

ORIGINAL RESEARCH

Is It Actually Wise To Prophylactically Remove The Wisdom Tooth? A Retrospective Analysis Of Odontogenic Cysts And Tumours Associated With Impacted Third Molars

¹Dr. Suryadeep Kaushik, ²Dr. D Gnanavel, ³Dr. P.D. Balamurali, ⁴Dr. Karthikshree V. Prasad, ⁵Dr. Monika Chaudhary

¹M.O(Dental), Govt of HP, India;

²Private Practitioner, Puducherry, India;

³Professor and Head, ⁴Professor, Department of Oral Pathology and Microbiology, MGPGI, Puducherry, India

⁵M.O (Dental), Govt of Uttrakhand, India

Corresponding Author

Dr. Monika Chaudhary

M.O (Dental), Govt of Uttrakhand, India

Received: 20 June, 2023

Accepted: 23 July, 2023

ABSTRACT

Aim- Impacted third molar is a common occurrence in human population which may or may not present with variety of signs and symptoms of associated pathologies. The dilemma of its prophylactic removal has puzzled dental surgeons over the years. The aim of this study is to provide a retrospective analysis of incidence of odontogenic cysts and tumours associated with impacted 3rd molars in Puducherry (India) population. **Materials and methods-** Surgical and Histopathological records of past 12 years from Mahatma Gandhi Postgraduate Institute, Puducherry, India were examined and their association with odontogenic cysts and tumours were evaluated. **Results-** were analysed and correlated using suitable methods. **Conclusion-** Odontogenic cysts and tumours occurred in a minority of patients which do not suggest its prophylactic removal but that small group indicates that a regular check up both clinical inspection and radiographic evaluation by a qualified individual is a must if your wisdom tooth hasn't erupted or partially erupted.

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution- Non Commercial- Share Alike 4.0 License, which allows others to remix, tweak, and build upon the work non- commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

INTRODUCTION

Tooth impaction means that a tooth has failed to erupt in oral cavity and has been stuck in bone (physical barrier to prevent its eruption). As human jaw sizes have been reducing in size because of changes in diet pattern over the years¹, there is less space between the distal end of the second mandibular molar and the anterior border of the ascending ramus of the mandible to accommodate full set of teeth. Impacted 3rd molars are one of the most common findings in oral cavity especially lower ones. 98 % of all impactions are third molars². This state may create a lot of symptoms and can affect the normal well being of the individual, necessitating its removal. The National Institute of Health (NIH) Consensus Development Conference on the removal of impacted third molars reached agreement on 3 issues. (1) There are well-defined criteria for impacted third molar

removal, i.e. infection, non-restorable carious lesion, cyst, tumor, destruction of adjacent tooth and bone. (2) It was agreed that reduced morbidity resulted from extraction in younger patients rather than in patients in advanced adulthood. (3) Current predictive growth studies were not sufficiently accurate to form a basis on which clinical action could be justified³.

But, if asymptomatic what is the treatment modality then? Some authors reported the absence of any associated problems over a period of several years due to the impacted third molars in edentulous patients⁴. Some authors have argued that all impacted third molars should be removed regardless of being asymptomatic^{5,6}.

Guidelines for the management of mandibular third molars have been recently published⁷; pathology such as unrestorable caries, nontreatable pulpal and/or periapical pathology, infection, internal or external

resorption of the tooth or adjacent teeth, and disease of the follicle including cysts or tumors are all well-defined criteria for third molar removal.

So, to give an advise for prophylactic removal becomes difficult for a surgeon himself in absence of quality studies about the incidence of cysts and tumours and other pathologies associated with 3rd molar patients and also to patients because of their fear of surgery, societal taboos, complications associated with its removal and losing an sound tooth though impacted.

The objective of this study was to do a retrospective analysis of impacted cases and how many of those were associated with a threatening pathology which is odontogenic in origin which might help us getting to know about the incidence of big lesions and if significant might warrant a prophylactic removal of impacted 3rd molar. We did not take into account other pathologies in 3rd molar region like of salivary gland, squamous cell carcinoma as they are of different origin.

MATERIALS AND METHODS

The Surgical records of Dept of Oral and Maxillofacial Surgery and Histopathological records of Dept of Oral Pathology and Microbiology of MGPGI, Puducherry, India were examined between June 2003 to June 2015 were examined and correlated. Cases in which lesions were not verified by HP examination were also excluded from this study. Symptoms of patients ranged from pain, swelling, trismus, inflamed mucosa around impacted tooth. In cases where associated pathology was diagnosed history of pain, gender and jaw predilection was also noted. We didn't rely on radiographic findings because histologically based studies investigating the follicular tissues of radiologically normal teeth showed that 34% to 46.5% of cases had occult histologic findings suggestive of dentigerous cyst formation^{8,9,10}. Therefore, it can be concluded that radiographic appearance may not be a reliable indicator of the absence of disease within a dental follicle.

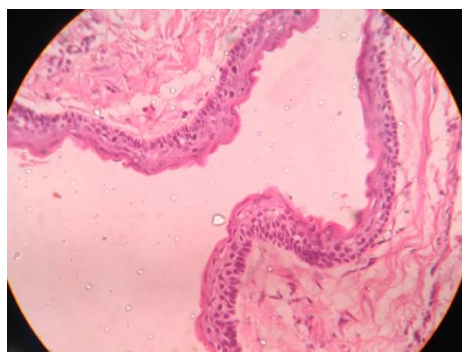


Figure 1 - HP image of KCOT

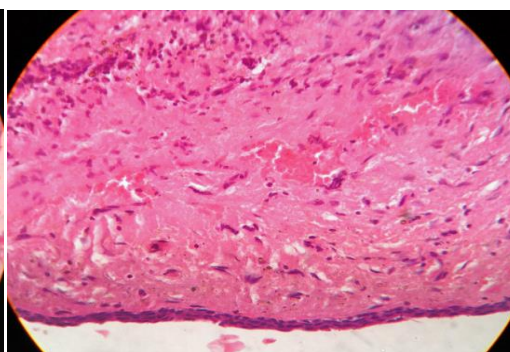


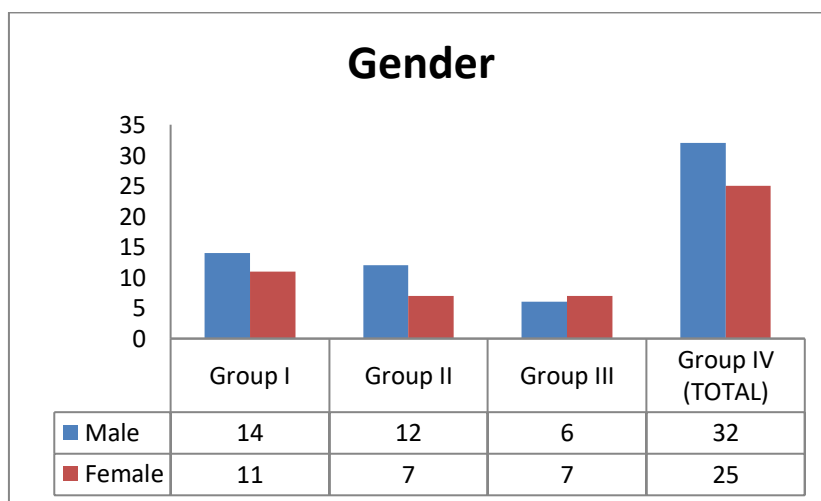
Figure 2 - HP image of Dentigerous cyst

RESULTS

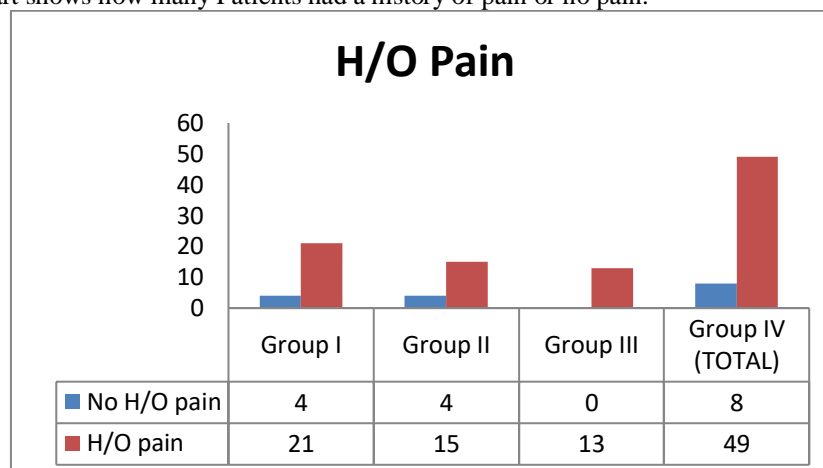
The total number of impacted 3rd molars removed was found to be 4459 and out of which 57 were associated with pathologies of odontogenic origin. So, odontogenic cyst and tumours were found in 1.27% of impacted cases in our study. Out of 57 cases, pathologies were more common in males (32 male

and 25 female). Out of these 57, 25 cases were of dentigerous cyst (GROUP I), 19 of Keratocystic odontogenic tumour (GROUP II), and 13 of ameloblastoma (GROUP III). In below given charts Group IV refers to total 57 cases.

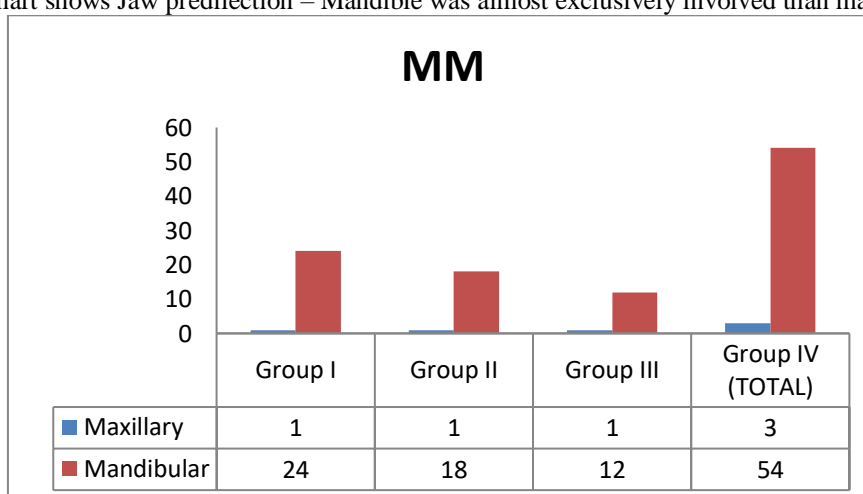
The gender predilection is as shown in chart below:-



Below given chart shows how many Patients had a history of pain or no pain:-



Below given chart shows Jaw predilection – Mandible was almost exclusively involved than maxilla.



We also tried to find any correlation between Gender and pain, Gender and jaw predilection in all three groups and overall using chi square test and p value but in none of the groups it was found to be significant.

DISCUSSION

The normal eruption period for wisdom teeth falls between the ages of 17–26 years¹¹. If it doesn't erupt in this time period it is considered impacted and there can be many Factors that influence its eruption like skeletal growth pattern, direction of eruption of the dentition, dental extractions as well as root configuration and maturation of the third molar¹².

Zhu et al. in his retrospective study stated that the frequency of mandibular angle fractures is higher in patients with unerupted third molar than others¹³. Reitzik et al. in an animal study deciphered that it took only 60% of the optimal force required to fracture the angle in a mandible with an impacted third molar¹⁴. We should also note here that fractures happen by accident and not pathologies that can be prevented. Removal of 3rd molar is one of the most common minor surgeries happening around and has its own risks. Common complications following surgery include the followings—dry socket, infection, haemorrhage and pain¹⁵. Fracture of the tuberosity or lingual plate can occur during the surgery¹⁶. Dysesthesia can occur due to iatrogenic damage of the

inferior alveolar nerve^{16, 17, and 18}. So, a question arises whether with increasing financial expenses and vast complications is it good to go ahead with surgery.

The surgical removal of impacted third molars is widely carried out in routine dental practice. However, in a large percentage of cases, asymptomatic third molar are universally removed for various reasons. A few reports have estimated that 18% and 50.7% impacted third molars are removed when no clinically sound justification for surgery is present¹⁹ and many times, an impacted third molar can remain asymptomatic throughout life²⁰ then what is the need of its prophylactic removal.

The incidence of large cysts and tumors occurring around impacted third molars reported by Dachi & Howell²¹ 11%. The prophylactic extraction of asymptomatic impacted third molar is warranted in order to prevent distocervical caries in 2nd molars according to McArdle and Renton²². Kan et al²³ bases the concept of prophylactic extraction of asymptomatic impacted third molars due to its ill effects on the periodontium. Above high incidence studies and other reasons justify its removal but on

other hand incidence according to SHEAR & SINGH²⁴ is (0.001%) and LYSELL & ROHLIN²⁵ is 3% doesn't justify its removal.

Though, our study reveals that as these pathologies are of serious concern and can cause disability of some kind due to the fact that these lesions require wide excision as treatment modality but their number being small so instead of blindly opting for prophylactic removal one should regularly visit a dental surgeon for a thorough inspection and radiological evaluation through intra oral periapical radiograph every year or when need arises as asymptomatic doesn't means absence of disease. Impacted wisdom teeth can be painless but might have signs of pathosis clinically or radiographically. Therefore the term 'asymptomatic' does not guarantee a 'risk-free' state^{16, 26}. It also noted that most patients do not want to remove the 3rd molar because of the costs attached to it or economic value of it²⁷. In practicality Geographical location of a person prevents him from reaching out to a dental surgeon. We feel that role of prophylactic removal of 3rd molar should be explored in cases where there is malocclusion as its early removal might play a role in preventing it and studies like The Jaw Epidemic: Recognition, Origins, Cures, and Prevention. Bioscience²⁸ should be kept in mind.

The data presented and the reports from the literature indicate that cysts and tumours do develop but in a relatively small number of patients. Our studies data are in consistency with Vigneswaran et al²⁹ who agree that the incidence of cysts or tumors around third molars is very low So, a clinician should take an informed decision based on history of patient and after ruling out 3rd molar as trouble maker only one should recommend his removal. Impacted tooth doesn't necessarily mean it will impact your life if we have to go by this retrospective analysis and selective extraction is way ahead.

REFERENCES

- Von Cramon-Taubadel N. Global human mandibular variation reflects differences in agricultural and hunter-gatherer subsistence strategies. *Proc Natl Acad Sci U S A*. 2011 Dec 6;108(49):19546-51. doi: 10.1073/pnas.1113050108. Epub 2011 Nov 21. PMID: 22106280; PMCID: PMC3241821.
- Gbotolorun OM, Olojede AC, Arotiba GT, Ladeinde AL, Akinwande JA, Bamgbose BO. Impacted mandibular third molars: presentation and postoperative complications at the Lagos University Teaching Hospital. *Nig Q J Hosp Med*. 2007;17:26e29.
- NIH consensus development conference on removal of third molars. *J Oral Surg*. 1980;38:235e236.
- Huang H, Mercier P. Asymptomatic impacted teeth in edentulous jaws undergoing preprosthetic surgery. *Int J Oral Maxillofac Surg*. 1992;21:147e149.
- Mettes TD, Ghaemina H, Nienhuijs ME, Perry J, van der Sanden WJ, Plasschaert A. Surgical removal versus retention for the management of asymptomatic impacted wisdom teeth. *Cochrane Database Syst Rev*. 2012;6:CD003879.
- Lytle JJ. Etiology and indications for the management of impacted teeth. *Northwest Dent*. 1995;74:23e32.
- National Institute for Clinical Excellence (NICE): Guidelines for wisdom teeth removals (updated November 2003).
- Adelsperger J, Campbell JH, Coates DB, et al: Early soft tissue pathosis associated with impacted third molars without pericoronal radiolucency. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 89:402, 2000
- Glosser JW, Campbell JH: Pathologic change in soft tissues associated with radiographically 'normal' third molar impactions. *Br J Oral Maxillofac Surg* 37:259, 1999
- Manganaro AM: The likelihood of finding occult histopathology in routine third molar extractions. *Gen Dent* 46:200, 1998
- Kruger E, Thomson WM, Konthasinghe P. Third molar outcomes from age 18 to 26: findings from a population based New Zealand longitudinal study. *Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology, and Endodontics* 2001; 92(2):150-155.
- Polat HB, Ozan F, Kara I, Ozdemir H, Ay S. Prevalence of commonly found pathoses associated with mandibular impacted third molars based on panoramic radiographs in Turkish population. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod*. 2008;105:e41e47.
- Zhu S-J, Choi B-H, Kim H-J, Park W-S, Huh J-il., Jung J-H, Kim B-Y, Lee S-H. Relationship between the presence of unerupted mandibular third molars and fractures of the mandibular condyle. *Int J Oral Maxillofac Surg* 2005;34:382-385.
- Reitzik M, Lownie JF, Cleaton-Jones JP, Austin J. Experimental fractures of monkeys mandibles. *Int J Oral Surg* 1978;7: 100-103.
- Song F, O'meara S, Wilson P, Golder S, Kleijnen J. The effectiveness and cost-effectiveness of prophylactic removal of wisdom teeth. *Health Technology Assessment (Winchester, England)*. 2000;4(15):1-55.
- Alling CC, Alling RD. Indications for management of impacted teeth. In: Alling CC, Helfrick JF, Alling RD, eds. *Impacted teeth*. Philadelphia: WB Saunders; 1993.
- Ricketts RM. The dilemma of the third molar. In: Schatz JP, Joho JP, eds. *Minor surgery in orthodontics*. Chicago: Quintessence Publishing; 1992.
- Chiapasco M, De Cicco L, Marrone G. Side effects and complications associated with third molar surgery. *Oral Surg Oral Med Oral Pathol* 1993;76:412-420
- Adeyemo WL. Do pathologies associated with impacted lower third molars justify prophylactic removal? A critical review of the literature. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod*. 2006;102:448e452.
- Ahlqwist M, Grondahl HG. Prevalence of impacted teeth and associated pathology in middle-aged and older Swedish women. *Community Dent Oral Epidemiol* 1991;19:116-119
- Dachi SF, Howell FV. A survey of 3,874 routine full mouth radiographs. II: a study of impacted teeth. *Oral Surg Oral Med Oral Pathol*. 1961;14:1165e1169.
- McArdle LW, Renton TF. Distal cervical caries in the mandibular second molar: an indication for the prophylactic removal of the third molar? *Br J Oral Maxillofac Surg*. 2006; 44(1):42-45
- Kan KW, Liu JK, Lo EC, Corbet EF, Leung WK. Residual periodontal defects distal to the mandibular

- second molar 6 – 36 months after impacted third molar extraction. *J Clin Periodontol.* 2002;29(11):1004-1011
24. Shear M, Singh S. Age standardized incidence rate of ameloblastoma and dentigerous cysts on the Witwatersrand South Africa. *Community Dent Oral Epidemiol.* 1987;6:195e198.
 25. Lysell L, Rohlin M. A study of indications used for removal of the mandibular third molar. *Int J Oral Maxillofac Surg.* 1988;17:161e164.
 26. Godfrey K, Dent KK. Prophylactic removal of asymptomatic third molars: a review. *Australian dental journal.* 1999; 44(4): 233-237.
 27. Hounscome J, Pilkington G, Mahon J, Boland A, Beale S, Kotas E, Renton T, Dickson R. Prophylactic removal of impacted mandibular third molars: a systematic review and economic evaluation. *Health Technol Assess.* 2020 Jun;24(30):1-116. doi: 10.3310/hta24300. PMID: 32589125; PMCID: PMC7336222.
 28. Kahn S, Ehrlich P, Feldman M, Sapolsky R, Wong S. The Jaw Epidemic: Recognition, Origins, Cures, and Prevention. *Bioscience.* 2020 Jul 22;70(9):759-771. doi: 10.1093/biosci/biaa073. PMID: 32973408; PMCID: PMC7498344.
 29. Vigneswaran AT, Shilpa S. The incidence of cysts and tumors associated with impacted third molars. *Journal of pharmacy & bioallied sciences.* 2015;7(Suppl 1):S251.