A Modified Tongue-Lip Adhesion for Pierre Robin Anomalad

ROBERT W. PARSONS, M.D.
DAVID J. SMITH, M.D.
Chicago, Illinois 60637

A modified *tongue-lip adhesion* for *Pierre Robin anomalad*, based on the work of Douglas (1946), Routledge (1960), and Randall (1977) is described. Modifications include placement of the *incision* and stripping of the *geniglossus muscles* from the mandible. Conservative non-operative management is successful for most patients, but an adequate surgical adhesion avoids tracheostomy when more active treatment is needed.

Most babies with Pierre Robin anomalad are successfuly managed today by non-surgical techniques. With the development of newborn intensive care units, the tongue-lip adhesion is needed only for an occasional infant whose respiratory problems are refractory to the techniques of positioning, nasogastric intubation, nasopharyngeal airway, and temporary endotracheal intubation.

Where a tongue-lip adhesion is required as in Figure 1, the Routledge technique (Routledge, 1960), popularized by Randall (1977), is a widely accepted improvement on the Beverly Douglas operation (Douglas, 1946). It avoids damage to the mandibular alveolar ridge and splints the adhesion temporarily with a glossopexy suture to avoid dehiscence. However, we have found that it does not always bring the tongue far enough forward to relieve the respiratory obstruction effectively when done as described. Therefore, the technique has been modified to gain more effective control of the airway by altering the incision and stripping the genioglossus muscles from the mandible.

Technique

Endotracheal anesthesia is used. The mucosa in the area of operation is infiltrated with a minimal amount of lidocaine 0.25% with epinephrine 1:400,000. A transverse incision is made just above the floor of the mouth across the mucosa of the tongue, high enough to avoid injury to the openings of the sublingual and submaxillary glands. It is deepened to expose the genioglossus muscles, and some release of the tongue is thus obtained. (Figure 2a) The genioglossus muscles are then bluntly stripped from their origins on the mandible (Figure 2b). The tongue can now be brought well forward, effectively relieving the glossoptosis.

A flap is created on the mucosa of the lower lip, based on the labial sulcus, and turned back over the alveolar ridge to be sutured to the margin of the tongue incision (Figure 2c). This creates a continuous raw surface for the adhesion without damage to the alveolus or obstruction of the salivary glands.

The glossopexy suture is placed as described by Routledge (1960). We usually use heavy Mersilene sutures passed through the tongue on a reversed Keith needle, using a heavy needle holder (Figure 3a). The index finger is placed at the base of the tongue just above the epiglottis to guide the needle. One end of the first suture is caught with a hook, threaded through the button, and then brought back through the tongue with the loop of a second suture (Figure 3b).

The posterior row of sutures between the lip flap and tongue mucosa is completed. Both ends of the glossopexy suture are then passed over the mandible to be tied over a button under the chin at the end of the procedure. The muscle of the tongue is sutured to the

Dr. Parsons is Associate Professor in Surgery, The University of Chicago Pritzker School of Medicine, Chicago, Illinois and Dr. Smith is Resident in Plastic Surgery, Indiana University School of Medicine, Indianapolis, Indiana.

Presented as a Poster Session at the Annual Meeting of the American Cleft Palate Association, San Diego, February 26, 1979.

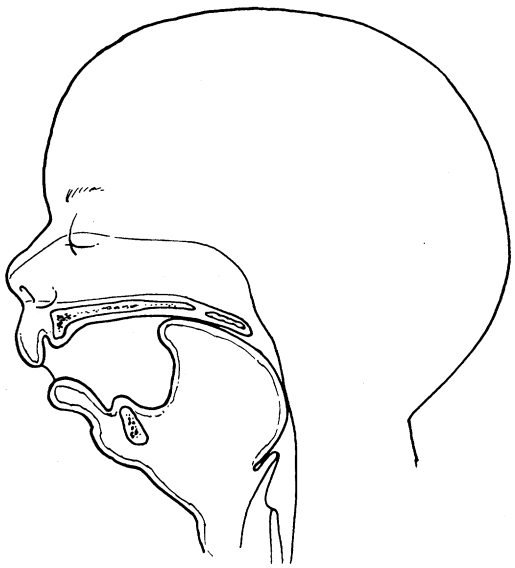

FIGURE 1. Glossoptosis in Pierre Robin anomalad. Tongue in nearly vertical position obstructs breathing. (Drawn from lateral X-ray)

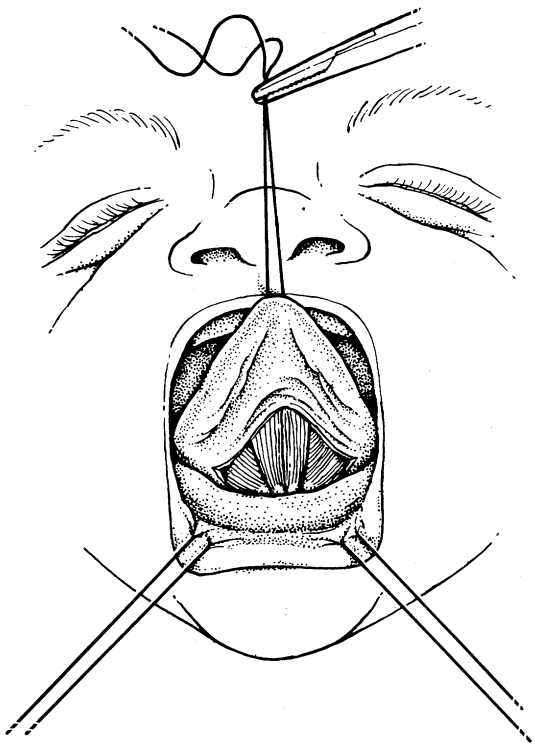

FIGURE 2a. Transverse incision on tongue just above floor of mouth exposes genioglossus muscles.

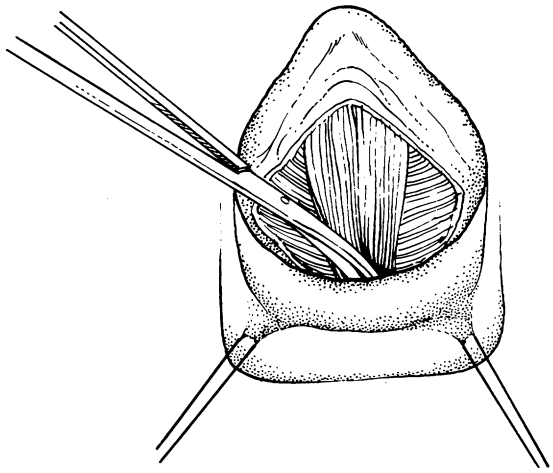

FIGURE 2b. These are bluntly stripped from mandible.

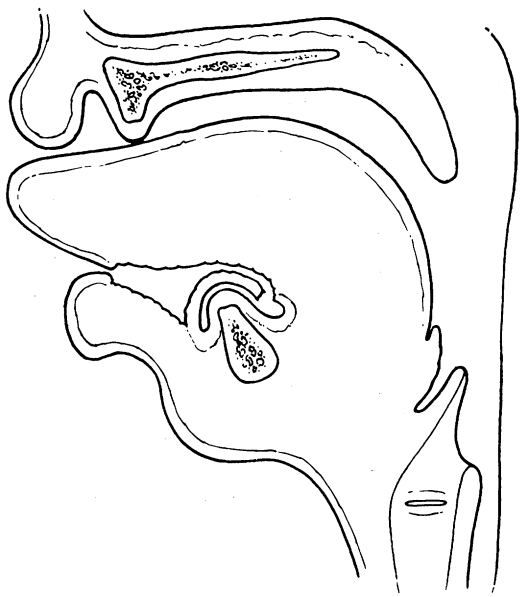

FIGURE 2c. Mucosal flap from lip creates continuous raw surface for adhesion. Raw surface on tongue well posterior to control base of tongue.

muscle of the lip on either side of the midline, and the mucosal suture lines are closed. Most of the tension is supported by the mucosal sutures at this point.

The glossopexy suture is then tightened and tied (Figure 3c). The tension should be enough to hold the base of the tongue forward

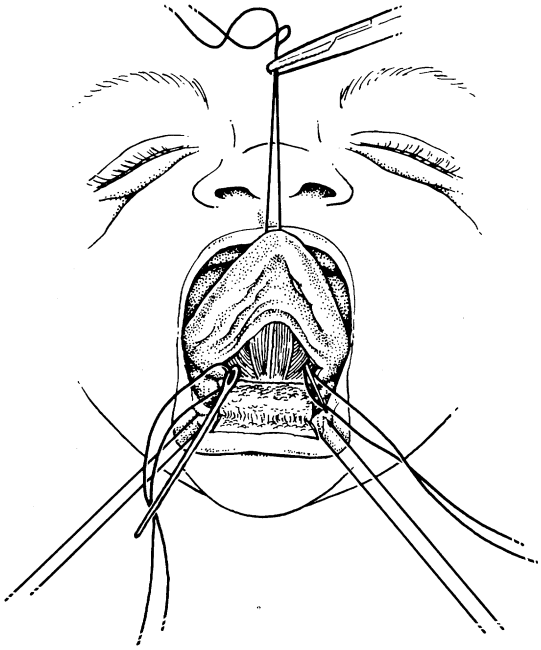

FIGURE 3a. Heavy Mersilene sutures passed to base of tongue just above epiglottis. Finger at base of tongue to guide needle not shown.

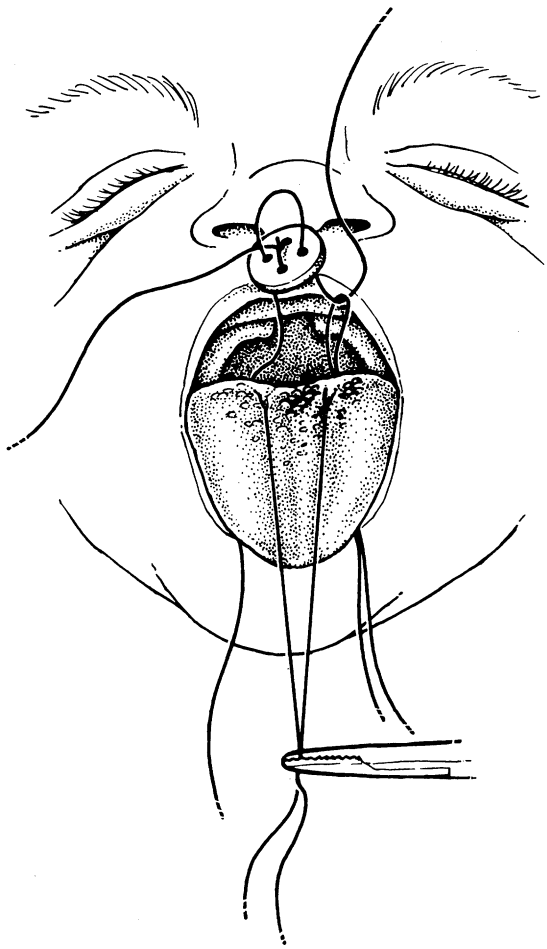

FIGURE 3b. Button threaded on suture which is brought back through tongue with loop of second suture. Note additional suture for retrieval of button.

to maintain relief of glossoptosis, but excessive tension is avoided. This suture will always tend to cut through the mucosa at the base of the tongue and the skin beneath the chin. It is removed when the chin button is loose, between the 6th and 10th days. We have never seen it remain effective longer than 10 days, and usually seven days is the most that can be expected. It is for this reason that its use without the tongue-lip adhesion is not advisable.

At the completion of surgery the tongue protrudes through the lips. The endotracheal tube is usually left in place for 24 to 48 hours, after which the infant can breathe normally through the nose.

Discussion

Tongue-lip adhesion is the most conservative step available for management of those few infants with Pierre Robin anomalad who have persistent respiratory obstruction after an adequate trial of non-surgical management. The technical modifications described, in their fully evolved form, have been used by us in four patients. It is our clinical impression that in our hands they provide more direct repositioning of the obstructing base of the tongue than the Routledge technique, with a more secure airway. The only effective alternative is tracheostomy, with its well-known attendant morbidity. Tracheostomy should be reserved for the truly rare patient with complications or failure of tongue-lip adhesion which cannot be otherwise managed. We have not seen such a situation but recognize its possible consequences.

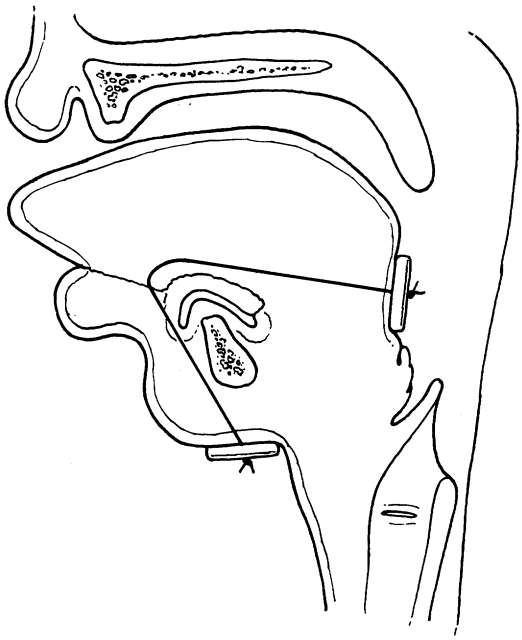

FIGURE 3c. Completed adhesion with glossopexy suture in place.

Summary

When a tongue-lip adhesion is required for Pierre Robin anomalad, posterior placement of the tongue incision just above the floor of the mouth and stripping of the origins of the genioglossus muscles provide more secure control of the glossoptosis. The technique described by Routledge (1960) is otherwise followed.

Reprints: *Robert W. Parsons, M.D.*
Section of Plastic Surgery
950 E. 59th Street
Chicago, IL 60637

References

DOUGLAS, B., The treatment of micrognathia associated with obstruction by a plastic procedure, *Plast. Reconstr. Surg.*, *1*, 300, 1946.

RANDALL, P., The Robin anomalad: micrognathia and glossoptosis with airway obstruction. In Converse (ed.) Reconstructive Plastic Surgery, 2nd ed., Philadelphia: Saunders, 1977.

ROUTLEDGE, R. T., The Pierre Robin syndrome: a surgical emergency in the neonatal period, *Brit. J. Plast. Surg.*, *13*, 204, 1960.