



ENDODONTIC FLARE-UPS: A REVIEW

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ABSTRACT

Occurrence of post-operative pain even though less in its incidence, is an established fact in endodontic literature. Even experienced dental practitioners face anxiety when they start an access preparation for endodontic treatment and hope that the case does not land up in flare-up. One can never know whether the root canal treatment will reward or punish the practitioner in terms of post-operative pain. Clinically, an absolute prediction of post-operative response after endodontic treatment is not possible. Endodontic flare up is an established entity which may involve pain and/or swelling along with other symptoms such as trismus, malaise, increased temperature, irritability etc. In many situations, flare ups can occur in most unanticipated cases also. Flare ups lead to unscheduled arrival of a distressed and irritable patient to the clinic and this could be disruptive to a busy practice. Under this situation of panic following a standard protocol of management becomes essential. Proper diagnosis and rendering active treatment is required to succeed in managing this event. This review article discusses the definition, incidence, causative factors, mechanism of endodontic flare up as well as diagnostic criteria, preventive measures and management strategies for the same.

KEYWORDS : Anxiety, Complication, Flare up, Pain

INTRODUCTION:

Occurrence of post-operative pain and flare-up after endodontic therapy has always remained a matter of discussion and a great concern amongst dental practitioners forever. Some of them even regarding post appointment pain as a failure of the endodontic treatment. Even though of a common occurrence, this is one of the most commonly misperceived and poorly understood clinical situation.

Root canal treatment lays foundation of the long-term doctor patient relationship as an initial therapy and serves as a foundation to the complex future restorative and prosthetic replacements. An uncalled for, pain, swelling or any form of suffering faced by the patient during the treatment can give rise to the undermining of confidence and trust of the patient in the dental practitioners.

Thus, an interappointment flare-up is a situation which both the patient and the dentist would wish to avoid. Yet it is an established complication of endodontic treatment which every clinician is likely to face in the clinical practice.

The term flare-up usually describes a situation that arises a few hours or days after the root canal treatment. The patient often complains of pain and/or swelling generally of a significant severity requiring an unscheduled visit.¹ Considering the complexity behind its etiology and the necessity for thoroughly understanding this phenomenon for the betterment of the patient and the dentist himself, it becomes essential for the dentist to be well versed with the phenomenon. So that, when an endodontic flare up occurs, the dentist is confident enough to diagnose and render appropriate treatment.

INCIDENCE:

Fortunately, the frequency of this emergency event occurs following only a small percentage of root canal treatment appointments. The studies from the literature that have considered the pre-treatment diagnoses in the design, report the overall incidence to be 1.5% to 5.5%.²

Importantly, the incidence of flare up is directly related to the pulpal pathosis and severity of the patient's preoperative signs or symptoms. The lowest frequency of occurrence is generally observed with a vital pulp without periapical pathosis and the highest frequency is observed with patients who present with pulp necrosis and acute apical abscess.^{1,3-6}

Risk factors:

The risk factors for flare up are considered under two categories which are patient related factors and treatment procedures related factors. Patient related factors include age, gender, systemic conditions, pulpal and periapical diagnosis, presenting signs and symptoms, and certain psychological conditions such as anxiety.^{3-5,7} (Table 1)

Table 1: Effect of patient related risk factors on incidence of endodontic flare-ups.

Risk factor	Effect on incidence of flare up
1. Patient related risk factors	
• Age	Highest incidence in the age group of 40 to 59 years
• Gender	Higher incidence in females
• Systemic conditions	Remains un-investigated Slightly higher rate in patients with allergies
• Presenting symptoms	Higher incidence in patients presenting with pre treatment pain
• Pulpal and periapical diagnosis	Higher incidence in acute apical abscess and acute apical periodontitis.
• Pre treatment periapical radiolucency	Higher incidence in acute exacerbation conditions e.g. phoenix abscess.
• Psychological conditions	Higher incidence in patients presenting with fear and anxiety

The treatment procedure related factors also have an effect on development of flare-ups. These factors include retreatment,

number of treatment visits, estimation of working length, debridement and obturation.^{5,8} (Table 2)

Table 2: Effect of treatment related risk factors on incidence of endodontic flare-ups

Risk factors	Effect on incidence of flare up
1. Treatment procedure related risk factors	
• Endodontic retreatment	Higher incidence due to technical difficulty, possibility of extrusion of remnants of gutta percha and solvents into the periapical tissues
• Number of treatment visits	Single visit endodontic therapy does not cause more flare-ups than multi-visit treatments.
• Inaccurate working length	Higher incidence in over instrumentation
• Obturation related	Higher incidence in over-obturation especially in the teeth with preoperative diagnosis of symptomatic apical periodontitis.

Theories for development of endodontic flare-ups:

Various theories have been proposed to describe the actual mechanism behind development of flare ups. However, alteration in local adaptation syndrome and role of microbial factors in development of endodontic flare ups seem to be widely accepted hypotheses. Microorganisms and their products especially Bacteroides, Fusobacteria and Peptostreptococci entering the peri-radicular tissues from infected root canals are associated with the development of most severe forms of endodontic flare ups.⁸

Other possible mechanisms for development of flare up include changes in peri apical tissue pressure, effects of chemical mediators such as histamine, bradykinin, prostaglandins, leukotrienes etc., immunological phenomena changes in cyclic nucleotides and numerous psychological factors such as fear, anxiety and apprehension.

DIAGNOSIS AND CLINICAL PRESENTATION:

Since the flare up phenomenon has such multiple facets, diagnosing the condition in short duration and rendering active treatment is the key to successfully manage this event. Patient presenting with endodontic flare up usually complains of significant increase in pain and/or swelling after commencement of endodontic therapy. Patient may also present with increased body temperature, malaise, irritability, and trismus. These signs and symptoms generally remain localized.

Occasionally however, the infection may invafascial spaces and may even have unfortunate sequelae such as regional temporary paresthesia.⁹

Prevention:

Flare ups may occur with the best of the care however, in most instances, flare ups occur when improper treatment is rendered. Thus, role of appropriate implementation of preventive strategies is important to avoid the development of endodontic flare ups. Preventive strategies mainly comprise of consciously exercising utmost care and precision while performing endodontic therapy. Placement of intracanal medicament and use of appropriate drugs also have a role in preventing endodontic flare ups.

Since microorganisms entering the periapex is considered as one of the causes for exacerbating inflammation, it has been suggested by Seltzer that use of appropriate intracanal medicaments would have a preventive effect on development of flare ups.¹⁰

Also, prophylactic use of analgesics and anti-inflammatory agents could prove to be an important preventive strategy for flare-ups. Treatment with NSAIDS before a procedure has been shown to have a significant benefit.¹¹

Treatment:

Unfortunate as it seems, despite rendering all possible care and preventive therapy, flare-ups can occur. The clinician should be well versed with the treatment protocol to successfully tackle this complication.

The triad for management of endodontic flare-ups includes behavioral intervention, localized treatment and pharmacotherapy. (Table 3)

Table 3: Management strategies for endodontic flare-ups.

Management strategy	
Behavioral intervention	<ul style="list-style-type: none"> • Reassurance • Controlling the anxiety levels
Localized treatment	<ul style="list-style-type: none"> • Drainage of exudate through canal • Occlusal adjustment • Surgical intervention in rare situations
Pharmacotherapy	<ul style="list-style-type: none"> • Adequate pain control • Analgesics and anti-inflammatory agents • Intraligamentary injections of steroids

The most important aspect of treatment of flare ups is providing reassurance to the patient. The dentist must explain that flare ups do occur and are treatable and should try to reduce the anxiety level of the concerned patient.

In the presence of suppuration resulting in swelling, drainage of exudate is the first line of treatment and tends to provide immediate relief. In most of the situations the drainage can be achieved by entering the root canal space. However, in rare situations, surgical intervention becomes necessary when the exudate cannot be evacuated through the root canal. Especially when a fluctuant swelling is involving fascial spaces and has a dependent base.

An integral part of management of endodontic flare-ups is achieving adequate pain control. Use of analgesics and non-steroidal anti-inflammatory agents is highly effective in reducing pain and swelling in most of the situations. Use of opioids remains restricted to the situations with severe pain not readily controlled by Non-steroidal anti-inflammatory drugs.

Use of intraligamentary or intraosseous corticosteroids could have efficacy in treating endodontic flare up cases but this approach still not has been established as a routine treatment option.¹²

Due to the multifactorial etiology and diverse clinical presentation, flare ups cause a dilemma to the clinician and it is also difficult for the patients to digest the fact that they enter the clinic with minimal or no pain but experience an increase in pain during or after the root canal treatment.

Thus, it would be desirable for the clinician to understand the phenomenon of flare ups and to be well equipped to prevent the occurrence of flare-up and be able to treat it. Taking all possible precautions at every step to prevent a flare up and meticulously implementing the treatment strategies is required to manage this unforeseen emergency.

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