

ORTHODONTICS

ORTHODONTIC MANAGEMENT OPTION OF CONGENITALLY MISSING MANDIBULAR CENTRAL INCISORS (A Case Report)

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ABSTRACT

A case report of orthodontic management of a malocclusion with bilateral congenitally missing mandibular central incisors; the patient presented with the chief complaint of a midline space in the mandibular arch and slight rotations of the maxillary central incisors. Creating a space in the mandibular arch for one incisor and providing the patient with a resin bonded three unit bridge was the treatment of choice in this patient.

Key Words: Missing mandibular central incisors, Resin bonded bridge.

INTRODUCTION

Even though the occurrence of patients exhibiting congenitally missing mandibular incisors is low, orthodontists should be familiar with different treatment options. Heredity is one of the possible factors associated with congenitally missing mandibular incisors. The following case report is documented for sharing the treatment alternatives for such cases among the clinicians. Newmann¹ reported patients with two congenitally missing mandibular incisors in a paper published in the July 1967 issue of the American Journal of Orthodontics.

Literature Review

The available literature reveals following main theories for the cause of missing mandibular incisors:

Heredity or familial distribution has been suggested as the primary cause.²⁻⁴ Graber⁵ stated, "Congenital partial anodontia appears to be the result of one or more point mutations in a closely linked polygenic system, most often transmitted in an autosomal dominant pattern incomplete penetrance and variable expressivity." He further stated "It is the dental clinician's challenge to recognize the congenital absence of teeth and evaluate other family members for possible manifestations of this primary heritable condition."

Second, anomalies in the development of the mandibular symphysis may effect the dental tissues forming the tooth buds of the lower incisors.⁶⁻⁹

Third, a reduction in the dentition is regarded by researchers as nature's attempt to fit the shortened dental arches (an expression of the evolutionary trend).¹⁰

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Finally, localized inflammation or infections in the jaw may have destroyed the tooth buds, or disturbance of the endocrine system may have caused an ectodermal dysplasia.¹²

Schwartz¹³ reported a case with missing mandibular incisor. He aligned the maxillary arch and moved the mandibular teeth mesially to close the space. Schwartz's ideal goal of intercuspation was not attained. Reidel^{14,15} discussed indications and contraindications for the removal of one or two mandibular incisor in order to correct certain malocclusions. He suggested the removal of maxillary first premolars and lateral incisors to balance tooth material in selected cases. Reidel and Little noted that treatment with missing mandibular incisors had greater potential stability than most treated malocclusions.

Treatment Options

The treatment options for cases with mandibular missing incisors depend upon many factors such as dental, skeletal, and aesthetic considerations. For example in a case with flat profile, removal of maxillary bicuspid to balance deficient tooth material may be contraindicated.

One of the possible treatment procedures involves obtaining a functionally adapted occlusion less the congenitally missing mandibular incisors by protracting the mandibular canines and posterior teeth forward. A second treatment modality includes the creation of space and uprighting and aligning the mandibular anteriors to receive a fixed prosthesis. Finally, the third method involves the removal of maxillary premolars or lateral incisors to balance tooth material resulting the absence of mandibular incisors.

As for the removal of maxillary premolars, we believe this would cause disharmony by flattening the facial profile. A Bolton analysis and diagnostic wax setup were completed for the treated case¹⁷.

CASE REPORT

History and general clinical picture

The patient was 16 years 2 months old at the start of treatment. He was Pakistani male, in good health, with noncontributory medical history relative to the malocclusion. He had an orthognathic facial profile

and exhibited good facial balance in all proportions. Lips were competent at rest. On intra-oral examination class-I molar and canine relationships were seen on either side. Maxillary central incisors were slightly rotated medially. Three-millimeter space existed in mandibular midline between the mandibular lateral incisors. Both mandibular central incisors were not seen on examination. There was no history of extraction of these teeth. No temporo-mandibular dysfunction was detected. No family history of missing teeth.

Diagnosis

Patient's chief complaint was the space in the mandibular dental midline and rotated maxillary central incisors. On radiographic examination permanent mandibular central incisors were found missing. All the four third molars were present. No periapical pathology was seen. There was crowding of 2 mm identified in maxillary arch. Maxillary dental arch was slightly "V" shaped. Over-jet was 1 mm and over-bite was 3.5 mm. Patient showed satisfaction on the antero-posterior position of the maxillary incisors when inquired. IMPA was 96°. Refer to Table no-1.

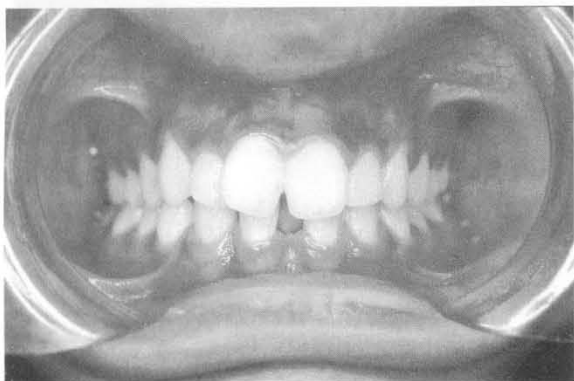
Treatment Plan

The objective of the treatment was to create the space for one mandibular incisor and provide the patient with a three-unit resin bonded bridge. Maxil-

TABLE 1

	Before Treatment	After Treatment
Skeletal		Degrees
SNA	78	76
SNB	78	76.5
ANB	0	-0.5
GO	130	129
Ar	140	154
S	121	122
FMA	25	26
MP-PP	26	27
MP-SN	30	31
Dental		
IMPA	96	100
UI-FH	108	112
II	132	122
UI-PP	106	111

Pre treatment



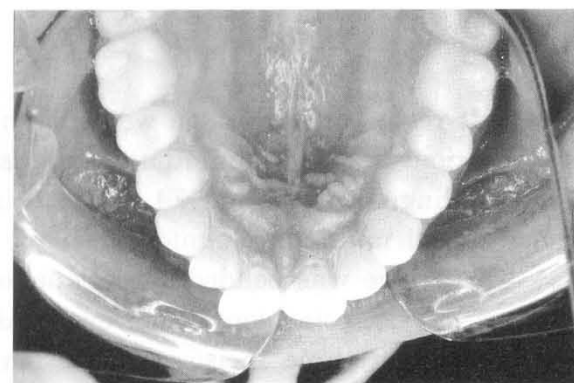
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Slide 3



Slide 5



Slide 7

Post treatment



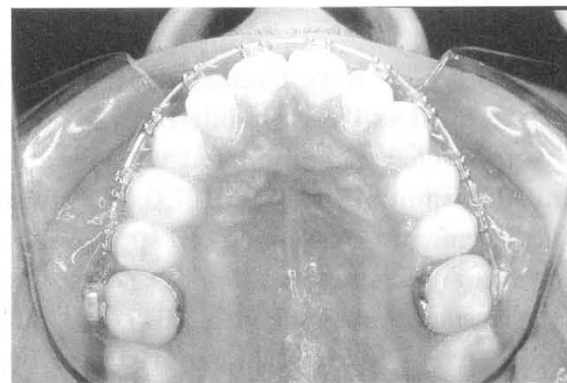
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Slide 8

Pre treatment

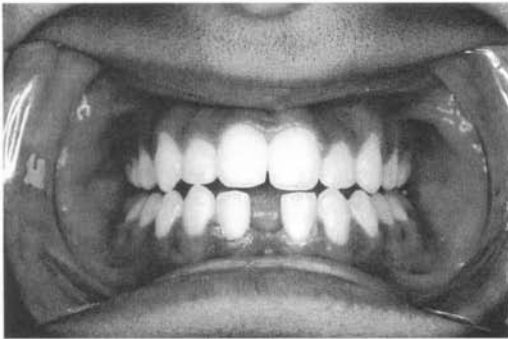


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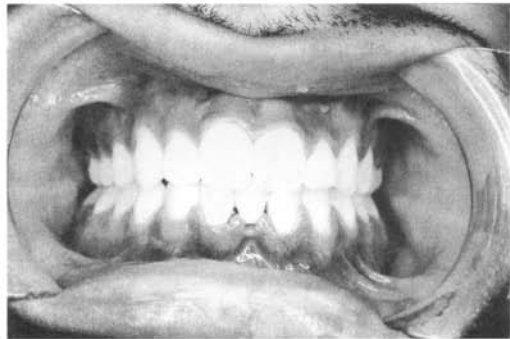
Post treatment



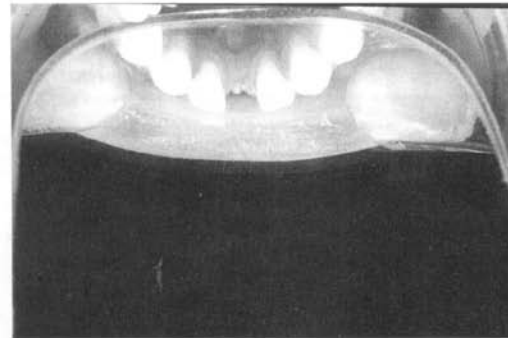
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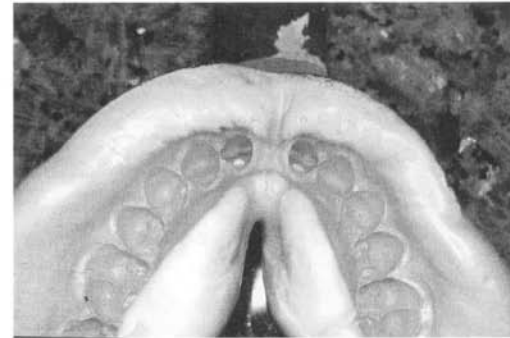
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lary arch was aligned in order to de-rotate the central incisors and finishing it in a "U" form.

Progress of Treatment

Both the arches were banded and bonded with 0.22" (pre-torqued and preangulated) appliances. The arches were leveled and alignment with progressive 0.014" nickle-titanium (NiTi), 0.016", 0.018" stainless-steel (S/S) arch wires. NiTi open coil spring was used to create the sufficient space for the pontic incisor. Finishing was accomplished with 0.017" x 0.025" S/S arch wires. Active treatment lasted 10 months. We achieved the desired space for the incisor and de-

rotation of the maxillary incisors. In this way we succeeded in keeping the lateral incisors in the middle of the alveolus thus avoiding too much increase in IMPA.

Three-unit resin bonded bridge was chosen for this young patient because minimum cutting is required on the lingual aspect only. Lateral incisors were prepared with minimum chamfer finish line and rest seat. The bridge was bonded with Panavia F. The midlines are not coincidental; however, this is to be expected with three incisors in the mandibular arch.

Retention

No retainer was provided for the mandibular arch as the resin bonded bridge provided the permanent retention^{18,19} However, a removable Hawley retainer was provided for the mandibular arch.

CONCLUSION

In treating the case presented in this report, we used the second approach. It is noteworthy that the temporomandibular joints (TMJ) were asymptomatic in this case before and out of retention despite the congenitally missing incisors and midline discrepancy. Evidently these unusual occlusions of six maxillary anteriors occluding with four or five mandibular anteriors did not play a part in causing TMJ problems in these cases. We agree with Valinoti's²⁰ findings that the absence of a mandibular dental midline does not apparently affect occlusion, aesthetics, periodontal health, or stability—the principal requirements of orthodontic therapy. It must be noted the treatment modality employed for cases with missing mandibular incisors must take into consideration all diagnostic criteria, including the patient's profile and skeletal growth patterns.

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