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Clinical Consideration for Placing Implants in Temporal Bone to Retain Auricular Prosthesis –A Case Reports

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I. Introduction:

The loss of facial structure, such as eye, nose ,ear in an individual influences psychology to a greater level. The cause for the loss of facial structure is due to severe congenital anomalies, accident trauma,surgical intervention of destructive tumour ,or malignancies .The rehabilitation of maxillofacial defect can be done in two ways, such as autogenous and prosthodontic reconstruction .The major problem with artificial prosthesis is by the method of retention it can be achieved.- soft tissue undercut ,adhesives and implant to support the prosthesis .The implant retained auricular prosthesis has lot of advantages compared to the other method of retention. This article discuss about the clinical considerations in placing implant with two different types of implant in two patients.

Indications for autogenous& prosthodontic reconstruction:

The indications for autogenous reconstruction are – Classic microtia , Lower third ear intact , patient preference ,less compliance patient[1] .The indication implant retained auricular prosthesis are –Major cancer resection ,radiotherapy ,absence of lower half of ear ,severely compromised tissue ,patient preference, failed autogenous reconstruction ,potential craniofacial anomaly ,poor operative risk ,Microtia[1].

Guidelines for placing the implant:

The position of implant decide the final esthetic result .The implants should be placed 20mm distance to the centre of the external auditory meatus in 8 and 11 $_{o'}$clock positions for right side of the face and 1 and 4 $_{o'}$clock position for the left side (Fig 1) [2].With correct position of implant 20mm from the ear canal and 15mm between the implant, the prosthesis support bar will be underneath the helix. In certain situations like poor quality or insufficient bone volume,implants will be located less or more than 20mm from the external canal [2].Implants when located less20mm , the final prosthesis will have shallow concha .when implants are located more than 25mm ,then acrylic plate will have to be fabricated with an extension so that prosthetic ear can be positioned correctly[2].

Types of implant:

Implants used for retention of auricular prosthesis is classified into solitary implant and collective implant .The implant of solitary type is shown in Fig 2; it can be noted that the presence of flange at the top makes difference .Collective implant is a plate form of implant shown in Fig 3; This type of implant is used for implant retained nasal prosthesis, orbital prosthesis and ear prosthesis. Epiplatesdiffer from the root form implant in the distribution offorces and are more suitable for the areas which have less quality of bone ; prosthesis made from this will be mostly retained by magnet.

Case report I :

A female patient aged 55 lost right ear due to fire accident (Fig4) wants artificial ear prosthesis .The treatment option of implant retained ear prosthesis was discussed with the patient .CT scan of temporal bone was taken and the findings were shown in table 1.Epiplate type of implant (Fig3)mediconsystem ,South Africa was planned to use in this,7mm length of screw and diameter of 3mm selected to retain the plate. Curved skin incision was placed 2mm from the EAM ,elevate the skin flap anteriorly to visualise the EAM .The flap was elevated posteriorly to expose the temporal bone .The correct location of the plate is 20mm from EAM was located on the exposed temporal bone and shown in (Fig 5).Totally six screws of 3mm diameter and length of 7mm were necessary to fix the plate in position .Using 701 SS bur the outer cortex is pierced and the screws

were threaded in position , the plate was stable .The two abutment was screwed in position at the centre of the epiplate (Fig 6). Postero anterior view of skull taken to verify the position of the plate (Fig7).

Case report II:

A female patient aged 19 lost both ear due to fire accident (Fig8) wants artificial ear prosthesis .The treatment option of implant retained ear prosthesis was discussed with the patient .CT scan of temporal bone was taken and the findings were shown in(table 2).Root form of implant (Fig2) was planned to use in this case.Implant used in intraoral situation Genesis India length of 6mm ,diameter of 5mm was selected for placing in the temporal bone.Curved skin incision was placed 2mm from the EAM ,elevate the skin flap anteriorly to visualise the EAM .The flap was elevated posteriorly to expose the temporal bone .The guidelines for placing the implant was followed .Physio dispenser was used for the osteotomy preparation ,drilling speed of 2000rpm was set to use .The drilling sequence followed are – pilot drill of 2.3mm ,followed by 2.8mm,3.4mm,,3.8mm,4.4mm .The implant was inserted in the cranial and caudal position and threaded in position (Fig 9).Postero anterior view of skull taken to verify the position of the plate (Fig10).

II. Conclusion :

The type implant decide the nature of attachment to be used to retain the auricular prosthesis .Epiplate type of implant system was used in the first case where in which magnet type of attachment was planned to retain the prosthesis .The root from of implant was used in the second case ,this implant is one which used in the intraoral situation without flange .The type of attachment planned in this is bar and clip type of attachment. The implant was placed according to the standard protocol discussed earlier. The implant was placed keeping in about the prosthesis to be retained . The prosthodontic protocol about the two case will be discussed in the next case report.

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Table 1- The bone availability on the right side

Bone quantity	Cranial right side	Caudal right side
15mm from EAM	7.5mm	11.0mm
20mm from EAM	4.0mm	4.6mm
25mm from EAM	3.8mm	6.7mm

Table 2 –The bone availability on both right and left side

Bone quantity	Cranial right side	Caudal right side	Cranial left side	Caudal left side
15mm from EAM	6.7mm	5.9mm	5.7mm	5.1mm
20mm from EAM	2.8mm	4.3mm	2.7mm	3.5mm
25mm from EAM	4.0mm	2.4mm	2.7mm	3.3mm

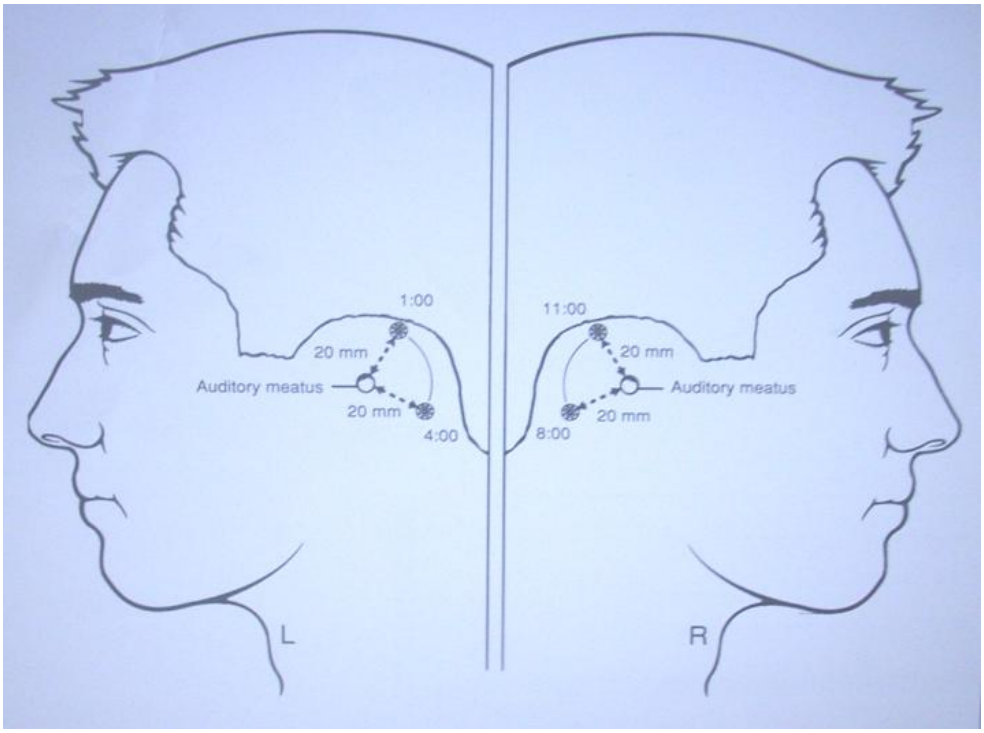

Fig 1- Guidelines for placing the implant

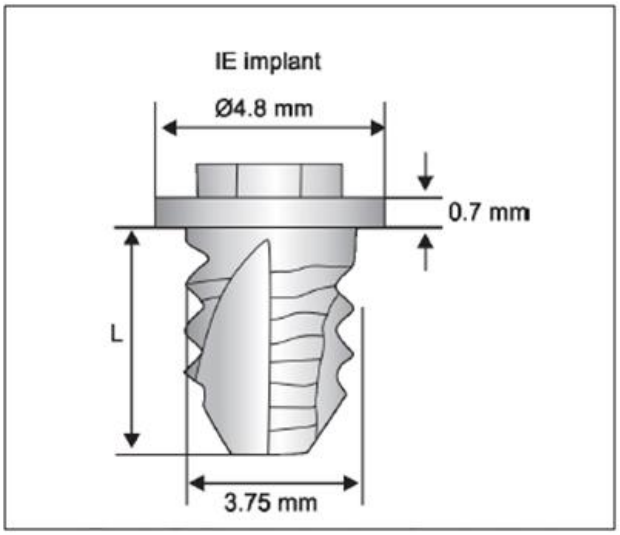

Fig 2 –Solitary implant

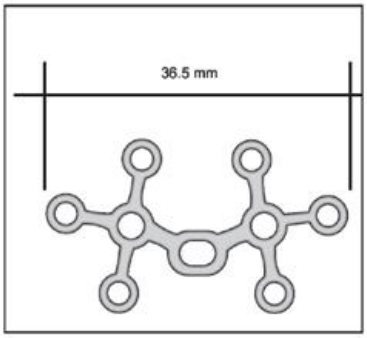

Fig 3 – Collective implant

Fig 4 –Ear defect on the right side

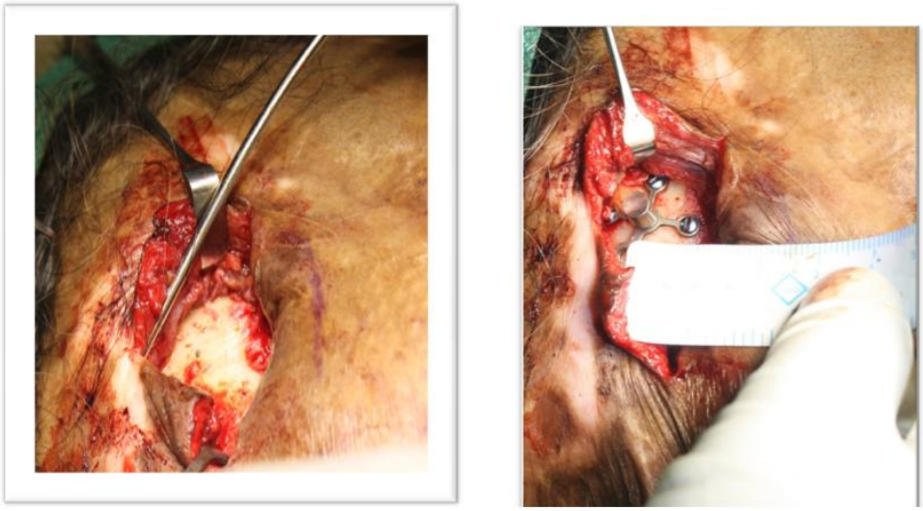

Fig 5 – Temporal bone exposed and the plate positioned at 20mm from EAM

Fig 6 – Epiplate in position secured with screws and abutment

Fig 7 –PA view of skull showing the position of plate and abutment

Fig 8 – Ear defect on both sides

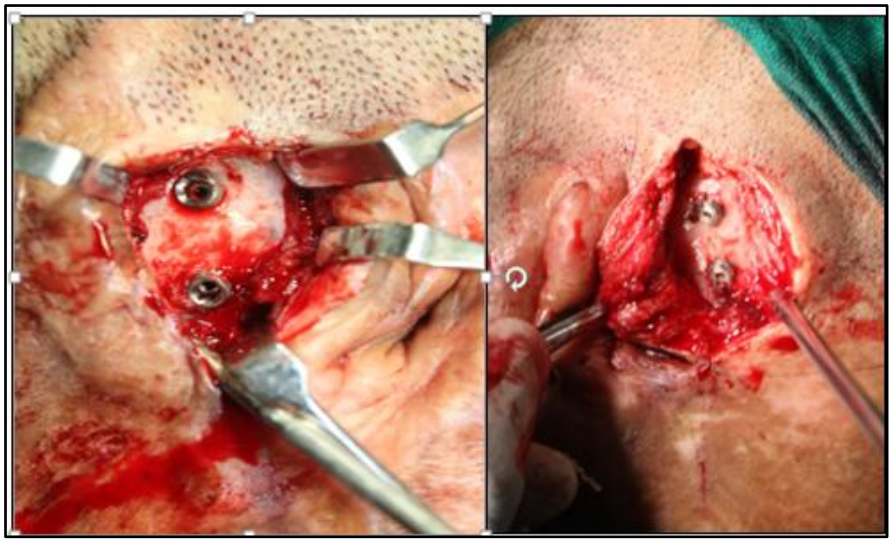

Fig 9 – Implants in position

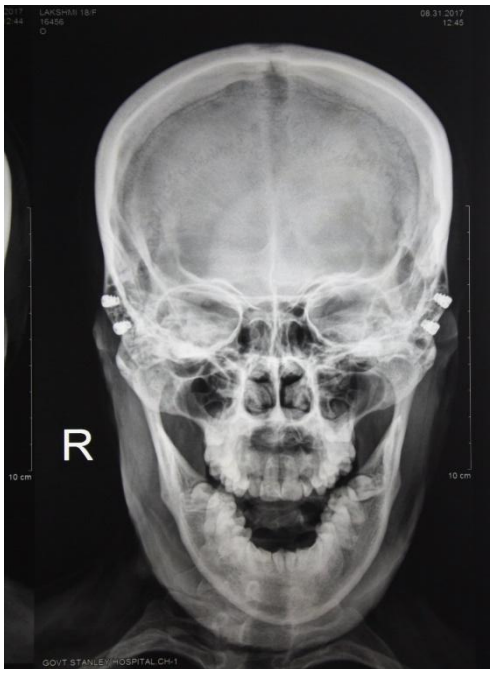

Fig 10 – PA view of skull to verify the position