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MISDIAGNOSIS OF SWELLING AND PAIN RELATED TO LONG-TERM ENDODONTICALLY TREATED MOLAR TOOTH

Khalid Merdad*, Sahar Bukhary**, Helal Sonbul*** *and* Wael Elias****

ABSTRACT

Flare-up following endodontic treatment is an undesirable complication. In this case report, the patient presented with severe pain and swelling in the mandibular left quadrant, related to teeth # 35 and # 36. Clinical evaluation revealed an intraoral palpable bluish swelling. Past dental history showed that tooth # 36 was endodontically treated four years ago. The tooth was asymptomatic until the lingual cusp was fractured. A general practitioner replaced the coronal restoration, prepared the tooth, and took final impression. Immediately after, the patient developed symptoms and received antibiotic and analgesic therapy for three weeks.

Following comprehensive clinical assessment, tooth # 35 was excluded as a culprit, and tooth # 36 remained under investigation. Clinical and radiographic examination of tooth # 36 showed a less than-optimal root canal filling, furcation involvement, narrow zone of attached gingiva, and history of replacement of the coronal filling with post and core, which might have had an impact on the ecology of the tooth; all were suggestive of endodontic disease. On the other hand, perplexing signs such as lack of tenderness to percussion and continuity of the lamina dura, suggested otherwise.

The case was diagnosed as a previous root canal treatment with normal periapical tissue, and accordingly, endodontic retreatment was instigated. In addition, exploratory surgery was performed and blue pieces of elastomeric impression material were found, which might have been the cause of all the signs and symptoms. In this case, foreign body reaction is a probable diagnosis. The purpose of this report is to forewarn dentists of the risks associated with impression material in case of periodontal disease and to emphasize the importance of prioritizing the patient data to avoid the pitfalls of misdiagnosis and unnecessary treatment.

KEY WARDS: Misdiagnosis, swelling, pain and foreign body reaction

* Department of Endodontics, Faculty of Dentistry, King Abdualziz University, Jeddah, Saudi Arabia
** Department of Oral Biology, Faculty of Dentistry, King Abdualziz University, Jeddah, Saudi Arabia
*** Department of Operative dentistry, Faculty of Dentistry, King Abdualziz University, Jeddah, Saudi Arabia
**** Department of Oral Diagnostic Science, Faculty of Dentistry, King Abdualziz University, Jeddah, Saudi Arabia

INTRODUCTION

Endodontic flare-up is a complex phenomenon that requires an unscheduled visit and immediate intervention. It is characterized by the development of pain and/or swelling or both following root canal treatment (RCT). The incidence of endodontic flare-ups has been reported to be between 1.4 and 16%[1-3]. Although the pain is the characteristic feature of endodontic problems, it can be masked by several factors, for instance gender, pain threshold and analgesics [4].

Recontamination of the root canal system, following root canal treatment, is considered one of the most important reasons for endodontic flare-ups. Recontamination of root canal treated tooth through the crown can occur when the root filling material is exposed to the oral environment [5]. This can take place through number of ways; including: a. delayed placement of coronal filling; b. failure, loss or fracture of the coronal restoration and/or tooth; c. contamination during the restorative procedures, for example, preparation for post and core; d. tooth decay.

In some perplexing situation a swelling of endodontic origin can be confused with that of periodontal origin. Periodontal abscess usually presents as swelling in the gingival tissue and is associated with dull pain and mild tenderness to percussion [7]. Two clinical types of periodontal abscesses are reported in the dental literature. The first type is related to preexisting periodontal pockets, while the second type is not necessarily associated with periodontal pockets, but maybe related to other factors such as trauma, impaction of foreign objects, or alterations in root integrity or morphology [7].

Within the scope of this report we are mainly concerned with gingival injury that is caused by placement of retraction cord, this is particularly significant in cases with narrow zone of attached gingiva [8]. It has been reported that this might subsequently lead to the retention of small pieces of impression material in the gingival crevices [9]. In spite of significant damage that may be caused by this injury, scarce scientific information is available about it. Most of the knowledge is based on pragmatic observations and case reports[9]. Impaction and retention of various types of impression material into the periodontal tissue has been reported to cause gingival or periodontal abscess by either causing an allergic reaction, or acting as a primary tissue irritant [9-13]. Embedded impression material can migrate to various parts within the oral cavity causing foreign body reaction and severe tissue destruction[10]. Short setting of the impression material, low tear resistant and mishandling of the retraction cord may cause small piece of impression to detach and to be embedded deep in oral tissues[11]. In both endodontic and periodontic scenarios, the decision of treatment of the postoperative problem is confusing for both the patient and the physician [14]. This case report is dedicated to understanding the possible misdiagnosis that can take place in such situations.

CASE REPORT

A 34 year-old female was complaining from swelling in left mandibular quadrant. Past dental history revealed that tooth #36 was root canal treated four years ago. It was asymptomatic and functional until lingual cusp was fractured. The general practitioner built up and prepared the tooth to restore it with a crown. According to the general practitioner, gingival retraction was achieved using retraction cord (Ultrpak) impregnated in a hemostatic agent containing aluminum chloride (Hemogin-I). Impression was taken, using Addition Silicon impression material (polyvinyl Siloxane). At the same visit, the patient suffered from severe pain and swelling next to the prepared tooth. Consequently, the general practitioner prescribed for the patient antibiotic therapy including Augmentin® (amoxicillin-clavulanic acid) and Flagyl® (metronidazole), and analgesic therapy including Tramal® SR tablets (tramadol hydrochloride) sustained release tablets) and Ponstan® (Mefenamic Acid) for three weeks. The swelling did subside and

the general practitioner diagnosed the case as acute periapical abscess and referred the patient to an Endodontist.

Clinical Examination: intraoral examination revealed palpable swelling related to tooth #36. The tooth was asymptomatic. It was associated with narrow zone of attached gingiva. Radiographic Examination (Fig. 1) of periapical radiograph of tooth #36 revealed the following: furcation involvement, with a radiolucent line between the core and the tooth and substandard root canal filling.

Diagnosis: pulp was previously treated with normal periapical tissue.

Management: Endododntic orthograde root canal retreatment was performed. The patient was treated under local anesthetic agent. After rubber dam isolation, access opening was made and patency was established in all canals. There was no evidence of purulent exudate. Canals were cleaned under copious irrigation with 5.25 % sodium hypochlorite delivered using a plastic syringe with 30-gauge side-vented Max-i-Probe needle (Hawe-Neos, Dentsply, Bioggio, Switzerland). Using Reciproc R40 (VDW, Munich, Germany) in all 3 canals, the canals were irrigated with 2% Chlorhexidine Gluconate (Gluco-Chex, Cerkamed Dental-Medical Company) and were then dressed with Calcium Hydroxide and temporary filling (Fuji IX GP, GC, USA).

Subsequently, an incision was made through the swilling that exposed two bluish pieces of rubbery impression material (Fig. 2).

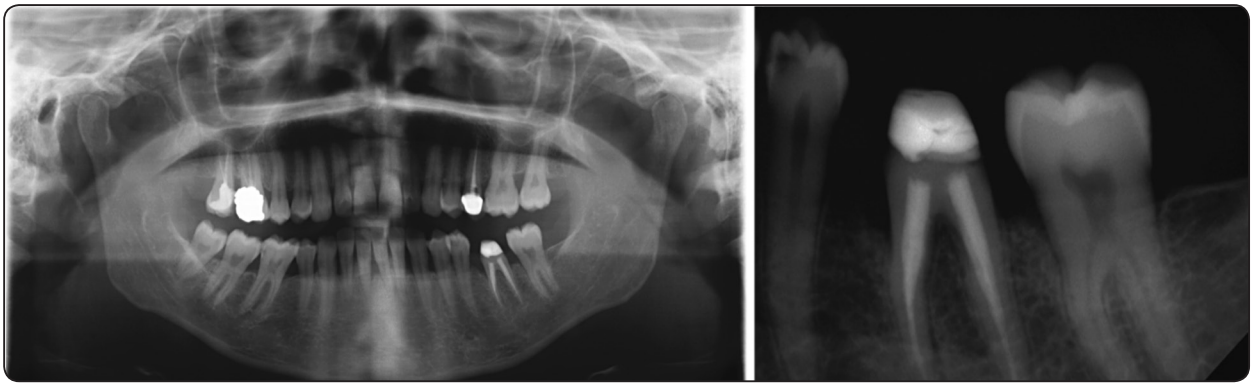

Fig. (1) Orthopangraph and Periapical radiograph showing tooth #36. There is a mild horizontal bone loss, coronal restoration with evidence of leakage and root filling material.

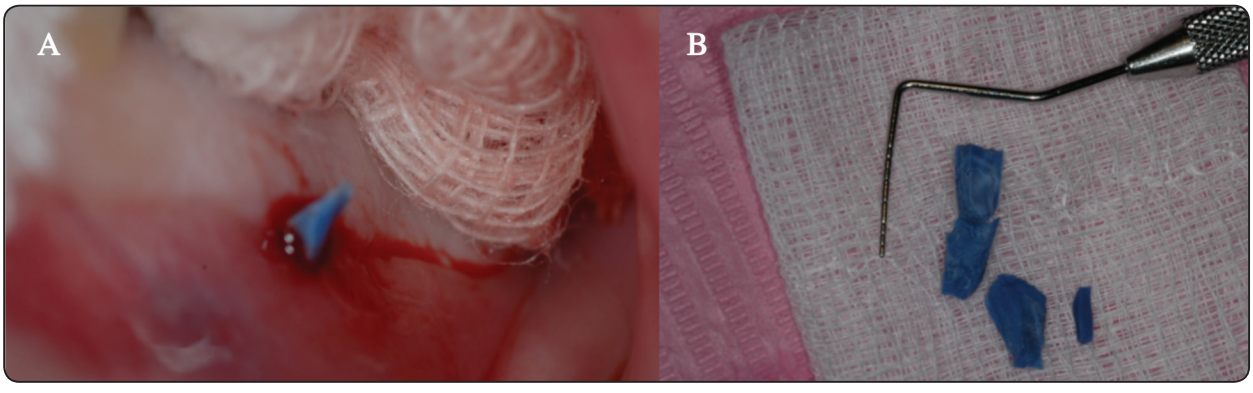

Fig. (2) Clinical photography A: shows the emergence of the impression materials after an incision was done, B: shows the impression martial after removal.

The patient was instructed to use Chlorhexidine mouthwash. The patient returned back a week later and upon examination, the area was asymptomatic and the root canal treatment was completed. The tooth received a core build up and a final crown.

DISCUSSION

In this case report we are discussing a swelling caused by a foreign body reaction to retained impression material that was misdiagnosed as a swelling of an endodontic origin. In this case the offended tooth #36 was first diagnosed with acute periapical abscess by a general dentist who based his diagnosis on the presence of a swelling related to the tooth and the nature of the pain. Accordingly, the patient was referred to the endodontic clinic. Based on clinical findings, the endodontist had two scenarios to deal with:

1. The first scenario was suggestive of a swelling of endodontic origin including: possible contamination of the root canal system due to tooth fracture, impaired coronal seal, furcal radiolucency, and a questionable apical seal (Fig. 1). Moreover, the patient was covered with antibiotics, and was on analgesics for 3 weeks, which might have easily masked the expected pain and tenderness associated with similar cases.
2. The second scenario was suggestive of pathology that might not be endodontic in origin. This includes: the absence of pain on percussion or palpation and the time-lapse between the obturation and the flare-up.

The decision to initiate root canal retreatment was based on the best available evidence.The first set of findings raised the possibility of coronal leakage and recontamination of the root canal system. Added to the fact that the tooth has fractured, the coronal restoration was severely deficient; it did not reach to the gutta percha, and the margins were recognizably leaking. Direct spread of micro-organisms and their toxins from the pulp chamber through the accessory canals, found in the floor of the pulp chamber may be responsible for the inflammatory changes that take place in the periodontal tissues of the furcation area [8,10]. It takes the microorganisms, 24 hours, to penetrate the root canal system, and between 19 to 42 days to reach to the apical portion of a root canal filling, even in well filled root canals [15]. Placement of an expeditious restoration that efficiently provides fluid tight seal is compulsory. This protocol strongly applies to temporary restorations as it does to permanent ones [5].

The fact that the patient was not responsive to percussion or palpation, nor did she have pain when she was referred to our care, did not affect the retreatment decision. In literature, it has been well established that analgesics effectively reduce dental pain, which might have camouflaged the clinical presentation of an endodontic flare-up [4].

In view of that, endodontic retreatment was performed, and not until complete patency was established and there was no evidence of purulent exudates, that the nature of the pathology was questioned. After which an embedded impression material was removed during an exploratory surgery.

There are several issues that must be addressed in this regard:

- The radiographic appearance of impression material that allows for easy diagnosis and retrieval of accidentally embedded materials. Unfortunately, Polyether and additional silicon are radiolucent material. On the other hand, polysulphides, the only radioopaque material, might not be detected if the retained section has insufficient thickness [16-18].
- The awareness of similar situations by the general practitioner for more efficient referral. In this case, and similarly a case presented by Ree [4], which the general practitioner referred the patient to the endodontist, who in turn managed the patient according to his endodontic background. This highlights the importance of the multidisciplinary approach in dentistry.

Misdiagnosis can and does occur. Although healthcare providers are responsible for such mistakes, patients also contribute to this issue in various ways, for example, providing misleading history. Moreover, some conditions are inherently more difficult to diagnose. Being educated about the possible alternatives and difficult diagnoses is the responsibility of all conscientious health providers.

CONCLUSION

Embedded impression material that penetrates soft tissues has been reported as a situation that can cause diagnostic problems. The purpose of this report is to forewarn dentists of the risks associated with impression material in case of periodontal disease and to emphasize the importance of prioritizing the patient data to avoid the pitfalls of inaccurate diagnosis and treatment.

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