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RESEARCH ARTICLE

TRANSMIGRATED & UNUSUALLY IMPACTED CANINE TEETH WITH ASSOCIATED PATHOLOGIES IN MANDIBLE A PROSPECTIVE STUDY

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ABSTRACT

Objectives & Aims: Canine impaction is one of the anomalies that should be considered by clinicians in detail. Various studies have reported impacted & transmigrated canine teeth in literature, but comprehensive studies available are very few. The aim of this study was to determine the incidence, prevalence, patterns & potential distribution of unusually impacted canine teeth in mandible stratified by gender, location (RT or LT) & unilateral or bilateral in mandibular. This study also aims to report transmigrated canine & the possible relationship between impacted & transmigrated with dentigerous teeth & other associated pathologies in mandible

Methods: The study was carried out in the department of Oral & Maxillofacial surgery over a period of three years. Patients were referred from oral medicine, radiology department with the symptom of swelling, pain, discharge or missing canines. Patients were also referred from orthodontics department for missing canines & retained deciduous canines. Patients with maxillary canine impactions were excluded. After examination of panoramic radiographs & clinical symptoms diagnosis was made, associated symptoms like pain, swelling, number, localization (RT/LT) age & sex, retained deciduous teeth, root resorption of adjacent teeth was also noted.

Results: The included sample consisted of 83 patients diagnosed with canine impacted canines in mandible on clinical examination & panoramic radiographs. Age ranged from 21 to 67 years. 46 were females &37 were males 62% were on left &36 on right side of mandible. 41 patients were between age group of 21-40 years, 19 cases were between 40-45, 21were between 45-60 years. Two patients were between 60- 65 years dentigerous cyst was seen in 48 cases above the 40 years of age, 27 cases were diagnosed on routine radiographic examination without any pathology, 24 cases reported with malocclusion, retained & mobile deciduous teeth. Two patients had transmigrated canine associated with draining sinus

Conclusion: The early detection of impacted as well as transmigrated teeth is crucial for successful treatment, therefore demographic studies are important & should be managed to prevent complications.

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INTRODUCTION

Tooth impaction is a common dental condition frequently reported in the literature (Chu *et al*., 2003; Hattab *et al*., 2014; Peltola *et al*., 1993). It was stated that when a tooth is unerupted more than 1 year after the normal age for eruption, it is then defined as "impacted" (Torres-Lagares *et al*., 2006).

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Dentist almost daily diagnose teeth that fails to erupt in oral cavity due to interference from gum, bone or another teeth within specified time (Msagati, 2013). The prevalence of impacted teeth varies according to the population & is reported to be between 6, 9& 76, 6%. The most commonly impacted teeth were reported as third molars, maxillary canines, maxillary central incisors, & premolars (Yamaoka, 1995; Shah, 1978). Obviously canine play an important role in aesthetics & function in human dentition (Hijwai and Mohammed, 2015) The incidence of canine impaction in particular range from

0.8-3.6% of general population (Aydin *et al*., 2004). Transmigration is defined as migration of impacted tooth crossing the midline to the opposite side of the arch. It is very rare condition than standard impaction cases typically affects the mandibular canines (Gonzalez-Sanchez, 2007). The prevalence of transmigration in different population & ethnic groups was reported to be between 0.1-0.34% in several studies (Javid, 1985) Although various terminology has been used to describe this condition, while Javaid (1985) suggested that a tooth must be classified as transmigrated when more than half of length of root have crossed the midline. Mupparapu (2002) stated that canines were considered transmigrated if the path of eruption had been altered & the tooth had drifted to the opposite side of mandible with at least half the crown length crossing the midline. The aetiology of canine impaction is associated with several systemic & local factors. These factors may include early loss of the deciduous canine, or its prolonged retention, arch length deficiency. Supernumerary teeth, presence of pathologic lesion in the region, cleft lip & palate; less common causes are cleidocranial dysplasia Down syndrome febrile diseases (Manne *et al*., 2012)

MATERIALS AND METHODS

This prospective study was conducted in the department of Oral & Maxillofacial Surgery from May. The included sample consisted of patients referred from oral medicine & radiology & orthodontics either for treatment of pathology or surgical exposure for impacted. Diagnosis was made on clinical examination & panoramic radiographs & CT scans. Age ranged from 21 to 67 years. It has been suggested that following signs were considered indicated that canine is impacted

1 Absence of normal labial or presence of palatal bulge
2 Prolonged retention of deciduous canine beyond 15 years of age
3 Delayed eruption of canine teeth
4 Distal tipping or migration of lateral incisor
5 Swelling or pus discharge

After investigations & informed consent all transmigrated teeth were surgically removed along with enucleation, curettage, treatment of adjacent teeth was also done under local /general anaesthesia. Sutures were removed after 7 days. Cystic lining & or granulation tissue was sent for histopathologic examination. (Figs 1-7)

Fig. 1. Mandibular transmigrated canine

Fig. 2. Extra oral draining sinus associated with impacted canine

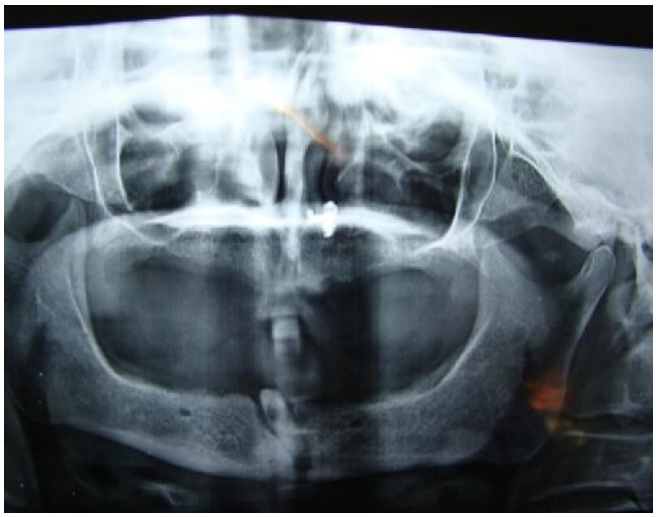


Fig. 3. OPG revealing transmigrated canine with pathologic fracture mandible

Fig. 4. Canine transmigration with pathologic fractures

RESULTS

The sample consisted of 83 patients diagnosed with impacted canines in mandible on clinical examination & panoramic radiographs. Age ranged from 21 to 67 years. 46 were females & 37 were males. 52 were on left & 30 on right side of mandible. Pie chart 1

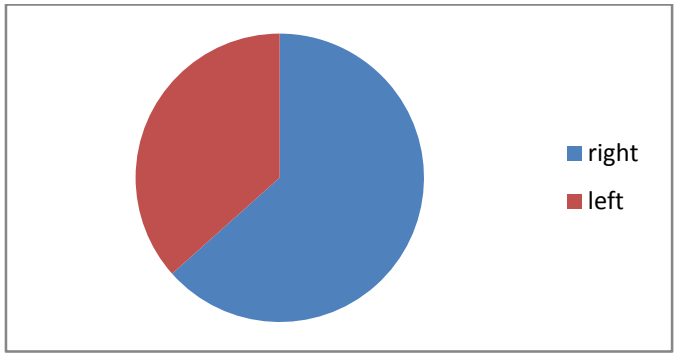
Table 1. Age, symptom & sides of mandible affected

Column 1	Column2	Column3	Column4	Column5
symptoms	dentigerous	malocclusion	asymptomatic	pathologic fractures & transmigrated canines
	48	24	27	2
sides	RT	LT		
	52	30		
AGE	21-40	40-45	45-60	60-65
	40	21	19	2

Fig. 5. CT scan showing impacted canine in mandible

Fig. 6. Impacted canine & lateral incisor

Fig. 7. Unusual canine impaction



41 patients were between age group of 21-40 years, 19 cases were between 40-45, 21were between 45-60 years. Two patients were between 60- 65 years. Dentigerous cyst was seen in 48 cases above the 40 years of age, 27 cases were diagnosed on routine radiographic examination without any pathology, 24 cases reported with malocclusion, retained & mobile deciduous teeth. Two patients had transmigrated canine associated with draining sinus & pathologic fractures (Table 1).

DISCUSSION

Canine plays a very important role in functional occlusion, appearance on the corner of mouth for aesthetic purpose ,food tearing etc But because of eruption pattern & sequence canine are more prone to impaction & should be considered by the clinician in detail. AS found in literature & because of eruption pattern & sequence canine are more prone to impaction & Maxillary canine are affected 20 times more frequently than mandibular canines as stated by Rohrer (1929). In the present study also 592 (60.22%) canine impaction were in maxilla &319 (46.7%) in mandible Chu *et al*. (2003) reported this ratio to be 6.14. In the present study maxillary & other impactions were excluded from the study. Canine impaction was found more on left side than right as reported in studies by (Peck, 1998; Mupparapu, 2002; Camilleri and Scerri, 2003; Shapira and Kuftinec, 2003) In the present study same findings were noted. 62% were on left &36 on right side of mandible. Females have been reported to have more impacted & transmigrated canines than males (Shapira and Kuftinec, 2003.) (Aydin *et al*., 2004) found that males are more affected than females. Age ranged from 21 to 67 years. 55.4 %were females & 44.5% were males. Nodine (1943) & Ando *et al* (19664) reported that impacted & transmigrated canines often do not produce any apparent symptoms similar to the present study canine reported with symptoms. (Mupparapu, 2002; Gonzalez–Sanchez, 2007; Aydin and Yilmaz, 2004; Peterson and Principles, 1988; Peterson) who reported a No of patients complaining of pain, infection, cyst formation fistulisation, tumors, resorption of adjacent teeth, jaw fractures,mal positioning of mandibular anterior teeth. Al-Waheidi (1996) suggested that canines were usually associated with cystic lesion & presence of a cyst at crown of canine might facilitate migration process. In the present study two patients had transmigrated canine associated with draining sinus and

pathologic fractures. Dentigerous cyst was seen in 34% of cases above the 40 years of age, 26% cases were diagnosed on routine radiographic examination without any patholog.54% reported with malocclusion, retained and mobile deciduous teeth. The aetiology and exact mechanism with regard to transmigration is not clear, (Camilleri and Scerri, 2003). It has been suggested that canine transmigration is congenital (Peck, 1998). While Ando *et al*. (1964); Shapira and Kuftinec (2003) suggested possibility of transmigration may be due to retention or pre mature loss of primary teeth, crowding, spacing, supernumerary teeth & excessive crown length of mandibular canines. Sometimes transmigration is a result of local pathology like cysts, tumours & odontomes. Al-Waheidi (1996) suggested that canines were usually associated with cystic lesion & presence of a cyst at crown of canine might facilitate migration process. Joshi (2001) stated that it was difficult to differentiate whether these pathologic conditions were responsible for transmigration process or that the pathology occurred after migration of canine. Management options for transmigrated or impacted canine include surgical removal, transplantation; surgical exposure with orthodontic alignment (Rabellato and Schabel, 2003). Surgical removal is more appropriate (Camilleri and Scerri, 2003). In the present study impacted and transmigrated canines were treated by surgical removal and treatment of associated pathology like enucleation of cystic lining, treatment of adjacent teeth etc. long term follow up was done to check the recurrence of pathology. Canine exposure was also done in patients who were referred from orthodontic department

Conclusion

According to current study the impacted mandibular canine teeth should be detected in early stages in order to prevent possible complications like cyst, jaw fractures & odontomes etc

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Notes

There is no financial or other competing interest

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