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A Rare Case of Mandibular Canine Transmigration with Concomitant Severe Incisor Root Resorption: A Diagnostic Revelation

Dr Ayushi Jain[1], Dr Mohit Kumar[2], Dr Harshika Sharma[3]

[123] Department of Dentistry, Kalyan Singh Government Medical College, Bulandshahr, Uttar Pradesh, India- 203001

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Abstract

Objective: This case report presents a rare and extreme manifestation of a vertically impacted and transmigrated mandibular canine, highlighting its diagnostic challenges and destructive potential towards surrounding dentition.

Case Presentation: A 17-year-old girl presented with pain in the lower front jaw. Examination showed a retained primary mandibular left canine, missing permanent canine, and pulpal exposure in the central incisors. OPG revealed the permanent mandibular left canine was impacted and transmigrated, with its crown located between the roots of the left central and lateral incisors. This unusual position led to significant external root resorption of the lateral incisor and primary canine, and mild resorption of the central incisors.

Discussion: The retained primary canine was a key etiological factor. Advanced imaging was crucial for diagnosis and treatment planning, revealing the full extent of irreversible damage. The severity of root resorption and the deep, transmigrated position of the canine made surgical extraction the primary treatment choice, as orthodontic alignment was considered highly complex and contraindicated.

Conclusion: Mandibular canine transmigration, though rare, can cause severe root resorption. This case underscores the importance of early radiographic diagnosis and intervention when a permanent canine is missing and a primary tooth is retained. For severe cases with significant pathology, surgical extraction is often the necessary management to resolve infection and prevent further damage.

Keywords: Transmigrated Canine, Impacted Mandibular Canine, Root Resorption, Vertical Impaction, Orthopantomograph

Introduction

Tooth impaction is defined as a permanent tooth that is unerupted more than a year after the normal age of eruption or a tooth that fails to emerge into the dental arch with mandibular third molars and maxillary canines being the most frequently involved. Mandibular canines are crucial teeth, serving as cornerstones of dental arch formation and playing a major role in functional occlusion and aesthetic smiles.(1,2) Mandibular canine impaction is considered a much rarer phenomenon than maxillary impaction, with a low prevalence rate of 0.05%-0.44%.(3) Although some contemporary systematic reviews suggest ranges as high as 0.92% to 5.1% in certain orthodontic populations.(4) While maxillary canines impaction often shows a strong female predilection, mandibular canines generally do not show a distinct gender difference. (5)

A particularly rare manifestation of this anomaly is canine transmigration, defined as an abnormal pre-eruptive migration where the tooth crown crosses the midline of the arch, specifically when more than 50% of its length has crossed this boundary.(6) Transmigration is characteristic of impacted teeth and is primarily observed in the mandibular arch. The incidence of transmigration is very low, typically ranging between 0.1% and 0.31%.(7) It is found to be significantly more common in patients with mandibular canines (18.8% prevalence) compared to patients with impacted maxillary canines, and it is seen more often unilateral than bilateral. (8,9)

This condition is often diagnosed incidentally during routine radiographic examination, as it can remain entirely asymptomatic. However, when a canine remains impacted, it can lead to severe pathology, requiring clinicians to conduct routine monitoring and early intervention. It has potential for causing severe complications, such as external root resorption of adjacent teeth, bone loss, and

compromised periodontal outcomes, dentigerous cyst formation, and necrosis of the pulp.(10) The concurrent retention of the primary canine is a common finding that can mask the underlying, migrating permanent tooth. Accurate localization of the impacted canine is often essential for diagnosing the severity of impaction and planning treatment, thus limiting the high risk of damage to adjacent structures. Treatment options for Mandibular Canine Impaction and Transmigration range from surgical extraction (often favored in severe cases where orthodontic movement is difficult) to surgical exposure followed by orthodontic repositioning (traction). (11–13)

This case report presents a rare instance of a vertically impacted and transmigrated mandibular canine (classified as Mupparapu Type V based on its vertical orientation in the midline) (14), complicated by the retention of the primary canine and severe pathological consequences to the mandibular incisors. Given the compounded rarity of transmigration and the extent of irreversible damage observed, this report aims to discuss the complexities inherent in the diagnosis and management of this severe dental anomaly.

2. Case Presentation

A 17-year-old female patient presented to the outpatient department with the chief complaint of pain in the mandibular anterior teeth while chewing and taking a bite of food. The medical and dental history was non-contributory. The patient also complains of discomfort in the lower border of the mandible while touching the surface.

2.1 Clinical Examination

Extra-oral examination revealed no significant findings. Intra-oral examination showed a mixed dentition with the retained primary left mandibular canine, which is firm and non-mobile. The permanent mandibular left canine (33) was clinically absent from its normal position. There is a presence of pulpal exposure irt the lower mandibular central incisors (31,41). Also, a soft periapical 1x1 mm swelling is present adjacent to 42 and 43, which is non-tender on palpation.

2.2 Radiographic Findings

OPG reveals that the permanent mandibular left canine was not in its typical position. Instead, it appeared to be vertically oriented with its crown located near the midline, crossing the path of the mandibular incisor roots. The roots of teeth 41, 31, 32, and 73 appeared blunted and divergent.

The permanent mandibular left canine (33) was both vertically impacted and had transmigrated, with the root of the canine touching the lower border of the mandible. Its path showed a vertical inclination with the crown positioned directly between and apical to the roots of the mandibular left central (31) and lateral (32) incisors, having clearly crossed the midline (Figure 1). The crown of the transmigrated canine was in intimate contact with the root of the lateral incisor (32) and primary canine (73), which exhibited severe external root resorption, with approximately [e.g., 50-60%] of their root structure lost. The root of the mandibular left and right central incisors (31,41) showed mild external root resorption with periapical radiolucency. The roots of teeth 31 and 32 were splayed apart, creating a dramatic divergence to accommodate the crown of the transmigrated canine.

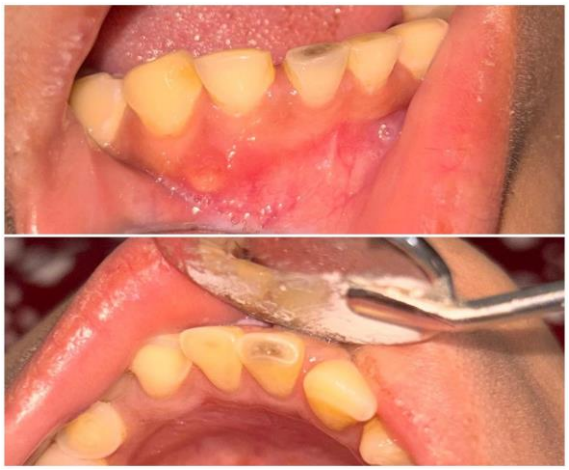

Figure 1: Intraoral view showing pulpal exposure irt mandibular central incisors (31, 41) and mild swelling in the labial vestibule near 42–43 region.

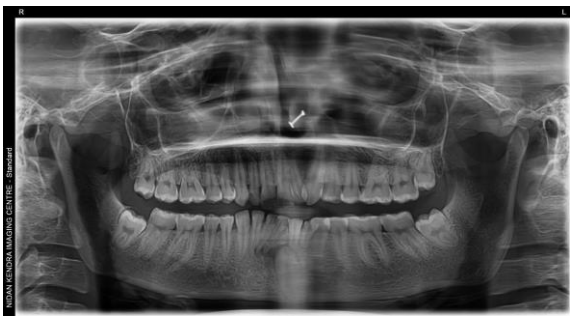

Figure 2: Orthopantomograph (OPG) revealing the vertically impacted and transmigrated mandibular left canine (33) with its crown positioned between and apical to the roots of mandibular incisors (31,

32), causing divergence and root resorption while the root is touching the inferior border of mandible.

3. Discussion

The OPG indicated the canine was vertically oriented. Vertical impaction, where the tooth axis is nearly perpendicular to the occlusal plane, was found to be the most common angulation for impacted mandibular canines in one study (40.8%) (15) Additionally, it was noted that the impacted mandibular canine (33) was located near the midline, crossing the path of the incisor roots. Based on the description of the transmigrated canine being vertically positioned in the midline, the presentation is consistent with a Mupparapu Type V classification of canine transmigration. (14)

The etiology of canine impaction is multifactorial, encompassing local, systemic, and hereditary factors. (16) In this patient, a clear local factor was identified: the retained primary left mandibular canine (73). The retention of a deciduous canine is a recognized local factor that prevents the eruption of the permanent successor. Other causes frequently speculated for impacted mandibular canines include inadequate space or arch length discrepancy, supernumerary teeth, and trauma. (17)

The case report also highlights the strong association between the impacted mandibular canine and the presence of other dental anomalies, which were found to be significantly more frequent in these patients. The severe complications observed in this 17-year-old patient are typical, yet highly concerning, sequelae of a deeply embedded, long-standing impaction, emphasizing the potential threats posed to dental health with deep impaction touching the lower border of the mandible.

The primary concern is the potential for external root resorption affecting the impacted tooth itself or adjacent teeth.(18) In this case, the crown of the transmigrated canine was in intimate contact with the roots of the adjacent teeth (32 and 73). This contact resulted in severe external root resorption of the lateral incisor (32) and the primary canine (73), leading to substantial root resorption. Additionally, mild external root resorption was also noted on the central incisors (31, 41). The severity of the impaction is compounded by the fact that the roots of the adjacent teeth (31 and 32) were observed to be splayed apart, creating a dramatic divergence to accommodate the impacted canine crown.

The finding of pulpal exposure in the mandibular central incisors (31, 41) and associated periapical radiolucency indicates irreversible damage resulting from the severe root resorption. The existence of infection or pathology is a direct indication for surgical management. While many impacted teeth are asymptomatic, the concerned patient presented with a chief complaint of pain in the mandibular anterior teeth while chewing and taking a bite of food. The symptoms of pain, swelling, and periapical pathology can be linked to infection or disturbance of the existing dentition caused by the impacted canine. (19)

For a case presenting with such unfavorable positioning and complications, the treatment decision must prioritize managing the associated pathology and the severity of the impaction. Surgical extraction is the most strongly indicated treatment given the severity of the impaction and the severe external root resorption of the lateral incisor and primary canine, along with the pulpal exposure of the central incisors.(7) Extraction of impacted mandibular canines usually involves an intraoral surgical approach. However, as the canine in this case is deeply impacted near the inferior border of the mandible, removal may potentially require an extraoral surgical approach. (20) Surgical exposure followed by orthodontic alignment could also be a proposed treatment option. (21) However, the characteristics of this specific case suggest that this option would be highly complex and potentially contraindicated, as there is evidence of root resorption affecting the adjacent teeth and the impaction is transmigrated and deep in nature. The orthodontic expansion or extrusion of severely impacted mandibular canines is described as difficult and often impossible due to the morphology of the alveolar process and the position of neighboring teeth. (22) Autotransplantation is a potential alternative treatment option for impacted mandibular canines. This option would necessitate the extraction of the adjacent primary canine and potentially the lateral incisor due to severe root resorption, followed by transalveolar transplantation of the impacted canine into the created space. (23) However, the long-term prognosis is uncertain with this treatment option.

4. Conclusion

This case report presents a rare and severe presentation of a vertically impacted and transmigrated mandibular canine, classified as Mupparapu Type V. The case underscores the significant pathological potential of such anomalies, which often remain asymptomatic until substantial damage has occurred. The transmigrated canine in this instance led to sequelae, including severe external root resorption of the adjacent lateral incisor and primary canine, mild resorption of the central incisors, pulpal exposure, and periapical pathology.

The diagnosis, heavily reliant on advanced radiographic imaging like CBCT, was crucial for accurately localizing the tooth and assessing the full extent of the damage to adjacent structures. The management of such complex cases necessitates a careful consideration of the risks and benefits of all treatment modalities. Given the deeply impacted and unfavorably positioned nature of the canine, coupled with the irreversible damage to adjacent teeth and the presence of infection, surgical extraction was determined to be the most prudent and indicated treatment to resolve the pathology and alleviate the symptoms.

This case serves as a critical reminder for clinicians to maintain a high index of suspicion for ectopic eruption patterns, especially in the presence of a retained primary canine. It highlights the imperative for timely diagnosis through routine radiographic examination and early intervention to prevent the severe, often irreversible, complications associated with mandibular canine transmigration.

References

1. Ciavarella D, Maci M, Fanelli C, Lorusso M, Laurenziello M, Lo Muzio L, Caroprese M, Cazzolla AP, Tepedino M. Treatment of mandibular impacted Canine in a patient with Class II division 1 malocclusion with "Reverse pin": a case report. Medicina. 2023 Oct 5;59(10):1774.

2. Monika R, Mahesh G, Nikhil M. Bilateral mandibular canine impaction: a rare case report. JOHCD. Mei. 2009;3(2):38-41.

3. Brown LH, Berrkman S, Cohen D, Kaplan AL, Rosenberg MA. A radiological study of the frequency and distribution of impacted teeth. J Dent Assoc S Afr. 1982;37:627-30.

4. Alhammadi M.S., Asiri H.A., Almashraqi A.A. Incidence, severity and orthodontic treatment difficulty index of impacted canines in Saudi population. J. Clin. Exp. Dent. 2018;10:e327–e334. doi: 10.4317/jced.54385.

5. Stabryła J, Zadurska M, Plakwicz P, Kukuła KT, Czochrowska EM. Comparisons of dental anomalies in orthodontic patients with impacted maxillary and mandibular canines. Diagnostics. 2023 Aug 25;13(17):2766.

6. Azeem M., Afzal A., Ahmed Z., Ali M.M., Haq A.U., Hamid W.U. Investigation of transmigrated mandibular canines. Dent. Press J. Orthod. 2019;24:65–68. doi: 10.1590/2177-6709.24.6.065-068.oar.

7. Dalessandri D, Parrini S, Rubiano R, Gallone D, Migliorati M. Impacted and transmigrant mandibular canines incidence, aetiology, and treatment: a systematic review. European Journal of Orthodontics. 2017 Apr 1;39(2):161-9.

8. Aktan, A.M.; Kara, S.; Akgünlü, F.; Malkoç, S. The incidence of canine transmigration and tooth impaction in a Turkish subpopulation. Eur. J. Orthod. 2010, 32, 575–581.

9. Aydin, U.; Yilmaz, H.H.; Yildirim, D. Incidence of canine impaction and transmigration in a patient population. Dentomaxillofac. Radiol. 2004, 33, 164–169.

10.Alaejos-Algarra C, Berini-Aytes L, Gay-Escoda C. Transmigration of mandibular canines: Report of six cases and review of the literature. Quintessence Int. 1998;29(6):395-398.

11.Nagaraj T, Umashree N. Transmigration of mandibular canine. e-Journal of Dentistry. 2011;1(3):72-74.

12.Plaza S.P. Orthodontic traction of a transmigrated mandibular canine using mini-implant: A case report and review. J. Orthod. 2016;43:314–321. doi: 10.1080/14653125.2016.1224539.

13.Crescini A., Baccetti T., Rotundo R., Mancini E.A., Prato G.P. Tunnel technique for the treatment of impacted mandibular canines. Int. J. Periodontics Restor. Dent. 2009;29:213–218.

14.Mupparapu M. Patterns of intra-osseous transmigration and ectopic eruption [11] of mandibular canines: Review of literature and

report of nine additional cases. Dentomaxillofac Radiol. 2002;31(6):355-60. Doi: 10.1038/sj.dmfr.4600732. PMID: 12424633.

15.LOKAM J, JYOTHIRMAI K, HARIPRIYA B, REDDY RS, RAMESH T, SRAVANI J. Exploring Canine Anomalies: Patterns, Prevalence, and Their Relationship to Skeletal Malocclusion among Orthodontic Patients at Bhimavaram, Andhra Pradesh, India. Journal of Clinical & Diagnostic Research. 2023 Dec 1;17(12).

16.Milano M, Barrett L, Marshall E. extraction of a horizontally impacted mandibular canine through a genioplasty approach: Report of a case. J Oral Maxillofacial Surg 1996;54:1240-42.

17.Brezniak N, Ben-Yehuda A, Shapira Y. Unusual mandibular canine transposition: A case report. Am J Orthod Dentofacial Orthop. 1993: 104:91-94.

18.Bishara SE, Kommer DD, McNeil MH, Montagano LN, Oesterle LJ, Youngquist W. Management of impacted canines. Am J Orthod 1976: 69:371-87.

19.Bishara SE. Impacted maxillary canines. Am J Orthod Dentofac Orthop 1992: 101:159-71.

20.Plumpton S. The extraction of mandibular teeth via an extra-oral approach. Br J Oral Surg 1966;4:127-31.

21.Gujar AN, Rani MS. Orthodontic management of impacted mandibular canine–a case report. Indian J Orthod and Dentofacial Res. 2016 Jul;2(3):131-5.

22.González-Sánchez, M.A.; Berini-Aytés, L.; Gay-Escoda, C. Transmigrant impacted mandibular canines. A retrospective study of 15 cases. J. Am. Dent. Assoc. 2007, 138, 1450–1455.

23.Ciavarella D, Maci M, Fanelli C, Lorusso M, Laurenziello M, Lo Muzio L, Caroprese M, Cazzolla AP, Tepedino M. Treatment of mandibular impacted Canine in a patient with Class II division 1 malocclusion with "Reverse pin": a case report. Medicina. 2023 Oct 5;59(10):1774.