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Short Communication

Mini Dental Implants: Hope or Hype in Dental Implantology

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Finding the ideal method to restore missing teeth has been a problem since the dawn of time. Dentures were previously the norm for restoring missing teeth. There are now options for better dental hygiene and an understanding of oral health, which has led to remedies for the majority of oral issues. The restoration of the stomatognathic system's normal contour, function, aesthetics, comfort, speech, and health are all included in prosthetic rehabilitation.

Modern implantology has shifted its attention to osseointegration, which has resulted in the development of the osseointegrated root form implant. The diameter of available implants ranges from 1.8 mm to 7 mm. The mini dental implant is a dental implant made of the same biocompatible material as normal dental implants, but with a smaller diameter (less than 3 mm) and shorter length. While narrow/conventional diameter implants normally have a diameter higher than 3 mm, mini implants have a smaller diameter (less than 3 mm). As a result, using mini dental implants to hold on to overdentures enables the adoption of less complicated surgical methods since the smaller diameter of the implant allows for its implantation in locations with little bone. These implants have been linked to better patient satisfaction and quality of life, instant stability, high survival rates, favorable marginal bone loss, and less postoperative discomfort. The dimensions (diameter and length) and the number of implants are typically determined by the quantity and quality of bone tissue present in the jaw. However, there are some drawbacks to overdentures supported by conventional implants, including cost, the challenge of placing the implant in the smaller buccolingual dimensions of bone without bone-grafting procedures, and the presence of chronic systemic diseases that can preclude most advanced procedures like bone grafts and lateralization of the inferior alveolar nerve. Consequently, opening flaps may not always be essential, reducing morbidity in the immediate aftermath of surgery. Additional benefits include bone expansion during installation that only requires a little osteotomy, which improves angiogenesis and increases the amount of osseous blood supply that is available to the supporting bone. Additionally, failure-related removal is simple, and healing requires little surgical trauma. When assessing patients with overdentures supported by small implants in terms of comfort, retention, chewing ability, and speaking ability, excellent patient satisfaction was discovered. These features are a few of the alluring ones that help patients adopt mini-implant therapies.

The indications of the mini dental implant include when normal implant insertion is not an option, mini implants for overdenture prosthesis retention should be taken into consideration. Patients who show unhappiness with traditional dentures and have restrictions on the placement of normal implants may be given the option of mini implants for rehabilitation. They are suggested for fixed replacement of the single or several teeth in a narrow ridge as well as bridge repair. Multiple implants are available at a reduced cost and can be utilized to stabilize removable complete or partial dentures. For patients with minimal financial resources, they may be appropriate. In cases where the facial-lingual width of the bone is insufficient for the insertion of a typical width implant, mini implants in the edentulous or partially edentulous arch are recommended. Due to narrower palato-labial bone and/or inadequate interdental space, mini implants are also used in the anterior maxilla. Insufficient buccolingual bone breadth is a typical reason for mini-implant placement in the atrophic posterior jaw. Orthodontic anchoring also frequently makes use of mini implants. In some situations, this application can also serve as an alternative to orthognathic surgery.

The contraindications of a mini dental implant include: for people who are medically unqualified for the procedure, mini implants should be avoided. Before beginning any clinical treatment, prospective patients must undergo a complete evaluation for all known risk factors and conditions connected to oral surgical procedures and subsequent recovery. A few examples of contraindications are as follows: vascular disorders, uncontrolled diabetes, bleeding issues, anticoagulant medications, excessive smoking, bone metabolic diseases, radiation treatment or chemotherapy, persistent periodontal infection, inadequate soft tissue protection, metabolic or systemic conditions that affect how well bones or wounds heal, using drugs that prevent or change normal bone remodelling, disorders that make it difficult for the patient to practice proper daily oral hygiene, unrestrained parafunctional tendencies, insufficient bone width or height, and lack of interarch space (not always placed in the narrow alveolar ridge).

Despite the drawbacks of the mini dental implants, the demand for these implants will increase, particularly among edentulous patients, for the following reasons: a rise in the demand for full dentures, the rising cost of conventional implants, access to care difficulties, particularly for economically disadvantaged patients indicated for maxillofacial prostheses, patients with medical conditions who might not be candidates for ridge augmentation or standard surgical methods, use of micro-implants as temporary supports for prostheses during the implant denture restoration's healing period when there is insufficient bone and space, a mini dental implant-supported permanent single crown can be used as an alternative to regular implants.

General dental surgeons are becoming more interested in implant dentistry. As a result, to provide conclusive prosthodontic treatment, it is necessary to analyze and combine the existing scientific evidence with the clinical data that is now accessible. The following elements affect the clinical effectiveness of micro-implants: mini implant architecture: enhancing implant form, thread patterns, and surface treatments result in faster osseointegration and improved primary stability, mini-implant size influences the area of potential bone retention, the success of mini-implants is substantially influenced by occlusion and masticatory pressures, the prosthesis position and number of mini-implants alter the forces acting on the bone around the implants, implant diameter and form, as well as the direction of the load, have an impact on the stress distribution.

Mini implants have been in use since around 1970, but the Food and Drug Administration did not approve them as "permanent" implanted devices until April 1999. (FDA). mini dental implants gained popularity among dentists when the FDA approved the MDI mini implant as a long-term technique for stabilizing dentures. The overwhelming majority of clinicians think that implants that do not need surgical preparation fail more frequently. Two key aspects must be taken into account when evaluating the failure rates of mini-implants: the biomechanical loading of the peri-implant bone and the timing of the loading, both of which are thought to affect the clinical outcome of the mini-implants. The cumulative survival rate is inversely correlated with implant diameter, although implant failure is not statistically significantly influenced by implant length. It has been demonstrated that instantaneous loading is feasible when peak loads do not go above a stress threshold at the implant neck. Further long-term studies are required to prove that the mini-implant technology can be used to stabilize prostheses over the long term and provide predictable levels of implant success.

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