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New surgical technique in restoring the chin lost due to trauma by using a subperiosteal problast implant

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ABSTRACT

Bone grafts are the most common techniques used in maxillofacial surgery in restoring any lost or defective bone. This novel surgical technique utilizes a new modified problast to restore the contour of the defected chin.

Keywords: *facial asymmetry; facial trauma; fracture mandibular bone; war injuries*

INTRODUCTION

The new, modified problast implant[1] is mostly used for cosmetic restoration, is light in weight, is ultra-porous (70–90%) or porous by volume, can be molded to the required esthetic shape, and can be autoclaved at the operation room. The subperiosteal problast implant promotes the tissue fibers to be ingrown through the problast porosities, which give fixation to the implant (no need for wire fixation of the implant to the underling bone as in bone grafts). The problast implant has a low crushing strength; it is resorbed by external pressure. I found that it is not resorbed when restoring the nonfunctional bones such as the chin.

SURGICAL PROCEDURES

Twelve patients have been admitted to the maxillofacial center with partial or complete loss of the chin due to trauma.

Medical history taken demonstrated no drug allergy, and clinical examination of all patients showed normal vital signs.

The surgical operations of the 12 patients were performed under general anesthesia with nasoendotracheal intubation.

The surgical operations of four patients were performed intraorally, with local anesthesia with epinephrine injected in the synthesis area for hematomas.

Horizontal incision was made through the mucosa midway between the depth of the vestibule and the wet line of the lower lip.

By dissection, the mentalis muscle was incised, oblique incision posterior to the cusped-bicuspid root was made, the mental nerves were protected, the periosteum was strapped, adequate pocket size to the implant was made, and the implant was then introduced. To stabilize the implant in position, a resorbable suture through the lip and the periosteum was performed, and the two layers were brought closer with interrupted resorbable suture to avoid postoperative infection. The tissue over the implant closed without tension to prevent resorption of the implant by pressure.

I performed one case intraorally with local anesthesia with only two inferior dental block injections on both sides of the mandible together with mucosal infiltration anesthesia.

I found that the general anesthesia is more convenient to the patient and to the surgeon.

The other eight cases were performed by using the extraoral approach. Through the skin and subcutaneous fat, a carved incision was performed in the submental region parallel to the interior border of the synthesis. To create a pocket over the synthesis, the mentalis muscle and the periosteum were incised and reflected,[2,3] and a pocket size was created to accumulate the implant over the pogonion. Stabilization of the implant was done by resorbable suture, and the wound was then closed in layers.

DISCUSSION

Two years' clinical follow-up showed that out of the 12 cases performed with this novel surgical technique, only in eight cases the problast retained its position. In the other four cases, the problast had moved out of its position due to direct facial trauma, resulting in a bad-looking appearance.[4] To give the patients a good permanent esthetic appearance, I injected the problast along with a mixture of a biocompatible material such as beta-tricalcium phosphate containing oily calcium suspended in combination with a porous hydroxyl appetite to promote bone formation through the problast.[5,6] Three years' clinical follow-up after injection showed a good permanent appearance. X-ray examination showed bone ingrowth through the porous problast, resulting in a good permanent esthetic appearance due to the fixed problast to the underlining bone.

RESULTS

This new surgical technique was found to be an easy, simple, and nontraumatic technique as compared with the other techniques. No wire fixation of the implant to the underlining bones was needed. Therefore, less time was consumed by the surgeon in the operating theater to implement this technique.

Three years' follow-up after injection of the problast with the compatible material showed a good permanent esthetic appearance. More studies and follow-up are recommended in this regard.

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