PROPHYLACTIC SURGICAL REMOVAL OF IMPACTED THIRD MOLARS: CONTEMPORARY VIEWS

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ABSTRACT

Removal of third molars is a common procedure performed in oral surgery. Although there are well-defined indications for removal of impacted third molars, removal of asymptomatic third molars is still universally practiced. This article reviews the body of knowledge regarding for and against the prophylactic surgical extraction of impacted third molars in contemporary oral surgical practice, and also discusses relevant issues related to the topic. Although, impacted third molars have been reported to be associated with diseases or lesions, the incidence of such occurrence was found to be apparently low. The weight of evidence in support of increased risk of mandibular angle fracture in the presence of unerupted or impacted lower third molar is overwhelming however, most recent evidence has shown that presence of impacted lower third molar helps to prevent condylar fracture. Therefore, prophylactic surgical extraction of impacted third molars in the absence of a well-defined indication does not seem a good clinical practice.

Key words: *Prophylactic extraction, impacted third molar, contemporary views.*

INTRODUCTION

The most common surgical procedure in dentistry is the removal of unerupted or impacted third molars. It is also the most controversial, especially when these teeth are asymptomatic. Some clinicians strongly believe the impacted third molars have no definite role in the mouth except to be involved in pathoses, hence these teeth are strongly recommended to be extracted even in the absence of pathology[1,2]. Whereas, other believe that the incidence of pathologies related to unerupted or impacted third molars are so low and insignificant that routine removal of asymptomatic impacted third molars is questionable and therefore, not a good clinical practice[3,4,5]. The last 2 decades have also witnessed overwhelming evidence in the literature supporting the fact that patients with impacted lower third molars (ILTM) are more likely to have an angle fracture than those patients without impacted mandibular third molars". These findings have led to recommendation of ILTM for prophylactic removal in adolescents and young adults who frequently play contact sports. Many reports have also shown that a high rate of removal of asymptomatic, disease-free ILTM is a common practice especially in Europe and America",". However, extraction of ILTM has also been reported to be associated with significant morbidity.

This article critically reviews the existing literature regarding the body of evidence for and against the prophylactic surgical removal of impacted lower third molars in contemporary oral surgical practice, and also discusses relevant issues related to the topic. For the purpose of review, unerupted and partially erupAmerica12,13.olars are considered as impacted third molars.

Pathologies Associated with Impacted Third Molars

Frequent diseases and lesions associated with unerupted and partially erupted mandibular third molars

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have been a source of concerns to many practitioners who believed in prophylactic surgical removal of ILTM. They believe the retention of ILTM in the mouth will cause a disease sooner or later. We examine some of their concerns.

Cysts Development: Dentigerous cyst is a common odontogenic cyst, and the third molars, especially the mandibular wisdom teeth are commonly related to dentigerous cyst more than any other teeth. Third molars are often prevented from erupting by the cysts[14]. Panoramic and intral oral radiographs have been extensively used as a screening method of survey of dentigerous cysts. The width (> 2.5mm) of follicular (pericoronal) space of ILTM were used to predict the probability of dentigerous cyst development[15,16]. Mourshed[15] reported an incidence of 1.44 dentigerous cysts per 100 unerupted teeth, while Keith[16] and Alattar et al[17] reported an incidence of 1.6% and 1% respectively. However, Stephens et a1[3] in an excellent review article believed that those assertions are pure speculations with no factual basis. Shear and Shigh[18] in an epidemiological study also reported an incidence of 0.001% and 0.0002% for black and white population in South Africa. In other studies a correlation between the incidence of cystic changes in follicular tissues and age of the patients have been reported[19,20]. Most cystic changes were found in patients between 20 and 25 years, and they therefore concluded that age may be used as an indication for surgical removal of ILTM, as the risk of surgical morbidity also increase with the increasing age. Guven et al[14] also reported an incidence of cyst formation associated with impacted third molars of 2.31%.

Tumors Development: The possibility oflesions such as ameloblastoma, epidermoid carcinoma, odontogenic carcinoma have been stressed as an indication for prophylactic removal ofimpacted third molars[19,21,23]. Guven et al[4] reported an incidence of 0.79% (benign, 0.77%; malignant 0.02%) among 9994 impacted third molars in their study, majority (92%) of which were found in the mandible. There were 41 ameloblastomas (51%), odontogenic myxomas (19%), 11 odontogenic fibromas (14%), 10 odontomas (13%), one squamous cell carcinoma and one fibrosarcoma involved. The incidence of ameloblastoma associated with impacted third molars has also been reported by Rakprasitkul (0.96%)[19,] Guven (0.41%)[4,] Regezi (0.14%)[24,] Shear and Singh (2%)[18]. The incidence of malignant tumors around impacted third molars is very low. The incidence is reported to be lower than 1%[4]. Eversole et a1[23] reported that approximately 50% of central mucoepidermoid carcinomas of the mandible were associated with a cyst or an impacted tooth.

Pericoronits: Pericoronitis, especially when recurrent is a well-defined indication for ILTM extraction. In 1979, The Consensus Conference on Removal of Third Molars[25] identified infection as a well-defined indication for extraction. Although, recurrent pericoronitis is generally accepted as a defined indication for ILTM extraction, there are some cases where simple excisional surgery to expose the clinical crown may be indicated'.

Other Lesions: Other well acceptable reasons for the removal of ILTM are unrestorable caries, non-treatable pulpal or periapical disease, fracture of tooth and destruction of adjacent teeth[25,26,27].

Third Molars and Mandibular Fractures

Mandibular Angle Fractures: The weight of evidence in support of increased risk of mandibular angle fracture in the presence of unerupted or impacted third molars is overwhelming. Patients with ILTM are more likely to have an angle fracture than those patients without impacted mandibular third molars[6,11] One mechanism by which third molars have been hypothesized to increase the risk of angle fractures is by occupying osseous space and, thereby, weakening the angle region by decreasing the cross-sectional area of bones (Fig 1). Based on this evidence, some investigators have advocated removing unerupted mandibular third molars to prevent angle fractures". By using dry isolated vervet monkey mandible, Reitzik et a1[28] showed that mandibles containing unerupted third molars fractured at approximately 60% of the force required to fracture the mandibles containing erupted third molars.

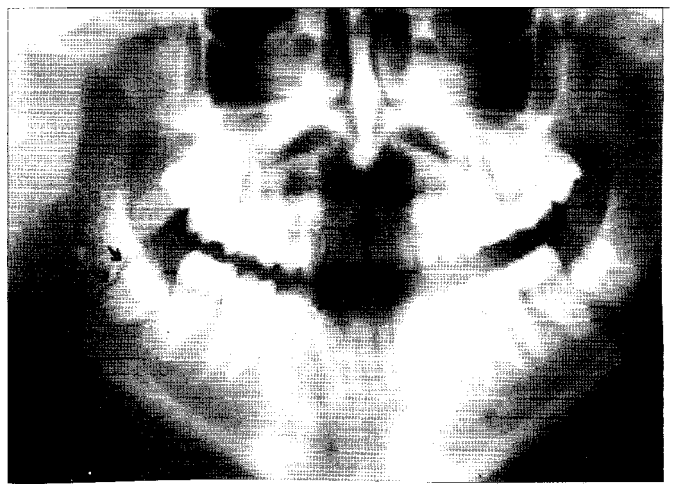

Fig 1: Orthopantomograph of the mandible shows a fracture (black arrows) involving right mandibular angle in the presence of an impacted third molar

Mandibular Condyle Fractures: In a recent retrospective study conducted by Zhu and his colleagues[29], in addition to confirming the findings of other previously published reports that the frequency of angle fractures is significantly higher in patients with unerupted third molars than in those patients without unerupted third molars; interestingly, they also found that the absence of unerupted mandibular third molars was significantly associated with higher incidence of condylar fractures (P< .001). They also found that there were significantly more symphysis and condyle combination fracture in the unerupted third molar absent group than in the third molar present group (P< .001). For nine patients who had a symphysis and bilateral condyle combination fractures, all of them had no unerupted third molars. In 2004, Iida et al' also reported a significant relationship between absence of ILTM and higher incidence of condylar fractures (P< .001). These two findings provided solid clinical evidence that incompletely erupted mandibular third molars help to prevent condylar fractures.

Matters Arising From the literature

There are therapeutic and prophylactic indications for the removal of impacted Third molars. There is however, no general agreement about the need for surgical removal of all asymptomatic impacted wisdom teeth. In 1997, the Faculty of Dental Surgery of the Royal College of surgeons of England published guideline for the management of patients with impacted wisdom teeth.

They are: Overt or previous history of infection including pericoronitis, Unrestorable caries, Non-treatable pulpal or periapical disease, or both, Cellulitis, abscess and osteomyelitis, Periodontal disease, Orthodontic abnormalities, Prophylactic removal in the presence of specific medical and surgical conditions, Facilitation of restorative treatment including provision of prosthesis, Internal/external resorption of tooth or adjacent teeth, Pain directly related to third molar, Tooth in the line of fracture or impending trauma management, Fracture of tooth, Disease of follicle including cyst/tumor, Impending orthognathic surgery or reconstructive jaw surgery, Tooth involved within field of tumor resection, Satisfactory tooth for use as donor for transplantation. (Adapted from Westcott K and Irvine Gil. Br J Oral Maxillofac Surg 2002; 40: 304-306).

The endorsement of these guidelines by the National Institute for Clinical excellence (NICE) of England in March 2000[13] with the added comment that a first episode of pericoronitis, unless particularly severe, should not be considered an indication for removal, made prophylactic in the absence of specific medical and surgical conditions unjustifiable.

The proponents of prophylactic removal of ILTM believe that diseases and lesions potentially associated with long-term retention of third molars justify their removal even in the absence of symptoms. But, can this assertion be justified by current reports in the literature? Can one consider the practice an evidence based decision? The data presented and the reports from the literature indicate that cysts and tumors do develop in a relatively small but still significant minority of patients[4]. There also seems to be a slight increase in the number of pathological conditions with increasing age[19,20]. All these must be taken into account in decision process when discussing the pros and cons of treatment with the patient. The important questions are". 1) What are the risks to the patients of deliberately retaining the impacted third molars? 2) What is the risk-benefit ratio of surgical removal? A strong indication for removal should be complemented by a strong contra-indication to its retention. The converse of this statement is also true. In addition, the substantial increase in the number of surgical extractions translates into increased health costa.

Radiological surveys of a mouth and jaws have shown that about one in five people in their 30s have at least one unerupted third molar and that these can remain in situ throughout life without pathologic change[31]. The complications associated with the removal of impacted third molars should not be underestimated. The surgery entails incision, stripping of periosteum, bone and tooth removal and suturing. Pain, swelling and trismus are almost universal after this procedure, and incidence of both inferior and lingual nerve damage is high[9]. In addition, Shepherd[32] also claimed that recent evidence suggests that the patients generally consider the disadvantages and complications of surgery as more serious than those of nonintervention.

Regarding mandibular fractures, incontrovertible evidence in the literature has shown that the presence of ILTM makes mandibular angle vulnerable to being fractured. In addition, the presence of ILTM has also been shown to be a preventing factor for condylar fractures. Is it appropriate to strengthen the mandibular angle region and to make the mandible more vulnerable to condylar fractures by means of removing an unsymptomatic ILTM? The treatment of condylar

fractures is more challenging and may be associated with more complications than that of angle fractures[7,29]. Therefore, prophylactic removal ofasymptomatic ILTM may not be beneficial as a means for reducing the chances of angle fracture in those patients at risk of maxillofacial trauma[29].

It is an accepted practice to recommend that when one third molar has a defined indication for removal, all third molars also be extracted with the same general anaesthetic. The argument for this is the avoidance of the risk of increased morbidity which may accompany future anaesthetics if retained teeth develop pathologic indications necessitating removal. However, the same principle of establishing a valid need for surgery must apply. The performance of unnecessary surgery to avoid anaesthetic risk is unacceptable unless the benefit of such surgery can be proven.

CONCLUSIONS

Although, considerable pathology may occur in association with impacted third molars, the present body of knowledge does not support removal of all impacted third molars in the absence of well-defined indications. The decision to extract or not to extract impacted third molars should be individualized, rather than generalized. Extraction of impacted third molars should be limited to those teeth with well-defined pathologic indications.

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