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HAIR GROWTH IN SKIN FLAPS LINING A CAVITY: A LEARNING EXPERIENCE

Plastic Surgery

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ABSTRACT

Hair growth becomes a significant long-term complication when skin flaps are used to line cavities. Intracavitary growth of hair from the flap lining the cavity can lead to poor hygiene, issues of pus discharge and foul smell. Various techniques have been employed by various surgeons to prevent intra-cavitary hair growth from skin flaps. In this paper, the authors discuss two patients and how the surgical technique was modified in the second surgery as per the learning experience from the first surgery.

KEYWORDS

Flaps, Surgical; Microsurgical Free Flaps; Hair Removal;

INTRODUCTION

When skin flaps are used to form the inner lining of any cavity, hair growth into the cavity can become a major concern and affect the long-term outcomes. In most cases of malignancy this problem is mitigated by use of postoperative radiotherapy, but for nonmalignant cases, it may persist. Literature search revealed many case reports related to intraoral hair growth but none related to hair growth from flaps done for nasal cavity reconstruction. In this paper, the authors describe their experience wherein the problem of hair growth from the flap in a patient of upper nasal defect led to modification of surgical plan for another patient with a similar defect.

Case Report

The Problem (Case 1)

A 21 year old lady, a case of spindle cell carcinoma operated multiple times in the past, presented to us with a 4 x 3 cms irregular defect over the root of nose with exposed parts of necrotic bone(fig 1). The right forehead flap was prelaminated on the under surface with a thin split thickness skin graft. After debridement, the forehead flap was used to cover the defect with grafted under-surface to form the inner lining. But the flap underwent partial necrosis at the business end. Hence a Free Radial Artery Forearm Flap (RAFF) for outer cover and the remnant of the forehead flap was used for lining the cavity. (The part of the flap initially meant for the outer covering was now being used for inner lining).

She returned 5 years later to the hospital with complaint of foul smelling discharge from a sinus (fig 2). The RAFF was raised from that side for exploration and enmeshed hair growth with few maggots were noticed(fig 3). This was debrided and replacement of lining was done using a forehead flap from left side, adjoining the previous scar and from the non-hair bearing part of the forehead(fig 4).

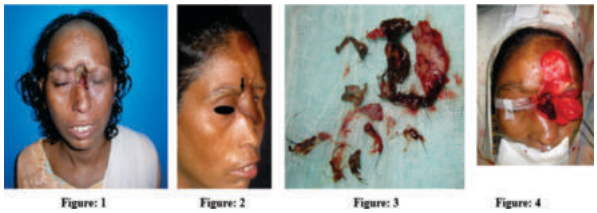

Figure 1: Photograph of Patient 1 showing the defect over the root of nose with exposed bones and nasal mucosa
Figure 2: Photograph of the patient showing pus discharging sinus (as shown by the black arrow) besides the medial end of the right eyebrow, 5 years after the flap cover was given
Figure 3: Pieces of previous flap, debris and hair debrided from the cavity causing pus discharging sinus
Figure 4: Photograph showing left forehead turn-down flap to form the inner lining

The Solution (Case 2)

A 25 year old diabetic man had a maxillary defect secondary to debridement of mucormycosis done earlier. (Fig 5) He had undergone right orbital exenteration and had a 3 x 3 cm defect exposing the nasal cavity and maxillary antrum. It was planned for cover by a FRAFF folded on itself to form both inner and outer lining. Since the patient had lots of hair on his forearm, learning from our previous experience, it was decided to de-epithelialize and pre-laminate the required flap with skin graft before performing the final reconstruction. The part of the skin planned for outside was prelaminated with post auricular Full Thickness Skin Graft to achieve a good color match with facial skin while the part meant for inner lining was prelaminated with a split thickness graft.[Figure 6,7] Once the grafts were settled, the flap was harvested and transferred to the defect.

Both patients have now shown no evidence of any hair re-growth clinically as well as on endoscopic examination, at 1 year follow up. [Figure 8]

Figure 5: Photograph of patient2 showing the orbito maxillary defect
Figure 6: Prelamination of the left FRAFF done with FTSG for the distal part meant for outer cover and with STSG (dark in colour) for the part meant for inner lining
Figure 7: Prelaminated FRAFF harvested
Figure 8: 1 year Postoperative photograph , patient 2

DISCUSSION

Many patients who undergo reconstruction after cancer extirpation require postoperative radiotherapy. The radiation usually results in complete and permanent destruction of all hair follicles, thereby eliminating the problem of ectopic hair growth. But in cases of trauma, infectious etiology, and congenital defects and even in some cases of malignancy, radiation therapy is not indicated and thus the ectopic hair growth may persist as a long term problem. Intracavitary growth of hair from the flap lining the cavity can lead to poor hygiene, issues of pus discharge and foul smell.

Various authors have used techniques such as de-epithelialized flaps, endoscopic trimming, electrolysis, thermolysis [1] and laser depilation [2,3] to avoid this problem. Clipping of hair under endoscopic guidance has been described for pharyngeal flaps [4] but it is time consuming and requires recurrent procedures. Electrolysis before flap transfer has been suggested as a viable option of hair removal. Laser epilation has been shown to reduce hair growth but does not destroy hair follicles permanently and also the Laser hand-piece is often too bulky for intra-cavitary use. Rahepyma et al advocated the use of de-epithelialization for intra-oral use of submental flaps. [5]

Though most of these methods may be useful in cases of intra-oral hair growth as access is available, after a nasal or maxillary reconstruction access is a problem. The authors have shown the use of surgical depilation and pre-lamination using skin grafts to avoid this predicament. Pribaz and Fine introduced the term 'Pre-lamination' referring to the process of constructing a three dimensional tissue block by bonding different layers into existing axial vascular territory and allowing time for maturation before being transferred to the defect.[6] The process of replacement of hair follicle bearing skin by a STSG or FTSG is complete by maximum two weeks time. Poeschl et al concurred that prelamination of flaps may be a useful option for flaps done for secondary reconstruction. [7]

Thankappan et al [8] used a adiposofascial FRAFF for inferior maxillectomy defect reconstruction. The flap mucosalized well since it was intra-oral .Their patient also received adjuvant radiotherapy. Reconstruction of intra-oral defects using fascio-mucosal RAFF (RAFF prelaminated with mucosa) has been described by some authors [9, 10] who concluded that it minimized the donor site morbidity. All their patients underwent adjuvant chemo-radiotherapy. Ikeda et al [11] showed that the skin flaps mucosalize when placed intra-orally. Shibahara et al [12] concluded that the skin of intraoral flaps comes to resemble the mucosa through an initial inflammatory change, followed by regressive metaplastic changes of skin specific appendages owing to the changed ambient environment especially saliva.

CONCLUSIONS

Hair growth from a skin flap should always be a consideration while planning a flap cover for a cavity defect. De-epithelialization and prelamination of the hairy areas of the flap can be an option for benign lesions, secondary cases and in reconstruction of patients in whom the true defect can be satisfactorily measured and in whom it is acceptable to wait at least a fortnight for the graft to settle. The time spent in planning the reconstruction goes a long way in minimizing complications in the long term.

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