

Bilaterally impacted mandibular canines approached differently – a case report

Archana Puttappa Betur

Arivu Dental Clinic, Davanagere

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Abstract- Aim: The aim is to report a case of bilaterally impacted mandibular canines treated with a different approach.

Background: Mandibular canine impaction is twentyfold less than the maxillary canines. Impacted teeth need to be treated when there is a failure of eruption even after 2 years following physiological eruption time. A wide array of treatment are proposed for impacted canines including surgical removal, surgical exposure and orthodontic alignment, transplantation etc. As this case includes bilateral impacted mandibular canines which are not acceptable to orthodontic treatment or reimplantation, different mode of treatment can be planned.

Case description: A 33-year old female patient reported with bilaterally impacted mandibular canines with retained deciduous canines. Though the canines were upright and labially placed, the teeth failed to erupt. Thus, both the deciduous and permanent canines were removed surgically. Then, the anterior teeth were orthodontically aligned. With the patients consent, the gained space was filled with the implant-based prosthesis.

Conclusion: The treatment plan and execution mode proved successful from both clinician and patient point of view. Thus, it is proved that when in need different approaches can also be useful with the same level of prognosis.

Clinical significance: Clinicians can keep trying new approaches to the cases with a good scientific background so as to increase their knowledge, capability to treat and to achieve a better hold on the dental advances.

Index Terms- Bilaterally impacted mandibular canines, Implant-based prosthesis.

I. INTRODUCTION

Tooth impaction is referred as the infra-osseous position of any tooth ahead of the time of eruption of the particular tooth into the oral cavity. With the wide variations of impacted teeth and their positions, the mandibular third molars with the mesio-angular impaction remain the most prevalent tooth to be impacted followed by the maxillary canines and so on. [1]

With the wide range of involved impacted teeth, the third molar remains most prevalent followed by the maxillary canines. [2] As this case report projects the impaction of bilateral mandibular canine impaction, if we correlate, the mandibular canine impaction is the least affected tooth and bilateral is still rare among the rare.

The reasons for these impactions could be mechanical obstruction in the path of eruption, premature loss of primary teeth, arch and teeth size discrepancy, micrognathia.[3]

Impacted teeth need to be treated when there is a failure of eruption even after 2 years following physiological eruption time. [4]

Though the treatment options for maxillary and mandibular canine remains the same, few factors need to be specifically taken into consideration, mainly density of the bone at the impacted tooth region (mandibular bone density will be more than maxilla which requires more forces and extra anchorage to move the teeth), severely displaced teeth cannot be moved to the required position, where extraction of the tooth is more preferred. [5]

The commonly preferred treatment option will be the combination of surgical and orthodontic approach.

The purpose of this article is to present a rare case with a different clinical approach and its prognosis and acceptance by the patient.

II. CASE REPORT

A 33-year old female patient reported to our clinic with the intention to get her retained milk teeth removed. Clinical evaluation showed, the retained bilateral lower deciduous teeth with absent permanent successors and no bulge anywhere in the lower arch. The patient had a mild crowding in the lower anteriors and mild mesio-angular rotation of upper centrals with class I molar relation and class I skeletal relation. OPG confirmed the retained bilateral lower deciduous canines with absolutely no root resorption and bilateral impacted permanent successors in the upright position below the roots of deciduous teeth (left canine touching the lower border of the mandible). Fig (1)



Figure 1: OPG showing the bilaterally impacted lower canines.

Though the bilaterally impacted lower canines were upright and almost in the desirable position to move orthodontically, we noticed few dilacerations and arch length deficiency in the lower arch, left canine touching the lower border of mandible and more specifically the patient was not willing for the removal of the first premolars to accommodate the canines, thus it was decided to

remove the impacted lower canines and align the others teeth in the arch with artificial replacement if the arch space requires it later.

Accordingly, both the lower impacted canines along with the retained primary canines were surgically removed in the initial appointment. Fig (2)



Figure 2: Extraction of primary with impacted permanent canines done.

Once the tissue healing was satisfactory, the fixed orthodontic treatment was started. Initially the upper anterior teeth alignment is achieved. Then the lower all four incisors were aligned which left a space of only half the mesiodistal width of canine on each side. Thus, we shifted the all four incisors onto right side and one complete canine mesiodistal width space is gained on the left side. Fig (3)

Figure 3: Space for implant placement achieved through orthodontic treatment.

As the bone density and width was good in the required region which was confirmed by CBCT imaging, with the brackets in space we placed the implant of measurement 4 x 11.5 in the canine space as decided by the CBCT report. Primary stability was achieved. Healing screw was placed and after complete osseointegration around the implant we placed the abutment with crown matching almost like an anterior tooth itself. Fig (4)



Figure 4: Implant supported left canine prosthesis done.

Later, after the stabilization of all the teeth in finalized position, we have de-bonded the brackets. The permanent retainer was also given from canine to canine in both the arches for 1 year.

After 1 year, the success rate of both orthodontic treatment and implant prosthesis was satisfactory which was confirmed both clinically and radiographically.

The patient acceptance was also to the at-most level which gave a good satisfaction to the clinicians who treated.

III. DISCUSSION

Tooth impaction is referred as the infra-osseous position of any tooth ahead of the time of eruption of the particular tooth into the oral cavity, whereas the infra-osseous position of the canine before the expected time of eruption is indicated as displacement of the tooth. [1] As this case report projects the bilateral mandibular canine impaction, when we co-related the incidence of impacted mandibular canines, it is very rare and Maged et al in 2018 showed that, the incidence of canine impaction is 1.9% of

the overall population. Among the canine impaction, the maxillary canine impaction is 92%, while 7.5% have impacted maxillary canine with other impacted teeth and the mandibular canine impaction is only 0.35%. According to Kerr, Mandibular canine impaction is twentyfold less than the maxillary canines. Females (69.4%) had more impacted canines than males (30.6%). Most of the impacted mandibular canines are unilateral and located on the labial aspect of the dental arch. [6] Whereas the impaction of bilateral mandibular canines is a rare entity.

The sequelae of canine impaction include, malpositioning of the tooth, migration of the adjacent teeth and loss of arch length, internal resorption of the tooth, cyst formation, external root resorption of adjacent teeth. [5]

Impacted teeth need to be treated when there is a failure of eruption even after 2 years following physiological eruption time. Most of the impacted mandibular canines are unilateral and located on the labial aspect of the dental arch. In this case report the impacted canines are bilateral which is very rare and labially present. A wide array of treatment options are proposed for impacted canines, which are - (1) asymptomatic teeth only requiring observation, (2) surgical removal, (3) combination of surgical exposure and orthodontic alignment, (4) surgical transplantation and (5) combination of surgical removal and replacement of the particular teeth. [7]

Though the treatment options for maxillary and mandibular canine remains the same, few factors need to be specifically taken into consideration, mainly density of the bone at the impacted tooth region (mandibular bone density will be more than maxilla which requires more forces and extra anchorage to move the teeth), severely displaced teeth cannot be moved to the required position, where extraction of the tooth is more preferred. [7]

When impacted canines are not acceptable to orthodontic treatment or reimplantation, extraction of the impacted tooth will become the desirable option, followed by the option of replacement. [8] In the recent past, implantology has been increased as a treatment option in oral rehabilitation because of the scientific advances and clinical improvements in the field. [9]ss The removal of impacted canines followed by immediate implant placement will minimize the number of surgical interventions and the waiting time, although increased surgical skill is needed to place the implants. [8]

When there is implant placement in the aesthetic region, there are multiple factors which needs to be considered. The implant apical design, implant form, screw thread and self-taping design which influences the stability in implant, the neck design will greatly influence for soft tissue in aesthetic zone. [10]

It is now accepted that both aspects of osseointegration, maintenance of present bone (remodelling) and new bone

formation (modelling), determine the fate of implant healing. The time period for osseointegration around the implant will be 2 – 3 months from implant placement which will give a good stability for the abutment and prosthesis. [9]

In this particular case, the patient being 33-year female, though both the canines were upright they failed to erupt into the oral cavity. Thus, the treatment mode was discussed, planned and executed with patient's consent and will.

IV. CONCLUSION

Though the treatment approach is not a combination of surgical and orthodontic which is most acceptable, the treatment was done according the patient's comfort level and as the patient satisfaction was well noticed which meant a great satisfaction to the team of clinicians who worked for it.

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AUTHORS

First Author – Dr Archana Puttappa Betur, MDS (Pedodontics and Preventive Dentistry), Fellow in Ortho, Certified Implantologist, Arivu Dental Clinic, Davanagere, Karnataka
Email: archana.betur@gmail.com, Contact no: 8105423877