IMMEDIATE LOADING OF IMPLANTS FOR THE REPLACEMENT OF A MAXILLARY DENTITION

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Rehabilitation in this particular case was especially demanding. The patient insisted that he could not wear a removable appliance due to a pathological vomiting reflex. Advanced periodontal disease and insufficient plaque control were also present. Tooth migration had occurred causing a severe deep bite. However, the anterior/posterior transverse interarch discrepancy of the bony structure, as well as the vertical interocclusal relations was satisfactory.

Fig. 1: The patient shows signs of poor oral hygiene and advanced periodontal disease. The visibly deep overbite has probably developed because of overuption and migration of the front teeth as well as bite collapse, which is secondary to the loss of posterior dental support.

Fig. 2: An orthopantomograph showed that, despite advanced periodontal disease, the residual alveolar bone would sustain the insertion of implants. The occlusal analysis indicated that the interarch relationship could be corrected with a fixed rehabilitation, without the need of vertical bony augmentation.

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Fig. 3: Initial periodontal treatment was carried out. As soon as an acceptable plaque control level was reached, surgery was performed.

Treatment plan

After extensive discussion with the patient regarding various treatment options, it was decided to immediately load the implants directly into the fresh extraction sockets. The patient was informed that this treatment option was supported by scarce scientific data, but in selected cases it has yielded excellent clinical results[1-3]. SLActive implants were chosen in order to help ensure optimum bone healing[4].

A fixed implant-supported restoration was planned without the need of major bone corrections or augmentations. Standard periodontal treatment was carried out at the initial stage.

As the patient insisted on not having to wear a removable provisional restoration, the treatment plan decided on was to perform an immediate placement and immediate loading

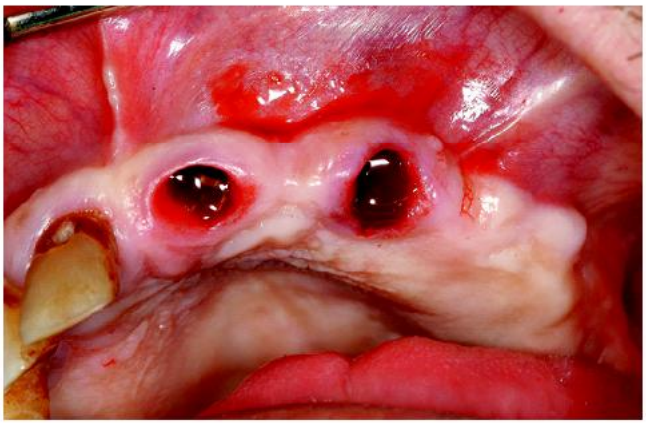

Fig. 4: Extractions were made and a full-thickness flap was then elevated in the left quadrant.

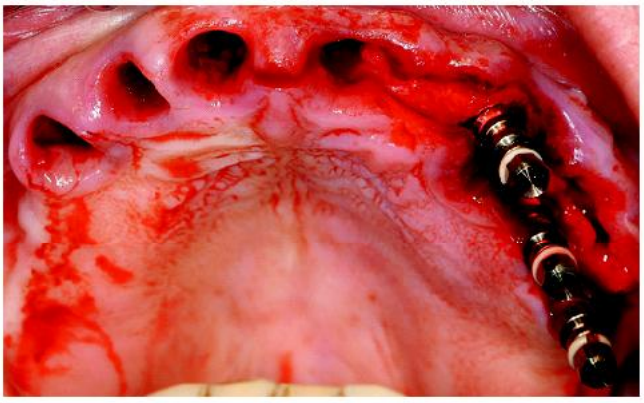

Fig. 5: An SLActive implant in position 23 was placed in the extraction socket and SLActiveimplants in positions 24 and 25 were placed in the healed alveoli.

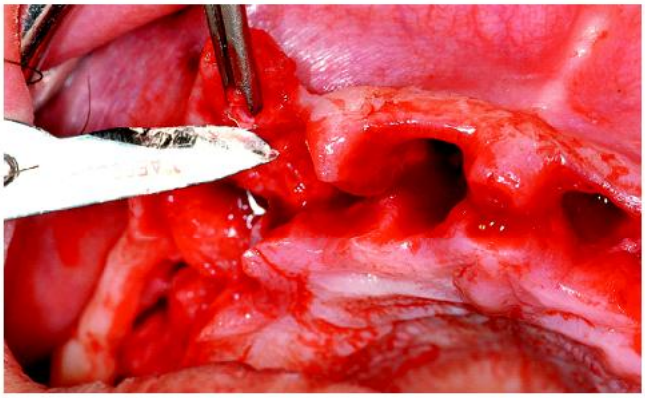

Fig. 6: Extractions were then performed in the right quadrant and the flap was then elevated. Great caution was given to removing the epithelial portion of the pocket from the flap in order to eliminate inflammatory tissue. This technique can be performed safely and easily where a thick periodontal biotype is present.

Fig. 7: Implant insertion is completed. Autogenous bone has been added where the horizontal periimplant defect was greater than 2 mm.

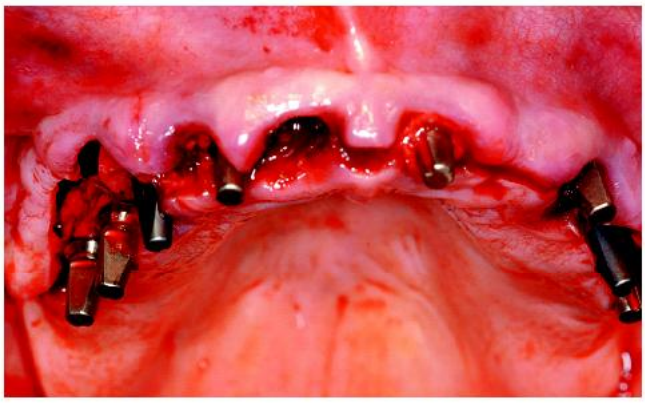

Fig. 8: Standard solid abutments for cemented restorations are connected.

	17	16	15	14	13	12	11	21	22	23	24	25	26	27
Teeth *Extraction*					X	X	X	X		X				
Implant insertion			X	X	X	X		X		X	X	X		
Type of implant insertion			ST	ST	PE	PE		PE		PE	ST	ST		

TABLE 1: This table shows the surgical procedure performed. (PE = post extraction / ST = standard placement)

protocol. This type of procedure, described in various papers, has been reported as being very efficient in selected cases. In the same session as the teeth extraction, four dental implants were placed in the extraction sockets and four in the residual alveolar bone. All implants were immediately loaded using standard abutments for cement-retained restorations.

The choice for this situation was to use SLActive implants. Animal studies have demonstrated that SLActive implants display more rapid osseointegration and, from a biomechanical standpoint, they reduce the stability risk in the early healing period[5]. This potentially allows safer, more predictable early loading[6]. After implant integration, a second more precise provisional was used to obtain ideal conditioning of the soft tissue. A porcelain-fused-to-metal FPD was then provided.

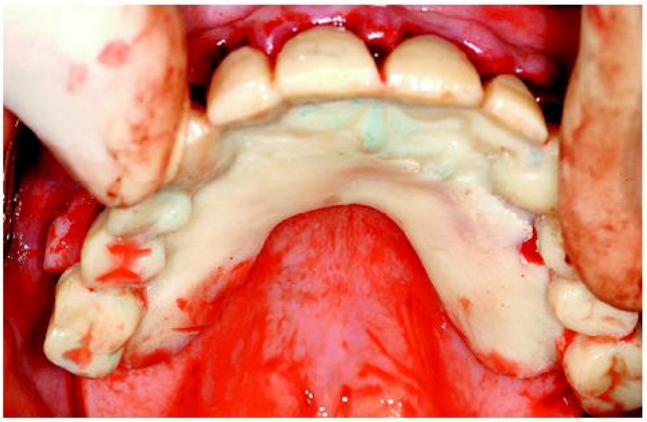

Fig. 9: The provisional restoration is adapted and relined (one piece of acrylic with palatal extension to permit tridimensional positioning in order to achieve correct occlusion)'.

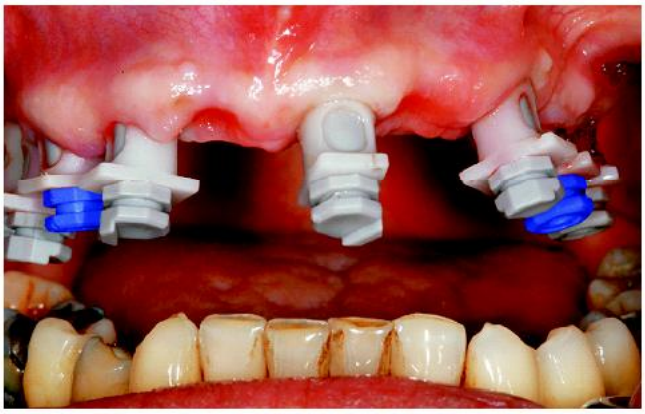

Fig. 12: After six weeks of undisturbed healing, the soft tissue has receeded. A second precise provisional FPD may now be prepared in order to begin final soft tissue conditioning. An impression is taken to prepare the provisionals

Fig. 10: After relining, the marginal portion of the provisional FPD is intentionally trimmed in order to provide a vertical gap between the implant shoulder and the prosthesis. The flap is then sutured in place. Ovate pontics are used in the edentulous spaces.

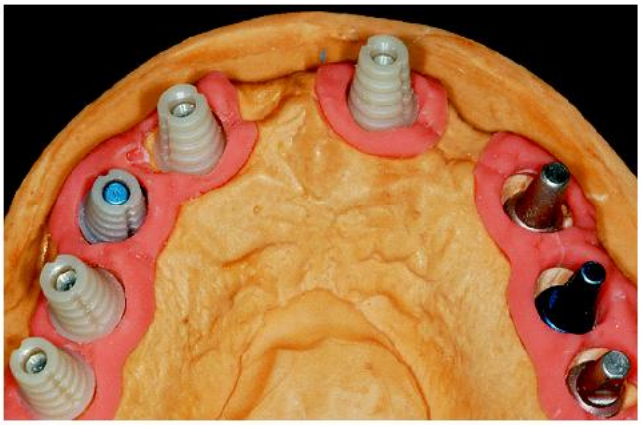

Fig. 13: A plaster model is prepared and acrylic provisional components are placed over the abutment analogs. Multiplepiece acrylic restorations are then easily fabricated.

Fig. 11: Radiological view immediately after surgery with provisional in place.

Fig. 14: The second provisional FPDs have a prefabricated interface to the implant shoulder, thus easily achieving a precise fit.

Fig. 15a-c: The tissue can now be gently pushed apart. Here, the ovate pontics help in achieving a nice soft tissue contour. Note the ischemic tissue at the time of the first insertion.
(a) The provisionals are slowly and gently inserted.
(b) The appearance of soft tissue three weeks after the delivery of the second provisional restoration.
(c) Soft tissue at the time the final prosthesis is inserted (eight weeks after the second provisional phase and 14 weeks after the first surgery).

Fig. 16: Occlusal view at the time of the final impression. In this case, the same abutments utilizied at the time of surgery were used for the final prosthesis.

Fig. 17: The final result of the restoration. Three-part FPD with one cantilever on each side. Eight implants support 12 prosthetic elements.

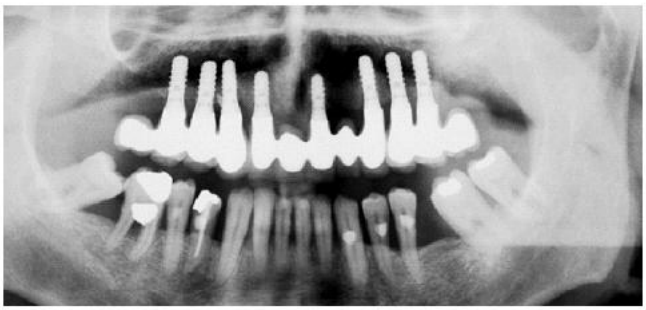

Fig. 18: Final radiographic view. Ideal bone-to-implant contact has been achieved.

Fig. 19a, b: The final restoration in place. Note the relationship between the implant-supported FPD and the periodontal tissues.

References

1. Grunder U. Immediate functional loading of immediate implants in edentulous arches: two-year results. Int J Periodontics Restorative Dent. 2001; 21:545-551
2. Cooper LF, Rahman A, Moriarty J, Chaffee N, Sacco D. Immediate mandibular rehabilitation with endosseous implants: simultaneous extraction, implant placement, and loading. Int J Oral Maxillofac Implants. 2002; 17:517-525
3. Jaffin RA, Kumar A, Berman CL. Immediate loading of dental implants in the completely edentulous maxilla: a clinical report. Int J Oral Maxillofac Implants. 2004; 19:721-30
4. Cochran D. Experimental studies with the new SLActive surface. International Team for Implantology World Symposium. June 18–20, 2005, Munich, Germany
5. Buser D, Broggini N, Wieland M, Schenk RK, et al. Enhanced bone apposition to a chemically modified SLA titanium surface. J Dent Res. 2004; 83: 529-533
6. Zöllner A, first clinical results from the SLActive Multicenter study. European Association for Osseointegration, 14th annual scientific meeting, September 22-24 2005, Munich, Germany
7. Gallucci GO, Bernard JP, Bertossa M, Belser UC. Immediate loading with fixed screw-retained provisional restorations in edentulous jaws: the pickup technique. Int J Oral Maxillofac Implants. 2004;19: 524,33

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