



## Duoguide: A Dual Helix Innovation for Optimized TADs Placement

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### KEYWORDS

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### ABSTRACT:

Implant placement has traditionally been a challenging procedure. Over the years, various designs and techniques have been introduced to achieve accurate positioning and ensure absolute anchorage in orthodontics. Since the 1980s, implant placement grids and templates have been commonly used for mini implant insertion. This article aims to present a straightforward and effective method for fabricating an orthodontic Duoguide using 0.018" Australian stainless steel wire, featuring a simple wire-bending technique.

**INTRODUCTION:** Conventional approaches to anchorage reinforcement typically involve the use of either intraoral or extraoral devices, each presenting inherent limitations. Extraoral appliances are highly dependent on patient compliance and are incapable of delivering continuous force, thereby compromising treatment efficacy. Intraoral methods, while more independent of patient cooperation, often result in varying degrees of anchorage loss, which can affect overall treatment outcomes.

The introduction of osseointegrated implants, following the groundbreaking research by Professor Branemark, marked a pivotal advancement in dental science. This innovation laid the foundation for the application of micro implants in orthodontics. Composed primarily of titanium, these orthodontic mini implants have transformed traditional anchorage paradigms by providing "absolute anchorage"—a stable, non-dental anchorage system that does not rely on adjacent teeth. <sup>1-2</sup>

Despite their advantages, the use of mini implants in clinical orthodontics is not without complications. Reported issues include implant mobility, oro-antral communication, peri-implantitis, unintended tooth movement, and implant fracture. One of the most significant risk factors for implant failure is the close proximity of the implant to adjacent tooth roots, particularly in the mandibular arch. This highlights the critical importance of accurate implant placement to avoid root contact and enhance clinical success. <sup>3-4</sup>

This complication is more frequently observed in the mandibular arch, underscoring the necessity for precise micro implant placement to prevent root proximity and potential implant instability. When a micro implant comes into contact with a tooth root, it may lead to adverse outcomes such as root resorption, loss of pulpal vitality, osteosclerosis, or dentoalveolar ankylosis. Therefore, accurate positioning of the implant is critical to ensure its long-term success. The use of **implant guides** has proven beneficial in enhancing the precision of miniscrew placement. <sup>5</sup>



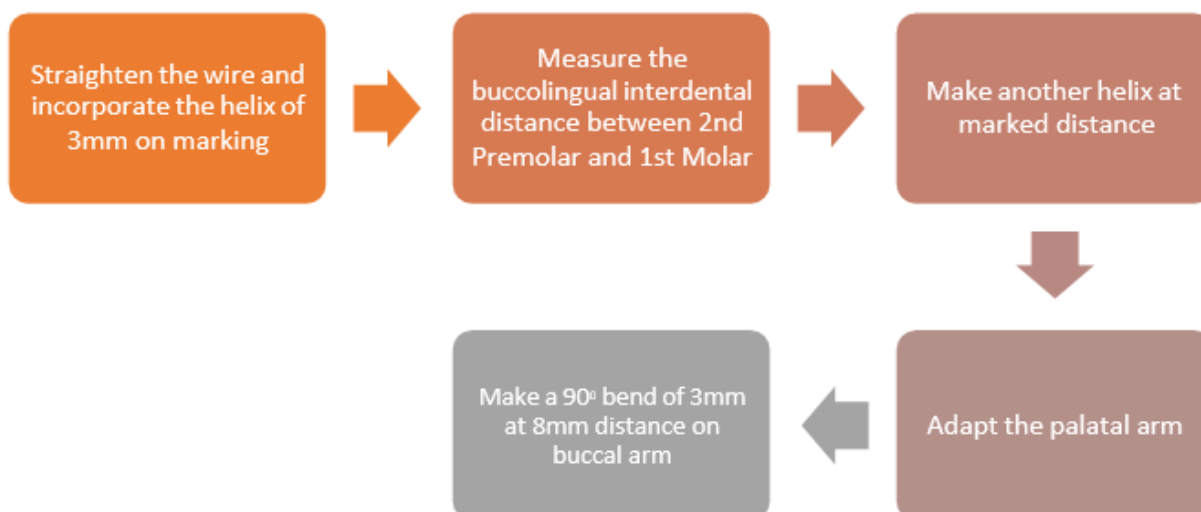
**MATERIAL & METHODS**

1. 0.018” AJ Wilcock SS wire
2. Wire cutter
3. Bird beak plier
4. Glass marking pencil



Figure 1: Armamentarium

**STEPS**





**PARTS OF DUOGUIDE**

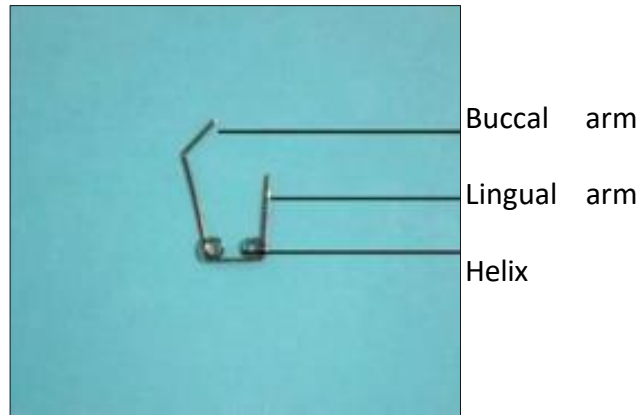


Figure 2: Parts of Duoguide

**DIFFERENT VIEWS OF DUOGUIDE**

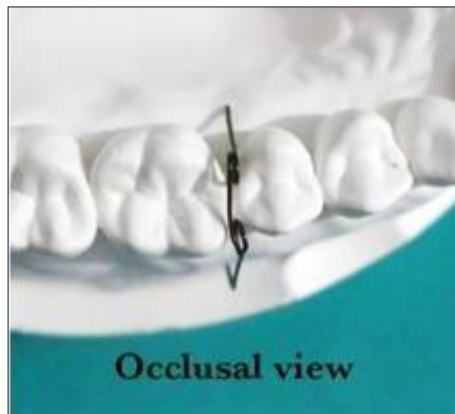


Figure 3: Occlusal view



Figure 4: Palatal view

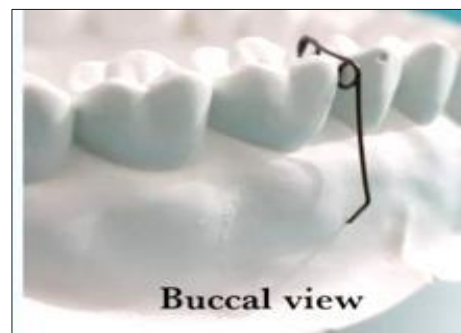
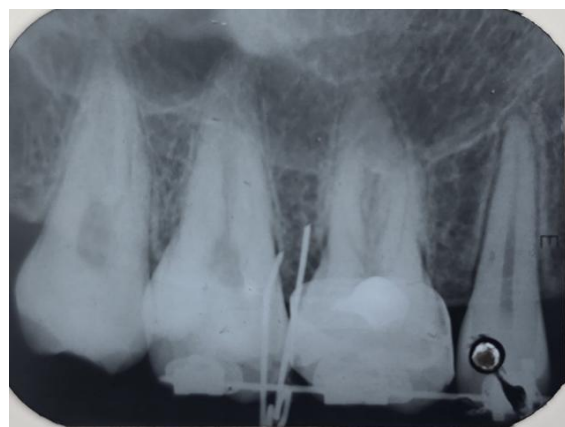


Figure 5: Buccal view



**Figure 5: Duoguide Insertion**



**Figure 6: RVG is taken to assess bone height for accurate miniscrew placement**

**INTERRADICULAR MINI-IMPLANT INSERTED AT PROBING POINT:**





## ADVANTAGES

**Chairside fabrication:** The ‘DUOGUIDE’ can be constructed directly at the chairside, eliminating the need for laboratory support or time-consuming procedures.

**Minimal armamentarium:** Fabrication requires only basic orthodontic tools and readily available materials, making it highly practical in routine clinical settings.

**Simple wire bending:** The design involves straightforward wire-bending techniques, making it easy to construct even for clinicians with limited wire-bending experience.

**Radiographic compatibility:** The guide allows for seamless acquisition of intraoral periapical radiographs (IOPA) or radiovisiographs (RVG) without removal, facilitating accurate assessment of bone height and implant positioning.

**No archwire removal required:** The MIP can be placed without interrupting the ongoing mechanics, as removal of the existing archwire is not necessary.

**Patient comfort:** The slim and contoured design of the MIP ensures minimal soft tissue irritation and provides a comfortable experience for the patient.

**Reusability:** The device can be sterilized and reused, offering a cost-effective solution for implant placement in multiple cases.

**Enhanced accuracy:** Provides a reliable clinical reference for identifying optimal implant insertion sites, thereby reducing the risk of root proximity and implant failure.

**Time-efficient:** Streamlines the implant placement process, saving valuable chairside time for both the clinician and the patient.

**Adaptability:** Can be customized to accommodate various interradicular spaces.

## CONCLUSION

The “DUOGUIDE” presents a simple, cost-effective,

and clinically efficient solution for precise orthodontic mini implant placement. Its chairside fabrication, minimal armamentarium requirement, and compatibility with ongoing orthodontic mechanics make it a highly practical tool in everyday practice. By aiding in the accurate identification of implant sites, particularly in areas with limited interradicular space, the “DUOGUIDE” reduces the risk of complications such as root proximity and implant failure. Double helix gives more retention as compared to single helix. This technique not only enhances clinical accuracy but also improves patient comfort and treatment efficiency, making it a valuable addition to the orthodontist’s armamentarium.

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