

Experiences with mini implants among paediatric patients



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EXPERIENCE OF PEDIATRIC PATIENTS WITH MINI IMPLANTS UNDER GOING ORTHODONTIC TREATMENT

ABSTRACT

Objectives: Mini-implants are gaining achievement in orthodontics procedures as they provide maximum anchorage. The study is planned to evaluate different experiences with mini implants among pediatric patients.

Methods: This study was done among 86 patients with a mean age of 14 ± 23 years. All the participants were interviewed with the help of a questionnaire containing information as experience during treatment with mini implants, acceptance rate of mini implants, complications faced during procedure and satisfactory results with the treatment. Visual analogue scale (VAS) was used to record pain parameters. The data was analyzed by SPSS 16.0 software. Nonparametric test was applied to obtain the median of VAS scores.

Results: Most of the patients face problems with mini implants during mastication of food (28.2%) and speech (23.6%). It also leads to poor oral hygiene in 16.4% of the subjects. The highest VAS scores were traced from the period of one to twenty hour i. e. (33.7 to 40.2). It was observed that most of the subjects get adopted to the mini implants in 5 to 10 days.

Conclusions: It is safe and sound to use mini-implants as an orthodontic anchorage device among patients undergoing orthodontic treatment. Mini implants are unquestionably accessory tools for treatment of orthodontists and ought to be utilized in selected cases demanding greatest anchorage.

Keywords: Mini-implants, Orthodontics, Pediatric patients.

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INTRODUCTION

Orthodontic procedure is recommended for aesthetics and proper functioning of teeth. Patients look for orthodontic treatment mainly for aesthetic motives but orthodontists normally advise orthodontic treatment to patients for function purposes. ¹

Orthodontic treatment takes a longer duration in alignment of dentition that leads to dissatisfaction among the patients. So, numbers of techniques have been introduced to assist in the reduction of duration of the treatment. ² Temporary anchorage devices and surgical corticotomies have been discovered for lesser-duration treatment. Reducing the period of treatment with effective techniques, increases the acceptability among patients to accept the orthodontic procedure. ³⁻⁴

The usage of temporary anchorage devices (TADs) also recognized as mini-implants can accelerate the treatment in a number of cases. ⁵ Temporary anchorage device or mini implants momentarily fixed to bone for the principle of providing orthodontic anchorage by supporting the teeth, which is subsequently removed after use. ⁶ Mini implants produce skeletal anchorage and have been successfully proven in the treatment of cases with varying degrees of complications, if their placement is correctly positioned. Additional concern is to maintain oral hygiene around the TAD by the patient. ⁷⁻⁸

Currently, mini-implants have gained significant status as they provide greatest anchorage in conditions involving orthodontic movements that require maximum control.⁹ Considering the insertion sites, mini-implants can be fixed in the cortical region of the alveolar bone of mandibular molar; in the median or paramedian sagittal area of the maxillary hard palate; and in the zygomatic bone for orthodontic corrections.¹⁰ Height and anatomic structures of the bone determine the length, shape and thickness of mini implants.¹¹

Despite the scientifically advancement in mini-implant use, still there are some limitations of surgical risk with some patients that leads to unwillingness in accepting these devices.¹² The present study is done to determine different experiences with mini implants among pediatric patients.

METHODOLOGY

This epidemiological study was done among patients undergoing orthodontic treatment in the Department of Pedodontics from April to December 2014 in Karad Institute of Dental Sciences. Prior to collection of data, ethical approval was obtained from the Institute and informed consent was taken from all the participants or their guardians.

All the willing participants in whom mini implants were fixed were included in the survey and participants with cleft lip and palate and with medical problems were excluded. A pre-tested survey was done among a 10 subjects in order to make sure the level of validity.

In this survey, all the participants or their guardians were interviewed with the help of a questionnaire containing information as experience during treatment with mini implants, acceptance rate of mini implants, tolerance, complications faced during procedure and satisfactory results with the treatment.

Every subject was asked to complete a questionnaire with eight sections from 1 to 8 according to severity of discomfort with visual analogue scale (VAS). Discomfort level was noted at different intervals of time. The data was analyzed by SPSS 16.0 software. Nonparametric test was applied to obtain the median of VAS scores.

RESULTS

The total study sample was 86 whom mini implant was fixed with orthodontic appliances. The participants were categorized as boys (41) & girls (45) with a mean age of 14 ± 23 years. After fixing the mini implant, most of the patients showed satisfactory results with time (86.4%).

In the present study, the most disagreeable feeling experienced was due to the pressure of mini implants on teeth surface (42.6%) followed by the time of insertion when the implant is placed in the bone (36.5%). Few subjects feel unpleasantness at the time of removal of implant (20.9%) as shown in Graph 1.

Graph 2 showed that most of the patients face problems with mini implants during mastication of food (28.2%) and speech (23.6%). It also leads to poor oral hygiene in 16.4% of the subjects. It causes injuries in 10.6% of the

participants. Less number of participants showed its relation to poor aesthetics (6.5%).

The highest VAS scores were traced from the period of one hour to twenty hour i. e. (33.7 to 40.2). After this time the scores declined as 15.7 after one week, 8.2 after two week and 2.3 after one month (Graph 3).

After the placement of mini-implant, the immediate effect noticed by the patients is the pressure on tooth surface (31.3%) followed by pressure on mini implants (26.5%). Some felt discomfort in the jaw bone (18.7%) and hard palate (14.6%) as mentioned in Graph 4.

It was observed that most of the subjects get adopted to the mini implants in 5 to 10 days i. e. 37.4%, followed by 29.6% in 10 to 15 days. Less than twenty percent get used to within five days. Few participants showed normal response with implants after 15 days as showd in Graph 5.

DISCUSSION

Anchorage is the resistance to unwanted movement of tooth. The increased use of temporary anchorage devices (mini implants) has developed to decrease the risks of patient compliance in the wish of providing supplementary outcomes.¹³ They also provide increased flexibility in supporting the tooth movements with conventional appliance mechanics.¹⁴

The level of pain after placement of mini implant was seen maximum from one to twenty hours and the peak declined after one week. The result of the

present study was similar with study done by Kuroda et al., 2007. This drop in pain level could be brought by the restraint of supporting soft tissues. ¹⁵

Regarding the most disagreeable experience with mini implants felt by patients was pressure of implant followed by its placement. However Bustamante et al showed that numbness from the anesthetic was mentioned by 20%, pressure from mini implant fixation by 40% and too lengthy procedure was mentioned by 10% of patients. The fact behind the pressure of mini implant is perfectly understandable as it was a new procedure and unknown for the patients. It had been suggested by the orthodontist with the aim of facilitating the orthodontic treatment. Even after consenting to the procedure, patients felt some psychological discomfort, even though no pain had been said. ¹⁶

When the experience of mini implants was observed, mastication and speaking problems were commonly seen in the participants. But Bustamante et al showed that oral hygiene difficulties were mentioned by 40%, mastication difficulties by 10%, psychological pain by 10%. In spite of the huge contribution of these mini implants, they pose complexities related to surgical procedures, and discomfort level to the patients. Notwithstanding these barriers, patients should be inform in advance that surgical procedures are simple & are performed under local anesthetic. In addition, procedure efficiency is improved and time is shortened. ¹⁷

The study showed that most of the patients adapted to these mini implants 5 to 15 days, as the pain subsides with time and structures supporting implant

get stabilized with implant. The time required to adapting to mini implants, ranged from 5 to 15 days. Bustamante et al in their study mentioned that patients required around ten days to get used to implants. Sixty percent were entirely adapted by third day after surgery, whereas others required a longer duration of time. ¹⁶

CONCLUSIONS

The study showed that most of the participants were satisfied with mini implants as it accelerates the treatment. Mostly discomfort level was noted by the pressure of mini implant. Later on it also leads to chewing, speaking and hygiene problems. The peak level of pain was from one hour to one day and most of the subjects get used to the implants within 20 days. Mini implants are unquestionably accessory tools for treatment of orthodontists and ought to be utilized in selected cases demanding greatest anchorage.

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