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CASE REPORT Multidisciplinary Treatment of an Adult Patient with a Labiopalatal Cleft

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Patients with labiopalatal clefts have a number of softtissue, developmental, and dental problems that must be addressed before orthodontic treatment can be successful. Soft-tissue sequelae affect mainly the nose and the upper lip and generally result in a straight profile. Swallowing and speech problems are also common.

The sagittal and transverse growth of the maxilla is restricted in these patients, and deficient vertical growth of the small maxillary fragment will also be evident. Underdevelopment of the maxilla can be seen in all three planes of space. Teeth are often missing, malformed, or displaced in the region of the cleft.

A close multidisciplinary approach between the orthodontist, oral surgeon, general dentist, speech therapist, ENT specialist, and plastic surgeon is absolutely necessary for satisfactory correction of these pathologies, as the following case demonstrates.

Diagnosis and Treatment Planning

A 16-year-old female presented with a labio-alveolarpalatal cleft on the right side (Fig. 1). The maxillary arch showed a considerable lack of space, with protrusion and rotation of the right central incisor and microdontia of the right lateral incisor. The mandibular right second deciduous molar had been removed due to decay, and the mandibular right second bicuspid was missing. The transverse dimension was restricted, resulting in a bilateral crossbite.

Cephalometric analysis revealed a skeletal Class III due to the hypoplasia of the maxilla. The patient had a long face with a straight soft-tissue profile and a short upper lip.

The palatal cleft had been closed at the age of 6 weeks, but the patient's speech still had a nasal resonance.

Orthodontic objectives prior to surgery were:

- Alignment of both dental arches
- Correction of rotations
- Elimination of the dentoalveolar incisor compensation
- Coordination of the dental arches
- Elimination of occlusal interferences after mandibular advancement

Presurgical Orthodontics (17 months)

The maxillary first premolars were removed to alleviate the crowding of the incisors. An .018" × .025" standard edgewise appliance was placed in both arches, and .014" and .016" nickel titanium

archwires were used to align the teeth and correct the rotations (Fig. 2).

Stainless steel archwires of increasing diameter were then placed. The width of the maxillary arch was coordinated with the width of the mandibular arch using a transpalatal bar (Fig. 3). Study casts were made on several occasions to simulate the advancement of the mandible for visualization of the orthodontic correction needed to eliminate occlusal interferences.

Surgical Phase

After orthodontic alignment and decompensation (Fig. 4), the cephalometric analysis showed a severe hypoplasia of the maxilla (Table 1). A Le Fort I osteotomy bringing the maxilla forward in one piece was simulated on casts mounted on a semi-adjustable articulator, and the intermaxillary bite wafer was made. After surgical advancement, rigid titanium mesh was used for osteosynthesis.

Postsurgical Orthodontic Treatment (6 months)

One month after surgery, the full-size archwires were replaced by light wires and intermaxillary elastics to close the bite and obtain good interdigitation (Fig. 5). Myofunctional training was initiated to improve the position of the tongue at rest and in swallowing.

Once the final occlusion had been obtained, the orthodontic appliances were removed, and a splint with a pontic replacement for the missing maxillary right lateral incisor was worn 24 hours a day as a retainer (Fig. 6). A Hawley-type retainer was used in the mandibular arch, making it possible to maintain space for replacement of the missing right second bicuspid.

Prosthetic Phase

Lack of alveolar bone in the region of the cleft made implant placement impossible. Therefore, a Maryland bridge with an extension to the central incisors was used to replace the maxillary right lateral incisor, and a conventional bridge was used to replace the mandibular right second bicuspid (Fig. 7).

Results

A labiopalatal cleft not only has dental, skeletal, esthetic, and social repercussions, but also affects speech, nutrition, and orofacial function. Only through collaboration between the orthodontist, general dentist, oral surgeon, plastic surgeon, ENT specialist, and speech therapist could we achieve our objectives in this case: a Class I dental and skeletal relationship, a normal overjet and overbite, alignment of the dental arches, prosthetic replacement of the missing teeth, closure of the palatal fistula, and restoration of facial harmony. □

FIGURES

Fig. 1 16-year-old female with labio-alveolar-palatal cleft on right side before treatment.

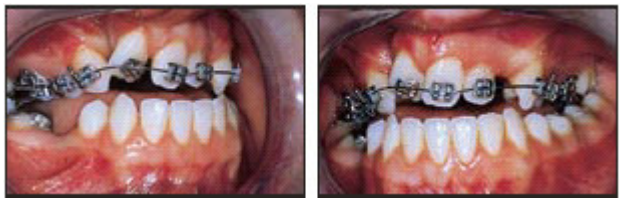

Fig. 2 Initial maxillary fixed appliance.

Fig. 3 Arch coordination with transpalatal bar.

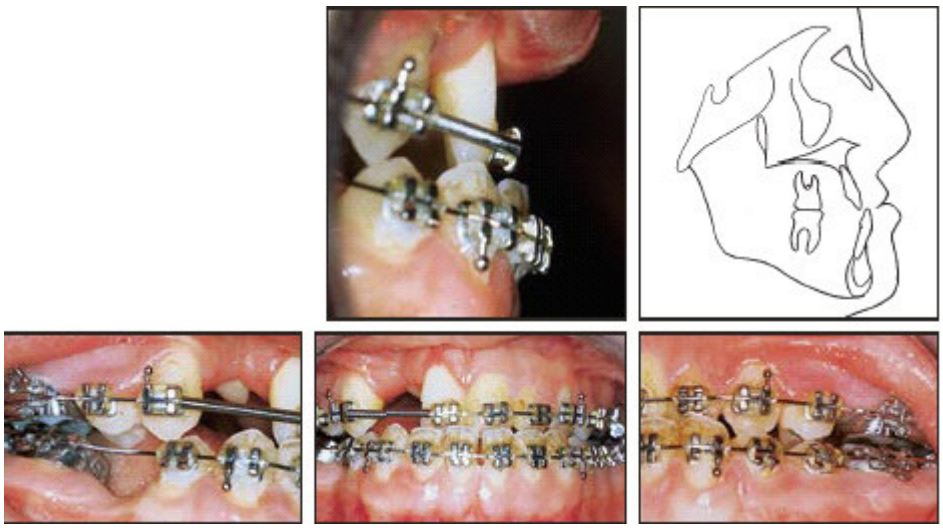

Fig. 4 Patient after 17 months of presurgical orthodontic treatment.

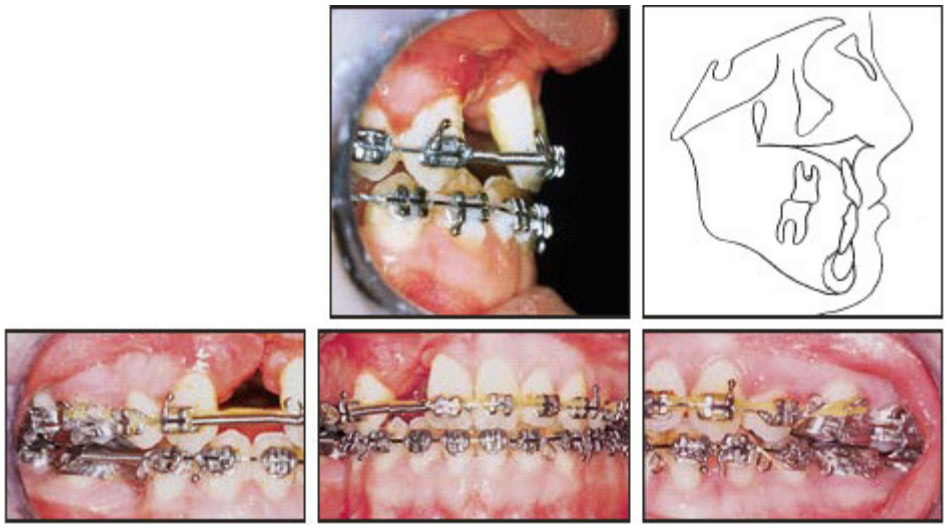

Fig. 5 Patient one month after Le Fort I osteotomy.

Fig. 6 Patient after six months of postsurgical orthodontic treatment, with pontic replacing maxillary right lateral incisor incorporated in retainer.

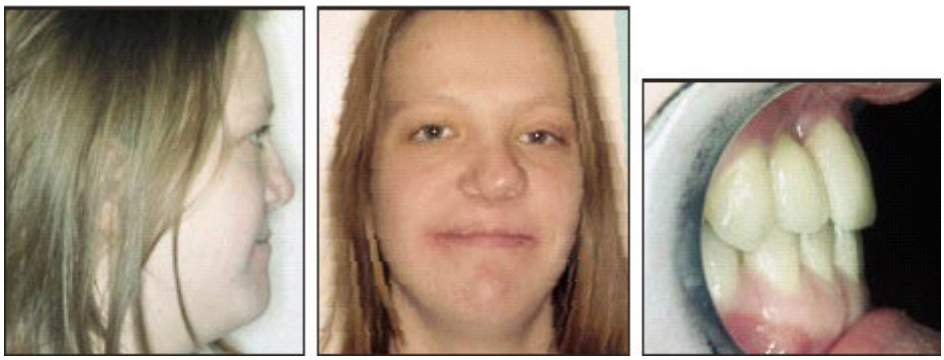

Fig. 7 Patient after placement of Maryland bridge to replace maxillary right lateral incisor and conventional bridge to replace mandibular right second bicuspid.

TABLES

TABLE 1
CEPHALOMETRIC DATA

	Presurgery	Post-Surgery
SNA	68°	74°
SNB	73°	72°
ANB	−5°	2°
Sassouni	Cl III	Cl III
B	33°	26°
GoGnSN	37°	39°
Jarabak	400°	404°
$\frac{1}{1}$	81°	69°
	98°	104°

Table. 1

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