

## Case Series

# RECONSTRUCTION OF MAXILLOFACIAL DEFORMITIES WITH SILICONE IMPLANTS

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## ABSTRACT

*Maxillofacial reconstruction is a very demanding job and requires proper skills and thorough treatment planning. An insight into a variety of reconstructive options and their outcomes must be considered before choosing a particular treatment modality. Although no material is ideal, the reconstructive material and implant should be nonimmunogenic, nontoxic, cost-effective, easily tailored and biocompatible.*

**Case Presentation:** *We present a case series and would like to share our experience of four patients who presented with facial deformities during a period from May 2014 to June 2016 and received silicone Maxillofacial implants successfully.*

**Conclusions:** *Silicone materials showed promising results with excellent tissue compatibility, ease of handling, patient comfort, good esthetics and relatively less morbid procedure. No single case has shown tissue irritation and infection. Silicone maxillofacial implants show great promise as another weapon in the reconstructive surgery.*

## INTRODUCTION

The reconstruction of maxillofacial defects both congenital and acquired is a very demanding job and requires proper skills and thorough treatment planning. An insight into a variety of reconstructive options and their outcomes must be considered before choosing a particular treatment modality<sup>1,2</sup>. Autogenous tissues and bone and alloplastic materials are available and a variety of compositions of synthetic materials allows the surgeon to choose a specific combination of strength, elasticity, and durability for a given procedure. Although no material is ideal, the reconstructive material and implant should be nonimmunogenic, nontoxic, cost-effective, easily tailored biocompatible<sup>3,4</sup>.

The use of Silicone facial implants was first reported in 1953 and since then this material has been used worldwide. In our country the use of silicone implants in Oral & Maxillofacial surgery is limited to silicone based prosthesis<sup>5,6</sup> or Temporomandibular joint interpositioning<sup>7</sup>. We present a case series and would like to share our experience of four patients

who presented with facial deformities during a period from May 2014 to June 2016 and received silicone Maxillofacial implants successfully.

## CASE 1

A 20 years old male from district Buner Khyber Pakhtunkhwa, with left hemifacial microsomia reported to us in May 2014 and was only concerned about his deficient left cheek prominence. He was advised a 3D CT scan. He was further evaluated by a medical specialist for any other congenital abnormalities and was declared fit for general anesthesia. Different augmentation options were discussed with him and his father. They opted for silicone implant. A custom made



Pre Op

Post Op

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silicone implant (Silimed, Brazil)<sup>8</sup> of optimum width, length and thickness (medium A=2.3cm, B=4.3cm, C=0.42cm) was selected according to the patient's defects size. Under general anesthesia and nasotracheal intubation intraoral incision was made in the maxillary left buccal sulcus. After reflecting mucoperiosteum, the implant was inserted and secured with 6 mm titanium bone screws at 3 different sites. The prominence was checked intraoperative. Wound was closed using non resorbable sutures. The patient was prescribed antibiotics and analgesics and was kept on nasogastric feeding tube for 10 days.

Post operative assessment was done at 10 days where slight surgical edema and mild pain was noted. The patient condition was found satisfactory at 3 months and 6 months and 12 months post op visits.

Upon request, an informed consent was granted for a portion of the face to be used for research purposes.

### CASE 2

A 25 years old female from Abbott Abad was referred by a colleague in November 2014 with retrognathic chin. She was giving a long history of multiple consultations and opinions including orthognathic surgery but she was not willing for any of them. She reproduced a recent 3D CT scan and her case was evaluated. She was given a choice of silicone chin implant and she showed her willingness for the surgical procedure after a week time. She was evaluated for General anesthesia and was declared fit. Along medium size (A=4.8cm, B=1.7cm, C=0.8cm) silicone implant from Silimed Brazil<sup>8</sup> was selected and was inserted through a labial incision. Intraoperative placement and prominence was checked. The desired result was obtained and the implant was secured with 9 mm bone screws. The wound was closed with sutures and nasogastric tube inserted for 10 days. A routine successful postoperative assessment at 3 months and 6 months was done. A third assessment at 12 months was planned but the patient was unable to come from abroad although they sent their photographs and reported no adverse complaint.

An informed consent was not granted for a portion of the face to be used for research purposes.

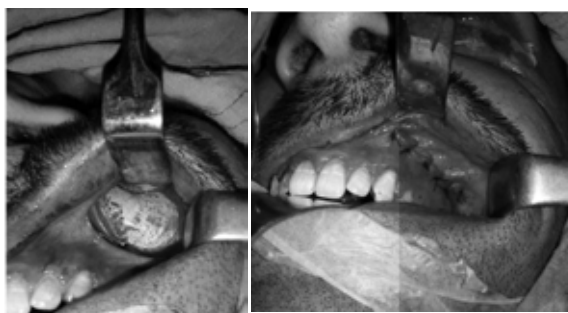
### CASE 3

A 27 years old constable from District Dir Khyber Pakhtunkhwa reported to the Outpatient department of Khyber College of Dentistry with a one year history of left zygomatic complex fracture. He was referred to Maxillofacial surgery Unit where he was evaluated and found that his left infraorbital bone and anterior wall of maxillary sinus were depressed. His mouth opening and occlusion were normal and there were no other symptoms. His only concern was esthetic. Different options like bone graft, titanium mesh and silicone malar implant were discussed and he opted for the silicone implant. On his appointment date, a silicone implant was arranged. The size selected was large silicone implant from Silimed8 (A=3.2, B=2.4, C=0.47cm). The implant was inserted in a fashion similar to the one in Case No.1. On first post op visit at day 10, there was mild to moderate swelling and a serous discharge from the wound margins. After stitch removal, a small area was opened with artery clamp and



Pre Op

Post Op



Per Op

a small hematoma was drained. Area was thoroughly washed and patient was advised to report on follow up visits, where his condition was found satisfactory.

Upon request, an informed consent was granted for a portion of the face to be used for research purposes.

#### CASE 4

A 19 year old female patient from District Buner presented in January 2015 with hemi mandibular hypoplasia. On examination occlusion was normal but there was gross asymmetry and hypoplasia at right angle body region. She was given detailed information regarding different options including osteo-distraction and bone augmentation and then silicone where she opted for the latter. The cost, procedure and possible complications were explained to the patient. Through a small Risdon incision a trimmable silicone block was gradually trimmed and inserted. Once the desirable symmetry was achieved no further trimming and adjustment was done. The silicone implant was secured with 9 mm bone screws. Follow up visits were arranged and explained to the patient. At last visit and thereafter

region. These deformities can be corrected by a variety of both autogenous and alloplastic reconstructive procedures. These materials are autogenous bone grafts, free tissue transfer, methylmethacrylate, different types of bone cement, or Silastic porous polyethylene (silicon) where no single material is free from disadvantages<sup>9,10</sup>.

Bone resorption and donor site morbidity are associated with free tissue transfer and grafts while alloplastic materials exhibit foreign body reactions, resulting in high infection and extrusion rates. Other materials like bone cements and hydroxyapatite cement have the disadvantage of poor workability and technique sensitivity to achieve good results<sup>11,12</sup>.

Because of the potential antigenicity and technique sensitivity of available material, Silicone is relatively a potential reconstructive candidate to be used in maxillofacial region with great success. Augmentation with silicone implants for both aesthetic and reconstructive purposes is an increasingly common surgical procedure. Good results are obtained with few complications. Infection is rare even with trans oral placement<sup>13,14</sup>.

#### CONCLUSION

In our experience silicone materials showed promising results with excellent tissue compatibility, ease of handling, patient comfort, good esthetics and relatively less morbid procedure. Moreover out of four cases, no single case has shown tissue irritation and infection. Malpositioning of implants is infrequent, and patient satisfaction is high, in that no patient underwent removal of silicone implant once inserted.

#### RECOMMENDATION

It appears at first glance that silicone maxillofacial implants show great promise as another weapon in the reconstructive surgery. Although it is suggested to evaluate this material with more experience and further studies.

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Pre Op



Post Op

the patient condition was equally satisfactory.

Upon request, an informed consent was granted for a portion of the face to be used for research purposes.

#### DISCUSSION

Facial anatomical disharmony can occur as a result of trauma, pathologies and congenital deformities, resulting in functional, esthetic and psychological morbidities. Maxillofacial regions of particular interest in such cases are chin, malar bone and nasoethmoid

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