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Journal homepage: <https://www.ijodr.com/>**Short Communication****Accuroguide: A precision template for optimizing mini implant placement in orthodontics****Siddhant Ramesh Jadhav<sup>1\*</sup>, Suresh Kundalikrao Kangane<sup>1</sup>**<sup>1</sup>Dept. of Dental, MIDSR Dental College, Pune, Maharashtra, India**ARTICLE INFO***Article history:*

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**ABSTRACT**

In orthodontics, anchorage is often produced by bringing forth the desired movement of misaligned teeth utilising a tooth or group of teeth. As orthodontics has advanced over the past few decades, practitioners have used micro-implants for anchorage with great success. This is due to the implants' many benefits, including simplicity of insertion and removal, small size, and patient compliance.

Micro-implant(MI) placement has always been a challenging and complex therapeutic option. The placement of orthodontic mini-screw implants determines their stability and success. As a result, choosing an implant loading location carefully is essential. A clinical and radiographic evaluation may be used to determine the mini-implant placement site. Many techniques have been developed to facilitate the mini-implants placement but requires more time for guide fabrication or because of inaccurate radiographic interpretation. The present article provides a new method for fabrication of a simplified template for guiding mini-screw implant placement.

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For reprints contact: [reprint@ipinnovative.com](mailto:reprint@ipinnovative.com)**1. Introduction**

In orthodontics, anchorage is typically achieved by leveraging the movement of malaligned teeth with the support of a single tooth or a group of teeth. With the advancements in orthodontic techniques over recent decades, mini-implants have emerged as a reliable source of anchorage, offering several advantages. Their ease of insertion and removal, small size, and high patient compliance have contributed to their widespread success.

The selection of the optimal mini-implant placement site is determined through clinical and radiographic evaluation. Critical factors such as bone thickness, quality, and quantity at the site of placement play a pivotal role in the stability and effectiveness of orthodontic mini-screws. Various techniques have been developed to simplify the placement process and enhance outcomes.<sup>1</sup>

**1.1. Primary factors<sup>2,3</sup>**

1. The thickness and mobility of soft tissue.
2. The quality of cortical bone.
3. The quantity of cortical bone.
4. The site of screw implantation.

**1.2. Secondary factors**

1. The angulations of mini-screw to bone.
2. Degree of mini-screw to bone contact.
3. Degree of inflammation of the peri-orthodontic mini-screw tissue.
4. Craniofacial morphology.
5. Screw dimensions.
6. Insertion and removal torque.

The miniscrew implantation site is one of the most important elements influencing the stability of mini-screw implants.<sup>4,5</sup> To precisely insert the miniscrew

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into interradicular gaps, a screw placement site can be evaluated using a number of ways.<sup>6</sup> Brass wires<sup>7</sup> or metallic markers<sup>8</sup> are simple to position in the interproximal areas, although their relative positions may not always line up across radiographic images.<sup>9</sup>

An orthodontic mini implant guide contributes to the overall success of orthodontic treatment by ensuring.<sup>10,11</sup>

1. Precise placement.
2. Reducing complications.
3. Improving predictability.
4. Enhancing the overall patient experience.

This article describes a new template for orthodontic mini-implant placement that is accurate in determining the implant placement site and is simple to fabricate.

## 2. Materials

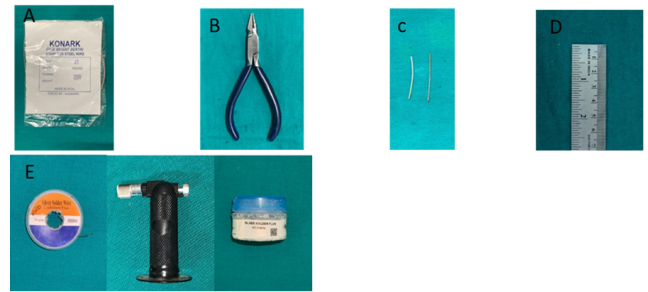
1. 21-gauge stainless steel wire.(Figure 1A).
2. Universal plier.(Figure 1B).
3. Small portion of 19x25 stainless steel wire.(Figure 1C).
4. Metal scale.(Figure 1D).
5. Soldering unit.(Figure 1E).

## 3. Method of fabrication

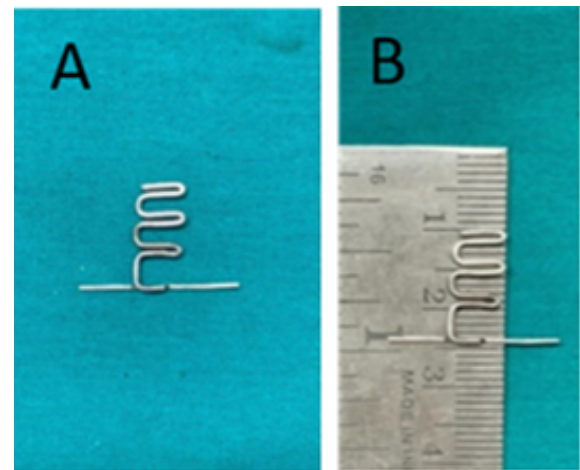
1. The guide is fabricated using 21-gauge stainless steel wire.
2. Wire is marked at 5mm from one end.
3. Using universal plier, wire is bent in a u loop fashion and compressed.
4. A 90° bend is given at the end of this u loop.
5. Leaving 2mm, another 90° bend is given for fabrication of following loop.
6. Multiple loops can be fabricated as per the depth of vestibule.
7. This template is soldered to base arch wire leaving 4mm from latest U loop.(Figure 2 A,B).
8. A stiffer base arch wire(19x25 SS) makes minimal movement of the template.

### 3.1. Clinical procedure

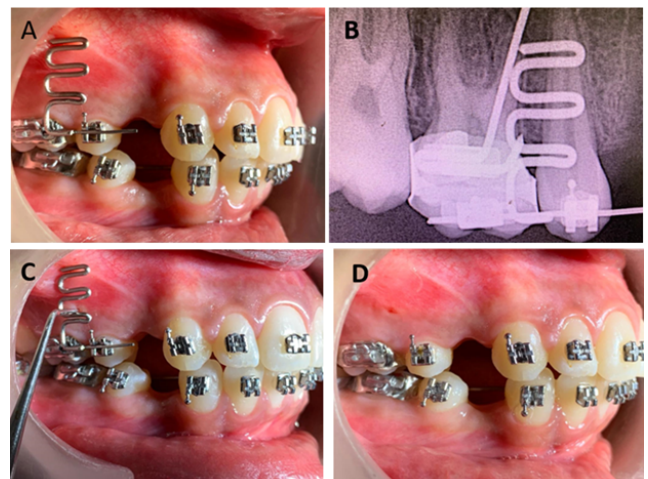
The guide is placed in buccal vestibule and inserted in molar tube on one side and premolar bracket on the other(Figure 3 A) An RVG is taken after securing this position(Figure 3 B). Mini-Implant placement site is located by using the template as a measurement guide. We get a precise vertical height for implant placement, the horizontal length is set at 5 mm to facilitate a straightforward estimation of half its length, thereby enhancing the likelihood of successful placement within the interradicular bone Probing is done in the determined location to induce a bleeding point, thus obtaining a site for Mini Implant placement(Figure 3 C,D).



**Figure 1:** A) 21-gauge stainlesssteel wire, B) Universal plier, C) Small portion of 19x25 stainless steel wire, D) Metal scale, E) Soldering unit.



**Figure 2:** A) Template soldered to base arch wire, B) Template compared with metal scale. |



**Figure 3:** A) Template placed in the vestibule, B) RVG of the secured template, C) Probing done to obtain bleeding point, D) Mini implant loading site obtained.

### 3.2. Advantages

1. Easy to fabricate.
2. Easy to install.
3. Materials readily available.
4. Increases accuracy of mini implant placement.
5. Minimizes complications due to incorrect mini implant position.
6. Cost effective.

### 4. Conclusion

Mini implant placement site determines the stability and success of the implant. Hence choosing an implant loading location with a greater accuracy is essential. Such guide can be easy to fabricate and help in choosing a precise location for our mini implants.

### 5. Source of Funding

None.

### 6. Conflict of Interest

None.

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