MID TREATMENT FLARE-UPS IN ENDODONTICS AND THEIR MANAGEMENT

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- Behavioural intervention
- Occlusal reduction

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- NSAIDS
- Long acting anesthetics

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Drainage through coronal access opening

Incision and drainage

Instrumentation

Trephination

Complex diagnosis

CONCLUSION

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Introduction

- Endodontic emergencies constitute a major part of dental emergencies , which is an unscheduled visit by the patient to the dental clinic.
- Flare-ups during endodontic treatment is an undesirable occurrence for both patient and clinician.

DEFINITIONS

- It is an acute exacerbation of assymptomatic pulpal or periradicular pathosis after the initiation or continuation of root canal treatment. (AAE)
- It is defined as a pain and /or swelling that requires an unscheduled patient visit and active intervention by the dentist .(JOE)

INCIDENCE

- The occurrence of mild pain is relatively common following root canal therapy; it should be expected and anticipated by patients.
- However a flare-up with severe pain and swelling is a rare occurrence ranging from 1.4% -16%.

CLINICAL CONDITIONS ASSOCIATED WITH MID TREATMENT FLARE UPS

- Flare ups in endodontics can be grouped as:

1) Inter appointment flare ups.
    1) Apical periodontits secondary to treatment
    2) Incomplete removal of pulp tissues.
    3) Recrudescence of chronic apical periodontitis.
    4) Recurrent periapical abscess.
2) Post obturation flare ups.

Nisha garg 4th edition

Apical periodontitis secondary to treatment

- Throbbing, gnawing and/or pounding pain.
- The preoperative condition of the pulp is either chronic or acute pulpitis.
- If the access cavity is opened, no productive exudates or escape of gas is noted, and culture tests may be negative because no infection is present.
- The cause is most frequently over instru

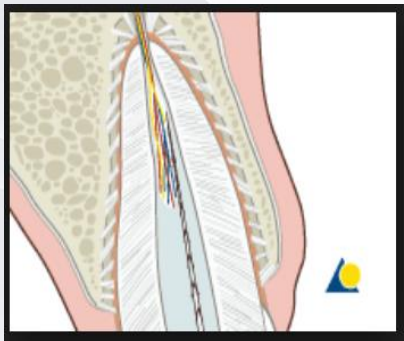
may occur as a result of overmedication or of forcing debris into the periapical tissues.

Incomplete removal of pulp tissue

- Pain due to incomplete removal of inflamed tissue.
- When acute pulpitis is present, the inflammation is confined to coronal pulp, which is removed during pulpotomy.
- Chronic pulpitis and in some cases of acute pulpitis, the inflammation may have already extended into radicular pulp.

Incomplete removal of pulp tissue

- Initially a pulpotomy relieves pain, discomfort frequently returns.
- The symptoms of such pain includes sensitivity to hot and/or cold or pain to percussion.
- Radiographs are taken to determine the working length and the remaining pulp tissue is removed.



Recrudescence of a chronic apical periodontitis

- It is an acute exacerbation of a chronic lesion after the initiation of treatment.
- The reason is still unknown but some say that facultative anaerobes multiplying slowly in the low oxygen environment of the periapical tissues suddenly receive air on access opening and react violently producing an acute reaction.
- As multiple strains are harbored in a lesion, access opening and instrumentation can lead to reduction of some organisms and probably an increase in a virulent strain leading to an acute reaction.

Recrudescence of a chronic apical periodontitis

- The symptoms of a recrudescence are identical to those of an acute periapical abscess: mobility, tenderness to percussion and swelling.
- The same emergency treatment for an acute abscess, incision and drainage through the root canal may be used.

Recurrent periapical abscess

- Refers to a tooth with an acute abscess relieved by emergency treatment after which the acute symptoms return.
- Even if the tooth is left open to drain, food debris / foreign objects like segments of tooth pick may block the drainage resulting in exudate collection again.
- When the open tooth is filled and closed at the same appointment, the abscess may recur.

Recurrent periapical abscess

- Abscess can recur more than once due to highly virulent microorganisms or poor host resistance.
- When such exacerbation are seen, it is better to do a periapical surgery and antibiotic coverage.

POST OBTURATION FLARE UPS

- These are relatively in frequent compared to interappointment flare ups.
- Only one third of endodontic pateints experience pain after obturation.
- Patients experiencing pre operative pain and over extended root canal fillings can result mostly in post obturation flare ups.

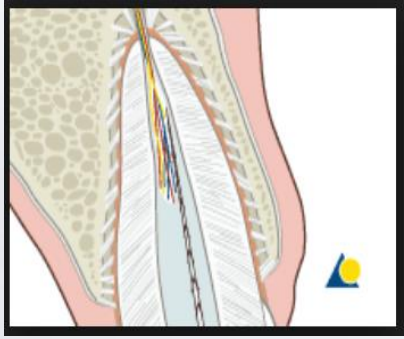
POST OBTURATION FLARE UPS

- For mild to moderate pain can be controlled by analgesics.
- For severe pain retreatment is indicated.
- When non surgical retreatment is not possible than surgical intervention is necessary.

CONTRIBUTING FACTORS

- Inadequate debridement
- Debris extrusion
- Over instrumentation
- Over filling
- Retreatment
- Periapical lesion
- Host factors

CONTRIBUTING FACTORS



INADEQUATE DEBRIDEMENT

- **Presence of residual pulp tissue---allows bacteria and their toxins to remain in the root canal and act as irritant .**
- **Teeth with necrotic pulps are more prone for mid treatment flare-ups than vital pulp.**
- **Thorough debridement is the goal for initial management of all teeth**

CONTRIBUTING FACTORS

DEBRIS EXTRUSION

- Despite good control of the length of the instrument pulp tissue fragments, necrotic tissue, microorganisms, dental filings and canal irrigants are extruded beyond the apical foramen leading to midtreatment or post-treatment pain.
- Debris extrusion is a problem with all the techniques of instrumentation, but crown down and balanced force techniques have been shown to extrude significantly less debris than step back filing techniques.

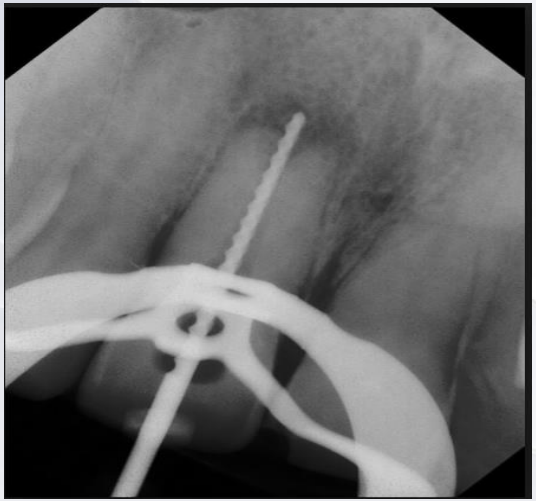
CONTRIBUTING FACTORS

OVER INSTRUMENTATION

- Gross over instrumentation may cause acute apical periodontitis producing inflammatory pain.
- Absence of an apical stop and presence of blood in the apical portion of the root canal usually indicates overinstrumentation .

CONTRIBUTING FACTORS

- Treatment constitutes of reopening the tooth ,irrigation with a combination of irrigants such as sodium hypochlorite and chlorhexidine,placement of a suitable intracanal medicament and relieving the tooth from occlusion.



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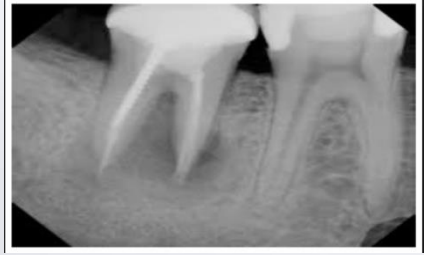


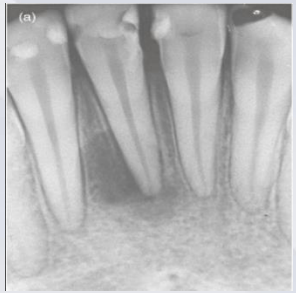
OVER FILLING

- Extrusion of sealer or gutta percha, into the periapical areas may lead to higher incidence and degree of pain than teeth with 1 mm short obturation.
- Permanent nerve damage can occur because of the chemical toxicity of the extruded material and also mechanical nerve damage.
- e.g. Para formaldehyde.

CONTRIBUTING FACTORS

PERIAPICAL LESION

- Apical radiolucencies are associated with increased flare ups.
- Also teeth with intact periodontal ligament, there is development of pressure after inflammation and so the area becomes more painful.



CONTRIBUTING FACTORS

HOST FACTORS

- Patient with dental phobias, patients age, sex, presence of allergies, tooth position, systemic diseases have shown both positive and negative correlations .

- Iqbal M et al., investigated the incidence and factors related to endodontic flare-ups in nonsurgical root canal treatment (NSRCT) cases completed by graduate endodontic residents at University of Pennsylvania, USA.
- They concluded that a low percentage of patients experienced flare-ups during NSRCT procedures.
- The presence of a periapical lesion was the single most important predictor of flareups during NSRCT.

Iqbal M, Kurtz E, Kohli M. **Incidence and factors related to flare-ups in a graduate endodontic programme.** Int Endod J. 2009 Feb;42(2):99-104.

- Onay EO et al., evaluated the incidence of flare-ups and identified the risk factors including age, gender, tooth type, number of root canals, initial diagnosis, the type of irrigation regimen, treatment modality and the number of visits, in patients who received root canal treatment from January 2002 to January 2008.

Onay EO, Ungor M, Yazici AC. **The evaluation of endodontic flare-ups and their relationship to various risk factors.** BMC Oral Health. 2015 Nov 14;15(1):142.

- Pulpal necrosis without periapical pathosis was the most common indication for flare-up (6 %).
- Teeth undergoing multiple visits had a higher risk of developing flare-ups compared to those with single appointments.
- There were no statistically significant differences in the incidence of flare-ups regarding to age, gender, tooth type, no of root canals, treatment modality, and the irrigation solutions used.

Onay EO, Ungor M, Yazici AC. **The evaluation of endodontic flare-ups and their relationship to various risk factors.** BMC Oral Health. 2015 Nov 14;15(1):142.

- Pamboo J et al., assessed the incidence of flare-ups among patients who received endodontic treatment in the Department of Conservative Dentistry and Endodontics in Vyas Dental college and hospital, Jodhpur during a period of one year, and also to examine the correlation with pre-operative and operative variables.

Pamboo J, Hans MK, Kumaraswamy BN, Chander S, Bhaskaran S. **Incidence and factors associated with flare-ups in a post graduate programme in the indian population.** J Clin Exp Dent. 2014 Dec 1;6(5):e514-9.

- Flare-ups were found to be affected significantly by gender of patient, presence of radiolucent lesions, patients taking pre-operative drugs and on type of instrumentation technique.
- In contrast, there was no correlation between flare-ups and age, different arch/tooth groups and single or multiple visit endodontics.

Pamboo J, Hans MK, Kumaraswamy BN, Chander S, Bhaskaran S. **Incidence and factors associated with flare-ups in a post graduate programme in the indian population.** J Clin Exp Dent. 2014 Dec 1;6(5):e514-9.

- A significant difference was found for gender with highest flare up occurring in females than males.
- On the other hand, periradicular diagnosis was positively related to flare-ups the presence of a lesion resulted in a statistically significant increase of emergencies when compared to teeth which showed a radiographically normal appearance of the periapical region.
- The highest incidence of flare-ups found in patients without any analgesics/anti-inflammatory drugs and antibiotics.

Pamboo J, Hans MK, Kumaraswamy BN, Chander S, Bhaskaran S: **Incidence and factors associated with flare-ups in a post graduate programme in the indian population.** J Clin Exp Dent. 2014 Dec 1;6(5):e514-9.

- Sevekar SA et al., compared the incidence and intensity of postoperative pain and flare-ups between single and multiple visit pulpectomy in primary molars.
- Also, correlated the preoperative status of the pulp to postoperative pain and flare-ups.
- They concluded that there was a low incidence of postoperative pain.

Sevekar SA, Gowda SHN . **Postoperative Pain and Flare-Ups: Comparison of Incidence Between Single and Multiple Visit Pulpectomy in Primary Molars.** J Clin Diagn Res. 2017 Mar;11(3):ZC09-ZC12. doi: 10.7860/JCDR/2017/22662.9377. Epub 2017 Mar 1.

- The majority of patients in both groups reported no pain or only minimal pain within 24 hours of treatment.
- There were no differences between single and multi visit treatment protocols with respect to the incidence of postoperative pain.
- No significant correlation could be found between pulp vitality and the incidence of postoperative pain.

Sevekar SA, Gowda SHN . **Postoperative Pain and Flare-Ups: Comparison of Incidence Between Single and Multiple Visit Pulpectomy in Primary Molars.** J Clin Diagn Res. 2017 Mar;11(3):ZC09-ZC12. doi: 10.7860/JCDR/2017/22662.9377. Epub 2017 Mar 1.

ETIOPATHOGENESIS

- Dr Seltzer discussed a number of hypothesis thought to be related to the etiopathogenisis of flare-ups

Alteration of the local adaption syndrome.

Changes in periapical tissue pressure.

Microbial factors.

Effects of chemical mediators.

Changes in cyclic nucleotides.

Immunological phenomena.

Various psychological factors.

ETIOPATHOGENESIS

ALTERATION OF THE LOCAL ADAPTION SYNDROME

- Ordinarily, the connective tissues become inflamed when they are exposed to an irritant.
- Chronic inflammation persists if the irritant is not removed; there is local adaptation.

- When a new irritant is introduced to inflamed tissue, a violent reaction may occur, Seyel called this phenomenon “the local adaptation syndrome.”
- The inflammatory lesion may be adapted to the irritant, and chronic inflammation may exist without perceptible pain or swelling.

ETIOPATHOGENESIS

- When endodontic therapy is performed, new irritants in the form of medicaments, irrigating solutions, or chemically altered tissue proteins may be introduced into the granulomatous lesion.
- A violent reaction may follow, leading to liquefaction necrosis, indicative of an alteration of the local adaptation syndrome.
- The pus, under pressure, is capable of evoking severe pain or swelling.

ETIOPATHOGENESIS

- Many violent reactions occur in teeth whose root canals have been left open for drainage and in those with long-standing asymptomatic periapical lesions.
- The flare-up may result from salivary products, including secretory IgA, activation of the complement system, or from the forcing of micro-organisms or their products into a previously adapted environment.

ETIOPATHOGENESIS

CHANGES IN PERIAPICAL TISSUE PRESSURE

- Mohorn *et al.,* indicated that endodontic therapy may also cause a change in the periapical tissue pressure.
- In teeth with increased periapical pressure, excessive exudate tend to create pain by pressure on nerve endings.
- When the root canals of such teeth are opened, the fluid would tend to be forced out.

ETIOPATHOGENESIS

- In contrast, the periapical pressure less than atmospheric pressure, it is conceivable that microorganisms and altered tissue proteins could be aspirated into the periapical area, resulting in accentuation of the inflammatory response and severe pain.
- Such teeth would not drain when the root canal was opened.

ETIOPATHOGENESIS

MICROBIAL CAUSES

1. APICAL EXTRUSION OF INFECTED DEBRIS

- One of principal causes (acc to Seltzer & Naidorf-1985, Siqueira-1997)
- During chemo-mechanical preparation, if the microorganisms are apically extruded ➡ a larger number of irritants enters than it was before, and there will be a transient disruption in the balance between aggression and defence in such a way that the host will mobilize an acute inflammation to reestablish the equilibrium.

ETIOPATHOGENESIS

- **Iatrogenic over instrumentation : increase in the influx of blood & exudates int** acteria.
- Crown-down e elected for instrume antitative factor is mor
- Qualitative f

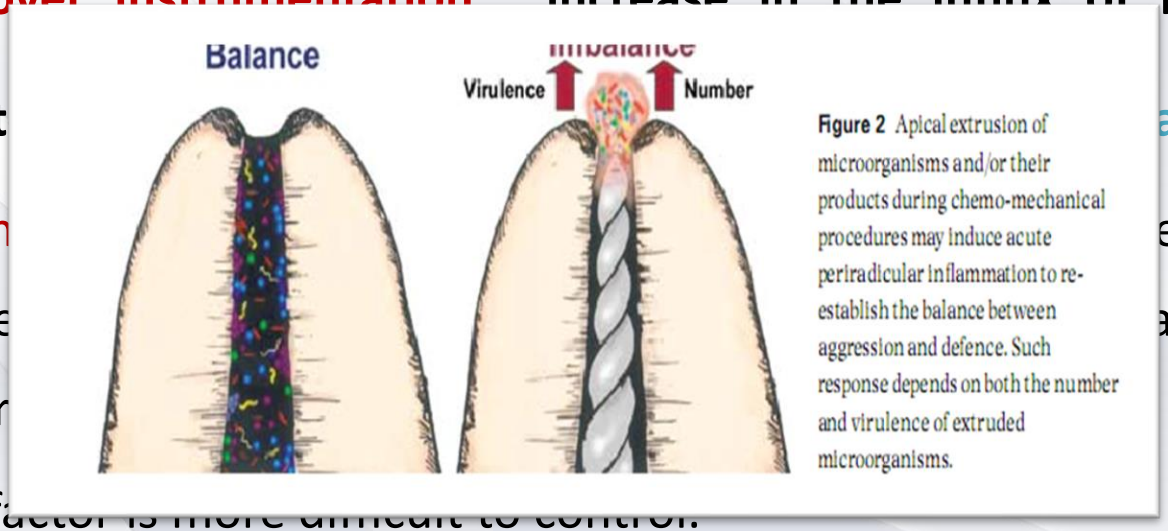


Figure 2 Apical extrusion of microorganisms and/or their products during chemo-mechanical procedures may induce acute periradicular inflammation to re-establish the balance between aggression and defence. Such response depends on both the number and virulence of extruded microorganisms.

ETIOPATHOGENESIS

2. **CHANGES IN THE ENDODONTIC MICROBIOTA OR IN ENVIRONMENTAL CONDITIONS**

- Endodontic microbiota exists as a mixed consortium.
- Organization of microcolonies in the endodontic climax community may be dictated by the ecological determinants occurring in different parts of the root canal system.

ETIOPATHOGENESIS

- For instan… aerobes are in greater n…
- Whereas … erobes.
- Endo pro…
- Likely to be more pronounced in cases of incomplete cleaning

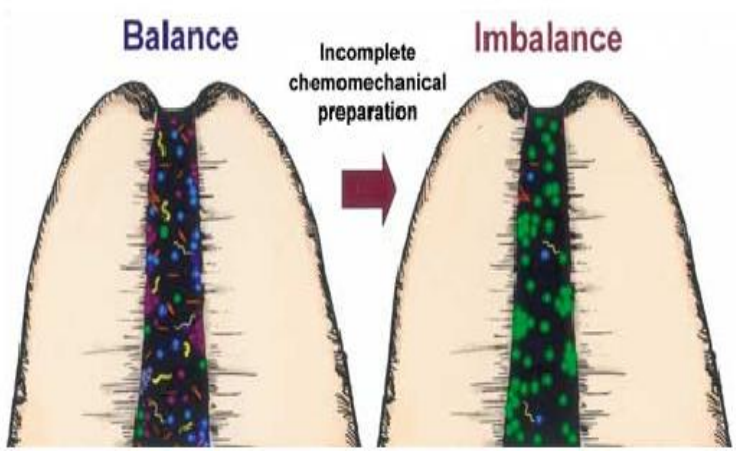


Figure 4 Incomplete chemo-mechanical preparation induces changes within the root canal system that may favour the overgrowth of certain species. If overgrown bacteria reach sufficient number and express virulence genes, they can induce damage to the periradicular tissues, and a flare-up may ensue.

ETIOPATHOGENESIS

- Sundqvist *et.al* established a relation between certain microorganisms and painful teeth.
- Bacteroides melaninogenicus was found to be predominanat which is a anaerobic gram negative rod.
- In study conducted by Louis.E Fusobacterium nucleatum is associated with most severe form of flare ups.

- Enterococcus faecalis is a facultative anaerobe that can survive in harsh environment.
- Studies have shown that E.faecalis is present in 4-40 % of primary endodontic infections.
- It’s presence is 9 times more in failed root canal treatment cases.

ETIOPATHOGENESIS

3. Second

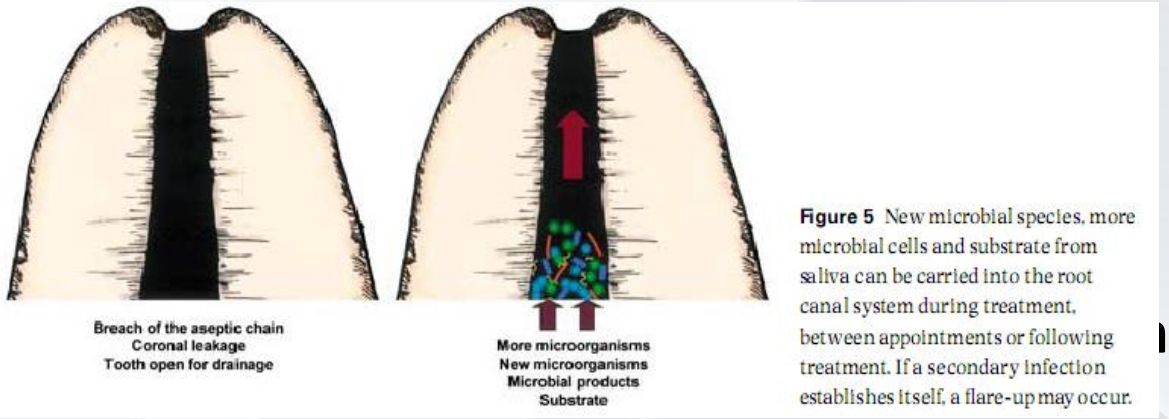


Figure 5 New microbial species, more microbial cells and substrate from saliva can be carried into the root canal system during treatment, between appointments or following treatment. If a secondary infection establishes itself, a flare-up may occur.

- **These** **isms that penetrate the root canal during the treatments between appointments .**
- ***Sources :***

Remnants of dental plaque or calculus

Caries on the tooth crown

Leaking rubber dam

Contaminated root canal instruments

Contamination by irrigants

ETIOPATHOGENESIS

Increase in redox potential

- It has l tial (eh) in the ro
- Access naerobic to aerobic.

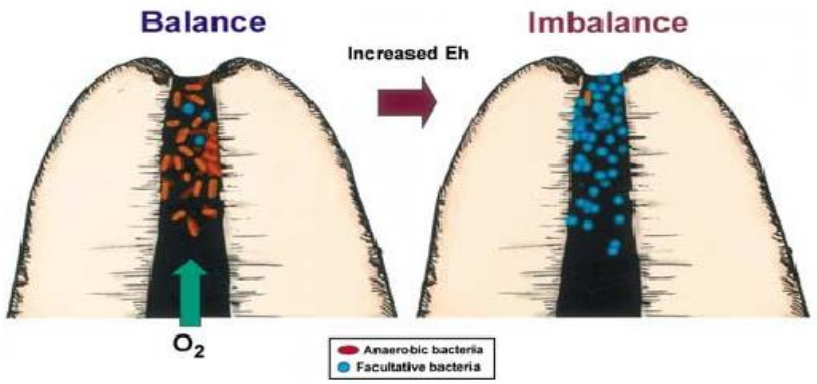


Figure 6 Entrance of oxygen into the root canal during treatment may favour the overgrowth of facultative bacteria that resisted chemo-mechanical procedures. This mechanism is only conjectural, and there is no clear evidence substantiating this theory.

- Energy yield of the facultative aerobes is more and this facultative aerobes like streptococci grow at a faster rate .

ETIOPATHOGENESIS

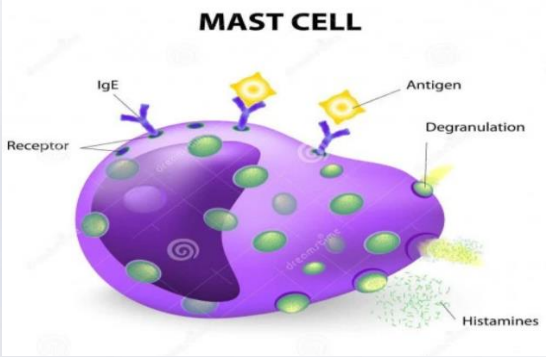
EFFECT OF CHEMICAL MEDIATORS

- These are in form of cell mediators, plasma mediators and neutrophil products.

Cell mediators :

- Histamine , serotonin (5 – hydroxytrptamine), prostaglandins (pg's), platelet activating factors (PAF), leukotrines (lt's) and lymphokines .

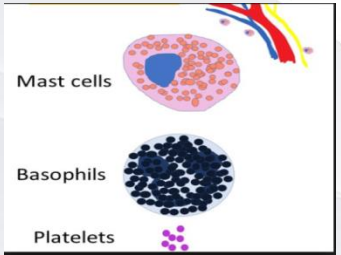
ETIOPATHOGENESIS



Histamine:

- Derived from mast cells , basophils & platelets.

- Physical injury, chemical agents, antigenic challenge of IgE sensitive cells cause release of histamine.
- Histamine acts directly on the local blood vessels & increases the permeability .



ETIOPATHOGENESIS

Serotonin:

- Found in mucosa of the gut , brain , & platelets.
- Released as a result of inflammation.
- Same effect as histamine.

ETIOPATHOGENESIS

Prostagl

- **Biologic**
- In inflam

•Increase permeability

•Promote chemotaxis

•Induce fever

•Sensitize pain receptor to stimulation by other chemical mediators

•Thrombaxane is formed when platelets are activated , causes platelet aggregation & vasoconstriction.

•In PMN's & reticulocytes arachidonic acid is metabolized by 5-lipooxygenase to products called leukotrines

nces.

ETIOPATHOGENESIS

Leukotrines:

- Lt A4, Lt B4, Lt C4, Lt D4, Lt E4.
- Have pro inflammatory effects
- Cause vascular leakage
- Smooth muscle contraction ,
- Lt C4 Lt D4 Lt E4 are 100-1000 times more potent than histamines & PG‘s.
- Increase the pain by prolonging the excitation of the neurons.

ETIOPATHOGENESIS

Platelet activating factors

- Derived from basophills and alveolar macrophages.
- Promotes platelet aggregation
- Increased vascular permeability
- Serotonin secretion
- May produce edema & hyperalgesia

ETIOPATHOGENESIS

Plasma mediators

- Usually present as inactive precursors in the circulation.
- Hageman factor is one of them gets activated by contact with glass, plasmin , bacterial lipopolysaccharides.

ETIOPATHOGENESIS

- Activated XII leads to Prekallikerin activator activity, - bradykinin formation - potent pain inducer.
- Triggers clotting cascade
- Triggers fibrinolytic system
- An intense PMN's infiltration may elicit severe reactions from release of lysosomal contents.

ETIOPATHOGENESIS

IMMUNOLOGICAL PHENOMENON

- Thomas & leaver have stated that pulp produces antibodies against the antigenic components of dental caries .
- e.g.. IgG , IgM, IgA , C3, C4 in chronic pulpitis – presence of macrophages & lymphocytes indicates both cell mediated & humoral immune reactions are involved

ETIOPATHOGENESIS

- Most predominant immunoglobulin produced by plasma cells in the peri apical lesions was found to be
- IgG 70% to 74%
- IgA 14% to 20%
- IgE 02% to 04%
- In patients with acute apical abscess & severe pain & swelling the levels of these immune complexes was found to be 3 times greater than in controls

ETIOPATHOGENESIS

PSHYCOLOGICAL FACTORS

- Fear of dentists, dental procedures, anxiety, apprehension , all these influence the pain perception of the patient and also the reaction threshold .
- Previous traumatic dental experiences.
- Root canal procedures appear to be especially painful to many because of antecedent experiences, conversations with others and also the lack of the information.
- All these induced anxieties intensify and perpetuate painful episodes.

MANAGEMENT OF MID TREATMENT FLARE-UPS

ANXIETY REDUCTION

- The causes of endodontic flare-ups are varied, and an effective preventive strategy must be multifaceted.
- There is a well-documented relationship between anxiety, pain threshold, and post- operative pain.

- **BEHAVIORAL INTERVENTION**
- In preoperative patients, high levels of stress, anxiety, or pessimism predict poor outcomes in measures that range from speed of wound healing to duration of hospital stay.
- Providing information about the procedure is an important step in preparing patients for endodontic treatment.

- Information about profound dental anesthesia and preventive pain strategies is an important anxiety reduction technique.
- Perhaps most importantly, the dentist should assure the patient that pain prevention is a primary concern.
- Information about sensations experienced during treatment as well as a description of procedures appears to have a significant impact in reducing patient anxiety.

OCCLUSAL REDUCTION

- Occlusal reduction is a valuable pain preventive strategy in appropriate cases.
- Occlusal reduction should result in less post-treatment pain in patients whose teeth exhibit pulp vitality, preoperative pain, percussion pain, or absence of a periapical radiolucency.
- While the presence of all four conditions is the strongest predictor, the presence of any one or more of the conditions is enough to indicate the need for occlusal reduction.

- There is a biologic rationale for the relief of pain provided by the occlusal reduction.
- Mechanical allodynia (i.e., sensitivity to percussion or biting forces) is due to tissue levels of mediators that stimulate peripheral terminals of nociceptors.
- Occlusal adjustment, in either arch, reduces mechanical stimulation of sensitized nociceptors.

PHARMACOLOGICAL STRATEGIES

Systemic drugs:

Antibiotics:

- Have been used both locally and systemically in anticipation of the pain reduction.
- Should be used only when there is cellulites, fever , malaise or toxemia.
- Over use of antibiotics can lead to risk of hypersensitivity and anaphylactic reactions.
- **PENICILLIN** is the most commonly used – based on the predominance of the penicillin –sensitive micro organisms reportedly found in the infected root canals.

PHARMACOLOGICAL STRATEGIES

Corticosteroids :

- Systemic corticosteroids have been successfully used to reduce pain and swelling mainly in oral surgical procedures.
- In endodontics I.M. injection of 6-8 mg of dexamethasone or 40 mg of methylprednisolone significantly reduced both the incidence and severity of pain 4 h after single-appointment endodontic therapy

PHARMACOLOGICAL STRATEGIES

- **Corticosteroids**
- If an oral route is chosen, 48 mg of methylprednisolone per day for 3 days and by extrapolation 10 to 12 mg of dexamethasone per day for 3 days should provide significant posttreatment pain relief.

Corticosteroids

- Action is mainly by the ability to retard the lysosomal release from the cells .
- Prevent the liberation of arachidonic acid from the phospholipids of the cell membranes.
- Appear to inhibit the formation of LT's.
- Many reports also state that when placed in the canal pain can be reduced successfully .

- Ehrmann. EH *et.al* investigated the relationship of postoperative pain to three different medicaments placed in the root canal after a complete bio in patients pre
- Pai dressed with Led d by patients who had a dressing of calcium hydroxide or no dressing at all.

They concluded that Ledermix is an effective intracanal medicament for the control of postoperative pain associated with acute apical periodontitis, with a rapid onset of pain reduction.

Ehrmann EH, Messer HH, Adams GG ***The relationship of intracanal medicaments to postoperative pain in endodontics.*** *Int Endod J. 2003 Dec;36(12):868-75.*

PHARMACOLOGICAL STRATEGIES

Analgesics

- **Non-narcotic analgesics** – relieve the pain with out altering the consciousness.
- Relatively ineffective in severe pain.
- e.g. aspirin, phenacetin, acetaminophens , propoxyphene

PHARMACOLOGICAL STRATEGIES

Narcotic analgesics

- Most potent analgesics
- They control the pain by reacting with the neurons of the brainstem , spinal cord and cerebral cortex.
- Primarily act by controlling the reaction to pain i.e. they increase the threshold to pain .
- Eg: morphine , codeine, meperidine, propoxyphene.

PHARMACOLOGICAL STRATEGIES

- ***LONG-ACTING LOCAL ANESTHETICS***
- Long-acting local anesthetics (e.g., bupivicaine) can provide an increased period of post-treatment analgesia beyond the usual duration of anesthesia.
- By blocking the activation of unmyelinated C-fiber nociceptors, the anesthetic decreases the potential for central sensitization.

PHARMACOLOGICAL STRATEGIES

- Long-acting local anesthetics can provide a period of analgesia for up to 8 to 10 hours following block injections and may reduce pain even 48 hours later.
- Use of long-acting local anesthetics is a valuable biologically based strategy that provides analgesia during the immediate postoperative period.
- Endodontic treatment by itself can be expected to provide significant pain relief.

DIAGNOSIS AND DEFINITIVE TREATMENT

- History of the onset of pain is important in determining if the pain is spontaneous or provoked by a specific stimulus.
- For example, if a tooth had a history of acute apical periodontitis and its occlusion had not been reduced, that could be identified as a probable cause of postoperative pain appropriate treatment should be provided.
- In contrast, a complaint of swelling, pressure, and throbbing in the interproximal area might suggest a periodontal component of the problem that should be explored.

- If inaccurate measurement control was used or proper measurement not maintained, the clinician must determine if the canal was under- or over-instrumented.
- Working length should be reconfirmed, patency to the apical foramen obtained, and thorough debridement with copious irrigation completed.
- Pain relief in the over-instrumented case is often dependent on an analgesic strategy.
- The under-instrumented case may require further instrumentation to the correct measurement, as well as the use of analgesics.

Establishment of drainage:

- Inflammatory edema is induced by chemical mediators and suppuration usually results from infectio
- In the presence of suppu method for reducing pain
- The drainage can be acco

- Removing the temporary filling from access cavity – exudate will come out through root canal.
- Passing a root canal instrument, such as a file or reamer, through the clogged canal (dentin debris) may help to establish the flow of exudate.

Establishment of drainage

- Drainage of the exudate is most effective method of reducing pain & swelling.
- But in some cases exudate is absent or can't be evacuated from the root canal – in these situations surgical interventions are necessary.
- After exudation has reduced access can be closed temporarily.
- According to the studies of weine, august & seltzer, leaving canal open can expose the canal to the oral flora & may actually leads to subsequent flare ups.

- ***Incision and drainage:***
- The goal of emergency treatment for an endodontic flare-up with a swelling is to achieve drainage.
- The object of drainage is to evacuate exudate from the periapical spaces.
- Drainage is best achieved through a combination of canal instrumentation and I&D.

- Even in cases wh  the canal should be accessed, instrum sed as soon as active drainage stops.
- Systemic antibiot ctive once the canal has been debride

Intracanal medicaments which are claimed to reduce the pain are :

Antimicrobial solutions :

- Since microorganisms are responsible for the exacerbations so placement of germicides & antiseptics into the canal should reduce the pain , but this is not the case in most instances .

Sulfa compounds:

- Have been reported to dramatically reduce the incidence of pain. --Nygaard -Ostby

- Sinhal *et.al* evaluated and comparison of the effect of 2% chlorhexidine gel and triple antibiotic paste with calcium hydroxide on incidence of interappointment flare-up in diabetic patients.
- They concluded that both triple antibiotic paste and 2% chlorhexidine gel were significantly effective for minimizing the interappointment flare-up and postoperative symptoms in diabetic patients.
- 2% chlorhexidine gel found to be more effective clinically, as compared to other experimental groups.

Sinhal TM, Shah R, Chinmay N, Pratik Subhas J. **Comparative evaluation of 2% chlorhexidine gel and triple antibiotic paste with calcium hydroxide paste on incidence of interappointment flare-up in diabetic patients: A randomized double-blinded clinical study.IES 2017;29(2):136-141.**

Calcium hydroxide therapy:

- When used as a Intracanal medicament reduces the bacterial colonies and their by products .
- This can be achieved in case calcium hydroxide is left in the canal for at least 1 week.

CORTICAL TREPHINATION

- Cortical trephination is defined as the surgical perforation of the alveolar cortical plate to release accumulated tissue exudates.
- Its use is indicated for patients with severe pain of endodontic origin without intraoral or extraoral swelling and when drainage cannot be accomplished through the root canal.
- For example, in the presence of posts, filling material, or ledging.

Trephination using a #3 spreader. B, Radiograph showing tip of a #3 spreader near root end.

COMPLEX DIAGNOSES

- The clinician must be sensitive to the potential of non-odontogenic pain being confused with a flare-up.
- For example, the words ‘‘tingling’’ or ‘‘burning’’ when used as descriptors of pain are signals of non-odontogenic pain rather than a flare-up.
- Similarly, although rare, it is possible for a tooth, other than one undergoing endodontic treatment, to suddenly become painful and confuse the diagnosis.
- A previously undetected periodontal component may also pose a diagnostic problem.

CONCLUSION

- The occurrence of mild pain and discomfort following endodontic treatment is common even when the treatment rendered is of the highest standard.
- It is the duty of the clinician to explain it to the patient. Prompt and effective treatment of flare-ups is an essential part of the overall endodontic treatment.

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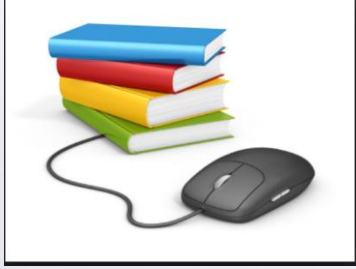

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