

Background

Dental implants and Astra Tech

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Tooth loss: a common problem

Tooth loss affects many people. Between 6% and 10% of the populations of North America, Japan and Europe have no teeth in either their upper or lower jaw.

More than 240 million people in these parts of the world are missing one or more teeth. Some five million (2%) have dental implants, while 50 million have traditional bridges or false teeth. The majority of more than 180 million people receive no treatment at all and they simply live with one or more gaps in their mouth.

Retirees are the largest, most rapidly growing age group in need of tooth restorations. According to the World Health Organization, 29% of the population in the U.S., 50% in Australia and 20% in Japan above the age of 65 have no natural teeth.

In Europe, the percentage of people over 65 years old who are missing all their teeth, varies considerably. Sweden (13%) and Switzerland (12%) are in relatively good shape, Germany (25%) does not fare quite as well, while the UK (57%) and the Netherlands (65%) fare much worse.

Traditional solutions

The average life expectancy is generally increasing and older people represent a growing percentage of the population. The demand for functional, attractive teeth at all stages of life has also grown in recent years. Many older people lead active lifestyles and are now unwilling to accept traditional solutions, such as bridges and dentures, that may adversely affect their overall appearance and leave them with less than ideal chewing function. Younger people who have lost one or more teeth are eager for solutions that feel like real teeth and that will last for the rest of their lives.

A traditional bridge requires the dentist to grind down adjacent teeth so that there is a support to which the bridge can be fastened. However, supporting teeth can decay and/or loosen over time requiring the need for new bridges.

When all the teeth in either the upper and lower jaw are gone, dentures represent one treatment option. But because traditional dentures do not help stimulate and maintain the jaw bone, the bone continues to resorb over time, leading to loose and ill-fitting dentures that often cause irritation to the gums and slurred speech. As a result, a common outcome is a deterioration in quality of life due to embarrassment and discomfort.

Dental implants

The field of dental implants is evolving rapidly. New technologies and improvements in biocompatible materials have enabled the development of systems that ensure faster healing, more reliable results and an esthetic outcome.

Implants can now be used to replace missing teeth in all situations from a single tooth to the entire set of teeth in both jaws. In other words, patients have access to dental solutions that look, feel and function like natural teeth. They can chew and smile as usual.

The first part of the treatment involves a surgical procedure during which the implant, a small titanium screw, is installed in the jawbone. The implant serves as a root and is integrated as new bone mass forms in contact with the surface of the titanium. A titanium or ceramic abutment is fastened to the implant. A crown, the visible part of the reconstructed tooth, is then placed on the abutment. When multiple teeth are to be replaced, two or more implants are installed to build the foundation for a fixed implant bridge reconstruction.

The current trend is moving toward shorter treatment periods and earlier loading of the implant. Depending on the patient's condition and choice of treatment, the process can range from immediate loading to a treatment period of several months. The patient receives temporary tooth replacement during the treatment period.

Astra Tech Implant System™

Astra Tech Implant System™ was launched in 1985. The system has been further developed and improved over the years and each step has been thoroughly documented. Over 20 years of documentation has resulted in 380 published scientific articles. Astra Tech Implant System is one of the most well-documented systems in the world. It has been shown that with the Astra Tech Implant System the mean marginal bone reduction is only 0.3 millimeters after 5 years in function, while the bone loss according to the current standard norm for implant treatment success is set to approximately 1.5 millimeters after 5 years.

As a company in the AstraZeneca Group, Astra Tech adheres to strict standard operating procedures and holds unique resources and expertise in the field of research. Our research and development is based on a holistic approach, taking into consideration what happens when biology, biomechanics and biochemistry interact. Just as in nature, a successful existence cannot be determined by one single element alone. Instead, there must be several interdependent features working together. One of these important features is the OsseoSpeed™ surface. It is a fluoride-modified surface, with a unique nano-structure, that promotes a rapid bone healing leading to a more reliable treatment result. Recent findings show that OsseoSpeed has high success rates even in difficult cases, which opens the door for implant treatment for patients who have porous, insufficient jawbone or osteoporosis.

Atlantis™ - patient-specific abutments

Atlantis™ is the leading CAD/CAM solution for patient-specific, cement-retained abutments in the US and is now being launched in Europe. Atlantis is available for all major implant systems.

Atlantis patient-specific abutments fit perfectly without the dentist having to make adjustments or send it back to the laboratory for additional modifications. For the patient, this means fewer visits to the dentist. The Atlantis solution also gives an optimal esthetic result and function. For the dental laboratory, this makes their work easier and more cost-efficient thanks to the digital process. For cement-retained restorations, the laboratory also benefits from having only one abutment supplier for all major implant systems.

Computerized process - designed from the final tooth shape

With the unique patented Atlantis VAD™ (Virtual Abutment Design) software, the abutments are uniquely designed from the final tooth shape. The need for chairside modification is eliminated as each abutment is made to be anatomically correct and specific to the space it will fit. The laboratory places an order in the Atlantis™ WebOrder and then sends the models or scanned models to Astra Tech for production.

Production of abutments is done in computerized milling machines controlled by CNC (Computer Numerical Control). This control system makes it possible to produce complicated, individually adapted components in an efficient manner. The abutments are made of zirconia, titanium or gold-shaded titanium.

Market for abutments

The demand for individually adapted abutments has grown sharply in recent years along with the increased demand from patients for good esthetic results. Therefore, this segment of the market is expected to show considerably faster growth than the total market.

Focus on education

Education is an important part of Astra Tech's operations in their efforts to help dental professionals provide best possible quality of treatment for their patients. Astra Tech has provided implant training for tens of thousands of dentists, and that number is steadily increasing. New programs are continually added to keep pace with developments in implant systems and treatment methods.

The international training center at Astra Tech's headquarters in Mölndal, Sweden, is fully equipped with the latest technology and offers the possibility to perform live surgery. The center is not only focusing on the education of dentists, but also offers a complete dental laboratory, allowing for the advanced education and training of dental laboratory technicians.

Astra Tech has on-going collaboration with a number of universities and university hospitals, such as University of Gothenburg (Sweden), University of Zürich (Switzerland), the University of Iowa, and the University of North Carolina (both in USA). The collaborative efforts with these universities encompass both R&D and training.

Astra Tech in brief

Astra Tech is a medical technology company that develops, manufactures and sells dental implants and other leading-edge healthcare products, chiefly in the fields of urology, odontology and surgery.

Astra Tech, a subsidiary of the pharmaceutical company AstraZeneca, has its headquarters in Mölndal, Sweden, where there are facilities for research and development, as well as production. The company has subsidiaries in 16 countries in Europe, North America and Asia/Pacific and is represented by local partners in other selected markets.

Astra Tech has 2100 employees.

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