

New Surgical Technique to Restore Facial Bone Loss and Deformities by New Modified Proplast Implant

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Abstract

Bone and skin grafts are the most common grafts used in oral surgery. The graft may be autogenic, isogenic, allogeneic, and xenograft. This new surgical technique is to encourage bone ingrowth through the and replacement of the Proplast by bone. Combination of the Proplast with biocompatible materials by painting the Proplast with this mixture encourages bone ingrowth through its porosity which is extra porous (70%–90%) by volume. This case report describes a patient with zygomatic bone loss treated by this new surgical technique.

Keywords: Deformity, facial bone, graft, new technique, Proplast implant

INTRODUCTION

The term “implant” means the transplantation of nonliving inert material and the graft means the transplantation of living tissue, and its success depends on the survival of the transplanted cells. Implants include synthetic materials such as ceramic,^[1] hydroxyapatite, and Proplast^[2] which are called alloplastic material, and the implant also includes metals such as.^[3] The graft may be autogenic grafts taken from the same individual, isogenic grafts taken from an individual who is genetically similar or related to the recipient or the host, allogeneic graft taken from individual who is not genetically related to the recipient or host, and xenograft taken from a donor of another species, for example, animal bone grafted to men.

Autogenous bone grafts to reconstruct and recontour the lost facial bones are the ideal technique; the facial bone loss may be reconstructed and contoured by many types of autogenic bone grafts such as cancellous autograft, iliac crest bone graft, costochondral graft, and autogenous particulate bone graft.^[4]

CASE REPORT

A 21-year-old male admitted to the maxillofacial center with left zygomatic bone loss due to a shell injury. Medical history demonstrated no drug allergy and no previous surgery. Clinical examination showed normal vital signs, no altered facial sensation, and no facial paralysis.

The new modified Proplast used in this new surgical technique being designed for surgical implantation, especially in cosmetic surgery, has a low crushing strength and it may be resorbed by external pressure.

The aim of this new surgical technique is to encourage bone ingrowth through the Proplast and replacement of the Proplast by bone that means convert the implant into graft.

DISCUSSION

Painting the Proplast with a mixture of the biocompatible material such as β , Tricalcium phosphate^[5] with an oily calcium hydroxide suspended^[6] (stimulate osteoconduction, with concentration of the growth factors), together with super porous Hydroxyapatite^[7] encourages bone ingrowth through its porosity.

To construct the lost zygomatic bone, the patient was operated through an extraoral approach under general anesthesia with nasotracheal intubation. The Proplast had been inserted through a coronal incision [Figure 1]. A dissection carried down the lateral orbital rim to the lower border of the zygomatic

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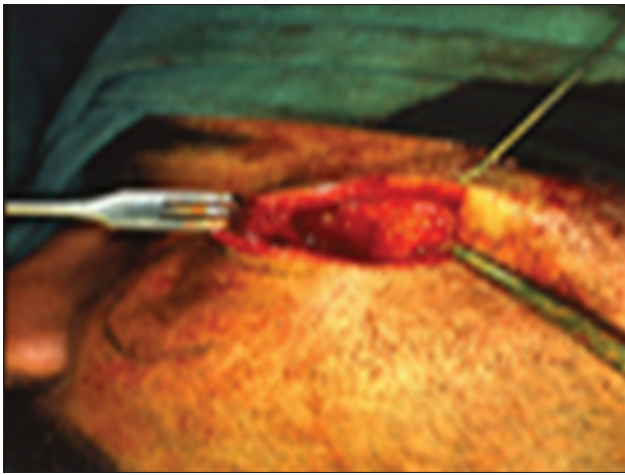


Figure 1: Coronal incision retracted

space just inferior to the orbital rim and angulated below the inferior orbital nerve close to the pyriform aperture (avoid perforation to the nasal cavity) and just above the upper sulcus (avoid perforation to the oral cavity).^[8,9]

This creates a surgical pocket large enough for the Proplast implant to be inserted and gives the required esthetic contour of the zygomatic bone [Figure 2a], the wound closed in layers without tension to avoid some resorption of the Proplast [Figure 2b].

It is a reasonable simple surgical technique and less trauma to the patient. Less time consuming by the surgeon, it needs no fixation of the Proplast to the underlying bones. Indicated for patients, how are medically contraindicated to the extensive surgery such as bone graft surgery, osteotomies, or refuse such surgery.

All the combinations of the materials used in this technique are biocompatible, not rejected by patient tissue, and give a permanent esthetic result. Few months postoperative, a growth of bone tissue through the implant start and complete replacement of the implant by bone is expected; also, the clinical finding showed a result superior to that achieved by the Proplast alone. It is a new idea; it is

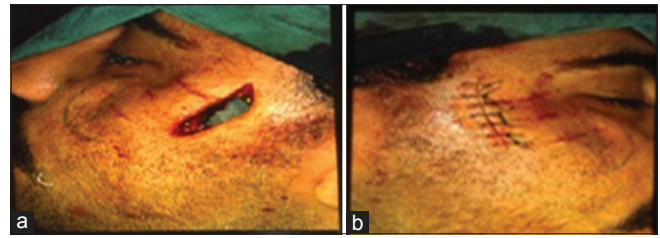


Figure 2: (a) Proplast inserted. (b) Wound sutured

an innovation of a new surgical technique in restoring the facial bone loss and deformities. More studies and follow-up are recommended.

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Conflicts of interest

There are no conflicts of interest.

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