

Zygomatic implants as a rational treatment for atrophic maxilla: A Retrospective study

Abstract:

Background: The use of zygomatic implants in our severely resorbed maxilla for oral rehabilitation and its outcome.

Material & method: Sixty patients with one hundred and forty Quickdent zygomatic implants underwent rehabilitation. Various combinations such as Quad zygoma, single zygoma, one side double zygoma, and one zygoma with other conventional implants combinations have been mentioned in patients' data over two and a half years. The overall results of implants with prosthetic evaluation and complications are mentioned below.

Results: The success rate of 99% is seen in this two- and half-year follow-up. In one of the patients who underwent quad zygoma one right anterior zygomatic implant was removed due to a cutaneous fistula in the cheek region other two were failure due to incorrect positioning, which was lost to follow-up.

Conclusion: Quickdent zygomatic implants have helped in rehabilitation of atrophic maxilla leading to immediate functional loading.

Key-words: Atrophy, maxilla, Zygomatic-implants, Quad zygoma

Introduction:

Atrophic maxilla with sever pneumatization of the maxillary sinus and atrophy of the alveolar bone. The challenge is to improve quality of life by giving good prosthetic outcome. Various procedures lift bone grafting or short implants has its own pros and cons when it comes to restoring the prosthetics in long run. The patient acceptance of treatment period and prosthetic which helps in mastication plays a significant role. Zygomatic implants have been mainly used for patients with available bone at the level of anterior maxilla zone.¹ This article includes of the combination of two zygomatic implants, one in each side, with two to four conventional implants at the level of the premaxilla or with quad zygoma when there was no bone in zone [1,2,3, 23-28].

Placing implants in maxilla special in zone 2 and 3as per Bedrossian(refer fig 1.) for the makes it more urging as posterior teeth plays important role in mastication which directly responsible for overall outcome of the treatment.

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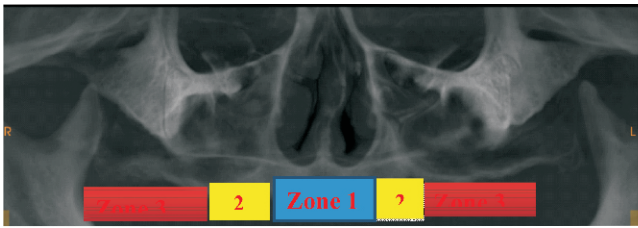


Figure 1: The Bedrossian classification for maxillary bone availability for dental implants. Zone 1, Canine to canine (premaxilla) region; zone 2, premolars region; zone 3, molars region.

Zygomatic implants were introduced by Branemark in early 1990s. Over the time lot of modification is been seen. The anatomy of each patients, each side plays a vital role in placing the zygoma implants. Zygomatic bone has high quality of density with dense wide trabecular bone giving good stability for immediate loading[28,29]. The purpose of the present prospective study was to evaluate the outcome of immediately loaded prostheses supported by zygomatic implants in severely atrophic maxillae after two and half years of functional loading.

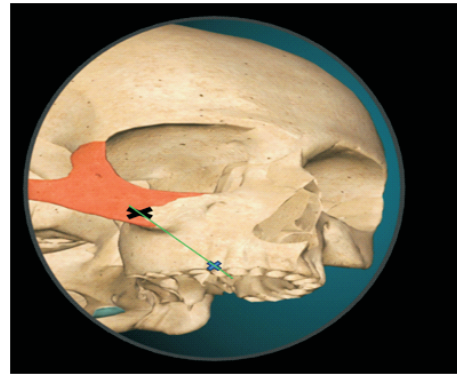
Material and Methods:

This is a prospective study who underwent placement of zygomatic implants as indicated. After evaluation of oral examination, Cone beam computed tomography evaluation, Blood investigation and surgical consent patient was scheduled for maxillary implant placements. The patient was included from Five different clinician's data who are experienced in full arch rehabilitation using Quickdent zygoma implants in routine practice where surgery was performed using Quickdent implant.

Quad zygoma was done in 10 patients, while Fifty patient single zygoma with conventional /Tilted implants combination, where Forty-five single one sided zygoma implant Five patient. Double(two) zygoma on one side with combination of conventional implants. The prosthetic delivery was done within 5 to 7 days. The follow up was done one week, 3 month, 6-month, one year, one and half year, two year. The Cone beam computed tomography was done immediately after placing implants followed with one-year scan. While clinical examination and OPG on three-month, six-month follow-up was done.

Steps: Pre-antibiotics was started one day prior to surgery day. Following all aseptic condition and precaution, Local anaesthetic containing lignocaine 2% with adrenaline in 1:80000 combination was used. A crestal incision with

bilateral vertical releasing incisions along the posterior part of the zygomatic buttress should be performed, and a mucoperiosteal flap should be raised and zygomatic tubercle was exposed. The attachment of masster muscle was identified. The second premolar teeth were located and marked (for single zygoma) {point 2} and canine was marked where quad zygoma was planned.



X-Point A (Zygomatic tubercle with maxillary sinus)
X-Point B (Premolar region)

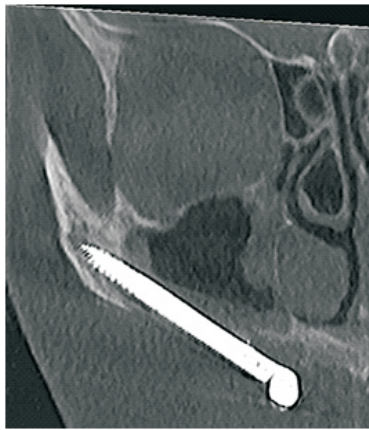
A free hand method was used in gradual manner by creating the entry point 1 was marked approx. 5 mm anterior to the zygomatic masster attachment. Also walls of maxillary sinus was traced. The round bur was used to create entry point. Pathway for connecting the premolar and entry point on the sinus membrane for placement of zygoma implant body using coarse and fine bur.drill one was used the sinus pathway joining point 1 and 2 to achieve point 3. Throughout the drilling procedure saline irrigation was vigorously done. The drills were exited and was palpated extra orally for bi cortical engagement. The measuring gauge used to assess the length of the zygoma implant.[18]

The measured length of implant was placed and the crest was seated at the prosthic planned position Torque was more than 60 Ncm ensuring good stability and abutment selected and placed. The area was sutured using vertical mattress sutures. Immediate impression making was done.

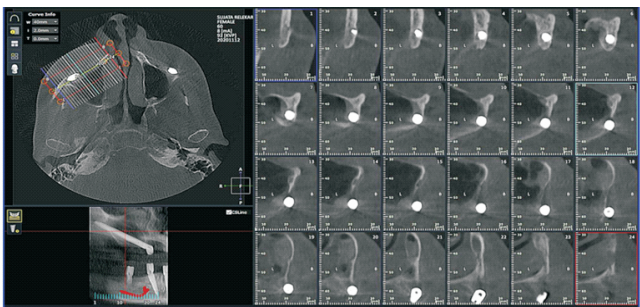
Each zygoma implants sizes were recorded and patient was given postoperative medication with infusion of intravenous antibiotics and Nonsteroidal anti-inflammatory drug. On discharge Cone beam tomography was done. Patient was called in the office for remaining prosthetic sittings.

Result:

The study has data from dec 2020 to June 2023, at which time sixty patients, with zygomatic implants had been followed for Two and half years after the implant insertion.



Coronal section for Zygoma implants



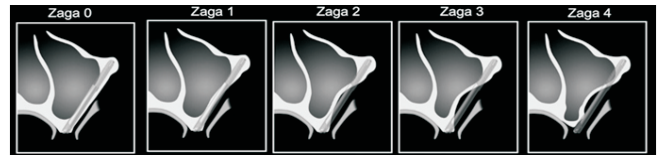
Cross section showing zygoma implant with bone contact and position

Complications:

One of patient complained of discharge extra orally from cheek on 6 months follow up where the radiographic and clinical examination suggested of zygoma bone and cheek skin communication resulted as cutaneous fistula. Out of four zygoma one zygoma at premolar area was removed (this case has quad zygoma with two pterygoids implants). The overall prosthetics of the patient was not compromised. The follow up after two years showed complete healing in the cheek region.

Discussion:

The use of zygomatic implants in treatment of resorbed maxillae, helps in immediate prosthetic loading in less time [2,5]. Procedures like sinus lift, Grafting has been replaced with these zygomatic implants with good results overall contributing in patient's psychology boosting the moral. The zygoma bone is documented and proven to have do density of bone which helps in zygoma implant stability and anchorage. The involvement of maxillary sinus in the placement of zygoma implant is important. The placing of zygoma intra sinus or extra sinus is based on the ZAGA (The zygoma anatomy-guided) Classification. Figure 2. [3-4]



It was observed that every patient had different zygoma architecture. In some patient it showed that right and left side also differ in orientation. It was seen that male and female also vary in bony texture. The Quickdent Zygoma implant has been used in all the cases which showed good prognosis in the follow ups. Out of two hundred only one zygomatic implant was removed. The important aspect of placing zygoma is the experience technique sensitivity. Each entry point (point 1) placement, angulation of the drill (point 3) is important as the final selection of implant length and its connection with respect to alveolar crest position place significant role in final prosthetics. It was seen the anterior and posterior spread for prosthetics was addition to the maxillary arch. No major complications occurred in the surgery. Postoperatively slight swelling was seen. In three patient bluish discoloration was seen on the cheek which gradually settled in few days. Sinusitis occurred in seven patients throughout the study. It didn't affect the implant. Stem inhalation was advised. It resolved over the time. One patient showed oroantral communication on day 7th before prosthesis delivery. There was breakage of suture at the mesial aspect of zygoma implant. The area was refresh and resuturing was done.^{11,15} In cases with intra-sinus zygoma implant it was absolute sound due to design of the polished surface of the implant body. The positioning of zygoma implant in addition to conventional implant cases was favorable for long term follow up.

Conclusion:

A success rate of 99% for zygomatic implants, and of was observed in the present study. These data mentioned is combination of quad zygomatic implants, Double zygoma, single zygoma in combination to conventional implants placed in atrophic maxilla has given time-tested technique in these two- and half-year span.

Length of Implant placed	No. of Patients
4.2 x 30	0
4.2x32	0
4.2x35	9
4.2x37	19
4.2x 40	22
4.2x 42	20
4.2x 45	21
4.2x47	17
4.2x50	8
4.2x 52	7
4.2x55	9
4.2x57	5
4.2x60	3
TOTAL	140

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