

**Original Research****Asymptomatic impacted third molar- removal/retention? A questionnaire based study.***Gopi Krishna J¹**¹Private practitioner, Karimpalayil, Kerala*

How to cite: Gopi K J, Asymptomatic impacted third molar- removal/retention? A questionnaire-based study, *Int J Perio Rehab* 2022, Article ID 22154010, 10 pages

Received: 06.05.2022

Accepted: 21.05.2022

Web published: 06.06.2022

ABSTRACT

BACKGROUND: Third molars generally erupt into the oral cavity between the ages of 17 to 24 years. Impaction may be associated with pathological changes, such as swelling and ulceration of the gingiva around the teeth, root resorption in relation to second molars, caries in the second molars, and the development of cysts or tumours. Whereas surgical removal can cause pain, swelling, trismus, dry socket, hemorrhage, paresthesia and many more conditions.

AIM: To study the decisions made by dentists on removal or retention of asymptomatic impacted third molar.

MATERIALS AND METHOD: This study recruited 100 participants (50 OMS & 50 other speciality dentists) among the dentists of a private Dental College. The judgement on removal or retention of asymptomatic impacted third molar under various situations was assessed using a questionnaire which had 15 questions. The response was calculated in percentage and results were tabulated. Bar graphs were also plotted comparing the response given by the OMS and others for each situation.

RESULTS: Most of the decisions made by the dentists were in accordance with clinical guidelines for management of unerupted third molars. Whereas some of the decisions were in contrary to the guidelines probably due to lack of knowledge about the guidelines among the dentists or because of experience which has influenced their decisions. These conflicting results have hindered the decision making process.

CONCLUSION: All asymptomatic & pathology free impacted third molars need not be considered for prophylactic removal but should be reviewed periodically.

Keywords: Asymptomatic, impaction, wisdom tooth, decision, guidelines.

Address for Correspondence:

Gopi Krishna J, BDS, Private practitioner, Karimpalayil, Panmana Kollam, Kerala- 641671.

Email: drgopikarimpalayil@gmail.com

INTRODUCTION

Generally, third molars erupt between 18 and 24 years of age, although there can be vast difference eruption time. In approximately 25% adults one or more third molars are absent [1-4] but they may still be present in the elderly patient. The prevalence of unerupted third molars is influenced by age, gender and race. The failure of third molar eruption is a very common problem [5-7] and the removal of impacted third molar teeth is one of the surgical procedures carried out frequently in the dental clinics. Surgical removal of impacted third molar surgeries may be associated with certain complications post operatively; these complications are more common in the mandible than in the maxilla; they may include hemorrhage, alveolar osteitis, nerve damage, delayed healing, periodontal defects, and infection. It is not mandatory that all third molars be removed even in the absence of pathological findings and patients need not unnecessarily have to accept harmful consequences associated with the surgery.

Approximately 75% of individuals who undergo regular dental care have their third molars extracted [8]. Apart from pathological conditions, other criteria used to justify the decision to extract, includes indications for orthodontic, prosthetic or restorative purposes [9,10]. In addition, the risks associated with the surgery are accepted by most of the surgeons, when there is clinical or radiological confirmation of periodontitis, caries, pericoronitis, damaging effects on second molars [11,12].

Although a number of studies have been reported on third molar extraction, the inconsistent results hinder the decision-making process. This study aims in accessing the decision making of the dentists and understanding the justification for removal or retention of asymptomatic impacted third molars under various conditions.

MATERIALS & METHOD

This study recruited 100 participants among the dentists of a private Dental College. The participants included 50 Oral & Maxillofacial Surgeons and 50 other specialty dentists. The judgement on removal or retention of asymptomatic impacted third molar under various situations was assessed using a questionnaire which had 15 questions. The various situations were - asymptomatic impacted third molar in a 18 year old adult, prior to orthodontic treatment to prevent late anterior crowding, pericoronitis, associated with risk of periodontal defects postoperatively, fear of second molar caries, risk of root resorption in second molar, risk of development of cyst or tumors, risk of permanent paresthesia, impediment in orthognathic surgery or prosthetic replacement. The response was calculated in percentage and results were tabulated. Bar graphs were also plotted comparing the response given by the OMS and others for each situation.

RESULTS

In this study,98% of the Oral & Maxillofacial surgeons and 55% of other specialty dentists have the opinion

that removal of asymptomatic impacted third molar is not ideal in a 18 year old adult. Whereas 2% of Surgeons and 45% of other specialty dentists believe that prophylactic removal of the impacted third molar is a better decision in this situation.

About 80% of other specialty dentists chose that extraction of the impacted third molar prior to orthodontic treatment has to be done to prevent late anterior crowding. Whereas 87.5% of the surgeons feel that third molar can be retained as it will not cause anterior crowding on eruption. 98% of surgeons and 85% of other dentists who participated in this study think that asymptomatic impacted third molar should be removed if it is associated with high incidence periodontal defect distal to second molars. Whereas 2% of surgeons and 15% of other dentists believe that it can be retained in such condition to prevent further complications. 88% of surgeons & 55% of other dentists feel that it is better to retain the asymptomatic impacted third molar which is associated with healthy periodontium.

About 20% of surgeons & 75% other specialty dentists consider extraction of the impacted third molar to be the ideal treatment incase of pericoronitis. Whereas 80% of surgeons & 25% of other dentists feel that it is not necessary to remove the impacted third molar to manage pericoronitis. 96% of surgeons & 92% other dentists in this study opted removal of impacted third as the treatment to prevent second molar caries. 100% of surgeons & 98% of other dentists believe that root resorption in relation to second molar can be prevented on removal of the impacted third molars.

In the present study only 37.5% & 15% of the surgeons chose extraction of impacted third molar is better when it is associated with the risk of cyst formation & neoplasm development respectively. About 52.5% of the surgeons & 60% of the other dentists feel that it is better to retain the asymptomatic impacted third molar as it can cause permanent paresthesia post operatively in some cases. 98% & 52% of the surgeons chose removal of the impacted third molar can be done if it impedes orthognathic surgery & prosthetic replacement respectively.

The dentists belonging to other specialties showed greater tendency towards extraction of asymptomatic impacted third molars when compared to the surgeons. [Table 1]

Questions Asymptomatic impacted third molar	Response	Oral & Maxillofacial surgeons	Other speciality dentists
In a 18 year old patient	Removal	2%	45%
	Retention	98%	55%
Associated with risk of late anterior Crowding	Removal	12.5%	80%
	Retention	87.5%	20%
Associated with higher incidence of periodontal defect distal to 2nd molar	Removal	98%	85%
	Retention	2%	15%
Associated with healthy periodontium	Removal	12%	45%
	Retention	88%	55%
Associated with mild pericoronitis	Removal	20%	75%
	Retention	80%	25%
Associated with risk of Second molar Caries	Removal	96%	92%
	Retention	4%	8%
Associated with risk of Root resorption of second molar	Removal	100%	98%
	Retention	-	2%
Associated with risk of cyst development	Removal	37.5%	75%
	Retention	62.5%	25%
Associated with risk of neoplasm	Removal	15%	55%
	Retention	85%	45%
Associated with risk of permanent parasthesia	Removal	47.5%	40%
	Retention	52.5%	60%
Impeding orthognathic surgery	Removal	98%	93%
	Retention	2%	7%
Impeding denture construction/implant placement	Removal	52%	65%
	Retention	48%	35%

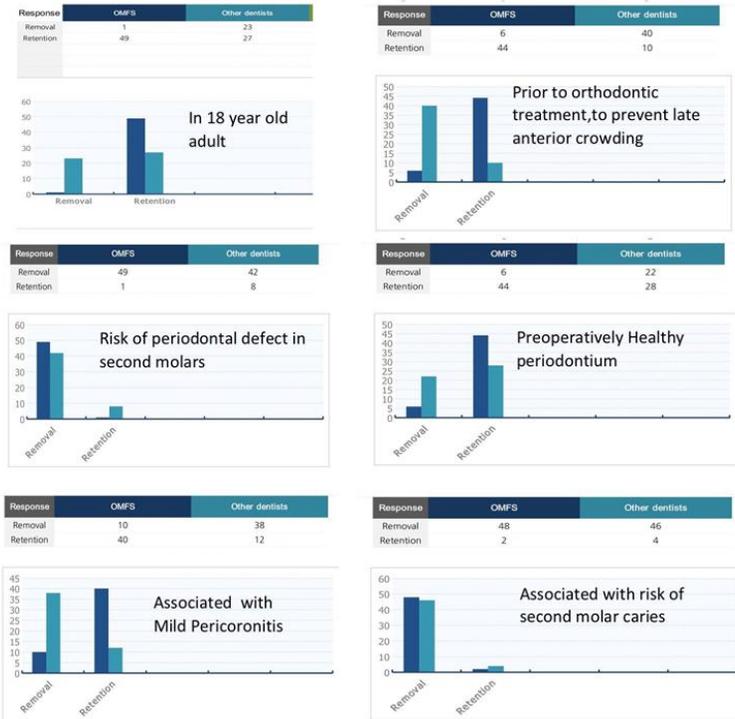


Fig 1

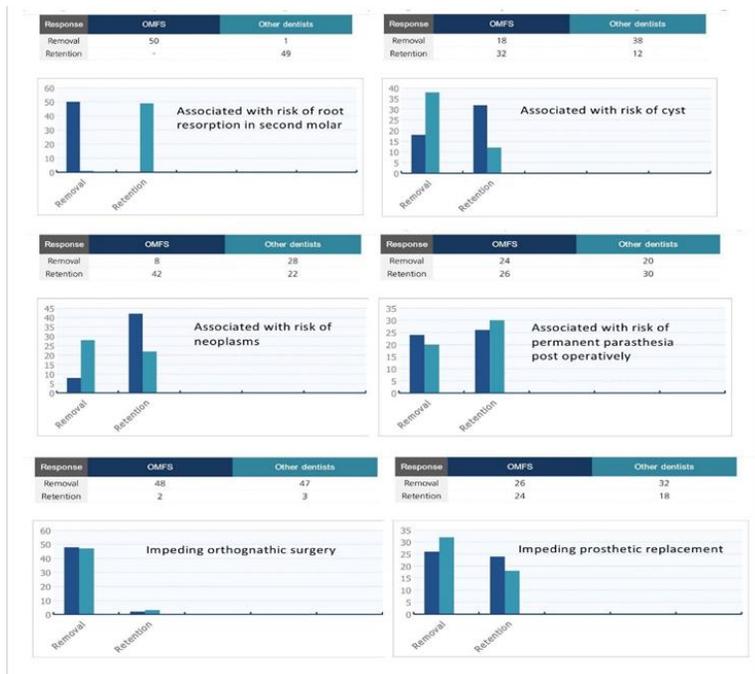


Fig 2

Bar graphs were plotted to compare the decisions made in each situation by the surgeons & other dentists. [Fig 1 & 2]

DISCUSSION

Mead defined an impacted tooth as a tooth which is prevented from erupting into position because of malposition, lack of space, or other impediments. [13]. Peterson described impacted tooth as tooth that fails to erupt into the dental arch within the expected time. Later Farman [15] proposed that impacted teeth are those that are prevented from eruption due to a physical barrier within the path of eruption. It should be noted that any normally erupted teeth would have been unerupted or partially erupted at certain stage in the process of eruption. Hence, all unerupted or partially erupted teeth should not be considered as impacted teeth [16]. Impacted third molars may be associated with certain pathological changes such as infections, dental caries, destruction of adjacent teeth, cysts and tumors. Although impacted third molars do not necessarily cause some of these pathological changes (such as dental caries), the impaction may increase the risk of disease, particularly when oral hygiene is poor.

As the third molars erupt completely into position anytime between 18 to 24 years, it is not ideal to extract the asymptomatic impacted third molar at the age of 18. In the present study, 98% of OMS & 55% of other specialty dentists have said the asymptomatic impacted third molar need not be removed. Whereas 45% of other dentists have said that removal is better, as they probably are unaware that a tooth which impacted at 18 years of age, can fully erupt by 25 years and also post operatively complications may occur after surgical extractions.

In this study, 87.5% surgeons have chosen retention of asymptomatic impacted third molar preceding orthodontic treatment. In a randomized study carried out by Harradine et al showed that the removal of third molars to prevent late incisor crowding cannot be justified [17]. Southard in his study concluded that the force generated by eruption of third molar is insufficient to significantly affect anterior crowding [18]. The National Institute of Clinical Excellence (NICE) in 2000 [19] & the Scottish Intercollegiate Guidelines Network (SIGN) in 1999 reviewed in 2005 [20] did not consider late anterior crowding as a reason to justify the prophylactic removal of third molars. About 80% of other dentists have opted for extraction of the impacted third molar prior to orthodontic treatment to prevent late anterior crowding. This is probably because they are unaware of the clinical guidelines for management of asymptomatic impacted third molar.

According to SIGN, there is a strong indication for removal of impacted third molar when it is associated with periodontal disease in relation to second molar [20]. In this study about 98% of OMS & 85% of other dentists have opted for removal in such condition. There is a debate about the development of periodontal defect at the distal surface of the second molars after extraction of the impacted third molars. Some authors showed improvement of periodontal health distal to the adjacent second molar, while others have revealed attachment loss and reduction in level of alveolar bone [21]. Only 12% of OMS opted removal, whereas 45% of other dentists chose for extraction of impacted third molar with healthy periodontium preoperatively. This is

because they probably lack the knowledge about development of periodontal defect after removal of impacted third molar.

Not all cases of pericoronitis should be treated with extraction. First episode of pericoronitis, unless severe should not be indicated for surgical removal of the third molar [19]. About 80% of the OMS in this study are aware about this, but only 20% have opted retention of the asymptomatic impacted third molar in case of mild pericoronitis. This is again because other specialty dentists are not familiar with the NICE guidelines.

About 96% of OMS & 92% of other dentists in this study have chosen removal of asymptomatic impacted third molar if it is associated with second molar caries. According to SIGN guidelines, there is a strong indication for removal of impacted third molar when there is caries in the adjacent second molar, which cannot be satisfactorily treated without the its extraction [20]. Walmsley et al reported that when second molar is restored but third molar is retained, recurrent caries can develop in the second molar extending to impacted adjacent third molar causing loss of both the teeth [22]. Thus prophylactic removal of impacted third molar which is mesioangular in position may be considered to prevent distal caries formation [23]. Dentists who opted retention are not aware that mesioangular type of impactions can cause second molar caries.

In this study, about 100% OMS & 98% other dentists chose removal of the impacted third molar if it is associated with the risk of root resorption of second molars. According to SIGN guidelines, third molar removal should be considered in case of root resorption of the second molar where it would be due to the third molar (20). Majority of the participants have opted this decision.

Around 62.5% of OMS have chosen retention of asymptomatic impacted third molar which is associated with risk of developing cysts which is in contrary to the clinical guidelines. This decision is probably opted as the incidence of cyst development on retention of the impacted third molar is rare (1.65%), according to Friedmann et al [24]. Whereas 75% of other dentists have chosen removal in such condition, possibly because they are not aware about the rareness of cyst development on retention of impacted third molars.

Similarly, tumors developing around the impacted third molar is relatively low (1.16%) [25] and so the fear of neoplasm cannot be considered as the justification for removal of asymptomatic impacted third molar. About 85% of OMS & 55% of other dentists have given the same opinion, which is not in accordance to the NICE guidelines. Whereas, 45% of other dentists have opted removal as they are again not aware about the rareness of tumors that develop when impacted third molars are retained.

Incidence of permanent paresthesia after surgical extraction of impacted third molar ranges from 0.33 - 1% which is quite rare [26]. About 52.5% of OMS & 60% of other dentists have chosen retention of the impacted third molar maybe because the conditions where there is high risk of nerve injury (deflection of mandibular

canal) should be taken into consideration. Whereas 47.5% of OMS opted removal maybe because they are aware that proper surgical method without excessive removal of bone & vertical sectioning of impacted teeth will prevent permanent paresthesia. But 40% of other dentists have opted removal probably because they are not aware that permanent paresthesia can occur postoperatively.

According to AAOMS, there is a view that when an impacted third molar may complicate orthognathic surgery, then it is reasonable to remove that tooth, provided the risks of complications do not outweigh the benefits [27] .About 98% of OMS & 93% of other dentists in this study have also opted removal, which is in according to the report submitted with AAOMS.

According to SIGN guidelines, removal of an impacted third molar close to the alveolar surface should be considered preceding denture construction or implant placement. About 52% of OMS & 65% of other dentists have chosen removal as their decision which is in agreement with the clinical guidelines. Whereas 48% of OMS & 35% of other dentists feel that prosthetic replacement is not a justification for removal of asymptomatic impacted third molar considering the complications which may arise after surgery.

There are no previous questionnaire based study carried out among the dentists about their decision on management of asymptomatic impacted third molars. This is a first study of that kind. It is understood from the results that majority of the OMS have good knowledge about the clinical guidelines for management of unerupted third molar than other specialty dentists. There are some conditions where decisions made by the dentists is not in agreement with the guidelines, probably because their experience influences their decision. The dentists belonging to other specialty lack proper decision making ability & showed greater tendency towards extraction of asymptomatic impacted third molars. Even though they do not have a major role in decision making about the management of asymptomatic impacted third molars, they are the ones who are going to refer the patients to a surgeon when they identify an asymptomatic impacted third molar. Hence, some methodology should be employed for implementation of clinical guideline on management of asymptomatic mandibular third molar which can improve dentists' knowledge on this topic and their decision making ability.

CONCLUSION

All asymptomatic & pathology free impacted third molars need not be considered for prophylactic removal but should be reviewed periodically.

ACKNOWLEDGEMENT - NIL

CONFLICT OF INTEREST - NIL

SOURCE OF FUNDING - NIL

REFERENCES

- 1)Rantanen AV. The age of eruption of the third molar teeth. *Acta Odontol Scand* 1967; 25: suppl 48.
- 2)Song F, Landes DP, Glenn AM, Sheldon TA. Prophylactic removal of impacted third molars: an assessment of published reviews. NHS Centre for Reviews and Dissemination, University of York, October 1996.
- 3)Von Wowern N, Neilson HO. The fate of impacted lower third molars after the age of 20. A four-year clinical follow up. *Int J Oral Maxillofac Surg* 1989; 18: 277-80.
- 4)Levesque GY, Demirjian A, Tanguay R. Sexual dimorphism in the development, emergence, and agenesis of the mandibular third molar. *J Dent Res* 1981, 60: 1735-41.
- 5)Garcia RI, Chauncey HH. The eruption of third molars in adults: a 10 year longitudinal study. *Oral Surg oral Med Oral Pathol* 1989; 68: 9-13.
- 6)Royal College of Surgeons of England Faculty of Dental Surgery. The management of patients with third molar teeth: report of a working party convened by the Faculty of Dental Surgery, The Royal College of Surgeons of England. London: Faculty of Dental Surgery RCS (Eng); 1997. (Current clinical practice and parameters of care).
- 7)Hugoson A, Kugelberg CF. The prevalence of third molars in a Swedish population. An epidemiological study. *Community Dent Health* 1988, 5: 121-38
- 8)Schulhof RJ. Third molars and orthodontic diagnosis. *J Clin Orthod.* 1976 Apr;10(4):272-81.
- 9)Chaparro-Avendaño AV, Pérez-García S, Valmaseda-Castellón E, Berini-Aytés L, Gay-Escoda C. Morbidity of third molar extraction in patients between 12 and 18 years of age. *Med Oral Patol Oral Cir Bucal.* 2005 Nov-Dec;10(5):422-31.
- 10) Kruger E, Thomson WM, Konthasinghe P. Third molar outcomes from age 18 to 26: findings from a population-based New Zealand longitudinal study. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod.* 2001 Aug;92(2):150-5.
- 11)Marciani RD. Third molar removal: an overview of indications, imaging, evaluation, and assessment of risk. *Oral Maxillofac Surg Clin North Am.* 2007 Feb;19(1):1-13.
- 12)Bagheri SC, Khan AH. Extraction versus nonextraction management of third molars. *Oral Maxillofac Surg Clin North Am.* 2007 Feb;19(1):15-21.
- 13)Archer WH. *Oral Surgery: A Step-By-Step Atlas of Operative Techniques*, 4th ed. Philadelphia: W.B. Saunders Company; 1966. p. 507-10.
- 14)Peterson LJ. Principles of Management of Impacted Teeth. In: Peterson LJ, Ellis E III, Hupp JR, Tucker MR, editors. *Contemporary Oral and Maxillofacial Surgery*, 3rd ed. St. Louis: Mosby; 1998. p. 215-48.
- 15)Agarwal KN, Gupta R, Faridi MM, Kalra N. Permanent dentition in Delhi boys of age 5-14 years. *Indian Pediatr.* 2004 Oct;41(10):1031-5.
- 16)Faculty of Dental Surgery. Current clinical practice and parameters of care. The management of patients with third molar (syn: wisdom) teeth. London: The Royal College of Surgeons of England; 1997.

- 17)Harradine NW,Pearson MH,Toth B. The effect of extraction of third molars on late lower incisor crowding:a randomized controlled trial. *Br J Orthod*. 1998 May;25(2):117-22.
- 18)T. E. Southard, K. A. Southard, and L. W. Weeda, “Mesial force from unerupted third molars,” *American Journal of Orthodontics and Dentofacial Orthopedics*, vol. 99, no. 3, pp. 220–225, 1991.
- 19)NICE . *Guidance on the Extraction of Wisdom Teeth*.London: National Institute for Clinical Excellence; 2000.
- 20)SIGN . *Management of Unerupted and Impacted Third Molar Teeth*. Edinburgh: Scottish Intercollegiate Guidelines Network; 1999.
- 21)Marmary Y, Brayer L, Tzukert A, Feller L. Alveolar bone repair following extraction of impacted mandibular third molars. *Oral Surg Oral Med Oral Pathol*. 1986;61:324–6.
- 22)Walmsley, A.D, Walsh, T.F., Trevor Burke, F.J., Shortall, A.C.C., Lumley, P.J. & Hayes Hall, R. (2002). *Restorative dentistry*. Churchill Livingstone. Edinburgh. [1]23)Al-Khateeb TH, Bataineh AB: Pathology associated with im- pacted mandibular third molars in a group of Jordanians. *J Oral Maxfac Surg* 64:1598, 2006.
- 24)Friedman JW. 20th century dental (mal)practice in the 21st century. *J Calif Litigation*. 2004;17:37–40
- 25)Santosh Patil, Vishal Halgatti,Sneha Maheshwari;Prevalence of cysts and tumors around the retained and unerupted third molars in the Indian population.*Journal of Oral Biology and Craniofacial Research*. 2014;4(2):82-87. doi:10.1016/j.jobcr.2014.07.003.
- 26)Jay W. Friedman, DDS, MPH.The Prophylactic Extraction of Third Molars: A Public Health Hazard,*American Journal of Public Health*. 2007;97(9):1554-1559. doi:10.2105/AJPH.2006.100271.
- 27)AAOMS. Report of a workshop on the management of patients with third molar teeth. *J Oral Maxillofac Surg* 1994; 52:1102-12.



Published by MM Publishers
<https://www.mmpubl.com/ijperior>

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International 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.
 To view a copy of this license, visit <http://creativecommons.org/licenses/by-nc/4.0/> or send a letter to Creative Commons, PO Box 1866, Mountain View, CA 94042, USA.

Copyright © 2022 Gopi Krishna J