

COMBINED USE OF TURNOVER AND PIVOT FLAP FOR DOUBLE LAYER CLOSURE OF POSTAURICULAR FISTULA

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ABSTRACT

Repair of post auricular fistula are challenging owing to scarred tissue and poor blood supply in this area. Various techniques including loco-regional flap cover and cavity obliteration have been utilized to repair this complicated problem. In our report, we introduce a novel technique using a double layer closure utilising local skin flap successful lasting results. Two young adults of age 18 Male and 21 year female. Size of fistulas were ranging from 1x2 and 2x2 cm respectively in size. Once the fistulous tract was excised two flaps were planned for double layer closure of fistula. First flap for inner lining was turnover flap. Then another local pivot flap is planned to cover the secondary defect or the raw area. It can be either simple rotation flap as in first case or Limberg type local transposition defect (2nd case) flap. Both fistulas were healed well.

KEYWORDS : Fistula , Post auricular, Flap Closure

INTRODUCTION:

Postauricular cutaneous mastoid fistula (PCMF), connecting the mastoid cavity with the postauricular skin are often an unusual complication of chronic suppurative otitis media (CSOM), radical mastoid surgery or spontaneous exteriorisation of a cholesteatoma from the mastoid through the post-auricular skin surface^{1,2,3}. Fistula development may also occur after closure of a post-auricular incision in

mastoid surgery due to necrosis or breakdown of poor skin edges⁴. Persistent post aural discharge and cosmetic concerns are two main reasons for patients asking for medical assistance. Repair of post auricular fistula are challenging owing to scarred tissue and poor blood supply in this area. Various techniques including loco-regional flap cover and cavity obliteration have been utilized to repair this complicated problem. In our report, we introduce a novel technique using a double layer closure utilising local skin flap successful lasting results.

CASE PRESENTATION

Two patients with past history of mastoid surgery were presented with discharging postauricular fistulas. Both were of young adults of age 18 Male and 21 year female. Size of fistulas were ranging from 1x2 and 2x2 cm respectively in size. Patients had undergone preoperative CT scan to rule out any residual pathology or residual disease following the mastoid surgery. During surgery, the post auricular region was cleaned and the fistula and fistulous tract were visualized. Skin around the fistula was incised, then the incision was extended upward in the temporal-mastoid-occipital area to expose an adequate portion of fibro-muscular-periosteal tissue. The fistulous tract was traced which was leading up to mastoid antrum and was excised. Fistulous tract was curetted, the antrum cleared of granulation tissue. The fistulous tract was

excised and abdominal free fat is used to obliterated the antrum. Two flaps were then planned for double layer closure of fistula. First flap for inner lining was turnover flap. The blood supply of this turn over flap was medial intact subdermal plexus. A circumferential incision was made all around the fistula. The width of turnover flap was same as that of the width of the fistula. The flap was raised in the subcutaneous plane and at the medial portion of flap , subdermal plexus was left intact. Flap was then turned inward so that skin part of flap face inside of fistula and sutured to each other leaving raw surface exposed. That was the first layer and the inner lining of fistula. Then another local pivot flap is planned to cover the secondary defect or the raw area. It can be either simple rotation flap as in first case (FIGURE 1&2) or Limberg type local transposition defect (2nd case) flap(FIGURE 3&4). The advantage of the rotation flap and the Limberg type transposition flap was that there was no secondary defect and skin graft was not needed. Laxity of post auricular skin was utilised for same. Even if there was any secondary defect due to transposition flap then it could be skin grafted. A mastoid dressing was done. 1st dressing was done on 3rd post op day. Sutures were removed on 14th post op day. Both fistulas were healed well. Patients were advised to do gentle massaging of the scar. The scars were well hidden behind the ears. The longest follow up was at 12th month with no significant complints

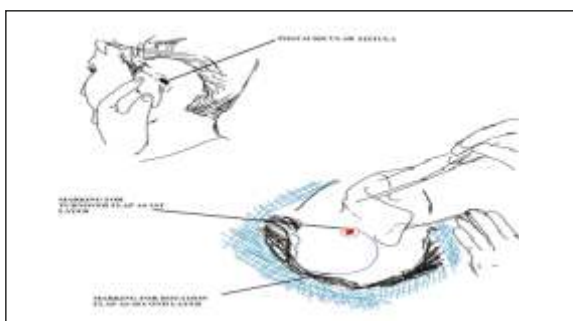


FIGURE 1- LINE DIAGRAM OF PLANNING AND FLAP MARKING OF CASE 1



FIGURE 2A- IMAGE SHOWING POSTAURICULAR FISTULA RIGHT SIDE IN CASE 1



FIGURE 2B – IMAGE SHOWING PLANNING WITH FLAP MARKING



FIGURE 2C – POST OPERATIVE IMAGE AFTER 4 WEEKS OF CASE 1

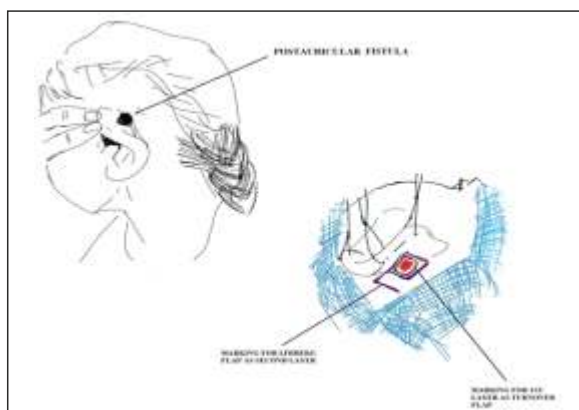


FIGURE 3- LINE DIAGRAM OF PLANNING AND FLAP MARKING OF CASE 2



FIGURE 4A- IMAGE SHOWING POSTAURICULAR FISTULA RIGHT SIDE IN CASE 2



FIGURE 4B – IMAGE SHOWING PLANNING WITH 2ND LAYER LIMBERG FLAP MARKING TO COVER THE RAW AREA LEFT FOLLOWING THE RAISING OF TURNOVER FLAP AS 1ST LAYER



FIGURE 4C – POST OPERATIVE IMAGE AFTER 4 WEEKS OF CASE 2

DISCUSSION:

Post-auricular cutaneous mastoid fistulae are uncommon in occurrence so its management techniques are rarely reported. The commonest cause of these fistulas are either complication of chronic ear disease or ear surgery, or both. Several techniques have been described, some with mixed outcomes. Direct closure of these fistulas has been attempted with very high failure rates due to the necrotic skin edges eventually leading to enlargement of the fistula. Asherson et al described a technique of closure of Post auricular Chronic Mastoid Fistula by transposing Temporalis muscle into the complicating mastoidectomy wound with Zygomatic mastoiditis⁵. The techniques used for the closure of post auricular fistula includes simple closure, or using bone or cartilage graft, or muscle flap cover that are limited by one or the other issue. There are chances of high failure rate with simple closure due to necrotic skin edges, while the bone and cartilage grafts get infected and eventually resorbs. Grafts undergo resorption⁶. However Vira and Andrew successfully repaired the fistula using the cartilage and it was not compromised using that technique¹⁰. Choo et al. Utilised a strip of Temporalis muscle to fill the mastoid bony defect in a case of post-auricular cutaneous fistula secondary to chronic suppurative otitis

media, followed by direct skin closure⁷. Recently, Olusesi and Opaluwah, utilised post auricular fasciocutaneous periosteal advancement flaps with excision of burrow triangle for the closure of post auricular cutaneous mastoid fistula caused by cholesteoma⁸. The Temporalis muscle flaps leaves aesthetically unpleasant depression in the temporal region of the scalp that is frequently not accepted by younger patients. The fibro-muscular-periosteal flap used to cover the mastoid cavity in the technique described here is able to solve all these issues, by filling the cavity, and maintaining the open Tympanoplasty with mastoid obliteration. The bilobed flap from the mastoid and lateral neck regions have also been described for the complex defect around retroauricular sulcus and Mastoid owing to lax skin which allows free tension wound closure with a good aesthetical result⁸⁻⁹. Our technique described here provides physiological closure of mastoid fistula in two layers. Flaps are robust due to high vasculature of post auricular region. These procedures can also be done under local anaesthesia in older individual. Properly executed flap scar is well hidden and does not leave any depression like Temporalis muscle transfer. Technique is easy to learn and execute and maintain open Tympanoplasty. One of the drawback or the argument against this procedure is that allowing the epithelial surface of turnover flap to line the tract make it liable to the infection as the epithelial surface sheds keratin and secretes sebum. But in none of the cases mentioned above we have noticed any form of discharge, infection or the recurrence in the fistula even after 1 year of follow up.

CONCLUSION

A Combination of Turnover plus Pivot flap is found to be successful method for closure of post auricular fistula with acceptable aesthetic

outcome

CONFLICT OF INTERESTS: NONE

NO ETHICAL APPROVAL REQUIRED: NO ETHICAL APPROVAL IS REQUIRED.

INFORMED CONSENT: DULY INFORMED CONSENT WAS OBTAINED IN ALL THE CASES.

FUNDING SOURCE: NONE

ACKNOWLEDGEMENTS: NOT APPLICABLE

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Declaration

The study is in accordance with the ethical standards of the responsible committee on human experimentation (Institutional or Regional) and with the Helsinki declaration of 1975, as revised in 2000

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How to cite this article

Sharma MK, K Naveen, Babu VS - Combined Use of Turnover and Pivot Flap for Double Layer Closure of Postauricular Fistula - UPJOHNS - Volume 8 Issue II-Page: 1-5
DOI: <https://doi.org/10.36611/upjohns/volume2/1>