Kissing Molars: Report of Four Cases and Review of the Literature

Kissing Molarlar: Dört Olgu Raporu ve Literatür Değerlendirmesi

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ABSTRACT Objective: The term 'kissing molars' (KM), is an extremely rare clinical condition. KM, refers to multiple impacted mandibular molars within a single follicular space whose roots lie in opposite directions and whose occlusal surfaces are in contact with one another. However, this term has also been used to describe a similar appearance with other impacted molars. KM may occur alone or accompanied by other disorders such as Mucopolysaccharidoses (MPS). **Material and Methods:** In this study, 4 new cases of KM have been presented. In addition 16 cases of KM composed 4 new cases and previously reported 12 cases have been evaluated. All cases are assessed according to age, sex, location, clinical symptoms, radiographic characteristics, systemic conditions and treatment options. **Results:** Ten (63%) patients out of 16 were male, 5 (31%) patients were female, and the sex of 1 patient (6%) is unknown. Five patients with KM had MPS and 1 patient with KM had Down's syndrome. In addition, there were no other systemic disorders in all patients. All 'kissing molars' of teeth were in mandible and of the 15 cases first diagnosed with panoramic radiograph and 1 case first diagnosed with periapical radiograph. **Conclusions:** It is concluded that the considerable radiographic findings and changes without notable symptoms, may occur involving inclination of the tooth and state of impaction in impacted molars during the usual age of eruption. This presented study revises the feature of KM phenomenon in the light of literature.

Key Words: Tooth, impacted; mucopolysaccharidoses; rosette formation; Down syndrome

ÖZET Amaç: 'Kissing molars' (KM) terimi çok nadir görülen klinik bir durumu belirtir. KM, mandibuler molar dişlerin tek bir folliküler boşluk içinde köklerinin ters doğrultuda ve oklüzal yüzeylerinin birbirleriyle temasta olduğu durumu ifade etmektedir. Ancak, bu terim aynı zamanda benzer görünümde olan diğer gömülü molar dişleri tanımlamak için de kullanılmaktadır. KM yalnız başına olabilir veya mukopolisakkaridozis (MPS) gibi diğer bozukluklara eşlik edebilir. Burada sunulan çalışma KM fenomeninin özelliklerini literatür ışığı altında gözden geçirmektedir. **Gereç ve Yöntemler:** Bu çalışmada, 4 adet yeni KM vakası sunulmuştur. Ek olarak daha önce literatürde rapor edilenlerle beraber 16 KM vakası, dördü yeni olmak üzere değerlendirilmiştir. Tüm olgular yaş, cinsiyet, yer, klinik semptomlar, radyografik özellikler, sistemik durumlar ve tedavi seçeneklerine göre incelenmiştir. **Bulgular:** On altı hastanın 10'u (%63) erkek, 5'i (%31) kadın olup, bir hastanın (%6) cinsiyeti belli değildir. Beş KM hastası MPS rahatsızlığına ve bir KM hastası da Down Sendromu'na sahiptir. Bundan başka diğer olgularda herhangi bir sistemik bozukluk rapor edilmemiştir. Kissing molar olan tüm dişler alt çenede olup ilk olarak 15 olgu panoramik radyografi ile ve 1 vaka periapikal radyografi ile teşhis edilmiştir. **Sonuç:** Sürme yaşı sırasında gömülü molar dişlerde, dişin açısı ve gömüklüğün durumuyla ilgili dikkate değer radyolojik bulgular ve önemli bulgular olmaksızın değişiklikler oluşabildiği sonucuna varılmaktadır.

Anahtar Kelimeler: Diş, gömülü; mukopolisakkaridozlar; rozet formasyonu; Down sendromu

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'Kissing molars' (KM) is an interesting and unusual clinical condition. The term KM was first reported by Van Hoof in 1973 and described as impacted permanent mandibular molars which occlusal surfaces are in contact with one another.[1-5]

In a series of cases with multiple 'rosetting' (rosette formation), in which a conglomeration of molars are impacted in a single follicle. KM with 'rosette formation' may occur in isolation or in combination with other disorders, such as mucopolysaccharidosis (MPS).[5,6]

KM may be easily diagnosed through radiographic examination, in which the impacted mandibular molars appear within a single follicular space, with their roots facing in opposite directions and with their occlusal surfaces in contact. The dental literature reveals only twelve cases of kissing molars.[1-7]

The purpose of this study to represent four new cases of KM and review the literature.

MATERIAL AND METHODS

Literature (1973-2012) comprises twelve cases of KM. Four of which were new cases presented in this study. All cases included the cases presented in this study were evaluated according to age, sex, location, clinical symptoms, radiographic characteristics, systemic conditions and treatment options (Table 1). All presented four new cases treated with their approval of informed consent forms.

This study was conducted according to the Declaration of Helsinki as a statement of ethical principles for medical research involving human subjects, including research on identifiable human material and data.

CASE REPORTS

CASE 1

A 32-year-old male patient with Down's syndrome was referred to the clinics of University of Ankara with the complaint of toothache. Clinical and radiological examination revealed multiple impacted teeth in the upper and lower dental arches. Among them, teeth 47 and 48 were located in a single follicular space, with their roots pointing in opposite directions and their occlusal surfaces in contact in a configuration described in the literature as KM. Follicular enlargement was also observed (Figure 1). Teeth 38, 47 and 48 were removed surgically under general anesthesia. Histopathological examination showed normal features of this area. Patient was followed for three months, and the healing of the surgical area was uneventful.

CASE 2

A 13-year-old female patient was referred to the clinics of University of Ankara in April 2008 due to the absence of the right mandibular permanent molar teeth. The patient revealed two systemic disorders, hypercholesterolemia and MPS. Panoramic radiograph showed impacted permanent molars in the right mandible located within a single follicular space, with their roots pointing in opposite directions and their occlusal surfaces in contact in a configuration described in the literature as KM (Figure 2a). Tooth 47 was surgically removed under local anesthesia (Figure 2b), and an orthodontic bracket was bonded to tooth 46 with stainless steel wire for eruption using orthodontic traction. Tooth 48 was allowed to erupt spontaneously. In the 6th months of orthodontic treatment, tooth 46 partially erupted, and orthodontic treatment was still continuing" (Figure 2c, 2d). One-year later, the orthodontic treatment was completed with eruption of tooth 46 in to the oral cavity (Figure 2e).

CASE 3

A 50-year-old male patient was referred to the clinics of University of Ankara in February 2010 complaining of non-functional teeth with an unaesthetic appearance. Clinical examination revealed an unaesthetic, non-functional occlusion with the absence of all molar teeth except for the maxillary first molars. A panoramic radiograph revealed the presence of unusually impacted mandibular and maxillary molars. Teeth 36 and 37 were in KM position (Figure 3). The patient refused both surgical and orthodontic treatments for socioeconomic reasons, but he accepted to remain under follow-up.

TABLE 1: Kissing molar cases reported in the literature and presented cases.

	Age (Year)	Sex	Location	Teeth	Symptom	Radiological Technique	Systemic Disease	Treatment
Van Hoof R.F. (1973)[1]	31	M	Mandible Right-Left	NA	Symptom free	Panoramic	Mental Retardation	NA
Hanke D. (1978)[9]	40	F	Mandible Right	48,49	Infection	Panoramic	NA	NA
Robinson et al. (1991)[4]	25	M	Mandible Right-Left	37,38 and 47,48	Symptom free	Panoramic	Healthy	NA
Nakamura et al. (Rosette Formation including kissing molars) (1992)[8]	21	M	Mandible Left	NA	NA	Panoramic CT	MPS	NA
Nakamura et al. (Rosette Formation including kissing molars) (1992)[8]	17	M	Mandible Left	37,38	NA	Panoramic	MPS Mental Retardation	NA
McIntyre G. (1997)[6]	19	F	Mandible Left	37,38	Pain and Pericoronitis	Panoramic	Healthy	Under GA, SE
Manani A. (1998)[7]	NA	NA	Mandible Left	37,38	Symptom free	Panoramic	NA	NA
Bakaeen et al. (2005)[3]	23	M	Mandible Right-Left	38,39 and 48,49	Pain	Panoramic	NA	Under GA, SE
Krishnan B. (2008)[5]	36	F	Mandible Left	37,38	Swelling	Panoramic	Healthy	Under LA, SE
Boffano et al. (2009)[2]	42	M	Mandible Right	48,49	Pain	Panoramic	NA	Under LA, SE
Presented Study; Case 1	32	M	Mandible Right	47,48	Pain	Panoramic	Down Syndrome	Under LA, SE
Presented Study; Case 2	13	F	Mandible Right	46,47	Symptom free	Panoramic	Hypercholesterolemia MPS	Orthodontic Treatment and Under LA, SE
Presented Study; Case 3	50	M	Mandible Left	46,47	Symptom free	Panoramic	Healthy	Patient refused treatment
Presented Study; Case 4	23	F	Mandible Right	47,48	Symptom free	CBCT Panoramic	Asthma MPS	Under LA, SE

NA: Not Available, M: Male, F: Female; CT: Computerized Tomography; GA: General Anaesthesia; LA: Local Anaesthesia; SE: Surgical Extraction; CBCT: Cone Beam Computerized Tomography.; MPS: Mucopolysaccharidosis.

FIGURE 1: (Case 1) Panoramic radiograph showing KM and follicular enlargement of right mandibular molars (Teeth 47, 48).

FIGURE 2a: (Case 2) Panoramic radiograph showing KM (Teeth 46, 47) before treatment.

FIGURE 2b: (Case 2) Panoramic radiograph taken after surgical extraction of Tooth 47.

CASE 4

A 23-year-old female patient was referred to the clinics of University of Ankara in May 2010 with a complaint of dental calculus. Her medical history revealed two systemic disorders, asthma and MPS. Routine radiological examination revealed KM in the right mandible (Figure 4a). Cone beam computed tomography (CBCT) imaging was performed to provide a more detailed analysis of the region (Figure 4b). Due to the prolonged duration of orthodontic treatment, patient preferred the removal of teeth 47 and 48. During the removal, it was observed that the both teeth were in the same follicle (Figure 4c).

FIGURE 2c: (Case 2) Panoramic radiograph showing the eruption of Tooth 46 six months after surgery and orthodontic traction.

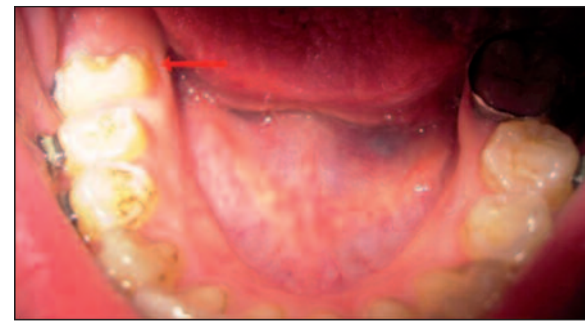

FIGURE 2d: (Case 2) Photograph of the patient six months after surgery and orthodontic traction. The right mandibular first molar is almost in normal position in the dental arch.
* Red arrow showing Tooth 46.
(See color figure at http://dishekimligi.turkiyeklinikleri.com/)

FIGURE 2e: (Case 2) Panoramic radiograph showing the complete eruption of Tooth 46 one-year after surgery.

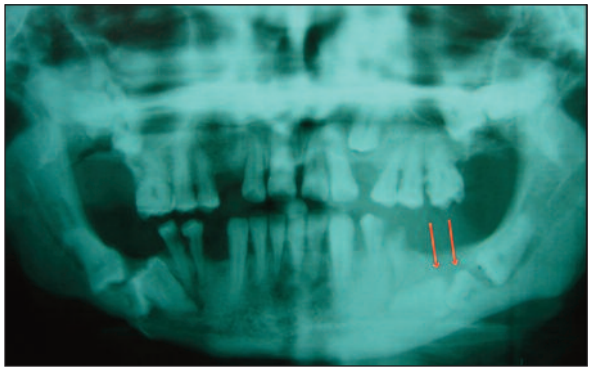

FIGURE 3: (Case 3) Panoramic radiograph showing a KM with 'rosette formation' in the left mandible.
* Red arrow showing the KM teeth.
(See color figure at http://dishekimligi.turkiyeklinikleri.com/)

FIGURE 4a: (Case 4) Panoramic radiograph showing KM in the right mandible.

RESULTS

The average age of patients was 32 years, and the age range was 13-76 years. Of the sixteen cases evaluated, ten (63%) were male and five (31%) were female, whereas the sex of one patient (6%) is unknown. KM was observed in the mandible in all cases and on the left in seven patients (44%), on the right in six patients (38%) and bilaterally in three patients (19%). The majority of cases (n=14, 88%) involved third molar teeth. Of the sixteen patients, six patients (38%) were clinically asymptomatic. Fifteen cases were diagnosed with panoramic radiographs and one case with a periapical radiograph. Five patients had MPS; one patient had Down's syndrome. Treatment consisted of surgical extraction in six cases (38%); in one patient (6%), treatment included a combination of orthodontic and surgical intervention; one patient (6%) refused treatment; and in eight (50%) patients, the way of treatment is unknown.

DISCUSSION

KM with 'rosette formation' may occur in isolation or in combination with other disorders or syndromes. Two of four patients (Case 2 and 4) had MPS and the authors concluded that 'rosetting' or KM may occur as an isolated feature of this disease.[5,6,8] However, the establishment of any definitive correlation between systemic diseases, syndromes and KM requires more detailed examination of additional cases.

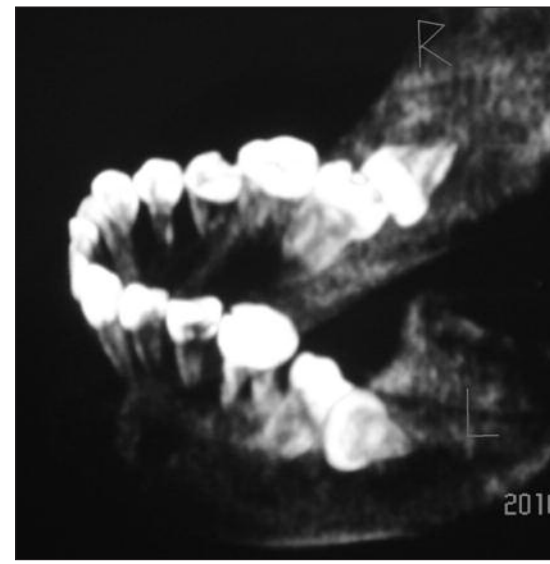

FIGURE 4b: (Case 4) CBCT reveals KM in the right mandible.
R: right; L: left.

FIGURE 4c (Case 4) Intraoperative photographic view showes extraction of the crown of KM.
(See color figure at http://dishekimligi.turkiyeklinikleri.com/)

Similar to the earlier reported cases, all KM were reported in this study were found in the mandible. Previously reported KM were all third molar teeth. One of the cases presented in this report included first molar tooth and one of them included second molar tooth (Table 1).

The failure of permanent teeth eruption is a common dental anomaly referred to as impaction. One of the rare clinical condition in dentistry KM is impacted teeth whose crowns face one another and whose roots lie in opposite directions.[6,8] The etiology of aberrantly positioned teeth is not well understood. Several studies have discussed prevalence and causes of impaction in different populations and there is little information available concerning the incidence, etiology, or treatment protocols of KM.[8-12]

Unerupted teeth may lead to pathological conditions such as internal and external root resorption of adjacent teeth and recurrent pericoronitis cysts and tumors.[9-12] The preferred treatment for KM is surgical extraction of the teeth. Removal of KM requires greater care than extraction of teeth with normal morphology because of the possibility of damaging adjacent teeth or the neurovascular bundle.[2,10,13] In the presented study, one case (Case 2) has been treated by combination of orthodontic and surgical intervention. The outcome was considered satisfactory. One of the impacted teeth was maintained within the dental arch.

In conclusion, KM has seldom been reported in the literature. Early diagnosis of KM facilitates treatment procedures and inhibits the likelihood of complications such as infections, cysts and tumors. Radiological examination is vital for correct diagnosis of impaction. Providing more detailed information with new cases will be helpful in the treatment plan of this rare clinical condition.

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