



Backgrounder: Dental Implants

The need for tooth replacement

Teeth confer quality of life. They enable you to eat, speak clearly and smile. Your teeth are an important part of your personal charisma and appearance. Teeth also give you security and self-confidence but most people take this for granted until they lose or severely damage a tooth.

Despite the improvement and progress in oral health in the United States for example, 7% percent of young Americans have lost at least one permanent tooth by age 17, Among adults aged 35 to 44, 69% have lost at least one permanent tooth. As many as 26% of adults aged 65 to 74 have lost all their natural teeth¹. More recent estimates indicate that 33% of the US population over 65 years of age currently suffer from a lack of teeth². The percentage has dropped considerably over the past five decades but the baby-boomer generation is reaching age 60. Although the percentage has been falling, the absolute number has remained the same or has increased slightly, both in the US and in Europe. Edentulism therefore poses a substantial problem and is even classified as a disability in the US.

The loss or absence of teeth, be it through dental disease, accident or congenital defect, not only affects a person's appearance, it also detracts from the ability to eat and enjoy food. Loosing teeth also affects a person's speech and, perhaps most importantly, the inability to eat properly can have significant further health consequences. Fortunately there are replacement solutions.

For almost 30 years, dental implants have offered a scientifically proven means of replacing teeth fully. Implants can be used to replace one or more missing teeth or to anchor dentures securely and make an important contribution to improving patients' quality of life.

What is a dental implant?

A dental implant is a small screw made of medical-grade titanium, a tested and proven material that is well tolerated by the body. It is inserted directly into the jawbone, which subsequently grows onto the implant surface to anchor it firmly. This lasts 6 to 12 weeks or longer depending on the initial situation and the type of implant surface. Straumann's new SLActive implant surface technology has been shown in preclinical studies to reduce healing times to between just 3 and 4 weeks. After this healing period, the tooth replacement - in the form of a crown, a bridge or a denture is secured to the implant.

¹ Statistics published by the Surgeon General, U.S. Department of Health and Human Services, May 2000

² Goldman Sachs Global Investment Research, June 2005



Natural tooth



Dental implant with crown



Why are dental implants the right choice?

Single-tooth gap



Conventional tooth replacement methods rely on using available teeth to support a bridge. In a single-tooth restoration, for example, the healthy neighboring teeth on each side of the gap have to be ground down to carry crowns, which are bridged together with one or more false teeth. The crown-and-bridge unit is subsequently cemented onto the ground tooth stumps.

Conventional crown-and-bridge treatment



The dental substance removed by grinding is lost permanently. With implant solutions, however, it is not necessary to grind the neighboring teeth because the implant replaces the root of the missing tooth and acts as a support for the tooth replacement. Implants thus provide dental replacement solutions that are widely regarded as the closest thing to natural teeth.

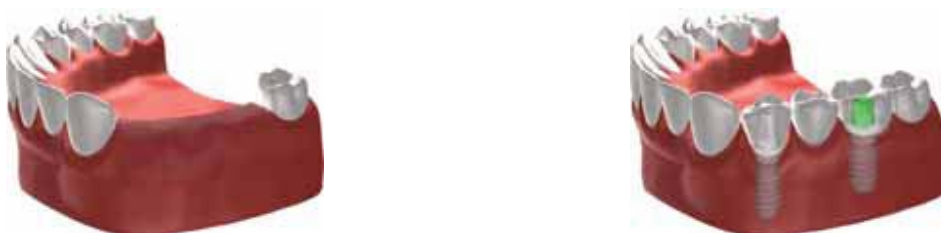
Implant-based treatment



Single-tooth replacement



Multiple-tooth replacement with two implants and a bridge



Restoring the teeth of fully edentulous patients

Multiple implants can be used to support a non-removable bridge or a removable denture.

Full teeth replacement with a non-removable bridge anchored on several implants



Dentures

A conventional denture is held in place by air pressure, like a suction cup. Studies show that even the best dentures are only about 20-25% as efficient as natural teeth. They reduce nutrition by limiting food selection and the ability to chew/grind. The biggest problem with lower denture is that it 'fish-tails' from side to side.

A conventional, removable full denture



Even one or two implants dramatically increase the stability. Research has shown that patients with implant-stabilized lower dentures select better foods and have better general health and well-being than those with regular dentures. Research has also shown that people with implant-stabilized dentures are more likely to go out to eat with friends or relatives – so their quality of life improves dramatically.

A removable full denture secured by two implant-borne clip-in retainers



Removable full denture secured by four implants with three bars



The problem of bone loss

After teeth have been lost or removed, the bone that once held them tends to die back, affecting the remaining dental situation and the facial contours. In patients with conventional full dentures, bone shrinkage eventually results in the loss of denture stability, painful pressure on the gum and denture breakage. Implants can also be inserted to stabilize and anchor full dentures. Furthermore, there is proof that dental implants preserve the bone and prevent osseodegradation.

What does the procedure involve?

Dental implants are usually inserted into the bone in an outpatient procedure under local anesthetic.

Example: replacement of a single tooth.

1. Treatment planning



Careful planning is critical for long-term esthetic outcomes. Planning the surgical procedure begins with an assessment of the patient's individual oral situation and takes his or her wishes into consideration. When all questions have been clarified, X-rays are taken to plan the operation and determine the position of the dental implant.

2. The operation



The next step is insertion of the implant under a local anaesthetic.

3. Incorporating the dental replacement





Before the prosthetic tooth (crown) can be incorporated, the implant has to gain sufficient stability, which means that the jawbone has to grow into the pores on the implant surface and anchor the implant permanently. This healing process typically lasts 6 to 12 weeks or longer depending on the initial situation and the type of implant surface, although Straumann's new SLActive implant surface technology has been shown in preclinical studies to reduce healing times to between 3 and 4 weeks. When the healing period is complete, the crown is secured on the implant.

Based on cases reported, the current success rate of Straumann dental implants is greater than 99.9% in healthy patients after the healing phase and prosthetic restoration have been completed. Conscientious oral hygiene, regular check-ups and appropriate care obviously contribute to the longevity of the implant just as they do to natural teeth.

About the Straumann® Dental Implant System

Renowned for its outstanding quality and precision, the Straumann Dental Implant System is one of the most successful and widely used implant systems in the world. It is also one of the longest and most extensively documented systems and is backed by more than 3000 publications. Its lasting success is the result of outstanding reliability and safety. Designed for maximum flexibility with a minimum number of components, the Straumann system includes three types of implant: the Straumann® Standard implant, pioneer in one-stage or transgingival healing, the Straumann® Standard Plus implant, for trans-, semi- or subgingival implant placement in the esthetic region, and the Straumann® Tapered Effect implant for immediate and early implantation. All Straumann implants have the SLA® surface, offering the option of immediate loading³. They are now also available with Straumann's leading SLActive surface technology which cuts healing times in half.⁴ The system is based on two prosthetic concepts: abutment-level impression (solid abutments) or implant-level impression (synOcta® prosthetic system). Straumann also offers an individualized implant prosthetic service.

Costs

The cost of tooth replacement depends on the indication and the patient's oral situation (e.g. the state of the bone and gum tissues). The cost obviously increases if the patient requires bone augmentation or soft tissue treatment and dental treatment charges vary from country to country and according to the level of the treating professional's specialization. It is therefore difficult to provide general guidelines. However, it should be noted that the material costs represent only about 15% of the overall treatment cost.

The comparison of short and long-term costs is a crucial factor in the choice of dental replacement. Although dental implants are associated with a higher initial investment, in many cases they offer a more economical solution in the long term.

³ With good primary stability and appropriate occlusal loading. In fully edentulous cases, four or more implants must be splinted together.

⁴ SLActive is available in Europe, North America, parts of Asia, and in some other regions.