

# Implant placement in the Posterior Maxilla: A Staged Approach

## Abstract

When one has a patient coming to the dental office for replacement of maxillary posterior teeth, one faces the challenge of decreased available bone height due to the proximity of floor of the maxillary sinus. Dynamic bone remodeling takes place after teeth are extracted, often reducing bone height and bone width and leading to vertical resorption of the alveolar ridge. Sinus floor elevation is a predictable procedure if performed correctly. Following is a case report of the procedure. Depending upon available bone height, a staged or simultaneous procedure can be performed. In the case documented, since the bone height was less than 3mm, a staged approach was followed. Sinus floor elevation was carried out in the first stage followed by Implant placement in the second after six months.

## Key Words

Sinus floor elevation; lateral window; staged approach

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## INTRODUCTION

When one has a patient coming to the dental office for replacement of maxillary posterior teeth, one faces the challenge of decreased available bone height due to the proximity of floor of the maxillary sinus. Dynamic bone remodeling takes place after teeth are extracted, often reducing bone height and bone width and leading to vertical resorption of the alveolar ridge. The procedure involves the creation of a space by elevating the Schneiderian membrane and placement of a graft consisting of autogenous, allogenic, or alloplastic material in the floor of the maxillary sinus. This procedure can be performed simultaneously with implant placement or in a staged fashion depending upon residual bone height. In the case report, since the bone height is less than 3mm, a staged approach was followed. The direct sinus lift procedure was performed at stage one followed by Implant placement after six months.

## CASE REPORT

Patient, Male aged 47 arrived to the clinic with missing upper right molars. According to history provided by him, they were extracted about 10 years back. Intraoral periapical radiograph revealed decreased bone height with respect to sinus lining. He was advised Cone beam computerized tomograph for the same for better evaluation. The

CBCT scan revealed decreased bone height less than 3mm. Using the guidelines provided by the ITI treatment guide (Volume 5) a staged implant placement was planned. According to this protocol, the direct sinus lift is first performed through a lateral window. After 4-6 months of the augmentation procedure, implants are placed in that region. Before the procedure the necessary diagnostics such as CBCT, Diagnostic casts, Blood investigations were done. The patient was prescribed the appropriate antibiotics, steroids and painkillers. According to the timetable of various SFE approaches (ITI treatment guide - volume 5), if available bone height is less than 3mm, one would have to do a lateral approach direct sinus lift and place implants after six months. In the first stage, a direct sinus lift with a lateral approach was carried out. Following which, after six months, Two Xive implants of 4.5/9.5 was placed in the first and second molar region.

## Stage 1

A mid-crestal incision was made with a 15c blade. A full thickness mucoperiosteal flap was raised. A lateral window outline was made using a rotary carbide bur with continuous saline irrigation. The extent of the window was decided by the number of teeth to be replaced. After the wall was fractured, the Schneiderian membrane was gently raised and



Fig. 1: Incision



Fig. 2: Flap reflection



Fig. 3: Lateral window outline created



Fig. 4: Window deepened



Fig. 5: Bony window infrafractured



Fig. 6: Intact sinus membrane seen



Fig. 7: Bellowing of the membrane seen



Fig. 8: PRF packed

the area was augmented using Platelet rich fibrin membrane. The PRF was made by centrifuging the patient's blood for 12 minutes at 3000 RPM. Membrane was made by putting pressure with wet gauze and draining the fibrin clot. Then a composite graft made of allograft (mineralised freeze dried bone), xenograft (cerabone) and alloplastic material (novabone putty) was placed. This was followed by placement of PRF membrane. The flap was sutured using monofilament (5.0). After six months, patient was recalled for evaluation, CBCT was repeated. A significant gain of height was seen. The surgery was

scheduled for placement of 4.5/9.5 (XIVE) implants in the first and second molar region. A full thickness mucoperiosteal flap was elevated and the implants were placed according to the correct prosthetic position. Both implants were placed at about 25Ncm<sup>2</sup>. Since the quality of bone was D1 type according to Misch's classification, it was decided to submerge the implants. The flap was closed with tension free closure and sutured with 5.0 monofilament suture. The implants will be loaded after four months.



Fig. 9: Composite graft used to pack

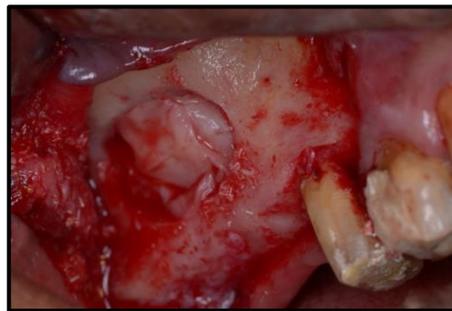
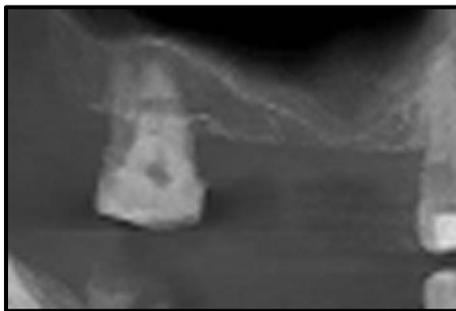
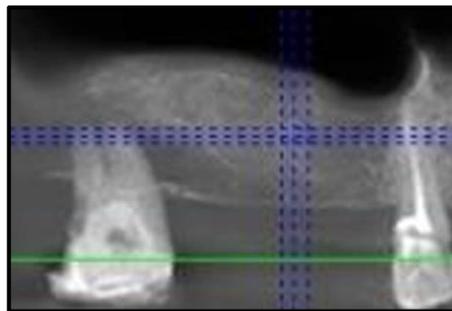


Fig. 10: PRF membrane



Pre-op



Post op (after six months)



Fig. 1: Preop



Fig. 2: Flap reflected

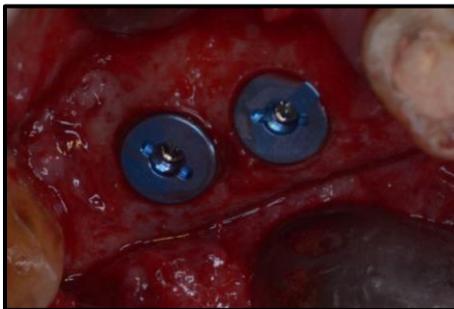


Fig. 3: Implants in place



Fig. 4: Sutured with monofilament (5.0)

**DISCUSSION**

Placement of Implants in the posterior maxilla can be predictable if treatment planned appropriately and done in a staged manner when indicated. Planning a two stage surgery may mean convincing the patient for two separate surgeries and this is difficult to do sometimes. There are many cases being documented where crestal drills and more non-invasive methods are being used to lift the lining even if RBH is less than 5mm by indirect sinus lift. May be in the future it could be possible to skip making the lateral window to lift the lining

completely, but as of now a staged procedure where direct sinus lift is done in the first stage and implants are placed in the second seem to be the more predictable way of achieving success.

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