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Full Article - Dental Implants by Doctor Linda Asfour

Advanced dental science is offering artificial tooth roots which fuse with the jawbone to form a secure foundation for tooth replacement .This concept for oral rehabilitation was developed more than 45 years ago by a Swedish scientist and orthopedic surgeon .Prof Per Ingmar Branemark.

In the late 50's Prof Branemark studied in his laboratory at Goteborg, phenomena of bone repair .He did make a metal tube and screwed it into the tibia of a rabbit. At the end of this device was an optical chamber to film the process of bone repair. This device was made of titanium. When Prof Branemark wanted to get back to the optical chamber, the study being completed, he realized it was welded to the bone of the rabbit. The osseointegration was born. He quickly realized that many applications might arise from this discovery, particularly at the mouth level. These titanium elements inserted into the bone can support fixed prosthesis. The first patient was treated this way from 1965.

Osseointegration is defined as a phenomenon of a direct contact between living bone and a metal (titanium).This integration is done through the titanium oxide which covers the surface of the implant. Bone cells do not recognize the titanium as a foreign body if the implant is machined in a certain way and under a very precise and aseptic condition.

The implant is fixed permanently in the bone and anchors to the crown providing support for chewing.

Benefits of dental implant

Improve appearance .Each tooth is made up of a crown and a root. The crown is visible while the unseen root anchors the crown to the jawbone, providing stable support. Many options are available for replacing a crown but only dental implants can replace its root. If the root is not replaced, shrinkage of the jawbone occurs, causing the face to appear older.

Improve comfort, speech and mastication. Since implants are anchored securely to the jaw bone, they feel, look, and function like natural teeth.

Maintain healthy adjacent teeth. With traditional treatment of missing tooth, two teeth adjacent to the missing tooth must be ground down to place a bridge. Dental implants eliminate the need to modify healthy teeth, resulting in a more conservative and esthetic restoration.

In the case of a total loss of teeth in one or both jaws, a full denture may work for the short term, but without tooth roots the jawbone slowly shrinks causing the denture to lose its fitness. This can lead to potential discomfort. Gradual loss of jawbone can also change the shape of the

face and appearance. Dental implants once fused in the jaw they can be restored with fixed bridge or over denture and that keep the bone healthy and the teeth securely in place.

Treatment Procedure

A comprehensive examination should be taken prior to implant treatment including panoramic x-ray and CT scan to determine the bone quality and quantity, to locate the vital structures, providing a guide for ideal placement of the Implant. After the dental implants are placed, they are covered with gum tissue while the bone heals. During the next three to six months, the implants will bond with the jawbone. Temporary crowns, bridges or over dentures are optional during this bone healing period. Once the dental implants have fused with jawbone, a post is attached to each implant. While the gum tissue is healing, temporary crowns, bridges or over dentures should be in place. When the gum tissue has healed an impression is taken to be used in designing the final dental restoration.

The successful rate of the Implant depends mainly on the operator's skills, the bone quality, the oral hygiene of the patient and the patient's general health. Studies have shown a successful rate of 95 percent for the fixture implant and higher for the bridges they support.

Absolute contraindications to dental Implants are: Insufficient bone above the mandibular nerve in the lower jaw or under the sinus wall. Bruxism (tooth clenching), uncontrolled type 2 diabetes, heavy smoking and active chemotherapy.

In case of insufficient bone an artificial bone graft or grafts from the iliac crest (hip) or from the chin can be used.

Dental Implant can develop a condition called peri-implantitis and is defined as an inflammatory reaction with loss of supporting bone in the tissues surrounding an implant. The overall frequency of peri-implantitis was reported to be 5%-8%. In individuals with history of chronic periodontitis (Gum disease) the incidence of peri-implantitis was 4-5 times higher than individuals with no history of periodontitis. Heavy smoking, diabetes and poor oral hygiene are usually associated with this condition. Treatment of peri-implantitis consists of plaque control, mechanical and surgical instrumentation of the affected area combined with systematic antibiotic and oral hygiene instruction.