

TONGUE FLAP FOR CLOSURE OF ANTERIOR PALATE FISTULA

V.K. PURI, VIKRAM P. GUPTA

SUMMARY

12 cases of anterior palate fistula larger than 5 mm in diameter were treated by anteriorly based dorsal, midline mucomuscular tongue flap without any fixation of tongue or jaw. The results obtained during the course of study support the method for the closure of large anterior palate fistula following cleft palate surgery.

(Key Words : Cleft lip & Palate, Palate fistula, Tongue flap.)

The incidence of palate fistula after the primary treatment of cleft palate varies from 8.9% to 34% (Posnick, Stenley, 1987). The discomfort and disability in speech, mastication and swallowing accompanying a defect of the palate is a great handicap. Many surgical attempts to close the palate fistula using local tissue or extra palatal tissue have been tried in the past.

In the present study the anterior palate fistula was closed by using local turn over flaps from the vicinity of the fistula for providing nasal lining. The cover on the oral surface was provided by the anteriorly based mucomuscular flap from the dorsum of the tongue, in accordance with the principles of Edgerton (1956), Converse (1972) and Pigott (1984).

Material and Methods.

12 cases of anterior palate fistula larger than 5 mm diameter following cleft palate surgery having the complaints of regurgitation of fluids and food from nose were taken up for the present study. The operation was carried out in two stages by raising and transfer of the flap from the tongue to the fistular site during the 1st stage and separation of base of flap and its adjustment at the site of defect after an interval of 3 weeks, during the second stage.

After suitable preparation for cleft palate surgery under appropriate anaesthesia with oral

intubation, Dott's mouth gag was applied into the patient's mouth. Palate mucosa around the fistula was infiltrated with adrenaline saline of strength 1:100,000. A circumscribed incision was given around the fistula and turn over flaps were raised. These were stitched with interrupted 4-0 chromic catgut sutures with inverted knots.

The gag was then removed and a dental prop was inserted to permit access to the tongue. A 2-0 silk suture was placed through the tongue which served as a retractor to expose the dorsum of tongue. An anteriorly based midline, dorsal tongue flap was designed and raised with four objectives in mind.

1. The base of the flap lies beneath the posterior border of the fistula when the tongue is in neutral position.
2. The length of the flap was adjusted so that the flap from the midline was long enough to fill the antero-posterior dimensions of the fistula and an additional 1 cm to allow for the smooth turning of the flap and to give some freedom of tongue movement.
3. The width of the flap was so adjusted that half the width of tongue was involved to ensure good blood supply to the flap.
4. The depth of the flap was approximately 5-7 mm thick so as to include a thin layer of muscle in it.



Fig. 1 (a) pre operative showing palatal fistula



1 (b) Post operative showing tongue flap in position



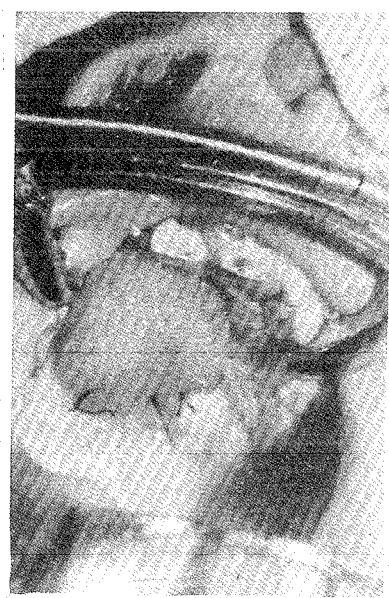
Fig. 2 (a) Pre operative view of another case



2 (b) Post operative view of the same



Fig. 3 (a) Pre operative view



3 (b) Post operative view

The donor site was closed by deep interrupted haemostatic 3-0 chromic catgut stitches. Care was taken not to strangulate the base of the flap. The flap was sutured to the periphery of defect by interrupted 4-0 silk sutures. No additional fixation of flaps with lip or upper incisors or

fixation by intermaxillary ligation or fixation of tongue to the chin or angle of the mandible was done.

Following completion of the operative procedure, attentive postoperative management of the airway was mandatory. Suction through the nose was carefully performed immediately following surgery by the surgeon but any subsequent nasal suction was interdicted. The patient was breathing well on his own before extubation took place. The patient was placed on his side in the recovery room and the nursing staff were instructed to suction the medial aspect of the dependent cheek. Post operative agitation was controlled by parenteral sedation for 24 hours. The hospital stay averaged about 5-7 post-operative days. The patient was kept on clear fluids for 5 days and a soft diet thereafter for 2 weeks. Antibiotic coverage consisted of administration of Ampicillin for a period of 1 week.

After a minimum period of 3 weeks of flap transfer the patient was operated for separation and adjustment of flap. Under suitable anaesthesia, nasal intubation was done, however in cases where this was not possible oral intubation was done. The base of the flap was divided and the donor area was sutured with 3-0 chromic catgut sutures. The flap was adjusted into the palate. The post operative care was similar to stage I. The cases were discharged on 4th post operative day. They were called for follow up after 2 weeks and then at 3 months interval.

Observations

1 case was in the age group of 1-2 years. 8 cases were in the age group of 2-5 years and one each in the age group of 5-10, 10-15 years, and 15-20 years and none above 20 years of age.

In all the cases the size of the fistula was larger than 5 mm in diameter. In 1 case there were two slit holes present each measuring 3 mm and 2 mm in size. In all the cases there was regurgitation of fluids/food from nose. In 8 cases there was hypernasality.

2 cases had undergone previous surgical attempts for closure of the fistula and 1 case was

using an obturator. In 1 case the presence of the root of an incisor teeth in the vicinity of the fistula was detected.

In none of the cases there was separation/tear of flap prior to 2nd stage operation. In 1 case there was necrosis of the tip of the tongue flap and later on there remained 1 mm sized fistula after the separation and adjustment of the flap. This required no surgical intervention.

There was decrease in the hypernasality in all the 8 cases and none had regurgitation of fluids from the nose. None of the patient complained of any change or loss of taste sensation, difficulty in articulation and swallowing due to the flap. No significant change in the size of the tongue was noticed as cleft palate patients often had large tongue except that it had slightly increased in length. None of the cases complained of bulkiness of tongue flap at the site of the fistula.

Discussion

In accordance to the principles of Edgerton et al (1956), Converse (1972) Pigott et al (1984) the anterior palate fistula was closed by using local turn over flap from the vicinity of the fistula for providing nasal lining. The cover was provided by the anteriorly based mucomuscular flap from the dorsum of the tongue.

Guerrero-Santos J. et al (1966— Jackson (1972) Hockstain (1977), Carreira (1980), Pigott et al (1984) and many other authors stressed the importance of correct alignment of the base of flap, design of flaps and provision of adequate mobility with a pedicle of reasonable length. Similarly the design of the flap in the present series was such that a midline flap from the dorsum of the tongue was taken. The flap was anteriorly based involving at least half the width of the tongue. The length of the tongue flap was taken such that it could cover the antero-posterior dimensions of the fistula with at least 2-3 mm to spare to allow for the turn over section to cover and to give freedom of some tongue movement. The depth of the tongue flap was such that few layers of the underlying muscles were included, so that submucosal plexus remains covered beneath

the layer of muscles.

Guerrero-Santos, J. and Altamirano (1966), Bakamjian (1966) and Vaughan E. et al. (1983), recommended a unilateral tongue flap on the belief that the deep lingual artery of the other side must be spared. However, this is not true as deep lingual artery runs on the ventral surface of tongue and is not included in the tongue flap. It is the submucosal plexus which is the major source of the blood supply to the tongue flap, Bracha (1981) and Pigott et al. (1984). Contrary to the experience of Guerrero Santos, J. (1966), Steinhauser (1982) and others, it has been found not necessary to provide any additional method of fixation of the jaw by intermaxillary wiring, fixation of tongue flap to the upper lip or the fixation of the tongue to the chin or angle by means of wires or sutures. The possibility of the detachment of the flap, loosening of stitches or any other similar problem was not encountered. There was no feeding problem for the child. Additionally, the surgeon could inspect and get the cleaning of the oral cavity done as required. Similarly Jackson (1972), Pigott et al. (1984) and Posnik (1987) have also not recommended any additional method of fixation of the tongue flap.

In one case there was necrosis of the distal part of the flap resulting in 1 mm sized fistula later on. This did not require further treatment. This, in our opinion, was probably due to the application of stitches into the donor area too close to the base of the flap. One case which showed presence of root in the vicinity of fistula, the root was removed 1 week prior to the operation.

In none of the cases there was interference of function or shortening of tongue except a negligible linear scar on the dorsum of the tongue. Taste sensation and swallowing reflex were normal. However there was cessation of regurgitation of the food/fluids from nose and improvement in the nasality of speech in all cases. Converse (1968), Bakamjian (1972), Jackson (1972), Steinhauser (1982), have also reported similar experiences.

Conclusions

12 cases of anterior palate fistula larger than 5

mm in diameter following cleft palate surgery were treated by anteriorly placed dorsal, mucomuscular, midline tongue flap. In none of the cases change in taste, sensation or swallowing was noticed and there was no complaint of bulkiness

of flap at the site of fistula. The results obtained during the course of this study strongly support the method for the closure of larger anterior palate fistulae following cleft palate surgery.

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Photograph/Legends

Fig. 1 to Fig. 3 (a) Pre operative, (b) Post operative.
Various types of Anterior palate fistula
treated by Dorsal tongue flaps.

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