



# Awareness On Pterygoid Implant Among Dental Undergraduates

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## **Awareness On Pterygoid Implant Among Dental Undergraduates**

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### **ABSTRACT**

**Introduction:** Pterygoid implant has been defined as “implant placement through the maxillary tuberosity and into the pterygoid plate.” These implants were first introduced by Tulasne in 1989. The pterygoid implant originates in the tuberosity region and then follows an oblique mesiocranial direction proceeding posteriorly toward the pyramidal process; it subsequently proceeds upward between both wings of the pterygoid processes and finds its encroachment in the pterygoid or scaphoid fossa of the sphenoid bone. The length of these implants ranges from 15 to 20 mm, and they are generally placed at an angle of 45° to 50° to the horizontal plane. The success rates for all these different treatment possibilities seem to be similar. Therefore the need for engaging the implants at the level of the pterygoid plate is currently controversially discussed.

**Aim:** To analyse the awareness of pterygoid implants among dental undergraduates.

**Materials And Methods:** A questionnaire was prepared on google forms. It was distributed among 70 students. The data was transferred to excel and coding was done, the data was transferred to SPSS and statistical analysis was done.

**Results:** Though 14% were still not aware when pterygoid implants can be used commonly. On doing the chi square test in regards to the awareness of pterygoid implant among undergraduates, along with a chi square value of 12.666, the p value was found to be 0.014, p<0.05, hence making the correlation statistically significant. The knowledge about the contraindications were also analysed and 60% of the participants who were aware of pterygoid implant were well aware of the contraindications.

**Conclusion:** As future clinicians it is very important to know about the newer developments in the field of dentistry to provide a better treatment as well as for framing a fair treatment plan, the study shows that there still more than awareness needed in the respective topic of pterygoid implants.

**Keywords:** Pterygoid implants, Posterior atrophic maxilla, innovative technology

### **INTRODUCTION**

Implant dentistry has grown leaps and bounds in recent years after the successful introduction of the osseointegration concept by Prof. P. I. Branemark in the early 1960s. Researchers have found that rehabilitation of missing teeth in the maxillary anterior region was far easier than a maxillary posterior segment. It has been elaborated by Albrektsson et al.(1) in their literature that posterior maxilla is a very difficult area to be rehabilitated. The reasons considered for difficulty in rehabilitating the posterior maxilla is mainly due to the anatomy of maxilla due to the presence of maxillary antrum, poor quality of bone and decreased the quantity of bone.

To overcome these difficulties, sinus lift procedures, GBR grafting with both autogenous and allogeneic materials, tilted implants (all on four concepts), and zygomatic implants were introduced. However, these procedures are not without complications such as tear of sinus membrane, bone grafts into sinus cavities, rejection of bone grafts, screw loosening of tilted implants, and morbidity of patients with the usage of general anesthesia for zygomatic implants (2).

To prevent these problems, the posterior most part of the maxilla near the tuberosity and behind the maxillary sinus can be utilized for placement of implants. This area is called the pterygoid or pterygomaxillary region. Placement of implants through the maxillary tuberosity and into the pterygoid plate is called pterygoid or pterygomaxillary implants. It was introduced by Tulasne in 1992 (3,4).

Placement of pterygoid implants involves origination of implants in the tuberosity region and follows an oblique medial cranial direction proceeding posteriorly toward the pyramidal process. It subsequently proceeds upward between both the wings of the pterygoid process of sphenoid bone (5,6). Our team has extensive knowledge and research experience that has translated into high quality publications (7-9)(10-25)

**MATERIALS AND METHODS**

All the students having clinical schedules were requested to participate in the survey and the preclinical students were excluded from the study. A total of 70 students out of 100 students participated in the survey. The present study used a random sampling method. A cross examiner was involved for the verification of data. The obtained results were tabulated in excel sheet and was transferred to spss-version 23 software for statistical analysis and chi square test was performed.

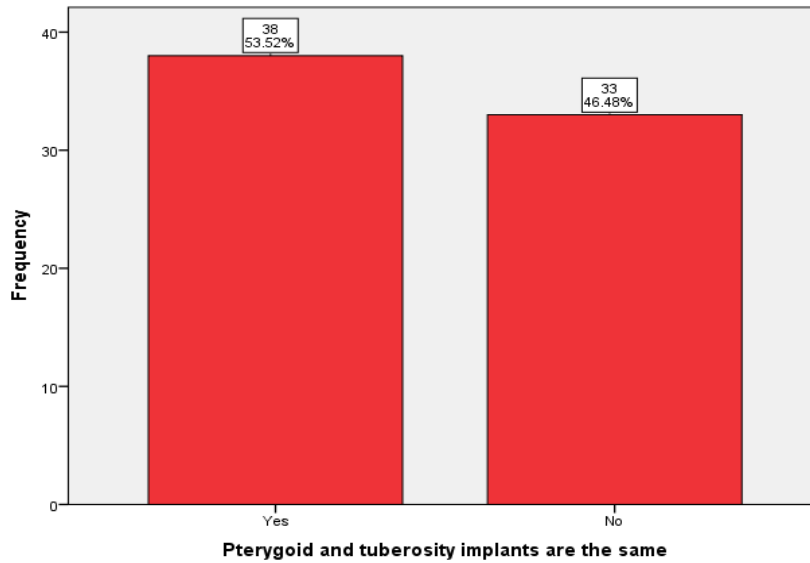
A questionnaire was prepared on google forms. It was distributed among 70 students. The questions asked are given in the following Table 1.

**Table 1: The table represents the questionnaire which was prepared for the study. The questionnaire started with the question about the name, year of study and were followed by the questions regarding pterygoid implant.**

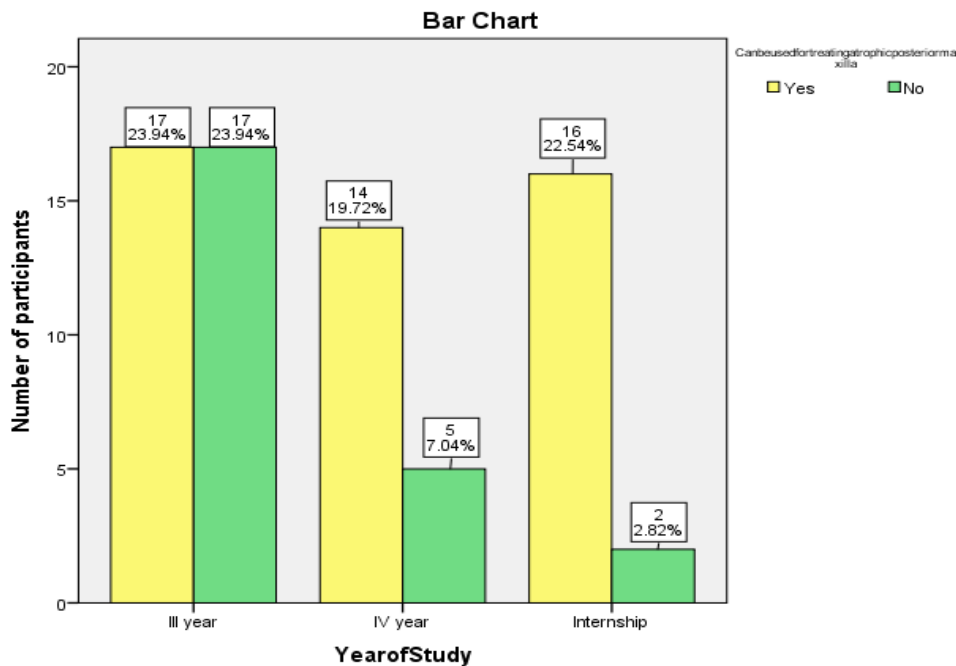
SERIAL NUMBER	QUESTIONS
1	Name
2	Year of study
3	Have you heard of pterygoid implant
4	Do you think that pterygoid and tuberosity implant are the same
5	Do you think that sinus floor augmentation is needed for placing pterygoid implants
6	Pterygoid implant passes through the maxillary tuberosity and the pyramidal process of palatine bone to engage pterygoid process of sphenoid bone, true or false?
7	Pterygopalatine-tuberosity is the anchorage point for pterygoid implant, true or false?
8	Most possible complication is bleeding from the pterygoid plexus, true or false?
9	Lack of primary implant stability is a drawback of pterygoid implant, true or false?
10	Do you think that the survey has provided you more knowledge about pterygoid Implants?

**RESULTS AND DISCUSSION**

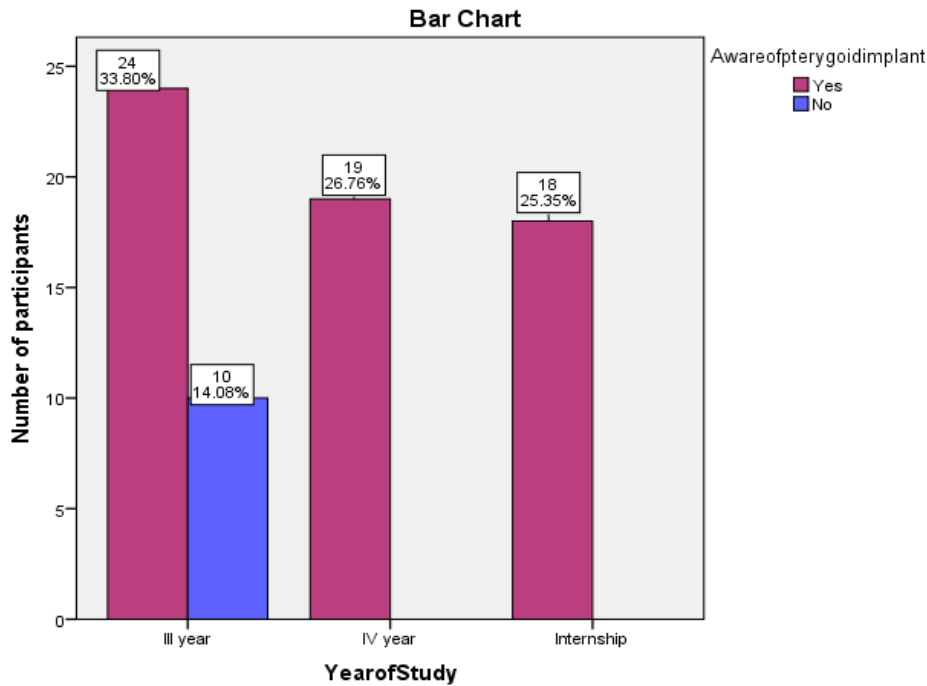
Out of the 70 participants, 14% of the participants have never heard of pterygoid implants. Also pterygoid implant is one of the most confused terms in the field of implantology. A perfect example for this is that, nearly half of the total students, that is 46.48% of the total student population believed that pterygoid implant and tuberosity implant are the same (figure 1).



**Figure 1:**The Bar Diagram Represents The Knowledge Of Students On Pterygoid And Tuberosity Implant. The X Axis Represents The Responses To The Question “If Pterygoid And Tuberosity Implants Are The Same”, And The Y Axis Represents The Frequency Of Responses. By Definition, All Pterygoid Implants Encompass The Tuberosity Region And Engage The Pterygoid Plate But Not All Tuberosity Implants Necessarily Engage The Pterygoid Plates.



**Figure 2:**Depicts The Knowledge Of Students Regarding If They Knew That Pterygoid Implant Can Be Used For Posterior Atrophic Maxilla. X Axis Represents The Year Of Study And Y Axis Represents The Number Of Participants. The Bar Colour Yellow Represents Yes And Bar Colour Green Represents No. Only 2.8% Of The Interns Were Unaware Of Use Of Pterygoid Implant And Majority Knew That It Was Used Mainly For The Management Of Posterior Atrophic Maxilla. Chi Square Test Was Done, Pearson Chi Square Value:8.604 , P Value = 0.014,  $P < 0.05$  And Hence The Association Was Found To Be Statistically Significant.



**Figure 3: Depicts The Association Between Awareness Of Pterygoid Implant Among The Students Who Participated In The Study. X Axis Represents The Year Of Study And Y Axis Represents The Number Of Participants. The Magenta Colour Of The Graph Represents The Answer Yes And Y Axis Represents The Answer No. Out Of The Total Student Population Who Participated In The Survey, Maximum Responses Were From The Third Year Students, Followed By Final Year And Interns. 14% Of The Third Year Students Were Not Aware Of Pterygoid Implant, While All The Final Year Students And Interns Were Completely Aware Of Pterygoid Implant. Chi Square Test Was Done, Pearson Chi Square Value: 12.666, P Value = 0.002,  $P < 0.05$  And Hence The Association Was Found To Be Statistically Significant.**

Osseointegrated dental implants are well established and highly developed and predictable treatment methods for prosthetic rehabilitation (26–28). However, management of patients who have severe posterior maxillary atrophy using osseointegrated implants has always been challenging due to a lack of bone density and difficulty to achieve proper access during surgical procedures (29,30). Many alternative therapies have been suggested to address these issues, that is, tilted implants, short and / or wide implants and zygomatic implants (31,32). Grafting procedures, such as Sinus maxillary lift and onlay / inlay lift, used to correct insufficient bone density (33). However, these procedures need to add multiple surgical sites and increased treatment stages with high morbidity and long treatment periods. Biomechanical factors can also influence survival of implants due to high occlusal forces in the molar region during mastication, which can also lead to other problems including fractures, screw fracture, and bone loss. By considering the above factors pterygomaxillary area is not considered as an ideal site for placing implants by multiple authors.

In our study we found a statistically significant result regarding the awareness of pterygoid implant among various grades of dental students. Since final years and interns were more exposed to the clinical scenario more than the third years who would have just started their clinical rotation, all final years and interns were found to be aware of pterygoid implant except 14% of the total third years who participated in the survey (Figure 3). One of the major reason why the pterygoid implants are well known among clinicians are because they were known to have explicable ability for the management of posterior atrophic maxilla, students knowledge regarding this was also assessed and it was found that most of the interns and final years had an idea about it and the relation was also found to be statistically significant (Figure 2).

Tuslane and Tessier et al were the first to describe the pterygoid implant, which was designed for insertion in dense cortical bone which is formed by posterior wall of maxillary tuberosity, horizontal process of palatine bone and pterygoid process of sphenoid bone (34). We can use pterygoid implants for approaching the dense pterygomaxillary plate through the maxillary tuberosity area for providing support in the posterior maxillary region without any grafting procedures and also without providing any posterior prosthetic cantilevers (35,36).

## CONCLUSION

The study mainly focused on getting to know the level of knowledge of undergraduate students of different levels and on educating them about the pterygoid implants as well as its variants. From the study we found that 14% of the total student population were not aware of pterygoid implant. Few correlations were done regarding the knowledge of students on whether they knew pterygoid implants were used for posterior atrophic maxilla since is the main purpose of the implant and the relation was found to be statistically significant with a p value of 0.014. The awareness of pterygoid implants in different levels of students were assessed as well and that relation was also found to be significant with a p value of 0.002, making the study highly significant. As future clinicians it is very important to know about the newer developments in the field of dentistry to provide a better treatment as well as for framing a fair treatment plan, the study shows that there still more than awareness needed in the respective topic of pterygoid implants.

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## Author Contribution

Author 1(Chithralekha B), carried out the study by conducting the survey and drafted the manuscript after performing the necessary statistical analysis. Author 2( Dr.Revathi Duraisamy) aided in conception of the topic, has participated in the study design, statistical analysis and has supervised the preparation of the manuscript. Author 3(Dr.Dhanraj Ganapathy) has participated in the study design, and has coordinated in developing the manuscript. All the authors have discussed the results among themselves and contributed to the final manuscript.

## Conflicts Of Interest

There are no conflicts of interest.

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