Aesthetics in endodontic microsurgery

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Endodontic microsurgery is the last resort in dealing with very specific pathology in endodontics in order to save the tooth. A major consideration is the flap design and the aesthetics, especially in the anterior zone, and sometimes things can be more complicated with the presence of crowns and veneers. The initial status of the gingiva, whether healthy or inflamed, and whether there are pockets or not, can influence our flap design, after a careful analysis of the bone situation. Usually, a horizontal incision on the gingiva leaves a scar, and a multiple flap design has a horizontal cut design, a technique that I seek to avoid. The absolute concern is the papilla and the cervical area around the teeth, and this one of the major keys of success in aesthetic consideration in microsurgery.

The incision should be clean and parallel to the axis of the tooth and as close as possible to the tooth. This area should be elevated with the same motion as cutting, using a small, flat microblade (Fig. 1), and this area should not be touched again or scraped when elevating the flap. All the fibres and microfibres must be preserved in order to have a fast recovery later and reattachment of those fibres that will lead to almost immediate stabilization and prevent a drop of the gingiva in this area.

The second and equally important step is management of the papilla. Using the same blade, one needs to enter



Fig. 2a-3d: Case 1. Fig. 2a: Pre-op. Fig. 2b: 3-month follow-up. Fig. 2c: 4-year follow-up. Fig. 2d: 6-year-follow-up. Fig. 3a: Pre-op. Fig. 3b: 2 years. Fig. 3c: 4 years. Fig. 3d: 6 years.

into the interproximal area to go as deep as possible to the palatal area, if working in the maxilla, from both sides and to elevate the papilla with the tip of the triangle intact (Fig. 1a & b), and it must remain intact. The area in which the flap has been elevated, especially around the tooth, should be kept hydrated so that the fibres can remain in a good condition.

Replacing the flap in its original place is crucial. Using a modified technique will allow replacement of the flap and the papilla with slight force, directed coronally that will keep the papilla and the flap in their original places and prevent them from dropping, for the best aesthetic results.

Case 1

The patient presented to the office with a swelling in the maxillary anterior (Fig. 2a–d). According to the patient, she had undergone a previous surgery in the area to treat a cyst, and she was told that bone grafting was performed. We placed a gutta-percha cone that led us to the infected area. The radiographs (Fig. 3a–d) and the i-CAT scan (KaVo Kerr) showed us that the pathology was around the apical part of the teeth, one amalgam retrograde filling had been placed and the area of the bone grafting did not seem right. The patient was very concerned about the aesthetics, as she had veneers and did not plan to have them replaced. This added to the challenge of treatment with such inflamed gingiva.

The surgery was redone, and the three-month follow-up radiograph and photograph (Figs. 2a–3d) showed great results: the gingiva seemed to be healthy and in place. The six-year follow-up photograph showed the stability of the results and the radiograph the bone healing.

Case 2

The patient was referred to our office suffering from swelling and pain in the anterior area. According to the pa-



Fig.4a-e: Case 2.

tient, she had had the same episode six months before and root canal therapy was done on the lateral incisor. The clinical examination revealed a swelling on top of both the central and the lateral incisor and that a crown had been placed on the central incisor. The radiographs revealed the presence of a large radiolucency in proximity to the nerves and little residual bone (Fig. 4a–e), around 3 mm on the buccal plate between the lateral incisor and the canine. The central incisor had previously undergone apicectomy and had a very large post that would have made retreatment very tricky.

A zero apicectomy for the lateral incisor and a normal apicectomy redo for the central apicectomy were performed. The postoperative follow-up showed a great result for the papilla, beautiful conservation of the aesthetics and complete bone healing (Fig. 5a–c).

Case 3

The patient was referred owing to failed root canal therapy, but this was a misdiagnosed case (Fig. 6), as she was suffering from lateral root resorption alongside a cyst in the apical area above the lateral and the central incisor. This infection developed, causing swelling inside her



Fig. 5a-c: Case 2. Fig. 5c: 18 months post-op.





Fig. 6-9c: Case 3. Fig. 8b: 18-month follow-up. Fig. 9a: 1-month follow-up. Fig. 9b: 3-month follow-up. Fig. 9c: 18-month follow-up.

upper nostril (Fig. 7), and after consulting with an otorhinolaryngologist, she was referred. A zero apicectomy and root canal retreatment were performed, and the lateral resorption was addressed, continually bearing the aesthetics in mind. The one-, three- and 18-month follow-up showed complete bone healing and stable resorption with periodontal ligament formation (Fig. 8a & b) and a beautiful smile (Fig. 9a-c).



Case 4

This case was one of the most challenging regarding the aesthetic concerns, as the patient had previously undergone two endodontic surgeries that had failed, and retreatment involving a complete redo of her crowns and smile was required. The status of the gingiva was not encouraging for any intervention, as the consequences can be unpredictable. The patient was put on mild antibiotics for one week in order to lower the inflammation or infection, followed by gentle cleaning and change of crowns to temporary crowns. This was followed after 48 hours by a long treatment involving redo of the microsurgeries and zero apicectomies combined with root canal retreatment. The major challenge was to manage the gingiva and the non-existent papillae. The eight-month follow-up showed superb bone healing and a new smile (Fig. 10a-d).

Conclusion

Microsurgery in endodontics is both challenging and satisfying. Following protocols can assure successful treatment outcomes.

about



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