

Management of Unilateral Cleft Lip and Palate in an Adult Patient – A Case Report.

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Abstract

Cleft lip and palate being a common craniofacial anomalies is being treated by many medical professionals including a pediatric surgeon/plastic surgeon, orthodontist, prosthodontist, speech therapist, etc. The treatment being started right after birth till the young age. Here we are presenting a case report which deal with the orthodontic and prosthodontic side of treatment.

Patient was having severe upper anterior crowding and cross bite at 11 and 13, so treatment performed are Fixed appliance therapy for expansion, alignment, levelling and correction of crossbite along with a removable lower posterior bite block followed by Extraction of malformed upper left lateral incisor followed by a conventional fixed prosthesis.

Keywords: Cleft Lip, Palate.

Introduction

Craniofacial Anomalies (CFA) are a diverse group of deformations in the growth of the head and bone of the face. Congenital anomalies (CA) are the main cause of infant mortality and child morbidity, affecting 2-3% of all infants. About 1% of these newborns have syndromes or more anomalies; CFAs are often an integral part. It is estimated that 30% of cases of Craniofacial are syndromic. On the contrary, about 70% are non-syndromic.

Cleft lip and palate are the most common congenital craniofacial deformities with a higher incidence in Asian people than in other races [1-2]. The cleft lip and palate occurs at about 1 to 2 per 1000 births in the developed world. CL is approximately twice as likely to occur in males as females and is the fourth most common head injury on the skull, while CP without CL is more common in females. In 2013, around 3,300 deaths were reported worldwide, compared to 7,600 deaths in 1990 [3].

The cleft and palate anomaly represent almost one third of all congenital malformations of the craniofacial region with an average global incidence of 1 to 700 [4-5]. In India, the cleft lip and palate occurs in almost 1 out of 500 live-born children⁴ and although national epidemiological data are not available, numerous studies from different parts of the country reported a variation in the incidence of split anomalies. Sidhu and Deshmukh reported the incidence of tongue and palate tingling (CL + P) on AIIMS in New Delhi to 1.4 per 1000 live births. Mossey and Little, from various multicentric studies across India, estimated that the incidence of CL/P in India is around 0.93-1.3 for a cleft lip and palate.

Aetiology is multifactorial, involving both genetic and environmental factors [6]. A recent population

cohort study in Denmark has shown that the degree of coherence and heritability estimates for monozygotic twins with CL / P are a strong genetic component [7]. Other case studies show that chromosome aberrations and mutations of individual genes are often associated with the development of CL/P; the mutation of an individual gene is more widespread than chromosomal abnormalities [8]. The environmental factors that cause CL / P are diverse. Studies based on the population have shown that the lack of folic acid in pregnancy strongly correlates with the development of OFCs in the fetus [9]. The teratogenic effect of several medications, such as hydantoin, sodium valproate, trimetadion, sedatives and alcohol, is well known. In children born to mothers with diabetes or phenylketonuria, there is a higher risk of developing CL / P. It has also been reported that the development of a fever of more than 40 ° C during the first 8 weeks of pregnancy has a high risk of cracks in the face of the fetus [10]. Early amniotic rupture can seriously interfere with the intrauterine development of the fetus, leading to various fetal anomalies, including CL or CP or both [11].

Patients with cleft lip and palate often exhibit a small and posterior positioned maxilla (Bishara and Tharp, 1977; Cronin and Hunter, 1980; Ranta, 1986). Thus, adult patients with cleft lips and plate often exhibit malocclusion, which is characterized by a severe frontal sacrum due to a small jaw that causes aesthetic problems and requires orthodontic treatment to address these problems. Due to the failure of fusion between the medial nasal and maxillary processes in the primary palate (lips and premaxilla) or unwanted units in the secondary palate, cleft may occur from the fourth to the twelve weeks of pregnancy⁽²⁾. Malformed teeth near the palate area

are very common. Central and lateral incisors located near the cleft are most often deformed or missing. The deformations include side chips, wedge-shaped chips, excess convexity, and chains with deformations of the crown enamel [12].

The goals of the orthodontic treatment of malocclusion at the patient cleft are the same and are considered relevant in every other case, achieving functional efficacy, structural balance and aesthetic harmony, an interdisciplinary approach in teenage patients with UCLP subsequent prosthetic rehabilitation in an adult patient with one-sided mouth and mouth crack (UCLP) with a broken bite, severe frontal and lateral cross teeth and jaw dysfunction.

Case Report

A young women aged 22-years and 5 months came to the orthodontics department of Rama Dental College. Her chief complaint was the unesthetic appearance of her maxillary anterior teeth which were behind her mandibular anterior teeth. She was born with non syndromic unilateral left cleft lip and palate. Her lip was repaired at the age of 7 month and the palate was repaired at the age of 2 years. The patient had a concave profile. The upper lip was retrusive and the lower lip was everted. The patient had good symmetry except for the nose and the upper lip region.



Figure 1: Pretreatment Facial and Intraoral Photographs.

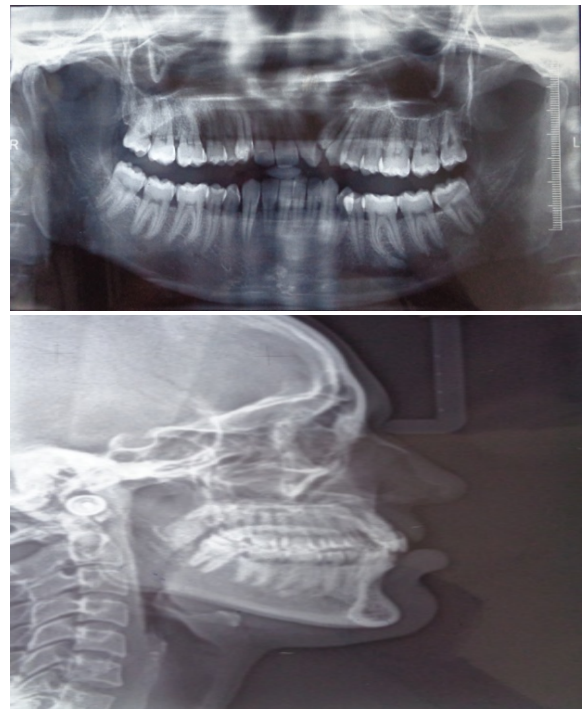


Figure 2: Pretreatment radiographs

Intraorally, the maxillary arch was collapsed in the anterior region due to the unilateral cleft lip and palate. She also had severe upper anterior crowding with crossbite irt 11 and 13. Upper lateral incisor left was malformed and peg shaped. The lower arch had moderate crowding with exaggerated curve of spee.

Treatment Objectives and alternatives

Treatment objective consisted of achieving a well balanced facial profile. Dentally the objectives were to expand the maxillary arch relieve crowding, correction of crossbite, arch levelling and curve of spee.

To achieve the above objectives following treatment plane was adopted.

1. Fixed appliance therapy for expansion, alignment, levelling and correction of crossbite along with a removable lower posterior bite block.
2. Extraction of malformed upper left lateral incisor followed by a conventional fixed prosthesis.
3. Retention.

Before starting orthodontic treatment the case was referred to prosthodontic department and discussed. Also the case was referred to periodontics to evaluate the periodontal health, particularly the teeth adjacent to cleft.

Fixed 0.022-in MBT appliance was fixed placed in the upper arch. A lower removable posterior bite block was also deliver to the patient. Upper arch expansion, alignment, leveling and correction of crossbite was achieved in 14 months. Care was taken to keep the forces as much light as possible. The lower posterior bite block was discontinued and fixed MBT appliance was placed in the lower arch. The total treatment duration was 24 months. The patient was referred to oral surgery for extraction of malformed upper left lateral incisor. After that, the patient was referred to prosthodontics for fabrication of prosthesis.

Discussion

Children with clefts often have dental abnormalities. These abnormalities include missing or deformed central or lateral incisors adjacent to the cleft [13].



Figure 3: Posttreatment facial and intraoral photographs

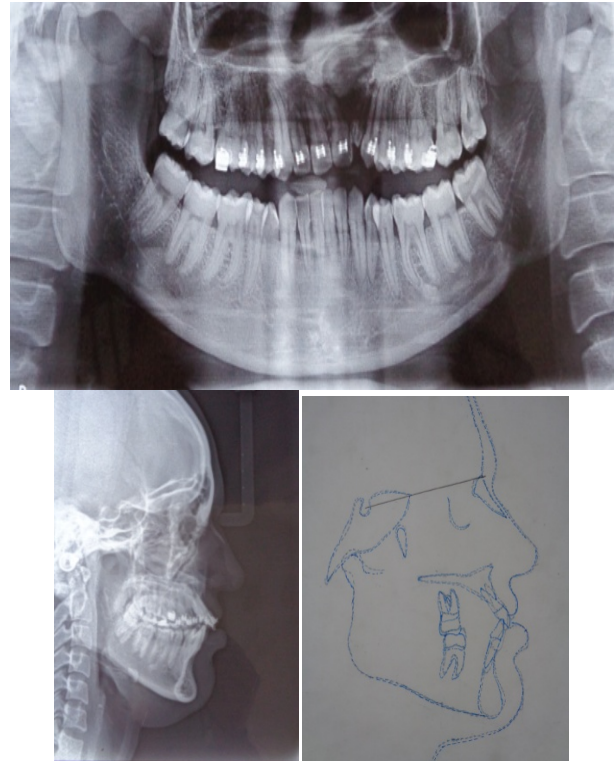


Figure 4: Posttreatment radiographs and superimposed tracings. Black, pretreatment; blue, midtreatment.

In our case 22 (maxillary left lateral incisor) was deformed and was extracted and replaced by a prosthesis in the later part of the treatment. Treatment of the residual alveolar defect in patients with cleft lip and palate generally requires bone grafting. The objectives of alveolar bone graft include developing a normal alveolar ridge in the area of the cleft, stabilize the transverse dimension, provide bone support for the erupting teeth and movement of the teeth adjacent to the cleft, providing osseous support for the alar base[14-15].

Table: Cephalometric measurements

Measurement	Indian normal	Pretreatment	Posttreatment
SNA (°)	82°	85°	83°
SNB (°)	79°	81°	81°
ANB (°)	3°	4°	2°
Wits (mm)	0.0mm	5mm	3mm
SN-MP (°)	32°	25.5°	27°
FH-MP (°)	22.5±4.4	21°	23°

LFH (ANS-Me/ N-Me) (%)	65-67mm	57.27%	62.62%
U1 to SN (°)	102°	108°	120°
U1 to NA (°)	25°	27°	30°
IMPA (°)	95°	98.5°	96°
L1 to NB (°)	28°	29.5°	27°
U1/L1 (°)	131°	124°	114°

Several active orthodontic appliances have been advocated in the literature which include RME (rapid maxillary expansion), semi rapid and slow expansion appliances. In this case 0.022 MBT appliance was used and a simple 0.014 NiTi was used commence the treatment. Activations were carried out monthly and care was taken to keep the forces as light as possible.

Conclusion

Our report describes the challenging treatment of on adult with unilateral cleft lip and palate. The case was treated with an interdisciplinary approach. This approach helped us to meet the objective to achieve proper occlusion, function, and esthetics.

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