# Immediate implantation: Ceramic implants in the lower jaw posterior region

**Ceramic implants have become firmly established in dental implantology. Patient demand for metal-free solutions is increasing, and the development of new biomaterials, microrough surface techniques and improved treatment protocols have enabled practices to use zirconia dental implants as a reliable treatment alternative to titanium implants. In this case report, the replacement of a mandibular posterior tooth with a zirconium oxide implant is described.**

Several studies have shown and proven that zirconia implants cause little to no inflammation of the peri-implant tissue cause – with a simultaneous lengthening of the epithelial attachment.
In addition, these implants look more natural and therefore offer improved aesthetics. In addition, they contain no metal components, making them ideal for patients with metal sensitivity or preferences for a metal-free solution. The patient should be informed about the advantages and disadvantages of both material options and included in the decision-making process when a zirconia implant is offered as a treatment option [1-5].
Clinical situation and treatment planning
A 21-year-old healthy patient presented to our clinic. She requested a permanent solution for her endodontically infected molar (Fig. 1a). The molar (tooth 36) had been endodontically treated six months previously. X-ray revealed a fracture related to tooth 46 (Fig. 1b). The fractured molar 36 was scheduled for extraction. The patient was informed about ceramic implants as an alternative to titanium implants and the Zeramex XT dental implant as a metal-free solution. After a detailed explanation and discussion, the patient decided on this treatment option. The main reason for their decision was the prognosis of less inflammation of the peri-implant tissue with ceramic implants and a metal-free solution.
Surgical and restorative protocols
After extraction of tooth 36, curettage and laser debridement (Biolase diode laser, 940 nm) of the socket were performed (Fig. 2). The x-ray showed few remnants of PDL around the alveolus.

Fig. 1a: Initial situation: endodontically infected molar.

Fig 1b: X-ray revealed a fracture related to tooth 46.

Fig. 2: The extracted tooth 36.

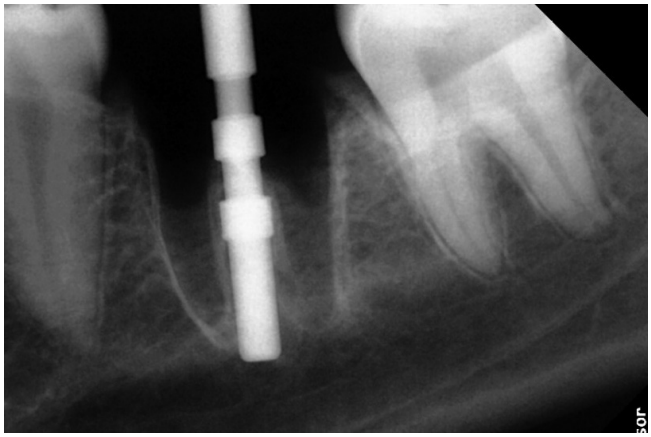

Fig. 3: X-ray image of the guide pin in region 36.

Around the immediate implants, the preserved PDL residues contributed directly to new bone formation and osseointegration (Fig. 3) [6]. The surgical guidelines of the drilling protocol were followed and a two-piece zirconia dental implant (Zeramex XT) measuring 4.2 x 12 mm was used to replace tooth 36 (Figs. 3 and 4). The implant was inserted with a torque of 35 Ncm in the interdental bone with a supragingival connection level (1.6 mm). The transgingival shoulder with its smooth surface (0.6 mm) offers the optimal conditions for the adhesion of soft tissue. Primary stability has been achieved. The implant was covered with an end cap in situ and the site sealed without transplantation.

Four months after surgery, the restorative process began with removal of the end cap and placement of a straight zirconia abutment with a carbon fiber screw (Figs. 5 and 6). The abutment was screwed with a torque of 25 Ncm for a permanent abutment-implant connection. The height of the abutment was adjusted using a Rotring diamond bur, followed by a conventional impression procedure for the final restoration. Procedure for the final supply. The soft tissue around the abutment was healthy and keratinized when the impression was taken. A monolithic zirconia crown was used as the prosthetic solution.

In order to achieve a tension-free and bending-free connection between the restoration and the implant, the zirconia restoration was cemented intraorally onto the abutments using the standard procedure with glass ionomer cement (Shofu INC, Japan) (Fig. 7).

## Clinical Outcomes

The result was beautiful with excellent tissue healing. The patient was very satisfied. No inflammation or prosthetic problems occurred during the follow-up period. The result in this case was a 100% metal-free implant and a metal-free crown.

## Conclusion

The Zeramex XT implant system is designed for a wide range of indications, from single implants to multiple implants.

Fig. 4a: Two-piece Zeramex XT implant with a carbon fiber reinforced Vicarbo® screw.

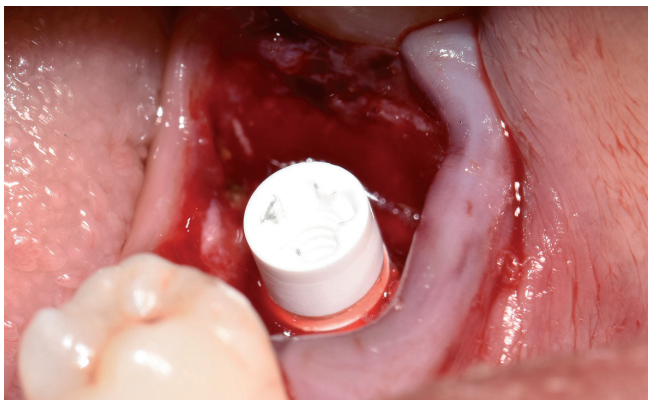

Fig. 4b: Implant region 36 (buccal view).

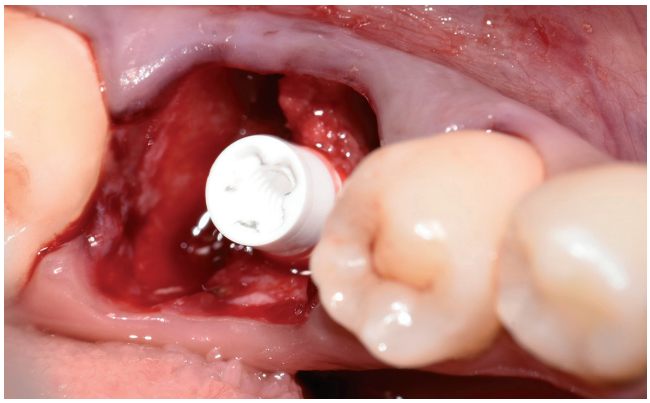

Fig. 4c: Implant region 36 (lingual view).

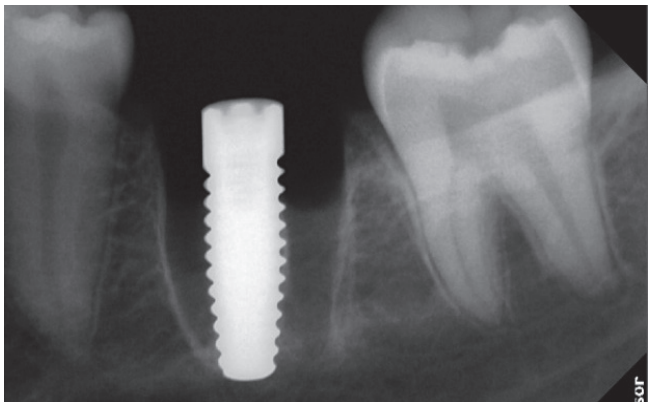

**Fig. 4d: X-ray image of the implant region 36.**

Fig. 5: Healing after four months with a healing cap.

In the case presented, it has proven to be excellent as an immediate implant for the infected alveolus. The surgical and prosthetic protocols are comparable to those of titanium implants. These are important factors for the successful integration of a new implant system into everyday practice. Our main reasons for using Zera-mex XT in the case presented were the following:

- The Zeramex XT implant system is designed to support a natural soft tissue appearance, particularly in patients with a thin mucosal biotype.

Fig. 6: Healing after four months without a healing cap.

Fig. 7: Final ceramic crown region 36.

• Zirconia generally exhibits lower plaque accumulation and bacterial adhesion than titanium.
• The Zerafil surface of these implants is microrough and hydrophilic for successful osseointegration, while the implant collar is partially machined to ensure excellent soft tissue attachment and a low inflammatory response.
• These implants also offer an advantage in mechanical strength. They are made of ATZ zirconia (aluminum-toughened zirconia), which offers improved hardness, flexural strength and toughness.
• The implants offer great restorative flexibility thanks to their two-piece design with internal connection.
• Micro-threads in the cortical bone area allow for better primary stability and axial loading, and the clinical protocol is comparable to that of titanium implants.

• It is a metal-free solution with a strong, tension-reducing Vicarbo screw that ensures an optimal implant-abutment connection.

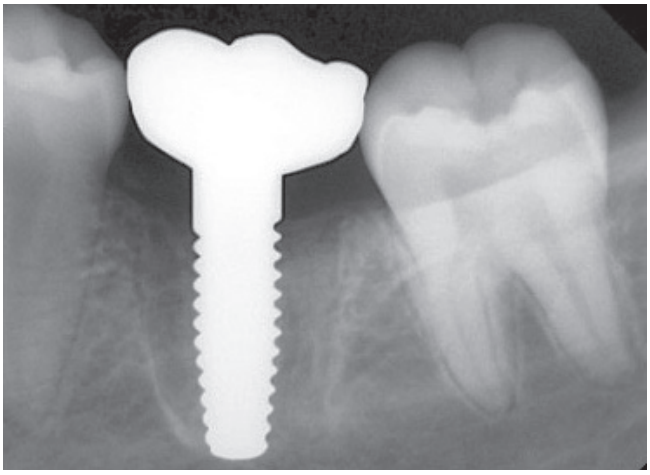

Fig. 8: X-ray image with final restoration.

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the International Academy of Ceramic Implantology, the first academy in the United States dedicated to metal-free implantology. He is an active member of the ZIRG (Zirconia Implant Research Group), which aims to lead and provide direction for research in metal-free implantology. In addition, the ZIRG supports young and established practitioners in clinical and scientific research. He is also a Fellow and Ambassador of the Cleanimplant Foundation, Germany. He is currently involved in numerous research projects on zirconia implant materials and digital dentistry.

**Literaturverzeichnis unter**
**www.dimagazin-aktuell.de/literaturlisten**

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