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RESEARCH ARTICLE

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## Innovation of new surgical technique to contour the missing bone in the face of survivors of traffic and war injuries by new modified Problast painted with a mixture of biocompatible materials

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### ABSTRACT

The bone grafts taken from the patient himself (Auto genius graft) to restore the contour of the lost facial bone lost is the ideal technique on the road to recovery from injuries of war or traffic accidents. This novel surgical procedure utilizes a new modified Problast painted with a mixture of a biocompatible materials to restore the lost parts of the zygomatic bones, due to traffic accidents, shell injuries, or bullet injuries.

**Keywords:** *facial asymmetry, facial trauma, fracture zygomatic bone, war injuries*

### INTRODUCTION

The Problast implant (Allow plastic) is a new modified material,<sup>1</sup> designed especially for cosmetic restoration. It is ultra-porous (70–90% porous by volume) and painted with a mixture<sup>2</sup> of biocompatible materials to promote the bone growth. The porous Problast implant has been used in this new technique as a sub-periosteal implant to restore the missing part of the Zygomatic bone in a facial trauma.<sup>3</sup> It is also used among patients who are contraindicated to bone graft or refuse such surgery. It is

an option when the surgery fails, owing to insufficient blood supply in the recipient area or excessive scar tissue that provides insufficient tissue to cover the bone transplant without tension.

### MATERIALS AND METHOD

The ultra-porous Problast implant is painted (in some cases immersed totally) with a mixture of a biocompatible phosphate containing oily calcium suspension,<sup>4</sup> which (stimulate the osteo conduction)

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in combination with a porous Hydroxyl apatite, promote bone formation through the porous Problast implant. All of these materials are biocompatible (inert), which means that they are not rejected by patient tissues.

### SURGICAL TECHNIQUE

To prepare the patients for surgery, a complete medical history as well as the mode of onset, and the duration of the injury are recorded, hematological examination, and x-rays of the face (lateral oblique, true lateral, and posterior anterior views) are profound.

In the operating room, an autoclaved Problast is scapple to the required shape to give it a good aesthetic aspect. The carved Problast is inserted through the coronal incision if a ready-made shaped Problast is found (Figures 1 and 2) by an extra oral approach.



**FIGURE 1.** Ready-made shaped Problast.



**FIGURE 2.** The Problast carved by scapple.

Under a general anesthesia, with oro endotracheal intubation, a dissection through a coronal incision is carried down from the lateral orbital rim to the lower border of the zygoma, just inferior to the orbital rim, angulated below the inferior orbital nerve close to the pyriform aperture medially, and just above the upper sulcus inferiorly, to create enough space to accumulate the subperiosteal implant. It is not necessary to fix the subperiosteal Problast implant to the underlining bones as in a bone graft. The ingrowth of fibrous tissues through the porosities of the subperiosteal implant give it a good temporary fixation. The wound is then sutured in layers without tension to avoid resorption of the implant by the pressure (since the Problast implant has a low crushing strength).

### POST-OPERATIVE

The patient is instructed to avoid sleeping on the operated side for few weeks to avoid any resorption of the implant. It is not necessary to prescribe any antibiotic as prophylaxis cover. The Alloplastic Problast is a radiolucent material. Thus, a regular post-operative/clinical follow up study for a period of three years is needed, until clear a bone deposition seen in the X-ray.

### RESULT AND CONCLUSION

The patients with bullet injuries were found to have a non-satisfactory result due to the comminuted<sup>5,6</sup> fracture of the zygoma, super imposed by an infection.<sup>7</sup> The bone spicules start to in grow in the sub-periosteal implant in about eight weeks (Table 1). No clinical difference was found between the painted Problast implant and the totally immersed problast in the mixture of compatible materials.<sup>8-10</sup> In 3–5 years, all the Problast implant is expected to be resorped and replaced by bone, followed by a remodeling of the bone. This gives a natural aesthetic appearance to the zygomatic bone, which means that the Problast implant has transformed

**TABLE 1.** Demographic data of patients with different type of trauma treated by a sub-periosteal implant mixed with a biocompatible material

No. of patients	Age	Sex	Type of trauma	Result
3	25–30	Male	Traffic Accident	Satisfactory
1	28	Male	Shell Injury	Satisfactory
2	30–36	Male	Bullet Injury	Non Satisfactory

to a normal living bone.<sup>11</sup> This innovative and new surgical technique is in need of more research, and constant follow-up is necessary to observe the deposition of bone and the final permanent aesthetic appearance. This new surgical technique is a relatively easy, simple, non-traumatic surgery, with less time consumed by the surgeon in the operating theater, delivering a satisfactory final aesthetic aspect.

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