Double hatchet flap as adequate dermatosurgical approach for tumours of the occipital scalp zone: Presentation of two cases

Georgi Tchernev,[1,2] Ilia Lozev,[3] Ilia Batashki,[4] Lorraine Joseph Kandathil,[1] Nikhil Oliveira,[1] Jose Carlos Cardoso[5]

[1]Onkoderma - Clinic for Dermatology, Venereology and Dermatologic Surgery, Sofia; [2]Department of Dermatology, Venereology and Dermatologic Surgery, Medical Institute of Ministry of Interior, Sofia; [3]Department of Common and Vascular Surgery, Medical Institute of Ministry of Interior, Sofia; [4]Director of the Medical Institute of Ministry of Interior, Sofia, Bulgaria; [5]University Hospital of Coimbra, Department of Dermatology and Venereology, Coimbra, Portugal

Abstract

Tumors of the scalp remain a serious challenge for clinicians since poor locoregional skin elasticity hinders the ability to utilise certain flaps, limiting the choice of reconstructive techniques available. As a result, surgical restoration of medium to large-sized defects are left to the discretion of the surgeon, who with a comprehensive knowledge of restorative techniques, along with the advantages, limitations as well as a sound understanding of the locoregional anatomy, can make thorough decisions on the choice of which flap is best suited for the defect. Here we present two cases where the double hatchet flap was employed as a dermatosurgical approach in order to provide exceptional cosmetic results. On dermatological examination, both patients presented with a medium to large- sized tumour formation but were otherwise in good health. Both underwent radical, wide-local excision, followed by reconstructive manipulation in the form of a double hatchet flap to close the defect. Postoperative follow-up reported positive signs of wound healing with aesthetically pleasing results. Finally, we discuss the use of various flaps in such conditions while providing evidence for the double hatchet flap as a possible alternative that provides perfect aesthetic results as seen in our cases. Such a complex surgical intervention requires the expertise of a multidisciplinary team in order to achieve an overall successful outcome.

Introduction

Surgical treatment of scalp tumours remains a serious challenge for the clinician. In the scalp area, there are a number of options for surgical treatment, which are determined or depend mainly on the experience of the clinician, age, comorbidity and individual desire of the patient, etc.[1] Interdisciplinary collaboration with surgical units and/or maxillofacial surgeons is also essential in the management of this type of lesions, and should be a prerequisite for better final results.

Case report #1

A 65-year-old male was referred to our department with complaints dating back to 5 years of a tumoriform lesion on the scalp (Figure 1a,b). The patient revealed a past history of hypertension but was otherwise healthy. A complete blood work-up was normal. The patient was prepared for surgery and preoperative markings were performed (Figure 1c). The tumour was removed under local anaesthesia via oval excision with about no more than 2/3 mm surgical safety margin down to the galea aponeurotica (Figure 2a). Two opposing hatchet flaps were designed (double hatchet flap) perpendicular to the larger diameter of the defect to ensure greater mobilization of surrounding tissue (Figure 2b-c). The flaps were formed to be at least 1.5 times larger, in order to cover the defect with the pedicles exceeding the defect radius. Each flap was incised down to the galea aponeurotica, elevated, rotated and moved transversely into the defect (Figure 3a-b). Simple interrupted sutures were then applied with closure of defect leading to a tension-free result (Figure 3c). There were no postoperative complications including infection, flap necrosis or dehiscence. The subsequent histopathological evaluation revealed an adnexal type skin tumour with a central, well-limited focus of trichoepithelioma with abundance of papillary mesenchymal bodies and keratin cysts. Histopathological analysis of the excised tumour confirmed additionally clean resection margins- free of tumour cells. A 4-week follow-up showed good signs of wound healing.

Case report #2

Here we present a second case of a 30-year-old female who visited the department for the first time due to a lesion on the scalp that appeared during her childhood (Figure 3a,b). The patient did not report any discomfort or burning in the area, but became concerned after noticing a change in the size of the lesion in the recent months. She had no past illnesses, her family history was unremarkable, no history of drug or food intolerance and she was otherwise healthy. Systemic examination was also within normal limits. On dermatological examination, two well defined tumour formations were observed on the scalp (Figure 3a,b). The first, a flat, irregularly shaped, flesh coloured lesion measuring 5×4 cm was

Correspondence: Nikhil Oliveira, Onkoderma - Clinic for Dermatology, Venereology and Dermatologic Surgery, General Skobelev 26, Sofia, Bulgaria.
Tel.: 00359876838005
E-mail: nikhil.oliveira@hotmail.com

Key words: Double hatchet flap, Non-melanoma skin cancer, Dermatologic surgery, Scalp reconstruction, Occipital scalp zone.

Contributions: The authors contributed equally.

Conflict of interest: The authors declare no potential conflict of interest.

Funding: None.

Ethical approval and consent to participate: Written informed consent was obtained from the patient and is available upon request.

Availability of data and material: Data and materials are available by the authors.

Please cite this article as: Tchernev G, Lozev I, Batashki I, et al. Double hatchet flap as adequate dermatosurgical approach for tumours of the occipital scalp zone: presentation of two cases. Dermatol Rep 2022;14:9487.

Received for publication: 31 January 2021.
Accepted for publication: 4 March 2022.

Dermatology Reports 2022; 14:9487
doi:10.4081/dr.2022.9487

identified with a separation of sebaceous matter, layered crust and squames (Figure 3a,b). The lesion appeared as a ruptured cystic lesion, irritated and on a bed of inflammatory exudate (Figure 3b). The second, a smaller, oval, skin coloured lesion measuring 1×1 cm (Figure 3c). There were no visible or palpable signs of locoregional lymph node enlargement. The patient was hospitalized and prepared for surgical treatment (Figure 3c). Complete pre-operative blood and imaging analysis and apparative diagnostics were within normal parameters or without abnormalities. The surgical treatment was conducted under local anaesthesia. An oval excision of the larger tumour lesion was performed (Figure 4a), followed by the formation of two C-shaped incisions made by the means of a double hatchet flap repair to close the defect (Figure 4b-d). In doing so, the second, smaller lesion was also removed in the same step. The flaps were then exfoliated from the surrounding skin and advanced into the middle of the defect (Figure 4b-d). The defect was then closed with single cut-off sutures (Figure 5a). The postoperative period passed without further complications or complaints with a good follow-up outcome 6 weeks after surgery (Figure 5b,c). The remote lesions were sent for histological verification, where the diagnosis of an intradermal melanocytic nevus, distorted hair follicles, granulation tissue and fibrosis had been made (Figure 6a-f).

The second smaller lesion was concluded as a dermal achromatic melanocytic naevus. Histopathology confirmed both lesions were with clear resection lines.

Figure 1. a-b) Oval hyperpigmented lesion on the occipital region of the scalp. c-d) Preoperative markings with 2-3mm safety margin

Discussion and conclusions

The limited possibilities for mobilization of the skin in the area of the scalp after the elimination of skin tumours often require the application of various therapeutic strategies with variable aesthetic results.

The often-practiced surgical elimination of the tumour and subsequent secondary healing is definitely a good option in multimorbid elderly patients, but it is often and aesthetically not completely acceptable.[1,2]

In a similar way is the issue of covering defects in the scalp area by means of split skin or full thickness mesh graft.[2]

Reverding skin grafting could be a definite better solution in the scalp area in the presence of more superficial localized forms of cutaneous tumours, and its application is preferable in the area of transitional areas - skin/hair or fronto/temporal area.[3]

Due to the limited elasticity in the scalp

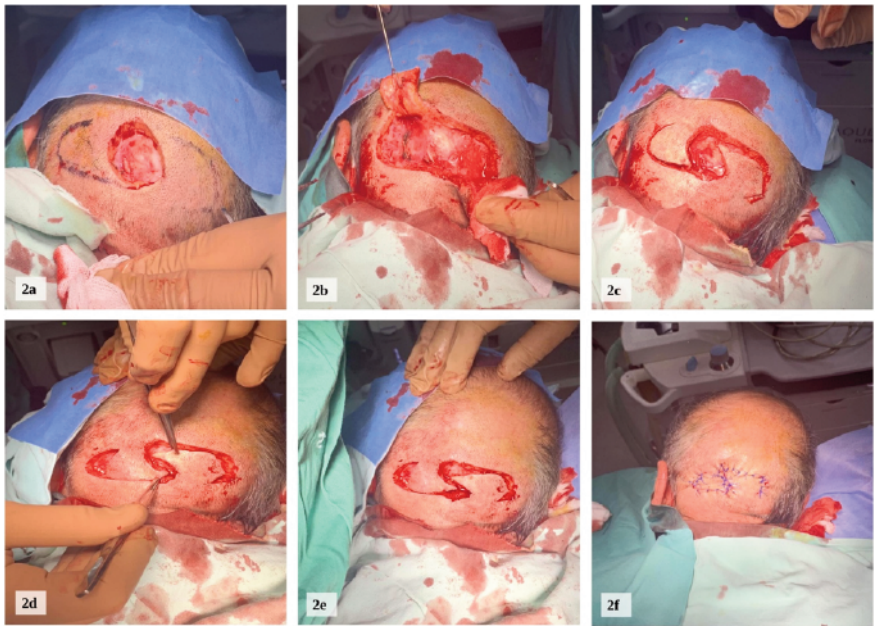

Figure 2. a) Oval excision of tumor. b-c) Intraoperative preparation of flaps. d-e) Transposition of the flaps to cover the defect. f) Complete closure of the defect with uninterrupted nylon sutures.

area, surgical treatment of cutaneous tumours proves to be a serious problem precisely because of the difficult to mobilize, transpose or rotate the unaffected skin adjacent to the intraoperative skin defect.[4]

The presence of sun damaged skin in the scalp area complicates the management.[4]

It is important to note that, in general, transposition and purely advancement flaps are generally less and less commonly used in the scalp, as opposed to rotational or combined rotational-advancement flaps for example.[4] These techniques are also the last option to cover defects, especially in tumours that affect the periosteum, external tabula, diploe and/or internal tabula. It is due to this fact that the vascularization/vitality of the flap is crucial for the optimal final cosmetic result or the preservation of its integrity.[4]

The so-called double hatchet flap is in fact a mixed type of flap that contains components of both rotation and advancement flaps, which makes it in itself a unique entity.[5] These two combined flaps and / or the so-called double hatchet flap create preconditions for a parallel reduction of the stress in the area of the skin defect that has occurred for covering.[5] The technique was first described by Emmet in 1977, but it is still used to this day as an alternative to covering post-surgical defects in the scalp area.[6] It is based on the simple rule that the length of the plastic should correspond to 1.5 times the diameter of the tumour or the resulting defect, and the size of the vascular, feeding foot - should correspond to at least 1/3 of the length of the flap.[4]

The question remains whether preoperative skin biopsy to optimize primary resection fields should be the rule or rather the exception in suspected non-melanocytic skin tumours (clinical/dermatoscopic).[7,8]

We have presented a successfully performed double hatchet flap in the occipital scalp zone in a 65-year-old patient with subsequent histopathologically verified trichoepithelioma (Figures 1 and 2). Additionally, we show a perfect result after removing an intradermal irritated achromatic melanocytic nevus of the occipital scalp zone using again the double hatchet flap (Figures 3-5). Interdisciplinary collaboration between dermatologists and surgeons is a serious prerequisite for achieving an optimal end result.

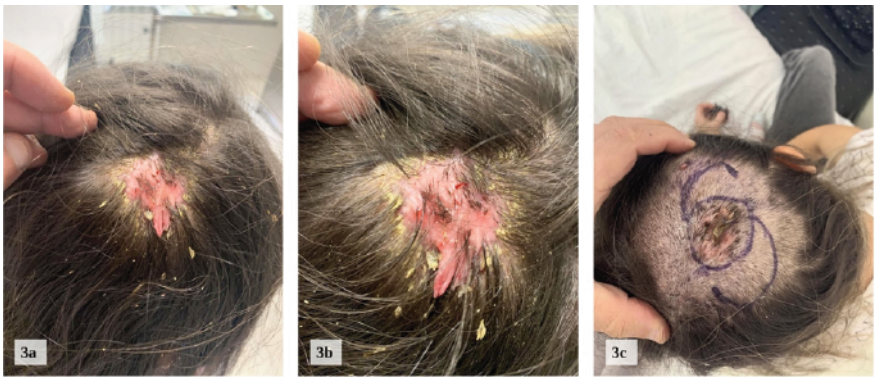

Figure 3. a-b) Flat irregularly shaped, flesh coloured lesion with multiple honey-coloured crusty squames. c) Preoperative markings of both lesion with additional surgical safety margins and etchings of each flap.

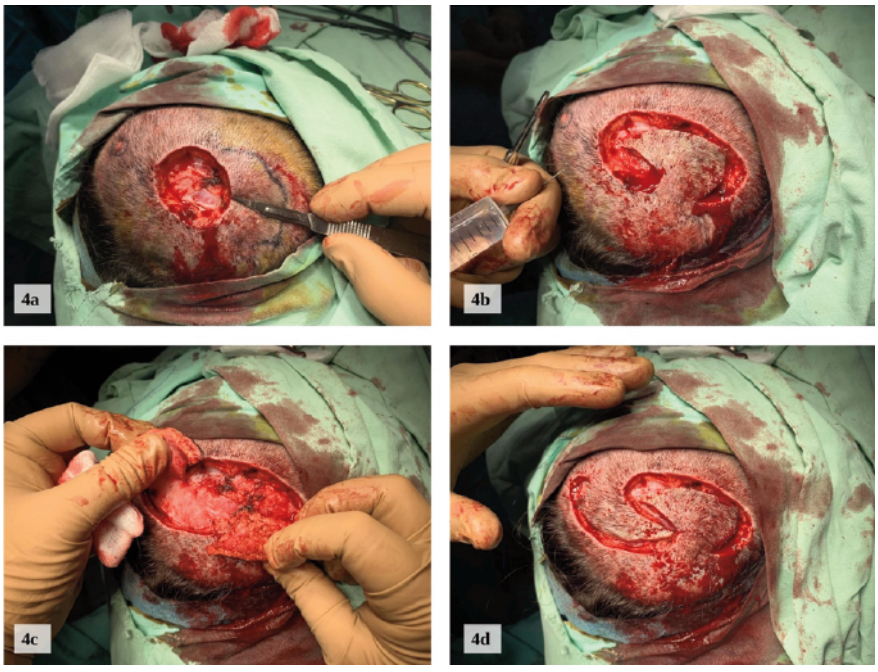

Figure 4. a) Oval excision of large defect. b) Administration of additional lidocaine after preparation of the flap. c) elevation and preparation of the flap for transposition to the centre. d) Intraoperative image after transposition to the centre of the defect.

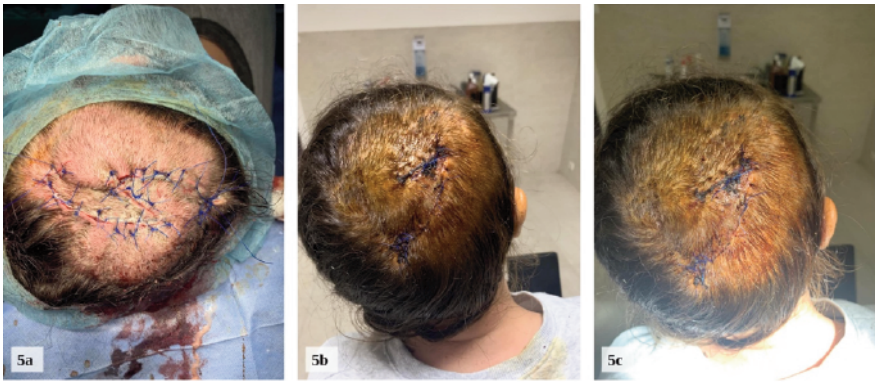

Figure 5. a) Complete closure of defect with single interrupted sutures. b-c) Postoperative follow-up images with progression to good wound healing.

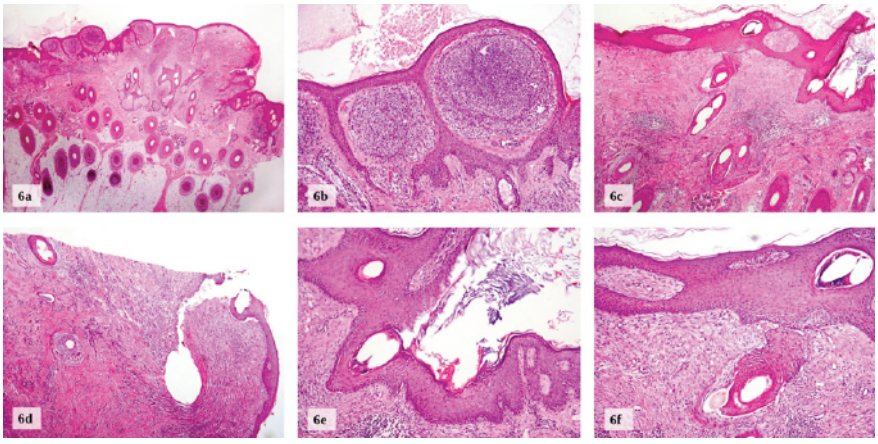

Figure 6. a) Intradermal melanocytic nevus with papillomatous surface, and areas of scarring and inflammation in the underlying dermis, surrounding the folliculosebaceous units. b) Detail showing nests of melanocytes in the papillary dermis. c) Epidermal hyperplasia, foci of inflammatory infiltrate and fibrosis surrounding distorted hair follicles. d) Granulation tissue, inflammation and fibrosis surrounding hair follicle remnants. e) Dilatation of the infundibular portion of two adjacent hair follicles; scarring in the superficial dermis is also seen. f) Partially destroyed hair follicle with extruded hair shaft and surrounding fibrosis.

References

1. Russo F. Reconstruction of Moderate-Sized Scalp Defects: A 1-2-3 Rule. Actas Dermosifiliogr (Engl Ed) 2019;110:474-481.
2. Sun L, Patel AJ. Outcomes of split vs full-thickness skin grafts in scalp reconstruction in outpatient local anaesthetic theatre. Scars Burn Heal 2021;7:20595131211056542.
3. Temelkova I, Lotti T, Cardoso JC, et al. Reverdin skin grafting as adequate approach for squamous cell carcinoma of the temporal region. Dermatol Ther 2020;33:e13199.
4. Varela-Veiga A, Suárez-Magdalena O, Suárez-Amor Ó, Monteagudo B. Double Hatchet Flap for the Reconstruction of Scalp Defects. Actas Dermosifiliogr 2017;108:878-80.
5. Fernández-Calderón M, Casado-Sánchez C, Cabrera-Sánchez E, Casado-Pérez C. Versatility of hatchet flaps for the repair of scalp defects. Actas Dermosifiliogr 2012;103:629-31.
6. Schultheis K, Kaufmann R, Meissner M. The double hatchet flap as a potential alternative closure technique for scalp defects. J Dtsch Dermatol Ges 2015;13:73-5.
7. Jung JE, Rah DK, Kim YO. Effects of preoperative biopsies on recurrence in head and neck skin cancer. Arch Plast Surg 2012;39:518-21.
8. Fahradyan A, Howell AC, Wolfswinkel EM, et al. Updates on the Management of Non-Melanoma Skin Cancer (NMSC). Healthcare (Basel) 2017;5:82.