

# Treatment of Microstomia with Commissuroplasty Using Buccal Mucosa Flaps

## Mikrostomianın Bukkal Mukoza Flebi Kullanılarak Uygulanan Komissuroplasti ile Tedavisi

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**ABSTRACT** Microstomia typically develops as a result of traumatic events directly affecting the soft tissue. However, it may show up congenitally as in this case report. Numerous functional and cosmetic problems are observed in patients due to the contraction in lip corners. The psychologies of patients are also negatively affected by the problems they experienced, hence the current condition becomes more complicated. A variety of surgical methods and equipment can be used for the treatment of microstomia. In this case report, commissuroplasty surgery performed using the Converse-Kazanjan technique and its 2 year follow-up have been presented.

**Keywords:** Commissuroplasty; microstomia; buccal flaps; reconstruction

**ÖZET** Mikrostomia sıklıkla yumuşak dokuyu doğrudan etkileyen travmatik olaylar sonucunda gelişir. Bununla beraber bu vaka sunumunda olduğu gibi konjenital olarak da görülebilir. Dudak köşelerinde görülen kontraksiyona bağlı olarak hastalarda fonksiyonel ve estetik birçok problem izlenir. Hastaların yaşamış olduğu problemler sonucunda psikolojileri de olaydan olumsuz etkilenir, dolayısıyla mevcut durum daha komplike bir hal alır. Mikrostomianın tedavisi için çeşitli cerrahi yöntemler ve apareyler kullanılabilir. Bu vaka sunumunda Converse-Kazanjan tekniği ile gerçekleştirilen komissuroplasti ameliyatı ve 2 yıllık takibi sunulmuştur.

**Anahtar Kelimeler:** Komissuroplasti; mikrostomia; bukkal flep; rekonstrüksiyon

Microstomia typically occurs as a result of chemical burns, thermal and electrical injuries and animal bites that directly affect the soft tissue.<sup>1</sup> In addition to that, microstomia may also be congenital.<sup>2</sup>

As the body tends to hypertrophic scarring in children and adolescents, microstomia occurs especially in these age groups. A cosmetic deformation arises in the lip and perioral region due to the closure of the injured commissure region with skin tissue. Patients develop deficiencies in speech, chewing, oral hygiene and facial expression due to hypertrophic scar and contraction. Psychological disorders developing due to cosmetically-unsatisfactory appearance have been reported as secondary complications.<sup>3</sup>

The goals of commissuroplasty carried out for the treatment of microstomia are to restore the lip functions and to make the patient feel functionally and cosmetically satisfied by obtaining a symmetrical lip appearance.<sup>4</sup>

The cause and severity of the condition affect the treatment approach. Different approaches have been reported for the treatment of microstomia in the literature.

In this case report, the patient admitted for orthodontic treatment, could not be treated due to inadequate mouth opening, and commissuroplasty was carried out to treat the patient's functional, cosmetic and psychological disorders.

## CASE REPORT

A 14-year-old female patient has been thought to have a congenital syndrome that could not be diagnosed as a result of genetic screenings. The disease could not be diagnosed definitively although all required screenings were performed several times both by a university hospital in Turkey and by various centers in Europe. The patient was admitted to the orthodontic department of our hospital by her family due to the misalignment of her teeth. The Department of Orthodontics referred the patient and her family to the Department of Oral and Maxillofacial Surgery, stating that it would not be possible to initiate treatment with the existing mouth opening. As a result of the anamnesis taken and the examinations performed, the patient was found to have mental retardation, hearing problem, maxillary and mandibular narrowing along with microstomia. Primarily, the Converse-Kazanjian technique was planned for the surgical treatment of microstomia in order to initiate orthodontic treatment (Figure 1). Preoperatively, vertical lines are drawn down from the right and left eye pupils of the patient (Figure 2). The intersection points of these lines and the horizontal lines drawn from the corner of the mouth were designated as the new commissure (Figure 3). The surgical margins were determined by drawing lines from these points to the vermilion borders of the lower and upper lips. After the surgical margins were formed with a No 10 scalpel, this triangular area was advanced to the oral mucosa level by dissection and the whole of it was removed. Subsequently, a triple flap was formed on the oral mucosa, rotated and sutured to the skin border (Figure 4 and Figure 5). No preoperative or postoperative complication developed,

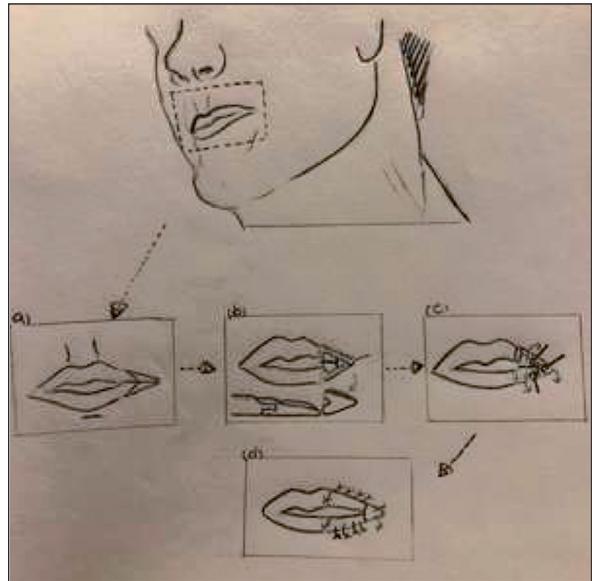


FIGURE 1: Figure of converse-kazanjian technique.

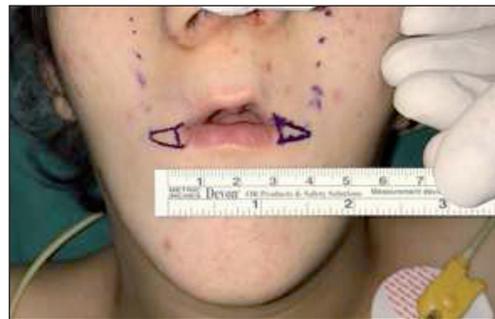


FIGURE 2: Preoperative horizontal mouth opening.



FIGURE 3: Preoperative vertical mouth opening.

and the patient was discharged on the first postoperative day by describing the postoperative care. The sutures were removed on the postoperative day 10. Postoperative 3rd month, the orthodontic treatment was initiated by taking the patient's mouth measurements, and it was found that the patient

had a 38 mm horizontal and 26 mm vertical mouth opening during the follow-up visit after two years (Figure 6 and Figure 7).



FIGURE 4: Intraoperative view.



FIGURE 5: Sutured triangular mucosal flaps.



FIGURE 6: Postoperative one year horizontal mouth opening.



FIGURE 7: Postoperative one year vertical mouth opening.

## DISCUSSION

The treatment of microstomia has forced surgeons for many years, regardless of being congenital or acquired. The main challenge encountered in this case is the preservation of the targeted cosmetic appearance and function, and provision of the ability to maintain it. Certain surgical procedures have been described for the restoration of the mouth corners, when the literature is reviewed.<sup>5</sup>

In 1831, Diffenbach has proposed the technique of advancing superior, inferior and lateral mucosal flaps after scar excision. This technique was modified by Converse in 1959, by Friedlander et al. in 1974. Roopenian and Kazanjian have reported two reconstruction methods depending on the amount of vermillion tissue loss. Gillies and Millard, and then John et al. advanced the oral mucosa by using the vermillion flap on the upper lip in order to close the defect on the lower lip. The commissures can also be extended with transpositional flaps.<sup>6,7</sup>

Muehlbauer has reported two Z-plasty techniques by rotating two small skin flaps to the lip mucosa.<sup>8</sup> Fairbanks and Dingman has formed two small triangular flaps, one from the upper lip and one from the lower lip mucosa. These flaps were extended by free dissection and sutured by being advanced towards the commissure.<sup>9</sup> Fernandez-Villoria relocated the internal and external orbicular oris muscle flaps and advanced them to create a new vermillion.<sup>10</sup>

Recently, Berlet et al. have presented a technique that involves the rotation of buccal mucosa

flaps to solve the problems with postoperative contracture, to open the shortened commissures and to close up the open wound surfaces. In this study, the suture line was located on the inner side of the cheek so that the corners of the mouth were pulled laterally towards the tragus, and contracture was prevented by avoiding the formation of a round or square commissure.<sup>11</sup>

Again recently, Turan et al. have defined the single-rhomboid flap technique with a 2-week splint treatment and reported that the mouth opening was increased by 37 mm to 65 mm after 8 months.<sup>4</sup>

Makiguchi et al. have used the nasolabial flap technique for the treatment of microstomia developed due to contracture after burn.<sup>12</sup>

The reconstruction of mouth corners can fully resist the conventional treatment. Initially, conservative treatments such as oral splint, physiotherapy can be administered. Z-plasty, skin grafting or commissuroplasty surgeries can be performed. However, there is often a need for a gradual treatment approach in large and resistant cases. These include extensive surgical procedures such as skin-muscle grafts and vestibuloplasty. In the postoperative period, hypertrophic contracture, scar and asymmetry frequently occur. The problems are further complicated by the fact that the majority of donor tissues do not resemble the mass, form and structure of the lips' vermilion tissue.<sup>5</sup>

This case presented, satisfactory results were obtained postoperatively and during the two-year follow-up by using the modified version of the Converse technique.

### Informed Consent

*Preoperative patient consent has been taken.*

### Source of Finance

*During this study, no financial or spiritual support was received neither from any pharmaceutical company that has a direct connection with the research subject, nor from a company that provides or produces medical instruments and materials which may negatively affect the evaluation process of this study.*

### Conflict of Interest

*No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.*

### Authorship Contributions

**Idea/Concept:** Hakan Alpay Karasu, Orkhan İsmayilov; **Design:** Ali Ekemen, Firat Aksun; **Control/Supervision:** Hakan Alpay Karasu, Orkhan İsmayilov; **Data Collection and/or Processing:** Firat Aksun, Murad Osmanlı; **Analysis and/or Interpretation:** Ali Ekemen, Murad Osmanlı; **Literature Review:** Orkhan İsmayilov, Eli Ekemen; **Writing the Article:** Hakan Alpay Karasu, Orkhan İsmayilov, Ali Ekemen; **Critical Review:** Hakan Alpay Karasu, Murad Osmanlı, Firat Aksun; **References and Fundings:** Hakan Alpay Karasu, Orkhan İsmayilov; **Materials:** Ali Ekemen, Firat Aksun.

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