



XiVE®

Dentsply Implants Product Catalogue,
Restoration with two XiVE® implants in the mandible
Case documentation for a 7-year period,
XiVE Long-term Documentation
2013, pp.8-9

Long-term Documentation

 **DENTSPLY**
IMPLANTS

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Long-term Documentation

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Long-term Documentation

The long-term clinical success of restorative prosthetic rehabilitation depends on several factors. An accurate general and specific medical history, as well as individual diagnosis, lead to appropriate treatment planning. Subsequent surgical and prosthetic treatment is another milestone for long-term success. However, a technically precise dental procedure is not the only important element for long-term success of a treatment. Patient compliance also plays a significant role. In addition, many properties of the implants used also have an effect on long-term clinical results. These are presented below for the XiVE® implant system.

Implant design

The implant design of XiVE® and its surgical protocol are harmonized to work perfectly together – with one goal: primary stability in every situation, taking the bone class into account. The special implant design consists of a crestal condensing and an apical self-tapping thread. With successful results: it condenses the peri-implant bone – particularly in bone with a weak structure. And with even better results: primary stability with the option of immediate loading. During preparation using twist drills, bone density can be assessed based on the resistance during the drilling process. If there is no or minimal resistance, a low bone density can be assumed. This has to be considered when using the crestal drill: here, the preparation depth with the crestal drill should be two millimeters, or can be omitted entirely if there is no cortical bone. High bone resistance corresponds to bone class D1. In this case, crestal preparation should be performed at a depth of six millimeters. This

vertically controlled, undersized implant bed preparation, in combination with the special thread design of XiVE® implants allows them to be inserted in all bone qualities with the same high primary stability and no trauma. The XiVE® Tap is also recommended for bone that is very compact. Internal condensation achieved by the special crestal thread design improves the primary stability in the undersized portion of the implant site during implant placement. During surgery the implant design allows the surgeon to proceed individually corresponding to the bone structure.^{1,5}

Implant surface

The surface structure of the implants has a significant influence on fast treatment success. For faster osseointegration, XiVE® also offers the clinically proven FRIADENT® plus surface. With its fast wetting and growth-activating properties FRIADENT® plus is one of the leading implant surfaces worldwide. The increased deposition of proteins such as sialoprotein activates the cascade for new bone formation.¹³ This results in a fibrin mesh, which also forms faster and more intensively.¹⁴ The bone-forming cells attracted profile and differentiate faster on the surface, i.e. osteoblasts develop faster from the osteoprogenitor cells. The favorable wetting characteristics of the surface accelerate the accumulation and differentiation of new cells.^{2, 3} The prerequisite for secure osseointegration of implants is an early, stable implant-bone connection and a load-oriented structure of the newly formed bone.¹⁵ This way chewing forces can be compensated and unimpaired healing ensured.

The high structural quality of the bone already present on the FRIADENT® plus surface during the early stage of osteogenesis supports early loading of the implants with appropriate indication.^{4, 9, 10, 11}

Connection geometry

Deep internal, very precise and indexed: the well-known hexagonal connection in XiVE® S plus allows for a force-transferring, due to the adjustable connection between implant and abutment which has been thoroughly proven in practice. The hexagon has formed a reliable connection between our implants and abutments for two decades – our recipe for success for excellent and proven prosthetic concepts. The structure of our connection components is the clue: six precise abutment options – for quick, easy and logical positioning easily understood by every implantologist involved in prosthetic restorations. The consistent color coding of all abutments facilitates the work of the prosthodontist and dental technician.



Platform-Switch

Platform-Switch refers to the use of an abutment diameter smaller than the diameter of the implant shoulder. Platform-Switch results in more stable bone conditions at the implant-abutment connection.^{6,7,16}

The fact that platform-switch results in less bone resorption can be explained by the shift of biomechanical stress away from the bone to the deeper implant-abutment connection.¹² According to the preliminary results of a recent study on standard and platform switch connections, slight bone resorption occurred with standard connections, whereas slight bone growth was detected for the implants with platform switch.⁸

Literature

- 1 | Hanser T, Becker C, Berger F, Khoury F: Die Sofortbelastung von Implantaten: Eine prospektive klinische Studie. Wissenschaftliches Poster, 18. Meeting der Academy of Osseointegration, 27. Februar – 1. März 2003.
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- 6 | Al-Nasour M, Chan H-L, Wang H-L: Effect of the platform-switching technique on preservation of peri-implant marginal bone: A systematic review. Int J Oral Maxillofac Implants 2012; 27(1): 138 – 145.
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- 8 | Canullo L, Fedele G R, Iannello G, Jepsen S: Platform switching and marginal bone-level alterations: the results of a randomized-controlled trial. Clin Oral Implants Res 2010; 21 (1): 115 – 121.

Case study documentation

The following cases demonstrate how long-term clinical results can be achieved with high esthetics by using XiVE®.

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- 10 | Neugebauer J, Traini T, Thams U, Piattelli A, Zoller JE: Peri-Implant bone organization under immediate loading state. Journal of Periodontology; 2006; 77 (2): 152 – 160.
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Restoration with two XiVE® implants in the mandible

Medical history

- 51 years old at the beginning of treatment
- Gender: female
- General state of health:
no general disease
- Non-smoker

Findings and initial situation

- Monolateral free-end situation in region 45-47 with severe horizontal bone atrophy (Figs. 1 and 2)

Treatment planning and procedure

- First, a lateral augmentation was performed in region 45-47: the outer bone plate was restored with a piece of cortical bone (Figs. 3 to 6)

- The piece of bone is set at a distance using Ellypsis Ponte Design tweezers. (Fig. 5) In between particulated bone is augmented (Fig. 7). Key feature of the biological concept of augmentation: the augmentation can be made any width using a biological bone membrane, which restores the shape of the original bone plate
- X-ray situation before and after augmentation (Figs. 8 and 9)
- Four months later (Fig. 10) implant placement of two XiVE® implants D 3.8 L 13 in region 45-47 (Fig. 11)
- Further four months later by exposure with a crestal incision and inter-implant epithelial transplant from region 47
- Restoration of implant with Gingiva Formers



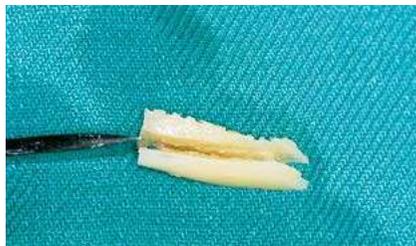
1 | Initial clinical situation



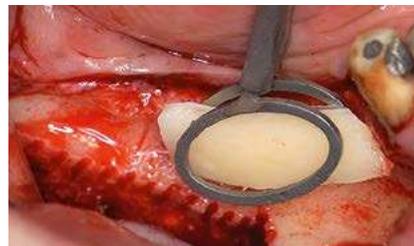
2 | Initial X-ray situation. Decayed molar region 47



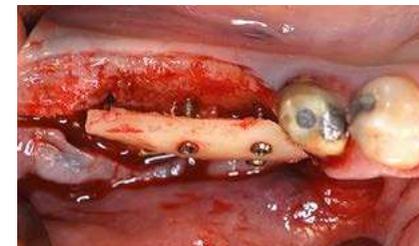
3 | Status post bone luxation



4 | The bone was split with a chisel to form a biological cortical membrane



5 | The elliptical tweezers hold the bone at a distance

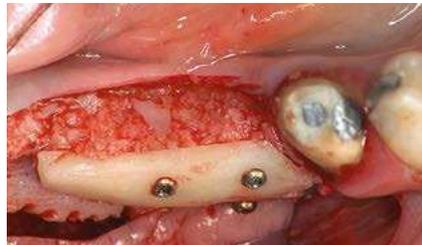


6 | Bone at a distance

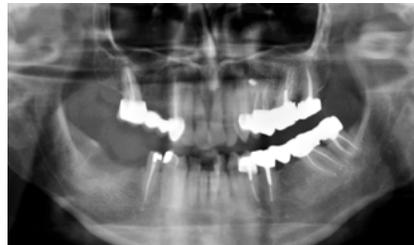
- D 3.8 GH 3 (Fig. 12)
- Eight weeks later, impression made with DENTSPLY Aquasil impression material for a metal ceramic restoration (Fig. 13)
- Both implants were restored with FRIADENT® EstheticBase

Treatment result

- The final metal-ceramic crowns on teeth 44-47 (Fig. 14)
- Bone condition in 2005 with temporary crown cementation (Fig. 15)
- Stable bone condition in 2012 (7 years after functional loading) (Fig. 16)



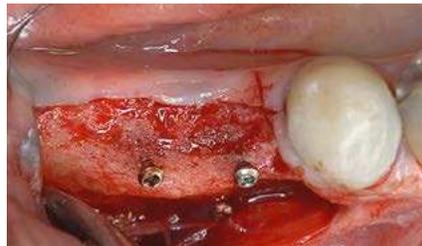
7 | The particulated bone fills the existing voids



8 | X-ray situation before augmentation



9 | X-ray situation after augmentation



10 | Clinical situation after 4 months



11 | Implant placement



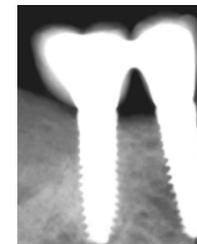
12 | Reentry



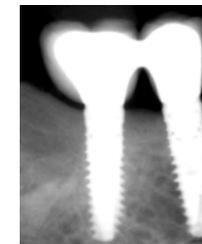
13 | Eight weeks after reentry shortly before impression molding (fibre 1 placed on 44)



14 | The final prosthetic restoration (tooth 46 designed as pre-molar)



15 | X-ray situation in 2005



16 | X-ray situation in 2012

About DENTSPLY Implants

DENTSPLY Implants is the union of two successful and innovative dental implant businesses: Astra Tech Dental and DENTSPLY Friadent. DENTSPLY Implants offers a comprehensive line of implants, including ANKYLOS®, ASTRA TECH Implant System™ and XiVE®, digital technologies such as ATLANTIS™ patient-specific CAD/CAM solutions, guided surgery, regenerative bone solutions, and professional development programs. DENTSPLY Implants creates value for dental professionals, and allows for predictable and lasting implant treatment outcomes, resulting in enhanced quality of life for patients.

About DENTSPLY International

DENTSPLY International Inc. is a leading manufacturer and distributor of dental and other healthcare products. The Company believes it is the world's largest manufacturer of professional dental products. For over 110 years, DENTSPLY's commitment to innovation and professional collaboration has enhanced its portfolio of branded consumables and small equipment. Headquartered in the United States, the Company has global operations with sales in more than 120 countries.

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