

Marjolin’s Ulcer of the Scalp: A Case Operated with Reconstruction by Advancement Flap Completed by a Skin Graft Performed at the Sominé Dolo Hospital in Mopti (Mali)

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Abstract

Case Report

Introduction: Cutaneous squamous cell carcinoma encompasses about 16% of scalp tumors. They can arise de novo or more often mark the evolution of lesions considered as non-invasive precursors: actinic keratoses and Bowen's disease more rarely, they occur on a burn scar (Marjolin's ulcer). We report a case of invasive squamous cell carcinoma on a burn scar (Marjolin's Ulcer) operated with reconstruction by advancement flap completed by a skin graft performed at the Sominé Dolo hospital in Mopti (Mali). A 62-year-old Malian man consulted for a scalp ulceration that had been evolving for 10 years. The lesion began with small trailing erosion that appeared on a burn scar. There was no notion of initial trauma and the patient had no particular history. Physical examination found a large ulceration (6x4 cm) of parietal seat on the scalp with a fibrinous bottom and a sclerotic border. There was a large left latero -cervical mass measuring 13 x 6 cm. The computed tomography of the skull did not find any bone lesions and that of the latero -cervical mass was in favor of adenopathy. Histological examination of a biopsy fragment confirmed the diagnosis of invasive squamous cell carcinoma. Deep resection removing the tumor with the periosteum exposing the parietal bone was performed. Reconstruction by advancement-rotation flap supplemented by a skin graft was performed. The management of squamous cell carcinoma is based on surgery, which is the reference treatment, against which other treatments must be compared. On the scalp, Rotation-advancement flaps are the preferred one-stage surgical repair technique.

Keywords: Marjolin’s ulcer, scalp, advancement flaps, Mopti, Mali.

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INTRODUCTION

Cutaneous squamous cell carcinoma encompasses approximately 16% of scalp tumors [1]. Its prevalence and incidence are increasing, due to the aging of the population and habits of sun exposure, and the average age of discovery is 76 years [2].

They can arise de novo or more often mark the evolution of lesions considered as non-invasive precursors: actinic keratoses (AK) and Bowen's disease.

More rarely, they occur on a burn scar (Marjolin's ulcer) [3].

Its management is based on surgery, which is the reference treatment, against which other treatments must be compared [2]. The excision of these advanced tumors then becomes complicated, causing full-thickness defects that are difficult to reconstruct [4].

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We report a case of invasive squamous cell carcinoma on a burn scar (Marjolin's Ulcer) operated with reconstruction by advancement flap completed by a skin graft performed at the Sominé Dolo hospital in Mopti (Mali).

OBSERVATION

A 62-year-old Malian man consulted for a scalp ulceration that had been evolving for 10 years. The lesion had started with small trailing erosion that appeared on a burn scar and which had progressively

worsened. The patient had repeatedly received antibiotic and antiseptic treatments without effect. There was no notion of initial trauma and the patient had no particular history.

Physical examination found a large ulceration (6×4 cm) of parietal seat on the scalp with a fibrinous bottom and a sclerotic border (Figure 1). There was a large left latero -cervical mass measuring 13 x 6 cm (Figure 2).



Figure 1: Large ulceration (6 × 4 cm) of parietal site on the scalp with a fibrinous bottom and a sclerotic border



Figure 2: A voluminous left latero -cervical adenopathy measuring 13 x 6 cm

The rest of the clinical examination was normal. Hepatic, treponemal and retroviral (HIV) viral serologies were negative. The computed tomography of the skull did not find any bone lesions and that of the latero -cervical mass was in favor of adenopathy. Histological examination of a biopsy fragment

confirmed the diagnosis of invasive squamous cell carcinoma.

Excision of the left latero -cervical mass carrying a few bundles of the sterno-cleido-mastodian muscle and without rupturing its capsule was performed (Figure 3).

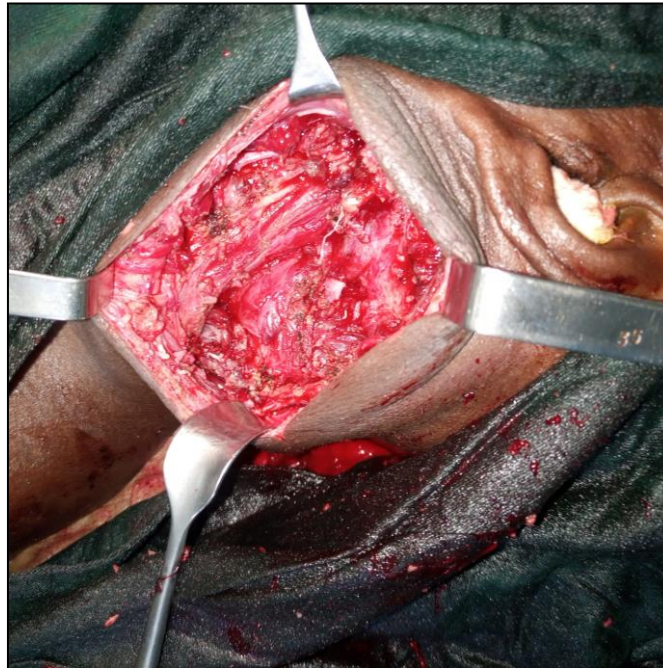


Figure 3: Excision of the left latero -cervical mass carrying away a few bundles of the sterno-cleido-mastodian muscle and without rupture of its capsule

Deep resection removing the tumor with the periosteum exposing the parietal bone was performed (Figure 4 & 5). The safety margin was 10 mm.



Figure 4: Deep resection removing the tumor with the periosteum exposing the parietal bone

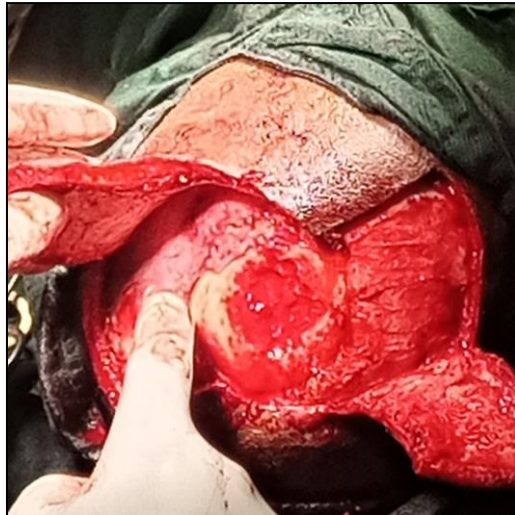


Figure 5: Deep resection removing the tumor with the periosteum exposing the parietal bone

Reconstruction by advancement-rotation flap supplemented by a skin graft was performed (Figures 6 & 7).

The postoperative course was simple, followed two months later by complete healing.



Figure 6: An advancement-rotation flap reconstruction



Figure 7: An advancement-rotation flap reconstruction completed with a skin graft

DISCUSSION

To our knowledge, this is the first case of Marjolin's ulcer operated with reconstruction by advancement flap completed by a skin graft performed at the Sominé Dolo hospital in Mopti (Mali).

Squamous cell carcinoma is pathology of the elderly subject [5] and repeated sun exposure is one of the main factors for its occurrence. Data from molecular epidemiology attest to a greater prevalence of mutations induced by ultraviolet rays in key genes of carcinogenesis such as the P53 cell cycle regulator gene [6]. This hypothesis finds its context in our 62-year-old patient, a nomadic breeder living in a sunny country like ours. Biopsy occupies a central place, both diagnostically and therapeutically. On the one hand, it is not easy to distinguish a beginning squamous cell carcinoma from a precancerous lesion such as actinic keratoses, and on the other hand to distinguish it from a basal cell carcinoma even for an accustomed eye [6].

There is almost always a lymph node stage before visceral metastatic involvement.

Its management is based on surgery, which is the reference treatment, against which other treatments must be compared [2].

We preferred to widen the lateral safety margins for tumor resection to 10 mm and removed the entire periosteum in depth, because of the lack of frozen section histological examination in our regional hospital. Knowing that the classic recommendations of the French society indicate that a margin of 4 mm is sufficient to eradicate 95% of squamous cell carcinomas (CEC) less than 2cm in diameter, as long as a disc margin greater than 6 mm is necessary to obtain the same result for tumors larger than 2 cm in diameter [7]. Given the unique nature of the cervical macro-adenopathy and the normality of the staging assessment, we did not resort to chemotherapy or radiotherapy. As recommended by the French Society of Dermatology, there is no complementary treatment to complete dissection if the metastatic invasion is moderate (micro-metastasis or single macro-metastasis), without capsule rupture [7]. Rotation- advancement flaps are the preferred repair technique in one-stage scalp surgery. They generally make it possible to close the losses of substance (PDS) of 5 to 6 cm in diameter while respecting a good capillary arrangement. These less mobile flaps are most often lined in opposition on either side of the PDS, we then speak of "OZ" plasty, Yin Yang flaps [8].

In the case of superficial scalp defects with preserved periosteum, skin grafts and local flaps are the most appropriate methods even when the defects are large. Due to the low rate of donor site morbidity and the expectation of the most satisfactory cosmetic outcome, local flaps should be considered the first-line

treatment in the majority of cases [9]. If the defects are complex or if the soft tissues are damaged due to deficient vascularization, the transfer of loose tissue should be used.

The healing of the surgical wounds on the scalp of our patient was effective in the space of 2 months of follow- up, almost buried in his hair. In Nepal in 2022, Dahal, A. *et al.*, achieved good healing of the skin defect in 3 months follow-up in their patient who underwent gross total removal of the tumor with extension of the bony defect followed by repair of the dura mater and repair of the skin defect by VY advancement flap [10].

In Poland, in a study published in 2020, Iwona Chlebicka, *et al.*, suggested skin grafting as the defect technique of choice for patients of older age and more advanced hair loss. Skin grafting is the preferred technique in their department to achieve the 5-6 mm safety margin of healthy tissue in older subjects with more extensive lesions. Because this technique offers more options if secondary recurrences occur. Advancement and rotation flaps have been used primarily to repair medium-sized lesions (10-39 mm) located on the forehead area to preserve the natural hairline and eyebrows. In this study 88.1% of small defects (less than 20 mm) were closed by primary closure [11].

In a sample of 293 patients operated for scalp lesions including 11.3% (i.e. 35 cases) of squamous cell carcinoma, the defects were closed using mainly primary closure in 65%, full-thickness skin grafting (28.5%) and local or regional flaps in 4.9% of all procedures [11].

Malahias, M. *et al.*, experience denotes that skin grafting proves ineffective in the absence of the periosteal layer from which a skin graft will normally derive its nutrients ensuring graft survival, and thus the gross defects that necessitated the removal of such a layer are not suitable for grafting. However the author describes the use of extended flaps combined with extended scalp detachment to safely reconstruct large full-thickness scalp defects after resections of squamous cell carcinoma under local anesthesia. It concludes that the extended scalp rotation flap with extended scalp detachment is a safe and reproducible solution for extended scalp defects [12].

Suk, S. *et al.*, in Korea emphasize the increased incidence of squamous cell carcinoma and the unusual aggressive behavior of some SCCs while emphasizing the importance of performing a complete resection with sufficient margin of safety for local control of the disease using a multidisciplinary approach [13].

Danish and Japanese work advocates the effectiveness of the dorsal muscle flap, reconstructing a squamous cell carcinoma defect complicated by a micro-anastomosed latissimus dorsi muscle flap covered with a split skin graft from the thigh in Denmark [14]. As for the Japanese study in 2022, a half-thickness skin graft mesh was placed on a latissimus muscle flap Dorsi transferred to Biopex artificial bone material (calcium phosphate bone paste) with a 9-month postoperative follow-up without recurrence or metastasis [15].

The Australian authors argue that a disease-free skin graft is the key to success after their psoriatic skin graft experience despite the use of betamethasone at the donor site before harvesting to cover the site of a clear cell SCC of the scalp [16].

The University of Taiwan recalls the usefulness of the crane technique through the work of Lu, *et al.*, who applied the crane principle as a life-saving procedure after excision of squamous cell carcinoma temporo-parietal. The principle of the crane being to rotate the previous flap with the galea and a layer of soft tissue left in situ, then perform the skin graft on the site of the original tumor.

Healing was obtained without incident from flap and skin grafting, thus confirming an adage in medicine that says “the older you are the wiser you are” [17].

There has been reported a case of successful treatment of moderately differentiated squamous cell carcinoma of the scalp by radiotherapy with VMAT (volumetric modulated arc therapy) of 60 Gy, follow-up at 3 years without recurrence [18].

The elective lymph node treatment of squamous cell carcinoma is based on the estimated risk of lymph node relapse. Treatment with radiotherapy alone is associated with poor disease-free survival in patients with locally advanced disease, advanced age, lymph node positive and immune dysfunction [18]. As for immunotherapy, it can be reserved when the disease relapses or progresses.

A US study conducted in 2021 by Ashraf, S. *et al.*, indicates that immunotherapy with cemiplimab which is an inhibitor of programmed cell death 1 (PD1) is a treatment option approved by the United States Food and Drug Administration (FDA) for locally advanced and metastatic squamous cell carcinoma in patients not candidates for surgery or whose disease is not likely to be cured by surgery or radiotherapy [19].

In Japan the subject of photoimmunotherapy has been approved in the current trends and future prospects of molecular targeted therapy for the

management of head and neck squamous cell carcinoma [20].

CONCLUSION

The management of squamous cell carcinoma is based on surgery, which is the reference treatment, against which other treatments must be compared. On the scalp, Rotation-advancement flaps are the preferred one-stage surgical repair technique. For extensive scalp defects the scalp rotation flap with extended undermining is a safe and reproducible solution. Skin grafting should be preferred in the majority of cases due to the low rate of donor site morbidity and the expectation of the most satisfactory cosmetic outcome.

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