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Research Article

Reasons For Root Canal Treatment In The Department of Restorative Dentistry Clinic of College of Medical Sciences, University of Maiduguri/University of Maiduguri Teaching Hostpital Maiduguri, Nigeria

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Abstract: ***Objective:*** To determine the reasons for root canal treatment carried out in the department of Restorative Dentistry of the University of Maiduguri Teaching Hospital and the College of Medical Sciences, University of Maiduguri, Nigeria between July 2006 and June 2010. ***Material and Method:*** This is a longitudinal prospective study or treatment of patients to collate reasons given for root canal treatment. This was done by obtaining data directly from the patient during clerking which also include demographic data such as gender, age, occupation and other relevant information. ***Results:***The number of patients was 320 but there were 372 teeth treated for root canal treatment. 287 had one root canal treatment done, while 20 patients had 2 root canal treatment, 8 had 3 root canal treatment done, 5 patient had more than 3 root canal treatment. First molars were the most frequently treated teeth with 141 teeth treated while the mandible had greater number of first molar treated (90). 2nd Molar are equally distributed in the arches formed and they formed second largest of treated teeth while the central incisors had 61 cases with the maxilla the contributing 91% for the root canal treatment. Caries and irreversible pupils were the commonest reason given for carrying out root canal treatment (53.2%) while acute dento-alveolar abscess came a distant second with 13.2%. ***Conclusion:*** Irreversible pulpitis/caries with its sequelae is the most common reasons given for root canal treatment.

Keywords: Irreversible, Pulpitis, Caries, Dento-alveolar Abscess, Root Canal Treatment

INTRODUCTION

Dental caries is an infectious disease that has consequent sequelae of irreversible pulpitis, dento-alveolar abscess culminating in cellutitis of different grades if the progression is not checked. Many countries in the world has high prevalence of dental caries but in the last 3 or 4 decades, advance interventions had seen dental caries reducing steadily, however, there is increasing prevalence in dental caries in the developing countries. What is observed in the developed countries are retreatment of old dental caries with replacement of old restoration (Mustafa, M. *et al.*, 2016; & Lal, U. M. A. I. S. H. *et al.*, 2003).

With the advent of endodontics dental caries and irreversible pulpitis leading to its sequelae are being contained and therefore less extraction of affected teeth. Today endodontic treatment associated with improved techniques and sophisticated technology associated with it have become integral part of success exhibited by modern and improved endodontic techniques (Molven, O., & Halse, A. 1988; & Sjögren, U. *et al.*, 1997).

Root canal treatment is frequently practiced in most clinics in Europe and America but studies conducted in Asia and Africa has been very few. The technical aim of endodontic treatment is to almost remove infection from the canals of the teeth, observe good instrumentation (Roux, D. *et al.*, 2002) and to seal the root canal hermetically to prevent interradicular microorganism and their toxins from reaching the periapical tissues (Lal, U. M. A. I. S. H. *et al.*, 2003).

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Information on reasons for treatment in a community is necessary to understand the disease pattern, determine cost effectiveness of a treatment, performance of previous treatment and determining and devising future facilities based on the treatment need (Mustafa, M. *et al.,* 2016; & Lal, U. M. A. I. S. H. *et al.,* 2003).

In developing countries very, few studies have been conducted concerning the reasons for and pattern of root treatment especially n Asia, Africa (Al Athel, M., & Khier, S. 2003; AlYahya, A. S. *et al.,* 1989; Al-Negrish, A. R. S. 2002; Lupi-Pegurier, L. *et al.,* 2002; Dugas, N. N. *et al.,* 2003; & Umanah, A.U. *et al.,* 2012).

The aim of this study was to determine the reasons for root canal treatment in the Restorative Department of the University Teaching Hospital, Maiduguri, North East of Nigeria. Moreso, the Dental School of College of Medical Sciences, University of Maiduguri was the first Dental School in the North East of Nigeria and the only one in the Northeastern part of Nigeria. The Northern Nigeria is consisting of 19 states while the south consists of 17 states. The first set of clinical students was admitted into the clinical year in 2006 and they graduated in 2010.

MATERIAL AND METHODS

This is a longitudinal study of patients attending the conservative dentistry clinic where endodontic treatment was performed. As a longitudinal study, no special questionnaire was needed but a good history and examination. A periapical X-ray are compulsory in order to arrive at diagnosis. The consultant/specialist was the only one involved in the treatment procedure because it was a pioneer dental school with no resident doctor for the first 3 years the study was conducted because the first set of graduates of the Dental School did not finish until 2010. All the required demographics are recorded in the day book and also the study workbook. The data collected reflects the age, sex site of tooth, the diagnosis and work done on that tooth and whether it was a single or multiple visit.

The number of patients between 2006-2010 which the study lasted were 320 but there are 20 patients who had 2 root canal treatments, 8 had 3 root canal treatment more than 3 tooth canal treatment were carried out on 5 patients.

RESULTS

This study involves 320 patients who had 372 root canal treatments between July 2006 and June 2010. This pilot study ended to coincide with the graduation of the 1st set of graduating students and incidentally the beginning of insurgency in the North East of Nigeria.

Male patients were 35.5% while 64.5% were females during the 4years period from July 2006 to June 2010 and all the patients were adult between the ages of 18years 55 years and all patients were Nigerians. The patients were treated by single operators between that period. Table I.

Table I: Distribution Of Teeth According To Tooth Type And By Arch Total Number Of Patients Were 320 With The Total Number Of Teeth Treated Were 372.

TYPE OF TEETH	MAXILLA	MANDIBLE	TOTAL	%
Central Incisors	56	5	61	16.4
Lateral incisors	9	1	10	2.7
Canine	-	-	-	-
1st premolars	14	15	29	7.8
2nd Premolars	27	32	59	15.9
1st Molars	51	90	141	37.9
2nd Molars	34	33	67	18.0
3rd Molars	-	5	5	1.3
Total	191	181	372	100%
	51.3%	48.7%	100%	

The reasons given for the root canal treatment were irreversible pulpitis which amounted to 198 (53.2%) out of 372 root treated tooth, while acute dentoalveolar abscess was 46 (13.2%) Fractured/Dislodged Restoration 46 (12.44%) Fractured Crown was 45 (12.1%), Recurrent caries was 31 (8.3%) while Re-RCT which was as a result of failed RCT was 2 and Peri-endo lesion was 1 which accounted for 0.5% and 0.3% respectively. There was no single iatrogenic causes (Table II).

Table II: Gender Distribution

YEAR	MALE	FEMALE	TOTAL	% of Total
2006/2007	30	52	82	22.04
2007/2008	48	72	120	32.26
2008/2009	32	58	90	24.19
2009/2010	22	58	80	21.51
	132	240	372	100.00

Table III shows the general distribution of teeth treated between 2006 and 2010 when the study lasted, while Table IV is the summary. There were 191 root treatment done in the maxilla, while 181 was done on mandibular teeth accounting for 51.3% and 48.7% respectively.

Table III: Criteria for Root Treatment

CARIES/IRREVERSIBLE PULPITIS	**198**	**53.2%**
ACUTE DENTOALVEOLAR ABSCESS	49	13.2%
RE-RCT	2	0.5%
FRACTURE CROWN	45	12.1%
PERI-ENDO LEISON	1	0.3%
FRACTURED/DISLODGED RESTORATION	46	12.4%
IATROGENIC PREPARATION	-	-
RECURRENT CARIES	31	8.3%
TOTAL	372	100%

For total number of teeth, first molars accounted for 37.9% 2nd premolar was next with 67 teeth (18.09) while central incisors came next with 61 teeth (16.4%), first premolar were 67 teeth (18.0%) while central incisors came next with 61 teeth (16.4%), 2nd premolars were 59 (15.9%) with first premolar, lateral incisors and 3rd molars came in a decreasing order of 29 (7.8%), 10 (2.7%) and 5 (1.3%) teeth respectively.

The distribution of root canal treated in the maxilla showed that the tooth most often treated in this study is central incisors (56) followed by first molars, second molar, second premolars, first premolars and lateral incisors in that order while canine and 3rd molars were not involved in root canal procedures.

Table IV: Distribution of Root Canal Treatment According To the Teeth in the Arch Year on Year Basis

		Central	**Lateral**	**Canine**	**1st premolar**	**2nd premolar**	**1st molar**	**2nd molar**	**3rd molar**	**Total**
	MAXILLA	10	1	-	2	9	10	8	-	40
2006/2007	MANDIBLE	-	-	-	4	8	23	6	1	42
	Sub Total	10	1	-	6	17	33	14	1	82
	MAXILLA	18	2	-	5	8	16	11	-	60
2007/2008	MANDIBLE	2	-	-	5	10	28	13	2	60
	Sub Total	20	2	-	10	18	44	24	2	120
	MAXILLA	14	3	-	3	5	13	08	-	46
2008/2009	MANDIBLE	1	-	-	4	8	22	08	1	44
	Sub Total	15	3	-	7	13	35	16	1	90
	MAXILLA	14	3	-	4	5	12	07	-	45
2009/2010	MANDIBLE	2	1	-	2	6	17	06	1	35
	Sub Total	16	4	-	6	11	29	13	1	80
	TOTAL	**61**	**10**	**-**	**29**	**59**	**141**	**67**	**5**	**372**

Table V. Summary Of Tooth Type

Maxilla	**No of teeth**	**% in both Arches**	**Arch % of Total In The Study**	
Central incisors	56		5	8.2%
Lateral incisors	9	90	1	10.0%
CANINE				
1ST PREMOLAR	14	48.3	15	51.7%
2ND PREMOLARS	27	45.8	2	54.2%
1 ST MOLARS	51	36.2%	90	63.8%
2ND MOLARS	34	50.7%	33	49.3%
3 RD MOLARS			5	100%
TOTAL	191		181	

Table IV also showed that in the maxilla central incisors were the most treated by root canal treatment amounting to 56 (29.3%), followed by first molar which was 5 1 (26.7%), 2nd molar had RCT done in 34 teeth (17.8%), 2nd premolar 27 (14.1 0/0), 1st premolar 14 (7.3%) and lateral incisors the least treated in that arch with 9 RCT done which accounts for only 4.7% of the teeth that had RCT in the maxilla.

However, in the mandible RCT was done in 90 (49.7%), second molar 33 (18.2%), second premolar was 32 (17.7%), first premolar 15 (8.3%) central incisors and third molar were 5 each (2.8%) respectively while RCT was done on one Lateral incisor which accounted for 0.5%.

DISCUSSION

This study was a prospective longitudinal study carried out in the dental clinic of a University Teaching Hospital between July 2006 and June 2010.

The determination date was determined by three (3) factors namely:

- The first set of the University dental students graduated at the end of 2009/2010 session and therefore the influence of the new graduates on the outcome of the result of the study was eliminated.
- It was at the start of the insurgency and the effect of that on the result of the study was to be avoided.
- The study was to be the result of a single operator who is a consultant and specialist in Restorative Dentistry.

The gender distribution of the study showed that more female had RCT done on their teeth. 240 (64.5%) for female and 132 (35.5%) for males just like some other studies (Saad, A. Y., & Clem, W. H. 1988; Cyr. G. *et al.,* 1985). unlike in some study that had almost equal gender (Lal, U. M. A. I. S. H. *et al.,* 2003) whilst other study reported male preponderance (Mustafa, M. *et al.,* 2016; Al-Negrish, A. R. S. 2002 & Spolsky, V.W. 1981). In the case of one of the studies that had male preponderance, the dental clinics was meant for male patients (Al Athel, M., & Khier, S. 2003; AlYahya, A. S. *et al.,* 1989; & Al-Negrish, A. R. S. 2002) Carious lesion leading to irreversible pulpitis was the commonest cause of RCT in this environment like other studies (Saad, A. Y., & Clem, W. H. 1988; Cyr. G. *et al.,* 1985; & Serene, T.P., & Spolsky, V.W. 1981). Acute dentoalveolar abscess was the next commonest reason for RCT accounting for 13.2% as it has been reported that in this environment, patients do not report to the clinic until late stage of dental pain after they must have undergone self medication (Umanah, A.U. *et al.,* 2012; & Spolsky, V.W. 1981), so it was not unexpected that the sequelae of pulpitis is playing out here in this study. Most other studies did not report acute dentoalveolar absiess except another study conducted in Nigeria (Umanah, A.U. *et al.,* 2012) but was not as high as this study. It may be because there were only 2 Government Dental Clinics in Maiduguri(the University Teaching & the State Government Dental clinic) serving almost 20 local government areas. Fractured restoration including dislodged restoration accounted for 12.4% of all restorations but fractured crown was higher in this study which formed an insignificant portion of those various study conducted in Nigeria (Umanah, A.U. *et al.,* 2012). The higher incidence of trauma to the teeth resulting in root canal treatment may be as a result of preponderance of motorbike as a means of public/commercial transportation in the metropolis coupled withthe fact that the insurgency started late in the period of the study. A period which marked the beginning of Boko Haram insurgency in the North Eastern part of Nigeria with the focal point in Maiduguri.

The Maxilla had the most teeth treated for root canal treatment with 191 (51.3%) while the mandible had 181 (48.7%). The central incissor had the most treated tooth in the maxilla and this may be attributed to the conspicous location of the tooth so the patient cannot afford to lose the tooth becasue of aesthetics.

The most treated teeth when both arches are considered is the first molar which is almost the first permanent tooth to erupt at the same time with the central incisors. The occlusal fissures and pits also make it more susceptible to carious lesion than the anterior teeth. Conversely, no canine is involved in this study.

CONCLUSION

Caries and its Sequelae when it is inadequately treated or not treated at all is the most common reason given in this study to do a root canal treatment. The most treated tooth in the mandible is the first molar, whereas, canine and maxillary 3rd molar was not seen at all for root canal treatment in this study Mandibular 3rd molar was very few which may be attributed to the teeth not having adequate access, reluctance of the patient to retain the teeth, multiple visits involved and difficulty in accessing the canals by the operator and lack of necessary mechanical and ultrasonic tools, instruments and accessories employed in such circumstances.

REFERENCES

1. Al Athel, M., & Khier, S. (2003). Reasons for root canal treatment in students' and interns' clinics in college of dentistry, king Saud University, Saudi Arabia. *J. Pak. Dent. Assoc*, *12*(1), 33-36.
2. Al-Negrish, A. R. S. (2002). Incidence and distribution of root canal treatment in the dentition

among a Jordanian sub population. *International dental journal*, *52*(3), 125-129.

3. AlYahya, A. S., Selirn, H. A., & Guile, E. E. (1989). The etiology and symptoms of endodontic cases treated in a university clinic in Saudi Arabia. *Saudi Dental Journal*, *1*(3), 86-90.
4. Cyr. G., Arvis, L., & Safari, K. (1985). Major etiologic factors leading to root canal procedures. J.Endodon (abstract No 31), 11-145
5. Dugas, N. N., Lawrence, H. P., Teplitsky, P. E., Pharoah, M. J., & Friedman, S. (2003). Periapical health and treatment quality assessment of root-filled teeth in two Canadian populations. *International endodontic journal*, *36*(3), 181-192.
6. Lal, U. M. A. I. S. H., Abidi, S. Y. A., & Rashid, S. A. Q. I. B. (2003). Reasons for root canal treatment in the department of endodontics of Fatima Jinnah Dental College hospital, Karachi. *Pak Oral Dental J Dec*, *23*, 151-152.
7. Lupi-Pegurier, L., Bertrand, M. F., Muller-Bolla, M., Rocca, J. P., & Bolla, M. (2002). Periapical status, prevalence and quality of endodontic treatment in an adult French population. *International Endodontic Journal*, *35*(8), 690-697.
8. Molven, O., & Halse, A. (1988). Success rates for gutta-percha and Kloroperka N-Ø root fillings made by undergraduate students: radiographic findings after 10–17 years. *International endodontic journal*, *21*(4), 243-250.
9. Mustafa, M., Mahmood, S., & Al Jeaidi, Z. A. (2016). An Analysis of Root Canal Treatments in Student Clinics of a Saudi University. *JPDA*, *25*(02), 66.
10. Roux, D., Doméjean-Orliaguet, S., & Saade, M. (2002). Leakage associated with intermediate restorative material and glass-ionomer cement retrograde fillings: A human and sheep teeth comparison with 2 different aging procedures. *Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology, and Endodontology*, *93*(1), 81-87.
11. Saad, A. Y., & Clem, W. H. (1988). An evaluation of etiologic factors in 382 patients treated in a postgraduate endodontic program. *Oral Surgery, Oral Medicine, Oral Pathology*, *65*(1), 91-93.
12. Serene, T.P., & Spolsky, V.W. (1981). Frequency of endodontic therapy in a dental school setting. *J. Endodon, 7,* 385-387
13. Sjögren, U., Figdor, D., Persson, S., & Sundqvist, G. (1997). Influence of infection at the time of root filling on the outcome of endodontic treatment of teeth with apical periodontitis. *International endodontic journal*, *30*(5), 297-306.
14. Umanah, A.U., Osagbemiro, B.B., & Arigbede, A.O. (2012). Pattern of demand for Endodontic Treaünent by Adult patients in Port-Harcourt, South-south Nigeria. *Journal of the West African College of Surgeons, 1*(3), 12-23