Periapical Surgery of Tooth #11 Suffering from a Chronic Periapical Abscess

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Introduction:

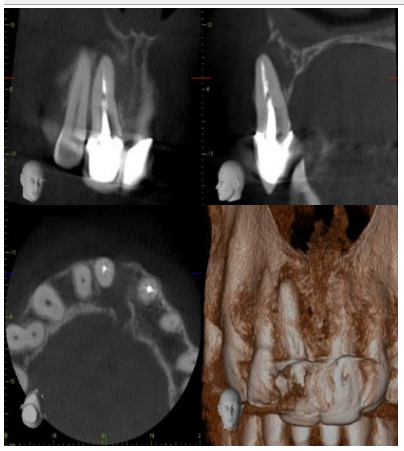
A 60 year old female patient with no relevant medical history was referred for treatment of tooth #11 that was suffering from a chronic periapical abscess. The tooth had received previous endodontic management over 20 years earlier and was restored with a post crown. The patient was desperate to retain the tooth. It was not tender to percussion and periodontal probing depths, and the mobility of the tooth was within the normal range. There was evidence of a sinus tract in the labial mucosa adjacent to the mid root of #11. The crown had a poor aesthetic appearance. There was radiographic evidence of periapical pathology. The post was short of optimal length. Due to the poor aesthetic appearance of the crown, the inadequate post length and the fact that the previous endodontic management and restoration was 20 years old, endodontic re-management was attempted initially. Unfortunately, the sinus tract did not resolve despite multiple dressings with calcium hydroxide. Periapical surgery was performed as a last resort to retain the tooth. To facilitate the surgical process, a permanent post was cemented and the tooth restored with a temporary crown.

Laser	LightWalker		
	Osteotomy	**Root resection and removal of Granulation tissue**	**Granulation tissue removal and disinfection**
Wavelength	Er:YAG (2940nm)	Er:YAG (2940nm)	Er:YAG (2940nm)
Handpiece	HC14-N	HC14-N	HC14-N
Fiber tip	cylindrical	chisel	Flat SWEEPS400/14
Energy	300 mJ	300 mJ	40 mJ
Power	6 W	8W	1.2 W
Mode/Pulse	MSP	SP	AutoSWEEPS
Frequency	20 Hz	20 Hz	15 Hz
Water	4	4	0
Air	1	1	0

Dr. Emanuel Plataniotis graduated from the University of Melbourne, Australia with a Bachelor of Dental science in 1993 and obtained his Masters in Endodontics from the University of Melbourne in 1998. He has worked in private practice as an Endodontist since 1999. Dr. Plataniotis has also instructed students in the field of endodontics at the University of Melbourne and has presented both on a local and international level.

CLINICAL CASE:

Endodontic re-management was provided to tooth #11. The pre-existing crown and post were removed to facilitate this process. The previous obturation material was removed, the canal instrumented and dressed with calcium hydroxide. The canal was dressed a 2nd time with calcium hydroxide as the sinus tract had not healed. Unfortunately, the sinus track did not resolve with this second dressing, so the canal was obturated and a cast post and temporary crown was constructed. Periapical surgery was performed. The aim of the procedure was to eliminate any remaining bacteria and remove any inflammatory tissue (which was sent for histological evaluation). Surgical access also allows for the detection of a crack along the root surface. After an infiltration of local anesthetic, an Ochsenbeine-Luebke periosteal flap was elevated. The Er:YAG laser with a cylindrical tip was used to perform an osteotomy to provide adequate access. The granulation tissue was removed using a curette and the Er:YAG laser. The apical 3rd of the root was resected using the Er:YAG and chisel tip. A retrograde preparation was created using diamond-coated ultrasonics. After the retrograde preparation, AutoSWEEPS was used in combination with 2% ozone water to debride and disinfect the surgical cavity and the retrograde cavity. A retrograde restoration was placed using BC putty. The Er:YAG was used to promote bleeding to fill the surgical cavity and the flap was sutured. The tissue removed was sent for histology; inflammatory tissue was evident with no evidence of epithelium. Swelling was evident for approximately 48 hours after the procedure but quickly resolved. There was minimal pain reported. The patient returned 7 days later for suture removal. There was no evidence of a sinus tract. The soft tissue appeared to be healing well. One of the advantages of the laser is the AutoSWEEPS function, which can be used to debride and disinfect both the bony cavity and the retrograde preparation.

Pre-op CBCT	Pre-op PA radiograph	Post obturation
		

Flap raised	Removal of granulation tissue	Root resection
		

Retrograde preparation	Flap sutured	Final PA radiograph	7 days post op