Microstomia has been described as a diminished oral aperture.\(^1\) It may result from various causes that lead to cicatricial scar formation,\(^2\) resulting in esthetic compromise, hypotonicity of the circumoral musculatures, and decrease in vertical and horizontal opening of the mouth.\(^3,4\) The main problem that can arise due to microstomia can be functional (speech, nutrition, hygiene) or esthetic (due to asymmetric lip placement).\(^4-6\) There are many treatment options available: surgical,\(^6-8\) nonsurgical,\(^1,9-13\) and a combination.\(^14,15\) In any of the treatment options, the aim is not just providing well-functioning lips with increased mouth opening and improved esthetics, but also providing a stable and long-lasting result.\(^14\) Three adjunctive therapies (surgery, stent, and exercise) were planned for an edentulous patient with microstomia.

**ABSTRACT**

The problem of small oral aperture is big. Irrespective of the etiology, this problem may be overcome by adjunctive therapies in the form of prosthesis, surgery, or exercise. A patient is described with this problem, which was overcome by revisiting the 3 adjunctive therapies including a commissural stent designed with the patient’s edentulous state in mind. (J Prosthet Dent 2016;115:137-140)
of the stent. Additionally, mouth stretching exercises were advised to augment the mouth opening.

The presurgically fabricated commissural stent was designed in 2 separate commissure conformers, made out of clear thermoplastic bioplast sheet (Bioplast sheets; Scheu Dental GmbH). The 2 conformers were connected to each other by removable means using a cervical headgear. Impression of both left and right cheeks was made with mouth maximally opened. Before making the impression, the extent of incision for commissuroplasty was marked (with indelible pencil) in relation to the left commissure, which was decided by equating it with the distance from the facial midline and the location of the right commissure at rest. The impression was made with polyvinyl siloxane (Aquasil Ultra, Putty; Dentsply Caulk) in putty consistency. The material was mixed and adapted over the outer and inner (mucosal) surfaces of the cheeks on both the left and right sides (Fig. 3). While adapting the impression material intraorally, care was taken to extend the material to the full depth of the maxillary and mandibular buccal vestibule. The impression was removed, and the cast was poured in Type III dental stone (Kaldent; Kalabhaji).

The cast of the left side was modified by trimming until the extent of the area that was planned to be surgically removed (as marked before making the impression). Separating material was applied (Bioplast insulator; Scheu Dental GmbH) on the casts, and 3.0 mm thick thermoplastic material (Bioplast sheets; Scheu Dental GmbH) was adapted using a Biostar V machine (Bioplast Scheu Dental GmbH) at 6 MPa pressure for 30 seconds to fabricate commissure conformers. The 2 conformers were attached through the cervical headgear to complete the commissural stent (Fig. 4). Double J-shaped hooks were fabricated using 19-gauge orthodontic stainless steel wire (K.C. Smith). One end of the hook was attached to the conformer through a pierced hole. The free end of the J-shaped hook was attached to the cervical headband (Leone Neck Pad for Safety Release; Libraltraders, Leone Safety Release modules; Libraltraders) on both the left and right sides to complete the commissural stent. The region of attachment to the cervical headgear determined the amount of tension created by the stent using a Dontrix gauge (Leone Dontrix).
Gauge; Libraltraders), and it was hence determined whether the stent was to be used in passive state (immediately after surgery) or in a dynamic state (after healing of surgical wound).

The purpose of the surgical procedure was to remove the scar tissue, enhance primary healing, and minimize tissue contraction. The contracture was released by a continuous incision through the skin (extraorally) and mucosa (intraorally), thereby creating a triangular defect. The extent of the incision was as previously decided.

The patient was shown and instructed how to assemble the 2 separate stent components with the headgear (Fig. 5). The stent was maintained to be passive for the initial 14 days, with the main aim to prevent relapse in initial stages. The J-shaped hook was symmetrically inserted at the third hole of the cervical headgear. After 14 days, the position of the hook was moved more posteriorly (according to maximum patient tolerance) to make the stent more active and dynamic in order to consistently apply force and prevent recurrence due to scar formation (Fig. 6). The patient was instructed to wear the stent for duration of not fewer than 14 hours, including nighttime wearing.

As suggested previously, manual mouth-stretching and jaw-stretching exercises were advised to be repeated alternately 10 times per instance and twice a day. A substantial improvement in mouth opening (4.0 cm measuring between upper and lower lip at the vermilion border of the lips in the region of the facial midline) was observed, and placement of the left commissure (Figs. 7, 8) was attained at the end of 5 weeks. After improvement of mouth opening, a conventional complete denture was fabricated. The patient reported with consistent findings in his 9-month recall.

**DISCUSSION**

A surgical intervention was required because the scar contracture was already present and needed to be excised. Addition of exercise augmented the results by promoting stretch. A commissural stent was fabricated using complete extraoral anchorage with the cervical headgear. The design of the appliance was made keeping in mind the edentulous state of the patient. The commissural stent was prescribed in a passive state during the early healing phase to prevent any relapse and connective tissue growth. The same commissural stent was made dynamic to increase the amount of stretch, if any relapse should occur, and maintain the achieved opening. The other advantages of the commissural stent were as follows: it provided physical resistance to scar contracture, together with a horizontal and vertical lip...
stretch; it permitted movement and function of the surgical region with traction without applying a constant force that could cause pressure necrosis; it was easy to fabricate; and no general anesthesia was required for the procedure. The drawbacks included an esthetic compromise (while in use); mechanical interference during mastication; and dependence on patient compliance (removable appliance) for results.

CONCLUSIONS
Adjunct therapies can be implemented before the fabrication of complete dentures in patients with microstomia as an alternative to a conventional protocol of sectional complete dentures.

REFERENCES

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