TREATMENT OF ACUTE APICAL ABSCESS BY SINGLE VISIT ENDODONTICS – 2 CASE REPORTS

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ABSTRACT

The purpose to publish these case reports is to show the effectiveness of single visit endodontics in teeth with acute apical abscess. Infected non-vital teeth in two patients were treated with single visit RCT along with incision and drainage of the abscess in the same appointment. Follow up of both the patients showed relief of symptoms to remarkable extent in the evening of treatment day. Radiographs showed significant periapical bone healing after 3 months in both patients.

INTRODUCTION

Since its introduction, single visit endodontics has been a form of focus of controversy. Some advocate that all root canal treatments to be done in one visit while others do not consider it even in cases of vital pulp extraplation.28 Some studies have reported statistically insignificant difference between single and multiple visit endodontics in terms of survival, post-operative pain or flare-ups.29-31 So, it depends only on the preference of the operator to adopt single or multiple visit endodontics.28

One of the acute emergencies in endodontics is acute peri-apical abscess due to an infected or non-vital tooth. Various treatment protocols and regimens using different tools have been designed and implemented on the basis of clinical results achieved by their users. The cardinal rule for managing all these infections is to achieve drainage and remove the source of the infection.32,4 Three avenues can address swelling and infection,1,2 establish drainage through the root canal, establish drainage by incising a fluctuant swelling and antibiotic treatment. But Systemic antibiotics provide no additional benefit over drainage of the abscess in the case of localized infections and should be administered in the event of system complications (fever, lymphadenopathy, cellulitis) or if the patient is immunocompromised.2 Cleaning and shaping are paramount to success regardless of drainage, because bacteria remaining within the root canal system compromises the resolution of the acute condition.5 Copious irrigation should be performed throughout the cleaning and shaping of the canal.6,7

CASE REPORTS

1 A 38 year old male was seen in this hospital with complaints of pain and swelling in the right upper quadrant and had mild fever. The pain was constant, throbbing, spontaneous, referred to the head region and lasted for several minutes after initiation. The pain was aggravated by hot foods and upon mastication. On extra-oral examination the patient had swelling of the right canine space without any lymphadenopathy. On intraoral examination a moderate fluctuant swelling was visible 3mm beneath the gingival margin on the buccal side between upper right canine and first premolar. Clinically the upper right first premolar

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had discoloration of the crown due to caries with a moderately large carious lesion. The tooth showed a mild response to hot and cold test with moderate pain on percussion and palpation of soft tissues with grade 1 mobility. Radiographically the crown had caries with pulp exposure. The lamina dura was widened with apical radiolucency. The tooth was diagnosed to have acute irreversible pulpitis and acute periapical abscess.

Once the tooth was diagnosed for endodontic treatment, access cavity was made and pulp chamber was opened and pus was allowed to drain. Incision was made by using surgical blade #11, and drainage by artery forceps and bone trephination. Maximum drainage of pus was achieved by compressing the swelling followed by copious irrigation with saline. When pus stopped draining, canals were copiously irrigated with saline. Then canal was prepared by step back technique with 15-60K file. 5.25% sodium hypochlorite was inserted into the canal for 30 seconds and copious irrigation was done before changing to next file. Canals were obturated with gutta percha cones and eugenol based sealer by lateral cold condensation technique, once they were prepared. Crown was temporarily filled with glass-ionomer cement. Quarter inch rubber dam (latex) was cut to make a drain and was inserted and sutured into the incision made for drainage. Patient was medicated with coamoxiclav, metronidazole and naproxen sodium. Patient was called in the evening to know the extent of swelling, pain and pyrexia which was considerably reduced. On follow up after 3 days, swelling, pyrexia and pain were not present. Considerable bone healing was present at six months post operative visit. Patient was followed up every 3 months till one year no signs of recurrence of apical infection were noted. (Figs 1-3)

2 A 15 year old male patient was referred to the Operative Department of Islamic International Dental Hospital for the treatment of lower left and right central and lateral incisor teeth. The patient stated that he had a bicycle accident when he was 10 years old and had not seen a dentist since then. The patient’s history did not reveal whether the teeth were luxated, intruded or extruded. He sometimes had mild pain and swelling in the mandibular anterior region. Clinical examination of soft tissues showed no signs of scarring or fistulae. None of these teeth were discoloured. Both the central and lateral incisors were slightly sensitive to percussion and palpation without any mobility. Mandibular right and left lateral and right central incisor teeth failed to respond to electric pulp testing, whereas the mandibular left lateral incisor response was within normal limits.

Periapical radiographs showed a large radiolucent lesion around the apices of the lower incisors with a well-defined margin around the apex of the lower left lateral central incisor. This tooth gave a normal response to electric pulp tests. Despite this
positive sensitivity test, root canal treatment was initiated on all mandibular incisors. Following access cavity preparation, vital pulp tissue was extirpated and the working length was estimated as being 1 mm short of the radiographic apex. The canal was prepared with size 15–60 K-files using a step-back technique. The other three incisors had necrotic pulp tissue and were accessed and size 15 K-files were passed beyond the apical foramen. Mucopurulent fluid was drained through incision made in the fluctuent swelling by surgical blade #11 and bone trephination. When drainage ceased, rubber dam drain was sutured and canals were prepared 1 mm short of the radiographic apices with size 15–60 K-files using a step-back technique. During preparation canals were copiously irrigated with sodium hypochlorite (30 sec) and normal saline. Cold lateral condensation was done and post-obturation radiographs taken. (Figs 4-7)

DISCUSSION

Traditionally, endodontic treatment of teeth with apical abscess aims at the complete elimination of microbial invaders of the root canal system. Studies have shown that instrumentation and irrigation of the root canal system substantially reduce the number of cultivable microorganisms but rarely lead to a total eradication.8,9 For this purpose intra-canal dressing (calcium hydroxide) is recommended.10,11,12 But it has obvious disadvantages i.e. it does not repeatedly kill the intra-canal flora,9,13,14,15,32 it needs multiple visits to be optimally potent.11 Minute differences in peri-apical healing were observed among individuals undergoing single visit and multiple visit root canal treatment,28-31 and bacterial growth at the second appointment had a significant negative impact on healing of the peri-apical lesion.17 In addition to this, the clinical efficacy of sodium hypochlorite irrigation in the control of root canal infection is much more than the effectiveness of inter-appointment calcium hydroxide dressing, in dis-infecting the root canal system and treatment outcome, indicating the need to develop more efficient inter-appointment dressings.17 E. faecalis is the most resistant bacterium against calcium hydroxide18 while sodium hypochlorite is effective against it in both buffered and unbuffered states.19 However, quantity of the irrigant is more important than type of the irrigant,21 therefore copious irrigation is recommended.

Intra-canal medicaments can only work efficiently if they are in direct contact with micro-organisms. Most of the micro-organisms causing endodontic failure, resides deep in dentinal tubules or accessory canals and multiple visits allow them to proliferate resulting in poor apical healing and endodontic fail-
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ure, Therefore these days it is considered a better option to disinfect the canals with copious irrigation of 5.25% sodium hypochlorite and sealing the canals resulting in elimination of the sources which will allow the multiplication of micro-organisms and therefore allow better peri-apical healing and better treatment outcome.

The effectiveness of a clinical strategy must not be evaluated only from a biological point of view but other factors such as cost, patient comfort, and effort put into the treatment by the dentist should be included in the final assessment. In single visit root canal treatment net profit for the dentist is almost 50% which reduces to 14% in second visit and 25% loss at third visit. From patient’s point of view one has to lose more hours of work for multiple visits and needless travels are required. Without question, single appointments are preferred by most of the patients.

CONCLUSION

Treatment of acute apical abscess by incision and drainage and single visit endodontics in the same visit proves to be much better alternative than traditional treatment protocols of treating acute apical abscess i.e. incision and drainage in first visit and completing root canal treatment in multiple visits with calcium hydroxide as inter-appointment dressing. Because of the low sample size further studies are warranted in this field of endodontics.

REFERENCES

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