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Editorial

Transforming Oral Implantology with Magnetic Mallet

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Alveolar bone resorption occurs after tooth extraction due to various factors, including patient health, extraction techniques, and soft tissue damage. Rapid alveolar ridge remodeling happens in the first six months post-extraction, affecting the potential for prosthetic restorations like dental implants. New minimally-invasive extraction methods exist but lack evidence on lower bone resorption. Residual ridge features influence implant success. Various innovative surgical devices have been proposed, but clinical evidence for some applications is lacking. Timely evaluation of new techniques is vital to ensure their efficacy and safety. Magneto-dynamic technology, such as the Magnetic Mallet, is used in oral surgery. It delivers controlled forces with precision. Dental magnet technology was patented in 1873 by William Bonwill, and it has evolved over the years. Magnetic mallets are being used in various oral implant procedures like implant placement and sinus floor elevation, providing improved precision, patient comfort, and a more patient-friendly alternative to conventional tapping methods.

The magnetic mallet is designed with an ergonomic handpiece connected to a central control unit, allowing adjustments for various procedures. Different replaceable tips are used based on the specific procedure, and a pedal controls its operation, with force adjustments ranging from 75 to 260 kp. Attachments for magnetic mallets include bone expanders, osteotomes, cutters, and other instruments, all made of surgical-grade stainless steel for longevity. Various instrument kits are available, such as osteotome, extraction, and ridge split kits. They can be used in both anterior and posterior regions. There's also a crown remover handpiece available. In comparison to traditional osteotomes, magnetic mallets provide significantly higher force (6-7 times more), yet they are less invasive and cause less patient discomfort. Traditional mallets deliver fast blows with a longer duration, potentially dislocating auditory ossicles and causing dizziness. This risk is reduced with magnetic mallets because they apply force for a shorter duration. Magnetic mallets direct most of the force to bone manipulation, while traditional osteotomes waste a significant amount of force moving the skull, reducing procedure efficiency.

Magnetic mallets in oral and implant surgery present a multitude of advantages that revolutionize the field. Their precision control in terms of strength and timing allows for atraumatic tooth extractions, thereby reducing the need for bone grafts and cost. The speed and high-energy impact they offer expedite procedures while eliminating the necessity for drilling during implant site preparation, simplifying sinus lifting and ensuring better implant stability. Importantly, these mallets maintain minimal heat production and eliminate the need for irrigation, featuring long-lasting inserts compared to traditional piezo units. Their ergonomic design enables one-handed operation and provides an unobstructed view for better depth control, guaranteeing predictable force delivery, improved access, and a less invasive approach, which ultimately reduces patient recovery time.

In the realm of implantology, magnetic mallets further distinguish themselves by minimizing skull shake, reducing patient side effects, and preventing deviation during osteotomy. Their single-handed operation for visualization purposes, combined with calibrated force and short impulses, accelerates bone healing and preserves alveolar bone. The double-curved tips enhance accessibility and precision in bone splitting and sinus lifts, while the elimination of heat production and reduced post-surgical pain underscore their minimal invasiveness. This versatile tool excels in facilitating bone splitting and sinus lifts, marking a significant advancement in oral and implant surgery techniques.

Magnetic mallets are crucial in various dental procedures, including tooth extraction, implant placement, and bone manipulation. Dental implant success depends on bone density, with denser bone yielding better results. In cases of reduced bone quality, maintaining adequate density is essential for implant stability. D3

trabeculae, weaker than D2 and less favorable for implant contact, are common in certain areas, leading to higher failure rates. Osteotomes and magnetic mallets help compress and manipulate bone, preserving native bone and improving osseointegration. This approach is highly successful in cases with minimal bone width and height in deficient alveolar ridges.

Magnetic mallets offer significant clinical advantages over conventional instruments. They are faster, more precise, and efficient in bone condensing, making them ideal for preparing a high-quality socket for implant placement and simultaneous sinus elevation. However, more clinical studies are needed to confirm their safety and effectiveness in oral implant procedures.

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