

## Original Research

### Combined orthodontic and surgical approach in management of patients suffering from cleft lip and palate syndromes

Alok Chourasia<sup>1</sup>, Awanindra Kumar Jha<sup>2</sup>, Aditi Sinha<sup>3</sup>, Nishant Kumar Tewari<sup>4</sup>, Sushmita Tiwari<sup>5</sup>, Pankaj Kumar<sup>6</sup>

<sup>1</sup>Orthodontist, Private Practitioner, Maihar, Madhya Pradesh, India;

<sup>2</sup>Lecturer, Department of Orthodontics, Dental Institute, Rajendra Institute of Medical Sciences, Ranchi, Jharkhand, India;

<sup>3</sup>Prosthodontist, Private Practitioner, Gaya, Bihar, India;

<sup>4</sup>Oral & Maxillofacial Surgeon, Nalanda Medical College & Hospital, Patna, Bihar, India;

<sup>5</sup>General Practitioner, Patna, Bihar, India;

<sup>6</sup>Physiotherapist, Nalanda Medical College & Hospital, Patna, Bihar, India;

#### **ABSTRACT:**

**Background:** Cleft treatment aimed at restoring aesthetics and ensuring adequate speech development is often prolonged and start from childhood and finish in adulthood. The present study was conducted to assess combined orthodontic and surgical management of cleft lip and palate patients. **Materials & Methods:** The present study was conducted in the department of Oral Surgery and Orthodontics. It consists of 24 cases of cleft lip and palate of both genders. Surgical repair was carried out. The expansion of the arches and redistribution of available space was achieved with orthodontic treatment. Satisfaction with facial appearance and function was assessed qualitatively using a three point Likert scale, i.e., (1) very satisfied, (2) satisfied, and (3) not satisfied. **Results:** Out of 24 patients, males were 14 and females were 10. Cleft deformity was unilateral cleft lip + alveolus in 2 cases, bilateral cleft lip + alveolus in 3 cases, cleft of hard & soft palate in 3 cases, unilateral cleft lip + palate in 10 cases and bilateral cleft lip + palate in 6 cases. The difference was significant ( $P < 0.05$ ). Satisfaction of treatment outcome was very satisfied in 21 cases, satisfied in 2 cases and not satisfied in 1 case. The difference was significant ( $P < 0.05$ ). **Conclusion:** Authors found that patients of cleft lip and palate can be well managed with surgical and orthodontic treatment. Thus combined interdisciplinary approach may be useful in such patients.

**Key words:** Cleft lip, Palate, Orthodontic treatment.

Received: 22 January, 2020

Accepted: 28 February, 2020

**Corresponding author:** Dr. Nishant Kumar Tewari, Oral & Maxillofacial Surgeon, Nalanda Medical College & Hospital, Patna, Bihar, India

**This article may be cited as:** Chourasia A, Jha AK, Sinha A, Tewari NK, Tiwari S, Kumar P. Combined orthodontic and surgical approach in management of patients suffering from cleft lip and palate syndromes. *J Adv Med Dent Sci Res* 2020;8(4):112-114.

#### **INTRODUCTION**

Cleft lip and palate surgery has been a challenge through centuries, basically because what seems to be perfect in the beginning deforms during growth and development ruining initially patient, then family and doctors expectations. Second, because the more aggressive the surgery is, the soft tissues' retraction and deformation increases. Another issue is the timing for the different interventions, if it is performed too early, growth would be impaired, and if too late, the teeth eruption and maxillary growth could be permanently

endangered. Cleft treatment aimed at restoring aesthetics and ensuring adequate speech development are often prolonged and start from childhood and finish in adulthood. Frequent evaluations of these treatments are centered on the clinical outcomes disregarding patient related outcomes such as satisfaction and quality of life that can guarantee long-term compliance with care. For the long-term benefit of these patients, multidisciplinary approach is required which involves orthodontist, surgeons, prosthodontists, and restorative dentists. Although complicated as well as invasive

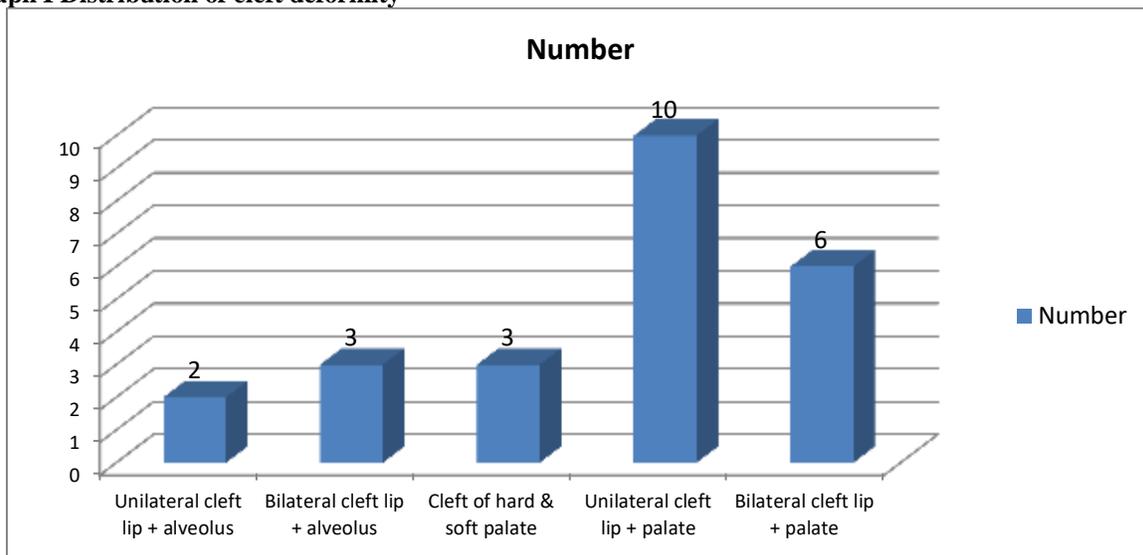
treatment of adult patients with orofacial clefts involving orthognathic surgeries and other treatments such as alveolar bone grafting and endosseous implants have been reported by several authors, very few have reported conventional orthodontic and prosthodontic treatment for adult patient with unilateral cleft lip and palate. The present study was conducted to assess combined orthodontic and surgical management of cleft lip and palate patients.

**MATERIALS & METHODS**

The present study was conducted in the department of Oral Surgery and Orthodontics. It combined of 24 cases of cleft lip and palate managed in the department of both genders. All patients were informed regarding the study and written consent was obtained. Ethical clearance was obtained prior to the study.

Patient demographic profile such as name, age, gender etc. was recorded. Surgical repair was carried. The expansion of the arches and redistribution of available space was achieved with orthodontic treatment. A 0.018” pre-adjusted edgewise appliance was used. Initial alignment and leveling were done with 0.014” NiTi archwire in both maxillary and mandibular arches. The patient was given obturator cum retainer cum denture in the upper arch and canine to canine lingual bonded retainer in the lower arch. Clinical evaluations of the surgical outcome of the repaired clefts were done 4 weeks post- operatively. For cleft lip repair, outcome was adjudged by the Pennsylvania lip and nose score as good, fair, or poor. Satisfaction with facial appearance and function was assessed qualitatively using a three point Likert scale, i.e., (1) very satisfied, (2) satisfied, and (3) not satisfied. Results thus obtained were subjected to statistics. P value less than 0.05 was considered significant.

**Graph I Distribution of cleft deformity**



**RESULTS**

**Table I Distribution of patients**

Total- 24		
Gender	Male	Female
Number	14	10

Table I shows that out of 24 patients, males were 14 and females were 10.

**Table II Distribution of cleft deformity**

Cleft deformity	Number	P value
Unilateral cleft lip + alveolus	2	0.01
Bilateral cleft lip + alveolus	3	
Cleft of hard & soft palate	3	
Unilateral cleft lip + palate	10	
Bilateral cleft lip + palate	6	

Table II, graph I shows that cleft deformity was unilateral cleft lip + alveolus in 2 cases, bilateral cleft lip + alveolus in 3, cleft of hard & soft palate in 3 cases, unilateral cleft lip + palate in 10 and bilateral cleft lip + palate in 6 cases. The difference was significant (P< 0.05).

**Table III Satisfaction with management**

Satisfaction of treatment outcome	Number	P value
Very satisfied	21	0.001
Satisfied	2	
Not satisfied	1	

Table III shows that satisfaction of treatment outcome was very satisfied in 21 cases, satisfied in 2 cases and not satisfied in 1 case. The difference was significant (P< 0.05).

## DISCUSSION

Although surgical closure of the defect and alveolar bone grafting in this patient would have provided support and continuous arch form and alveolar ridge. However, there are strong controversies regarding the recurrence of the oronasal fistula and the timing and age of graft. It has been stated that the overall failure rate of oronasal fistula closure was around 37% and increased as high as 65% in the second or further procedures. Several studies suggest that bone graft success decreases if performed after the eruption of permanent canine into the cleft site. It has also been mentioned that once teeth have erupted in the cleft site, their periodontal support will not improve with a bone graft; instead, the height of the crest of alveolar bone will resorb to its original level.

Protocols for lip and palate repair vary from centre to centre and are empirical. A review of 34 European centres revealed 34 different approaches. The optimum timing and nature of surgery remains elusive. As a general rule, in most British centres lip repair is undertaken at 3 months and palate repair between 6 and 12 months. The recent fashion for neonatal lip repair on the basis that this will improve bonding of the child and mother has not been proved. The present study was conducted to assess combined orthodontic and surgical management of cleft lip and palate patients.

In present study, out of 24 patients, males were 14 and females were 10. Cleft deformity was unilateral cleft lip + alveolus in 2 cases, bilateral cleft lip + alveolus in 3, cleft of hard & soft palate in 3 cases, unilateral cleft lip + palate in 10 and bilateral cleft lip + palate in 6 cases. Taiwo et al<sup>9</sup> in their study for cleft lip repair, the Pennsylvania lip and nose score was used to assess surgical outcome whereas the integrity of the closure was used for cleft palate repair. A total of 70 subjects were enrolled in this study with 40 females (57.1%) and 30 males (42.9%) (female: male = 1.3:1). The age of the subjects at presentation ranged from 1 day to 26 years. Majority of the study group were infants 74.3% (52) and 25.7% (18) presented after age one. 19 (39.6%) of subjects were operated within the ages of 3 months for lip repair and 10 (45.5%) subjects after 18 months for palate repair. There was a good surgical outcome of 71.4% with an overwhelming parents/ subjects satisfaction of 94.8% with the treatment outcome. Twelve cases (15.6%) in which surgical outcome was rated fair, the subjects or their parents were still very satisfied with the surgical outcome.

We found that satisfaction of treatment outcome was very satisfied in 21 cases, satisfied in 2 cases and not satisfied in 1 case. Nollet et al<sup>10</sup> in their study showed that plausible reasons given for patients' satisfaction even with poor outcome include the fact that the treatment outcome might resonate with patient

expectations or that the surgery itself was an improvement on the initial cleft presentation.

## CONCLUSION

Authors found that patients of cleft lip and palate can be well managed with surgical and orthodontic treatment. Thus combined interdisciplinary approach may be useful in such patients.

## REFERENCES

1. Filho JF, de Almeida AL. Aesthetic analysis of an implant-supported denture at the cleft area. *Cleft Palate Craniofac J* 2013;50:597-602.
2. de Buys Roessingh AS, Dolci M, Zbinden-Trichet C, Bossou R, Meyrat BJ, Hohlfeld J. Success and failure for children born with facial clefts in Africa: A 15-year follow-up. *World J Surg* 2012;36:1963-9.
3. Raposo-do-Amaral CE, Kuczynski E, Alonso N. Quality of life among children with cleft lips and palates: A critical review of measurement instruments. *Bras J Plast Surg* 2011;26:639-44.
4. Kaoje UA, Sambo MN, Oche MO, Saad A, Raji MO, Isah BA. Determinants of client satisfaction with family planning services in government health facilities in Sokoto, Northern Nigeria. *Sahel Med J* 2015;18:20-6.
5. Kirschner RE. Measuring Aesthetics Outcome in Cleft Lip Surgery. Presented at Pan-African Congress on Cleft Lip and Palate, Ibadan, Nigeria; 2006.
6. Diah E, Lo LJ, Yun C, Wang R, Wahyuni LK, Chen YR. Cleft oronasal fistula: A review of treatment results and a surgical management algorithm proposal. *Chang Gung Med J* 2007;30:529-37.
7. Adeola DS, Ononiwu CN, Eguma SA. Cleft lip and palate in northern Nigerian children. *Ann Afr Med* 2003;2:6-8.
8. Singla S, Pandher PK, Lehl G, Talwar M. Orthodontic and prosthodontic management of an adult patient with unilateral cleft lip and palate. *Indian J Dent Sci* 2016;8:159-62.
9. Taiwo AO, Adeyemo WL, Braimah RO, Ibikunle AA. A prospective, single center analysis of satisfaction following cleft lip and palate surgeries in Southwest Nigeria. *J Cleft Lip Palate Craniofac Anomal* 2016;3:9-13.
10. Nollet PJ, Kuijpers-Jagtman AM, Chatzigianni A, Semb G, Shaw WC, Bronkhorst EM, et al. Nasolabial appearance in unilateral cleft lip, alveolus and palate: A comparison with Eurocleft. *J Craniomaxillofac Surg* 2007;35:278-86.