



A Fully Digital Workflow for Immediate Placement and Immediate Loading of Dental Implants with Angled Screw Channel Abutments



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Introduction

This clinical report presents techniques in implant dentistry, focusing on immediate placement of dental implants and immediate loading of interim Implant-Supported Fixed Dental Prostheses (ISFDPs) with angled screw channel (ASC), as well as definitive restorations with ASC abutments.

Materials & Methods

A 66-year-old male patient exhibited third-degree mobility and severe bone loss around teeth numbers 7, 8, 9, and 10. The prognosis was hopeless, prompting the patient to opt for extractions followed by Implant-Supported Fixed Dental Prostheses (ISFDPs) restoration. A fully digital workflow facilitated the planning of the implants and the design of both provisional and definitive ISFDPs.

Diagnostic and Planning Workflow

An intraoral scanner (TRIOS 4; 3Shape, Denmark) was used to capture the existing dentition, while a Cone-Beam CT (CBCT) scan provided a three-dimensional view of the implant sites. A digital wax-up was created using CAD software (Exocad DentalCAD 2.4 and CARES® Visual) and was superimposed onto the CBCT scan for precise implant positioning using CARES® Synergy. Digital software (coDiagnostiX® 10) was utilized to plan the fully guided implant surgery. Frenectomy with CTG was performed prior to implant surgery.

Provisional Restoration and Implant Placement

Provisional fixed dental prostheses were designed in CARES® Visual and fabricated using a 3D printer (Straumann® P30+). Teeth numbers 7 through 10 were extracted, and bone-level dental implants were placed immediately at the sites of teeth 8 and 9. The splinted 8-9 with cantilever 7 and 10 provisional ISFDPs were loaded on the same day using anodized Angled Screw Channel (ASC) abutments. The provisional ISFDPs were successfully immediately loaded with a cantilever extension.

Definitive Restoration

Following successful osseointegration, definitive screw-retained monolithic zirconia ISFDPs were fabricated. The prostheses featured anodized ASC abutments for teeth 8 and 9, with cantilever pontics replacing teeth 7 and 10.

Follow-Up and Maintenance

The patient was periodically recalled for postoperative evaluations and oral health checkups to monitor the performance and stability of the ISFDPs.



Conclusion

The fully digital workflow enabled predictable outcomes for implant surgery and restoration, saving both time and materials. The ASC abutments provide optimal screw access, improve esthetics by preventing labial access holes, and reduce cement-related peri-implant disease risks. Immediate placement and immediate loading reduce the need for additional surgical interventions and shorten the overall treatment time. Furthermore, soft tissue begins healing around the provisional prosthesis immediately after loading, significantly reducing the time required for tissue conditioning around the implant prosthesis. The prognosis of immediate loading on fixed dental prostheses can be predictable with well-planned implant placement, proper splinting, and an appropriate occlusal scheme. In this case, the patient was highly satisfied with the treatment outcomes and the reduced number of required appointments.