

Research Article

NEW GUIDING JIG FOR PRECISE MINI IMPLANT POSITIONING

**Jerbin Vijai V M¹, Sanjay V Ganeshkar², Vijaylaxmi B Mendigeri³,
Radhakrishna Gogineni⁴ and Sanman Varne⁵**

10/62, Vijai Illam, Authivilai, Neyyoor Post, Kanyakumari-629802

ARTICLE INFO

Article History:

Received 16th November, 2023

Received in revised form 22nd November, 2023

Accepted 18th December, 2023

Published online 28th December, 2023

Keywords:

Mini - implant, anchorage

ABSTRACT

Mini implants have gained wide popularity for its promising results in clinical orthodontics as absolute anchorage. The risks associated with mini-implant insertion procedures without any guide can lead to various complications ranging from root damage to implant failure owing to root proximity. Development of occlusal canting, as a result of variable mini-implant height on either side of the arch is also a distinct possibility. This article describes a new implant guiding jig that can be used to guide placement of mini-implants more precisely by offering guidance in all three planes, which is made using the inventory readily available in the clinic

Copyright© The author(s) 2023. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

INTRODUCTION

Anchorage is the resistance to undesired tooth movement and is the most important factor affecting the success or failure of orthodontic treatment. The use of mini-implants to obtain absolute anchorage has recently become very popular in clinical orthodontics for its promising results. Widespread use of mini-implants has led to a need for precise placement. Accurate placement of mini-implant is of utmost importance for safety and stability.

The complications resulting due to positioning errors of mini-implants have been documented. The problems are

1. Risk of damaging the roots or the periodontium.
2. Possibility of mini screw-root contact resulting in early screw failure.¹
3. Development of occlusal canting, as a result of variable mini-implant height on either side of the arch.²

To avoid these risk factors and potential complications guides and stents have been developed.

Several guides and grids have been designed for accurate positioning of orthodontic mini implants. In this article, a new implant guiding jig is discussed that can be used for precise placement of mini-implants by offering guidance which is reusable and made using the inventory readily available in the clinic.

ARMAMENTARIUM

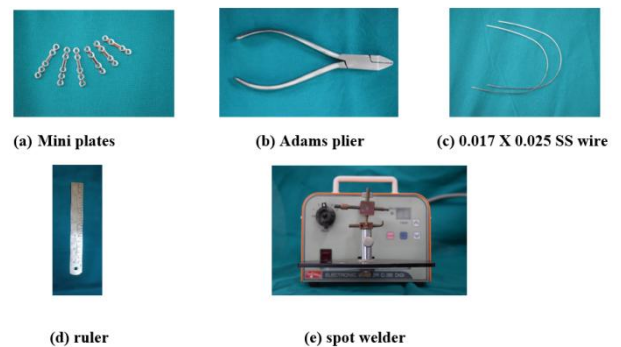


Figure 1: Aramentarium

Design and Steps in Fabrication of Implant Guiding Jig

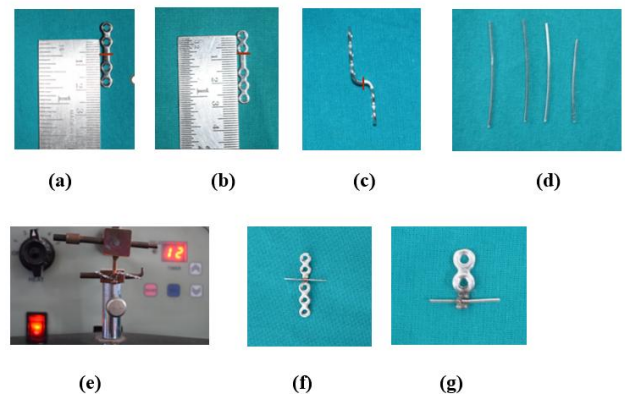


Figure 2: Design and Steps in Fabrication of Implant Guiding Jig
The new implant guiding jig is fabricated using the mini plates with holes of 2mm diameter to which 0.017” X 0.025” SS

*Corresponding author: **Jerbin Vijai V M**

10/62, Vijai Illam, Authivilai, Neyyoor Post, Kanyakumari-629802

wire is welded. Two jigs of 6mm and 8mm are made. Markings are marked on miniplates at 6mm and 8mm (fig. 2-a,b). Step bend is made at the marked point (fig. 2-c). 0.017” X 0.025” stainless steel wire is spot welded to the miniplates at the step bend and the excess part of miniplate is cut using disc cutting bur (fig. 2 d-g).

CLINICAL PROCEDURE

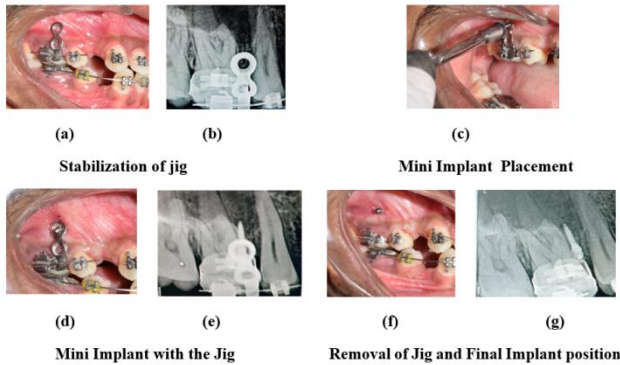


Figure 3: Clinical Procedure

The implant guiding jig is stabilized intra orally in the bracket slot (fig. 3-a). An Intra Oral Periapical radiograph (IOPA) is taken to determine the position of jig in relation to the roots (fig. 3-b). After stabilization of the jig, mini-implant is placed through 2mm diameter hole of miniplate(fig. 3-c,d,e). After placement of mini-implant the jig can be removed (fig. 3-f,g). The jig helps in easy placement of mini-implants at symmetric height bilaterally.

ADVANTAGES

- Simple and rigid design
- Quick and easy fabrication with chairside materials

- Cost effective
- Universal
- Precise placement of mini-implant
- Reusable after sterilization

CONCLUSION

One of the various factors of orthodontic mini-implant success is its precise location and accurate insertion. It is always safer to use guiding templates for placing mini-implants to reduce the risk of failure and complications as these guides can facilitate precise location which can be confirmed by radiographs.

There is no doubt that previously designed guiding jigs in the literature helps in precisely positioning the mini-implants, but the major disadvantage lies in their durability and stability. This new jig surpasses this major drawback as it is made up sturdy stainless-steel material and it is universal with dimensions of 6mm/8mm. It can also be sterilized and reused for other patients saving lots of effort and time.

References

1. Baumgaertel S, Razavi M R, Hans M G. Mini-implant anchorage for orthodontic practitioner. *Am J Orthod Dentofacial Orthop* 2008; 133:621-7.
2. Kuroda S, Yamada K, Deguchi T, Hashimoto T, Kyung HM, Yamamoto T T. Root proximity is a major factor for screw failure in orthodontic anchorage. *Am J Orthod Dentofacial Orthop* 2007;131(suppl):S68–73.
3. Roopak D Naik, Ameet V Revankar, Harshavardhan Kidiyoor, Sanjay V Ganeshkar . A 3-dimensional jig for accurate mini implant placement. *Orthodontic update* 2013;92:1-2.

How to cite this article:

Jerbin Vijai V M, Sanjay V Ganeshkar, Vijaylaxmi B Mendigeri, Radhakrishna Gogineni and Sanman Varne, (2024). “New Guiding Jig for Precise Mini Implant Positioning”. *International Journal of Current Advanced Research*.12(12), pp.2731-2732
