

# Post-extractive implant and immediate loading with GBR in the upper front: a case report

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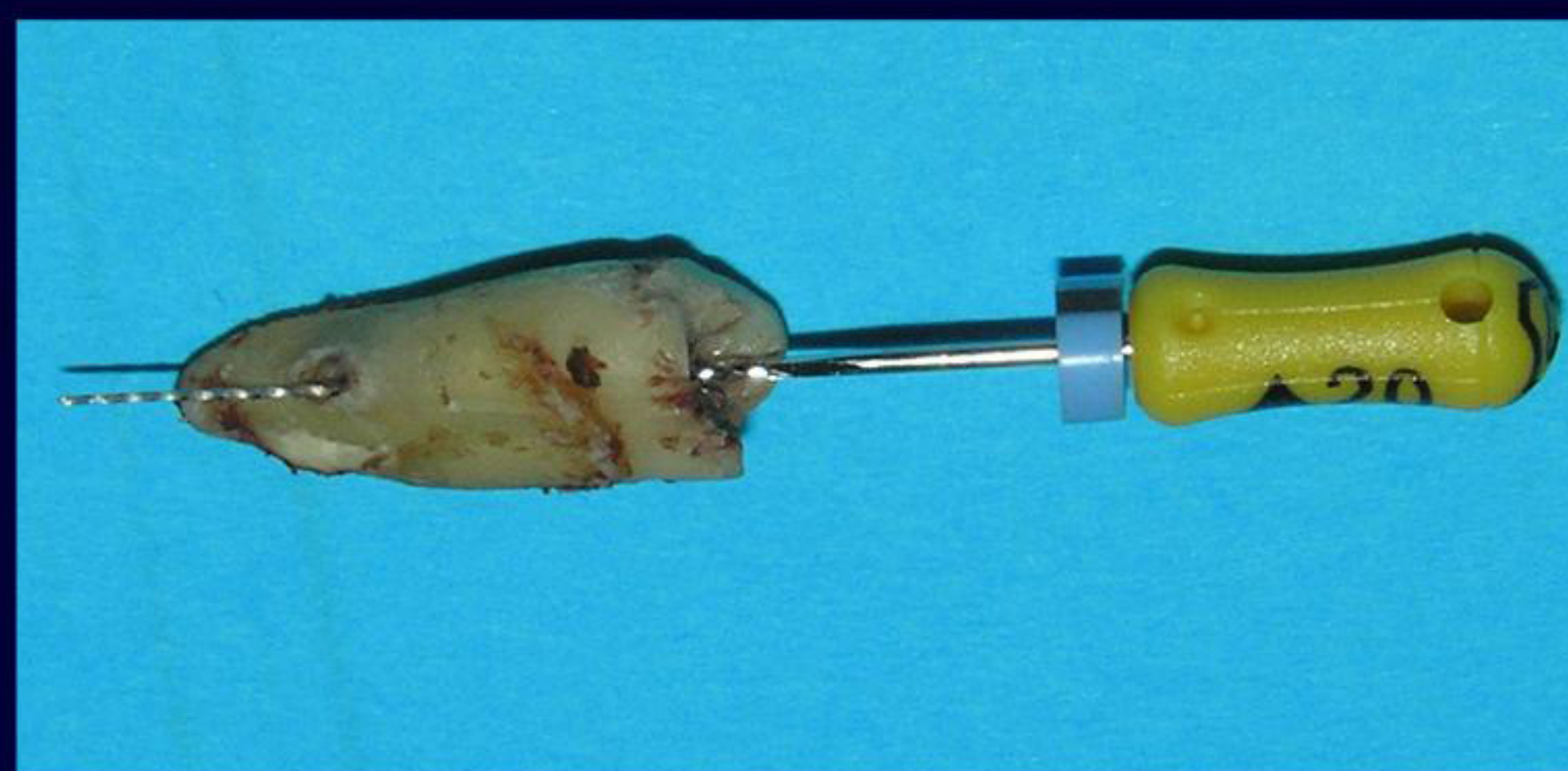


Fig. 1: Extracted upper lateral incisor with “via falsa”

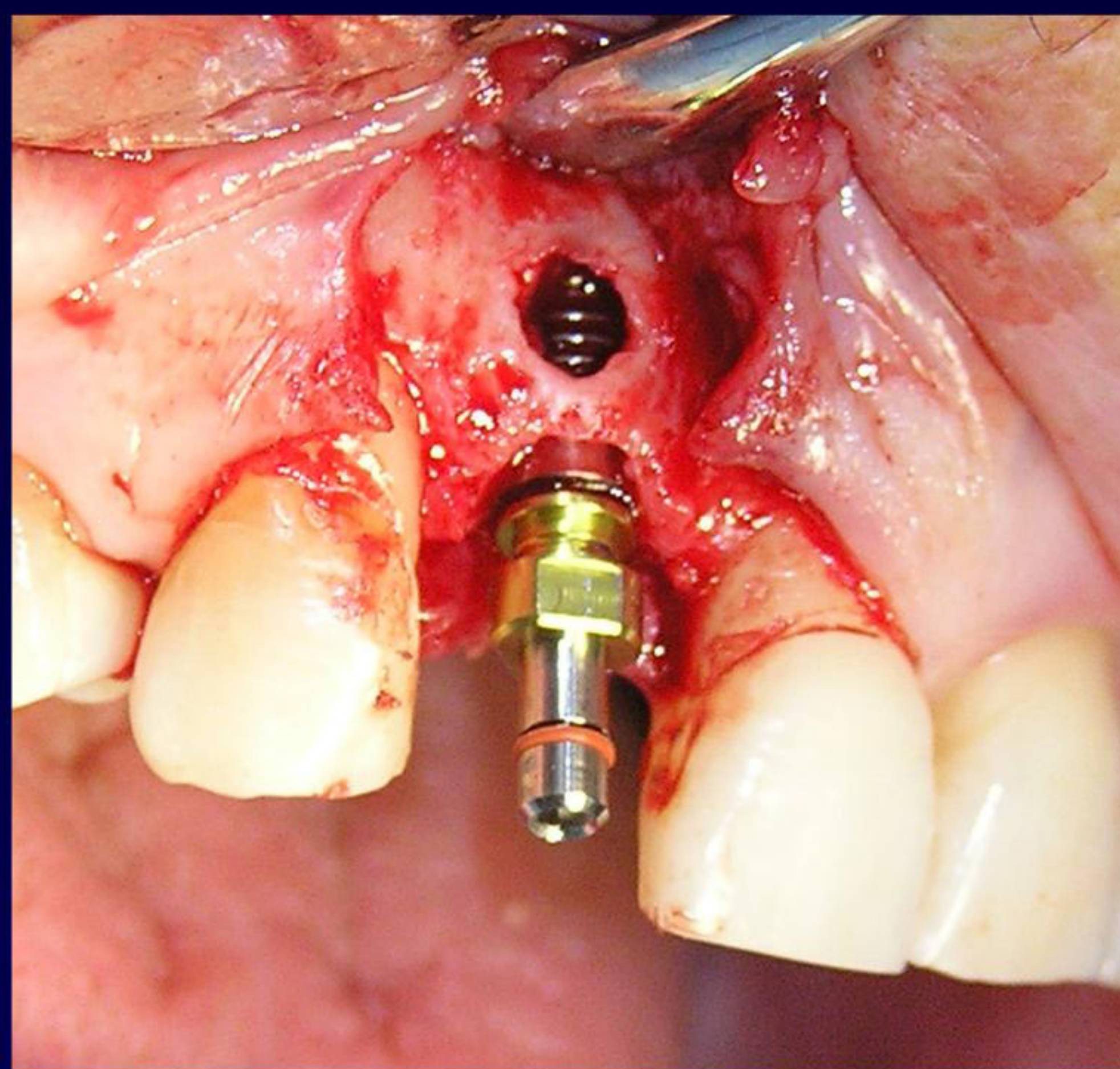


Fig. 2: Immediate implant placement in fresh extraction socket with buccal fenestration

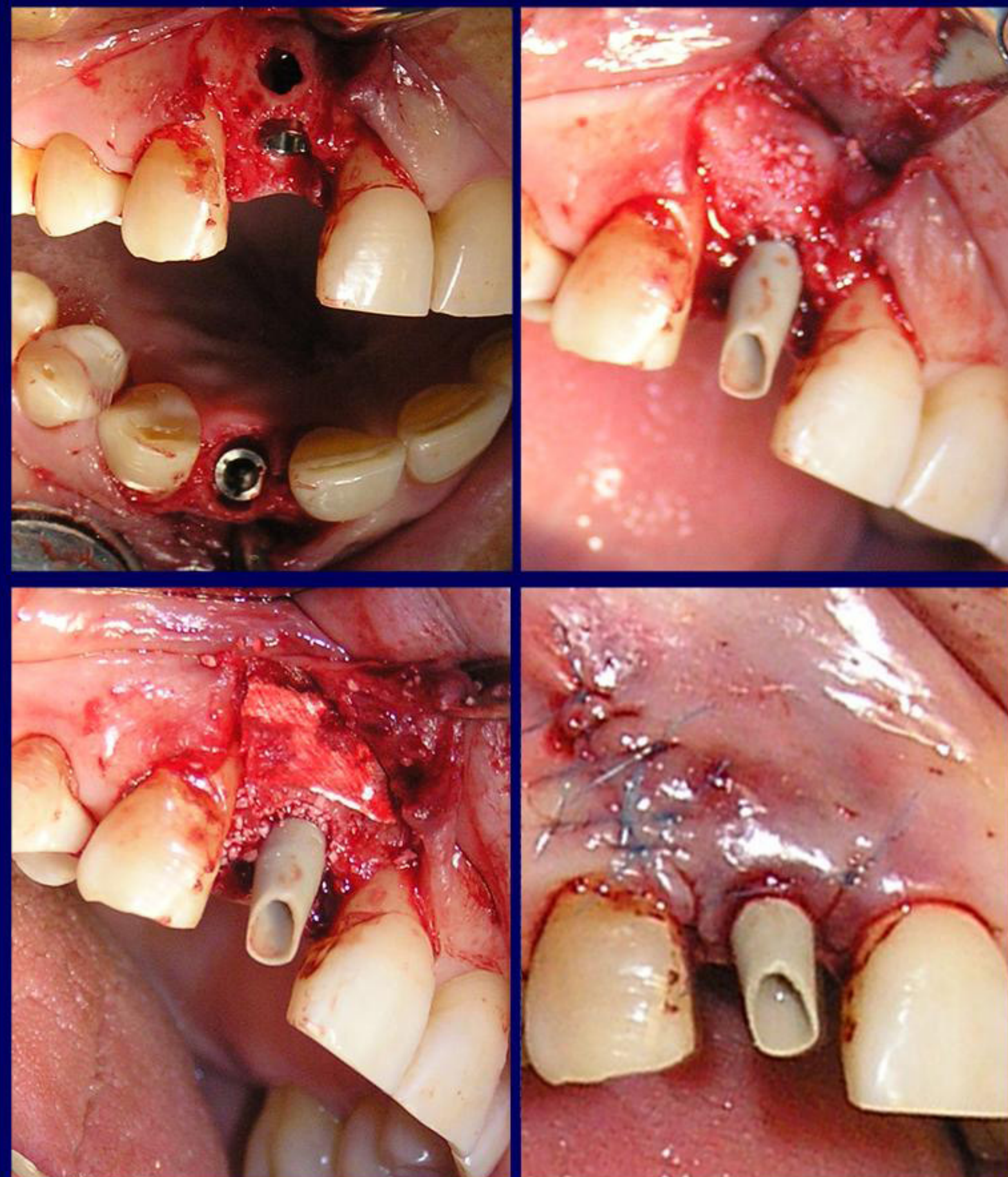


Fig. 3: Implant position in three dimensions, provisional abutment and GBR procedure with bioresorbable material and double-layer membrane and suture



Fig. 4: Chairside provisional immediate loading protocol with a silicon key and isolation of the surgical field

## INTRODUCTION

The reason of missing anterior maxillary teeth may be periodontal, endodontic, iatrogenic or traumatic. The inevitable bone resorption following maxillary anterior tooth loss/extraction occurs in vertical and horizontal dimension and the subsequent modification of the soft tissue level may compromise a two-stage implant restoration protocol (1). Immediate implant placement in fresh extraction sockets, where possible, may preserve the alveolar hard and soft tissue anatomy (2). Procedures like flapless surgery and/or immediate provisional restoration may reduce the tissue loss by minimizing surgical trauma and functionalizing anatomical structures, and therefore improve the esthetic outcome (3). The magnitude of bone remodeling around the implant depends on the position of the implant itself in the three dimensions and is reliable to the formation of a biological width (4). Implant positioning in a mesio-distal, bucco-lingual and apical-occlusal direction is a prerequisite in developing a good emergency profile and creating ideal marginal and interproximal soft tissue esthetic in relation with adjacent teeth and lip line (5, 6). Prosthetic and surgical guidelines have to support peri-implant health and aesthetic outcome by selection of the ideal implant diameter and ideal implant position in 3 dimensions. The emergence profile of the final restoration has to be reliable with the size of the tooth to be replaced and the adjacent teeth.

An ideal implant position in all 3 dimensions is required. The mesio-distal distance between implant and adjacent teeth of 1,5 mm enhances the maintenance of the interproximal bone level and therefore of the interproximal papilla. The oro-buccal palatal position and the slightly palatal axis inclination of the implant improves buccal esthetics and guarantees biomechanical aspects. The buccal bone-to-implant gap that often occurs positioning the implant with a prosthetic defined axis in the palatal alveolar wall does not interfere with the degree of osteointegration and does not require guided bone regeneration procedures when up to 2mm (7). The vertical position of the implant platform 2-3 mm to the proximal bone crest and / or to the CE-junction of adjacent teeth ensures the establishment of the peri-implant biological width, guarantees the esthetic requirements and the ideal emergence profile of the final restoration. The contour of the implant-supported provisional crown has to condition the buccal and interproximal soft tissue and is essential for the esthetic result (8). The height of the interproximal papilla is related to the interproximal bone level of the adjacent tooth or between the single implants (2) and to the distance from the bone crest to the contact point implant-crown/tooth-crown which should be 3-5mm (9). Thin periodontal tissues and increasing distance bone crest – contact point cause significant loss of the interproximal papilla (3).

## MATERIAL & METHODS

An upper right lateral incisor with a buccal fistula due to a previous “via falsa” has to be extracted (fig. 1). The periodontal tissue is thick and healthy with measurements  $\leq 3$ mm. The atraumatic tooth extraction discloses a buccal fenestration combined with the fistula but intact marginal hard and soft tissue (fig. 2). An immediate implant placement (fig. 2) combined with a GBR procedure with bioresorbable material (Bio-Oss® 0,5-1) and double-layer bioresorbable membrane (Bio-Gide®) (fig. 3) and immediate provisional loading protocol (fig. 4, 5) have been tested. A short time follow-up at 5-10-20-40-60-80 days and 6 months was documented (fig. 6, 7).

## RESULTS AND CONCLUSION

Immediate placing and immediate loading of implant in the esthetic zone may preserve the hard and soft tissue components that exist naturally around teeth and improve the esthetic result by immediate return of form and function (10). The L - incision has to improve the surgical approach on the one hand, and to reduce the surgical trauma and the following tissue resorption on the other hand.

The anterior single-tooth replacement without tissue deficiencies is predictable since the support of tissue is provided by alveolar walls and adjacent teeth. Immediate implant placing and loading combined with GBR applying bioresorbable materials may be a predictable procedure to replace missing anterior maxillary teeth combined with moderate peri-implant hard tissue defects (11). The bioresorbable material placed in the buccal fenestration and in the implant – alveolar wall gap improves the bone stimulation transferring functional loading directly on the surrounding alveolar walls. Clinical long term studies are required to verify the few results.

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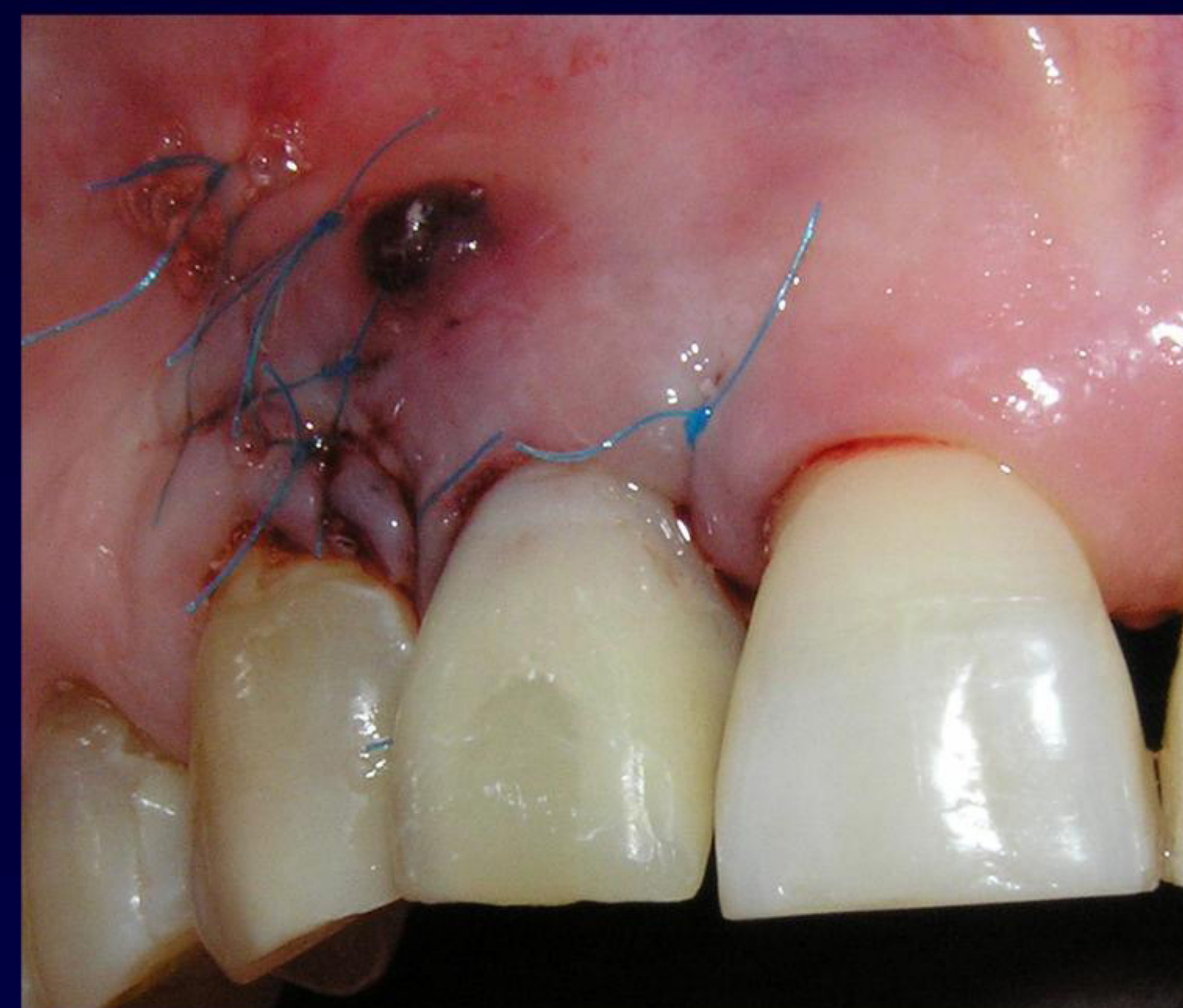


Fig. 5: Surgical outcome of immediate implant placement and immediate loading procedure – residual vestibular fistula

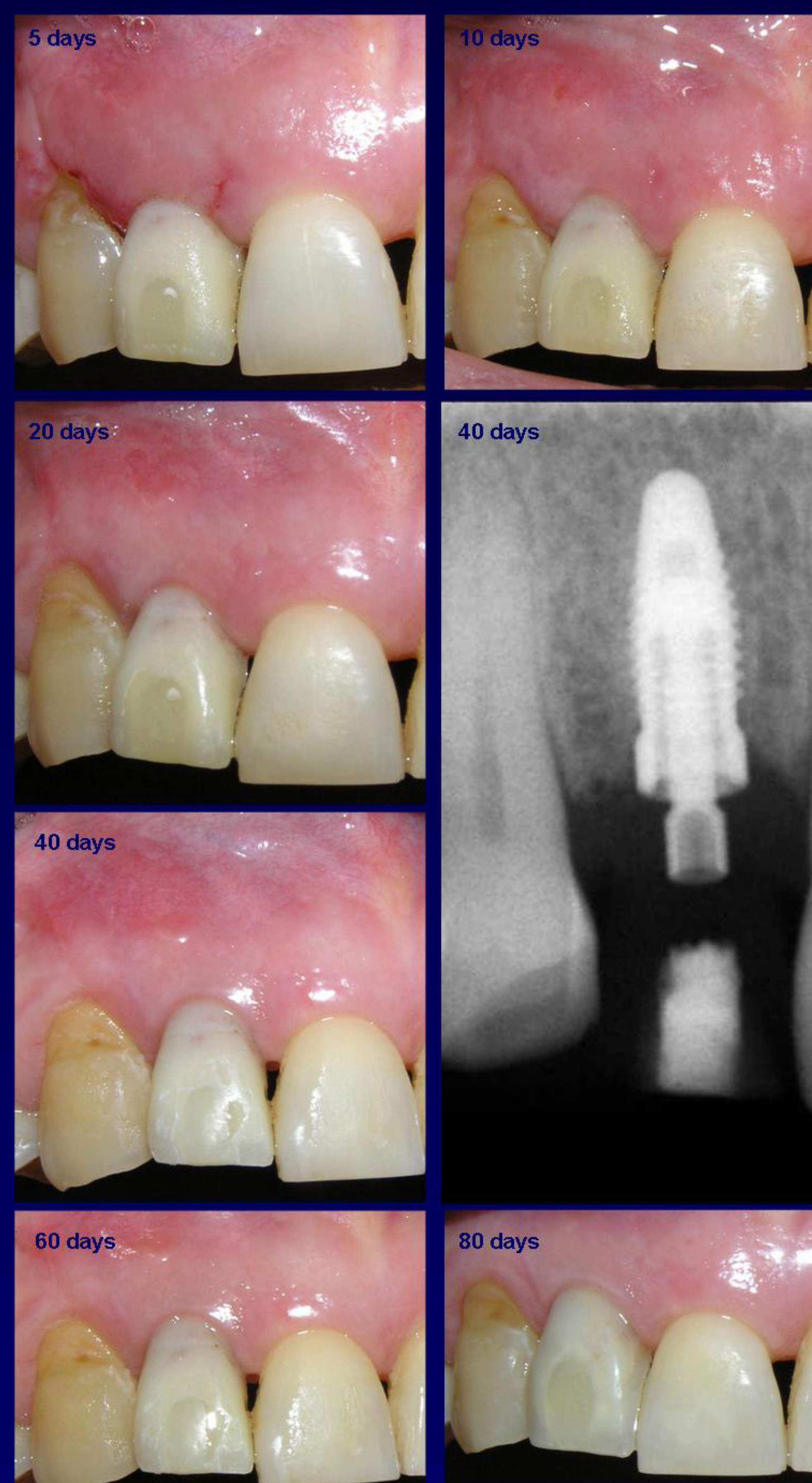


Fig. 6: Short term follow-up at 5, 10, 20, 40, 60, 80 days.



Fig. 7: Final restoration and follow-up at 6 months.