Awareness On Zygomatic Implants Among Dental Students

Baala Vignesh.A1, Visalakshi Ramanathan2, Revathi Duraisamy3, Dhanraj M. Ganapathy4

1Graduate Student, Department of Prosthodontics, Saveetha Dental college, Saveetha institute of medical and technical sciences, Poonamallee, chennai
2Senior Lecturer, Dept of prosthodontics, Saveetha Dental college, Saveetha institute of medical and technical sciences, Poonamallee, chennai
3Reader, Department of Prosthodontics, Saveetha Dental college and Hospitals, Saveetha Institute of Medical and Technical Sciences (SIMATS), Saveetha University, 162, Poonamallee High Road, Velappanchavadi, Chennai – 600077, Email: revathid.sdc@saveetha.com
4Professor and Head, Department of Prosthodontics, Saveetha Institute of Medical and Technical Sciences, Saveetha University,Chennai-77, Email: dhanarajmganapathy@yahoo.co.in

Abstract

Introduction: Functional and aesthetic rehabilitation of maxilla or posterior maxillary defects is challenging and zygomatic implants have been an effective option in the management of atrophic edentulous maxilla and maxillectomy defects. Zygomatic implants were introduced by Branemark. Bone grafting and augmentation procedures involve two step procedures and lead to economic and financial loss for the patient, thus zygomatic implants have proved to be a good non-grafting option for the rehabilitation procedures for treating posterior maxillary and atrophic maxillary cases.

Aim: This study aims to assess the awareness of zygomatic implants among undergraduate students.

Materials And Method: A online questionnaire based survey was circulated among the students of Saveetha Dental college and the answers were compiled in excel sheet and tabulated and analysed using the statistical software IBM SPSS version 20.0 and the results of the survey were represented using tabulations and graphical illustrations.

Results: Totally 100 participants took part in the the survey and out of which 90% of them were aware of zygomatic implants. 80% of the participants who took part in the survey were aware of the indications of zygomatic implants. 80% of the participants were aware of the most common complication being sinusitis. And the rest of the participants were aware of the other complications that can occur due to zygomatic implants.

Conclusion: This survey was done to create an awareness on zygomatic implants. From the study most of them were aware of zygomatic implants, their indication, surgical procedure, contraindication and treatment protocol.

Keywords: osseointegration; innovative technology; implant; zygomatic bone.

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INTRODUCTION

Dental implants are a common mode of rehabilitation for partially and completely edentulous patients.(1,2) Numerous restrictions have arised with the use of these implants and one of it is the lack of sufficient bone volume, especially in the region of the posterior maxilla.(3) This insufficient bone volume could either be due to bone resorption or pneumatization of the sinus or a combination of both(4).

The zygoma implant has been an effective option in the management of the atrophic edentulous maxilla as well as for maxillectomy defects.(5) Brånemark introduced the zygoma implant as a solution to obtain posterior maxillary anchorage.(6) It was also used to expedite the rehabilitation process. Rehabilitation with zygomatic implants offers a viable graftless option for treating severely atrophied maxillae.(7) Bone grafting and augmentation procedures involve two step procedures and leads to economic and financial loss for the patient, thus zygomatic implants has proved to be good non-grafting option for the rehabilitation procedures for treating posterior maxillary and atrophic maxillary cases.(8)

Zygomatic implants can be placed in patients with severe resorption of maxilla, Maxilla with insufficient bone height, in cases where there is a Pneumatization of maxillary sinus.(9) They are used along with grafts to reduce the dimensions of bone grafts needed. Zygomatic implant placement has shown to reduce preoperative risk, which suggests that older patients and patients
with more severe general health problems can be rehabilitated compared with traditional methods of bone grafts. (10) Zygomatic implants offer an interesting and a unique alternative to bone grafting in the severely resorbed posterior maxilla. (11) It has been in use for more than ten years and gives a predictable outcome in the rehabilitation of completely as well as partially, edentulous patients.

Thus this study was done to evaluate the awareness of zygomatic implant, indications and contraindications and the techniques for the placement and treatment planning of zygomatic implant and for the success of prosthetic rehabilitation involving zygomatic implants. Our team has extensive knowledge and research experience that has translated into high quality publications (12–32).

Materials And Method

An online questionnaire based survey was circulated among the students of Saveetha Dental college. 100 participants participated in the survey and 15 questions based on zygomatic implants were circulated. Incomplete responses were discarded. The inclusion criteria included valid and appropriate survey responses. Exclusion criteria was based on incompletely filled survey forms.

The study had high internal validity and low external validity. The present study used a random sampling method. A cross examiner was involved for the verification and for minimizing bias.

The questionnaire consisted of questions based on the awareness, indications, contraindications, complications of zygomatic implants. The responses were collected and the answers were tabulated in excel sheet and analysed using the statistical software IBM SPSS version 20.0 and the results of the survey were represented using tabulations and graphical illustrations. All statistical analysis done was represented as figures and charts. P-value was set to be significant as 0.05.

Results

Totally 100 participants took part in the survey and out of which 90 of them were aware of zygomatic implants and 10 were not aware of zygomatic implants.

10 participants answered atrophic maxilla to be the indication of zygomatic implants, 6 participants answered posterior defect, 4 participants answered maxillectomy defect and 80 participants answered all of the above.

For the question what are the contraindications for zygomatic implants, 14 participants answered sinusitis infections, 20 participants answered zygomatic bone pathologies and 17 participants answered uncontrolled systemic disorders and 49 participants answered all of the above.

For the question what are the complications that can occur due to zygomatic implants, 80 participants most common complication being sinusitis, 8 participants answered fistulae, 6 answered edema and 6 participants answered peri implantitis.
Figure 1: This graph shows the year of study of the participants who took part in the online survey. X axis shows the year of study of participants and Y axis shows the number of responses. 12 participants were third year students, 23 participants were fourth year students and 16 participants were interns.

Figure 2: This graph describes the responses to the question what are the indications of zygomatic implants. X axis shows the indications and Y axis shows the number of responses. 10 participants answered atrophic maxilla, 4 participants answered posterior defect, 4 participants answered maxillectomy defect and 80 participants answered all of the above.
Figure 3: This graph shows the responses to the question what are the complications of zygomatic implants. X axis shows the most common complications and Y axis shows the number of responses. 80 participants answered sinusitis, 8 participants answered fistula, 6 participants answered edema and 6 participants answered periimplantitis.

Figure 4: This Bar graph describes the association between the most common complications seen in zygomatic implants and year of study of the participants. X axis shows the year of study and Y axis shows the number of responses to the question what are the complications of zygomatic implants. Blue colour stands for sinusitis, red colour stands for fistula, green colour stands for edema and orange colour stands for peri implantitis. 12 thirds year students, 40 fourth year students and 31 interns answered sinusitis. 5 third year students, 2 final year students, 2 interns answered fistula. 3 third year students and 1 intern answered edema, 2 third years, 2 final years answered periimplantitis(p=0.092>0.05). The study was statistically not significant.
The zygomatic bone can be used as anchorage for prosthetic rehabilitation in hemimaxillectomy patients as well as for other defects like maxillary atrophy and other defects. This development offers alternatives to bone grafting or sinus-lift procedures, which involve invasive surgery and gives a possibility to obtain firm anchorage from the zygomatic bone. The study correlated to these findings.

Zygomatic implants can be placed in patients with severe resorption of maxilla. Maxilla with insufficient bone height, in cases where there is a Pneumatization of maxillary sinus. They are used along with grafts to reduce the dimensions of bone grafts needed. Use of remote bone anchorage helps in reducing cantilever stress and enhancing the cross-arch effect. Zygomatic implants are known to reduce preoperative risk with age factor and general health problems being of lesser effect to the patient. The data correlated with the study. The contraindications of zygomatic implants are mostly the same for that of conventional implants and sinus lift procedures. They include sinus infections, narrow sinus, under developed septae, severe sinus floor convolutions, local infections, Caldwell Luc operations. Zygoma shows regular trabeculae and compact bone and can be used for the insertion of mini plates in maxillofacial fractures, can be used for fixed anchorage for dental arch retractions and to anchor a screwed prosthesis. Surgical drilling guides ought to be encouraged for zygomatic implant placement.

The complications of zygomatic implants include sinusitis, fistula formation, edema, periimplantitis. The zygomatic implant placement may result in a foreign body reaction in the form of inflammation of the sinus membrane, may be triggered by a treated implant surface against a finished one, an oroantral communication produced by perforation of the Schneiderian membrane, and a lack of osseointegration of the coronal part of the implant. Sinusitis is the most frequently observed complication, with an average prevalence of zygomatic implants. Local infections or mucositis are directly related to the appearance of sinusitis, favoured by the lack of osseointegration, lack of contact between the implant and the bone crest, superficial infection and lack of cicatrisation of the soft tissues. Prosthodontic rehabilitation also plays a relevant role. Lack of osseointegration at the marginal area of the implant at its palatal aspect, along with functional forces, may increase the risk of oroantral communication and the posterior development of sinusitis and fistulas. The other complications also include paresthesia from affection of infraorbital and zygomaticofacial nerves, bruising of tissues, labial lacerations. The literature
coincides with the present study.

The future scope of study includes, better method for the diagnosis of zygomatic implant treatment planning. Better knowledge about the indications, complications and contraindications is necessary for the placement of zygomatic implants to ensure the success of the implant.

**Conclusion**

This study showed that most of the participants were aware of zygomatic implants. They were aware of the indications, contraindications and complications of zygomatic implants. But better knowledge for the techniques for placement and easier diagnosis is necessary for the success of the treatment.

**Author Contribution**

All authors equally contributed to the study.

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**Conflict Of Interest**

nil

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