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Original article

Incidence of pain after pulp extirpation by dental students

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ABSTRACT

Aim:To evaluate the quality and ability to perform pulp extirpation among undergraduate, interns, and postgraduate dental students

Material and Methods:A questionnaire survey targeting the patients treated by undergraduate, interns, and postgraduate dental students was conducted at Riyadh Colleges of Dentistry and Pharmacy (RCsDP). A structured questionnaire accessed age, gender, location of tooth, incidence of pain, type of pain, and intensity of pain. Differences between groups were examined using Chi-square test.

Result: The incidence of pain after pulp extirpation was 50.2% (n=104). The majority first noticed pain after one day (52.9%, n=55), occurred suddenly (56.7%, n=59). No statistically significant differences were found between patients treated by undergraduates, interns, and postgraduate dental students.

Conclusion:The incidence of a pain after pulp extirpation was higher. Patients treated by undergraduates were more likely to have high incidence of pain after pulp extirpation than interns and postgraduates. Dentists should be aware of this pain and make efforts to prevent or treat it.

Introduction

Pain is the predominantly associated symptom among patients visiting dental office. The endodontic pain is mainly caused due to the inflammation of the pulp tissue occurring due to dental caries progressing to pulp. It is characterized as pain before endodontic treatment, pain during endodontic treatment, and pain after endodontic treatment.[1] Mechanical, chemical, and/or microbial injury to the pulp or periradicular tissues comprises the causative factors of inter-appointment pain.[2]

Pain after endodontic procedures is an unfavorable occurrence for both patients and dentist and affects patient's quality of life and the success of dentist-patient relationship. However, mild pain is relatively common even when the treatment has followed the highest standards and should be expected and anticipated by patients.[3] Pain may occur soon after initiating endodontic treatment for an asymptomatic tooth or shortly after the initial emergency treatment or during the course of the treatment. The incidence of inter-appointment pain associated with endodontic therapy was found to be 4.2%.[4]

One of the clinical conditions associated with flare-ups in some instance is incomplete removal of pulp tissues during the initial appointment due to lack of time factor may consist of incomplete pulpectomy.[5] A study showed that corticosteroids are effective in soothening the pain by decreasing in few minutes or hours in teeth with signs of asymptomatic pulpitis after the pulp is extirpated and the canal is filled with "Ledermix" paste.[6] Prompt and effective treatment of flare-ups is

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an essential part of the overall endodontic treatment. The aim of this study was to evaluate the quality and ability to perform pulp extirpation among undergraduate, interns, and postgraduate dental students.

Material and Methods

A cross-sectional survey targeting the 70 patients each treated by undergraduate dental students, dental interns, and postgraduate dental students was conducted at Riyadh Colleges of Dentistry and Pharmacy (RCsDP), Riyadh, Kingdom of Saudi Arabia. A structured questionnaire accessed age, gender, location of tooth, incidence of pain, type of pain, and intensity of pain. Ethical approval was obtained prior to the study. The questionnaire was distributed and the study was briefly explained and queries were answered. The study required participants to spend about 10 minutes completing a questionnaire.

A completed questionnaire indicated the consent to participate in the study. Anonymity and confidentiality were assured. The quantitative data was entered onto computer for analysis using Statistical Package for Social Science (IBM-SPSS) Version 22 for Windows. Descriptive analysis was undertaken to present an overview of the findings from this sample with an analysis by student level. Differences between groups were examined using Chi-square test. A p value of $\leqslant$ 0.05 was considered as statistically significant.

Results

The mean (±SD) age of the patients was 34.7 (±9.6) years, ranging from 12-55 years. One hundred and nine (52.2%) patients were males and 100 (47.8%) were females (Figure 1). There was no statistically significant difference between age and gender (p>0.05). The majority of the patient were medically fit (79.5%, n=167).

The majority of tooth location for endodontic treatment was lower posterior (40.5%, n=85). Upper posterior teeth were more likely to have felt pain after pulp extirpation. However, this association was statistically not significant (p>0.05). Seventy one percent (n=149) felt pain in the teeth before treatment. The incidence of a pain after pulp extirpation was 50.2% (n=104). However, 51.7% (n=89) had taken medicine to relieve the pain before the dental visit (Table 1).

Table 2 shows the variables of pain. The majority first noticed pain after one day (52.9%, n=55), occurred suddenly (56.7%, n=59), localized type (92.3%, n=96), mild intensity (67.3%, n=70), no associated signs and symptoms (93.3%, n=97), didn't affect sleep (78.8%, n=82), and didn't take any medicine to relieve the pain after the dental visit (51.9%, n=55). Patients who had pulp extirpation by interns were more likely to have taken medicine to relieve the pain before the dental visit and this association was statistically significant (p<0.05).

Patients treated by undergraduates were more likely to have high incidence of pain after pulp extirpation (67.1%, n=40) than interns (49.3%, n=34) and postgraduates (44.1%, n=30). However, this association was statistically not significant (p>0.05) (Table 3). Table 4 shows the association between variables (pain) and student level. Patients who had pulp extirpation by postgraduates are more likely to have taken medicine to relieve the pain after the dental visit and this association was statistically significant (p<0.05).

Discussion

One of the main issues in studying pain is the patient's subjective evaluation and its measurement. Therefore,

Table 1. Incidence of pain after pulp extirpation

		Frequency (n)	*Percent (%)*
Tooth location (n=210)	***Upper anterior***	***39***	***18.6***
	Lower anterior	***18***	***8.6***
	Upper posterior	***68***	***32.4***
	Lower posterior	***85***	***40.5***
Do you feel pain of the tooth before treatment? (n=210)	***Yes***	***149***	***71.0***
	No	***61***	***29.0***
Do you feel pain after pulp extirpation? (n=207)	***Yes***	***104***	***50.2***
	No	***103***	***49.8***
Did you take any medicine to relieve the pain before the dental visit? (n=172)	***Yes***	***89***	***51.7***
	No	***83***	***48.3***

questionnaire design is critical to ensure that it will be fully understood by patients and easily interpreted by researchers.[7] The causes of pain after pulp extirpation encompass mechanical and chemical factors. The aim of this study was to investigate the incidence, severity, and duration of pain after pulp extirpation to evaluate the quality and ability to do pulp extirpation between undergraduate, interns and, postgraduate dental students of RCsDP.

The results of the study showed no statistically significant difference between age and gender. The majority felt pain in the teeth before treatment. The incidence of pain after pulp extirpation was 50.2%. The present study found that patients treated by undergraduate students were more likely to have high incidence of pain after pulp extirpation than interns and postgraduate students. However, patients who had pulp extirpation by postgraduate students were more

Table 2. Variables (pain)		***Frequency (n)***	***Percent (%)***
When the pain was first noticed?	***Immediately after pulp extirpation***	***40***	***38.5***
	After one day	***55***	***52.9***
	More than one day	***9***	***8.7***
Under what circumstances does the pain occur?	***Eating***	***21***	***29.8***
	Drinking	***2***	***1.9***
	Biting	***12***	***11.5***
	Suddenly	***59***	***56.7***
What is the type of pain?	***Localized***	***96***	***92.3***
	Diffuse	***8***	***7.7***
What is the intensity of pain?	***Mild***	***70***	***67.3***
	Moderate	***25***	***24.0***
	Severe	***9***	***8.7***
Any signs or symptoms associated with the pain?	***Tenderness***	***0***	***0.0***
	Swelling	***7***	***6.7***
	No association	***97***	***93.3***
Does the pain affect your sleep?	***Yes***	***22***	***21.2***

	No	***82***	***78.8***
Did you take any medicine to relieve the pain after the dental visit?	***Yes***	***51***	***48.1***
	No	***55***	***51.9***

likely to have taken medicine to relieve the pain after the dental visit.

Most studies that investigated the incidenceof post-endodontic pain referred to flare-up. Data on pain incidenceand severity experienced during endodontic treatment were very limited.[8] Few Visual Analog Scale (VAS) studies showed 100% incidenceof treatment pain.[9-11] However, these VAS studies indicated that the severity of treatment associated pain was very low (4%-8% on 100- point VAS scales). Some non-VAS studies reported incidenceof treatment pain ranging from 11% to 22%.[12-14] A study has reported that pulp extirpation alone is probably the most significant factor in reduction of post-operative pain regardless of other variables.[15]

Conclusion

Pain following complete removal of vital pulp is rare. However, when pain is intense it indicates incomplete removal of vital pulp tissue from the root canal. Treatment consists of reestablishing the working length, complete removal of the remaining vital pulp tissue, and relieving the tooth from occlusion. Dentists should be aware of this pain and make efforts to prevent or treat it. Patients should be informed about the possibility of pain after endodontic treatment and instructed in the use of analgesics.

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