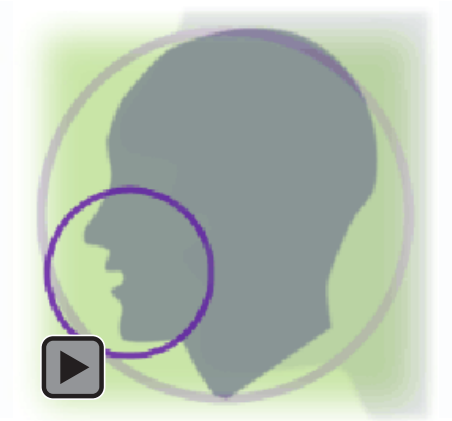
the Journal of CONTEMPORARY DENTAL PRACTICE at www.thejcdp.com
Volume 4 Number 4 November 15, 2003 Fall Issue

Microstomia Caused by Swallowing of Caustic Soda: Report of a Case

Wilson Denis Martins, DDS, PhD;
Fernando Henrique Westphalen, DDS, PhD;
Vania Portela Ditzel Westphalen, DDS, PhD



Abstract

A case of microstomia caused by swallowing caustic soda is presented. A 54-year old man developed a progressive stricture of the circumoral region following accidental ingestion of caustic soda when he was 9 years old. He was treated by a general surgeon who performed bilateral commissurotomies when he was 19 years old and lived normally until he needed major dental prosthetic treatment. His dentist was unable to perform the treatment due to the mouth stricture. The surgical option was to perform bilateral buccal mucosal flaps.

A review of the literature and the surgical technique are presented.

Keywords: Microstomia, contractures of circumoral tissues, hypertrophic scarring, ectropion, cheiloplasty

Citation: Martins WD, Westphalen FH, Westphalen VPD. Microstomia Caused by Swallowing of Caustic Soda: Report of a Case. J Contemp Dent Pract 2003 November;(4)4:091-099.

Introduction

Partial or full-thickness facial injuries may lead to the formation of contractures of the circumoral tissues and subsequent development of microstomia. Microstomia can be acquired as a result of injury to facial tissues such as animal bites, electrical and thermal lesions, and chemical burns. The resulting stricture of the circumoral region causes ectropion of the lower lip, difficulty with eating, breathing, speaking, and drooling. The microstomia can also result in the patient's inability to maintain adequate oral hygiene or receive some dental services such as prosthesis fabrication. Substantial esthetic facial deformity can also result and is most significant in children and adolescents, in whom there is a tendency toward hypertrophic scarring and interference with the morphological development of facial structures.[1]

Other causes of microstomia, not related to injuries like the association with craniofacial anomalies and deformities (Crouzon disease, Apert syndrome, hemifacial microssomia[2], and scleroderma) (Spackman[3]), have been outlined in the literature.

This report details a man with chemical burn cicatricial microstomia. Functional microstomia correction was achieved by cheiloplasty using bilateral buccal mucosa flaps.

Case History

A 54-year old man presented to the Oral and Maxillofacial Surgery Clinic, at the Clínica de Fraturas e Ortopedia XV in Curitiba, Paraná, Brazil, desiring a solution for his problem of a "small mouth opening." He presented a history of ingestion of caustic soda (lye) when he was 9 years old, with the chemical burns limited to the lips and mouth. He developed adhesions to the upper and lower lips and experienced subsequent progressive microstomia until he was 19 years old when a general surgeon performed bilateral commissurotomies. There was no history of esophageal or gastrointestinal tract injury secondary to the ingestion of the lye.

The patient lived normally, with satisfactory mouth opening, until he needed major dental prosthetic treatment. His dentist was unable to provide these services due to the recurrent microstomia and small mouth opening.

Physical examination showed bilateral hypertrophic scarring and contractures of the commissures leading to a 2.5 cm limited mouth opening. (Figures 1 and 2)

The greatest horizontal commissure width was 4.5 cm. Poorly restored teeth were present in both the maxillary and mandibular teeth.

Figure 1.

Figure 2.

Treatment

Bilateral commisuroplasties using rombhoid flaps to cover the resulting raw surfaces was the treatment of choice after reviewing surgical options. The patient was admitted to the hospital for the surgical procedure under general anesthesia. The new commissures locations were planned using two vertical lines drawn tangential to the inner convexity of the right and left irises.[4] (Figure 3)

Lateral incisions were made through the skin and fibrous scar tissue to the underlying mucosa (Figure 4). The skin was dissected from the subcutaneous attachments. Rombhoid flap-type designs were then outlined in the upper and lower lips. They were rotated anteriorly to cover the surgical created defects and secured with 6-0 nylon sutures. (Figures 5, 6, and 7)

Figure 3.

Figure 4.

Figure 5.

Figure 6.

Figure 7.

Treatment

The patient had an unremarkable postoperative course. He was instructed on the use of immediate progressive physical exercises (smiling, active mouth opening, stretching of the corners of the mouth with finger pressure). Sutures were removed after 10 days and the incisions were well healed. The patient showed improved mouth opening (5.5 cm) with the horizontal commissure width being 6 cm.

A six-month follow up examination showed a mouth opening of 5.2 cm and a horizontal commissure width of 5.6 cm, but there was enough room for the planned dental treatment and for mastication of food. (Figure 8)

Figure 8.

Discussion

The difficulties in reconstruction of the commissures has been related to the complex functional and esthetic requirements of the circumoral region.[5,6] Since Dieffenbach[7] proposed a method for the correction of microstomia, different procedures have also been proposed. This technique was modified by Converse[8] and by Friedlander.[4] Gillies and Millard[9] presented a simple technique in which they used the vermilion flap of the corner of the mouth to reconstruct the upper lip and used oral mucosa from the inner aspect of the lower lip to form the vermilion border.

Muehlbauer[10] proposed two Z-plasties using the rotation of two small skin flaps into the mucosal part of the lip. Fairbanks and Dingman[11] used two small triangular flaps, one with a superior base and one with an inferior base. These flaps were dissected free and transposed for a lengthening effect at the same time that buccal mucosa is advanced to the commissure and then sutured.

Johns et al.[5] used triangular flaps to achieve excellent results in a woman with a history of lye burns to the perioral area as a child, with scar contracture and decreased mouth opening.

Objecting to the division of the orbicularis muscle, Fernandez-Villoria[12] proposed a technique based upon elongation of the muscular circumference. He suggested dissecting two muscular flaps, one from the inner portion with a superior base and one from the lateral portion with an inferior base.

Takato[13] used a free forearm flap for reconstruction of the oral cavity and vermilion flaps at the oral commissures, since local flaps would be insufficient to cover the large defect. Berlet et al. [14] presented a technique involving an opening of the shortened commissure and rotating mucosa flaps to cover the raw surfaces. The suture lines are placed on the inner aspect of the cheek. Jackson[6] indicated the use of rotating mucosa rhomboid flaps to cover the raw surfaces, after commissurotomy.

Mehra et al.[15] treated a case of severe microstomia with three mucosal flaps (superior, inferior, and lateral oval-shaped) with a modification of the technique described by Converse.[8] We agree with these authors that in cases in which the contracture is mild and a commissurotomy can be expected to increase both the width and general size of the oral aperture, a relative conservative technique can be performed.

The present case was not too severe. With a history of a relatively successful surgery when the patient was 19 years old, the conservative Jackson´s rombhoid flap[6] was chosen due to its simplicity. Esthetics was not the primary concern of the patient; however, an improvement in the overall balance of the circumoral region and in the appearance of the teeth was achieved. (Figures 1 and 8)

Figure 1.

Figure 8.

References

1. Penna KJ, Sadoff RS. Prevention of microstomia following facial burns. Br J Oral Maxillofac Surg 1998;36:146-147.
2. Lopez Jr J. Surgical management of microstomia in the dental office. J Am Dent Assoc 1978;97: 840-842.
3. Spackman GK. Scleroderma: what the general dentist should know. Gen Dent 1999;47: 576-579.
4. Friedlander AH, Zeff S, Sabin H. Cheiloplasty for the correction of microstomia secondary to an untreated burn. J Oral Surg 1974; 32:525-527.
5. Johns FR, Sandler NA, Ochs MK. The use of a triangular pedicle flap for oral commisuroplasty: report of a case. J Oral Maxillofac Surg 1998; 56:228-231.
6. Jackson IT. Local flaps in head and neck reconstruction. St. Louis:Mosby; 1985:399-401.
7. Dieffenbach JF. Chirurgische Erfahrungen besonders über die Wiederherstellung zerstörter Theile des menschlichen Körpers nach neuen Methoden. Berlin:Enslin;1829.
8. Converse JM. Technique for elongation of the oral fissure and restoration of the angle of the mouth. In:Kazanjian VH, Converse JM, eds. The surgical treatment of facial injuries. Baltimore:Williams & Wilkins;1959.
9. Gillies HD, Millard DR. Principles of plastic surgery. Boston; Little Brown; 1957.
10. Muehlbauer WD. Elongation of mouth in postburn microstomia by a double Z-plasty. Plast Reconst Surg 1970; 45:400-402.
11. Fairbanks GR, Dingman RO. Restoration of the oral commisure. Plast Reconst Surg 1972; 49: 411-413.
12. Fernandez-Villoria JM. A new method of elongation of the corner of the mouth. Plast Reconst Surg 1972; 49:53-54
13. Takato T, Ohsone H, Tsukakoshi H. Treatment of severe microstomia caused by swallowing of caustic soda. Oral Surg Oral Med Oral Pathol. 1989 Jan;67(1):20-4.
14. Berlet AC, Ablaza VJ, Servidio P. A refined technique for oral commissurotomy. J Oral Maxillofac Surg 1993; 52:1400.
15. Mehra P, Caiazzo A, Bestgen S. Bilateral oral commissurotomy using buccal mucosa flaps for management of microstomia: report of a case. J Oral Maxillofac Surg 1998; 10:1200-1203.

About the Authors

Wilson Denis Martins, DDS, PhD

Dr. Martins is an Oral and Maxillofacial Surgeon and a Professor of Stomatology at the Catholic University of Paraná (PUCPR) in Curitiba, Brazil.

e-mail: wilson@rla01.pucpr.br

Fernando Henrique Westphalen, DDS, PhD

Dr. Westphalen is a Professor of Stomatology at the Catholic University of Paraná (PUCPR) in Curitiba, Brazil.

Vania P.D. Westphalen, DDS, PhD

Dr. Westphalen is a Professor of Endodontics at the Catholic University of Paraná (PUCPR) in Curitiba, Brazil.