# One-piece AWI G-Line ceramic implants in the premolar region

## Clinical use of the AWI single-unit implant system following delayed implantation

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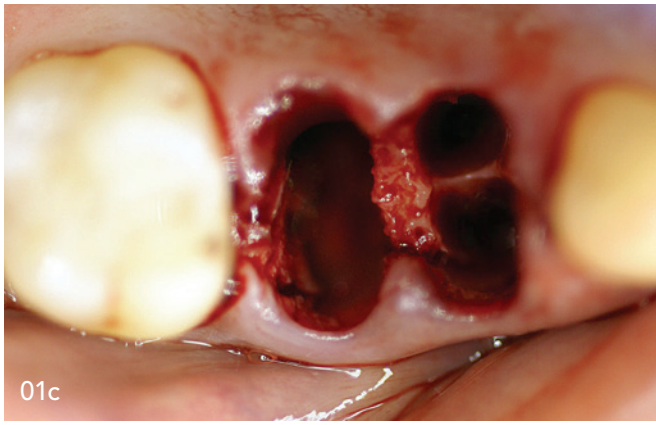
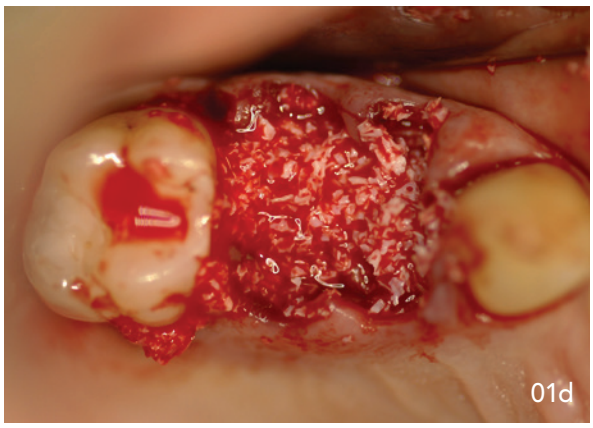


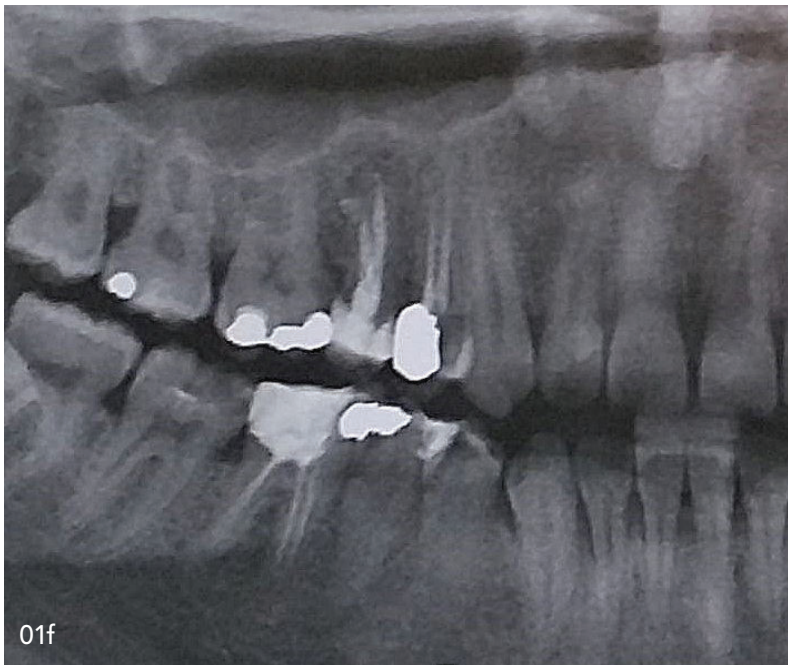

### Abstract

Patients who smoke are at increased risk of implant failure. Thorough pretreatment and a consistent prophylaxis and recall programme are essential. In addition, both clinician- and patient-related considerations regarding implant system and material selection must be taken into account. This case report describes the rehabilitation of a patient smoking more than ten cigarettes per day. Following invasive tooth extraction and simultaneous socket preservation, one-piece AWI G-Line zirconia implants and all-ceramic single crowns were used for prosthetic restoration.

### Smoking and implant success

Tobacco use is a known risk factor for complications associated with dental implants. Although smokers have a higher risk of implant loss, successful treatment is achievable with appropriate prophylaxis management (Figs. 5c+d). Due to nicotine-induced calcium depletion, bone quality in smokers is often reduced.



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This calcium loss accelerates bone resorption and increases the risk of both osteoporosis and periodontal disease. To mitigate these effects, stable periodontal conditions, control of systemic and lifestyle-related risk factors, and excellent oral hygiene must be ensured (Figs. 1a–c).

According to current DGI/DGZMK guidelines, ceramic implants are considered a viable treatment option in cases of titanium intolerance and in smokers. Zirconia used in ceramic implants is biologically compatible, does not trigger allergic reactions or inflammatory responses, and thus supports oral health. Lower plaque and bacterial accumulation reduce the risk of infection and gingival inflammation. In this case, one-piece AWI G-Line (WITAR) zirconia implants with a bioferrite coating were placed.

## Case report

### Medical history and pretreatment

A 31-year-old male patient presented with pain in teeth 14 and 15, both of which had undergone endodontic treatment. Radiographic findings revealed periapical radiolucencies indicating chronic apical periodontitis, as well as large coronal restorations on both teeth. The patient had no relevant systemic conditions (Fig. 1f).

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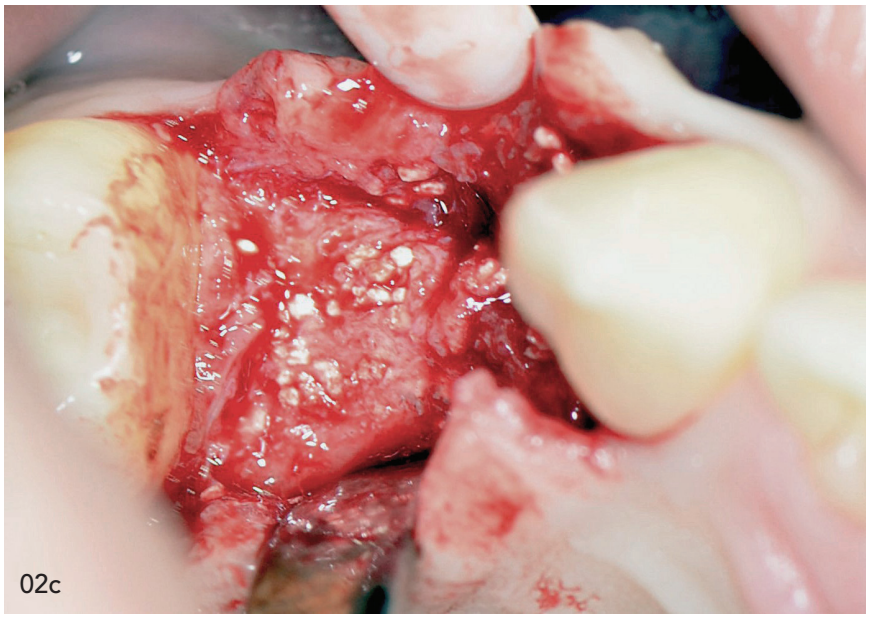
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The treatment plan involved the extraction of the non-restorable premolars, followed by thorough professional cleaning. Socket preservation was performed to maintain the alveolar ridge. Implantation was planned approximately six months post-augmentation. To reduce microbial load, the patient rinsed twice daily with chlorhexidine for one week following the initial cleaning.

### Extraction and socket preservation

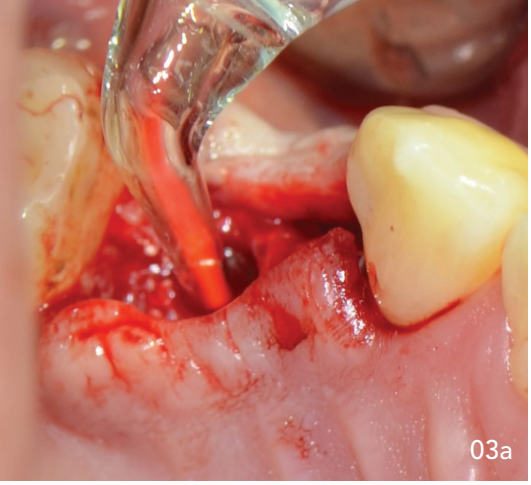
Figure 1a shows the pre-extraction clinical status of teeth 14 and 15. Due to ankylosed roots, osteotomy was required for removal. During luxation with Bein elevators, the buccal plate fractured (Fig. 1c). Following extraction, the sockets were filled with a mixture of autologous bone chips and bovine xenograft. To ensure volume preservation and favourable soft-tissue healing, the sites were covered with a resorbable collagen membrane before suturing (Figs. 1d+e).

## Implantation

The patient requested a fully metal-free solution, including the prosthetic restoration. Six months later, the alveolar ridge was assessed as suitable for implant placement (CBCT and clinical pre-op: Figs. 2a+b). A crestal incision with a releasing cut at tooth 13 was made, and a mucoperiosteal flap was elevated (Fig. 2c). Two one-piece AWI G-Line zirconia implants (AWI 394010R, gingiva-coloured) were inserted (Figs. 3a–h).

Simultaneous lateral augmentation was carried out using ß-TCP Easy Graft and PRGF membranes to cover both the graft and the implants, enhancing wound healing. A postoperative radiograph confirmed correct implant placement (Fig. 4c).

Due to the low thermal conductivity of zirconia, frictional heat from implant insertion dissipates more slowly than with titanium.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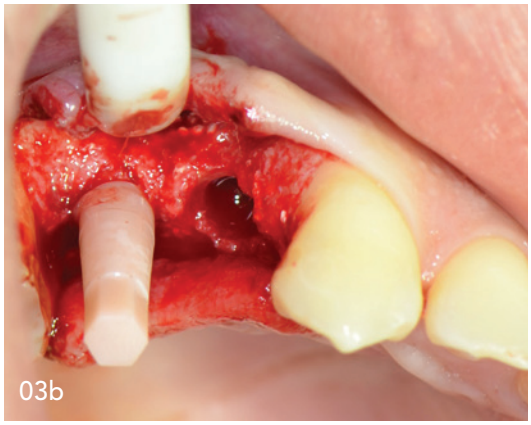
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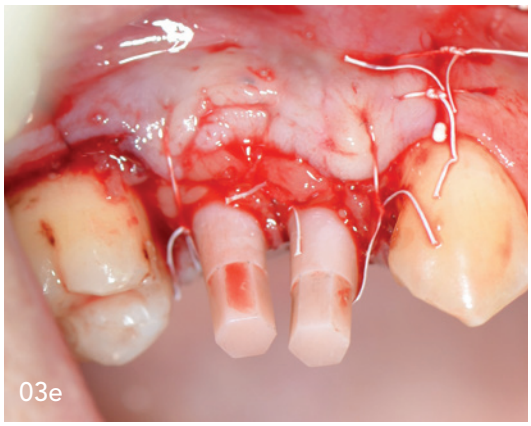
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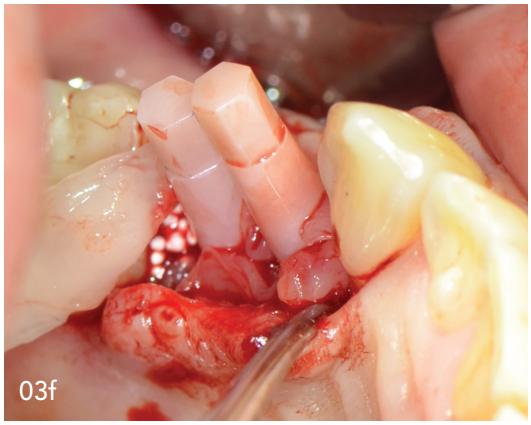
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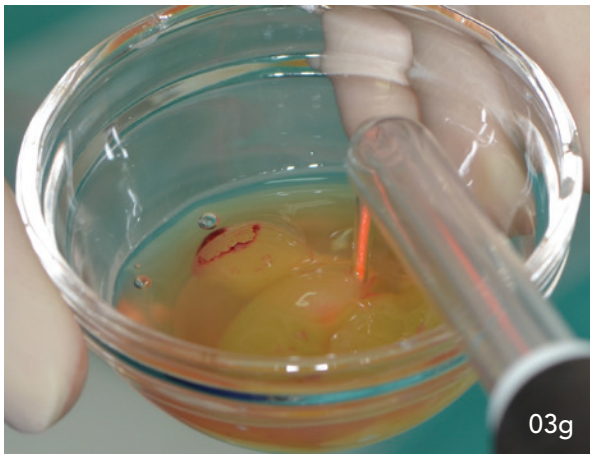
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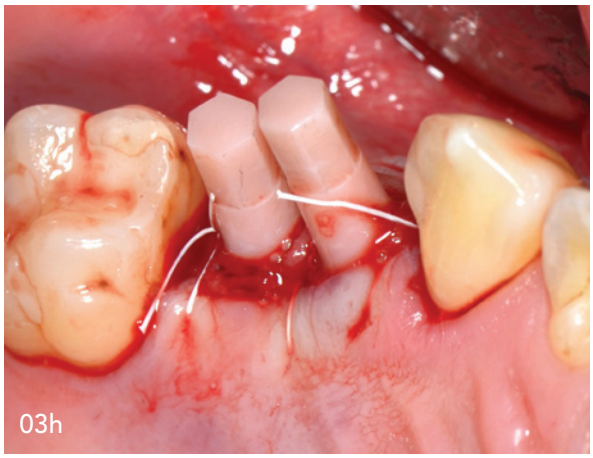
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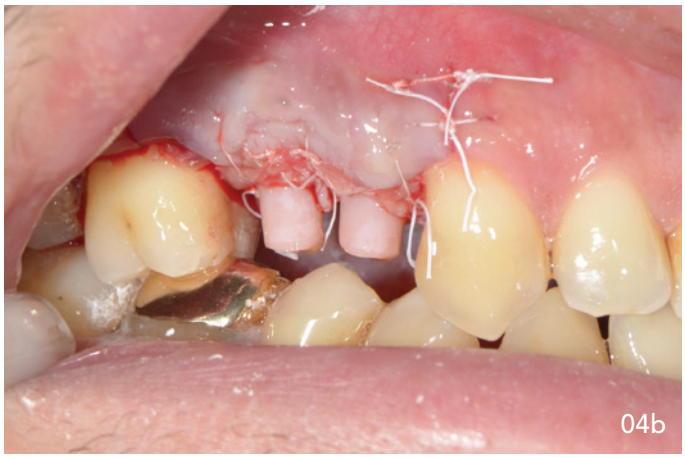
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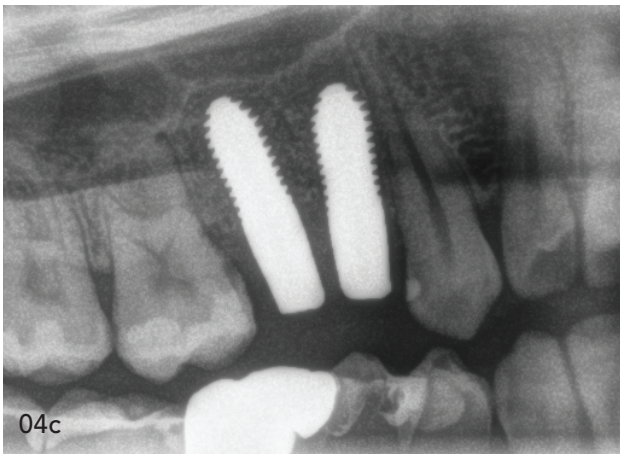
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**„By avoiding titanium and opting for all-ceramic restorations, potential risk factors such as peri-implant inflammation, bone loss, and gingival recession were significantly reduced."**

Therefore, ceramic implants must be inserted at a slower rotational speed to avoid excessive interface temperatures. Post-insertion, the implants were shortened and shaped using a red contra-angle handpiece and ceramic polishing instruments (Figs. 4a+b). Healing was performed transgingivally over four to six months.

## Prosthetic restoration

Figures 5b and c show well-healed soft tissue around the implant sites. If necessary, the implant shoulder can be positioned 1.5–2 mm subgingivally in a scalloped fashion to match the natural gingival architecture.

In the same appointment, tooth 16 was prepared for a partial crown. A conventional impression was taken using Honigum Heavy and Light materials (DMG). Final restoration was performed using pressed monolithic e.max crowns. The final result in the upper jaw is shown in Figures 5c and d.

## Conclusion

This case illustrates the successful use of one-piece AWI G-Line zirconia implants in a smoker, following professional debridement and socket preservation. The resulting bone structure supported anatomically shaped, aesthetically pleasing all-ceramic implant crowns.

The AWI G-Line implants made of TZP zirconia in gingiva colour offer:
- Excellent long-term durability
- A straightforward insertion protocol
- Outstanding aesthetic integration due to their natural pink hue

The prognosis in this case is very favourable. By avoiding titanium and opting for all-ceramic restorations, potential risk factors such as peri-implant inflammation, bone loss, and gingival recession were significantly reduced.

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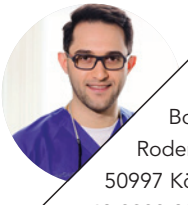

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