Vermont Law School

From the Selected Works of Gabriela Steier

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Better Horizontal Ridge Expansion

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Better horizontal ridge expansion

Using advanced minimal-invasive instruments and techniques allows for concomitant implant placement and regenerative procedures

By Liviu Steier and Gabriela Steier, U.K.

This 54-year old patient regularly attends our practice and takes part in our quarterly preventive program. His anamnesis contains no special entries. Figure 1 shows that the patient has lost tooth 12 as a result of a previously unsuccessful root canal treatment, followed by an unsuccessful apicotomy.

The prosthetic work has been in-situ for a long time and was performed also loco. Secondary decay at the crown margins of tooth 11 created the need of prosthetic retreatment. The different treatment options were explained in detail to the patient, one of which was fixed restoration using implants.

The patient decided on implantation in position 12, and was told that as a consequence of local infection, apicotomy, and long-term tooth loss, the alveolar ridge has collapsed and guided bone regeneration would be needed to restore the optimum anatomical condition.

The existing porcelain fused to metal bridge (abutment teeth = 15 and 11, pontic = 12) was removed, decay eliminated and new adhesive core build-ups performed. Buccal infiltration anesthesia was given and the patient was offered a new metallic, composite, veneered bridge.

A full gingival flap was raised allowing the extensions of the bone resorption to be identified. It was obvious that implant placement without bone augmentation could not be performed. The two treatment options available were:

1) Vertical and horizontal bone augmentation with a healing time of at least five months and an implant placement with an additional surgery. The initial small-sized drills were reversed. Initial small-sized drills

2) Horizontal ridge widening with immediate implant placement and bone grafting.

Of course, there were advantages and disadvantages of each treatment option.

Advantages of bone augmentation and implant placement in two stages:

- Direct full control of bone augmentation procedure.
- Predicable bony support at implant placement time.
- Risk-free implant placement.

Disadvantages of bone augmentation and implant placement in two stages:

- Treatment delay by healing time of at least five months.
- Two surgical procedures needed.

Advantages of bone augmentation and implant placement at the same time:

- Reduced healing time.
- Disadvantages of bone augmentation and implant placement at the same time:
- Bone management knowledge skills for the surgeon requested.

- Additional technical equipment required.

Messinger has introduced a so-called Split Control instrument kit it described as a ‘[…] minimally invasive alternative to osteotomies. Bone spreading and bone condensing with special screw-like instruments (spreaders) achieve a controlled and standardised dilation of horizontally resorbed bone and a gentle densification of cancellous bone’

The Split Control Kit by Messinger contains different sized screws, built similarly to a Hedström file, but reversed. Initial small-sized drills are offered within the kit intended for use as markers and access instruments, and to be followed by


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the spreaders in increasing dimensions.

The implant guiding system (by Innovative Implant Technology) was used to two-dimensionally position the primary marker drill. To begin with, an OS followed by an 018 pilot drill was used, complimented by an expansion burr in the size of a 025 burr. The bony spreading was performed using the following spreaders: 027, 029, 031, 033.

As a next step, the guided bone regeneration was performed. To augment the buccal resorption, Bio-Oss® Spongiosa small granules, 0.25 mm (Geistlich Biomaterials) were used and covered with Geistlich® Bio-Gide resorbable bilayer membrane 25 x 25 mm both soaked in wound blood.

Conclusion

The buccal bone plate can resorb to a severe degree as a result of tooth loss. Conventional implantologic reconstructive therapy supposed until recently a two-stage approach: guided bone regeneration followed by a five-month healing time and a second surgery for fixture installment. Using advanced minimal-invasive instruments for extremely thin-ridge expansion allows for concomitant implant placement and regenerative procedures.