel K. Zur Fensterresektion der verkrümten Nasenscheidewand. Arch Laryngol Rhinol 1904; 15:48–61.
13. Nolst Trenité GJ. Implants in a growing nasal septum. The influence of surgical procedures on the nasal septum, upon maxillary and nasal growth; an experimental study in the rabbits. Diss, Rotterdam 1984.
14. Ombrédanne M. Les déviations traumatiques de la cloison chez l'enfant avec grosse obstruction nasale. Traitement chirurgical et résultats éloignés. Arch Fr Pédiat 1942; 1:20–26.
15. Peacock MR. Submucous resection of the nasal septum. J Lar Otol 1981; 95:341–356.
16. Pirsig W, Knahl R. Rhinoplastische Operationen bei Kindern. Erfahrungen an 92 Fällen. Z Laryngol Rhinol 1974; 53:250–265.
17. Pirsig W, Königs D. Wedge resection in rhinosurgery: A review of the literature and long-term results in a hundred cases. Rhinology 1988; 26:77–88.
18. Salus WG, Wehner W. Erste Erfahrungen mit der Septumplastik a.m. Cottle. HNO 1971; 19:311–312.
19. Schønsted-Madsen U, Outzen KE. Five years results following septo- and rhinoplastic surgery. (In press)
20. Sherman AH. A study of nasal airway function in the post-operative period of nasal surgery. Laryngoscope 1977; 87:299–303.
21. Sloth M, Köhlendorf L. Senkomplikationer efter septumoperationer. Ugeskrift for Laeger 1976; 138:86–88.
22. Stoksted P, Vase P. Perforations of the nasal septum following operative procedures. Rhinology 1978; 16:123–138.

U. Schønsted-Madsen, M.D.
Dept. of O.R.L.
Odense University Hospital
5000 Odense C.
Denmark