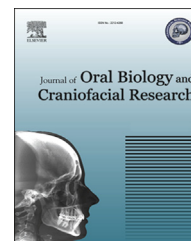


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Original Article

Prevalence of cysts and tumors around the retained and unerupted third molars in the Indian population



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ABSTRACT

Aim: Tooth impaction is a frequent phenomena and surgical removal of these teeth are the commonest of the dental surgical procedures. The debate over the removal of asymptomatic impacted third molars still continues. The aim of this retrospective study was to determine the incidence of development of cysts and tumors around the retained and unerupted third molars in the Indian population.

Material and methods: 5486 impacted third molars of 4133 patients were studied through the panoramic radiographs for the presence of associated cysts and tumors. The ages of the patients ranged from 17 to 67 years, with a mean of 33.7 years. The results were evaluated using the Pearson chi-square test. P-values less than 0.05 were considered to be statistically significant.

Results: There were 134 cysts (2.24%) and 63 tumors (1.16%) found that were associated with impacted third molars, of which 3 were malignant (0.05%). 143 patients had symptoms such as swelling or pain due to cystic or neoplastic lesions. The remainder 54 patients had no symptoms suggestive of pathology. The most common cyst was dentigerous cyst and the most common tumor was ameloblastoma.

Conclusion: The results indicate that cysts and tumors do develop in a relatively small but still considerable minority of patients. The fact that a considerable number of patients had no signs or symptoms indicating pathology is certainly worth considering. Consultation should be sought from dental specialists if there are symptoms in the third molar region.

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Introduction

The third molar teeth are the last to erupt with a relatively high chance of becoming impacted. Hence, the surgical extractions of these impacted teeth have become the most common dentoalveolar surgeries.¹ The retained, unerupted mandibular third molars are often associated with varied pathologies such as pericoronitis, caries, periodontitis, cystic lesions, benign and malignant tumors, pathologic root resorption along with detrimental effects on adjacent tooth.²

In 1979, the NIH Consensus Development Conference agreed on a number of indications for removal of impacted third molars, which included infection, non restorable carious lesions, cysts, tumors, and destruction of adjacent teeth and bone.³ Various retrospective studies have revealed that asymptomatic, “nonfunctional”, unerupted third molars were removed to prevent the associated pathologies, in one-third of the total reported cases. The controversy over the risks and advantages of the removal of these teeth still exists. Some authors reported the absence of any associated problems over a period of several years due to the impacted third molars in edentulous patients.⁴ Stephens et al however overemphasized the development of dentigerous cysts due to impacted third molars.⁵

No general indication for the need of surgical removal of all asymptomatic impacted third molars has been agreed upon till date.^{6–8} The surgical extraction of many impacted mandibular third molars which have been asymptomatic for years are often carried out to prevent development of any future complications and pathologic conditions.⁹ Although removal of such unerupted and retained third molars is the most common oral surgical procedure, many investigators have questioned the necessity of removal for patients who are asymptomatic or have no associated pathologies. These may be based on the view that retention of impacted teeth for a longer duration has less chances of pathological change in the tooth itself, or of deleterious effects on adjacent tooth and associated structures. Some authors have argued that all impacted third molars should be removed regardless of being asymptomatic.^{10,11} Other are of the view that removing such impacted third molars without any symptoms is questionable in the light of the present lack of knowledge about the incidence of associated pathology.⁸ Yet other authors consider that prophylactic surgical removal of impacted third molars is not obligatory as the risk of development of pathological conditions in or around follicles of third molars is apparently low.^{12,13} The objective of the present study was to determine the incidence of the development of cysts and tumors around the impacted third molars.

Material and methods

The records of 4133 patients attending the Department of Oral Medicine and Radiology, Jodhpur Dental College General Hospital between September 2008 to December 2012 were investigated using panoramic radiographs to determine whether the chief complaints were related to impacted teeth and/or associated cysts and tumors. All patients aged 17 years

and older were included in the study keeping in view the normal age of eruption of the third molars. The ages of the patients ranged from 17 to 67 years, with a mean of 33.7 years. The ratio of male to female patients was 1.8:1. The ratio of maxillary to mandibular molars was 1:1.6. Ethical clearance was obtained from the Institutional Ethical Committee. A written informed consent was obtained from the patients prior to the inclusion in the study.

All panoramic radiographs were taken with the Dentsply Gendex Orthoralix 9200 (Dentsply Asia, Milford, US), and the magnification factor was 1.23. All reported measurements were adjusted according to this factor. One group of researchers examined the radiographs at the same time on standard light boxes to determine the number and types of impacted teeth, and the presence of associated pathologies. A tooth was defined as impacted when the tooth was obstructed on its path of eruption by an adjacent tooth, bone, or soft tissue. A healthy finding without pericoronal radiolucency was defined by a uniform line without a rupture or a diffuse lucent area below the crown. A radiolucency in excess of 4 mm was regarded as a cyst. The tumors were diagnosed based on the clinical records and specific radiological and histopathological features (Figs. 1 and 2). The hyperplastic dental follicle was differentiated based on the histopathological and macroscopic findings. The data for these 4133 patients were evaluated to determine the incidence of cysts and tumors around third molars. The observations were entered and analyzed using the computer program, SPSS 12 (SPSS Inc. Chicago, USA). The results were evaluated using the Pearson chi-square test. P-values less than 0.05 were considered to be statistically significant.

Results

143 patients were symptomatic with complaints of pain and swelling due to cystic or neoplastic conditions. 2135 patients had symptoms such as swelling, pain, trismus or fever due to pericoronitis. The remaining 1998 patients were asymptomatic. The impacted molars and/or associated pathology in these patients were diagnosed during routine clinical and radiographic examination. There were 134 cysts (2.24%) and 64 tumors (1.16%) found that were associated with 5486 impacted third molars, of which 3 were malignant (0.05%). 143 patients had symptoms such as swelling or pain due to cystic or neoplastic lesions. The remainder 54 patients had no symptoms suggestive of pathology, which included mainly the dentigerous cysts, keratocystic odontogenic tumor, hyperplastic dental follicles and odontoma. Of the 134 patients who had associated cysts with an impacted third molar, 45 (33%) were women and 89 (67%) men. Their ages ranged from 20 to 64 years with a mean of 31.8 years. There were 28 cysts (20%) localized in the maxilla and 106 (80%) in the mandible (Table 1). 132 cysts (99%) were found to be dentigerous and 2 cysts (1%) were calcifying odontogenic cysts. The 64 patients who had an associated tumor with the impacted third molar, consisted of 40 women (64%) and 23 men (36%), aged 17–54 years with a mean of 29.6 years. 3 of these tumors (5%) were localized in the maxilla (1 in male and 2 in females) and 60 (95%) in the mandible (22 in males and 38 in females). There

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