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Original research article

Evaluation of pronasale, nasolabial and paranasal asymmetries in patients with unilateral cleft lip and palate using three-dimensional imaging

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Abstract

Objective: Facial symmetry is an important component of a successful treatment of patients with cleft lip and palate. The aim of this retrospective study was to examine the pronasale, nasolabial, and paranasal region asymmetries in patients with nonsyndromic unilateral cleft lip and palate (UCLP) using three-dimensional (3D) facial imaging.

Materials and Method: The study group consisted of 29 patients with complete UCLP aged 8–29 years. 3D stereophotogrammetric soft tissue recordings of all patients were analyzed. Measurements were performed on the cleft and noncleft side and compared with each other by the paired t-test.

Results: Statistically significant differences were observed between the cleft and noncleft sides. Alar contour-Pronasale distance was longer on the cleft side than on the noncleft side, with the difference between them being statistically significant (p<0.05). The Subnasale-Pronasale / Alar contour-Pronasale ratio was also significantly lower on the cleft side than on the noncleft side (p<0.05).

Conclusion: Patients with UCLP did not present significant asymmetries regarding Cheek and Buccal contours and Chelion-Subnasale and Christa Philtry-Subnasale heights. Asymmetrical appearance was prominent on alar base and pronasale regions.

Keywords: Cleft lip; cleft palate; facial asymmetry

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Introduction

A symmetrical face is considered one of the main features of attractiveness.[1] People are sensitive to different levels of facial asymmetry and perceive symmetrical faces as more attractive.[2] Mild facial asymmetries are common biological features that can even be considered aesthetically pleasing[3]; however, because severe facial asymmetries have an adverse effect on external appearance, corrective treatments are important issues. A typical anomaly that produces mild or severe facial asymmetries is the cleft lip and palate (CLP). These facial asymmetries are common in patients with bilateral (BCLP) and unilateral cleft lip and palate (UCLP).[4] In patients with UCLP, significant asymmetries of the nose and upper lip may remain even after extensive treatment during infancy.[5,6] In previous studies on patients with UCLP, it was reported that the nose was generally asymmetrical, the tip of the nose was deformed, flattened and deviated to the unaffected side.[7,8] However, it has also been stated that the nasoalveolar molding treatment plays an important role in providing nasal symmetry in patients with UCLP.[9]

It is widely accepted that there is a link between subjectively evaluated attractiveness and objective symmetry analyzes,[1,10,11] and there are several studies on the facial asymmetries of CLP patients in the literature.[7,12-14] These studies were conducted using various methods, such as direct anthropometric measurements,[3] posteroanterior cephalometric radiographs,[15] two-dimensional photographs,[16] cone-beam computed tomographies,[17] and three-dimensional (3D) stereophotogrammetry images.[18-20] Posteroanterior radiographic analysis, which is frequently used to evaluate facial asymmetries, is an effective method by which to demonstrate skeletal asymmetry; however, the soft tissues that cover skeletal structures can compensate for the underlying

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skeletal anomaly, to either reflect it as is or as more severe.[21,22] Facial asymmetries are also 3D anomalies with frontal, sagittal, and vertical components; therefore, the use of 3D imaging methods by which to simultaneously assess these three components to examine asymmetry is presumed to be more accurate.[14] After the development of high-resolution digital cameras, 3D stereophotogrammetry methods have become popular because they provide more detailed imaging of the facial soft tissues.[23] 3D stereophotogrammety imaging can be used as a successful technique in orthodontic patients and those with craniofacial anomalies, such as CLP, and the facial asymmetries of these patients can be examined in detail.[24-26]

The aim of this study was to evaluate paranasal and nasolabial asymmetry in patients with UCLP using by acquiring 3D data. The null hypothesis tested was that there were no significant differences in 3D landmark asymmetry between the cleft and noncleft sides of the patients with complete UCLP.

Materials and Method

This study was approved by the University Ethics Committee before commencement of the study. This single-centered and retrospective investigation was conducted on 29 patients (13 females, 16 males) from 8 to 29 years old (mean age: 15.45 years) with nonsyndromic complete UCLP. The inclusion criteria were as follows: 1) absence of any systemic or metabolic disease and 2) absence of any congenital anomaly other than cleft lip and palate. Patients undergone growth modification therapy and orthognathic surgery before taking 3D images were excluded. All CLP patients who underwent orthodontic treatment (125 patients aged 8–32 years old) were evaluated first based on the inclusion criteria. Fifty-two of these patients were excluded from the study because 8 of them had isolated cleft palate, 42 had BCLP,and 2 had no stereophotogrammetry records. Of the remaining 73 patients, 44 were excluded from the study because they had previously undergone growth modification therapies or orthognathic surgery before the 3D images were taken.

Stereophotogrammetric images of all patients were assessed. All images were taken using the noninvasive 3dMDface System (3dMD LLC, Atlanta, GA, USA) with an image-capture time of 1.5 ms. All images were taken under standard office lighting conditions and a natural head position, which have high clinical reproducibility. The 3D images were reoriented and analyzed using 3dMD Vultus® software ver. 2.3.0.2 (3dMD LLC, Atlanta, GA, USA). All 3dMD images were reoriented in all dimensions to standardize them and all sections that were not included in the analyses were removed.

The anthropometric landmarks used in this study are shown in Figure 1. The linear, angular, and proportional measurements are shown in Figures 2A-C. All measurements and landmark identifications were performed by a single operator. The coronal plane (CP) was determined as the line passing through the outer canthi of both eyes. Measurements performed in this study included Cheilion (Ch)- Alar curvature (Ac), Ac-Pronasale (Pr), Ac-Subnasale (Sn), Christa philtry (Cph)-Sn, Buccal contour-Soft tissue Nasion´-Sn, Sn-Pr/Ac-Pr, Cheek point (Ck)-CP, Ac-CP, and Buccal contour-CP. These measurements were taken symmetrically on the cleft and noncleft sides and compared each other.

Descriptions of the parameters

Ch-Ac (mm): distance between Cheilion (Ch) point and Ac point.

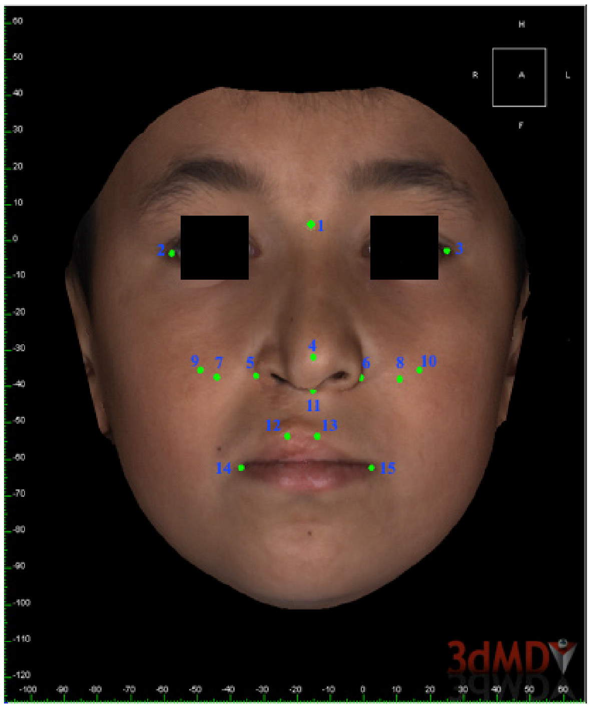

Figure 1. Anthropometric landmarks related to the nose, lips and chin

No	Landmarks	Abbreviation
1	Soft tissue nasion	N'
2	Exochantion Right	ExR
3	Exochantion Left	ExL
4	Pronasale	Prn
5	Alare curvature Right	AcR
6	Alare curvature Left	AcL
7	Buccal contour point Right	BcR
8	Buccal contour point Left	BcL
9	Cheek point Right	CkR
10	Cheek point Left	CkL
11	Subnasale	Sn
12	Christa philtry Right	CphR
13	Christa philtry Left	CphL
14	Cheilion Right	ChR
15	Cheilion Left	ChL

Ac-Prn (mm): distance between Alar (Ac) and Pronasale (Prn) points.

Ac-Sn (mm): distance between Alar (Ac) and Subnasale (Sn) points.

Cph-Sn (mm): distance between Christa (Cph) and Subnasale (Sn) points.

Bc-N´-Sn°: angle formed by the intersection of lines Buccal-Soft tissue Nasion´ (Bc-N´) and Soft tissue Nasion´-Subnasale (N´-Sn).

Ck-CP (mm): distance between Cheek (Ck) and CP and measured perpendicular to the CP.

Ac-CP (mm): distance between Alar contour (Ac) and Coronal plane (CP) and point measured perpendicular to the Coronal plane (CP).

Bc-CP (mm): distance between CP and Buccal contour (Bc) point measured perpendicular to the CP.

Statistical analyses

SPSS 23.0 (IBM Corp, Armonk, NY, USA) was used to perform all statistical analyses. The means and standard deviations (Sd) of the measurements were calculated. The paired t-test was performed to identify differences between the cleft and noncleft side measurements. Significance was determined as $p<0.05$.

Results

The linear, angular, and proportional measurements were compared and were shown in Table 1. The Ac-Prn was longer on the cleft side than on the noncleft side, and the difference was statistically significant ($p<0.05$). The Sn-Prn/Ac-Prn was significantly lower on the cleft side than on the noncleft side ($p<0.05$).

Ch-Ac (mm), Ac-Sn (mm), Cph-Sn (mm), Bc-CP, (mm), Ck-CP, Ac-CP (mm) and Bc-N'-Sn° parameters were similar on the cleft and noncleft sides.

Discussion

One of the main objectives in the treatment of patients with UCLP is to create a symmetrical appearance of the nasolabial region. Although some patients with UCLP have satisfactory functional results after primary repair of the cleft, others need more revisions because of their nasolabial asymmetry.[27] In previous studies conducted on patients with UCLP, it has been reported that the nose was generally asymmetric; because the alar base shape is even more flat because of insufficient bone support on the affected side, and the columella is wider and shorter on the cleft side.[28] It may be difficult to do objective evaluation of soft tissue symmetry in patients with cleft due to its complexity; therefore, the use of 3D facial images has become more popular in recent years for evaluating facial asymmetries in patients with UCLP.[29,30] Although perfect symmetry is not expected in patients with cleft lip and palate, the nasolabial area where asymmetry is most prominent should be examined using these 3D methods. Previous studies that investigated the accuracy of anthropometric measurements using 3D stereophotogrammetry, it was concluded that the system was a reliable technique for facial soft tissue analysis.[23, 31-37] Therefore, in the present study, the measurements on the cleft and noncleft sides in patients with UCLP were compared using non-

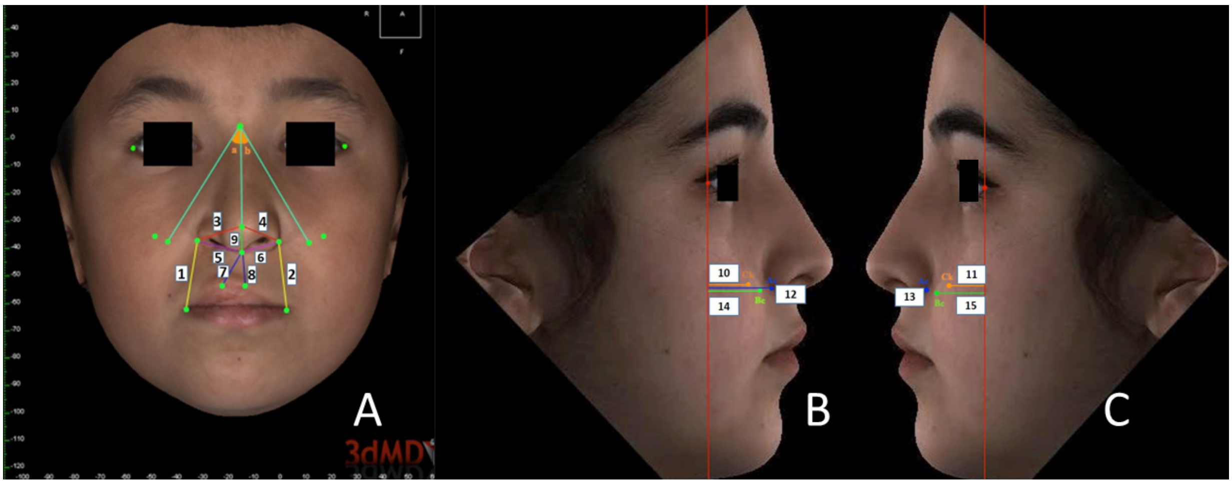

Figure 2. *Linear, angular and proportional measurements; (A) Measurements numbered from 1 to 9, (B) Measurements numbered as 10,12,14, (C) Measurements numbered as 11,13,15*

Measurements	No
Ch - Ac (mm)	1 - 2
Ac - Prn (mm)	3 - 4
Ac - Sn (mm)	5 - 6
Cph - Sn (mm)	7 - 8
Bc - N’ - Sn⁰	a - b
Sn - Prn / Ac - Prn	9/3 - 9/4
Ck - Coronal Plane	10 - 11
Ac - Coronal Plane	12 - 13
Bc - Coronal Plane	14 – 15

Table 1. Comparisons of linear, angular and proportional measurements performed on the cleft and noncleft sides (mean±standard deviation)

Measurements	Cleft side (n=29)	Noncleft side (n=29)	Difference	p‡
Ch-Ac (mm)	27.57±2.78	28.16±2.86	-0.59±1.67	0.068
Ac-Prn (mm)	30.4±3.86	28.96±4.07	1.44±2.92	**0.013**
Ac-Sn (mm)	21.06±2.99	20.64±2.83	0.42±2.69	0.400
Cph-Sn (mm)	13.94±2.56	13.47±2.82	0.47±1.72	0.152
Bc-N'-Sn°	37.21±3.14	36.2±2.89	1.01±3.56	0.138
Sn-Prn/Ac-Prn	0.64±0.08	0.68±0.06	-0.04±0.05	**0.000**
Ck-CP (mm)	9.03±2.72	9.31±2.72	-0.28±2.37	0.527
Ac-CP (mm)	14.31±3.31	13.72±3.27	-0.58±1.71	0.076
Bc-CP (mm)	11.28±3.19	11.38±3.49	-0.1±1.98	0.788

‡ Paired t test. Statistically significant differences are shown in bold

invasive 3D stereophotogrammetry system to quantitatively evaluate nasolabial symmetry.

The null hypothesis was rejected in the present study. It was found that there were significant differences between the cleft and noncleft side of the patients in two of the nine soft-tissue measurements that were assessed. Ac-Prn distance was longer on the cleft side than on the noncleft side, which was in agreement with results of previous studies.[20,28] Because of insufficient bone support within the cleft region, the nasal base was more flat and the pronasale point was deviated toward the noncleft side. Bagante *et al.*[28] compared the Al-Prn (mm) distance, which is similar to the Ac-Prn (mm) measurement on cleft and noncleft sides of patients with UCLP. They found that this distance was significantly shorter on the cleft side than the noncleft side.[28] The reason for the different results of similar measurements might be the characteristics of the patients who were in the study group, who had undergone a secondary rhinoplasty surgery that allowed repositioning of the nasal septum and pronasale. In accordance with this finding, Sn-Prn/Ac-Prn was lower on the cleft side because the Ac-Prn distance was longer on that side. This result suggested that the nostril shape on the cleft side was wider and appeared to be more asymmetrical than that on the noncleft side because of significant differences in the vertical dimensions. In previous studies, it has been reported that nasoalveolar molding (NAM) was beneficial for providing symmetry in the vertical direction.[38, 39] Nevertheless, patients who were in the present study did not have NAM therapy.

The distances of Chelion-Alar contour (Ch-Ac), Alar contour-Subnasale (Ac-Sn), Christa philtry-Subnasale (Cph-Sn), Buccal contour projection (Bc-CP), Cheek point-CP (Ck-CP), Alar contour –CP (Ac-CP) and Buccal contour-Nasion-Subnasale angle (Bc-N'-Sn°) were similar within the cleft and noncleft regions, which indicated that nasolabial asymmetry was intense within certain regions in patients with UCLP. Although it was presumed that none of the patients had undergone primary or secondary rhinoplasty based on their medical history, very few areas on those in our study group exhibited significant asymmetry. These findings might have resulted in midface deficiencies of both the cleft and noncleft sides instead of severe asymmetrical characteristics. In addition, this study group can be considered as substantially heterogeneous because the exact primary surgical procedures performed could not be identified as a result of the lack of documentation. Another limitation of the present study may be wide age range. In their study, Kyrkanides *et al.*[40] compared patients with UCLP and noncleft patients for symmetry analysis in different age groups. Because the faces of the noncleft controls presented less symmetrical characteristics, particularly in those within the postpubertal age group, the researchers reported that the difference in symmetry between the two groups decreased with growth and development.[40] Consequently, because of the many confounding effects in patients with clefts, such as primary surgical type, revisions, cleft severity, and growth period, etc. as seen in the previous studies, these can be considered the most common limitations.

Conclusion

Our analyses of symmetry using 3D stereophotogrammetric images showed that nasolabial asymmetry was more intense on the pronasale and alar base regions in patients with UCLP. Further studies are needed using larger sample size and groups that are more homogeneous.

References

1. Meyer-Marcotty P, Kochel J, Boehm H, Linz C, Klammert U, Stellzig-Eisenhauer A. Face perception in patients with unilateral cleft lip and palate and patients with severe Class III malocclusion compared to controls. J Craniomaxillofac Surg 2011;39:158-63.

2. Rhodes G. The evolutionary psychology of facial beauty. Annu Rev Psychol 2006;57:199-226.

3. Farkas LG, Cheung G. Facial asymmetry in healthy North American Caucasians: an anthropometrical study. Angle Orthod 1981;51:70-7.

4. Bugaighis I, Mattick C, Tiddeman B, Hobson R. 3D facial morphometry in children with oral clefts. Cleft Palate Craniofac J 2014;51:452-61.

5. Bernstein NR, Kapp K. Adolescents with cleft palate: body-image and psychosocial problems. Psychosomatics 1981;22:697-700.

6. Meyer-Marcotty P, Alpers GW, Gerdes AB, Stellzig-Eisenhauer A. Impact of facial asymmetry in visual perception: a 3-dimensional data analysis. Am J Orthod Dentofac Orthop 2010;137:161-8.

7. Bugaighis I, Mattick C, Tiddeman B, Hobson R. 3D asymmetry of operated children with oral clefts. Orthod Craniofac Res 2014;17:27-37.

8. Zreaqat M, Hassan R, Halim A. Facial dimensions of Malay children with repaired unilateral cleft lip and palate: a three dimensional analysis. Int J Oral Maxillofac Surg 2012;41:783-8.

9. Maull DJ, Grayson BH, Cutting CB, Brecht LL, Bookstein FL, Khorrambadi D, *et al*. Long-term effects of nasoalveolar molding on three-dimensional nasal shape in unilateral clefts. Cleft Palate Craniofac J 1999;36:391-7.

10. Edler R, Rahim MA, Wertheim D, Greenhill D. The use of facial anthropometrics in aesthetic assessment. Cleft Palate Craniofac J 2010;47:48-57.

11. Scheib JE, Gangestad SW, Thornhill R. Facial attractiveness, symmetry and cues of good genes. Proc Biol Sci 1999;266:1913-7.

12. Desmedt DJ, Maal TJ, Kuijpers MA, Bronkhorst EM, Kuijpers-Jagtman AM, Fudalej PS. Nasolabial symmetry and esthetics in cleft lip and palate: analysis of 3D facial images. Clin Oral Investig 2015;19:1833-42.

13. Pietruski P, Majak M, Pawlowska E, Skiba A, Antoszewski B. A novel computer system for the evaluation of nasolabial morphology, symmetry and aesthetics after cleft lip and palate treatment. Part 2: Comparative anthropometric analysis of patients with repaired unilateral complete cleft lip and palate and healthy individuals. J Craniomaxillofac Surg 2017;45:505-14.

14. Ras F, Habets LL, Van Ginkel FC, Prahl-Andersen B. Three-dimensional evaluation of facial asymmetry in cleft lip and palate. Cleft Palate Craniofac J 1994;31:116-21.

15. Ishiguro K, Krogman W, Mazaheri M, Harding R. A longitudinal study of morphological craniofacial patterns via PA x-ray headfilms in cleft patients from birth to six years of age. Cleft Palate J 1976;13:104-26.

16. Krisztian N, Mommaerts MY. Analysis of the cleft-lip nose in submental-vertical view, Part I–reliability of a new measurement instrument. J Craniomaxillofac Surg 2007;35:265-77.

17. Harikrishnan P, Balakumaran V. Analysis of Intramaxillary and Mid-Face Skeletal Asymmetry in a Three-Dimensional Model With Complete Unilateral Cleft Lip and Palate. J Craniofac Surg 2018;29:e759-e762.

18. Ferrario VF, Sforza C, Dellavia C, Tartaglia GM, Colombo A, Carù A. A quantitative three-dimensional assessment of soft tissue facial asymmetry of cleft lip and palate adult patients. J Craniofac Surg 2003;14:739-46.

19. Moslerová V, Dadáková M, Dupej J, Hoffmannova E, Borský J, Černý M, *et al*. Three-dimensional assessment of facial asymmetry in preschool patients with orofacial clefts after neonatal cheiloplasty. Int J Pediatr Otorhinolaryngol 2018;108:40-5.

20. Wong KWF, Keeling A, Achal K, Khambay B. Using three-dimensional average facial meshes to determine nasolabial soft tissue deformity in adult UCLP patients. Surgeon 2019;17:19-27.

21. Ferrario VF, Sforza C, Miani A, Tartaglia G. Craniofacial morphometry by photographic evaluations. Am J Orthod Dentofacial Orthop 1993;103:327-37.

22. Shah SM, Joshi M. An assessment of asymmetry in the normal craniofacial complex. Angle Orthod 1978;48:141-8.

23. Wong JY, Oh AK, Ohta E, Hunt AT, Rogers GF, Mulliken JB, *et al*. Validity and reliability of craniofacial anthropometric measurement of 3D digital photogrammetric images. Cleft Palate Craniofac J 2008;45:232-9.

24. Bagante I, Akota I. Cleft-related nose deformation evaluation and measurement methods. Literature review. Stomatologija 2015;17:75-83.

25. Bell A, Lo T-WR, Brown D, Bowman AW, Siebert JP, Simmons DR, *et al*. Three-dimensional assessment of facial appearance following surgical repair of unilateral cleft lip and palate. Cleft Palate Craniofac J 2014;51:462-71.

26. Van Loon B, Maal T, Plooij J, Ingels K, Borstlap W, Kuijpers-Jagtman A, *et al*. 3D Stereophotogrammetric assessment of pre-and postoperative volumetric changes in the cleft lip and palate nose. Int J Oral Maxillofac Surg 2010;39:534-40.

27. Kane AA, Pilgram TK, Moshiri M, Marsh JL. Long-term outcome of cleft lip nasal reconstruction in childhood. Plast Reconstr Surg 2000;105:1600-8.

28. Bagante I, Zepa I, Akota I. 3D Assessment of Nasolabial Appearance in Patients With Complete Unilateral Cleft Lip and Palate. Cleft Palate Craniofac J 2018;55:220-5.

29. Devlin MF, Ray A, Raine P, Bowman A, Ayoub AF. Facial symmetry in unilateral cleft lip and palate following alar base augmentation with bone graft: a three-dimensional assessment. Cleft Palate Craniofac J 2007;44:391-5.

30. Singh GD, Levy-Bercowski D, Yáñez MA, Santiago PE. Three-dimensional facial morphology following surgical repair of unilateral cleft lip and palate in patients after nasoalveolar molding. Orthod Craniofac Res 2007;10:161-6.

31. Aldridge K, Boyadjiev SA, Capone GT, DeLeon VB, Richtsmeier JT. Precision and error of three-dimensional phenotypic measures acquired from 3dMD photogrammetric images. Am J Med Genet 2005;138:247-53.

32. De Menezes M, Rosati R, Ferrario VF, Sforza C. Accuracy and reproducibility of a 3-dimensional stereophotogrammetric imaging system. J Oral Maxillofac Surg 2010;68:2129-35.

33. Ghoddousi H, Edler R, Haers P, Wertheim D, Greenhill D. Comparison of three methods of facial measurement. Int J Oral Maxillofac Surg 2007;36:250-8.

34. Honrado CP, Lee S, Bloomquist DS, Larrabee WF. Quantitative assessment of nasal changes after maxillomandibular surgery using a 3-dimensional digital imaging system. Arch Facial Plast Surg 2006;8:26-35.

35. Lübbers H-T, Medinger L, Kruse A, Grätz KW, Matthews F. Precision and accuracy of the 3dMD photogrammetric system in craniomaxillofacial application. J Craniofac Surg 2010;21:763-7.

36. Plooij J, Swennen G, Rangel F, Maal T, Schutyser F, Bronkhorst E, *et al*. Evaluation of reproducibility and reliability of 3D soft tissue analysis using 3D stereophotogrammetry. Int J Oral Maxillofac Surg 2009;38:267-73.

37. Weinberg SM, Naidoo S, Govier DP, Martin RA, Kane AA, Marazita ML. Anthropometric precision and accuracy of digital three-dimensional photogrammetry: comparing the Genex and 3dMD imaging systems with one another and with direct anthropometry. J Craniofac Surg 2006;17:477-83.

38. Grayson BH, Cutting CB. Presurgical nasoalveolar orthopedic molding in primary correction of the nose, lip, and alveolus of infants born with unilateral and bilateral clefts. Cleft Palate Craniofac J 2001;38:193-8.

39. Maull DJ, Grayson BH, Cutting CB, Brecht LL, Bookstein FL, Khorrambadi D, Webb JA, Hurwitz DJ. Long-term effects of nasoalveolar molding on three-dimensional nasal shape in unilateral clefts. Cleft Palate Craniofac J 1999;36:391-7.

40. Kyrkanides S, Bellohusen R, Subtelny JD. Asymmetries of the upper lip and nose in noncleft and postsurgical unilateral cleft lip and palate individuals. Cleft Palate Craniofac J 1996;33:306-11.

Tek taraflı dudak damak yarıklı hastalarda üç boyutlu görüntüleme ile nazolabial asimetrinin değerlendirilmesi

Özet

Amaç: **Dudak damak yarıklı hastaların tedavi başarısında fasiyal asimetri önemli bir komponenttir. Bu retrospektif çalışmanın amacı, nonsendromik tek taraflı dudak damak yarıklı hastalarda üç boyutlu yüz görüntüleme kullanılarak pronazal, nazolabial ve paranazal bölge asimetrilerinin değerlendirmektir.**

Gereç ve Yöntem: **Çalışma grubu tek taraflı total dudak damak yarığı bulunan, yaşları 8-29 yıl arasında olan 29 hastadan oluşmaktadır. Tüm hastaların 3 boyutlu stereofotografik yumuşak doku görüntüleri analiz edildi. Ölçümler yarık olan ve olmayan taraflar için yapılarak birbirleriyle karşılaştırıldı. Yarıklı ve yarıksız taraf ölçüm farklılıklarının tespiti için eşleştirilmiş t testi kullanıldı.**

Bulgular: **Yarıklı ve yarıksız taraf ölçümlerinde istatistiksel olarak önemli farklılıklar gözlendi. Alar kontur-Pronazal mesafesi, yarık olan tarafta yarık olmayan tarafa göre istatistiksel olarak önemli düzeyde daha uzun bulundu ($p<0.05$). Subnazal-Pronazal/Alar kontur-Pronazal oranı, yarık olan tarafta yarık olmayan tarafa göre istatistiksel olarak önemli ölçüde düşük bulundu ($p<0.05$).**

Sonuç: **Tek taraflı total dudak damak yarıklı hastalarda yanak ve bukkal kontürlerinde ve dudak köşesi-Subnazal ile Krista filtri-Subnazal ölçümlerinde önemli bir asimetri göstermedi. Asimetrik görüntü, alar taban ve pronazale bölgelerinde belirgindi.**

Anahtar Kelimeler: **Damak yarığı; dudak yarığı; fasiyal asimetri**