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Introduction and Objectives

- In case of vertical fractures, in the buccal-palatal direction, the required treatment is the tooth extraction.. The socket-shield technique is a recent alternative in implant rehabilitation of condemned teeth, as a consequence to those fractures.⁽¹⁾
- It consists in maintaining the buccal portion of the root fragment, in order to make a the surgery and restoration more conservative.⁽¹⁾
- This is a conservative technique, it minimizes the tissue loss⁽²⁾, optimizes the aesthetic results⁽³⁾, preserves the interimplantary papillae⁽⁴⁾, avoids bone resorption without the need of bone augmentation. ⁽⁵⁾
- This presentation consists in describing the technique and mention its indications and advantages, based in studies over the last 5 years.

Technique

Indication: Vertical fractures of teeth without pulpar pathologies, where the tissue preservation and aesthetics are a priority. ⁽¹⁾⁽⁵⁾

1- Evaluation of probing depth through the vertical fracture, certifying the absence of caries, lesions or other type of infections.⁽¹⁾

2- After wearing the crown, the fracture line becomes visible and an odontosection is carefully performed, leaving only the buccal portion of the root ⁽¹⁾

3- the remaining root forms the socket-shield and the fracture line is removed with the bur. ⁽¹⁾

4- the implant is placed 1mm apically to the remaining root flaplessly without contacting it. ⁽¹⁾



Image 1 – Evaluation of the probing depth through the vertical fracture, certifying the absence of caries, lesions or other type of infections



Image 2 – After the wearing the crown, the fracture line becomes visible and an odontosection is performed, leaving only the buccal portion of the root.



Image 3– the remaining root forms the socket-shield and the fracture line is removed with the bur



Image 4– the implant is placed 1mm apically to the remaining root flaplessly without contacting it.

Methods

•Relevant articles for this technique dated between 2010 to 2015 were searched, using the keywords “socket shield”.

•Articles that did not describe the technique, nor its indications or results, were excluded.

Inclusion criteria:

- 1) Studies in humans or in dogs.
- 2) Results obtained after using the technique.
- 3) Studies that mentioned aesthetic results
- 4) Studies that mentioned results at a periodontal level
- 5) Studies that presented results with clinical, radiographic, histologic or microscopic evidence.
- 6) Follow-up after a minimum period of 4 months
- 7) Technique used in patients with vertical fractures of incisors, canines or pre-molars with healthy roots free of infection or any other problem that compromises the periodontal and periimplant health in any of the dental arches.



Image 5– Occlusal view after 6 months



Image 6– Buccal tissues with no inflammation.

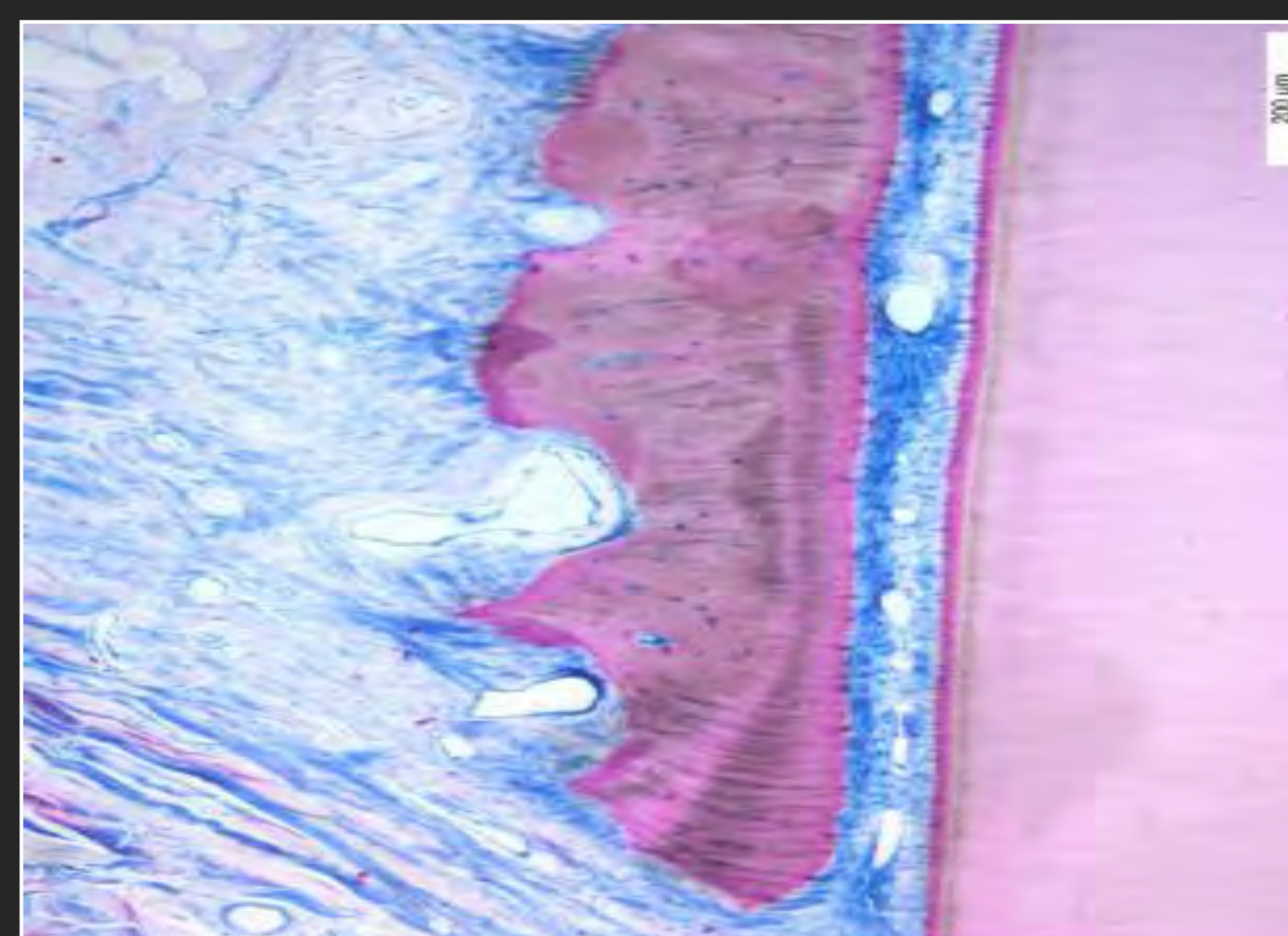


Image 7– Bone crest with no osteoclastic activity



Image 8 – Prosthetic result of the upper central incisor after 6 months.

Results

- Hürzeler et al (2010)⁽²⁾ observed histologically the absence of inflammation and of bone resorption around the 4 implants placed in the 3rd and 4th premolars of the dogs after 4 months follow-up. All implants presented osteointegration.
- Kan e Rungcharassaeng (2013)⁽³⁾ placed implants with immediate loading using this technique at the aesthetic zone and were able to maintain the anterior aesthetics preserving the interimplantary papillae.
- Baumer et al (2015)⁽¹⁾ used this technique in pre-molars of 3 dogs and registered a healthy periodontal ligament around the buccal fragments and a good osteointegration of implants with no osteoclastic activity. Buccal bone volume was also maintained.
- Cherel e Etienne (2014)⁽⁴⁾ registered the preservation of papillae between 2 implants with immediate loading in adjacent teeth after a 11-month follow-up.
- Lagas et al (2015)⁽⁵⁾ performed this technique in the upper incisors of 16 patients without any bone grafting and proved its success without any bone loss.

Conclusions

- This is a recent technique in implantology and is still being studied. The authors conclude that it could be used very much in the future, because it is conservative. However, long-term follow-ups and a larger number of subjects need to be studied more to be able to predict the outcomes. It is not used on a daily basis due to its difficulty to work over the root and by the infrequency of root fractures without any infectious areas or any other periodontal or periimplant issues..
- It may be a more conservative alternative allowing less dependence on bone grafts and allowing the outcome being anatomically; post-operatively; aesthetically; prosthodontically and periodontally more predictable in cases of vertical fracture. More studies in humans need to be performed in the long term.

Bibliography:

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- 5) Lagas L, Pappakitsou J, Serge S, Meier G. (2015) Implant placement in the aesthetic zone: the socket-shield-technique. *Neu Tidschr Tandheelkd* 11:33-6

Image references:

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- Figs 7,8 Hürzeler MB, Zühr O, Schupbach P, Rebele S, Emmanouilidis N, Fickl S. (2010) The socket-shield technique: a proof-of-principle report. *J Clin Periodontol* 37(9):855-62