Single layer anteriorly based tongue flap for extensive palatal cleft- A case report

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Abstract
The most widely recognized difficulty of a repaired congenital fissure is palatal fistula which can be seen from narrow to wide forms as derived in the published literature. Small fistulas are usually asymptomatic, but the larger ones create regurgitation of fluids in the nasal cavity and interferes the normal speech. Various options are present for the surgical management to close fistulas. Local flaps are usually used for small fistulas comparatively large fistulas are difficult to manage. Tongue flaps due to its high vascularity are region is the treatment of choice for most of the surgeons. The anteriorly based tongue fold is a sheltered and compelling strategy for conclusion of moderately extensive repetitive palatal fistula with no practical impedance of the giver site. This article portrays remaking of one such wide palatal fistula by anteriorly based tongue fold performing single layer conclusion.

Keywords: Palatal fistula, Tongue flap, Cleft palate, Local flap.

Introduction
0 – 77.8% worldwide prevalence is proven as the commonest complication occurring after cleft palate is palatal fistula.[1] Palatal fistulas can involve both primary and secondary palate in which involvement of secondary palate ranges from 8.9 – 34%.[2] Transposition of adjacent tissues can be used for closing small fistulas comparatively it is extremely difficult to close large fistulas.[3-8] The junction premaxilla and secondary palate or hard and soft palate is the common location of palatal fistula. Size, position and degree of velopharyngeal incompetence are major factors for deciding the treatment plan. The incidence of fistulas is not necessarily of genetic origin but the etiologic factors can also vary like trauma, tumour, infection, granuloma, leprosy, Noma, syphilitic gumma, leishmaniasis.[2] Main objectives of ideal reconstruction are replacement of the lost tissue with similar tissue. Tongue flap is a versatile flap which can be anteriorly or posteriorly based with axial or random pattern of blood supply and can be harvested from ventral, dorsal or lateral portion of tongue.[9-12] In the event of tongue folds there are numerous specialized focuses that specialists need to consider as the essential to diminish the odds of repeat. One of these is the accentuation on great nasal layer conclusion in two-layer system.[13-16]

Case Report
Seven-year-old girl operated for cleft lip and palate at childhood presented with huge palatal fistula on primary palate extending mildly to secondary palate presented to us for closure (Fig. 1). An anteriorly based tongue fold was made arrangements for the conclusion of palatal fistula. Choice was made to play out a solitary layer conclusion. The palatal fistula was roughly quadrangular in shape each side measuring around 3 cm crossing alveolus between the incisors. Orthopantomogram and 3-D CT confirmed the bony defect. Routine blood investigations were done which were unremarkable. Under general anaesthesia, according to the size of defect (Fig. 2) an anteriorly based tongue flap was taken which was sutured with vicryl (non-absorbable) (Fig. 3). Length and width of tongue flap was determined by using a template as a guide. The depth of flap was about 5 to 8 mm thick, which included thin muscular layer, for the protection of sub-mucosal plexus, which is the major source of blood supply to the flap. The flap was then rotated forward and sutured to raw edges of palatal defect anteriorly and laterally using 4-0 vicryl. Donor site was also closed using interrupted 4-0 vicryl sutures. We used a thin needle prick after an hour of procedure then every 4 hourly for a period of 24 hours to check the viability of flap. The flap was tested with vascular loop tourniquet for adequate vascularity before separation. Patient was given nasal feed post operatively for two weeks. Following fourteen long periods of medical procedure the pedicle was separated under general anaesthesia (Fig. 4). Palatable recuperating of the site was watched. Follow up revealed no nasal regurgitation and mild improvement of speech and the patient was sent to speech pathologist.

Fig. 1: Pre-Clinical Picture showing Cleft

Fig. 2: Measurement of defect

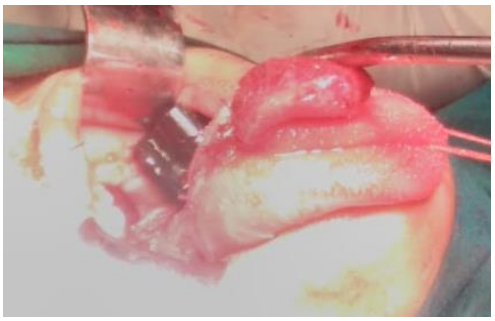

Fig. 3: Anterior tongue flap

Fig. 4: Post-operative picture

Discussion

Guerrero-Santos and Altamirano (1966) were first to describe the use of a tongue flap to close palatal fistulas secondary to cleft palate repair. The tongue flap, with its muscular bulk and excellent vascularity, has proved to be effective in occluding even large palatal fistulas that were previously felt to be inoperable. Tongue fold have been utilized as a part of abundant in our field of oral and maxillofacial medical procedure to close innate deformities like palatal fistula or obtained absconds which happen after delicate tissue tumor resection, injury, diseases or oro-antral fistulas. They have been additionally utilized for conclusion of imperfections happening after radiotherapy absconds. There is posteriorly based fold too which are shown for recreation of delicate sense of taste, back oral mucosa and retromolar region. Anteriorly based folds are utilized to close hard sense of taste, essential sense of taste, intra oral mucosa, lips and floor of the mouth absconds. They are adaptable decision of treatment because of their vascularity, portability and versatility. Tongue folds are shown in instances of palatal fistulas, its repeat, disappointment of congenital fissure, sense of taste with extreme scarring and places here lingering palatal tissue does not permit reasonable conclusion. They are likewise utilized as a part of deformities which are bigger than 1 cm. in width. Achievement has been accounted for in nearby folds in fistulas estimating under 1.5 cm. in breadth.[17] Ranina supply routes navigate profoundly before ventral mucosa, creating branches which rise to the dorsum of tongue, this ranina branches inundate front based tongue fold.[18] Several creators have announced occurrence of enormous palatal fistula after palatoplasties, and additionally trouble of their treatment. Occurrence have extended from 0-30% which relies upon kind of parted, patients age, palatoplasty procedure and specialists encounter.[19] Tongue flap closure for end stage palatal defect id associated with relative lack of complication and high success rate in children and adults.[20] The specialist must not delay to raise a vast fold to guarantee its vascular practicality and permit impressive tongue development without undue strain on the pedicle.[21] This allows water tight closure and increased area for ingrowth of new blood vessels before flap division. Some hesitate to alter the tongue anatomy for fear of changing speech and deglutination. There are no significant adverse effect on articulation, lingual mobility, or swallowing following the use of a tongue flap procedure to close palatal defects. The mobility of the remaining tongue may be more important in preserving speech intelligibility than the relative mass of the tongue that remains. Although lingual mobility and articulation are reported to be unaffected by removal of tongue tissue, Steinhauser (1982) cautioned that the tongue flap itself may interfere with lingual mobility and articulation if it is too thick. In this case, partial excision or debulking may be required as a secondary procedure. The tongue flap has been found to be an effective method of closing large palatal fistulas to reduce nasal emission and hypernasality. However, there is a lack of sufficient clinical research that specifically evaluates changes in resonance and nasal

emission as a result of fistula repair. Protruding tissue can interfere with normal tongue movement, with tongue placement, and with the anterior f ow of air during articulation. This can result in a lateral distortion of speech. Therefore, the surgeon should attempt to shape the tongue flap so that it conforms to the contour of the palatal vault as much as possible. Occluding a palatal fistula is often done for the purpose of reducing or eliminating hypernasality and nasal emission. The nasal emission that remains is more audible and, therefore, the patient's speech may be perceived to be worse. If this occurs, parents should be counseled that this is not a sign that the surgery was unsuccessful.[19] Few authors have used flap from lateral border of tongue. Different alterations have been done in these folds in which one adjusted fold strategy shows that the edges of fistula are swung to the nasal side without coordinate conclusion, leaving the nasal layer free of strain. In the wake of resecting the fold, the all around vascularized crude territory of tongue will be in contact with the crude region of fistula and nasal hole. This crude to crude contact coordinates the tongue fold and prompts firm recuperating of the encompassing region. The nasal layer hole will then begin to epithelialize until the total conclusion of this hole which is demonstrated by nasoscope development.[22] Single layer conclusion of fistula by pedicle foremost based tongue fold can hence be demonstrated for repair of extensive palatal fistulas that can't be effectively treated by other nearby and removed folds as a result of the size and position of the imperfections.

Conclusion

Tongue folds are amazing option for wide or intermittent palatal fistulas as they are adaptable and can be intended for every fistula closure. They are normally shown for fistulas that are in excess of 1 cm. The pedicle anteriorly based tongue flap in our case has given excellent result which has improved the quality of life of the patient.

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