Immediate loading implant surgical protocol in fresh socket with simultaneous connective soft tissue graft in the aesthetic zone - Two years follow-up

Abstract

Background
Immediate implant placement into an extraction socket, in an aesthetic demanding place, followed by immediate provisionalization can dramatically decrease tooth and prevent soft tissue collapse at all treatment stages. Therefore, these treatment concepts also cause a great challenge to clinicians. Buccal volume loss, following tooth extraction, due to bone resorption is a certain. Techniques have been developed to prevent bone loss or minimize its occurrence basically by using biomaterials and/or two surgical stages. This protocol shows that with proper implant position and immediate provisional restoration in association with connective tissue graft, buccal volume can be recovered using a minimally invasive technique and avoiding biomaterials. This one-stage technique optimizes implant placement and soft tissue aesthetics while providing immediate patient satisfaction.

Material and methods
Thirty patients (6 women, 7 men) with a mean age of 38 years (range, 20 to 59 years) were included. All patients were healthy and non-smokers. Pre-surgical clinical and radiological examinations (axiography and intra-oral X-ray) revealed healthy conditions of the surrounding tissues. All surgical procedures were performed under local anesthesia (4% Artane solution) and antibiotic prophylaxis (amoxicillin and Clavulanic acid 875-125 mg). A posterior was taken to register the anatomy of the failing tooth. The tooth was then carefully extracted, in an attempt to preserve the surrounding bone. Post-operative non-steroidal anti-inflammatory drugs were prescribed for 3 days and antibiotic treatment was continued for 5 days postoperatively. Antifibrinolytic agents (Cytoplast® PTFE Suture) were used in the aesthetic zone – Two years follow-up.

Results
All implants were successfully integrated and definitive restorations were placed approximately 4 months. For all cases, the gingival level remained stable at 24 months. Meaning no significant soft tissue volume reduction was observed.

Conclusion
This report evaluated the buccal volume maintenance after both tooth extraction and immediate implant replacement with an autogenous connective tissue graft, a surgical technique aimed to compensate the lack of volume to bone resorption, for soft tissue. It warrants to be reliable and to allow above-average soft tissue outcomes together with immediate patient satisfaction.

1 Background and Aim
Single tooth replacement in the aesthetic zone is probably the most challenging procedure in implant dentistry. [12] Buccal volume loss due to bone resorption is a certain. Techniques have been developed to prevent bone loss or minimize its occurrence basically by using biomaterials and/or two surgical stages. This protocol shows that with proper implant position and immediate provisional restoration in association with connective tissue graft, buccal volume can be recovered using a minimally invasive technique and avoiding biomaterials.

2 Surgical Protocol

2.1 Surgical Protocol

2.2 Results
Immediate implant placement in a fresh socket successfully maintained buccal bone volume and resulted in a 100% survival rate in 3 cases. Therefore, it may be a good option. It provides space for soft tissue between implant/tooth (24) and socket gap is healed by new bone. (4,7-11) Thin connective tissue grafts can be used (24) to increase distance between tooth/implant, placed predictably over buccal bone resorption. Marginal alveolar bone height exists between the implant surface and the alveolar process to allow predictability heal with bone formation. [13,14]

The present study describes a surgical protocol for immediate implant placement in a fresh extraction socket and a simultaneous connective soft tissue graft [15] with immediate provisional restoration (24) in 32 patients and evaluates buccal volume maintenance over a period of 2 years. No bone grafts or barrier membranes were used.

3. Results
No major adverse reactions or complications were observed during the period of the report. No implant or connective soft tissue graft failed after 24 months, resulting in a 100% survival rate. In 3 cases, connective tissue graft was repeated due to a volume reduction in the 2-4 Mths after surgery. Marginal gaps between the implant surface and socket wall were confirmed to be absent in the 4-month radiographic control.

4 Conclusion
The present study evaluated the buccal volume maintenance after both tooth extraction and immediate implant replacement with an autogenous connective tissue graft. This technique intends to reduce the lack of volume by bone resorption with soft tissue. Connective tissue graft is stable over time [16] unlike autogenous bone graft that suffer resorption. [17,18] Namely, implants gaping is a good approach to achieve a space for soft tissue between implant/bone (24) and socket gap is healed by new bone. [19,20] Thin connective tissue graft should be used to allow the connective tissue graft. Definitive impressions were taken 4 months after surgery along with a radiographic control and ceramic crown to placed. Non-steroidal anti-inflammatory drugs were prescribed for 3 days and antibiotic treatment was continued for 5 days postoperatively. Sutures were removed 5 to 8 days after surgery. No postoperative changes were noted, no infections were recorded. Monthly clinical observations were performed for the first four months and every 6 months after.

5 References
9. D. Boticelli et al. Non-steroidal anti-inflammatory drugs were prescribed for 3 days and antibiotic treatment was continued for 5 days postoperatively. Sutures were removed 5 to 8 days after surgery. No postoperative changes were noted, no infections were recorded. Monthly clinical observations were performed for the first four months and every 6 months after.