



Actinomyces Infection of Periapical Granuloma

Contributed By: Dr. David Thom – May 2000



History:

51 year-old female with a chief complaint of swelling "on and off" in the maxillary left anterior area for the past two years but currently asymptomatic. She had endodontic therapy performed on tooth #2.3 approximately four years ago but the swelling in this area never resolved. She was referred to the Graduate Endodontic Clinic at the University of Toronto Faculty of Dentistry for treatment.

Findings:

The buccal gingiva from teeth #2.1 to #2.5 was swollen and tender to palpation. Tooth #2.3 was sensitive to percussion and had normal periodontal probings and mobility. Periapical, panoramic and standard maxillary occlusal views were exposed and show an ill-defined, radiolucent lesion approximately 2 cm diameter. This lesion is associated with tooth #2.3 and extends mesially to the periapical area of #2.2, distally to the maxillary sinus and appears to encroach the floor of the left nasal cavity. The radiolucency of this lesion in the occlusal view suggests the destruction of the palatal bone in this area as well.

Pre-operative Diagnosis:

#2.3 pulpless tooth with acute exacerbation of a chronic alveolar abscess.

Treatment Provided:

Orthograde endodontic retreatment of this tooth was performed to disinfect the canal space prior to the immediate surgical retrograde approach. A full-thickness mucoperiosteal flap with vertical releasing incisions was reflected from tooth #2.1 to #2.5. There was a bony lesion from which a yellow-white aggregate material (similar in appearance to cottage cheese) was removed, as well as soft tissue from the area, and sent for biopsy. The lesion extended to the aforementioned anatomical areas and was debrided and irrigated with saline. An apicoectomy of tooth #2.3 was performed and a retropreparation made using a Spartan® ultrasonic tip. A retrofilling of mineral trioxide aggregate was placed using a Messing gun and retropluggers. Collacote® was placed in the defect and hemostasis was achieved. The flap was



reapproximated and sutured close with 3-0 silk sutures. The patient was given post-operative instructions to care for this area, including Peridex® to rinse with at home and a prescription for Toradol® (one 10 mg tablet every 4-6 hours for pain, up to four tablets maximum per day; 12 tabs).

Sutures were removed six days later and the patient reported only mild discomfort and swelling after the surgical appointment. The University of Toronto Department of Oral Pathology produced histological sections of

the biopsy material showing granulation tissue with a diffuse, heavy, mixed inflammatory infiltrate. As well, the specimen includes large clumps of mixed bacteria. A gram-stain was performed and shows numerous gram-positive, filamentous bacterial aggregates suggestive of Actinomyces.

Post-operative diagnosis:

Periapical granuloma infected with Actinomyces

Note:

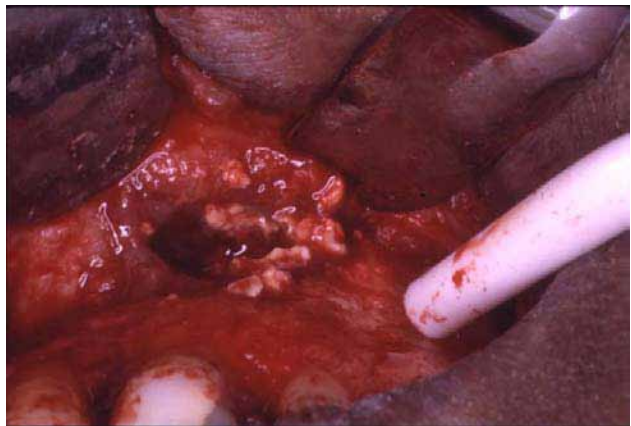
Actinomyces and Arachnia genera have been shown to prevent normal periradicular healing following conventional orthograde endodontic therapy due to their capacity to survive in the periapical tissues outside the root canals (Bystrom et al., Endod Dent Traumatol 1987; 3:58-63; Happonen, R.-P., Endod Dent Traumatol 1986; 2:205-209; Weir & Buck, Oral Surg Oral Med Oral Pathol 1982; 54:336-40). In such cases, surgical intervention subsequent to an orthograde endodontic treatment approach may be necessary for periradicular healing to occur.



Buccal view of quadrant 2.



Standard maxillary occlusal radiograph view suggesting palatal bone loss and close proximity of lesion to the nasal cavity.



"Cottage cheese"-like material removed from lesion.



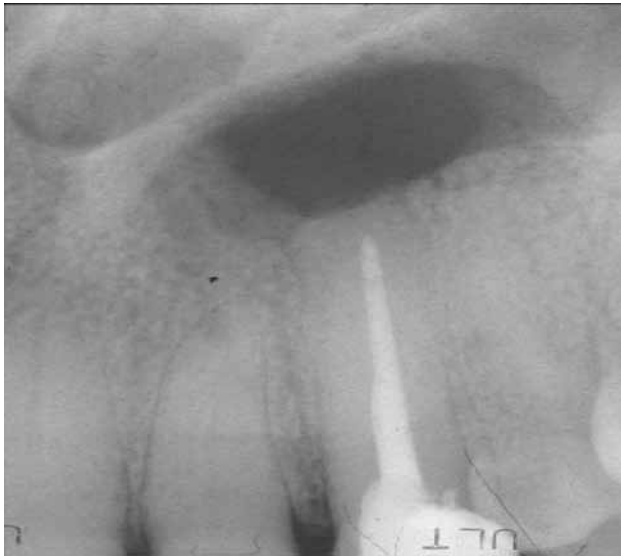
Mineral trioxide aggregate used as retrofilling material.



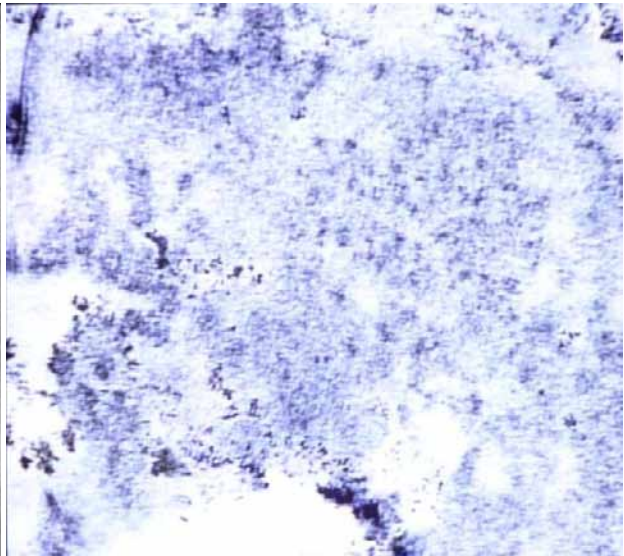
Pre-operative periapical radiograph showing original root canal filling and lesion associated with tooth #2.3.



Radiograph showing #2.3 following orthograde endodontic retreatment (prior to surgery).



Radiograph showing apicoectomized #2.3 with M.T.A. retrofilling.



Gram-stain showing an abundance of gram-positive, filamentous aggregates of bacteria, characteristic of Actinomyces.