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# Reconstruction of Saddle Nose Deformities Using Porous Polyethylene Implant

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**Abstract.** Various materials have been employed for nasal contour restoration. We used porous polyethylene implants in reconstruction of saddle nose deformity in 36 cases. Only one complication occurred in the 8–18 months follow-up period. No implant was removed. Both cosmetic and functional results were accepted as pleasing by the patients.

**Key words:** Porous polyethylene implant—Saddle nose deformity

Depression of the dorsum of the nose may occur in the bony or the cartilaginous portion, when both are affected, the term *saddle nose* is often used to designate the deformity. Associated conditions can also interfere with respiratory function: e.g., thickening of the septal cartilage and collapse of the lateral and alar cartilages. Congenital saddle nose is unusual, most deformities of this type being traumatic in origin. Various materials including cartilage or bone autografts; inorganic implants as silicone rubber, acrylic, polytetrafluoroehylene have been employed for nasal contour restoration. Autogeneous rib cartilage or iliac bone grafts are most frequently used, although there are problems associated with its use. Harvesting requires general anesthesia. In addition, the operating time is longer and there are complications such as pneumothorax, bleeding, and postoperative chest pain. Many investigators have been searching for an ideal implant material that is preformed, sterilized, nontoxic, and most importantly capable of becoming vascularized. We present our experience with porous polyethylene implants which have proved clinically suitable in the maxillofacial region.

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## Patients and Surgical Technique

Thirty-six patients (10 females, 26 males) aged between 19 and 33 (mean 24) years with saddle-nose deformity were operated on over the past 3 years using porous polyethylene (Medpor-Porex Surgical) frameworks. The deformity was due to excessive resection of the septal cartilage in submucosa resection operation in 12 of the patients and trauma for the rest of them. The pocket for the implant was prepared via intercartilaginous and transfixation incisions under local anesthesia in 25 patients where the rest of patients were operated under general anesthesia. In 24 patients with flat nose, lateral osteotomy was necessary to narrow the wide bony lateral walls. Lower and upper cartilages were trimmed. The implant was inserted into the pocket after being soaked in an antibiotic solution, and there was no fixation. Dorsocolumellar implant was used in 22 patients and dorsal implant in the rest. Mucosal incisions were sutured with chromic catgut. After packing the nose, dorsal bandage and cast applied.

## Results

There was only one exposure which developed at the intercartilaginous incision site. After trimming the implant, mucosa was sutured again and it healed without complication. There were no infection or displacement of implant. Mean operating time was approximately 45 min. The average follow-up was 14 months. The results were accepted as ‘‘good’’ cosmetically. All reconstructions improved the nasal valve mechanism. All patients were pleased with both cosmetic and functional results (Figs. 1, 2).

## Discussion

The standard techniques of saddle nose reconstruction is by rib cartilage or iliac bone autografts which are known

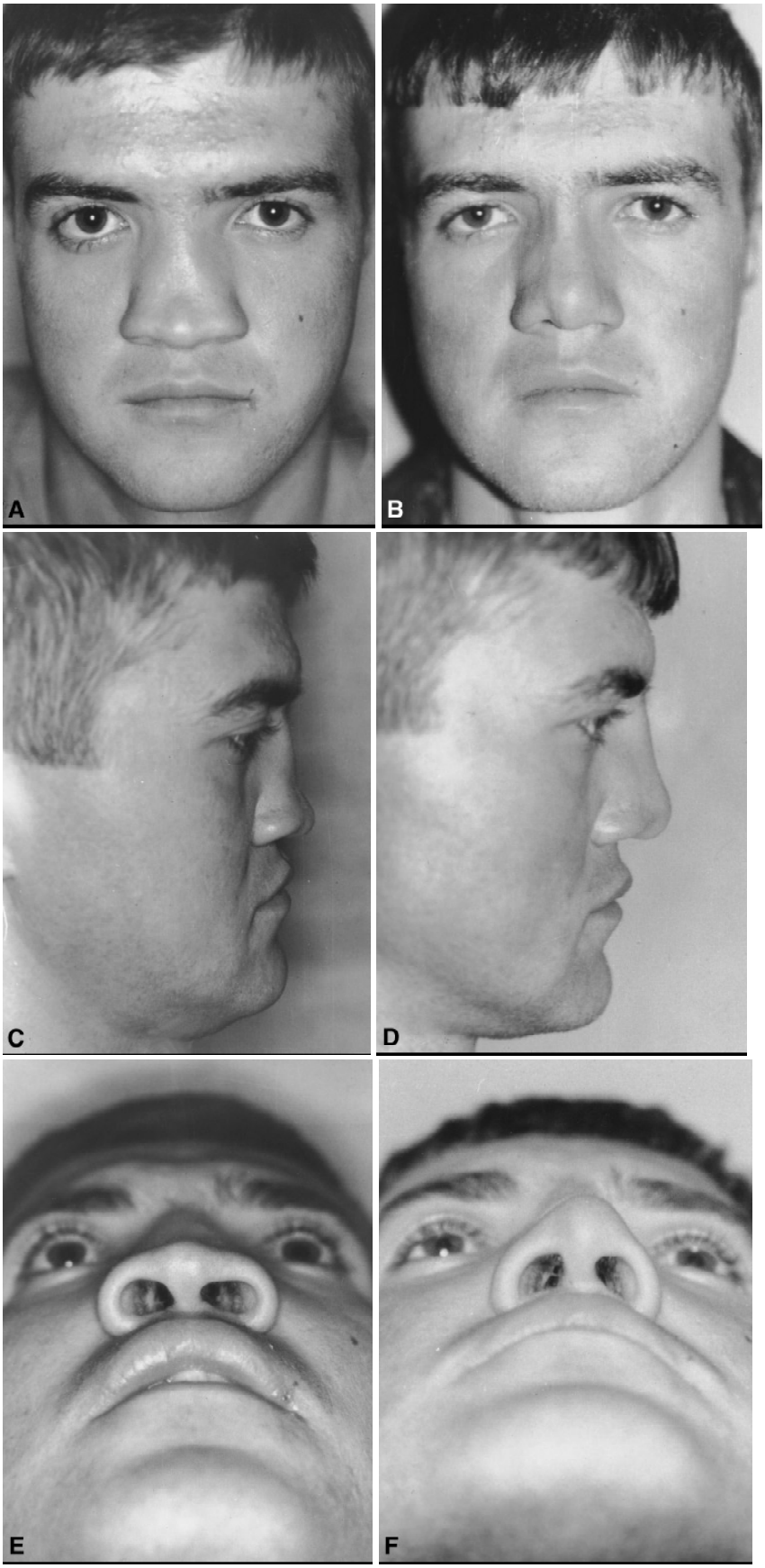


**Fig. 1. (a)** Preoperative anterior view of a patient with saddle nose. **(b)** Postoperative anterior view at 15 months. **(c)** Preoperative lateral view of the same patient. **(d)** Postoperative lateral view at 15 months. **(e)** Preoperative inferior view. **(f)** Postoperative inferior view at 15 months.

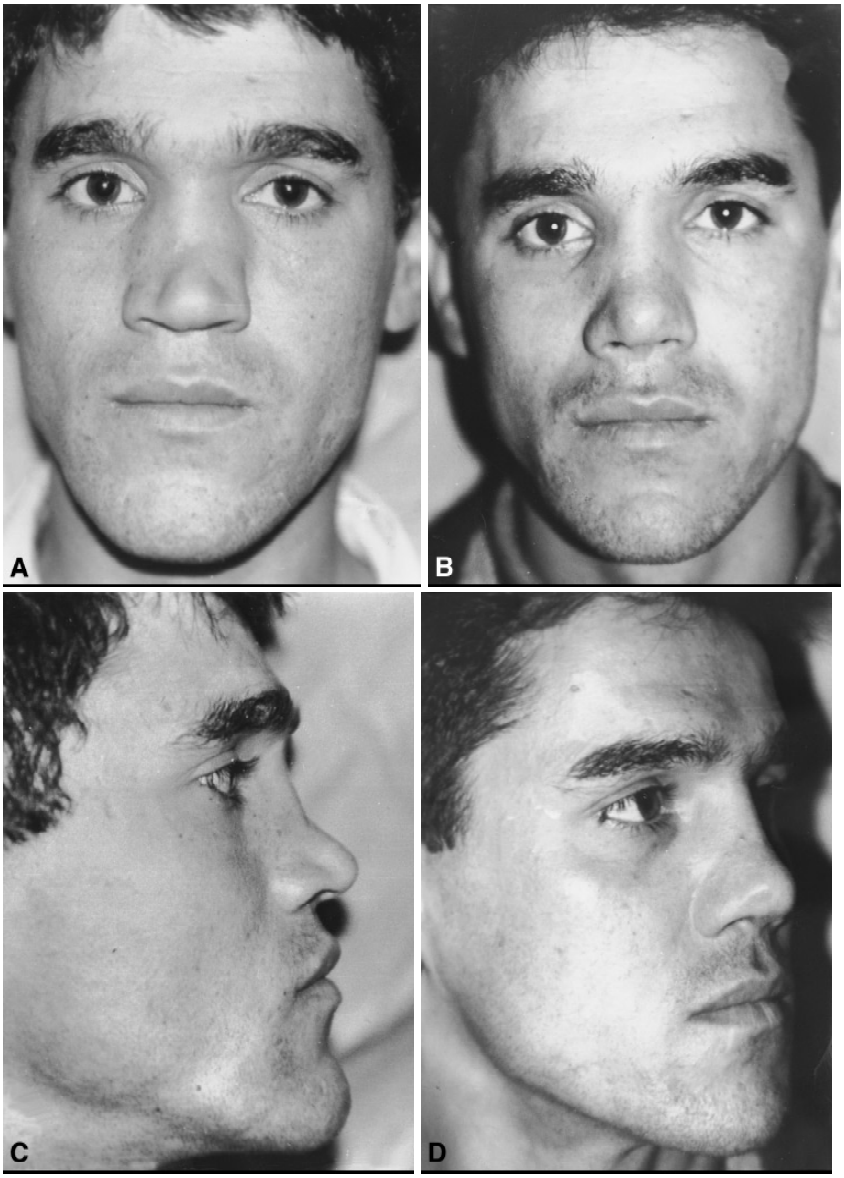


**Fig. 2. (a)** Preoperative anterior view of a patient with saddle nose. **(b)** Postoperative anterior view at 14 months. **(c)** Preoperative lateral view of the same patient. **(d)** Postoperative lateral view at 14 months.

to be the best material, although there are problems associated with its use. The use of rib cartilage can be limited because of calcified rib cartilage [2,4,12]. Cartilage, however, tends to curl and bend particularly in younger individuals. Bone grafting is contraindicated if contact between the bone graft and host bone cannot be achieved and there is a critical technical detail in shaping the graft, for it is the fit of the graft within the concavity of the deformity that ensures the stability of the transplant and its consolidation to the host bone. Thus the surgeon must be experienced in order to carve and shape a cartilage or bone framework [7]. The preshaped implant allows an optimal contour. In addition, it can be trimmed easily, and texture of implant provides excellent stabilization [13].

Silicone implants are not good alternatives because there is no vascular ingrowth; capsule formation and extrusion are frequent. Some of the most severely shaped noses are those seen following the extrusion of an alloplastic implant associated with suppuration [6,7]. The pores of Proplast do not readily interconnect and they tend to be unstable when implanted into tissue. If tissue ingrowth does occur, then fragmentation of the Proplast implant has been observed [1,11]. Recent clinical and experimental studies have shown rapid vascularization and soft tissue ingrowth of porous polyethylene implant [8–10]. This creates a structure that acts like living tissue [11]. Histopathological examinations of the implants have revealed collagen and mature blood vessels throughout the interstices of the implant [9,13].

Porous polyethylene has wide applications in cranial, maxillofacial, orbital, and ear reconstructions, and the material is described as infection-resistant [5,9,13]. Our findings are similar to previous publications with use of porous polyethylene implants.

Because many of these noses have a traumatized

saddle or flat appearance, widening of the bony dorsum or deviation, osteotomy of the lateral walls of the nose is required. Some of them have a thickened deviated septum that also requires straightening by submucous resection of the remaining septal framework. Two-stage reconstructions of such deformities have been advocated when using bone or cartilage grafts [7]. We used porous polyethylene at the same stage without any complication.

Our 14-month follow-up time is short, and this is acceptable and encouraging when compared with solid implants like Silastic which has a 50% exposure at 5 months [6].

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