

Endodontic treatment for a Bengal Tiger

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Introduction

Tebore, an almost 500 pound Bengal tiger (subspecies of the Siberian tiger) is a star attraction at a small, private children's zoo in Visalia, California. This beautiful tiger, with its characteristic bright coloured fur is frequently taken on 'field trips' to primary schools where he is petted and hugged by children, including mentally-retarded children. Although Tebore is quite domesticated, his owner was concerned that he

might snap at a child. To minimize a potential puncture-tear injury from the canines, the owner and the zoo's veterinarian requested that the four 'fangs' be reduced in length and root canal treatment for the remaining tooth structure completed. Root treatment was preferred to extraction because the animal is also used to make television commercials when it has to look ferocious. By keeping the roots of the canines it would be possible to construct plastic 'fangs' which would be attached to

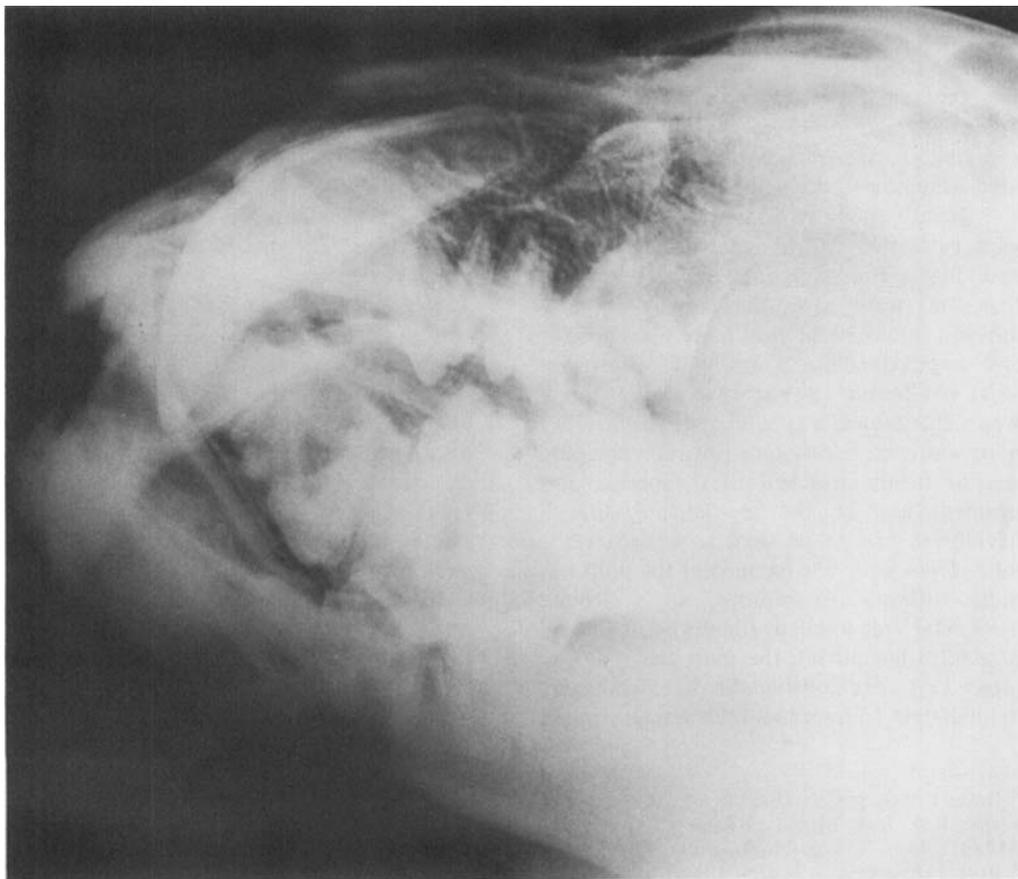


Fig. 1. Lateral jaw pre-operative radiograph. Note the incomplete closure of the cuspid apex.

the roots thus giving the animal the required ferocious appearance.

Procedure

The animal was initially mildly sedated with Acepromazine¹ inserted into a small piece of meat which was eaten while the tiger was still in his cage. When the effects of the sedative were apparent, the animal was walked to a truck and driven to the veterinary hospital. While still in the truck, the veterinarian injected i.m. zylazine (Rompun)² (3 mg/kg) and atropine (10 cc) and ketamine HCl (Ketaset)³ (10 mg/kg). Within a short time the tiger was anaesthetized and at a surgical plane of general anaesthesia. The tiger was then wheeled on a gurney into the hospital for pre-operative radiographs (Fig. 1) and then into the small operating room. With the assistance of three registered dental assistants, a diamond disk was used to remove the first crown. It was observed that due to the oral anatomy, a diamond disk was potentially hazardous to the adjacent teeth and gingiva. Accordingly, a tungsten bur was used to remove the remaining three crowns.

Based upon personal communication with two other dentists that had performed endodontia for large cats, it was expected that the roots, after the crowns were removed, would be approximately 6 cm long and approximately 3 mm wide. However, what was found was not what was expected. When the crown was removed, the healthy pulp was intact and quite fibrotic. The pulp was so firmly attached to the periodontal ligament and to the pre-dentine, that a haemostat had to be used to extirpate the pulp. Even with one haemostat the pulp was quite difficult to remove, so a second haemostat was applied. Finally with the aid of a third haemostat, the pulp was removed intact (Fig. 2). Considerable haemorrhaging immediately followed and this was controlled



Fig. 2. Three haemostats were required to completely extirpate the pulp!

with sterile gauze pressed into the root canal. The intact pulp was measured immediately after extirpation and was approximately 125 mm long (Fig. 3). The width of the empty root canals was approximately 7 × 12 mm (Fig. 4a, b).

Instrumentation proved a problem because no available dental instruments were wide enough, long enough, nor flexible enough to negotiate the entire curved root canal. Thus, because the pulp was healthy (intact, uninfamed), because of time constraints (approximately 3 hours) and unavailability of 'working' radiographs, the root canal was filled as well as possible in the available time.

It was immediately apparent that preformed gutta-percha cones were of no use. So after thorough irrigation of the roots with physiological saline (12 gauge needles) and drying by aspiration and 2" × 2" sterile gauze pads, temporary gutta-percha stopping was selected to fill the roots. Several temporary stopping sticks were warmed and

¹ Ayerst Co.

² Haver Lockhart Co., Division of Cutter Laboratories, P.O. Box 27/451, Kansas City, Missouri 64180, USA.

³ Bristol Laboratories, Bristol-Myers Co., Syracuse, New York 13201, USA.

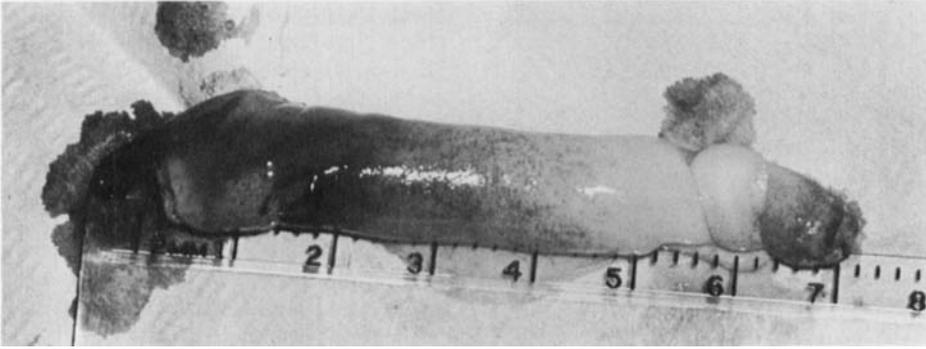


Fig. 3. The pulp 5 minutes after extirpation. Due to twisting and some initial desiccation, the pulp appears to be only 70 mm long. In fact the pulp was approximately 125 mm long immediately following extirpation.

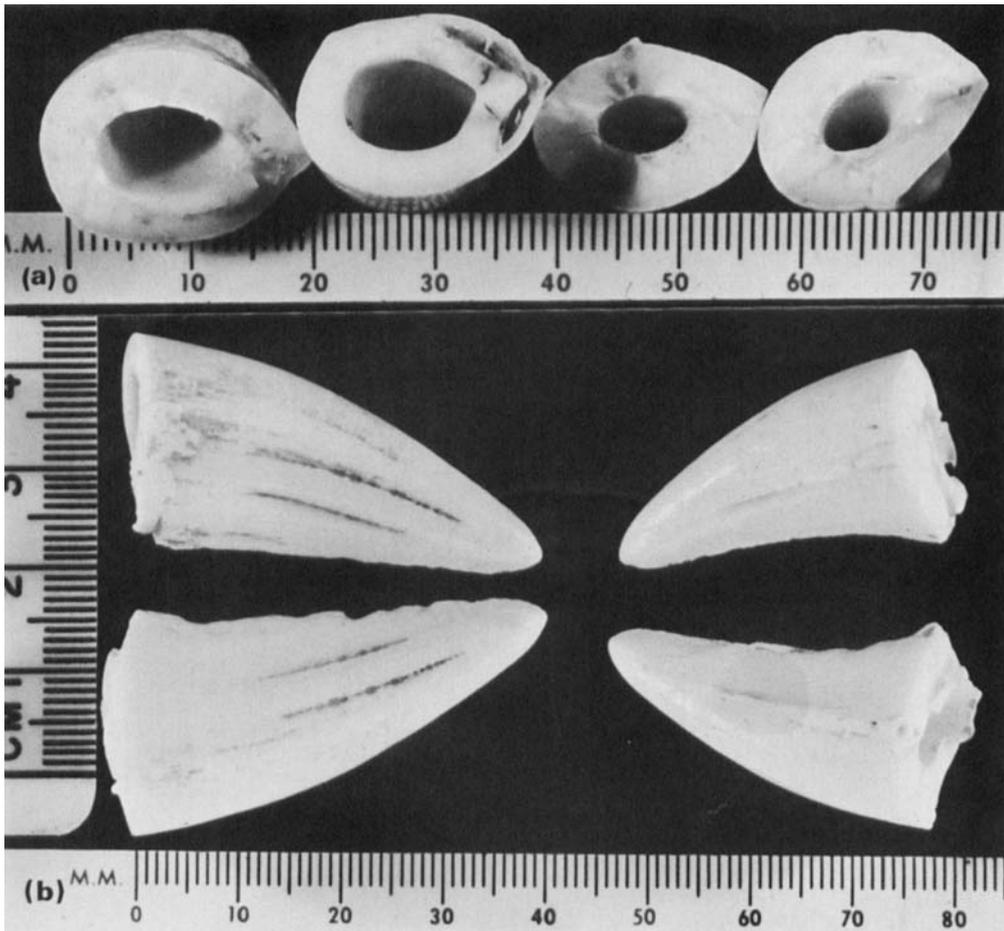


Fig. 4. (a) The four cuspids standing on tip to illustrate the pulp chambers. The two maxillary teeth are on the left. (b) The full length of the four cuspids.

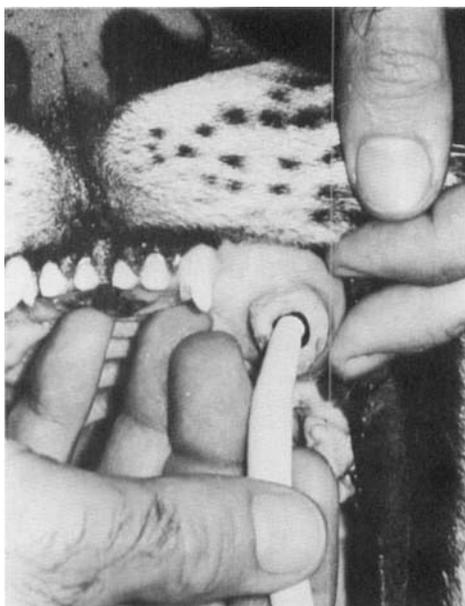


Fig. 5. Sticks of temporary stopping were fused with heat to prepare a custom-made 'master' gutta-percha cone.

fused to form a 'custom made' master cone (Fig. 5). Using approximately 20 cc of Grossman's sealer injected with a 12 gauge needle the master cone was pressed into the root canal with digital pressure. Slightly warmed sticks of temporary stopping were placed alongside the master cone to fill in any apparent gaps.

Amalgam was used to seal the access cavity. A post-operative radiograph was taken and the tiger was administered i.m. penicillin, covered with a blanket (to minimize potential shock) and returned to his cage for an uneventful recovery.