

Saddle Nose: Our Approach to the Problem

Miguel Andrade, M.D., Victor Santos Fernandes, M.D., and J.P. Boléo-Tomé, M.D.

Lisbon, Portugal

Abstract. Saddle nose is usually caused by a trauma or by excessive resection of the septal cartilage. Nevertheless, there are other, less frequent causes of injury, such as congenital, syphilis, leishmaniosis, and leprosy. Within this context, it is very likely to see widening of the bony bridge and drooping of the tip of the nose. For this clinical status, we found extremely satisfactory a therapy in which we use a dorsum cartilage graft, followed by narrowing of the nasal bridge and shortening of the nose. To achieve this aim, different kinds of materials were employed. The authors usually prefer rehydrated (0.9% saline solution) human costal cartilage. This material was used in a study of a series of patients with saddle nose in which we used open rhinoplasty and cartilage homografts.

Key words: Saddle nose—Rhinoplasty—Cartilage homografts

The nasal deformity classically referred to as saddle nose remains a challenge in reconstruction, in both the tech-

nique of repair and the choice of implant material for nasal reconstruction. Establishment of both nasal function and nasal form requires reconstruction associated with grafting procedures. Most authors prefer autogenous materials/grafts. For many years we used inorganic implants [2] (like hydroxyapatite) and autogenous cartilage [4] or bone [3–6,8,9,14,15,17,20,21]; now we are using cartilage homografts with good results.

Background

Saddle nose is usually caused by a trauma [2,21] (Figs. 1A and B) or by excessive resection of the septal cartilage [7,10,18]. Nevertheless, there are other, less frequent causes of injury, such as congenital, syphilis, leishmaniosis, and leprosy [10,11]. In this context, it is very common to see a pseudohump, due to depression of the cartilaginous dorsum, frequently accompanied by widening of the bony bridge and drooping of the tip.

Technique

Satisfactory correction of this type of deformity can often be obtained by reducing the pseudohump, narrowing the nasal bridge by osteotomies of the lateral and medial walls [15], cartilage grafting of the dorsum and/or columella, and tip remodeling procedures. Various materials have been employed for nasal contour restoration. We, however, prefer rehydrated human costal cartilage homografts. In some cases the cartilage was kept in a solution containing gentamycin for at least 12 h. The rehabilitation provides malleability and easy contouring of the rehydrated cartilage.

The graft is boat shaped, is narrow at the extremities, becomes wider in the middle, and has rounded edges; it is a three-dimensional cartilage graft. The graft should “sit” in a stable manner, without any “rocking”—this is

Editorial Comment: The use of “denatured” cartilage homografts requires a routine observation of the survival of these grafts for more than 3 years in order to detect either possible late absorption or eventual rejection of such grafts, despite the apparent survival of a few or some of these grafts for at least 3 years. The late Tom Gibson and Lyndon Peer always emphasized the necessity of long-term “objective” evaluations of the possible “survival” of cartilage homografts in such cases as these when they were used many decades ago.

Blair O. Rogers, M.D.
Editor-in-Chief

Presented at the XIVth International Congress of the ISAPS in São Paulo, Brazil, May 31–June 3, 1997

Correspondence to Dr. Miguel Andrade, Unit of Plastic and Maxillo-Facial Surgery, Hospital Egas Moniz, Rua da Junqueira 123, 1300 Lisbon, Portugal

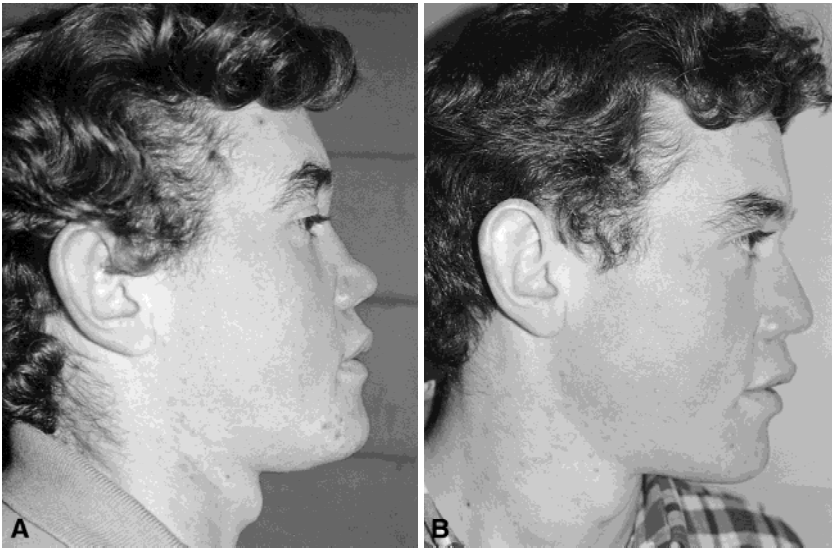


Fig. 1. Posttraumatic saddle nose deformity. Preoperative (A) and postoperative (B).

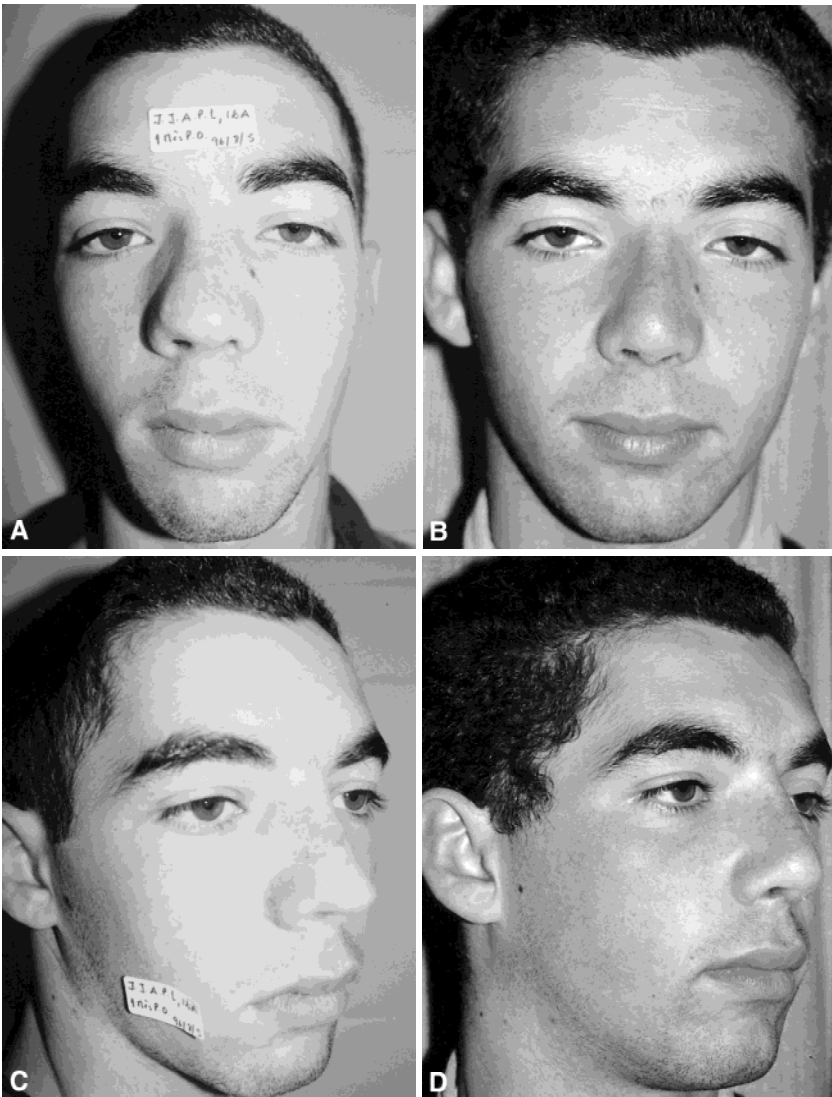


Fig. 2. Postrhinoplasty saddle nose deformity. Preoperative (A,C) and postoperative (B,D).

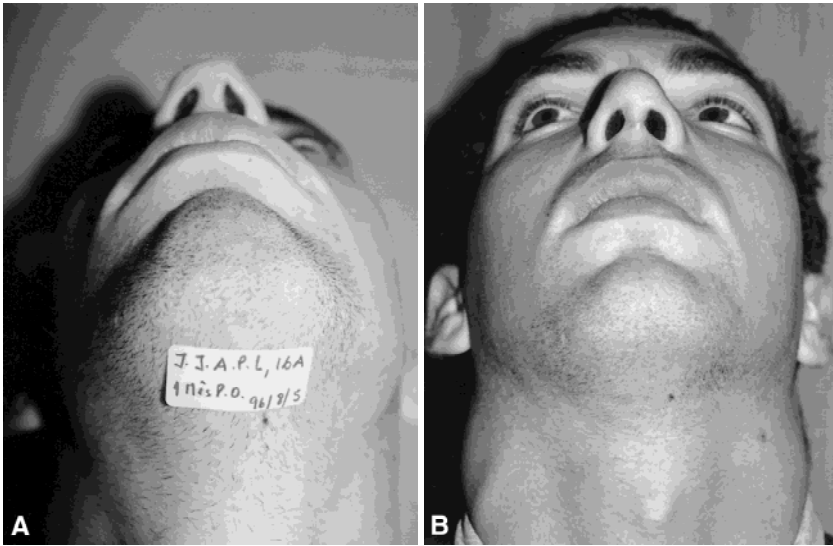


Fig. 3. Basal view. Preoperative (A) and postoperative (B).

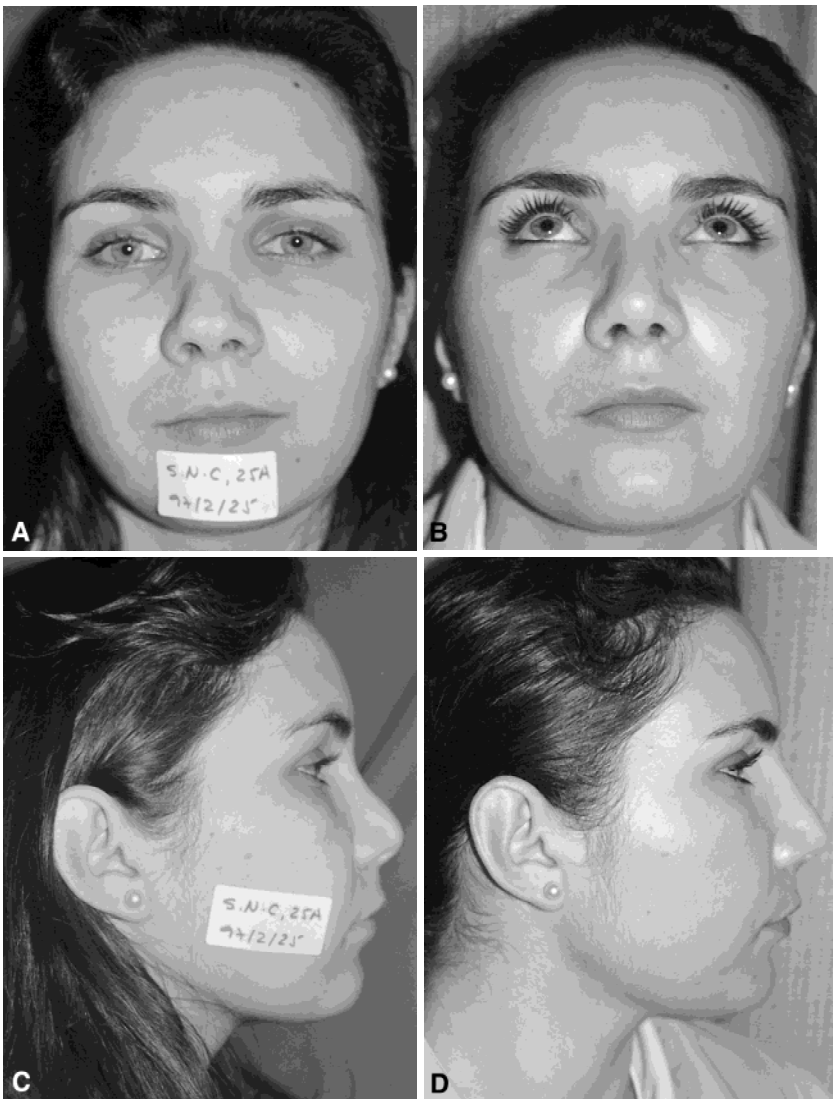


Fig. 4. Preoperative (A,C) and postoperative (B,D).

a critical technical detail. Another tip is related to the dissected pocket, which should be just large enough to accept the graft and not large enough to allow movement; it should fit its bed like a "hand in a glove" [9].

As many of our patients need tip remodeling procedures simultaneously and have undergone a rhinoplasty previously (Figs. 2A–D) or have had a trauma to the nose, we use the external approach [5,10,12,16] (Figs. 3A and B). This makes possible direct vision, with a wide exposure of both domes and the lateral and medial crura, and a direct approach to the septal and tip deformities. A nonabsorbent mattress suture joins the medial crura over the distal end of the graft, thus increasing the projection of the domes and camouflaging the tip of the graft.

The postoperative course of these patients is similar to that following other rhinoplasties, and broad-spectrum antibiotics are recommended.

Discussion

We applied this technique to 18 patients. All the patients have been examined and the results were considered good by both patients and surgeon (Figs. 1–4). Our minimum time of follow-up is 3 months and the maximum is 3 years.

The question of whether autogenous rib cartilage is preferable to preserved homologous material is debatable. Both have biological as well as technical advantages and disadvantages that counterbalance each other. With reference to the main point of discussion—the rate of resorption—it has been proven that, under equal stress, some autogenous cartilages will show partial resorption, whether it is ear, rib, or septal cartilage. Our opinion regarding the rate of resorption is that it is less a function of the nature and pretreatment [1] of the implant cartilage than of its mechanical stress.

The preservation of the cartilage is a multistage procedure in which cells are destroyed by osmotic exchange baths. Treatment with an aqueous solution of hydrogen peroxide is followed by processing for 1 h with sodium hydroxide at room temperature. This denatures and washes out noncollagen protein. The cartilage is sterilized by γ irradiation. This extensive process ensures freedom from pyrogens, bacteria, and conventional and unconventional viruses. The cartilage is dehydrated not by lyophilization, but by a particularly tissue-compatible process using organic solvents. This ensures that the tissue structure and mechanical properties of the native cartilage remain virtually intact.

References

1. Adlinton P, Anscombe AJ, Phillips JJ: Influence of the mode of preparation on the long-term efficacy of homolo-

- gous costal cartilage implants. *J Laryngol Otol* **106**(86): 511, 1992
2. Bull T: Operation on the saddle nose. *Laryngol Rhinol Otol Stuttgart* **62**(5):201, 1983
3. Baser B, Shahani R, Khanna S, Grewal DS: Calvarial bone graft for augmentation rhinoplasty. *J Laryngol Otol* **105**(12):1018, 1991
4. Ortiz-Monasterio F, Olmedo A, Oscoy LO: The use of cartilage grafts in primary aesthetic rhinoplasty. *Plast Reconstr Surg* **67**:597, 1981
5. Goga D, Robier A, Mateu J, Beutter P: Surgical correction of saddle nose. Apropos of 23 cases. *Ann Otolaryngol Chir Cervicofac* **105**(2):123, 1988
6. Harbon S, Najean D, Awad M, Sakr A, Ricbourg B: Augmentation rhinoplasty using bone graft. Technical aspects and therapeutic deductions. *Rev Stomatol Chir Maxillofac* **90**(1):713, 1989
7. Holt GR, Garner ET, McLarey D: Postoperative sequelae and complications of rhinoplasty. *Otolaryngol Clin North Am* **20**(4):853, 1987
8. Sheen JH: Secondary rhinoplasty. *Plast Reconstr Surg* **56**:137, 1975
9. Helms J, Herberhold C, Jahrsdoerfer RA, Kastenbauer ER, Panje WR: Head and neck surgery. Thieme: Stuttgart, pp 278–285, 1992
10. McCarthy G: Plastic surgery. Saunders: Philadelphia, pp 1882–1893, 1902–1920, 1990
11. Malaviya GN, Husain S: Surgical correction of saddle nose deformity in leprosy—One stage procedure. *Acta Leprol* **9**(2):76, 1994
12. Murakami CS, Cook TA, Guida RA: Nasal reconstruction with articulated irradiated rib cartilage. *Arch Otolaryngol Head Neck Surg* **117**(3):327, 1991
13. Meyer R: Secondary and functional rhinoplasty—The difficult nose. Grune & Stratton: New York, pp 139–161, 1988
14. Romo T, Jablonski RD: Nasal reconstruction using split calvarial grafts. *Otolaryngol Head Neck Surg* **107**(5):622, 1992
15. Staindl O: Therapy of saddle nose. *Laryngol Rhinol Otol Stuttgart* **62**(8):348, 1983
16. Stoll W: Experience using open rhinoplasty. *HNO* **34**(5): 190, 1986
17. Tardy ME Jr, Schwartz M, Parras G: Saddle nose deformity: Autogenous graft repair. *Facial Plast Surg* **6**(2):121, 1989
18. Tzadik A, Gilbert S, Sade J: Complications of submucous resections of the nasal septum. *Arch Otorhinolaryngol* **245**(2):74, 1988
19. Berman WE: Rhinoplastic surgery. Mosby: St. Louis, pp 208–213, 1989
20. Wilk A, Herman D, Rodier C, Conraux C: Surgical treatment of saddle nose, our experience apropos of 19 cases. *Rev Laryngol Otol Rhinol Bord* **111**(1):13, 1990
21. Wolfgruber H: Correction of saddle nose. *Laryngol Rhinol Otol Stuttgart* **64**(2):81, 1985