ISSN: 0975-8585

Research Journal of Pharmaceutical, Biological and Chemical Sciences

Pattern of Radiographic Referrals among Interns during Endodontic Treatment: A Survey.

Laxmish Mallya, Nandita Shenoy*, Junaid Ahmed, Ashok Shenoy[2] ,Srikant N and Shreya Hegde.

Department of Oral Medicine and Radiology, Manipal College of Dental sciences, Mangalore, Manipal University, Karnataka, India.
[2]Department of Pharmacology, Kasturba Medical College Mangalore, Manipal University, Karnataka, India.

ABSTRACT

The spread of infection in the dental hard tissue begin as a carious lesion and spreads to the apical tissues and bone which are difficult to analyse clinically. Hence to assess the extent and type of destruction, to help reach a diagnosis and decide on the treatment modality radiographs become mandatory. Aim: to assess the pattern of radiographic referrals among interns during endodontic treatment in a private dental college. To study the pattern of use of radiographs among interns of a dental college and to assess their awareness about radiographic use among the above population. A cross-sectional questionnaire design was employed in the present study. Questions were based on the number and type of radiographs prescribed, and also on their knowledge in concerns of their understanding of dental radiography. The response rate was 88%. 55% were females and 45% were males. In their tenure of two months posting in endodontics, we were happy to know that 50% of our subjects were proficient in interpreting radiograph. We feel there is need to develop a broad evidence based criteria for radiographic prescription in endodontic practice and has to be included in the dental school curriculum.

Keywords: radiographic referral, dental, infection, endodontic.

Corresponding author

ISSN: 0975-8585

INTRODUCTION

A major part of the tooth is present under the gums and bone surface and hence radiographs have played an important role in diagnosis, treatment planning and prognosis as a simple yet efficient process of understanding the tooth structure not clinically seen. From the spread of infection beginning as a carious lesion to the apical tissues and bone, the periodontal breakdown of the alveolar bone, the extent and type of destructive or densifying bony and soft tissue lesions, radiographs are indispensable to help reach a diagnosis and decide on the treatment modality to be followed.

Dentists use radiographs more often than any other health professional. For this reason, compliance to ALARA principles becomes important in their practice in order to reduce patient exposure to ionizing radiation [1]. Dentist, knowing the patient's health history and vulnerability to oral disease, is in the best position to make this judgment in the interest of each patient.

Oral and maxillofacial radiology is taught for a period of one and a half years beginning from the third yr of their course during the four year duration of under graduation, both theoretical and practical classes are held in our dental school. The course focuses on radiation physics, the potential biological hazards of ionizing radiation, methods of radiation protection, Techniques of radiography and its interpretation.

The purpose of this study was to investigate knowledge, attitude and behavior of our dental students regarding oral radiology by means of a questionnaire. By understanding the level of knowledge of our future dentists and the way their awareness regarding patient protection in dental radiography, we can shape our future academic programming accordingly both in undergraduate and postgraduate courses.

MATERIALS AND METHODS

The present study was conducted among junior residents of a private dental college in Dakshina Kannada, Karnataka State. A questionnaire, which was validated for reproducibility, was used to collect the data for the study. The study was approved by the Institutional ethics committee and written informed consent was obtained from the study subjects. The questionnaire was distributed among the interns working in various departments of the college. The sections of the questionnaire were (1) demographic characteristics of dentists, (2) radiographic prescription details (3) radiographic techniques and processing, and (4) radiation protection. Data was analyzed using Statistical Package for Social Sciences (SPSS), version 16.0 (SPSS Inc, Chicago IL).

Study Questionnaire

Date._____ Sr. no._____ Sex. _____ (M/F)

1. How many radiographs have you prescribed in your posting?
a. 1-5
b. 5-10
c. More than 20
d. More than 50

2. Which is the most frequently prescribed Radiograph?
a. IOPA
b. Bitewing
c. OPG
d. Any Other (please specify)

3. Which Radiograph do you prefer to use?
a. Digital
b. Analogue
c. Depends on the case
d. No preference

4. Which processing method is used in your institution?
a. Manual
b. Automated
c. Either
d. Not aware

5. Are you efficient in taking an acceptably good level of radiograph yourself?
a. Very efficient
b. Can Manage
c. Need Improvement
d. Don't know how to take a radiograph

6. How is your proficiency in interpreting a Radiograph?
a. Very proficient
b. Proficient
c. Can manage
d. Need improvement

7. The intra oral technique used most frequently for taking a radiograph
a. Bisecting
b. Paralleling
c. Both
d. Dont know

8. Are you aware of the various indications of prescribing a Radiograph?
a. Aware of all the indications
b. Aware of a few indications
c. Not aware
d. Not sure

9. Are you aware of the various contra-indications of prescribing a Radiograph?
a. Aware of all the contraindications
b. Aware of a few contraindications
c. Not aware
d. Not sure

10. Which is the most common condition for which you prescribe a radiograph?
a. Deep Caries
b. RCT
c. Proximal caries
d. All of the above

11. Are you aware of the various risks of radiation exposure?
a. Aware of all risks
b. Aware of a few risks
c. Not aware
d. Not sure

12. Is according to you a radiograph justified for diagnosis and treatment planning against the risks of exposure?
a. Definitely yes
b. May be
c. Definitely No
d. Not sure

13. According to you a radiograph in RCT is least indicated ?
a. Pre Treatment

b. Working length
c. Master cone
d. Post Obturation

14. What according to you makes a good radiograph?
a. Good resolution
b. Sharpness of image
c. Visualization of structures indicated
d. All of the above

15. Which is the most commonly encountered fault?
a. Cone Cut
b. Area of interest not seen
c. Image distortion
d. Any other(please specify)

16. Should Radiograph be mandatory for all cases?
a. Definitely agree
b. Depends on the case
c. Definitely disagree
d. Not sure

17. Are you aware of the advantages of radiographs in endodontic practice?
a. Highly Aware
b. Moderately Aware
c. Poorly aware
d. Not aware

18. Are you able to relate your clinical and radiographic diagnosis?
a. Always
b. Occasionally
c. Rarely
d. Never

19. Do you think a radiograph makes it easier to explain to the patient his condition and the treatment modality to be followed?
a. Yes
b. Most of the times
c. A few times
d. No

RESULTS

Twelve respondents out of 112 who participated in the study were excluded due to respondent's errors while filling out the questionnaire. In total, 100 questionnaires were analyzed.

Profile of respondents

The mean age of the dentists who participated in the study was 21.6±1.2 years (range 21–24 years). The average duration of practice was 1.5 years. Majority of them were females (55 females and 45 males).

Radiographic techniques

Interns when asked about the number and the most frequently prescribed radiographs in their 2 months long posting in the department of endodontic, majority of them had prescribed more than 20 Intra Oral Periapical (IOPA, 54%) . They preferred digital radiographs compared to an analogue view due to its clarity and absence of processing (40%, n= 40). When asked about the techniques employed, they said that the most preferred technique (88%) for periapical radiography was the bisecting angle technique. Paralleling

technique was reported as 8%, few also mentioned both techniques (2%) and the remaining respondents (2%) did not know the technique they used. Only 50 (50%) respondents reported that they were proficient in taking radiographs on their own whereas 38% (n=38) felt that they can manage taking a radiograph, in case of need.

Indication for prescription

Our interns felt that patients with dental caries, periapical lesions and periodontal disease are the main indications for Dental Radiography and contraindications were mainly pregnancy, patient with a history of allergy and difficulty in opening the mouth. Majority of them felt that radiograph in RCT is least indicated after obturation of canals, though they felt that a radiograph during an endodontic procedure can enhance efficiency and accuracy of the procedure.

Processing and Faults

Sixty one (39%) respondents reported that they used automatic processor, 61 (61%) were comfortable using both techniques for processing .Sharpness of image, visualization of structures indicated were the main criteria to indicate a good radiograph by 84% of our study subjects. Fifty seven (57%) felt that Cone Cut was the most commonly encountered fault, 28% felt image distortion and 14% felt that area not been visualized adequately in a radiograph is a major drawback in diagnostic imaging.

Radiation protection

Only 8 (8%) interns felt that cancer can be a major risk factor for radiographic exposure, 10% felt that radiographic exposure can lead to mucositis, whereas 82% felt all of the above to be radiation induced biologic effect and can be a complication induced with radiologic exposure.

DISCUSSION

Increasing awareness on hazards of radiology among clinicians and patients indicate a need for radiation protection and so the upcoming question remains, as to how much knowledge, each section of dental professionals working in a college still possess once they are qualified and working in their field. Although a dental professional should always be prepared to increase his/her knowledge through continuing dental education programs, it is a well-known fact that this is more likely to occur if the continued education in terms of old and recent advances is made mandatory for all dental professionals. The goal of intraoral and extraoral imaging is to produce high-quality images of the oral structures with a minimum of radiation exposure [2].

The present study shows that interns are knowledgeable about oral radiology, and radiological guidelines, which is in contrast to other studies [3,4]. With respect to radiation protection of the patients, when asked about the risk of radiation exposure and their possible consequences, they replied with the right answers and this was similar to studies done by Svenson et al [5].

Use of short cone instead of a long cone increases the effective dose of a radiographic exposure [5] but only 8% of our subject's preferred long cone. This is similar to findings done by in Turkey [6], Uganda [7] and Belgium [8].

It has been determined that digital imaging for intraoral radiography requires about half the exposure of E-speed film and produces images largely comparable with conventional film images and thus is a viable alternative [9, 10]. The survey showed that digital radiography (40%) was preferred rather than analogue among our subjects.

About 39% of the dentists preferred automatic processing of films and 61% of our subjects were fine with both manual and automatic processing techniques. The ease of using automatic processing makes it a popular technique even though the developer depletion is faster compared to manual processing and F-speed film is more resistant to solution depletion than E-speed [11].

To adhere to ALARA principles, it is very important to avoid unnecessary radiographs [12]. This study showed that periapical radiographs were the dominant initial radiographs taken by our subjects. This may be beneficial for the patients exposed to radiation and due to better resolution many incipient and occult conditions of the teeth and periapical region might thus be detected.

Success of root canal treatment depends on a number of factors, in particular the diagnosis of the pulp and periapical conditions, root canal anatomy, canal preparation and obturation. Our subjects felt that post obturation radiographs are the most important thing to determine the success of endodontic treatment and endodontic diagnosis and treatment relies heavily on radiographic examination and provides the most valuable information compared with other diagnostic tests [13, 14].

The results in this study show that 98% of our subjects preferred periapical radiographs and are still one of the most important diagnostic tools for endodontic treatment, they also felt the need for an ideal radiograph in terms of density and sharpness for proper evaluation and interpretation of the findings in the radiograph.

Our subjects felt that clinical and radiological correlation is essential for a successful treatment outcome. Stheeman et al [15] showed that as the diagnostic confidence of dentists increase there is an increase in diagnostic accuracy from radiograph interpretation, and they suggested that methods should be devised in order to improve the diagnostic confidence.

In conclusion, the results show that the intern's knowledge and behaviour regarding oral radiology, its importance in endodontics and radiology safety standards are satisfactory. They are also able to prescribe, detect radiographic changes and clinically correlate for a better diagnosis and treatment plan.

REFERENCES

[1] Horner K. Br J Radiol 1994; 67:1041–1049.
[2] Hintze H. Scand J Res 1993; 101: 52–56.
[3] Paksoy CS. J AÜ Faculty of Dent 2000; 27: 45–52.
[4] Aydın Ü, Yılmaz H, Bulut H. J HÜ Faculty of Dent 2003; 27: 19–24.
[5] Svenson B, Söderfeldt B, Gröndahl H-G. Dentomaxillofac Radiol 1996; 25: 151-156.
[6] Ilguy D , Ilguy M , Dincer ŞBayırlı G . Dentomaxillofac Radiol 2005;34:222–227.
[7] Mutyabule TK , Whaites EJ .Dentomaxillofac Radiol 2002;31:164–169.
[8] Jacobs R , Vanderstappen M , Bogaerts R , Gijbels F. Dentomaxillofac Radiol 2004;33:334–339.
[9] Gratt BM, White SC, Halse A. J Am Dent Assoc 1988; 117: 609-614.
[10] Tugnait A, Clerehugh DV, Hirschmann PN. J Dent 2003; 31: 197–203.
[11] Casanova MS, Haiter-Neto F. Dentomaxillofac Radiol 2004;33:108-13.
[12] Geist JR, Katz JO. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 2002; 93: 496–505.
[13] Tronstad L. Endodontic examination and diagnosis. In: , Tronstad L (editor). Clinical Endodontics. A Textbook. NY: Thieme Publication, 2003, pp 79–80.
[14] Carotte P. Br Dent J 2004;5:231–238.
[15] Stheeman SE , Mileman PA , van't Hof MA , van derStelt PF. Int Endod J 1995;28:125–128.