MANAGEMENT OF PALATAL FISTULA WITH MODIFIED ALVEOLAR EXTENSION PALATOPLASTY – A PROMISING TECHNIQUE

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ABSTRACT

Palatal fistulas are usually complications to cleft palate surgeries, post traumatic or due to surgical removal of maxillary pathologies. Palatal fistulas pose a disgusting problem to the patients by way of nasal regurgitation of fluids, nasal intonation of speech, halitosis and recurrent respiratory infection. Closure of palatal fistulas are challenging and technique sensitive. Alveolar extension palatoplasty (AEP) was introduced by Michael H Carstens and the technique proves to be more successful than other local flaps. AEP provides hard palate coverage with like tissue without any donor site morbidity unlike tongue flaps. This paper aims in describing the technique of palatal fistula closure by AEP with slight modification. The technique is simple, easily adoptable and a dependable procedure for the management of palatal fistulas.

Key words: Palatal fistula, Alveolar extension palatoplasty, Oronasal fistula, Ora antral communication

INTRODUCTION

A break in structural integrity of the palate leading to oro nasal or oro antral communication are called palatal fistulas. Palatal fistulas are usually complications of previous cleft palate surgeries, removal of cyst or tumours in the maxilla or a sequel of maxillofacial trauma. Palatal fistulas are more common after palatoplasty in cleft palate surgeries. Likewise the procedure of palatal fistula closure is much studied in patients with cleft palate. Palatal fistula closure are usually done with local flaps, tongue flaps, interposition flaps, Buccal flaps, Forearm flap, Temporalis myofacial flaps etc. This paper discus the technique of modified AFP which was successful on five of our patients with palatal fistulas secondary to maxillofacial trauma.

METHODOLOGY

Five patients of maxillofacial trauma with fracture of maxilla developed palatal fistula after ORIF under GA in this centre from 2007 to 2011. The patients had fistulas of not more than 3cm in length and 2cm in breadth. The patients selected for AFP had fistula in the hard palate and not in the alveolar region or in the soft palate region. Patients had complaints of speech distortion, nasal regurgitation of oral fluids, repeated respiratory infection and halitosis. Upper respiratory tract infection was controlled with antibiotics. Palatal acrylic plate made up of heat cure acrylic material was fabricated. A wax spacer was used during fabrication to enable us to use the same plate post operatively. The palatal plate prevented regurgitation oral fluids and the chance of respiratory infection was reduced ,this subsequently aided in healing of hyper tropic nasal mucosa. Patients were given with acrylic plate one month before surgery and instructed to use two months post operatively. The plate was not worn during sleep.

Modified Alveolar Extension Palatoplasty Technique

Informed consent was obtained from all five patients before surgery. GA induced by Nasotracheal intubation. Patient placed in Supine position and neck extension achieved by keeping a pillow or rolled towels under the shoulder. Lignocaine 2% with 1:2, 00,000 of Adrenaline (5 ml) is injected in 3 to 4 regions for haemostasis. Mucosal preparation was done with Betadine. Dingmans’ mouth gag applied. Fistula margins excised .Crevicular incision placed from II molar and continued anteriorly around all teeth on the palatal aspect. If the size of fistula is small, anteriorly or two teeth are spared from elevation of palatal mucoperiosteum. This is done for the flap to remain in place after elevation of the entire palate.

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Dissection is carried out in an antero posterior direction in subperiosteal plane to the posterior border of the palatine bone. The mucoperiosteal flap elevated from tooth margins and palatal bone. Special attention is given on the lateral aspect of GPA. This is the region where anastomosis of GPA with lesser palatine A on the aponeurosis of tensor veli palatini exists in the vicinity of hamulus. The space of Ernst is not entered. Care should be taken while dissecting around GPA, preservation of integrity of GPA is at most important for the technique to succeed. Posteriorly a small periosteal elevator is placed on the posterior border of the palatine bone to free the muscle attachments. This manoeuvre adds to the antero posterior length of the flap. The careful and targeted dissection should be practiced meticulously for the flap to succeed. Osteotomy on the medial aspect of greater palatine foramen is recommended in case of larger defects in cleft patients. We have not done Osteotomy around GPA as the length and breadth of the flap was found to be sufficient to close the fistula. The dissection around GPA was always done finally. With the entire flap defined, closure of fistula was done from posterior margin to anterior margin with 4/0 vicryl interrupted sutures. Next the lingual free marginal gingiva is approximated with buccal marginal gingiva (interdental sutures) with interrupted sutures. The bone exposure was near the alveolar margins and not on the palatal alveolar shelves.

The dissection around the uvulus, soft palate muscles, maxillary tuberosity, medial pterygoid to elevate levator veli palatini, sectioning of levator aponeurosis, osteotomy of GPA and more importantly elevation of nasal mucosa was not done. These dissection techniques were used in the closure of cleft palate using AFP. The technique was modified for the closure of palatal fistula and it proves to be really simple and effective.

Post operatively the palatal plate was placed after suturing. Antibiotics prescribed for one week and analgesics for five days. Suture removal was done on the tenth post operative day. Chlorhexidine mouth washes (0.2%) was started on second post operative day for three to four times a day and continued for two months.

**DISCUSSION**

Palatal fistulas are usually complication of previous surgeries whether it is palatoplasty, tumour excision or maxillofacial fracture. Palatal fistulas are more
Management of palatal fistula with palatoplasty

Management of palatal fistulas is often difficult due to the stiffness of palatal mucosa, scarring from previous surgeries or injury and further complicated by non-availability of adequate tissue for tension-free closure. Management of palatal fistulas are done with local flaps (palatal flaps, island flaps, rotational flaps, hinge flaps), interpositional flaps with cancellous bone and periosteum, tongue flaps, buccal flaps, nasolabial flaps, vonlangenback flaps, facial artery musculomucosal flaps, Temporalis flaps and forearm flaps.

Palatal fistulas are classified into pre-alveolar, alveolar, post-alveolar, hard palate, junctional palate and soft palate. Out of these, fistulas in the junction of hard and soft palate are the most difficult to manage and the next difficult ones are the fistulas in anterior palatine region.

Hard palate fistulas where adequate tissues are available are usually managed by mucoperiosteal flaps of von langeteck type. Fistulas where an adequate tissue was not available were managed with AEP. In fistulas where severe shortage of tissues exists with extensive scarring, then tongue flaps were used.

AEP was introduced by Michael H. Carstens in the year 1999. The technique was introduced after careful analysis of blood supply to the maxilla and extensive work on the embryology of maxillary development.

The blood supply to the palatal mucoperiosteum was elaborately studied by Maher et al. The study by Huang and associates in which overlying mucosa and glandular layers revealed that

A) There is no mid-line anastomosis between the GPA’s.

B) The periosteum of the lingual alveolar arch is supplied by GPA.

C) The lateral extensions of GPA and its angiosome are defined sharply on the midline of the alveolar ridge.

D) A collateral blood supply to the hemipalate exists from ascending palatine branch of facial artery.

The above studies clearly demonstrate that an incision in the palatal alveolar junction as in the case of von langenback type will clearly disrupt the blood supply from GPA. The gingival mucoperiosteum on the palatal aspect will become dependent on blood supply from labial angiosome or backflow from APFA of that side. Further the studies by Skoog and Bardach demonstrated that maintaining the periosteal layer of mucoperiosteum preserves highly osteogenic cambium layer.
Management of palatal fistula with palatoplasty

An incision in the palatal alveolar junction not only disrupts blood supply from GPA to palatal gingiva but also disrupts supply to highly osteogenic periosteum. Seibert\textsuperscript{17} and Delaire\textsuperscript{18} studies recommend only subperiosteal dissection. AEP is based on these above anatomic background. AEP preserves the blood supply of palatal mucoperiosteum by maintaining blood supply from GPA and does not interrupt periosteal blood supply as only subperiosteal dissection was carried out.

The advantage of AEP

1. Hard palate coverage with like tissue
2. Tension free closure due to additional tissue available from gingival extension
3. Minimal exposure of palatal bone, raw area is on the tooth margin and not on the palatal bone.
4. Preservation of blood supply to the palatal gingiva and palatal periosteum.

The original Carsten’s technique is simplified and modified here for the closure of palatal fistula in hard palate. Carstens himself had performed single layer closure of post dehiscent defect of 2 cm in diameter and it was successful.\textsuperscript{8}

Denny\textsuperscript{19} et al performed AFP with two layer closure on 60 patients and found the procedure to be more successful. We had no problems in the healing of palatal fistula, marginal gingiva (periodontal pockets) or no tooth mobility elicited. Hence AEP can be performed in selected cases of palatal fistula without any hesitation.

CONCLUSION

The modified AEP can be recommended for closure of fistulas of hard palate for

1. Tension free closure with like tissue.
2. The procedure is better than tongue flaps for medium sized hard palate fistulas of 2 to 3 cm in diameter at the maximum.
3. Healing is guaranteed because of non interruption of blood supply unlike von langenback technique.

However a large sample size is recommended for the extensive research on the success of the technique on palatal fistulas.

REFERENCES