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Microsurgical Endodontics and Guided Tissue Regeneration in the Management of Two Failing Central Incisors

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INTRODUCTION

- Two failing root filled maxillary central incisors with cast post and core restorations pose a significant challenge to the restorative dentist
- Retaining the patient's own teeth would be the ideal solution however, whilst post can be removed predictably it is less predictable when long wide cast posts are present with minimal surrounding root structure (Abbott, 2002) . The risk of root fracture leading to a complicated extraction with extensive bone loss remains high in this situation
- Alternative options include extractions and prosthetic replacement or surgical endodontic treatment
- A removable option in a young patient with an otherwise healthy mouth is often not an acceptable option to the patient
- Small maxillary lateral incisors do not make ideal bridge abutments and any form of bridge should therefore be avoided
- Dental implants can be considered however, high smile lines and thin gingival biotypes are considered to be high risk in terms of achieving a predictable gingival aesthetic outcome (Buser et al., 2004). Following extraction of two adjacent teeth there is often interproximal bone loss which results in loss of the papilla height. This can result in a black triangle between the implant restorations or the need of a long contact between the two restorations to compensate. Both of which result in a compromised aesthetic outcome
- Surgical endodontics can be considered as an alternative attempt to save the teeth and therefore aim to preserve the anterior aesthetics. This poster outlines the careful microsurgical technique required to ensure successful outcome with minimal gingival recession post surgery

BACKGROUND

- 52 year old female patient presented with persistent throbbing pain present for past 18 months from her maxillary central incisors which were tender to percussion
- Both teeth were previously traumatised many years ago and subsequently root filled and restored with long and wide cast posts, cores and crowns
- The patient had an otherwise healthy dentition
- Following clinical and radiographic examination the following differential diagnosis was made: Chronic periapical periodontitis (Periapical granuloma), Extra-radicular infection, Periapical cyst, Apical scar tissue

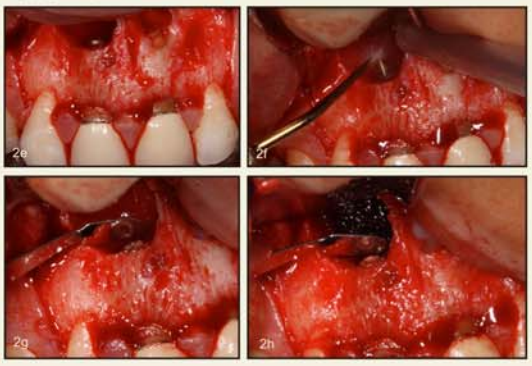
PRE OPERATIVE PHOTOGRAPHS & RADIOGRAPHS

- Pre-op pictures show a high smile line and thin gingival biotype (Figure 1a-b)
- Pre-op radiograph shows large periapical radiolucencies, well fitting long and wide cast metal posts, well condensed root filling and a good coronal seal at the crown margins (Figure 1c)

SURGICAL PROCEDURE

- Three sided full thickness mucoperiosteal flap was raised using the papilla preservation technique (Velvart, 2002) (Figure 2a)
- Small defect on the UL1 and larger defect at UR1 (>10mm) was revealed (Figure 2b)
- The granulation tissue was curetted out at both sites (Figure 2c-d)

- Root apices were resected perpendicular to the long axis of the teeth (Figure 2e)
- Root end preparation to remove 3-4mm of gutta percha was completed using ultrasonic tips (Figure 2f-g)
- Apices were sealed with Mineral Trioxide Aggregate (MTA) (ProRoot MTA, Maillerfer, Dentsply, Switzerlnd) (Figure 2h)



- Guided tissue regeneration with Bio-Oss®/Bio-Guide® (Geistlich, Wolhusen, Switzerland) was carried out in the UR1 defect as described by in a systematic review and meta-analysis by Tsesis et al., 2011 (Figure 2i-k)
- Flap was sutured with 5.0 non-resporbable monfilament polybutester Novafil sutures (Syneture,) (Figure 2l)

POST OPERATIVE PHOTOGRAPHS & RADIOGRAPHS

- Post operative photographs show gingival tissues at one week, three months and one year (Figure 3a-c).
- At one year the patient's symptoms had completely resolved, there was no obvious recession and gingival aesthetics have been maintained

One week post op

Three month post op

One year post op

- Radiograph one week post operatively (Figure 3d) shows presence of root end fillings, an apical defect filled with Bio-Oss® at UR1 and persistent periapical radiolucencies at UR1 and UL1
- Three months post operatively the radiograph (Figure 3e) shows peripical radiolucency on the UL1 beginning to resolve. The UR1 periapical area appeared denser but a radiolucent line separating the xenograft and native bone was still clearly visible
- One year post operatively the periapical radiolucency at UL1 has almost completely resolved. The radiolucent line separating native bone and Bio-Oss® at UR1 has also almost disappeared. There is a more uniform appearance to the apical area at UL1 and UR1 suggesting healing has occurred (Figure 3f)

CONCLUSION

- This poster highlights the challenge that restorative dentists can face when trying to predictably manage two failing central incisors in a patient with a high smile line and thin gingival biotype
- Through careful microsurgical technique it is possible to carry out endodontic surgery and maintain gingival aesthetics which may be less predictable with some of the alternative treatment options available
- Using modern surgical endodontic techniques (as described in this case) a success rate of 91.6% at 1 year was reported in a meta-analysis (Tsesis et al., 2009). The outcome of this case is in keeping with these results
- Managing this patient using microsurgical endodontics required one clinical visit, three short follow up visits and no laboratory costs making it a more cost effective treatment option compared to some of the alternative options

REFERENCES

Please email the author for a full list of references

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