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Endodontic flare up: A nightmare every dentist wants to flee from

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Abstract

Background: Flare-ups can occur after root canal treatment and consist of acute exacerbation of an asymptomatic pulpal and/or per radicular pathologic conditions.

Aim: This study aimed to evaluate the knowledge, attitude, skills and preparedness of endodontist and pedodontist to manage a case of Endodontic flare-up.

Materials and methodology: A cross-sectional survey was carried out in May 2020 on 50 endodontist and pedodontist who had done post graduation from Delhi NCR. A 10 question based questionnaire was developed to assess their knowledge, awareness and skills. Data were subjected to appropriate statistical measures and analyzed.

Result: 36% of the endodontist and pedodontist (n=50) had heard about Flare Up index by Rimmer but needed a brush up and 12% were only sure about FUI. 52.17% were sure of the scoring system too. 60% of specialists knew about cortical trephination as a successful modality to reduce Interappointment pain apart from instrumentation, incision and drainage and use of Intracanal medicaments

Conclusion: Endodontic flare-up are a hyperalgesia syndrome with acute pain and swelling causing undesirable situations for patients and dentists. Old age and absence of a periapical lesion in necrotic teeth is a significant risk factor for flare-ups.

Keywords: Flare-up, Flare up index by Rimmer, Cortical trephination

Introduction

Mate *et al.* defined flare-up as a pain and/or swelling of the facial soft tissues and the oral mucosa around the tooth undergoing endodontic treatment which requires an unscheduled emergency visit to the dentist to relieve the discomfort and symptoms^[1].

The risk factors that have been studied to elucidate which factor correlates to what type of flare-up are the number of sessions whether single or multiple sittings to complete the treatment, the type of intracanal medicament used, pulpal/periapical diagnosis, apical extrusion of debris, whether a case of initial treatment or retreatment, presence of irritants, apical patency other than host factors like gender and age^[2]. The narrowing of the diameter of the pulp canals in the age group 50 or above is an important predisposing factor for endodontic flare-up^[3].

The overall incidence of flare-ups is low ranging from 1.5% to 5.5%^[4]. The frequency of occurrence varies being highest for patients who present with severe pain associated with pulp necrosis and acute apical abscess and lowest in cases with vital pulp without periapical pathosis^[5].

This study was done to assess the skills, knowledge, attitude, awareness and preparedness of endodontist and pedodontist in handling a case of endodontic flare-up which is a nightmare for every dentist and to educate these specialists about all the treatment options.

Materials and methodology

A cross-sectional study was conducted through a Whatsapp based questionnaire on 50 postgraduates in the speciality of Pedodontics and preventive dentistry and masters in endodontics and conservative dentistry with experience of 2 years, 3 or more years and dentists undergoing their masters from Delhi NCR.

All the postgraduates with masters other than these two fields were excluded. The survey was conducted in two phases (survey tool development and data collection) for a period of 2 days

to the contacts of the two invigilators.

Survey tool development

A 10 item questionnaire was framed on dentist background such as gender and professional years of experience to check preparedness on managing cases with endodontic flare-ups. A

3-point scale was made to analyze the attitude, awareness, knowledge and skills of dental specialists by marking options A, B and C. To remove any bias the setting of the survey was that one device could only take the survey once.

Data collection

Questionnaire	A	B	C
1. What is your gender?	A. Male	B. Female	1. What is your gender?
2. How many years of experience post graduation?	Undergoing post graduation	Less than 2 years	Three or more years
3. Are you aware about 9 questionnaire based Flare up index by Rimmer?	Yes I am aware	No I am unaware	I am aware but need to brush up
4. The flare up index ranges from?	0-9	0-45	0-90
5. How long the symptoms begin to erupt post treatment in a case of endodontic flare up?	Few hours and lasts till 2-3 days	Begins on the 2nd day and ends by a week	The symptoms begin after a week
6. Incomplete chemico mechanical preparation leads to acute exacerbation due to?	Change in endodontic micro biota	Increase of oxidation-reduction potential	Both of the two
7. Is cortical trephination a successful measure to reduce interappointment pain apart from reinstrumentation, incision and drainage, use of intracanal medicament?	Yes	No	Never read about cortical trephination
8. Is narrowing of the diameter of the root canal in older patients a predisposing factor for endodontic flare up?	Yes	No	May be
9. Does selection of instrumentation technique that extrudes less amount of debris apically help in prevention of flare up?	Yes step down technique	Yes crown down technique	No
10. Which of the following helps in reducing post operative pain due to endodontic flare up?	Use of Form cresol, Ledermix, eugenol, camphorated paramonochlorophenol	NSAIDS, corticosteroid /antibiotic combination, intracanal steroids	None of the above

Statistical analysis

The dental specialists' knowledge, awareness of recent advances, skill, and attitude on managing endodontic flare-up

was given 3options for each of the following 10 questions.

Result

Table 1: The percentage of dentist that choose option A, B and C for particular questions

S.No	A	% age	B	% age	C	% age	Skipped
Q1	14	28%	36	72%	-	-	0
Q2	20	40%	10	20%	20	40%	0
Q3	6	12%	26	52%	18	36%	0
Q4	20	43.48%	24	52.17%	2	4.35%	4
Q5	38	76%	12	24%	0	0	0
Q6	8	16.67%	4	8.33%	36	75%	2
Q7	30	60%	10	20%	10	20%	0
Q8	24	50%	18	37.5%	6	12.5%	2
Q9	20	40%	18	36%	12	24%	0
Q10	8	32%	36	72%	6	24%	0

28% of the endodontist and pedodontist were male and 72% were female. (Figure 1).

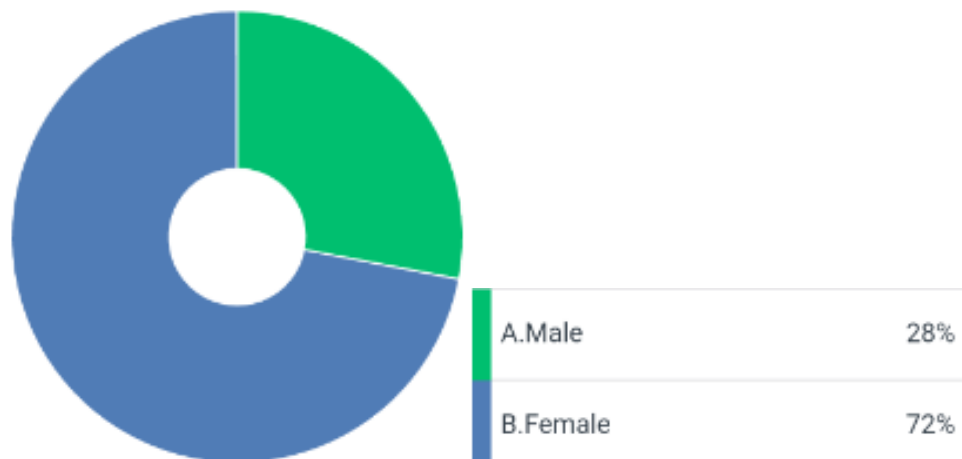


Fig 1: 28% of the endodontist and pedodontist were male and 72% were female

40% of specialists were undergoing post graduation, 40% had an experience of 3 or more years post their post graduation

and 20% had just completed in less than 2 years (Figure 2), (Table 1).

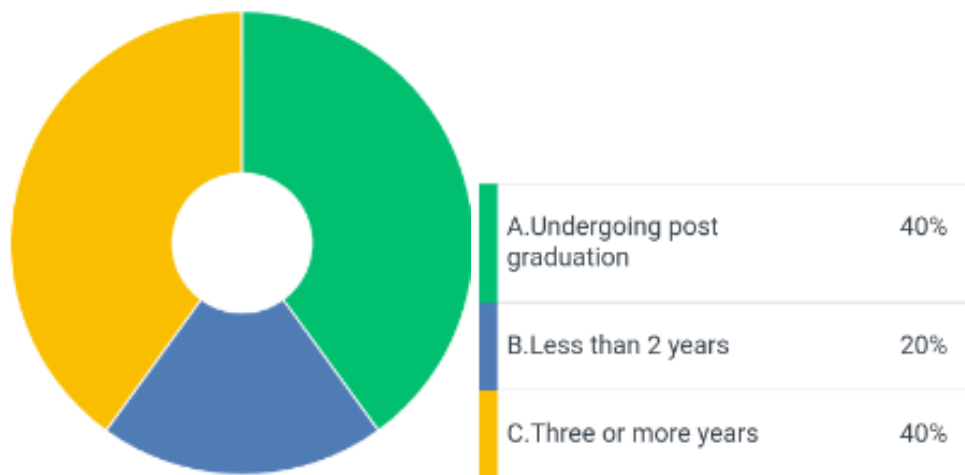


Fig 2: Shows undergoing post 40% less than 2 years 20% and three or more years 40%

52% of the specialists had never heard about about Flare up Index by Rimmer and 36% knew but needed a brush up on the

9 questionnaire based FUI (Figure 3), (Table 1), (Table 2).



Fig 3: Shows yes I am aware, No and I am aware but need to brush up

52.17% gave the score as 0-45% which is the FUI scoring range while as rest gave a wrong range. 4 specialists skipped

the questionnaire (Figure 4), (Table 1), (Table 2).



Fig 4: Shows the A.0-9-43.48%, B.0-45 -52.17% and C. -0-90.4.35%

Only 72% of the dental specialists knew endodontic flare up begin after few hours and last till 2-3 days. (Figure 5), (Table 1).

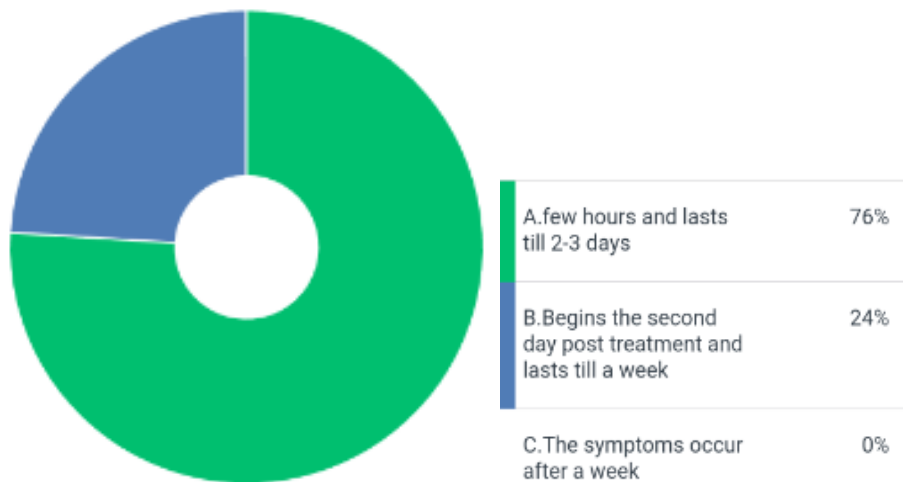


Fig 5: Only 72% of the dental specialists knew endodontic flare up begin after few hours and last till 2-3 days

75% of the respondents knew the incomplete chemomechanical preparation leads to acute exacerbation due to change in endodontic micro biota and increase of

oxidation-reduction potential. 2 respondents didn't answer the question. (Figure 6).

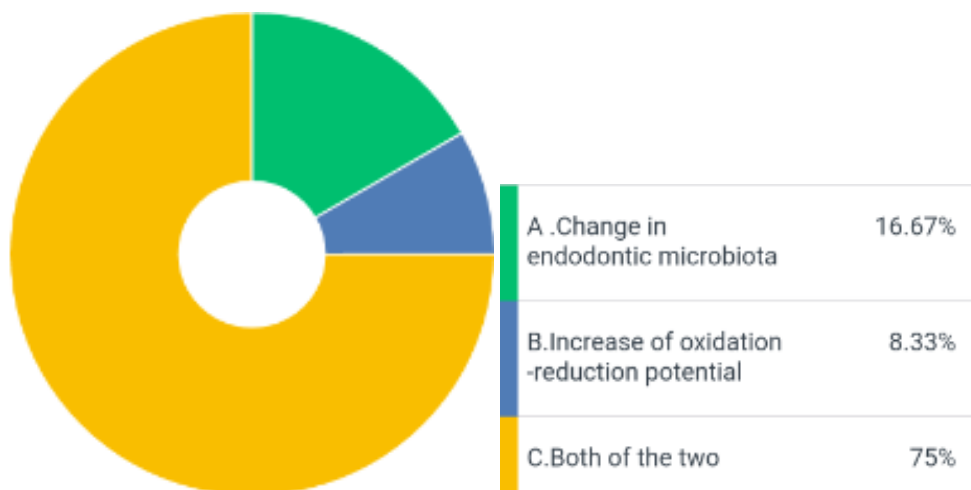


Fig 6: oxidation-reduction potential. 2 respondents didn't answer the question

Cortical trephination is a successful option for management of endodontic flare up case as it reduces interappointment pain was answered by 60% of the respondents whereas 20% of the

specialists had never hear about this treatment option. (Figure 7).

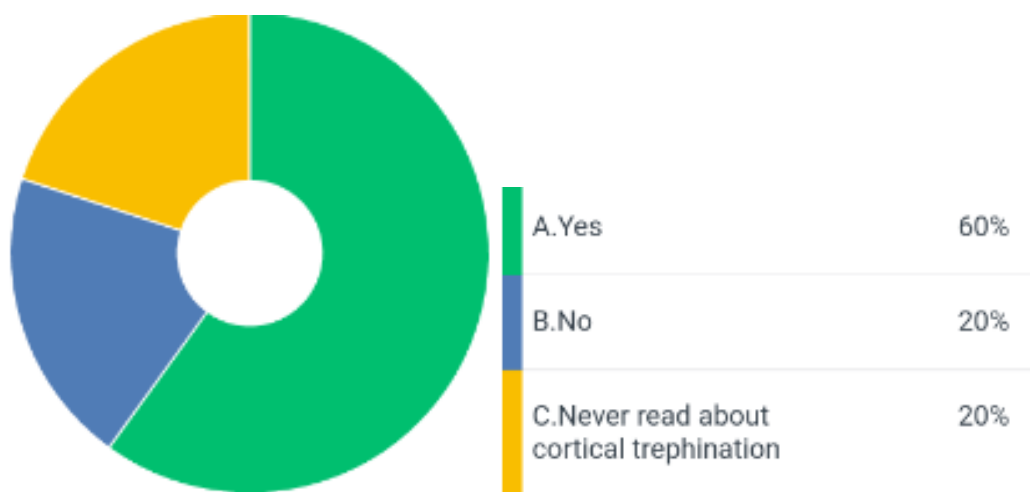


Fig 7: flare up case as it reduces interappointment pain was answered by 60% of the respondents whereas 20% of the specialists

50% knew with increasing age the narrowing of diameter of root canal occurs which predisposes to endodontic flare up. 2

specialists skipped this question, 12.5% were doubtful about age being a predisposing factor for a flare-up (Figure 8).

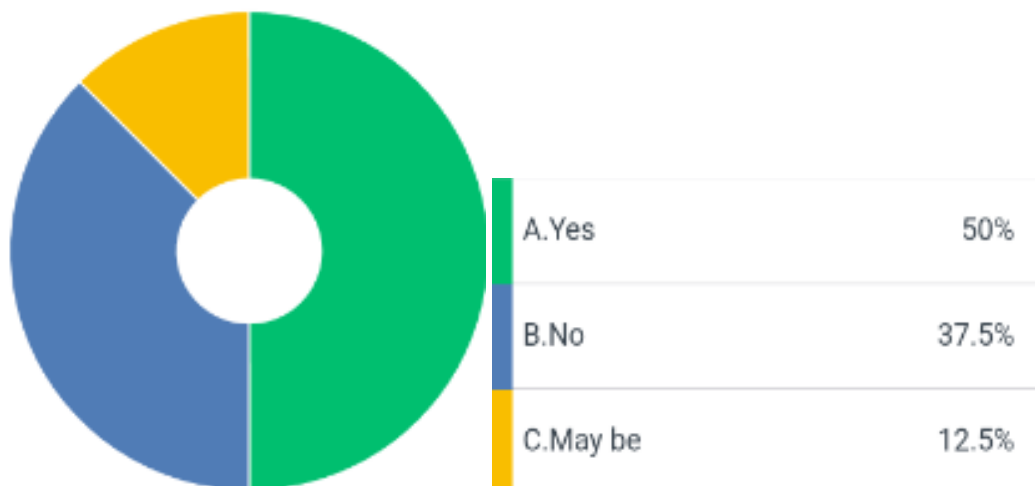


Fig 8: predisposing factor for a flare-up

Only 36% of specialists were well aware of crown down being the best technique available for minimum flare ups

while as 40% thought selection of instrumentation technique plays no role in prevention of flare-up (Figure 9), (Table 1).

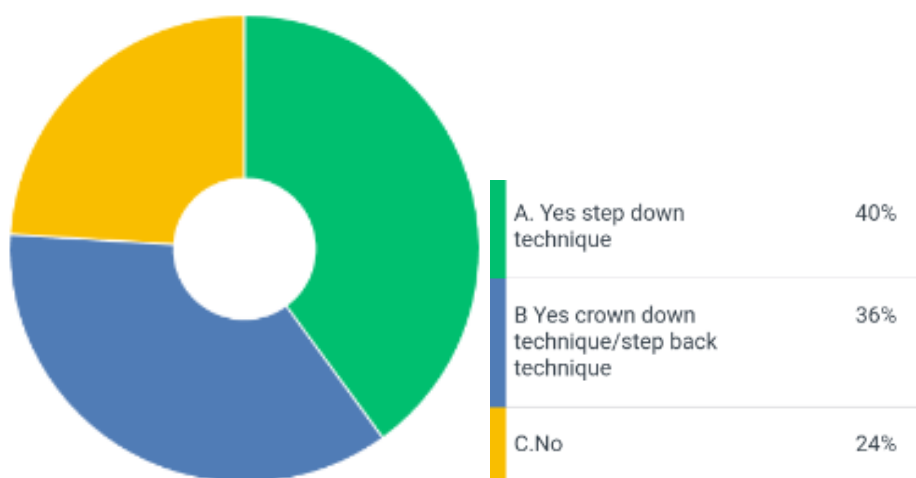


Fig 9: thought selection of instrumentation technique plays no role in prevention of flare-up

72% of specialists answered correctly that use of NSAIDS, corticosteroid/antibiotic combination, Intracanal steroids

helped in reducing post operative pain due to endodontic flare-up. (Figure 10).

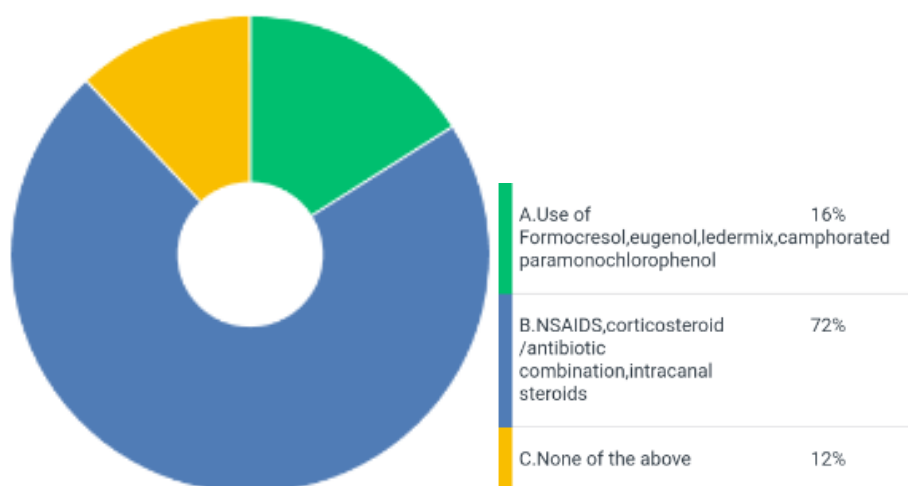


Fig 10: reducing post operative pain due to endodontic flare-up

Discussion

Bystrom and Sundquist called flare-up “an exacerbation” and is interplay of microbial, mechanical and chemical factors [6]. Pre operative pain, the type of intracanal medicament used, anxiety, tooth vitality and size of periapical lesion are various

causative factor that determine flare up rates [7]. Crown down technique which reduces debris extrusion also reduces the flare up incidence as all root canal preparations are linked with apical extrusion of canal debris and irrigants at varying degrees.⁸ Cortical trephination is surgical perforation

of the alveolar bone to release the accumulated per radicular tissue exudates to prevent and relieve from post treatment pain and pain relief was reported by Chestner *et al.* [9].

In females decreased pain threshold is seen due to altered levels of serotonin and nor adrenaline because of change in hormonal levels during menstruation, hormone replacement therapy and consumption of oral contraceptives [10, 11].

Patients consuming steroids as a treatment of systemic diseases have low flare-up rates as they suppress the acute

inflammatory responses during chemomechanical preparation when the factors irritate the apical periodontal tissue [6].

If pulp is necrotic and per radicular changes are seen endodontic treatment needs to be done in two visits while as in retreatment cases or primary endodontic treatment when pulp is viable and no per radicular changes are seen single sitting treatment needs to be done to prevent flare-up [12].

Table 2: Flare up index questionnaire

	FUI range
Existence of pain after the first visit	0-1
The number of days with pain x pain degree/day	0-21
How many days were analgesics taken?	0-7
How many time emergency treatment was needed?	0-7
Does the pain still exist and in what degree?	0-3
Are analgesics still being taken?	0-1
Did the swelling appear and in what degree?	0-3
Existence of limitation of mouth opening (Trismus)	0-1
Systemic involvement (e.g. temperature rising, fatigue)	0-1
Total Score	0-45

The flare up index (FUI) can show us longitudinally the effect of treatment course by reducing FUI value or ineffectiveness of treatment given by rise of the FUI Values (Table 2) [13].

The questions of this survey were such framed that it also served the educative purpose of awaring the specialized dentists about managing endodontic flare-ups.

Conclusion

The incidence of flare-ups of endodontic treatment is 1.4-16% and its origin is multi-etiological where interplay of microbial, mechanical and chemical factors occurs directly or indirectly. Incorrect measurement of working length, demographics, general state of health, condition of pulp and periodontal tissue, number of visits and type of Intracanal medicament play a pivotal role in developing flare-up. This study helped in educating the specialists about acute exacerbations where only 52% were aware of Flare up index given by Rimmer.

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