

### **Transmigration of Mandibular Canines - A Review of Literature and Report of 4 Cases**

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#### **Abstract**

The purpose of this paper is to present the report cases of migration of mandibular canine crossing the midline of the mandible. This developmental anomaly is incidental finding during the radio graphic examination. Most commonly associated with over retained deciduous canines or missing permanent canines, an intraoral radio graph should be supplemented with panoramic radio graph for investigation of transmigrated canine.

**Keywords:** Trans migration, Impacted canine in mandible, Panoramic radio graph

#### **Introduction**

The term “transmigration” refers to the intra osseous migration of unerupted teeth across the midline. [12,13] Various authors defined transmigration in different ways. Javid [14] and Mupparapu [1] defined transmigration when more than half of total length of canine has crossed the midline, while Tarsi Tano et al. [7] defined transmigration when the canine crosses the midline in its pre-eruptive phase. The most common teeth influenced by trans

migration are mandibular cuspid. There are numerous theories proposed in literature regarding the etiology of trans migration, including the most accepted theory of abnormal displacement of tooth buds in embryo genesis phase.<sup>[15]</sup> It is incidental findings during panoramic radiograph. Usually there are no clinical symptoms, the absence of permanent mandibular cuspid makes clinician to take a screening panoramic radio graph.

Trans migration of mandibular cuspid ranges from mild to extreme. Unilateral transmigration is a rare entity, it is more common in mandible as compared to maxilla. Bilateral transmigration is extremely rare entity as compared to unilateral transmigration. It’s prevalence more common in female as compared to male. This anomaly affects more commonly mandibular left than right canines. In asymptomatic patients when indications for removal of impacted canine not compulsory, it is advisable to leave the impacted canine at their position. In such cases routine radio graphic examination is essential to observe for any pathologic changes.<sup>[2]</sup>

Mupparapu has proposed a classification of unilaterally transmigrating mandibular canines in 2002. (Table2).

### **Case Reports**

#### **Case 1**

A 34-year-old female patient reported to the department with pain in upper left posterior region since 10 days. On intraoral examination decayed teeth in 28 and missing 33 was seen. After clinical examination panoramic radio graph was done which reveled impacted 33 and 48. 33 was seen crossing midline and present apical to 43. (Fig.1)

#### **Case 2**

A 38-year-old male patient reported to the department with the chief complaint of pain in right lower posterior region of a jaw since a week. On intra oral examination decayed 45 46 associated with pain and root stumps in 16, 17, missing 33. After clinical examination, panoramic radiograph were advised which revealed, periapical radio lucency, widening of the periodontal ligament space in 45 and 46 and incidental finding of impacted mandibular canine 33 was seen which crosses the midline. (Fig.2)

#### **Case 3**

A 11-year-old male patient refer from pedo dontic department for panoramic radiograph to see the mixed dentition status, which also revealed mesio angular impact ed 43 associated with widened follicular space were below the apex of 31 and it is asymptomatic in nature without any pain and swelling. (Fig.3)

#### **Case 4**

A 21-year-old female patient reported to the department of oral medicine and radiology with chief complaint of spacing in lower anterior region of the jaw. Panoramic radiograph were taken which showed horizontally impacted right side mandibular canine which crosses the midline (Fig.4). It was present near the lower border of the mandible. Final diagnosis of trans migration of man

dibular canine was given. Other findings in panoramic radio graph revealed impacted 23 with over retained canine 63.



Fig 1: Panoramic radiograph showing transmigration of 33 below the apices of the mandibular canine 43.



Fig 2: Panoramic radiograph showing impacted tooth 33 that has crossed the midline and is below the apices of the mandibular incisors.



Fig 3: Panoramic radiograph showing impacted tooth 43 that has crossed the midline and is below the apices of the mandibular incisors 31.



Fig 4: Panoramic radio graph shows horizontally impacted 43 which crosses the midline of the jaw.

Table 1: Canine transmigration cases observed

Case No.	Age (Yr.)	Gender	Canine Migrated	Position Of Migrated Canine	Inclination	Mupparapu's Type	Associated Pathology	Other Observations
1	34	Female	33	43	Mesioangular	Type 1	Nil	Impacted 48
2	38	Male	33	41 42	Mesioangular	Type 1	Nil	Nil
3	11	Male	43	31	Mesioangular	Type 1	Enlargement of follicle	Nil
4	21	Female	43	33	Horizontal	Type 2	Nil	Impacted 48 38 33 over retained 63

Table 2: Mupparapu used five criteria to classify the transmigrated canines. These are summarized as follows:<sup>[1]</sup>

Type 1	The canine is impacted mesioangularly across the midline, labial, or lingual to the anterior teeth with the crown portion of the tooth crossing the midline.
Type 2	The canine is horizontally impacted near the inferior border of the mandible below the apices of the incisors.
Type 3	The canine has erupted either mesial or distal to the opposite canine.
Type 4	The canine is horizontally impacted near the inferior border of the mandible below the apices of either premolars or molars on the opposite side.
Type 5	The canine is positioned vertically in the midline with the long axis of the tooth crossing the midline.

## Discussion

Though the etiology and exact cause of transmigration is still not clear, over the years various probable factors have been associated. These are anomalous position of tooth germ, displacement of dental lamina in the embryonic life, strong eruption force, agenesis of the adjacent teeth, premature loss of primary teeth, over retained canines, crowding, spacing, super numerary teeth, excessive length of crown, bony pathology resembling a cystic lesion, tumors, cysts, odontomas, genetic role, fracture and idiopathic causes.<sup>[11]</sup> Vichi et al proposed that proclination of the lower incisors, increased axial inclination of the unerupted canine and an enlarged symphyseal cross-sectional area of the chin may be favorable conditions for transmigration.<sup>[19]</sup>

Canine impaction occurrence is more in the maxilla than in the mandible, but canine trans migration is more frequent in the mandible. The mandibular canine is the most common tooth in which migration and crossing of the midline has been recorded.<sup>[3-5]</sup> Ando et al. were the first to utilize the term “trans migration”. Treatment considerations for transmigrated teeth depend on the stage of development, position of the teeth, where they are identified and whether the patient is symptomatic or not. Treatment proposed for transmigrated mandibular cuspid are auto-transplantation, surgical removal, and surgical exposure with ortho dontic alignment. If the patient is asymptomatic, than trans migrated impacted canine could be left at their place, but it is very important to see the position

or any pathological changes of these teeth by taking regular panoramic radio graphs. [9,10] Transmigrated cuspid are usually asymptomatic and discovered on routine panoramic radio graph taken for orthodontic purposes. They can sometimes be associated with pain and discomfort, swelling or paresthesia due to impingement of mandibular canal. [16,17] Management of transmigration mainly involves surgical extraction. [18] In asymptomatic patients with no pathological alteration, surgical extraction can be deferred, and the patient can be put on periodic follow-up.

### Conclusion

Transmigration was a rare phenomenon before the invention of panoramic radiography. The prescription of panoramic radiograph as a routine radiograph for evaluation of over-retained deciduous canines or missing permanent canines has led to increased cases of transmigration. An intraoral periapical radio graph should not be sufficient to detect transmigration so panoramic radiograph also to be taken. Early diagnosis help dentists to preserve canines, which play a key role, in esthetics and function in the human dentition.

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