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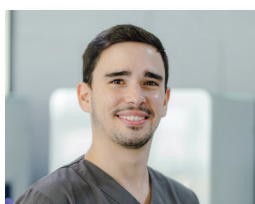
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Total bimaxillary restoration with double-unit zirconium oxide bridges

INTRODUCTION

Immediate fixed reconstruction is increasingly preferred by both doctors and patients due to the advantages it offers. From the functional improvements in mastication and phonetics, to the daily comfort and aesthetic changes that play a major role both in social life and for the psyche.

Improvements in diagnostic methods, surgical techniques, implant design and surfaces, and increasing knowledge of tissue biology mean that treatments that were previously occasionally used are now becoming routine. The procedure called immediate loading and also known as a „same-day smile“ is an increasingly common treatment choice for patients who want a fixed reconstruction solution.

This treatment solution offers various advantages, among which stand out the reduced procedure time and the immediate restoration of the patient's masticatory function and physical appearance.

The impact on the patient's self-esteem is significant when he or she receives a fixed bridge instead of a removable prosthesis, which is placed 6 hours after the procedure. The technique is supported by the literature, and it must therefore be well planned and executed.

The patient's expectations should also be included in the treatment planning so that the final clinical result is as close as possible to these expectations. After the definitive restoration has been placed, regular check-ups at the follow-up appointment and a strict oral hygiene protocol to be followed by the patient are important.

All the necessary requirements must be followed, taking into consideration certain important aspects such as the patient's general state of health and oral health, as well as oral parafunctions such as bruxism and tobacco use.

The patient's expectations must also be evaluated for a successful final clinical result. After the insertion of the permanent work, it is important to carry out a regular follow-up and for the patient to follow a rigorous oral hygiene routine.

This approach helps to avoid or minimize problems with rehabilitation over time.

CASE STUDY

52-year-old female patient with no contraindications to the insertion of dental implants. As a reason for the consultation, she stated that she wished to stop using her upper removable dentures and move to fixed reconstruction, both upper and lower, simultaneously obtaining improvements in appearance and mastication.

The patient was partially edentulous. The maxilla presented areas of bone resorption, particularly in the first and second quadrant. She only used an acrylic removable upper prosthesis with hooks, which were unsatisfactory from both a functional and an aesthetic point of view.

TREATMENT PLAN

The patient previously underwent two sinus lift surgeries using the lateral window technique in the first and second quadrants to allow for the insertion of the subsequent implants. Six months later, eight implants were inserted in a fixed temporary acrylic bridge using immediate loading.

This bridge was subsequently replaced by a permanent bridge with a dual structure: titanium bars with ZirkonZahn zirconia prostheses with layered vestibular lamina on teeth 15 to 25. Four incisors were extracted from the lower maxilla, leaving the canines to preserve the integrity of the bone crest and allowing for the insertion of the anterior implants with simultaneous bone regeneration.

During this period, the patient used a temporary bridge that was cemented to her canines and second molars. Surgery was subsequently carried out to insert four implants – two in the third quadrant and two in the second.

After three months of osseointegration, the canines were extracted and a second temporary bridge was screwed onto the six implants. The lower permanent bridge, inserted after the extraction of 37 and 47, was also a bridge with a dual structure, with titanium bars on top of six implants and ZirkonZahn zirconia prostheses fixed to the bars in the laboratory.

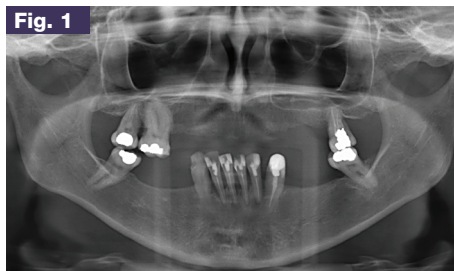


Fig. 1 Initial panoramic radiograph



Fig. 2 Patient's initial state – acrylic removable dentures



Fig. 3 Maxilla



Fig. 4 Mandible



Fig. 5 Incisor exposure at rest



Fig. 6 Mandible, after the extraction of the lower incisors

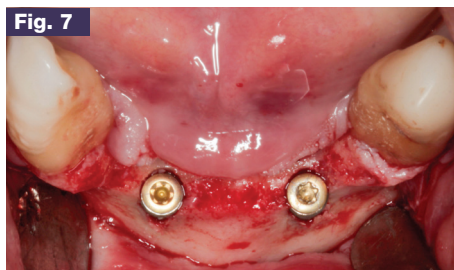


Fig. 7 (32, 42) Straumann Implant BL 3.3 mm NC, SLA 14 mm

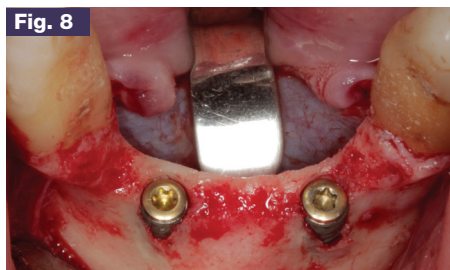


Fig. 8 (32, 42) Straumann Implant BL 3.3 mm NC, SLA 14 mm

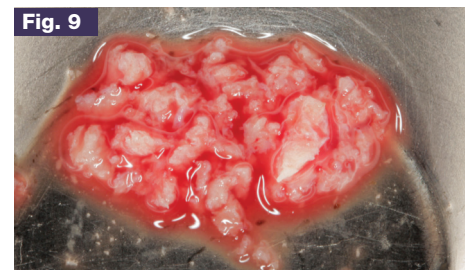


Fig. 9 "Bone chips" obtained with an autogenous cortical bone scraper, to mix with Geistlich Bio-Oss®



Fig. 10 Insertion of Geistlich Bio-Oss® 0.5 g mixed with autogenous cortical bone



Fig. 11 Insertion of Geistlich Bio-Gide® 25 mm x 25 mm

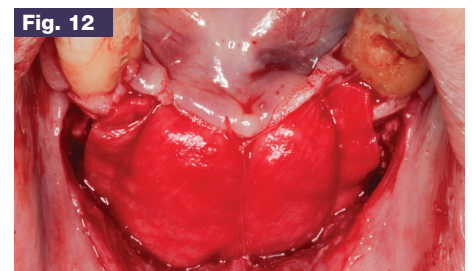


Fig. 12 Insertion of Geistlich Bio-Gide® 25 mm x 25 mm, sstabilised with com 5-0 Vicryl absorbable sutures

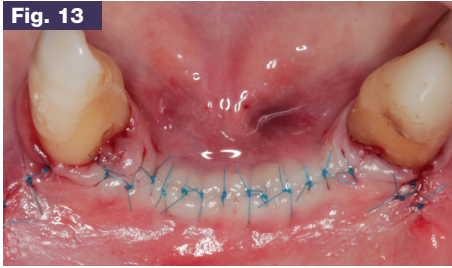


Fig. 13
Monofilament suture 6-0

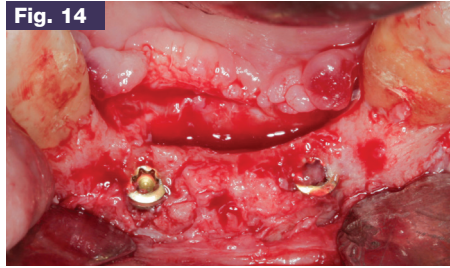


Fig. 14
(32, 42) Straumann Implant BL 3.3 mm NC, SLA 14 mm

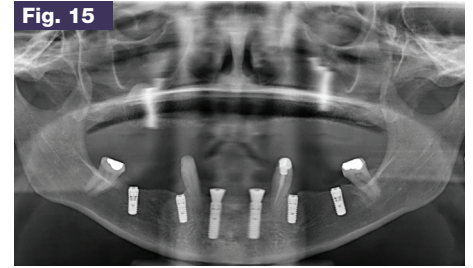


Fig. 15
Follow-up panoramic radiograph

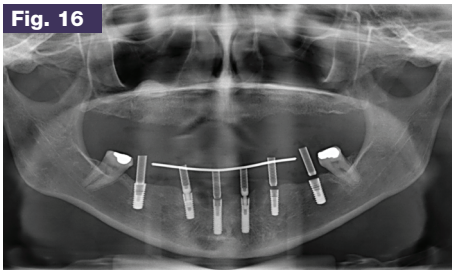


Fig. 16
Follow-up panoramic radiograph after the extraction of the lower canines and the insertion of a temporary bridge on top of the implants

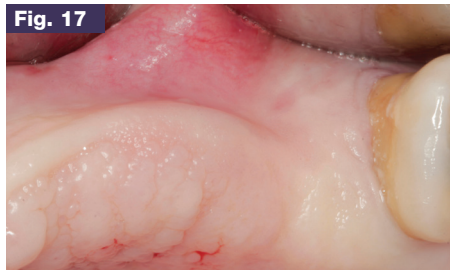


Fig. 17
Initial situation

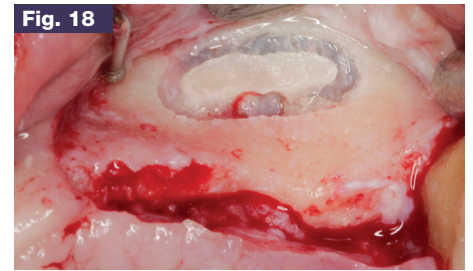


Fig. 18
Maxillary sinus lift surgery, lateral window technique with piezo technique

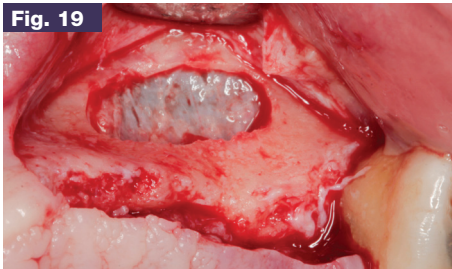


Fig. 19
Maxillary sinus lift surgery, lateral window technique with piezo technique

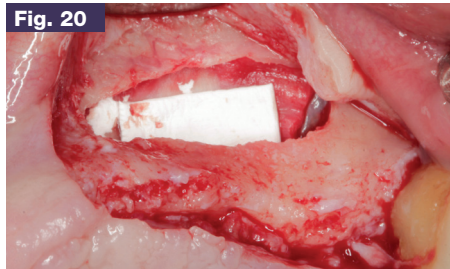


Fig. 20
Insertion of Geistlich Bio-Gide® membrane 25 mm x 25 mm to protect the Schneider membrane

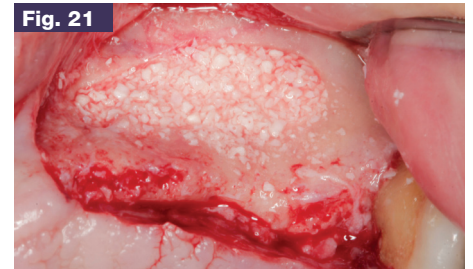


Fig. 21
Insertion of Geistlich Bio-Oss® 1.5 g

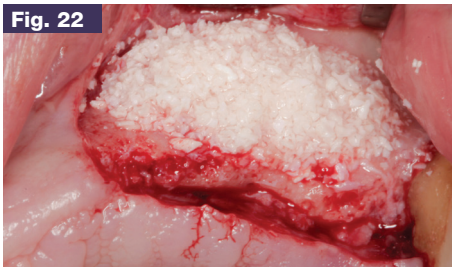


Fig. 22
Insertion of Geistlich Bio-Oss® 1 g for increased vestibular depth

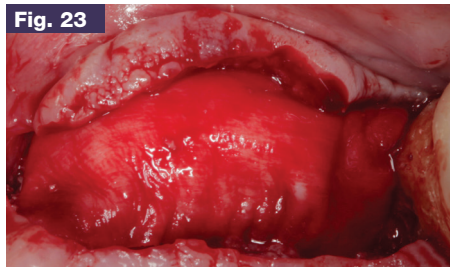


Fig. 23
Insertion of Geistlich Bio-Gide® membrane 25 mm x 25 mm

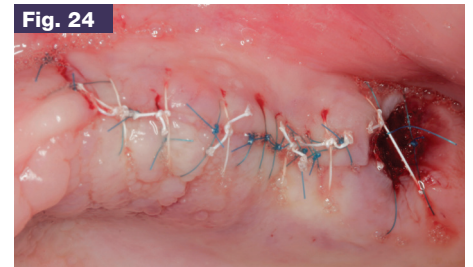


Fig. 24
Extraction of tooth 27 – 6-0 monofilament and 5-0 PTFE sutures



Fig. 25
6-0 monofilament and 5-0 PTFE sutures

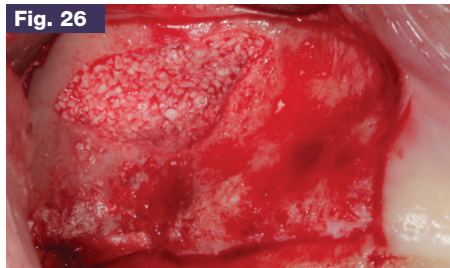


Fig. 26
Insertion of Geistlich Bio-Oss® 1.5 g

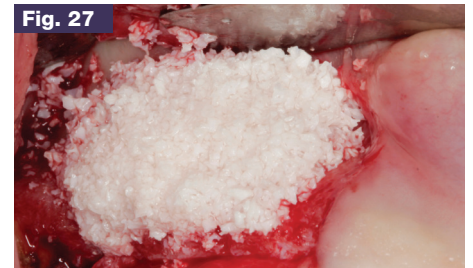


Fig. 27
Insertion of Geistlich Bio-Oss® 1 g for increased vestibular depth

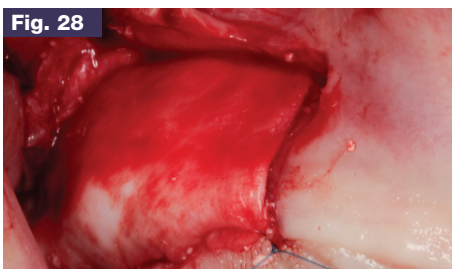


Fig. 28
Insertion of Geistlich Bio-Gide® 16 mm x 22 mm

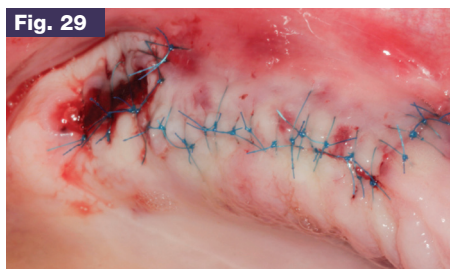


Fig. 29
Extraction of tooth 17 – 6-0 monofilament sutures



Fig. 30
Removal of the 6-0 monofilament sutures after a week of healing

Sinus-lift No. 2 q. (Lateral window technique)

Sinus-lift No. 1 q. (Lateral window technique)

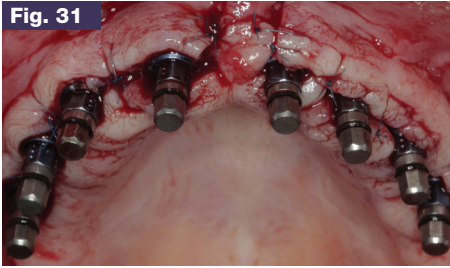


Fig. 31
OKTAGON® Implants BL NC 12 mm
(15) Ø 4.1 mm (16, 13, 11, 21, 23) Ø 3.75 mm (25, 26) Ø 4.1 mm

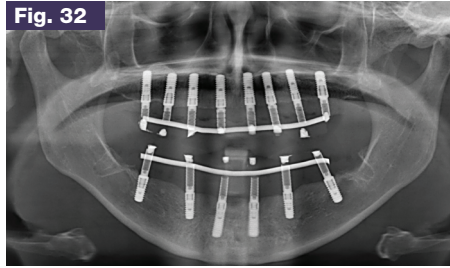


Fig. 32
Panoramic radiograph with temporary prostheses in situ

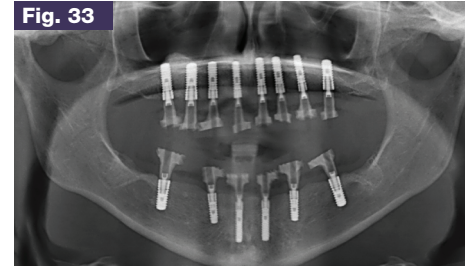


Fig. 33
Follow-up panoramic radiograph



Fig. 34
Temporary prostheses on implants

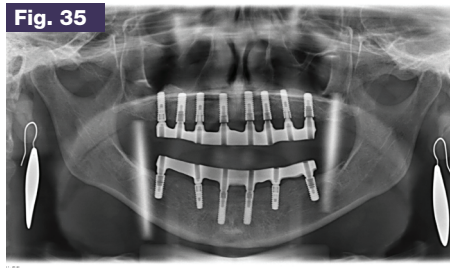


Fig. 35
Panoramic radiograph with titanium bars



Fig. 36
Upper and lower titanium bars

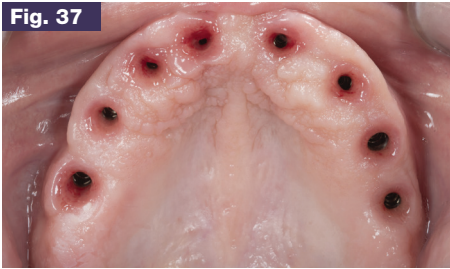


Fig. 37
Emergence profile of the implants in the upper jaw



Fig. 38
Emergence profile of the implants in the lower jaw



Fig. 39
Prefabricated zirconia structure from canine to canine



Fig. 40
Coloured zirconia structure



Fig. 41
Upper zirconia structure after being cemented to a bar made in the laboratory



Fig. 42
Lower zirconia structure after being cemented to a bar made in the laboratory



Fig. 43
Final upper layered zirconia structure with titanium bar



Fig. 44
Final lower layered zirconia structure with titanium bar



Fig. 45
Final front view

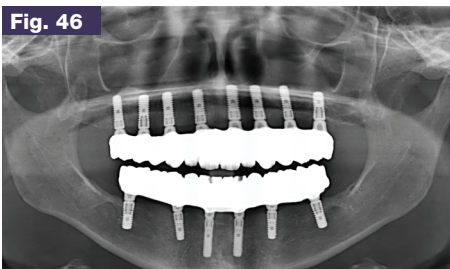


Fig. 46
Abschließendes OPG, mit Zirkongerüsten und Titanstegen

CONCLUSION

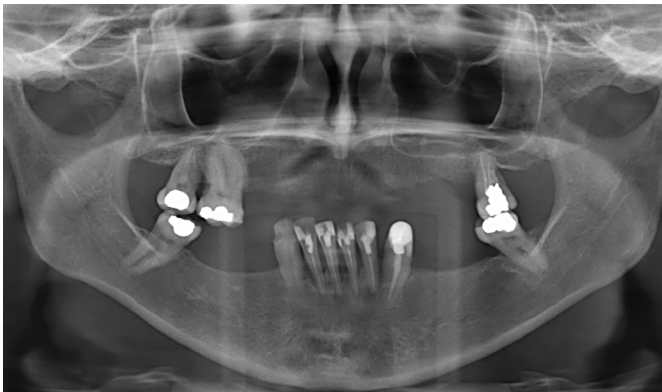
The case study presented shows an example of upper and lower fixed reconstruction with layered zirconia crowns cemented to their respective titanium bars in the laboratory. In this way, a double hybrid structure (titanium and zirconium) is obtained in each jaw, where the cementation in combination with the bar allows a good distribution of the masticatory forces, helping to protect the implants from overloading.

The risk of fracture of the zirconia structures, described in many scientific articles regarding fully ceramic structures, was also significantly reduced. This becomes very useful in the predictability of treatments in patients with bruxism and in cases with an increased desire for a better aesthetic outcome in which ceramic is preferred in both halves of the jaw.

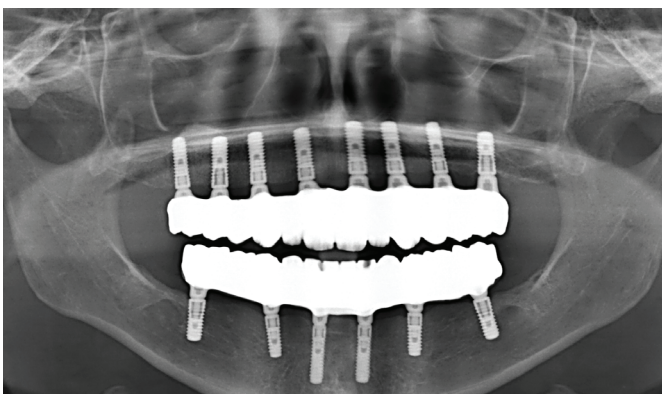
In both the upper and lower jaw, the correct amount of space was conserved between the bridge and the gingival mucosa in order to allow the patient to practice good oral hygiene.

The patient immediately adapted to the dual reconstruction with regard to both mastication and pronunciation. The aesthetic results met and even exceeded the patient's expectations. She demonstrated great satisfaction – which is the best reward for the whole team working on this case!

BEFORE



AFTER



REFERENCES

- [1] Sanz-Sánchez, I., Sanz-Martín, I., Figuro, E. & Sanz, M (2015) Clinical efficacy of immediate implant loading protocols compared to conventional loading depending on the type of restoration: a systematic review. *Clinicas Oral Implants Research* 26: 964-982
- [2] Javed, F. & Romanos, G.E. (2010) The role of primar stability for successful immediate loading of dental implants. literature review
- [3] Eckart, Jacob, Fenton, Mericske-Stern, *Prosthodontic Treatment for Edentulous Patients, Complete Dentures and Implant-Supported Prosthesis*, Zara - Bolender, Mosby
- [4] German O. Gallucci, DMD, Dr Med Dent/ Dean Morto , BDS, Ms/ Hans-Peter Weber, DMD, Dr Med Dent, *Loading Protocols for Dental Implants in Edentulous Patients*



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