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KNOWLEDGE AND AWARENESS ABOUT DISTRACTION OSTEOGENESIS AMONG DENTAL STUDENTS

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Abstract

There are multiple treatment modalities available to promote bone growth within the oral cavity. Distraction osteogenesis is a surgical dental procedure performed to initiate new bone growth in the maxillofacial region. This procedure has been employed for past 100 years in the lengthening of long bones.The aim of the study was to assess the knowledge and awareness about distraction osteogenesis among dental students.A custom made questionnaire comprising of 10 questions, 6 questions relating to knowledge and 4 questions regarding awareness about distraction osteogenesis were formulated and circulated among 100 undergraduate dental students. The responses were then subjected to statistical analysis. 67% were aware of the term distraction osteogenesis and the type of distracters. 75% were unaware of distractor and oral implant combination devices. 54% were aware that distraction osteogenesis being used as a part of orthodontic treatment.32% of them knew that distraction osteogenesis is ideal for vertical ridge augmentation and 50% were aware nerve injury is a complication of distraction osteogenesis.The present study suggests that among undergraduate dental students the knowledge and awareness regarding distraction osteogenesis is moderate.The knowledge and awareness of this procedure will increase if more clinical studies educational programs and research on the effectiveness of this procedure are conducted.

Keywords; Distraction osteogenesis, Implant, Ridge augmentation, Alveolar bone

INTRODUCTION:

There are multiple treatment modalities available to promote bone growth within the oral cavity. Distraction osteogenesis is a

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surgical dental procedure performed to initiate new bone growth in the maxillofacial region. This procedure has been employed for past 100 years in the lengthening of long bones (Codivilla, 2008). Predictable results have been developed through scientific studies by Russian surgeon, Gavriel Ilizarov (Ilizarov, 1989a). The basic principle behind this technique includes,corticotomy or osteotomy and placement of distraction devices, latency period of approximately 7 days of initial post surgical healing, gradual distraction at a rate of 0.5-1 mm per day and retention/consolidation period of several months for callus maturation and mineralization.(Ilizarov, 1989b)

The use of distraction osteogenesis has increased enormously in the last two decades especially for severe bone deficiency such as: (1) deficient maxilla or midface, (2) deficient hypoplastic mandible, and (3) deficient alveolar bone prior to implants placement. Malocclusion, sleep apnea, TMJ ankylosis, Pierre Robbins syndrome, ridge deficiency are all conditions which contribute to a poor oral status for individuals. These conditions can often be corrected with distraction osteogenesis (Bell & Guerrero, 2007).

As dentistry is always evolving, it is imperative to relay current trends to other professionals within the field of dentistry. Hence, it is important to be aware of these various procedures to provide current treatment options and inform each individual patient based on his/her particular needs (A. Rachmiel et al., 1998). Though, literature search reveals the effectiveness of these procedures, studies assessing knowledge and awareness about distraction osteogenesis is still lacking. Therefore, the goal of this research was to analyze the knowledge and awareness about distraction osteogenesis among dental students.

MATERIALS AND METHODS:

A custom made questionnaire comprising of 10 questions, 6 questions relating to knowledge and 4 questions regarding awareness about distraction osteogenesis were formulated and circulated among 100 undergraduate dental students. The responses were then subjected to statistical analysis. The study protocol was reviewed and approved by the Institutional Ethical Committee of Saveetha Dental College and Hospitals, Chennai.

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RESULTS:

Table 1 show the questions used in this study to assess the knowledge and awareness about distraction osteogenesis among dental students.

67% were aware of the term distraction osteogenesis and the type of distracters (Fig 1). 75% were unaware of distractor and oral implant combination devices (Fig 2). 54% were aware that distraction osteogenesis being used as a part of orthodontic treatment (Fig 3).32% of them knew that distraction osteogenesis is ideal for vertical ridge augmentation (Fig 4)and 50% were aware nerve injury is a complication of distraction osteogenesis (Fig 5).

Fig 1:Awareness of distraction osteogenesis

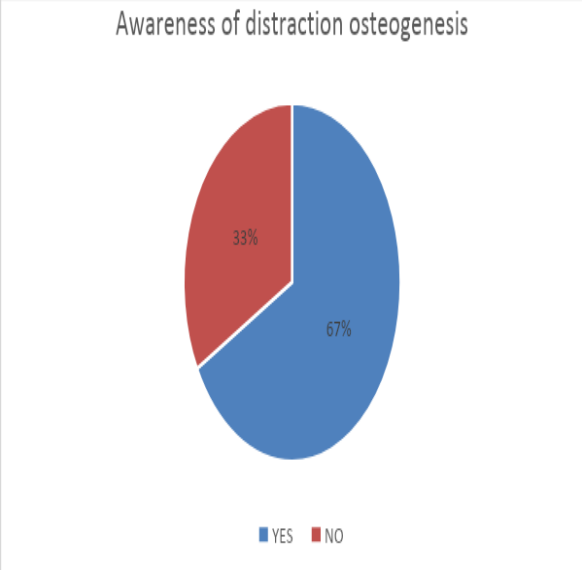

Fig 2:Awareness of distractor and combination devices

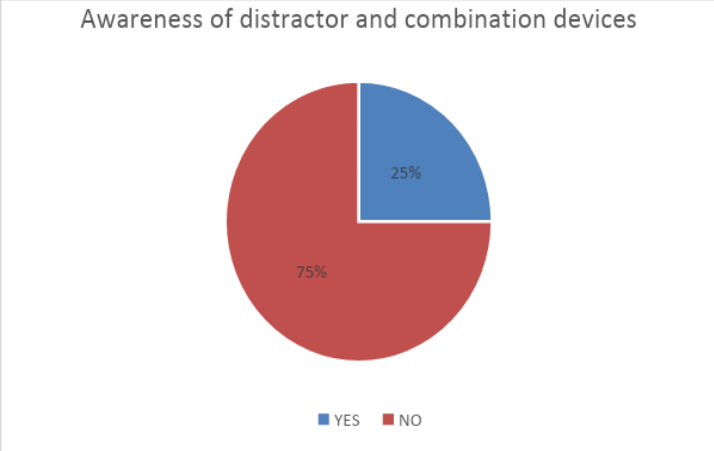

Fig 3:Awareness of distraction osteogenesis usage in orthodontic treatment

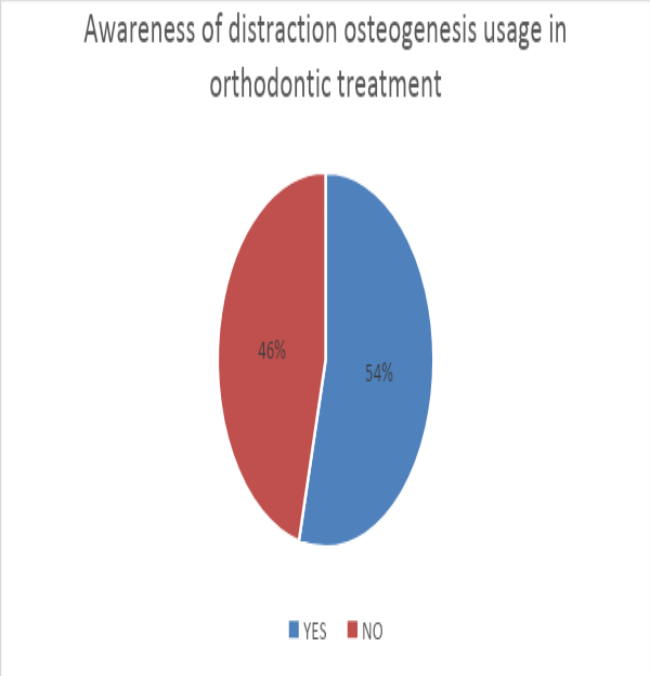

Fig 4:Awareness of distraction osteogenesis in ridge augumentation

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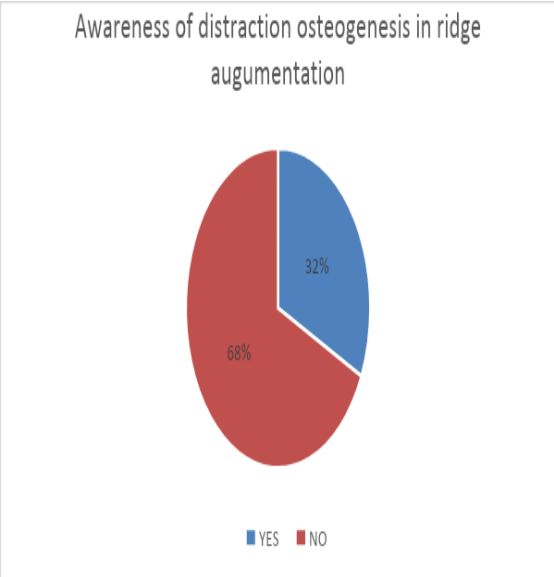
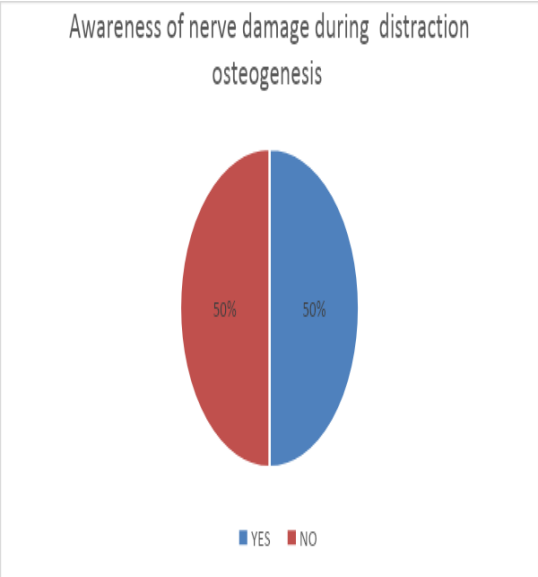


Fig 5:Awareness of nerve damage during distraction osteogenesis



DISCUSSION:

This study assessed the knowledge and awareness about distraction osteogenesis among dental students. Literature search reveals the effectiveness of distraction osteogenesis in various specialities in dentistry. Rachmiel A et al highlighted the use of distraction osteogenesis in oral and maxillofacial surgery(Adi Rachmiel et al., 2002)(Adi Rachmiel & Shilo, 2018) ;(Adi Rachmiel & Shilo, 2015) . Maheshwari S et al suggested the biomechanics and orthodontic treatment protocol in maxillofacial distraction osteogenesis (Maheshwari et al., 2011). McAllister SB[10] highlighted the role of distraction osteogenesis for vertical bone augmentation prior to oral implant reconstruction. (Maheshwari et al., 2011; McAllister, 2001; McAllister & Gaffaney, 2003)

To the best of our knowledge, this is the first study to assess the knowledge and awareness about distraction osteogenesis among dental students. In the present study, eventhough 67% and 60% were aware of the term distraction osteogenesis and the type of distracters, only 20% had known distraction osteogenesis as a treatment option for both implant placement and ridge augmentation.

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50% were known that osteotomies are made in distraction osteogenesis and 54% were aware that distraction osteogenesis being used as a part of orthodontic treatment. Hence, this study suggests that knowledge and awareness about the technique and its indications is still inadequate.

Also, in this study 75% of them have not seen any procedure employing distraction osteogenesis. Hence, this study emphazises there is a need for increased clinical training programs as a part of undergraduate dental curriculum.

CONCLUSION:

Our study showed that among undergraduate dental students, however there is knowledge and awareness regarding the term and the technique of distraction osteogenesis, still the knowledge about its indications are inadequate. Knowing treatment options is essential to provide optimal care for each individual patient. The knowledge and awareness of this procedure will increase if more clinical studies educational programs and research on the effectiveness of this procedure are conducted.

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Table 1: Questionnaire to assess the knowledge and awareness about distraction osteogenesis among dental students.

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QUESTIONS TO ASSESS KNOWLEDGE
Distraction osteogenesis is ideal for ---------- Vertical/ Horizontal ridge augmentation
Distraction osteogenesis is commonly performed in ---------- Maxilla/ Mandible
Among the following, distraction osteogenesis is a treatment option for ---------- Implants/Ridge augmentation/ Both
Whether osteotomies are made in distraction osteogenesis? Yes/ No
.Most common complication of distraction osteogenesis? Nerve injury/ Infection/ Adjacent tooth damage
Have you seen any procedure employing distraction osteogenesis ? Yes/ No

QUESTIONS TO ASSESS AWARENESS
Are you aware of the term “Distraction Osteogenesis”? Yes/ No
Are you aware of the type of distractors? Yes/ No

Are you aware of distractor and oral implant combination devices? Yes/ No
Are you aware that distraction osteogenesis being used as a part of orthodontic treatment? Yes/ No

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