

Original Article

Knowledge of General Dentists and Dental Specialists in Kermanshah about Periradicular Surgery

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Abstract

Introduction: Periradicular surgery is an appropriate treatment method for dental periradicular impairments. The present study was carried out to analyze the knowledge of general dentists and dental specialists about periradicular surgery.

Methods: This descriptive cross-sectional study was conducted on 93 general dentists and 7 dental specialists (Endodontists and Oral and Maxillofacial Surgeons) in Kermanshah. Data were collected by a standard questionnaire including demographic information and technical questions about the principals of periradicular surgery. Data were analyzed by SPSS (version 17) using t-test and Chi-square.

Results: The knowledge of the specialists with the mean of 7.4 for correct responses was considered good and for general dentists, the mean of 5.1 for correct responses was considered average. There was a significant correlation between the educational status of the participants (specialists and general dentists) and their knowledge ($P < 0.001$). Participation in retraining courses did not have any significant effect on the knowledge of specialists and general dentists on the principles of periradicular surgery ($P < 0.05$). However, there was a significant difference between the work experience of the participants and their knowledge on periradicular surgery, so that by increasing the work experience, the knowledge of general dentists and specialists decreased ($P < 0.001$).

Conclusion: The knowledge of general dentists in Kermanshah about the principles of periradicular surgery was at average level. Endodontists and Oral and Maxillofacial Surgeons are recommended to carry out periradicular surgery as a typical part of clinical therapy.

Keywords: Endodontics, Educational status, Knowledge, Periradicular surgery

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Introduction

Periradicular surgery is an appropriate technique for periradicular lesions. In fact, this kind of therapy is applicable when it is not possible to use common endodontic techniques (root canal therapy or endodontic retreatment). In this technique, the impaired tissues along with the pathogenic factor are extracted from the physical surrounding of the root. Periradicular surgery includes part of the root that contains the non-cleaned, unformed or unfilled canal space, and it is better to fill the canal from the right side (reverse filling) and create a seal (1-2). Although it is rarely performed, periradicular surgery is the only option with high success to be used for some cases of periapical (dental root) infections. The surgeons should have the required knowledge and skill to perform periradicular surgery in order to noticeably prevent the serious incidence associated with surgery. Using their knowledge and expertise, they should accurately plan their procedures taking into account the appropriate substitute strategies in the face of unusual circumstances during the surgery (2-3).

By evaluating the knowledge of general dentists and using the obtained results, a more precise planning can be performed to enhance the surgeons' knowledge about the principles of periradicular surgery and the factors associated with it in order to prevent the post periradicular surgery complications and heavy costs. Given the importance of this issue, the present study was conducted to determine the knowledge of general dentists and dental specialists in Kermanshah about the periradicular surgery.

Methods

In this descriptive cross-sectional study, 93 general dentists and 7 dental specialists (endodontists, oral and maxillofacial surgeons), owning private offices, were randomly selected. Participation in the study was completely voluntary and the data were coded and analyzed confidentially. A self-administered questionnaire was used to collect the data. The validity of the questionnaire was determined using content validity, given the objectives of the study. Having studied the authentic books, articles and resources and having consulted five faculty members at Kermanshah School of Dentistry, the researcher designed a questionnaire that included all the objectives of the study. The reliability of the questionnaire calculated by Cronbach's alpha coefficient was 0.6. The questionnaire comprised of questions about educational status, work experience (since the start of activity in private offices), participation in retraining courses, and the number of surgeries as well as technical questions (Table 1). In the present study, to assess the knowledge of dental specialist and general dentists, out of 10 questions,

8 were made on the principles of periradicular surgery (Table 1). In case the number of correct responses was less than 5, the knowledge level was considered poor, 5-7 correct responses were indicative of average knowledge and 7 correct responses was considered as good knowledge.

Data were analyzed by SPSS software (version 17). Frequency, mean and standard deviation were used for descriptive data and t-test and Chi-square were applied to analyze the correlation between tendency, work experience, educational status and knowledge of the principles of periradicular surgery. P-value<0.05 considered as significant.

Results

From 127 general dentists and dental specialists, 100 dentists, including 7 dental specialists and 93 general dentists, completed the questionnaires. The frequency of the given responses is presented in Table 1.

The knowledge of dental specialists was good with the mean of 7.4 and that of the general dentists was average with the mean of 5.1. From 100 participants in this study, 73 general dentists reported lack of doing periradicular surgery. Their knowledge about the principles of periradicular surgery was average. Also, 12 participants had undergone periradicular surgery once and had average knowledge about the principles of periradicular surgery. Further, 15 participants reported 2 or more than 3 times periradicular surgery and had good knowledge about the principles of periradicular surgery ($P<0.001$).

The knowledge of general dentists and specialists declined by increasing the work experience ($P<0.001$). The educational status of the participants had no significant correlation with their knowledge about periradicular surgery ($P>0.05$).

Discussion

The present study investigated the knowledge of general dentists and dental specialists about periradicular surgery to carry out a better planning to promote their knowledge. The reason for analyzing these groups was the presence of chapters related to principles of periradicular surgery in their educational curriculum. Given the fact that the residents in Endodontics and Oral and Maxillofacial Surgery courses have carried out more periradicular surgery, therefore, the possibility of doing a proper approach is higher. More concentration on the prerequisite theoretical courses in the chapters related to periradicular surgery can be effective for residents to enhance their knowledge.

Table 1: Frequency of correct responses to questions in the questionnaire

	Questions	Frequency of correct responses (%)
1	Which treatment is recommended for mandibular second molar with a lift and cover?	
	1. Epico surgery	Dental specialist 5 (71.4)
	2. Tooth extraction	General dentist 60 (68.2)
	3. Retreatment 4. Replant	
2	In which of the following, retreatment prior to epico surgery is necessary?	
	1. Presence of long post in canal	Dental specialist 7 (100.0)
	2. Shorter obturation of root canal	General dentist 63 (71.6)
	3. Requirement for biopsy 4. Presence of broken and impenetrable device	
3	In terms of regeneration, periradicular tissue of which of the following is more effective as retrograde substance?	
	1. Amalgam	Dental specialist 7 (100.0)
	2. Composite	General dentist 71 (80.7)
	3. Glass Ionomer 4. Mineral trioxide aggregate	
4	If anesthesia is lost during the surgery of mandibular teeth, which injection method is appropriate?	
	1. Extra infiltration injection	Dental specialist 7 (100.0)
	2. Extra block injection	General dentist 51 (58.0)
	3. Injection in surgical location 4. Injection in granulation tissue	
5	In case of the need for perpendicular releasing cut in mandibular first premolar surgery, where is the appropriate location of the cut?	
	1. Mesial line angle of mandibular canine	Dental specialist 4 (42.9)
	2. Distal line angle of mandibular canine	General dentist 26(29.5)
	3. Mesial line angle of mandibular first premolar 4. Distal line angle of mandibular first premolar	
6	What is the main cause of flap rupture?	
	1. Irregular initial cut	Dental specialist 6 (85.7)
	2. Overstretching of flap	General dentist 55 (62.5)
	3. Stitch with no space from the edges 4. Non-observance of advices after surgery	
7	Which technique is recommended to decrease the post-surgery pain?	
	1. Prescription of sedatives with short half-life one hour before surgery	Dental specialist 7(100.0)
	2. Prescription of sedatives with long half-life one hour before surgery	General dentist 62(80.0)
	3. Prescription of ibuprofen 400 half an hour before surgery 4. Prescription of ibuprofen 400 half immediately after surgery	
8	Which of the following has less pain after work?	
	1. Root canal therapy of anterior teeth	Dental specialist 4 (57.1)
	2. Root canal therapy of posterior teeth	General dentist 13(40.0)
	3. Retreatment 4. Periradicular surgery	

Hull et al. (4) investigated the endodontic therapy patterns in Washington and reported 78% of endodontics, 15.5% of general dentists and 6.6% of other specialists performed periradicular surgery. Although general dentists, that are appropriately trained, and other specialists may carry out periradicular surgery, most techniques and scientific materials about periradicular surgery have expanded owing to endodontists.

In the present study, the knowledge of dental specialists (85%) was higher than that of general dentists (48%) in terms of root cutting angle from the biological viewpoint. The root end was cut with 45° angle for a long time, but

recent studies as well as microscopic analyses indicate that 90° cut results in a more precise remounting and improvement of flap. Biologically point of view, the most appropriate cutting angle is the root end perpendicular to the longitudinal axis of tooth. Vertical cutting from anatomical apex most probably includes all apical branches of the tooth, and by increasing the cutting angle, the number of dentinal tubules associated with periradicular area and root canal system will remarkably increase. The expansion of the prepared hole at the root end is easier if the root cut is perpendicular to the longitudinal axis of the tooth. This may decrease the root

breakage and provide a better environment for apical improvement (5-6).

The substances used for filling the root end should easily mold, create a good seal, have a suitable tissue tolerance and be minimally affected by humidity. Nowadays Mineral Trioxide Aggregate (MTA) is the best choice for root end filling. However, many dentists use amalgam, but previous studies conducted over a decade have indicated that using amalgam has a weak prognosis followed by maximum success of 54%, while using MTA has indicated the success rate of 98% in previous studies. Thus, it is recommended to use MTA as the first priority and use amalgam in case MTA is not available (5, 7).

In the present study 79% of the participants reported they had not previously undergone periradicular surgery. The majority of them reported lack of skill (33%), lack of knowledge (23%) and not being cost-effective (22%) as the reasons for using this surgery. Most of the general dentists asserted lack of skill for not doing periradicular surgery. The dentists should feel confident to do this therapy and talk to the patient about the advantages and disadvantages of this therapy. Generally, various factors such as treatment cost, proper prognosis about improvement, possible success or failure of therapy, patient and dentists' profit to carry out periradicular surgery, apart from the dentist's expertise, are considered essential to carry out this surgery (8-9).

Conclusion

The knowledge levels of dental specialists and general dentists were good and average, respectively.

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References

- Gutmann JL. Perspectives on root-end resection. *J Hist Dent.* 1999; 47(3): 135-136.
- Friedman S. Management of post-treatment endodontic disease: A current concept of case selection. *Aust Endod J.* 2000; 26(3): 104-109.
- Siqueira JF, Jr. Aetiology of root canal treatment failure: why well-treated teeth can fail. *Int Endod J.* 2001; 34(1):1-10.
- Hull TE, Robertson PB, Steiner JC, del Aguila MA. Patterns of endodontic care for a Washington state population. *J Endod.* 2003; 29(9): 553-556.
- Rahbaran S, Gilthorpe MS, Harrison SD, Gulabivala K. Comparison of clinical outcome of periapical surgery in endodontic and oral surgery units of a teaching dental hospital: a retrospective study. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod.* 2001; 91(6):700-709.
- Sauveur G, Boccara E, Colon P, Sobel M, Boucher Y. A photoelastometric analysis of stress induced by root-end resection. *J Endod.* 1998; 24(11): 740-733.
- Niederman R, Theodosopoulou JN. A systematic review of in vivo retrograde obturation materials. *Int Endod J.* 2003; 36(9): 577-585.
- Pissiotis E, Sapounas G, Spangberg LS. Silver glass ionomer cement as a retrograde filling material: A study in vitro. *J Endod.* 1991; 17(5): 225-229.
- Chong BS, Owadally ID, Pitt Ford TR, Wilson RF. Cytotoxicity of potential retrograde root-filling materials. *Endod Dent Traumatol.* 1994; 10(3): 129-133.
- Bernstein SD, Horowitz AJ, Man M, Wu H, Foran D, Vena DA et al. Outcomes of endodontic therapy in general practice: A study by the Practitioners Engaged in Applied Research and Learning Network. *J Am Dent Assoc.* 2012; 143(5): 478-487.
- Cohen S, Burns RC, Hargreaves KM, Berman LH. *Pathways of the pulp*: Elsevier Mosby; 2006.
- Mahdipour M, Taghavi Zenouz A, Gholizadeh N. Knowledge and Attitude of Dental Practitioners in Ta-briz Regarding Infection Control Procedures. *J Dent Res Dent Clin Dent Prospects.* 2007; 1(3): 103-107.
- Gutierrez JL, Bagan JV, Bascones A, Llamas R, Llana J, Morales A, et al. Consensus document on the use of antibiotic prophylaxis in dental surgery and procedures. *Med Oral Patol Oral Cir Bucal.* 2006; 11(2): E188-205.
- Aps JK. Flemish general dental practitioner's knowledge of dental radiology. *Dentomaxillofac Radiol.* 2010; 39(2): 113-118.
- Su Y, Wang C, Ye L. Healing rate and post-obturation pain of single-versus multiple-visit endodontic treatment for infected root canals: a systematic review. *J Endod.* 2011; 37(2): 125-132.
- Ince B, Ercan E, Dalli M, Dulgergil CT, Zorba YO, Colak H. Incidence of postoperative pain after single- and multi-visit endodontic treatment in teeth with vital and non-vital pulp. *Eur J Dent.* 2009; 3(4): 273-279.
- K B. Trial suggests no difference between single-visit and two-visit root canal treatment. *Evid Based Dent.* 2013; 14(2): 48.