Scientific Review for Straumann®

Roxolid® SLActive® Implants.

HIGHER CONFIDENCE IN ALL INDICATIONS

Roxolid is a dental implant material combining both excellent biocompatibility and high mechanical strength. Roxolid is a metal alloy composed of ~15 % zirconium and ~85 % titanium, which leads to an increased mechanical resistance compared to pure titanium. A higher mechanical resistance of titanium-zirconium alloys compared to pure titanium has been reported by **Kobayashi et al. 1995**. Roxolid Implants have up to 42% higher fatigue strength than titanium implants of comparable size and type **(Grandin et al. 2012)**. In addition, it has been shown that titanium- zirconium alloys have a better biocompatibility than titanium **(Ikarashi et al. 2005)**.

Today, dentists and their patients expect not only a successful dental implant treatment but also a short and predictable healing time. Straumann® SLActive® is a chemically modified hydrophilic surface. Preclinical studies have shown that the osseointegration process of the SLActive surface is faster compared to the SLA® surface **(Buser et al. 2004, Schwarz et al. 2007)**. This secondary stability is achieved sooner than hydrophobic surfaces increasing predictability during early healing. Beyond that, Roxolid Implants with the SLActive surface showed osseointegration properties that were at least as good or even superior to those of titanium implants with the SLActive surface **(Gottlow et al. 2012, Wen et al. 2013)**.

Human studies proved the osseointegration process is accelerated for implants with the SLActive surface **(Oates et al. 2007, Lang et al. 2011)**. Furthermore, it was demonstrated that implants with the SLActive surface can successfully be used in immediate and early treatment protocols without compromising on performance or predictability of implant therapy **(Nicolau et al 2013, Bornstein et al. 2010, Buser et al. 2013)**. These conclusions are supported by the preclinical findings of a shortened healing phase which may increase predictability during early healing.

Clinical studies have shown that Roxolid SLActive Implants are equally effective as titanium implants **(Barter et al. 2012, Quirynen et al. 2014, Al-Nawas et al. 2014)**. In these studies Roxolid SLActive Implants reached success and survival rates of 97 % or higher after two years – similar as reported for titanium implants. Also crestal bone level changes of less than 0.2 mm per year following the year after implant placement have been documented for Roxolid SLActive Implants **(Barter et al. 2012)**.

PREDICTABLE TREATMENT SUCCESS EVEN IN CHALLENGING CASES

Many patients have difficult health conditions that could compromise the treatment outcome of the implant therapy. Especially in challenging indications, the use of an implant system that is clinically tested and for which the performance is documented in scientific literature is important to minimize the risk of treatment failure. Straumann® SLActive® Implants have been tested in very challenging indications and successful treatment outcomes have been documented. Clinical studies have been performed in the following challenging situations:

- Implant placement in the horizontally augmented maxillary sinus, 97% survival rate after one year **(Lindgren et al. 2012)**
- Dehiscence defects after implant placement, 100% survival rate after one year **(Van Assche et al. 2013)**
- Early implant placement in the posterior maxilla, 100% survival rate after one year **(Roccuzzo & Wilson 2009)**
- Immediate loading of overdentures supported by two bar-splinted implants, 99% survival rate up to 40 months **(Stoker et al. 2011)**
- Rehabilitation of atrophic maxilla supporting an over-denture, 100 % survival rate after 12-16 months (mean follow-up of 13.5 months). **(Cordaro et al. 2013)**

60 YEARS

straumann®
simply doing more℠

These studies impressively document that SLActive Implants can also successfully be placed in very challenging indications.

PRACTICE DIFFERENTIATOR OFFERING NEW TREATMENT POSSIBILITIES

Many clinicians routinely treat patients with a limited quantity of crestal jaw bone. In these situations, implants with a regular diameter or length are typically placed if reconstructive or regenerative techniques will be applied. These techniques can be very invasive for the patient as well as time consuming and expensive. Smaller-sized implants could overcome the need of reconstructive or regenerative therapies and are therefore an attractive alternative. **Benic et al. 2013** compared Ø 3.3 mm Roxolid Implants to Ø 4.1 mm titanium implants. In this study, it was found that both implants performed equally successful, reaching 100% survival rates after one year. **Chiapasco et al. 2012** used Ø 3.3 mm Roxolid Implants as an alternative treatment option to bone regeneration or reconstructions. In the study, 100% success and survival rates were found after up to 19 months. In a non-interventional study, which was performed in 40 centers in 7 countries, 603 Roxolid Implants were placed in 357 patients **(Al-Nawas et al. 2014)**. The study reported a survival rate of 98% and a success rate of 97 % after two years. Clinicians also documented that for 54% of the placed implants, a bone augmentation procedure could be avoided by using Ø 3.3 mm Roxolid Implants.

Roxolid Implants offer a higher tensile strength compared to Straumann Grade 4 titanium implants* and are designed to be used in challenging indications. The hydrophilic SLActive surface accelerates the healing process compared to the hydrophobic SLA surface.

* Norm ASTM F67 (states min. tensile strength of annealed titanium); data on file for Straumann cold-worked titanium and Roxolid® implants.

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