Original Article

Study of Kissing Molars in Turkish Population Sample

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Abstract

Background: "Kissing" or "rosetting" of molars are extremely rare phenomenon with limited cases in the dental literature. It was first described in 1973, refers to contacting occlusal surfaces of the impacted mandibular second and third molars. The aim of the present study was to report the incidence of kissing molars (KMs), classification, incorporated pathologies, and its management in a group of Turkish population. **Materials and Methods:** The panoramic radiographs of the patients who referred to Gaziantep University Faculty of Dentistry between January 2012 and November 2014 for surgical treatment retrospectively were evaluated. The cases of KM were determined and evaluated with respect to its type, combined pathology, and treatment. **Results:** Of the 6570 radiographs included in the study, 4 were seen to present as KM illustrating 0.060% of the sample. Three cases were Class II (0.045%), and only one case was encountered as Class III (0.015%). The mean age at the time that the KM teeth were identified was 34 years with a range from 29 to 40 years. Three of the patients were male, one of the patients was female, and all cases were seen unilaterally. One of the KMs was associated with dentigerous cyst formation. **Conclusion:** KM is a very rare clinical condition and few treatment options described. Early detection is essential to preclude complications and to provide more successful treatment. In this study, we evaluated the cases of KM and review of the literature also presented.

Keywords: *Dentigerous cyst, fourth molars, kissing molar, mucopolysaccharidosis*

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Introduction

Mandibular third molars are the most common unerupted teeth; retention of the mandibular second molar is much less common.[1] Simultaneous retention of both teeth is quite rare. "Kissing molars" (KMs) are an interesting finding in permanent mandibular molar teeth. KMs or "rosette formation" was first described by Van Hoof[2] in 1973, who reported impacted mandibular molars that were in the same follicular space and contacting each other, with roots pointing in opposite directions. This term has since been used for the same condition in other molars.[3,4]

KMs are rare, and there are few cases in the literature. The etiology of the phenomenon remains unknown. The diagnosis of KMs can be made radiologically. The aim of the article is to describe our cases, provide a literature review, and to evaluate KM cases in terms of incidence, age, gender, classification, associated pathology, and management in patients who were referred to the Oral and Maxillofacial Surgery Department, Faculty of Dentistry, Gaziantep University between January 2012 and November 2014.

Materials and Methods

The panoramic radiographs of patients who were referred to the Oral and Maxillofacial Surgery Department at the University of Gaziantep between January 2012 and November 2014 were evaluated retrospectively. In total, 6570 panoramic films were investigated.

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The data such as age, gender, location, dental involvement type, symptoms, radiographic technique, medical problems, treatment, histopathological findings, and postoperative complications of patients with KMs were evaluated. Impacted molars that did not have occlusal surfaces contacting each other and roots pointing in opposite directions were excluded. After the radiographic examination, 4 cases were found to be KMs with contacting occlusal surfaces between two impacted molars and roots pointing in opposite directions. The cases were grouped according to the classification of Gulses *et al*.[5] and pathologies combined with KMs were determined. Treatment procedures and follow-up radiographs were evaluated.

Results

In total, 6570 patients were evaluated, and 4 (0.060%) were seen to have KMs. Three patients were males, and one was female. Their ages were 29, 32, 35, and 40 years. Three of the cases showed impacted second and third molars [Class II; Figures 1-3].[5] The other involved the third and fourth molars [Class III; Figure 4].[5] One of the KM cases was associated with dentigerous cyst formation. In all cases, it was decided to extract the last KM because of postoperative fracture risk, vital structure injury, and the size of the lesion. There were no complications after the surgical treatments.

Figure 1: Kissing mandibular second and third molars within a dentigerous cyst

Figure 3: Panoramic radiograph with presence of kissing molars

Discussion

KM is an unusual condition and assessment of a case is important in deciding on management. The etiology of KM remains unclear though some theories have been proposed. It has been suggested to be related to mucopolysaccharidosis.[6] Mucopolysaccharidosis is a genetic disorder that causes lysosomal enzyme malfunction, leading to glycosaminoglycan accumulation in the cornea, heart, liver, central nervous system, bone, and other regions.[7] It has also been suggested that bone loss or expansion of cyst formation may cause movement of the molars. Dentigerous cyst formation causes resorption on the mesial surface of the distal tooth, and this condition stimulates the migration of the mesial tooth. Dentigerous cyst formation may be a reason for uneruption. However, the effect of dentigerous cysts on KM is unclear. Moreover, cyst formation may occur during or after the tooth eruption.[8,9] Thus, it is not clear whether a dentigerous cyst of the permanent teeth causes impacted teeth or impacted teeth result in dentigerous cysts. In our cases, there was no evidence of mucopolysaccharidosis according to clinical and radiological findings, and none of the patients had medical problems. With the exception of the first case, the patients had no related pathological findings [Figures 2-4]. In the first case, the KMs were associated with a dentigerous cyst [Figure 1].

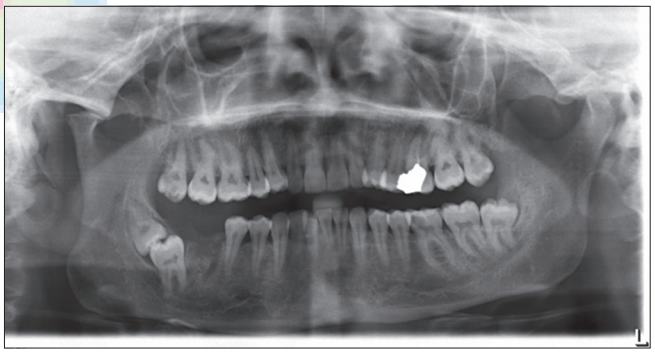

Figure 2: Orthopantomogram revealing impacted lower second and third molars with their crowns facing each other in single follicular space

Figure 4: Panoramic radiograph showing impacted third and fourth molars

Table 1: Distribution of age, gender, location, dental involvement type, symptoms, radiographic technique, medical problems, treatment, histo-pathological findings and post-operative complications of patients with kissing

Author and year of reporting	Gender/ age	Location	Teeth	Symptoms	Radio graphic technique	Medical problems	Treatment	Postoperative complications	Histo-pathological findings
Van Hoof, 1973	M/31	Mandible Right-Left	37,38 or 38,39 and 47,48 or 48,49	None	Panoramic	Mental Retardation	NA	_	_
Hanke D.(1978)	F/40	Mandible Right	48,49	İnfection	Panoramic	NA	NA	_	_
Robinson *et al.*, 1991	M/25	Mandible Right-Left	37,38 and 47,48	None	Panoramic	Healthy	NA	_	_
Nakamura *et al.* 1992	M/25	Mandible Right Left	36,38 and 46,48	None	X	MPS Mental Retardation	_	_	_
	M/17	Mandible Left	37,38	NA	Panoramic	MPS Mental Retardation	NA	_	_
	M/21	Mandible Left	NA	NA	Panoramic, CT	MPS	NA	_	_
Manani A,1998	_	Mandible Left	37,38	Non	Panoramic	NA	NA	_	_
Mclntyre G, 1997	F/19	Mandible Left	37,38	Pain and Pericoronitis	Panoramic	Healthy	Under GA, SE	Trismus and dry socket	_
Bakeen *et al.* 2005	M/23	Mandible Right-Left	38,39 and 48, 49	Pain	Panoramic	NA	Under GA, SE	_	No evidnce of disease
Koerner KR, 2006	M/39	Mandible X	X	Pericoronitis	X	_	Ex + Iliac grafting under GA	_	_
Krishnan B, 2008	F/36	Mandible Left	37,38	Swelling	Panoramic	Healthy	Under LA SE	None	Dentigerous Cyst
Buffano *et al.* 2009	M/42	Mandible Right	48,49	Pain	Panoramic	NA	Under LA SE	None	No evidence of disease
GiraldiNetro *et al.* 2012	F/30	Mandible Left	37,38	None	Panoramic CBCT	None	Under LA SE	None	No evidence of disease
	F/22	Mandible Left	37,38	None	Panoramic CBCT	None	Under LA SE	None	No evidence of disease
Sa fortes *et al.* 2012	M/33	Mandible Right/ Left	37,38 or 38,39 and 47,48 or 48,49	None	Panoramic CBCT	Healthy	Under LA SE	None	Dentigerous Cyst
Aydın Gulses *et al.* 2012	F/26	Mandible X	7,8	NA	X	_	Surgical Removal	None	Non
	F/32	Mandible X	7,8	NA	X	_		None	Dentigerous Cyst
	F/37	Mandible X	7,8	NA	X	_		None	Non

Contd...

Table 1: Contd..

Author and year of reporting	Gender/ age	Location	Teeth	Symptoms	Radio graphic technique	Medical problems	Treatment	Postoperative complications	Histo-pathological findings
	F/22	Mandible X	7,8	NA	X	_		None	Granulamatous chaneges of the Follicle
	F/20	Mandible X	7,8	NA	X	_		None	Non
	M/44	Mandible X	8,9	NA	X	_		None	Non
	M/23	Mandible X	7,8	NA	X	_		Paresthesia of IDN (4 months)	Granulamatous chaneges of the Follicle
	M/16	Mandible X	6,7	NA	X	_		Paresthesia of IDN (6 months)	Dentigerous Cyst
	M/27	Mandible X	8,9	NA	X	_		Paresthesia of IDN (3 months)	Dentigerous Cyst
Güven *et al.* 2013	M/32	Mandible Right	47,48	Pain	Panoramic	Down Syndrom	Under GA SE		Non
	F/13	Mandible Right	46,47	Non	Panoramic	Hyperchoolesterolemia MPS	Orthodontic treatment and under LA SE	NA	NA
	M/50	Mandible Left	46,47	Non	Panoramic	Healthy	Patient refused treatment	NA	_
	F/23	Mandible Right	47,48	Non	Panoramic CBCT	Astma MPS	Under LA SE	NA	NA
Kıran *et al.* 2014	F/18	Mandible Right/ Left	37,38 and 47,48	Swelling	Panoramic	Healthy	Under GA SE	None	Hyperplastic Dental Follicle
Anubhav A. 2014	F/18	Mandible Left Right	37,38 and 47,48	Swelling	Panoramic	Healthy	Under GA SE	Mild Pain	NA
B. Nedjat-Shokouhi and R.M.Webb 2014	M/18	Mandible Left Right	37,38 and 47,48	Swelling	Panoramic	Healthy	Under GA SE	None	Dentigerous Cyst
Sybille Scheuber Michael Bornstein	F/48	Mandible Right	47,48	Pain	Panoramic DVT	_	Consultation with neurology department	_	_
Present study	M/40	Mandible Left	37,38	Pain Swelling	Panoramic	Healthy	Under LA SE	None	Dentigerous Cyst
	M/32	Mandible Left	37,38	Pain Swelling	Panoramic	Healthy	Under LA SE	None	None
	M/35	Mandible Right	48,49	Pain	Panoramic CBCT	Healthy	Under LA SE	None	None
	F/29	Mandible Right	47,48	Non	Panoramic	Healthy	Under LA SE	None	None

NA=Not available; MPS=Mucopolysaccharidosis; CBCT=Cone-beam computed tomography; IDN=Inferior dental nerve; DVT=Digital volumetric tomography; M=Male; F=Female

In the study of Gülses *et al*.,[5] 2381 panoramic radiographs of patients with impacted lower third molars were investigated and 9 (0.37%) KM cases were reported. In the same study, KMs were classified in relation to impacted tooth numbers. According to the classification, Class I covered impacted first and second molars, Class II, impacted second and third molars, and Class III, impacted third and fourth molars. According to this classification, three of our cases were Class II and the other was Class III. In addition, in our study, incidence of KM (0.060%) is much lower than the result of Gülses *et al*.[5]

There are few cases of KM in the literature. Indeed, to our knowledge, 40 KM cases (totally 32 patients, 24 cases were unilateral, 8 cases bilaterally, total 40 cases) have been reported up to now [Table 1].[2-6,10-22] The ages of the patients were between 13 and 50 (mean age: 26.9). Of the patients, 16 were males (6 of them bilateral) and 15 were females (2 of them bilateral), and in 1 case, gender was not reported. Eight patients had bilateral mandibular localization, eight had right mandibular localization, and nine had left mandibular localization. In the remaining 7 patients, localization was not reported. Throughout the literature, the diagnosis was usually made using panoramic radiographs;[2-6,10-14,16-22] however, some cases were identified with cone-beam computed tomography (CBCT).[6,16-18,22] In total, 23 teeth were reported to have extracted surgically (5 bilaterally); in 1 case, the patient refused treatment, and in 1 case, the patient underwent a neurology department consultation. In 7 cases, no treatment was reported (three bilaterally). The incidence of KM cases showed a slight predilection for male versus female (M: 22/F: 17) and in terms of right and left side, the occurrence was almost equal (9 left, 8 right). The occurrence of KM cases seen on the left side was almost equal in males and females (M: Left 3, F: Left 4). However, on the right side, KM may be more common in females than males (M: Right 2, F: Right 4). Bilateral KM cases were more prevalent in males than females (M: 6, F: 2). In this study, we reported four new cases. Three of our patients were males, and one was female. Their ages were 29, 32, 35, and 40 years (mean age: 34). Two of the KMs were located on the left side and two on the right. Our findings (age, localization, and gender) were similar to those reported previously.[2-6,10-22]

In impacted third molars, orthopantomogram (OPG) is the most useful and reliable radiograph and is considered the gold standard in most cases. CBCT is recommended for further investigation to demonstrate the three-dimensional relationship between anatomical structures and impacted tooth roots or pathological lesions. Most authors used OPG for the diagnosis of impacted teeth as we did in the present study.[23,24]

Dentigerous cysts may develop into several pathologies, such as ameloblastomas, squamous cell carcinomas, and epidermoid carcinomas.[25-27] Thus, it is important to examine carefully changes in soft tissue around KMs. Unerupted teeth may cause tumors, cyst formation, recurrent pericoronitis, or internal and external root resorption.[28] The preferred treatment for KM is surgical removal of the teeth. However, practitioners should be careful to avoid damage to the neurovascular bundle and to avoid jaw fractures. The depth of the embedded teeth, root resorption of adjacent teeth, the relationship of the tooth to the ascending ramus, cystic changes, angulations, and the form of the roots are other factors that must be evaluated carefully.[17,29,30]

In three of our cases, the last molars were extracted, and the remaining molars were allowed to erupt normally. In the other case, which was associated with a dentigerous cyst, the third molar was extracted and the second molar was left because of proximity to the inferior alveolar nerve and fracture risk. Initially, cyst was treated with marsupialization for minimizing cyst size. Finally, the cyst was enucleated and the second molar was extracted.

Conclusion

Thus, KM is a rare but potentially important clinical condition that should be considered by dentists. Understanding the disease is essential for an accurate diagnosis and better clinical management. However, there are few reports in the literature and limited knowledge about KM. In the present study, we sought to advance the understanding of the different types of KM that might be seen in clinical practice by researched in our database and reviewing the literature reviews which were published before. Further studies are needed to assess the etiology and to develop treatment and management strategies.

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Conflicts of interest

There are no conflicts of interest.

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