



Research Article

Preferred Treatment Option among Patients Attending a Tertiary Restorative Clinic for Irreversible Pulpal Damage

AO Arigbode* and AU Umanah

Department of Restorative Dentistry, University of Port Harcourt, Rivers State, Nigeria

*Corresponding author: AO Arigbode, Department of Restorative Dentistry, Faculty of Dentistry, College of Health Sciences, University of Port Harcourt, Port Harcourt, Rivers State, Nigeria, Tel: +2347055736436; E-mail: arisabbey@gmail.com

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Abstract

Background: The usual treatment for irreversible pulp damage is root canal therapy (RCT), but extraction may also be recommended by the clinician or demanded by the patient for some reasons. The aims of this study were to determine the level of rejection of RCT, the level of demand for tooth extraction, to ascertain the reasons for the choice of treatment and to identify the teeth usually involved with rejection.

Materials and Methods: This was a cross-sectional study conducted among consenting adult patients presenting with Caries and/ or irreversible pulpal damage in the Conservation clinic of University of Port Harcourt Teaching Hospital. Data was collected through clinical examination and structured anonymous questionnaire. Socio-demographic variables, preferred mode of treatment, reasons for the choice and the teeth involved were collated. Summary statistics was generated.

Results: There were two hundred and thirty-four patients, out of which 145 (62.0%) were females. The mean age was 30.1 years \pm 12.0. RCT was recommended for 168 individuals out of which 56 (33.3%) opted for extraction. Those who agreed to do RCT wanted to preserve their natural tooth. Acceptability of RCT was more with the upper first premolar and central incisors while demand for extraction was more with the first and second molars. Cost of RCT was the strongest reason for demanding extraction followed by time factor.

Conclusion: One-third of the patients who required RCT opted for extraction. Aesthetics and financial factors appeared to strongly influence this decision.

Key Words:

Pulpal damage; Root canal therapy; incisors; Molars

Introduction

Oral health is an important component of systemic health through its impact on quality of life [1] and dentists are expected to play an important role as gate keepers with respect to their patients' systemic

health [2]. Common dental complaints and cause of irreversible pulpal damage is related to dental caries [3-5]. Advance dental caries can progress from the enamel through the dentine to the pulp chamber eliciting in the process severe toothache. If no restorative intervention is undertaken at this stage, necrosis of the pulp eventually occurs. Inflammation can then spread around the tooth apex causing periapical periodontitis. Other sequelae like abscess, granuloma and cyst may also developed [3-5]. Apart from advance caries, other conditions that may cause irreversible pulpal damage or necessitate root canal therapy (RCT) include: traumatic injuries; fractures to the tooth; dens invaginatus or iatrogenic pulp exposure [6].

The usual treatment for irreversible pulp damage is RCT, but extraction may also be recommended by the clinician or demanded by the patient for some reasons. RCT may be single or multiple visits, nonsurgical or surgical [6,7]. The objectives of treatment include pulpal extirpation, microbial elimination, cleansing of the root canal walls and removal of all debris, and obturation of the root canals [7]. Extraction is regarded by most clinicians as the treatment of last resort, unless the patient cannot bear the cost of the endodontic treatment and subsequent fixed restoration [4-7]. However, some patients may opt for extraction of a tooth recommended for RCT on the grounds of the relatively longer time involved in endodontic treatment, higher cost, fear of RCT and/ or fear of possible failure [8]. Tooth extraction was rarely considered by clinicians in the past; perhaps, because of the fear that dental anarchy may occur when a tooth is lost and also because of the belief that full complement of teeth is required for acceptable oral functions [9-12].

Currently, there is concrete evidence to prove that the total number of occluding pairs of teeth is more important than the total number of teeth present in the oral cavity [11,12] and tilting and supra eruption which tend to occur after a tooth is lost do not always occur to appreciable degree [9-12]. This makes extraction of a tooth with irreversible pulpal damage worthy of consideration sometimes, particularly among the older adults, when there are no occluding pairs, where molars are involved, when such requests are strongly made, when there is inability to maintain good oral hygiene and when oral function would not be impaired. Many patients are increasingly presenting with teeth whose pulp had been irreversibly damaged and dentists are confronted with the dilemma of whether to undertake RCT or consider exodontias [6,7]. Furthermore, the predictable and high success rate achieved in implant prosthodontics in the recent past has widened the treatment options available for the treatment of teeth that are considered compromised. When a dentist is confronted with a posterior tooth whose pulp is irreversibly damaged, he is duty bound to professionally educate the patient about all the treatment options available and to assist the patient to make a wise decision [4,7].

The patient's preferred treatment option must be taken into cognizance before a final decision is made. Otherwise, the patient may not comply with postoperative instructions or honor recall visits if he is not motivated to receive the treatment option recommended by the dentist. Previous surveys on clinicians' and patients' preferred treatment option for teeth with irreversibly damaged pulp, though scanty, revealed gross inconsistencies. The aims of this study were to determine the level of rejection of RCT, the level of demand for tooth extraction and to ascertain the reasons responsible for the choice of treatment among our patients and to identify the teeth usually involved with rejection.

Materials and Methods

This was a clinic based cross-sectional study conducted among patients who were 17 years old and above attending the Conservative clinic of University of Port Harcourt Teaching Hospital, Port Harcourt for RCT and/or tooth filling. A thorough clinical history was taken and the patients were all examined on a dental chair using caries probe, mouth mirror, tweezers and cotton wool. The light attached to the dental chair was employed for illumination. Intra-oral radiography and pulp vitality test were done where appropriate. Treatment plan was drawn up and the teeth for filling and those for RCTs were clearly mapped out. The treatment options for teeth with irreversibly damaged pulp, for instance, RCT with or without fixed restoration and extraction with or without prosthetic rehabilitation and the charges involved were presented to the patients in details and dispassionately. Following an exhaustive interaction with the patient, the patient was allowed to make a final selection.

At the end of the treatment planning process, the study and its objectives was introduced to the patients; thereafter, they were invited to participate with the assurance that no penalty would be administered in any form if consent is not given. Those who agreed to participate were served a structured anonymous and pre-tested questionnaire for data collection. Patients who did not give their consent and cases where RCT was contraindicated were excluded. Those who did not fill the questionnaire as appropriate were also excluded from the study. Those who required only fillings were asked to limit their response to relevant questionnaire items. The following data were requested from the patients: age; sex; profession; history of RCT; preferred treatment option between RCT and extraction (for those requiring RCT) and the reason for the selection and/ or rejection. The cause of the pulpal damage whether it was caries related or not and the tooth involved were noted by the clinician from the case folder.

Data Management

SPSS for Windows version 15.0, (SPSS Inc Chicago Illinois, USA) was used to generate summary statistics.

Results

There were two hundred and thirty-four participants, out of which eighty-nine (38.0%) were males and 145 (62.0%) were females. The mean age was 30.1years \pm 12.0. Six participants (2.6%) had primary education, 40 (17.1%) had secondary education while the remaining 188 (80.3%) had tertiary education. One hundred and six participants (45.3%), representing the majority were students, eighty-nine (38.0%) were civil servants and the remaining thirty-nine (16.7%) was self-employed.

Out of the two hundred and thirty-four patients that participated, 168 (71.8%) were referred to Conservative clinic for RCT or RCT and filling while 66 (28.2%) patients were referred for tooth filling alone. Out of the 168 (71.8%) individuals recommended for RCT, only 112(66.7%) agreed to have the treatment while 56 (33.3%) opted for extraction. Those who agreed to have RCT expressed their desire and willingness to preserve their natural tooth.

The distribution of teeth recommended for RCT in the upper arch and the level of compliance is shown in figure 1. Apart from the upper lateral incisors and canine where only two teeth were involved each, the level of compliance was more with the upper first premolar

(84.6%) and upper central incisors (76.7%) while the worst compliance was recorded where the upper first (47.1%) and second molars (57.1%) were involved. In the lower arch however, between the lower first and second molars, which were the two most commonly recommended teeth for RCT, the worst compliance (47.6%) was recorded with the second molar (Figure 2).

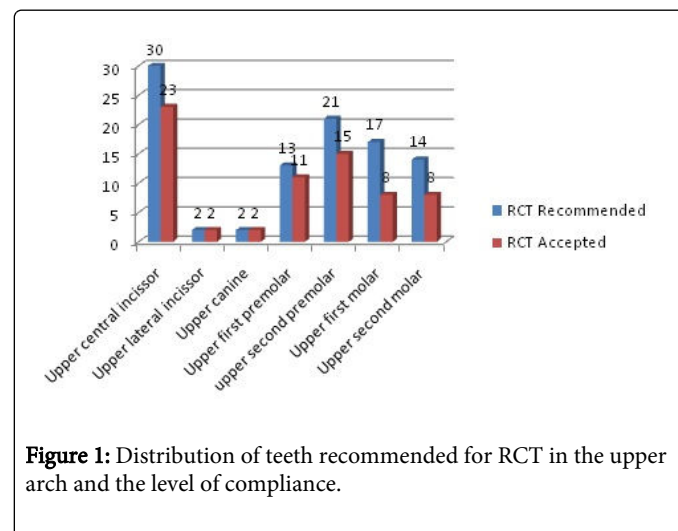


Figure 1: Distribution of teeth recommended for RCT in the upper arch and the level of compliance.

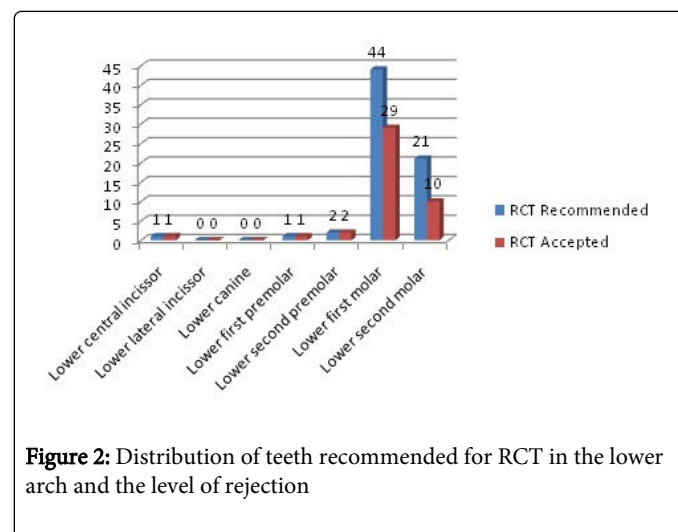


Figure 2: Distribution of teeth recommended for RCT in the lower arch and the level of rejection

Only 14 (6.0%) of the 234 patients who participated in the study reported that they have had RCT before. Out of this 14, 8 had the RCT on molar teeth, 3 had the treatment on incisors while the remaining three involved premolars. Unlike in the anterior teeth, the irreversible pulpal damage in the posterior teeth was related to caries.

Thirty-six (64.3%) out of the 56 patients who rejected RCT and opted for extraction did so for financial reason. Eleven of these patients (19.6%) opted for extraction on account of time factor. Nine patients (16.1%) believed that RCT could fail and the toothache would recur and therefore opted for tooth extraction. Two patients (3.6%) considered extraction as less stressful and one patient (1.8%) opted for extraction on medical ground. A few patients gave more than one reason for preferring tooth extraction.

Discussion

Most of the participants (62.0%) in this study were females. This agrees with gender distribution in previous hospital based epidemiological studies [13-15]. The average age of the patients involved in this survey (30.1 years) is not far from the 40 years reported in a similar study [16]. Our dental centre as previously reported is patronized majorly by students because it is located near a University campus.

Our result as previously reported by other investigators [16,17] shows that endodontic treatment is usually undertaken as a result of sequelae of dental caries. Other reasons for treatment included restorative considerations, retreatment, and trauma [16,17]. Regarding prevalence of RCT, 6.0% of the participants reported that they have had RCT before. The number of root filling they had was, however, not evaluated. Gulsahi et al, [18] radiographically examined the teeth of 1000 patients and reported that 3.3% of their teeth were root filled. According to Boykin et al, [17] endodontic services constituted approximately 2% of all dental procedures performed. Our experience shows that endodontics is the second most common restorative treatment in our centre [15].

Most of the patients in our study agreed to have RCT because they desired to retain their natural dentition. This finding supports a previous publication in this regard [6]. Our result also shows that some other patients preferred extraction to RCT. This is also in line with previous reports on this subject [6]. Regarding the reason for the choice of RCT, a major and long recognized reason why a patient may opt for a particular treatment and reject others is cost of treatment. It is therefore not surprising that most of our patients rejected RCT on financial ground. Generally, clinicians rate RCT high and above extraction when the procedure is feasible and straightforward [17]. However, when a patient could not afford the treatment, it becomes a valuable alternative and treatment of last resort [19]. Another reason indicated by our patients for preferring extraction to RCT is the time factor. Extraction is usually completed at a visit whereas infected root canal may involve multiple visits before the treatment is completed. Several recall visits may not be agreeable to some busy individuals. Patients frequently inquire about the length of time required to complete treatment to enable them make informed decision [7,19-21].

Our result shows that the number of people who indicated that they have had RCT in the past is low. This number is grossly inadequate to have influenced the outcome of treatment preference in our study. A previous study [7] suggests that patients who have had previous experience in RCT were favorably disposed to having the procedure again. It is also not clear at the moment whether the reason for requesting for extraction by some of the patient is due to fear of RCT. Fear of the procedure was reported by Christensen [7]. Treatment preference varies among patients and clinicians [23,24]. When choosing the appropriate treatment for patients therefore, it should be kept in mind that every patient and situation is unique [25]. It has been stated that few patients who may be reluctant to accept endodontic treatment would heartily accept it after a painstaking dental education. The long-term interest of the patient rather than an overambitious desire to retain teeth at all costs should, however, be the standard [8].

Posterior teeth are far more prone to and affected by caries [5,16]. This account for the reason why they suffer more irreversible pulpal damage than anterior teeth as evident in our finding. Since esthetics is a strong motivating factor for tooth retention and or replacement [22],

it is therefore not surprising that patients tend to conserve the central incisors and first premolars-the most anterior of the posterior teeth and would readily let go the molars that play little or no part in dento-facial aesthetics. The need to concentrate more conservative efforts on premolars rather than on molars on the part of the clinicians is well discussed in the literature under shorten dental arch concept [9,10].

Conclusion

One-third of the patients who required RCT opted for extraction. Aesthetics, financial and time factors appeared to strongly influence this decision. It is important to involve patients in treatment planning process for optimal result.

References

1. Boykin MJ, Gilbert GH, Tilashalski KR, Litaker MS (2009) Racial differences in baseline treatment preference as predictors of receiving a dental extraction versus root canal therapy during 48 months of follow-up. *J Public Health Dent* 69: 41-47.
2. Mindiola MJ, Mickel AK, Sami C, Jones JJ, Lalumandier JA, et al. (2006) Endodontic treatment in an American Indian population: a 10-year retrospective study. *J Endod* 32: 828-832.
3. Holt R, Roberts G, Scully C (2001) Dental damage, sequelae, and prevention. *West J Med* 174: 288-290.
4. Ayna B, Ayna E, Celenk S (2010) Endodontic and prosthetic treatment of teeth with periapical lesions in a 16-year-old-girl. *J Appl Oral Sci* 18: 201-206.
5. Bjorndal L, Laustsen MH, Reit C (2006) Root canal treatment in Denmark is most often carried out in carious vital molar teeth and retreatments are rare. *Int Endod J* 39: 785-790.
6. Nejat R, Collins F (2006) Implants or Endodontics: Alternative Treatments?.
7. Christensen GJ (2006) Implant therapy versus endodontic therapy. *J Am Dent Assoc* 137: 1440-1443.
8. Kidd EAM, Smith BGN and Watson TF (2003) *Pickard's Manual of operative dentistry*. (8th edtn), Oxford university press, oxford, UK.
9. Kanno T, Carlsson GE (2006) A review of the shortened dental arch concept focusing on the work by the Käyser/Nijmegen group. *J Oral Rehabil* 33: 850-862.
10. Sarita PT, Witter DJ, Kreulen CM, Van't Hof MA, Creugers NH (2003) Chewing ability of subjects with shortened dental arches. *Community Dent Oral Epidemiol* 31: 328-334.
11. Lin HC, Corbet EF, Lo EC, Zhang HG (2001) Tooth loss, occluding pairs, and prosthetic status of Chinese adults. *J Dent Res* 80: 1491-1495.
12. Battistuzzi P, Käyser A, Kanters N (1987) Partial edentulism, prosthetic treatment and oral function in a Dutch population. *J Oral Rehabil* 14: 549-555.
13. Kutesa A, Mwanika A, Wandera M (2005) Pattern of dental caries in Mulago Dental School clinic, Uganda. *Afr Health Sci* 5: 65-68.
14. Brennan DS, Luzzi L, Roberts-Thomson KF (2008) Dental service patterns among private and public adult patients in Australia. *BMC Health Serv Res* 8: 1.
15. Arigbede AO, Omitola OG, Gbuje DC (2011) Pattern of restorative dental care in the dental clinic of University of Port Harcourt Teaching Hospital. *Nig Qt J Hosp Med* 21: 236-240.

16. Saad AY, Clem WH (1988) An evaluation of etiologic factors in 382 patients treated in a postgraduate endodontic program. *Oral Surg Oral Med Oral Pathol* 65: 91-93.
17. Boykin MJ, Gilbert GH, Tilashalski KR, Shelton BJ (2003) Incidence of endodontic treatment: a 48-month prospective study. *J Endod* 29: 806-809.
18. Gulsahi K, Gulsahi A, Ungor M, Genc Y (2008) Frequency of root-filled teeth and prevalence of apical periodontitis in an adult Turkish population. *Int Endod J* 41: 78-85.
19. Cobankara FK, Belli S (2011) An Important Dilemma in Treatment Planning: Implant or Endodontic Therapy? *In-Tech Shangahi, Croatia*.
20. Cohn SA (2005) Treatment choices for negative outcomes with non-surgical root canal treatment: non-surgical retreatment vs. surgical retreatment vs. implants. *Endodontic Topics* 11: 4-24.
21. O'Neal RB, Butler BL (2002) Restoration or implant placement: a growing treatment planning quandary. *Periodontol* 2000 30: 111-122.
22. Amet EM (2010) Management of unscheduled anterior tooth or prosthesis loss with extraction and immediate implant placement: a clinical report. *J Oral Implantol* 36: 209-217.
23. Morris MF, Kirkpatrick TC, Rutledge RE, Schindler WG (2009) Comparison of nonsurgical root canal treatment and single-tooth implants. *J Endod* 35: 1325-1330.
24. Di Fiore PM, Tam L, Thai HT, Hittelman E, Norman RG (2008) Retention of teeth versus extraction and implant placement: treatment preferences of dental faculty and dental students. *J Dent Educ* 72: 352-358.
25. Kiqbal M, Kim S (2008) A review of factors influencing treatment planning decisions of single-tooth implants versus preserving the natural teeth with nonsurgical endodontic therapy. *J Endod* 34: 519-529.