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# A prospective, controlled clinical trial evaluating the clinical and radiological outcome after 3 years of immediately placed implants in sockets exhibiting periapical pathology

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## Abstract

**Objectives:** The aim of the present study was to compare the clinical and radiological outcome of immediately placed implants in sockets with or without periapical pathology 3 years after implant placement.

**Materials and methods:** Twenty-nine patients with immediate implant placement were clinically and radiologically followed 3 years after implant placement (test group: 16 patients without periapical pathology, control group: 13 patients with periapical pathologies). Clinical (full-mouth bleeding score, full-mouth plaque score, clinical attachment level measurements and width of keratinized mucosa buccally of the implant) and radiological parameters (vertical distance from the implant shoulder to the first bone-to-implant contact [IS-BIC]) were assessed. Both 95% confidence intervals, as well as results of statistical tests (one-sample, two-sample and paired *t*-test) were provided.

**Results:** The implant survival rate was 100% for all 29 implants after 3 years. The clinical and radiological parameters showed no statistically significant difference between the test and the control group at 3 years (two-sample *t*-test). The IS-BIC was between  $1.54 \pm 0.88$  mm (mesial, test) and  $1.69 \pm 0.92$  mm (distal, test). Between the 1- and 3-year visit the IS-BIC increased in both groups significantly on one side of the implant:  $0.30 \pm 0.37$  mm (mesial, test) and  $0.33 \pm 0.43$  mm (distal, control) (one-sample *t*-test). None of the 13 examined radiographs of implants immediately placed in sockets with periapical pathologies revealed retrograde peri-implantitis after 3 years.

**Conclusion:** It is concluded within the limitations of this study, that after careful debridement of the extraction socket, immediate placement of implants into sites with periapical pathologies can be a successful treatment modality for at least 3 years with no disadvantages in clinical and radiological parameters to immediately placed implants into healthy sockets.

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Implant placement immediately after tooth extraction is a widely accepted procedure revealing high survival rates ranging from 93.9% to 100% (Kan et al. 2003; Ferrara et al. 2006; Esposito et al. 2007; den Hartog et al. 2008; De Rouck et al. 2008). This technique aimed originally at preserving the pre-extraction contours of

the alveolar process (Schulte & Heimke 1976; Anneroth et al. 1985; Lazzara 1989), because a marked resorption of the buccal bone plate after tooth loss was observed. However, dimensional ridge alterations could not be prevented when implants were immediately placed into fresh extraction sockets (Botticelli et al. 2004; Araujo