THE EFFECT OF ONE PIECE IMPLANT LOCATOR VERSUS TWO PIECES ON THE MARGINAL BONE LOSS IN IMPLANT SUPPORTED OVERDENTURE

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By

Haitham Awad Metwally Elsisi

B.D.S, Ain Shams University (2004)

M.D.S, Ain Shams University (2010)

Faculty of Dentistry

Ain Shams University

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Supervisors

Prof. Dr. Hany Ibrahim Eid

Professor of prosthodontics

Faculty of dentistry, Ain Shams University

Dr. Tamer Omar Ibrahim

Assistant professor of prosthodontics

Faculty of dentistry, Ain Shams University

Faculty of Dentistry

Ain Shams University

بسم الله الرحمن الرحيم

{قالوا سبحانك لا علم لنا إلا
ما علمتنا انك أنت العليم الحكيم}

صدق الله العظيم

سورة البقرة {٣٢}

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Dedication

Dedicated to,

My loving family without their guidance, wisdom and knowledge, I would not be able to achieve my goals and reach my dreams.

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Introduction

Edentulous patients unusually suffering from lack of optimal stability and retention with their mandibular dentures especially in cases with severely resorbed mandible.

Currently, implant supported overdentures are a reliable treatment alternative for completely edentulous patients. Many patients, who suffered from retention problems of mandibular dentures, did not desire complete prosthesis. The implant supported overdentures offered them a treatment alternative, that was reliable and that provided phonetic, esthetic and economic advantages. It provides better chewing experience, masticatory performance, less complaints and higher satisfaction when compared with conventional complete denture treatment.

Many attachments have been used to retain implant supported overdentures including bars, magnets, studs and telescopes. The locator attachment is a new system that does not involve the splinting of implants. Since it was introduced in 2001, the locator has been widely and successfully used to support dentures. This attachment is self-aligning, has dual retention and is available in different colors with different retention values. Although there have been few clinical studies on the locator system, locator attachments have many clinical advantages such as their availability in different vertical heights, their resilience, retentiveness and durability. In addition, repair and replacement are quick and straightforward. [(1)]

Numerous studies have demonstrated that osseointegrated implants used as anchors for complete denture have become a widespread and predictable treatment modality for the edentulous jaw. The high success rate of interforaminal implants used to support mandibular overdentures is well documented with longitudinal studies.

The introduction of the two-stage surgical procedure for osseointegration with delayed loading has been challenged rapidly by proposals for different clinical protocols. The objective was a decrease in overall treatment time via single-stage surgery and immediate prosthesis function. The anterior zone of edentulous mandibles provided the most predictable results with both fixed and overdenture prostheses; however, reports on immediate loading protocols in edentulous maxillae were not supported by comparable long-term follow-up periods, as demonstrated in early research reports on osseointegration. [(2)]

Nowadays one piece implant is used for retaining overdentures and has better results when immediately loaded compared with the traditional two pieces implant and attachment which is loaded according to the Branemark loading protocol.

Review of literature

I. The state of edentulism

1. Sequels of edentulism

Loss of all permanent teeth is the terminal outcome of a multifactorial process involving biologic processes (caries, periodontal disease, pulpal pathology, trauma, oral cancer) as well as non biologic factors related to dental procedures (access to care, patient preferences, treatment options ,etc.). The distribution and prevalence of complete edentulism between developed and less-developed countries may be associated with a complex interrelationship between cultural, individual, access to care, and socioeconomic factors. World Health Organization databanks indicate that caries is still prevalent in the majority of countries internationally, with some reporting 100% incidence in their populations; severe periodontal disease is estimated to affect 5% to 20% of the population, and the incidence of complete edentulism has been estimated between 7% and 69% internationally.[3]

After teeth loss patients suffer from tremendous consequences concerning; jaws anatomical structure, function, esthetics and psychology. The close relationship between the tooth and the alveolar process continues throughout life. Wolf's law states that "bone remodels in relationship to forces applied". Bone stimulation through teeth and its periodontal ligaments maintains its form and density. [4, 5]

Lack of stimulation to the residual bone due to tooth loss with its periodontal ligament support causes a decrease in the trabeculae and bone density with loss of the external bone width and height, a perfect example

of disuse atrophy. Periodontal bone loss before teeth extraction, hyperparathyroidism, hypogonadism and nutritional deficiencies share in accelerating bone resorption. Bone loss is not limited to the alveolar bone; also portions of the basal bone may be resorbed. [6-8]

Tooth extraction in the mandible will result in continual reduction in alveolar bone volume. It is more dramatic in the mandible than the maxilla. The continued resorption of the mandibular alveolar bone is associated with greater difficulty with mandibular denture construction, use and satisfaction. This absence of teeth is also associated with reduced social and physiologic function. [9, 10]

The effect of bone loss together with the aging process cause facial changes and esthetics consequences as decreased facial height, rotation of the chin forward, deep facial grooves, loss of tone of facial muscles of expression and thinning of the vermillion border of the lips. These changes together give the patient an old prognathic appearance. [11, 12]

2. Solutions for problems of edentulism

The construction of complete denture was the only solution for the edentulous arch for many decades. This treatment modality faced many problems especially in the lower jaw. The decreased area of coverage, flooding action of saliva and the activity of the tongue resulted in unstable prosthesis. A removable prosthesis neither stimulates nor maintains the bone health. It accelerates the bone loss especially for patient continues wearing ill fitting denture. [13]

The problems of complete dentures in continued alveolar bone loss leading to lack of stability and retention especially of the lower denture