

## **Surgical Mesh an Eye Support Post Total Maxillectomy: A Case Study and Review of Literature**

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### **Abstract**

**Introduction:** Post Maxillectomy reconstruction is more commonly done by prosthesis. Surgical management by microvascular grafting or autogenous tissue is more agreeable but is not always possible. Also surgical reconstruction is expensive, not readily available and if failure occurs then prosthetic reconstruction becomes a better option.

Given the irregular cavity created post Maxillectomy and the shape of the orbit, meshes provide a reliable alternate to bone and help in preventing enophthalmos, diplopia, visual acuity defects, restricted eye movements etc.

**Material and Methods:** After complete removal of the maxilla and achievement of hemostasis, the mesh was cut to adequate shape. The mesh was then inserted in the defect to form a sling and sutured to soft tissue around zygoma and attached soft tissue laterally and to nasal septal mucosa or turbinates medially using Vicryl 3-0 sutures. Adequate support was achieved for the orbital contents in a hammock like fashion. Incision was closed and the cavity given time to heal and approximately 3-4 weeks after surgery a fabricated obturator is used for rest of the cavity.

**Conclusion:** Prolene propylene mesh though a primary material in abdominal surgery can be used to as an effective Post Total Maxillectomy Orbital support both in case of obturator use or in free flap repair.

**Keyword:** Maxillectomy, Mesh, Reconstruction.

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### **Introduction**

Maxillectomy has long been the cornerstone for the treatment of maxillary carcinomas. The procedure itself has come a long way, from being considered a procedure with high mortality due to heavy blood loss, to being successfully performed

all over the world every day. Many approaches are used to perform the procedure, the most common being through the Gingivo-buccal incisions, lateral rhinotomy incisions and a modification of it, called the Weber Ferguson incision.

According to Aramany Maxillectomy defects are divided into six classes[1]. These are - a. Class I: The midline resection of the maxilla; the teeth are maintained on one side of the arch. b. Class II: The unilateral defect, retaining the anterior teeth on the contralateral side up to 2nd premolar. c. Class III: The defect occurs in the central portion of the hard palate and may involve part of the soft palate. d. Class IV: The defect crosses the midline and involves both sides of the maxillae up to 2nd premolar on contralateral side. e. Class V: The bilateral defect and lies posterior to the remaining abutment teeth. f. Class VI: The bilateral defect and lies anterior to the remaining abutment teeth.

Post Maxillectomy reconstruction is more commonly done by prosthesis. Surgical management by microvascular grafting or autogenous tissue is more agreeable but is not always possible[2]. Also surgical reconstruction is expensive, not readily available and if failure occurs then prosthetic reconstruction becomes a better option.

One of the most challenging aspects of this highly radical procedure is orbital floor reconstruction to prevent enophthalmos. Currently, various types of materials, such as titanium meshes, hydroxyapatite, silica gel, Teflon, and Medpor, and autogenous bones, such as the iliac and cranial bones and ribs, are used for orbital floor reconstruction. Mainly these materials have been studied more in orbital floor fractures but their use in post total Maxillectomy cases have also been done. In this study, we used the Prolene mesh generally used in Hernia surgery a cheaper, more cost effective and more easily available alternate to titanium mesh for orbital floor reconstruction. Given the irregular cavity created post Maxillectomy and the shape of the orbit, meshes provide a reliable

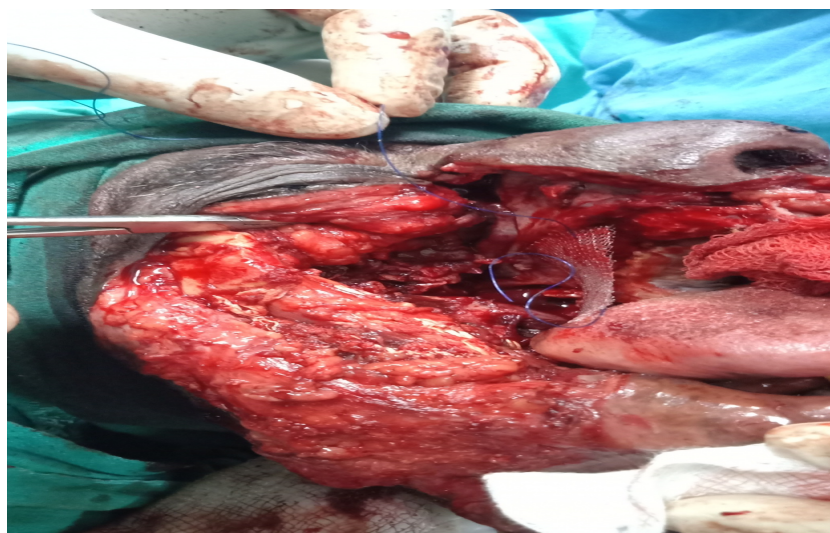
alternate to bone and help in preventing enophthalmos, diplopia, visual acuity defects, restricted eye movements etc. Although worldwide, titanium mesh still remains the material of choice for reconstruction post Maxillectomy, Prolene Mesh makes a cheaper and readily available option.

### Materials and Methods

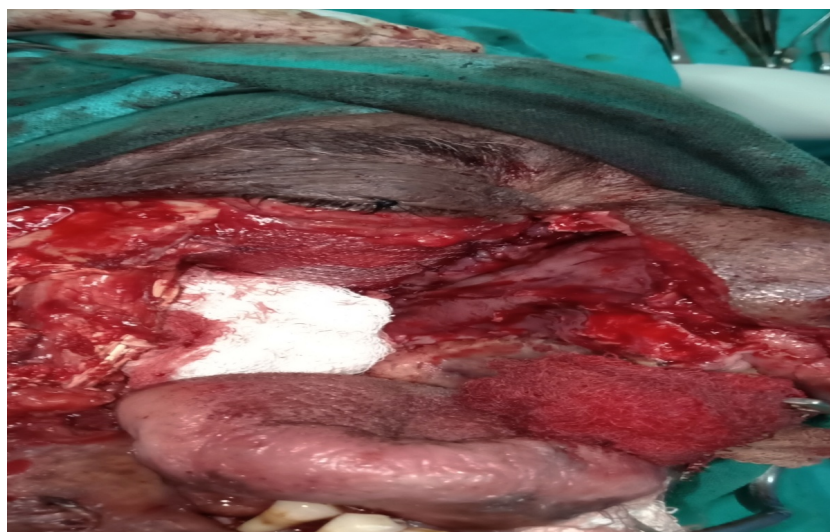
Between June 2017 and September 20123, we performed total 18 maxillectomies at RUHS-CMS, Govt. RDBP Jaipuria Hospital, Jaipur.

Standard Weber Ferguson incisions were given and total maxillectomies were performed. None of the cases required orbital exenteration. Intra-operatively, the Prolene mesh was fixed to the residual bones for the reconstruction of hard-tissue defects after tumour resection. None of the cases reported any infection during the follow up.

All patients underwent preoperative CT PNS with 3D reconstruction to assess the size of the possible defect that would be created. Total Maxillectomy was performed in all the cases with standard incisions, without orbital exenterations. A monofilament polypropylene mesh was used in all the cases. After complete removal of the maxilla and achievement of hemostasis, the mesh was cut to adequate shape. The mesh was then inserted in the defect to form a sling and sutured to soft tissue around zygoma and attached soft tissue laterally and to nasal septal mucosa or turbinates medially using Vicryl 3-0 sutures. Adequate support was achieved for the orbital contents in a hammock like fashion. Incision was closed and the cavity given time to heal and approximately 3-4 weeks after surgery a fabricated obturator is used for rest of the cavity.



**Figure 1: Prolene mesh being fixed medially to septal mucosa and Turbinates**

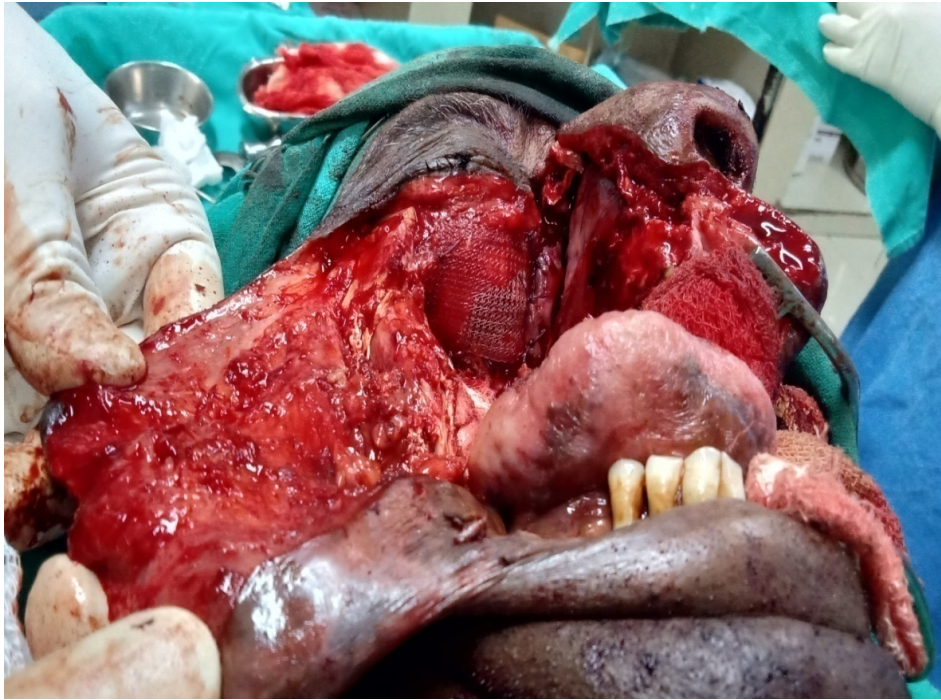


**Figure 2: Mesh fixed laterally on soft tissue around zygoma**



**Figure 3: Final Result**





**Figure 4: Final outcome before closure**

### Discussion

A diplopia and enophthalmos post Maxillectomy is a debilitating condition and a reason for significant morbidity for the patient, generally a support to orbit infraorbitally will ameliorate this condition.

The model support material for the orbital floor must be able to withstand herniation of the orbital content. Several options are available for orbital floor reconstruction, including alloplastic materials and autologous and allogeneous bone grafts[3, 4]. Bone grafts have risk of, high resorption rates thus low rate of integration and moreover they have high rates of viral infection transmission

PROLENE Polypropylene Mesh is nonabsorbable and is constructed of the same knitted polypropylene monofilament as PROLENE Polypropylene Suture[3] it is an ideal support material for the following reasons:

1. Resists degradation by tissue enzyme and retain strength indefinitely in clinical use.

2. Its bidirectional elastic property allows adaptation to various stresses encountered in the body.
3. The low tensile strength tends to produce less or just appropriate inflammatory response.
4. It is quite cheaper and readily available then it's other counterparts.
5. Similarly, being more flexible then titanium, bone or cartilage it can be remodelled and adjusted according to the need.

### Conclusion

Prolene propylene mesh though a primary material in abdominal surgery can be used to as an effective Post Total Maxillectomy Orbital support both in case of obturator use or in free flap repair.

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