بسم الله الرحمن الرحيم

"وَمَا أُوتِيتُمْ مِنَ الْعِلْمِ إِلا قَلِيلاً"

صدق الله العظيم

(الإسراء: الآية٨٥)

Dedication

To my mother who always prays for me.
To my father who always helps me.
To my wife who always supports me.
To my brother who always stands beside me.
And to my beloved kids Reem, Rowan and Amr.

EFFECT OF FLAP DESIGN ON CERVICAL BONE RESORPTION AROUND ENDO-OSSEOUS IMPLANTS: A CLINICAL AND RADIOGRAPHIC ASSESSMENT

Thesis

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AIM OF THE STUDY

This study was designed to compare between flap and flapless techniques in implant placement regarding:

1. The clinical evaluation of osseointegrated implants.
2. The bone height and density changes around the endo-osseous implants.

HISTORY OF IMPLANTOLOGY

An endosteal implant is an alloplastic material surgically inserted into a residual bony ridge primarily as a prosthodontic foundation. The prefix endo means "within," and osteal means" bone" [8].

Root form implants are the design most often used in restoration of the partially or completely edentulous patient. The desire has always been to replace missing teeth with something similar to a tooth. Root form implant history dates back thousands of years and includes civilizations such as the ancient Chinese, who 4000 years ago carved bamboo sticks the shape of pegs and drove them into the bone for fixed tooth replacement. The Egyptians, 2000 years ago, used precious metals in a similar method, and a skull was found in Europe with a ferrous metal tooth inserted into a skull in a similar fashion. Incas from Central America took pieces of sea shells and tapped them into the bone to replace missing teeth [9] (Fig. 1).

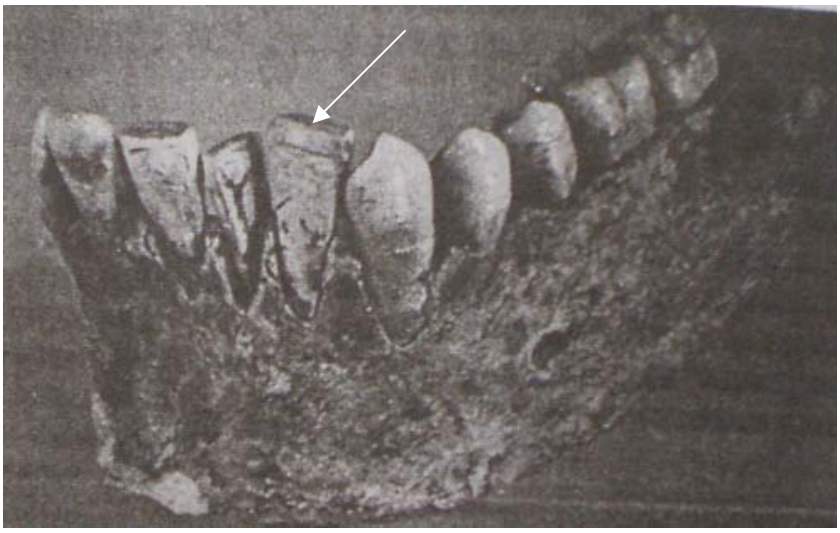

Fig. 1: Fragment of a lower mandible with a wooden wedge implant.

Maggiolo [10] introduced the more recent history of implant dentistry in 1809 using gold in the shape of a tooth root. In 1887 ***Harris*** [11] reported the use of teeth made of porcelain into which lead-coated platinum posts were fitted. Many materials were tested, and in the early 1900s ***Lambotte*** [12] fabricated implants of aluminum, silver, brass, red copper, magnesium, gold, and soft steel plated with gold and nickel

The first root form design that differed significantly from the shape of a tooth root was the Greenfield latticed-cage design in 1909, made of iridoplatinum [13].

Surgical cobalt chromium molybdenum alloy was introduced to oral implantology in 1938 by ***Strock*** [14] when he replaced a maxillary left incisor single tooth, an implant that lasted more than 15 years. In 1946 ***Strock*** designed a two-stage screw implant that was inserted without a per-mucosal post. The abutment post and individual crown were added after complete healing [15].

Bone fusing to titanium was first reported in 1940 by ***Bothe et al*** [16]. In 1952 ***Branemark*** [17] began extensive experimental studies on the microscopic circulation of bone marrow healing. These studies led to dental implant application in early 1960; 10-year implant integration was established in dogs without significant adverse reactions to hard or soft tissues. Studies in human beings began in 1965, were followed for 10 years, and were reported in 1977.

Classification of dental implants:

Many classifications for dental implants have been reported, however the most accepted one is that classifying them according to the form and material as following:

I. According to the form:

The forms most commonly used are categorized into 4 types:

1. Endodontic stabilizers:

They are used for treatment of mobile teeth, where the stabilizer is inserted through the dental canal perforating the apex. They are made of titanium or chrome cobalt. The use of endodontic stabilizers is safe and effective [(18)].

2. Intra mucosal inserts:

They are small button like retentive elements used to provide retention for partial or complete dentures. The insert consists of a head which is inserted in the mucosa; neck and base which are attached to the denture. ***Muratori 1988*** [(19)] , stated that intra mucosal inserts were not true implants as they were permanently fixed to a removable prosthesis and tissue holed them temporarily.

3. Subperiosteal implants:

They are inserted under the periosteium on the bone surface. Early, they were made from vitalium, later on , they were available as titanium subperiosteal implants in hydroxyapatite coating. In general, they were used for treating patients with atrophied alveolar ridge [(20)]. In light of poor long-term data and existence of alternative methods with much

improved results, ***Albertktson et al 1986*** [21] , have proposed clinical indications of Subperiosteal implants (Fig. 2).

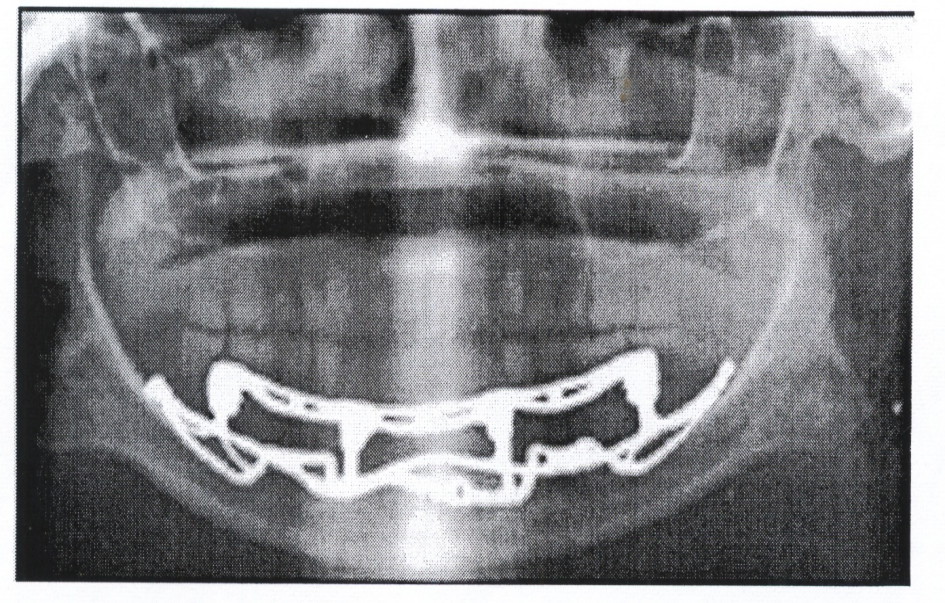

Fig. 2: Panoramic radiograph showing subperiosteal implant.

4. Endosteal implants:

These implants are inserted into the residual bony ridge. There are three main designs of endosteal implants:

****Transosteal implants:*** They are one piece implants made of chrome cobalt alloy or titanium. The most common form is the mandibular staple bone which is used to rehabilitate the severely atrophic edentulous mandible. The problems which may result from this type of implants are usually due to their improper placement labiogingivally. The main drawbacks of this implant are their limitation to the fully edentulous lower jaw, gingival reaction around the pins and/or compression loading of the implants [22].

****Blade form implants:*** They are flat plates, with a larger surface area, spreading the masticatory forces over a larger area of bone, the