

Soft tissue management in a total upper jaw implant rehabilitation

Ilaria Franchini, Andrea Parenti, Ernesto Cappellato

UNIVERSITA' DEGLI STUDI DI MILANO – DIPARTIMENTO DI SCIENZE CLINICHE “L. SACCO” - ISTITUTO ORTOPEDICO GALEAZZI - MILANO
IRCCS – ISTITUTO DI RICOVERO E CURA A CARATTERE SCIENTIFICO

SERVIZIO DI ODONTOSTOMATOLOGIA Direttore: Prof. R.L.Weinstein

REPARTO DI IMPLANTOLOGIA E RIABILITAZIONE ORALE *Responsabile: Dr. Tiziano Testori

INTRODUCTION

Bone resorption following tooth extraction occurs in three dimensions and compromises hard and soft tissue levels for the implant supported restoration (1, 2). Specially the management of the keratinized gingiva and the interproximal papilla in the anterior and posterior regions has to guarantee the maintenance of esthetics, function, phonetics and hygiene (1, 3). The emergence profile of the final restoration has to be reliable with the size of the tooth to be replaced and the adjacent teeth. There are 4 different stages of peri-implant tissue management: (I) prior to implant placement, (II) at implant placement, (III) at second stage surgery, (IV) in the prosthetic phase (4, 5).

The replacement of multiple adjacent missing teeth in the anterior maxilla with fixed implant supported restoration is difficult in regard to the management of the peri-implant tissue (6). Potential causes of esthetic implant failure are beyond vertical and horizontal bone deficiencies specially improper implant selection and positioning (7). An ideal implant position in all 3 dimensions is required (6). The mesio-distal interimplant distance of 5mm in the anterior and 3mm in the posterior region enhances the maintenance of the interproximal bone and papilla. The oro-buccal palatal position of the implant improves buccal esthetics and guarantees biomechanical aspects. The vertical position of the implant platform to the bone crest and CE-junction of adjacent teeth ensures the esthetic needs and the emergence profile of the final restoration (2).

MATERIAL & METHODS

The implant supported total rehabilitation of an edentulous upper jaw illustrates different stages and procedures of the management of the peri-implant soft tissue. A clinical and instrumental diagnosis trial (fig. 1) evaluated the prosthetic and surgical guidelines to support peri-implant health and aesthetics by selection of the ideal implant diameter reliable with the missing tooth and ideal implant position in 3 dimensions. According to the guidelines 8 implants with diameter 5mm for canines and molars and 4,3mm for premolars were placed in the left and right latero-posterior maxillary region with the help of a surgical device build on the prosthetic wax-up (fig. 2). Bilateral sinus-lift required sub-mucosal healing (fig. 3). Because of the rectangular shape of the maxilla, the insufficient mesio-distal distance and the inadequate oro-buccal position no implant was placed in the front region. The management of the soft tissue in the posterior regions has been performed by a split thickness technique and apical repositioning during second stage surgery (fig. 4). The management of the soft tissue in the anterior region has been accomplished with pre-prosthetic surgery and conditioning with a fixed ovoid shaped provisional restoration (fig. 5, 6). After 6 months the restoration was finalized. A 2-year follow-up was documented (fig. 7).

RESULTS & CONCLUSION

Correct implant selection and positioning and accurate preparation of the soft and hard tissue are the prerequisite in creating optimal emergence profile, esthetic, function and peri-implant health (2). Periodontal guidelines in the uncovering procedures of dental implants result in decreased thickness of peri-implant tissue, pocket elimination and creation of an adequate zone of keratinized gingiva. This contributes significantly to the long term success (8). The use of an ovate pontic in the anterior maxillary region successfully enhances the soft tissue management and satisfy the esthetic, functional, phonetic and hygienic requirements creating the illusion of reality (9, 1).



Fig. 1: Initial situation and clinical / technical diagnostic trial.

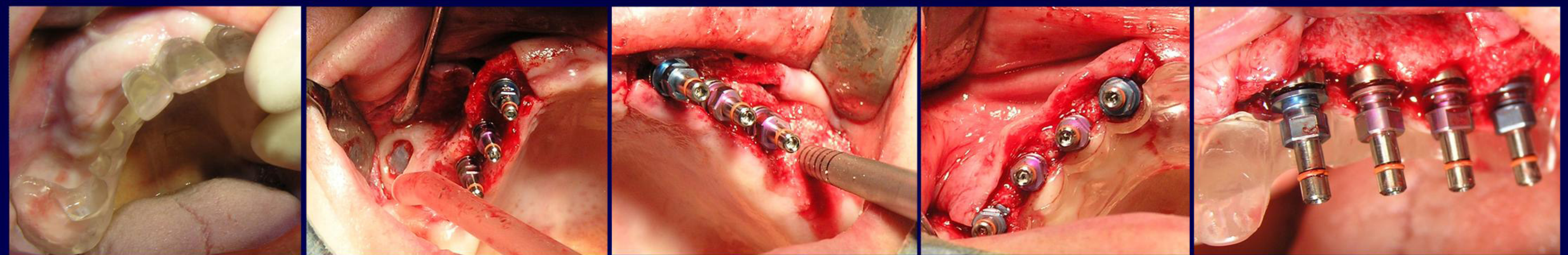


Fig. 2: Surgical procedure – implant placement and bilateral sinus lift with different approach: Caldwell-Luc (right) and Summers technique (left).

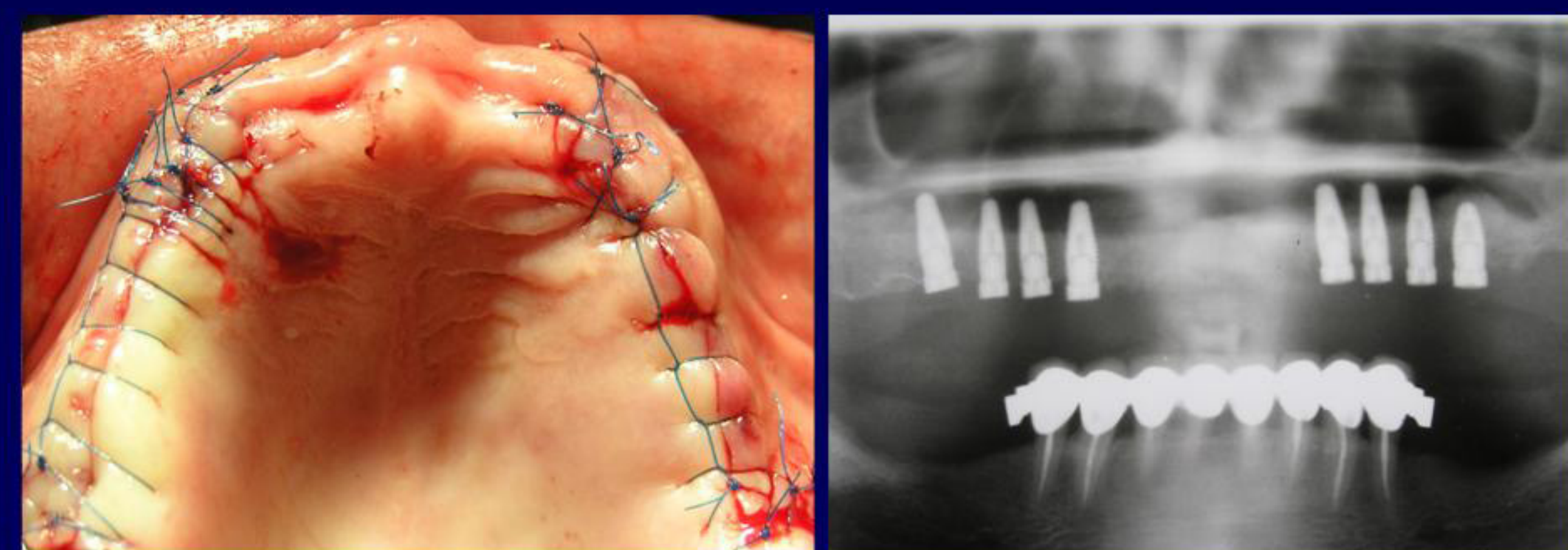


Fig. 3: Submucosal healing and post-operative radiograph.



Fig. 4: Second stage surgery and soft tissue maturation in the latero-posterior regions.



Fig. 5 : Perimplant tissue maturation, pre-prosthetic surgical incisions & conditioning of soft tissue in the front with the provisional prosthesis.



Fig. 6: Soft tissue maturation after 8 weeks.

Fig. 7: Final restauration after 2 years.

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