

Prevalence of Apical Cyst, Crowding and Edentulism in a Known Population and Their Treatment with Apicoectomy, Brackets and Fixed Prosthesis Respectively

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ABSTRACT

Background: This study was conducted to assess the Prevalence of Apical Cyst, Crowding and Edentulism in a Known Population and Their Treatment with Apicoectomy, Brackets and Fixed Prosthesis Respectively.

Material and methods: This study comprised of 50 subjects who underwent oral clinical examination. The study procedure had been explained to all the subjects and informed consent was taken from the subjects. 20 out of 50 subjects did not give consent and hence they had been excluded from the study. So overall sample size was 30. The prevalence of apical cyst, crowding and edentulism was assessed in this study. the findings had been recorded and tabulated. Also, the treatment plan of the conditions was also made. Statistical analysis was conducted using SPSS software.

Results: Apical cyst was seen in 16 subjects (53.3%). Edentulism and crowding were seen in 8 subjects (26.7%) and 6 subjects (20%), respectively. Group 1 comprised of 16 subjects who had apical cyst. Group 2 comprised of 8 subjects with edentulism and Group 3 comprised of 6 subjects with crowding. There were total 20 males and 10 females in this study. There were 11 males and 5 females with apical cyst. There were 4 males and 2 females who had crowding and there were 5 males and 3 females who had edentulism. Apicoectomy was performed in subjects with apical cyst. Fixed dentures were fabricated for the subjects with edentulism and orthodontic treatment with brackets was planned for those having crowding.

Conclusion: The most common condition in this study was apical cyst which was treated with apical surgery. Crowding and edentulism were treated with orthodontic treatment using brackets and fixed dentures.

1. INTRODUCTION

Radicular cysts represent the most prevalent odontogenic cystic lesions of inflammatory nature, affecting both the maxillary and mandibular alveolar bone.¹⁻³ The development of a radicular cyst is believed to be influenced by the proliferation and/or degeneration of the epithelial rest cells of Malassez, which are stimulated by an inflammatory response stemming from the pulpal necrosis of a non-vital tooth.⁴⁻⁶ Most apical cysts are asymptomatic and can develop gradually, often being discovered incidentally during routine X-ray examinations as a significant periapical radiolucency at the apex of one or more teeth. A more accurate diagnosis is obtained through histopathological analysis, which confirms the nature of the lesion as either a granuloma or a cyst.⁷

Edentulism refers to the condition of being edentulous, meaning the absence of natural teeth.⁸ Complete edentulism denotes an oral cavity devoid of any teeth. Sufficient dentition is crucial for overall well-being and quality of life. Edentulism represents a significant public health challenge for the elderly and has a notable impact on the delivery of primary care. This

condition is both devastating and irreversible, often regarded as the "ultimate indicator of disease burden in oral health." Individuals experiencing edentulism display a diverse array of physical variations and health issues. The loss of teeth can hinder mastication and speech, and may lead to aesthetic concerns, ultimately diminishing the quality of life.⁹

Crowding is a common orthodontic malocclusion with a strong hereditary tendency. It is caused by a variety of factors, including the impact of environmental and genetic factors on dental arch dimensions.¹⁰ Dental crowding is defined as an inconsistency between tooth size and arch dimension that results in malocclusion; it occurs because of a lack of coordination between tooth size and arch dimensions. The lower incisors are the teeth most frequently involved

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2. MATERIAL AND METHODS

This study comprised of 50 subjects who underwent oral clinical examination. The study procedure had been explained to all the subjects and informed consent was taken from the subjects. 20 out of 50 subjects did not give consent and hence they had been excluded from the study. So overall sample size was 30. The prevalence of apical cyst, crowding and edentulism was assessed in this study. the findings had been recorded and tabulated. Also, the treatment plan of the conditions was also made. Statistical analysis was conducted using SPSS software.

3. RESULTS

Table 1: Prevalence of apical cyst, crowding and edentulism.

Conditions	No. of cases	Percentage
Apical cyst	16	53.3
Edentulism	08	26.7
Crowding	06	20
Total	30	100

Apical cyst was seen in 16 subjects (53.3%). Edentulism and crowding were seen in 8 subjects (26.7%) and 6 subjects (20%), respectively.

Table 2: Group-wise distribution of subjects

Groups	Number of cases
Group 1 (Apical cyst)	16
Group 2 (Edentulism)	08
Group 3 (Crowding)	06
Total	30

Group 1 comprised of 16 subjects who had apical cyst. Group 2 comprised of 8 subjects with edentulism and Group 3 comprised of 6 subjects with crowding.

Table 3: Gender wise distribution of subjects

Gender	Number of cases of apical cyst	No. of cases of crowding	No. of cases of edentulism	Total
Males	11	4	5	20
Females	5	2	3	10
Total	16	6	8	30

There were total 20 males and 10 females in this study. There were 11 males and 5 females with apical cyst. There were 4 males and 2 females who had crowding and there were 5 males and 3 females who had edentulism.

Table 4: Treatment plan

Condition	Treatment
Apical cyst	Apicoectomy
Edentulism	Fixed Dentures
Crowding	Orthodontic treatment with brackets

Apicoectomy was performed in subjects with apical cyst. Fixed dentures were fabricated for the subjects with edentulism and orthodontic treatment with brackets was planned for those having crowding.

4. DISCUSSION

The management of partially edentulous patients utilizing fixed partial dentures (FPD) presents persistent challenges due to a multitude of factors, such as dental considerations, patient-related aspects, and specific characteristics of the prosthesis.¹¹ The components of the prosthesis experience stress, which can lead to complications in the supporting structures. During the use, insertion, and removal of the prosthesis, abutment teeth endure stress as they serve as the supporting and anchoring elements of the prosthesis. Should this force exceed their inherent ability to endure it, it may result in the resorption of the supporting alveolar bone, potential fracture of the abutment, and ultimately, failure of the prosthesis.¹²

Apical surgery is a component of endodontic surgery, which encompasses procedures such as incision and drainage, closure of perforations, and resections of roots or teeth. The primary aim of apical surgery is to surgically preserve a tooth that has an endodontic lesion that cannot be effectively treated through conventional endodontic (re-)treatment methods. Consequently, it is clinically significant to conduct a comprehensive clinical and radiographic assessment of the tooth prior to performing apical surgery (including evaluations of adjacent and opposing teeth) to determine whether surgical or non-surgical endodontic approaches should be pursued. As per the revised guidelines from the European Society of Endodontology, the indications for apical surgery include radiological evidence of apical periodontitis and/or symptoms linked to an obstructed canal (where the obstruction is deemed irretrievable, displacement appears impractical, or the risk of damage is excessively high), extruded materials accompanied by clinical or radiological signs of apical periodontitis and/or symptoms persisting over an extended duration,¹³⁻¹⁵ ongoing or new disease following root-canal treatment when re-treatment of the root canal is not a viable option, and perforation of the root or the pulp chamber floor where treatment from within the pulp cavity is not feasible.¹⁶

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Eklund and Burt¹⁷ reported that regardless of the overall decline in edentulism, the less-educated and poor of all ages continued to be much more likely to become edentulous. The study showed the relationship between edentulism and socioeconomic factors; they stated that socioeconomic variables are a significant predictor of edentulism when the number of remaining teeth.

Numerous orthodontic treatments involving dental braces have been suggested to address or avert crowding issues. Certain methods utilize braces to widen the teeth or jaws. These interventions can be initiated at an early age, specifically before children reach six years, during which only primary teeth are present. Additional treatments may be implemented when children exhibit a combination of primary and permanent teeth, typically between the ages of 7 and 11. At this developmental stage, treatments focus on using braces to preserve the space created when the primary molars are lost and subsequently substituted by smaller adult premolars.¹⁸

5. CONCLUSION

The most common condition in this study was apical cyst which was treated with apical surgery. Crowding and edentulism were treated with orthodontic treatment using brackets and fixed dentures.

REFERENCES

- [1] Nair P.N. Pathogenesis of apical periodontitis and the causes of endodontic failures. *Crit. Rev. Oral Biol. Med.* 2004;15:348–381.
 - [2] Bhaskar S.N. Periapical lesions: Types, incidence, and clinical features. *Oral Surg. Oral Med. Oral Pathol.* 1966;21:657–761.
 - [3] Bhaskar S.N. Nonsurgical resolution of radicular cysts. *Oral Surg. Oral Med. Oral Pathol.* 1972;34:458–468.
 - [4] Manor E., Kachko L., Puterman M.B., Szabo G., Bodner L. Cystic lesions of the jaws—A clinicopathological study of 322 cases and review of the literature. *Int. J. Med. Sci.* 2012;9:20–26.
 - [5] Lin L.M., Huang G.T., Rosenberg P.A. Proliferation of epithelial cell rests, formation of apical cysts, and regression of apical cysts after periapical wound healing. *J. Endod.* 2007;33:908–916.
 - [6] Karamifar K., Tondari A., Saghiri M.A. Endodontic Periapical Lesion: An Overview on the Etiology, Diagnosis and Current Treatment Modalities. *Eur. Endod. J.* 2020;14:54–67.
 - [7] Lin L.M., Ricucci D., Kahler B. Radicular Cysts Review. *JSM Dent. Surg.* 2017;2:1017.
 - [8] Adam RZ. Do Complete Dentures Improve the Quality of Life of Patients? University of the Western Cape; 2006.
 - [9] Cunha-Cruz J, Hujoel PP, Nadanovsky P. Secular trends in socio-economic disparities in edentulism. *J Dent Res.* 2007;86:131–6.
 - [10] Normando D., Almeida M.A.O., Quintão C.C.A. Dental Crowding. *Angle Orthod.* 2013;83:10–15
 - [11] Retention and stress distribution in distal extension removable partial dentures with and without implant association. Rodrigues RC, Faria AC, Macedo AP, de Mattos Mda G, Ribeiro RF. *J Prosthodont Res.* 2013;57:24–29.
 - [12] Intra-osseous anchorage of dental prostheses. I. experimental studies. Brånemark PI, Adell R, Breine U, Hansson BO, Lindström J, Ohlsson A. *Scand J Plast Reconstr Surg.* 1969;3:81–100.
 - [13] Baek S.H., Plenk H., Kim S. Periapical tissue responses and cementum regeneration with amalgam, SuperEBA, and MTA as root-end filling materials. *J. Endodont.* 2005;31:444–449.
 - [14] Bernabé P.F., Gomes-Filho J.E., Rocha W.C., Nery M.J., Otoboni-Filho J.A., Dezan-Junior E. Histological evaluation of MTA as a root-end filling material. *Int. Endod. J.* 2007;40:758–765.
 - [15] Calzonetti K.J., Iwanowski T., Komorowski R., Friedman S. Ultrasonic root-end cavity preparation assessed by an in situ impression technique. *Oral Surg. Oral Med. Oral Pathol. Oral Radiol. Endod.* 1998;85:210–215.
 - [16] Cambruzzi J.V., Marshall F.J., Pappin J.B. Methylene blue dye. An aid to endodontic surgery. *J. Endodont.* 1985;11:311–314.
 - [17] Eklund SA, Burt BA. Risk factors for total tooth loss in the United States; longitudinal analysis of national data. *J Public Health Dent.* 1994;54:5–14.
 - [18] Turner S, Harrison JE, Sharif FN, Owens D, Millett DT. Orthodontic treatment for crowded teeth in children. *Cochrane Database Syst Rev.* 2021 Dec 31;12(12):CD003453.
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