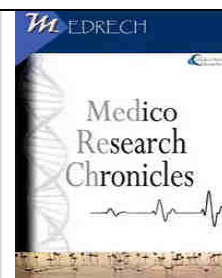




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STUDY OF VARIOUS TYPES OF TEMPORARY ANCHORAGE DEVICE (TAD) PLACEMENTS IN PATIENTS UNDERGOING ORTHODONTIC TREATMENT IN RURAL DENTAL HOSPITAL OF WESTERN MAHARASHTRA: A CROSS-SECTIONAL STUDY

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ARTICLE INFO	ABSTRACT	ORIGINAL RESEARCH ARTICLE
Article History Received: September 2019 Accepted: October 2019 Keywords: Temporary Anchorage Devices, Miniscrews, Mini plates, Orthodontic treatment.	Introduction: The present study was aimed to study various types of TAD placements in patients undergoing orthodontic treatment in the Rural Dental Hospital of Western Maharashtra. Material & Methods: The study was a descriptive cross-sectional type carried out in the Department of Orthodontics & dentofacial orthopedics, Rural Dental College, Loni. The study population included all patients of both gender and aged above 12 years, who were scheduled for placement of Temporary Anchorage Devices (TAD) in orthodontic treatment, and willing to participate in the study were included in the study. The number of sites and details of TAD placement in terms of side and quadrant was recorded. Results and conclusion: TAD implants are common in the age group of 19-21 years and females. The common sites of the implant were URPR/ULPR followed by MaxAR, URZB/ULZB, and LRBS/LLBS. The use of miniscrews was most common as TAD in patients undergoing Orthodontic treatment.	
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INTRODUCTION:

Temporary Anchorage Devices (TADs) is a therapeutic alternative to traditional methods of anchorage in orthodontic treatment. TAD is a titanium-alloy mini screw, ranging from 6 to 12 millimeters in length and 1.2 to 2 mm in diameter, that is fixed to bone temporarily to enhance orthodontic anchorage. Placement is minimally invasive and often completed using a local anesthetic. They were inserted directly

through the gingival tissue into the bone with a hand driver. Stationary anchorage is achieved by gripping mechanically to cortical bone, rather than by osseointegration.¹ Therefore, the orthodontist is able to load the TAD immediately, as well as remove it with a simple twist of the hand driver. Stationary anchorage failure of TADs under orthodontic loading varies between 9 and 30 percent.²

Orthodontic skeletal anchorage devices can be divided into mini plates, miniscrews, and bone screws. Placement is minimally invasive and often completed using only local anesthetic. Miniscrews have been favored in the last decade because they can be inserted easily under local anesthesia by the orthodontist at various locations within the dentoalveolar region. The success rates are reported to be 80–90%, which is slightly lower than that of the miniplate and palatal implant. Miniscrews can easily be inserted and removed with a simple procedure, can be loaded immediately, are commercially available in a number of sizes (width and lengths), and are relatively cost-effective.³

The aim of the present study was to study various types of TAD placements in patients

undergoing orthodontic treatment in the Rural Dental Hospital of Western Maharashtra.

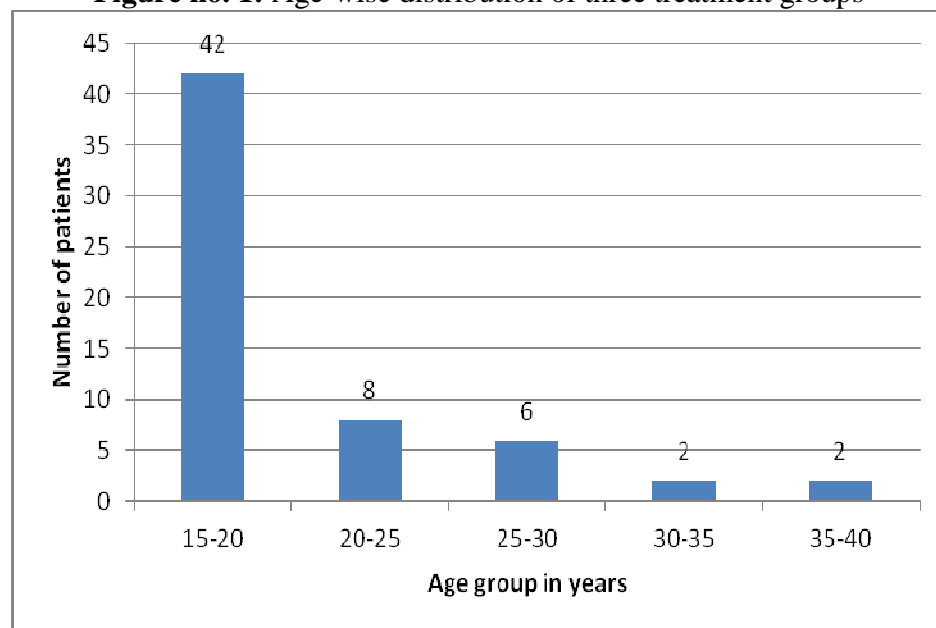
MATERIAL & METHODS:

The study was a descriptive cross-sectional type carried out in the Department of Orthodontics & dentofacial orthopedics, Rural Dental College, Loni, from 2017 to 2019. The study population included all patients of both gender and aged above 12 years, who were scheduled for placement of Temporary Anchorage Devices (TAD) in orthodontic treatment, and willing to participate in the study were included in the study. The number of sites and details of TAD placement in terms of side and quadrant was recorded.

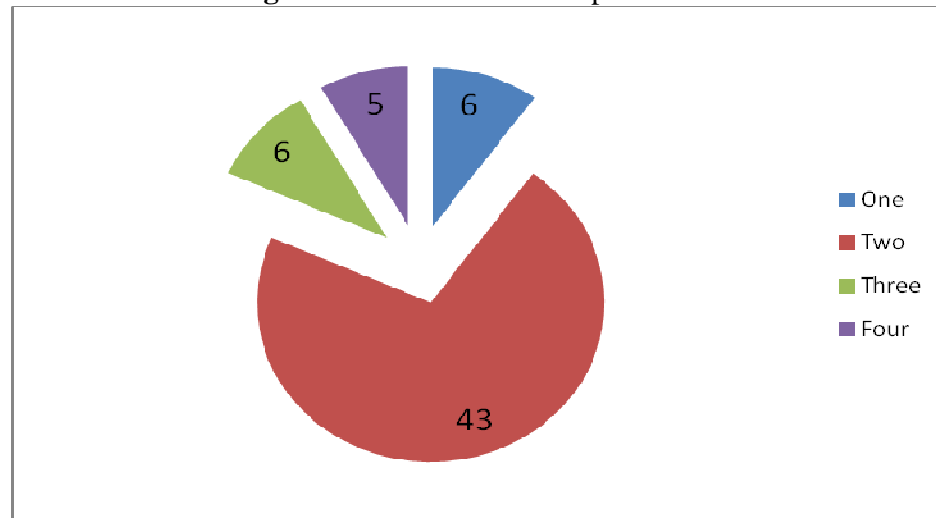
RESULTS

In the present study, 60 patients were included.

Figure no. 1: Age-wise distribution of three treatment groups

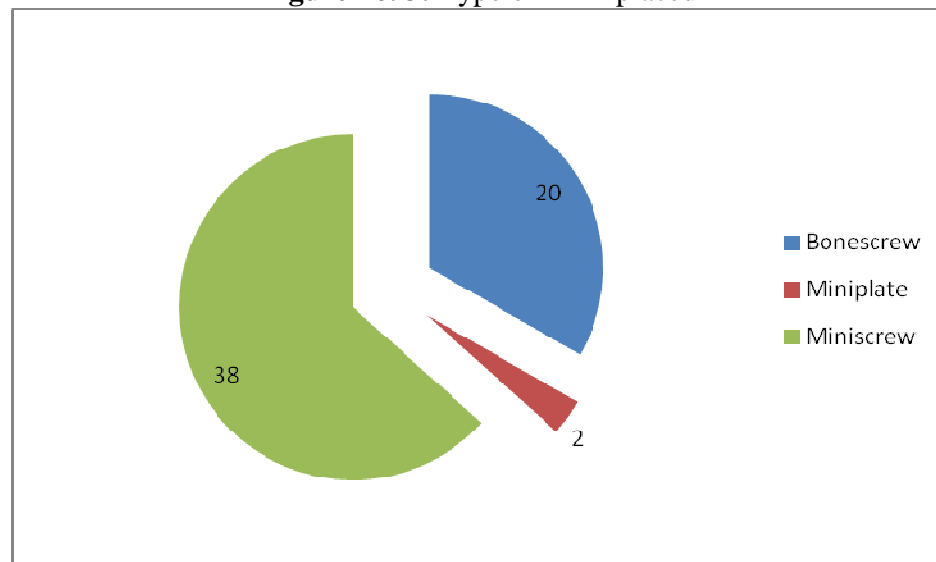


The most common age group was 15-20 years with 42 patients (Graph no.1). The number of females (38, 63.3%) was more as compared to males (22, 36.7%).

Figure no. 2: Number of Implant Sites

As shown in Figure no. 2, two sites (43, 71.7%) were most commonly operated for implants. The implant sites were labeled as follows URPR, ULPR (Upper right and Left Posterior region) patients, MaxAR (Maxillary anterior region) these were the most common sites for 13 and 12 patients respectively in which TAD were placed. The other sites were 2 TAD placements were done were URZB,

ULZB (Upper right and Left Zygomatic bone), LRBS, LLBS (Lower right and left bone screw) in 9 and 7 patients respectively. 03 TAD placement was done in URPR, ULPR, MaxAR (n=3), and URPR, ULPR, LLPR (n=3). 03 patients of Group A received as many as 4 TADS in URPR, ULPR, LLPR, LRPR (Upper and lower right and Left Posterior region).

Figure no. 3: Type of TAD placed

With respect to the type of TAD placed (Figure no. 3), the Miniscrew (38, 63.3%) and Bonescrew were commonly employed. Miniscrews have been favored/ in the last

decade because they can be inserted easily under local anesthesia by the orthodontist at various locations within the dentoalveolar region. The success rates are reported to be 80–

90%, which is slightly lower than that of miniplate and palatal implant.⁴ Miniscrews can easily be inserted and removed with a simple procedure, can be loaded immediately, are commercially available in a number of sizes (width and lengths), and are relatively cost-effective.^{5,6,7} Although miniscrew insertion is not complicated, patients are still anxious about the procedure. There have been cases wherein the patient's level of pain perception during miniscrew placement was disregarded and which resulted in the patient experiencing discomfort during the procedure. Therefore, it is important to take into consideration the pain experienced by patients during miniscrew insertion.⁸

DISCUSSION

Age-wise distribution seen in this study was, 42 (70%) patients were between the ages of 15–20 years in all the groups. The mean age in all the groups ranged from 19-21 years. 38 (63.30%) patients in our study were females and the rest 22 (36.70%) patients were males. Most commonly 2 implant sites in 43 (71.7%) were noted whereas 3 and 1 implants were placed in 6(10%) of total patients. In 5 (8.3%) of total patients, as many as 4 implant sites were recorded. As shown in Figure no. 2, two sites (43, 71.7%) were most commonly operated for implants, among which URPR/ULPR (13) followed by MaxAR (12), URZB/ULZB (9) and LRBS/LLBS (7) were the common sites of the implant.

The most common implant was miniscrew used in 63.3% of patients of all the patients whereas Bone screw was used in 33.3% patients, and miniplate were placed only in 2 patients i.e. in 3.1 % patients. The use of mini-screws was most common as TAD in patients undergoing Orthodontic treatment.

The procedure of implant insertion for the mini implants was similar to that explained that by Neal D. Kravitz et al.²

CONCLUSION

TAD implants are common in the age group of 19-21 years and females. The common sites of the implant were URPR/ULPR followed by MaxAR, URZB/ULZB, and LRBS/LLBS. The use of mini-screws was most common as TAD in patients undergoing Orthodontic treatment.

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