SHORT LENGTH VERSUS CONVENTIONAL IMPLANTS IN REHABILITATION OF COMPLETELY EDENTULOUS MANDIBLE

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بسم الله الرحمن الرحيم

وَعَلَّمَكَ مَا لَمْ تَكُنْ تَعْلَمُ
وَكَانَ فَضْلُ اللّهِ عَلَيْكَ
عَظِيماً

صدق الله العظيم

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To my Parents, who guided and supported me throughout my life.

To my Wife who gave me continuous encouragement and endless care.

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Introduction

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The traditional treatment plan for the edentulous patient is the complete removable maxillary and mandibular dentures. However, such prostheses, especially the mandibular denture, have well-documented problems such as lack of stability and retention. This is affected by the height and shape of the mandibular ridge as continued loss of alveolar bone can occur over time, and cause previously stable dentures to become ill-fitting.

Subsequent bone loss leads to a decrease in the size of the denture bearing area, thereby reducing denture stability which causes insufficient retention of the lower denture, difficulties with eating and speech and altered facial appearance.

Osseo-integrated dental implants with implant-supported or retained mandibular overdentures provided an alternative to the essentially palliative therapy offered by conventional dentures. The McGill Consensus Statement and the weight of supporting scientific literature have shown that implant supported and retained mandibular overdentures are superior to the conventional complete denture. [(1)]

For the edentulous mandible a two-implant overdenture treatment relative to conventional denture treatment provided enhanced prosthesis retention, stability, improved masticatory performance, oral health-related quality of life and patient satisfaction have been identified for patients having persistent functional problems with an existing mandibular conventional full denture due to atrophic mandibular arch.

In clinical situations where bone resorption has occurred following tooth loss, various strategies have been proposed to overcome the anatomic and physiologic limitations of implant placement.

Surgical protocols employing bone grafting, inferior alveolar nerve transposition, distraction osteogenesis and sinus augmentation have been suggested for standard implants rehabilitation treatments, while these methods have obtained a level of success, many patients are unable or unwilling to undergo such surgical procedures due to high cost, the need for multiple surgeries and poor general health. [2]

With the introduction of short implants, dental implant rehabilitation for resorbed ridges is a less complex, less traumatic and more safe treatment option for edentulous patients showing bone height and volume limitations.

Biomechanically, short implants might be disadvantageous specially when combined with poor bone quality and high occlusal loads. However, the majority of the stress concentration is distributed at the level of the first few threads to the crestal cortical bone when an implant is loaded and that an implant with a larger diameter helps to reduce the maximum stress/strain values at the bone-implant interface. [3]

The development of implant design, surface structure, and improved surgical technique has given reason to re-evaluate previous results in clinical situations with bone limitations. Several studies have demonstrated that short dental implants could be used successfully. However, the clinical effectiveness of short length implants versus conventional length implants was not thoroughly investigated. [4]