

Original Research

Effect of third molars in dental crowding as per orthodontist & oral surgeons perception: An original research

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ABSTRACT:

Aim: The aims of this study were firstly to assess the views of oral surgeons and orthodontists regarding prophylactic third molar extraction (TME) to prevent crowding of anterior teeth (CAT), and secondly to analyze the influence of clinical factors on such views, with a particular interest in the potential roles of age and specialty. **Methodology:** A six-question questionnaire was sent to 166 participants, of which 97 were orthodontists and rest 69 were oral surgeons. Their opinion was recorded on the role played by the third molar eruption in incisor crowding both in the lower and upper jaws. They also had to report their clinical viewpoint on the effectiveness of third molar extraction in order to prevent dental crowding. Descriptive statistical analysis was carried out with the data received. **Results:** 83.8% of the surgeons and the 82.5% of the orthodontists consider the force generated by the upper third molar eruption not able to cause dental crowding. On the contrary, the results related to the mandible arch show a higher percentage of surgeons (36.2%) and orthodontists (47.4%) thinking that the produced force is able to generate crowding. **Conclusion:** Orthodontists and oral surgeons have the same opinion on the role of the third molar in causing anterior crowding. The majority of both groups of clinicians do not consider their preventive extraction useful in order to prevent anterior crowding

Keywords: Third molar; Crowding; Extraction.

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INTRODUCTION

For several decades, there has been debate regarding whether third molars have an impact on crowding of anterior teeth (CAT) [1]. Several early studies appeared to support the notion. In Vego et al. [2] described an increase in CAT over time in patients with intact third molars. In 1982, Linquist, et al. [3] described a similar trend, but it was not clinically significant. Also, Richardson, et al. [4] reported a 5-year longitudinal study wherein orthodontic patients with impacted molars in the upper jaw were observed to have more crowding in anterior and molar

regions than patients without impacted molars. In Niedzielska, et al. [5] reported evidence consistent with the supposition that the so-called Ganss ratio, which is the ratio between third molar width and the retromolar space, may be predictive of CAT. However, Esan et al. [6], found that space availability was likely not a major determinant of CAT, but that third molar impaction type may be an important factor. Others have focused on interproximal forces between anterior teeth generated by the eruption of third molars as an indicator of CAT relapse, though the clinical significance of this index is unclear

[7,8]. In addition, Karasawa et al. evaluated three hundred subjects with a mean age of 20.4 years on the presence or absence of wisdom teeth and mandibular incisor crowding. They also found no statistically significant association between the presence of upper and/or lower third molars and anterior mandibular teeth crowding. Their conclusions stated that evidence on the role of third molars as etiologic factor in the late lower arch crowding is lacking, similarly to the ones of the previous study.[9] Meanwhile, a number of studies have failed to affirm the putative relationship between impacted third molars and CAT [10]. In Harradine, et al. [11], monitored 77 orthodontic patients for the development of CAT using plaster study casts, ortho-pantomographs, and cephalometric radiographs. Comparing Little's index of irregularity between patients with and without third molar extraction (TME), they did not find a significant effect of TME on subsequent lower incisor crowding. Several subsequent attempts to resolve this question also revealed no evidence of an effect of third molars on CAT [12], including studies examining the suggested role of impacted third molars on incisor alignment changes following orthodontic treatment [13,14]. The inclination for clinicians, including orthodontists and oral surgeons, to recommend prophylactic TME prior to their eruption to prevent CAT seems to be based more on personal experience and opinion than on empirical evidence from the clinical literature. In the USA, oral surgeons were found to be more likely to recommend prophylactic TME than orthodontists [15]. In 2000, NICE (National Institute of Health and Care Excellence) guidelines suggested that prophylactic TME should not be performed in Britain, even if the molars are impacted, in the absence of disease (e.g., infection) [16]. This more conservative view of performing TMEs only in the presence of symptoms has gained some prominence in Europe. Notably, in Italy, majorities of oral surgeons and orthodontists do not favor asymptomatic TME for CAT prevention [17]. Meanwhile, in a 2008 study in Spain, Torres et al. [18] found that prophylaxis remained the primary justification for TME referrals, with the second most common justification being orthodontic reasons. According to Lindauer, surgeons were still significantly more likely than orthodontists to believe that erupting third molars produce an anterior component of force and cause crowding of the anterior dentition, and were therefore more likely to recommend prophylactic removal of third molars to prevent crowding.

AIM OF THE PRESENT STUDY

The primary aim of the present study was thus to assess the opinions of oral surgeons and orthodontists in Saudi Arabia regarding the usefulness of TME for the prevention of CAT with a question-based survey,

and to determine what factors influence these opinions.

METHODOLOGY

A six-question questionnaire was created using Google Chrome and was sent to 166 participants, of which 97 were orthodontists and rest 69 were oral surgeons. Respondents were informed, in the first part of the questionnaire, that by answering the survey, they consented to the use of that data. Members had to indicate, choosing from a pop-up menu, their opinion on the role played by the third molar eruption in incisor crowding both in the lower and upper jaws. They also had to report their clinical viewpoint on the effectiveness of third molar extraction in order to prevent dental crowding. The survey was completely anonymous, and the researchers were not aware who sent or did not send the answers. Data were collected in an Excel document and analyzed using SPSS 25.0.

Descriptive statistics was computed. Categorical data are presented as numbers (frequencies) and percentages. Question responses with 95% confidence intervals were compared across demographic groups with chi-square tests.

RESULTS

83.8% of the surgeons and the 82.5% of the orthodontists consider the force generated by the upper third molar eruption not able to cause dental crowding. Lower percentages are reported in the mandible arch by the surgeons (63.8%) and orthodontists (52.6%). No statistically significant differences between surgeons and orthodontists were found regarding this question. Similar percentages were reported about the role of the third molar extraction to prevent dental crowding: 84.1% of the surgeons and 89.7% of the orthodontists do not consider the upper third molar extraction useful, while 63.2% of the surgeon and the 58.8% of the orthodontists do not consider the lower third molar extraction useful. In dealing with the upper arch in both groups, almost all the clinicians agree in avoiding third molar extraction; only 10.3% of orthodontists and 15.9% of oral surgeons consider this practice useful to prevent upper incisor crowding. Similar percentages are reported on the relationship

between eruption and crowding: 16.2% of the surgeons think that in the maxilla there is a relationship, but 6 (50%) of them answered 'sometimes', 2 (16.7%) 'often', 4 (33.3%) 'rarely', and nobody answered 'always.' The percentage between orthodontists was similar: 17.5% maintain that in the maxilla, the force due to third molar eruption is able to create anterior crowding, but 6 (31.6%) of them answered 'sometimes', 2 (10.5%) 'often', 11 (57.9%) 'rarely', and again nobody said 'always'. The results show that the majority of practitioners irrespective of their specialization think

that in the upper arch, the force is not capable of causing dental crowding. On the contrary, the results related to the mandible arch show a higher percentage of surgeons (36.2%) and orthodontists (47.4%) thinking that the produced force is able to generate crowding; 60% of surgeons answered 'sometimes,' 20% 'often', 16% 'rarely', and 4% 'always', while among orthodontists, 66% answered 'sometimes', 19.1% 'often', 10.6% 'rarely', and 4.3% 'always'. These results show a different

mindset about the role played by the lower third molar. Forty-one (59.4%) surgeons were older than 45 years old and 28 (40.6%) were younger than 45 years old, while 59 (61.5%) orthodontists were older than 45 years old and 37 (38.1%) younger than 45 years old. There were no statistically significant differences between groups ($P > 0.05$) even if a slight difference was observed between the two age categories especially among oral surgeons.

Table 1- Questionnaire used in the present study

S. No.	Questions
1	Which category do you belong to? (orthodontist - oral surgeon).
2	How old are you? (<45 years / >45 years).
3	Do you think that the eruption of upper third molar is able to create anterior dental crowding? (yes/no) (always, often, sometimes, rarely).
4	Do you think that the eruption of lower third molar is able to create anterior dental crowding? (yes/no) (always, often, sometimes, rarely).
5	Do you consider the prophylactic extraction of the upper third molar useful to prevent anterior dental crowding? (yes/no) (always, often, sometimes, rarely).
6	Do you consider the prophylactic extraction of the lower third molar useful to prevent anterior dental crowding? (yes/no) (always, often, sometimes, rarely).

Table 2- Data obtained in the present research from oral surgeons

Ques. No.	Oral surgeon	Orthodontist	P value
1	86 (41.6%)	97 (58.4%)	-
2	59.4% older than 45 years	61.5% older than 45 years	-
3	83.8% (upper 3 rd molar eruption doesn't cause anterior teeth crowding)	82.5% (upper 3 rd molar eruption doesn't cause anterior teeth crowding)	0.82
4	63.8% (lower 3 rd molar eruption doesn't cause anterior teeth crowding)	52.6% (lower 3 rd molar eruption doesn't cause anterior teeth crowding)	0.12
5	84.1% (upper 3 rd molar extraction not useful)	89.7% (upper 3 rd molar extraction not useful)	0.03
6	63.2% (lower 3 rd molar extraction not useful)	58.8% (lower 3 rd molar extraction not useful)	0.0145

P value >0.05 is significant

DISCUSSION

Orthodontists are generally considered more conservative and more used to retain healthy wisdom teeth and not considering them a cause of incisor crowding; oral surgeons, on the other hand, usually have a more interventionist approach leading to the extraction of all the four wisdom teeth even if asymptomatic. The survey did not show any statistically significant differences in the answers between the two groups (surgeons vs. orthodontists), but it pointed that a considerable part of dental practitioners still think that crowding is linked to the third molar eruption. Even if the majority of participating orthodontists do not believe in this relationship and responded 'no', there is still a great percentage of 'yes' especially dealing with the mandible (47.4%). This is in accordance with the study conducted by Lindauer et al. [15] on US practitioners using a similar questionnaire. In fact, they showed that more than half of the US orthodontists and oral surgeons consider the force

generated by the lower third molar eruption capable of generating anterior crowding. In this study, the majority of orthodontists and surgeons believe that prophylactic extraction is not useful both in the upper and in the lower arch to prevent incisor crowding: similar percentages are reported for the maxilla (89.7% orthodontists, 81.4% surgeons) and for the mandible (58.8% orthodontists, 63.2% surgeons). In a 2019 study conducted in India, Another study found that a sizable majority of dental professionals (~73%) in their sample recommend TME in the mandible to reduce the risk of CAT, with no significant differences among eight specialties. It is interesting to see that the opinions of the younger orthodontists do not differ from those of the older orthodontists; on the contrary, there is a difference between younger and older surgeons. Although not statistically significantly different, the younger are more likely to not suggest third molar extraction both in the upper (92.9%) and lower arch (74.1%) in contrast with the older (78% and 56.1%, respectively).

CONCLUSION

The majority of orthodontists and oral surgeons consider the upper third molar not able to cause dental crowding. On the other hand, for the lower third molar; especially, orthodontists had divided opinion. Both groups do not recommend the upper third molar extraction to prevent anterior crowding, but are more likely to suggest lower third molar extraction. So, they did not favor prophylactic TME to prevent CAT, though nearly a quarter do recommend prophylactic TME, especially oral surgeons who have received a referral for this purpose.

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