



Neglected Giant Scalp Basal Cell Carcinoma

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Summary: Rarely, basal cell carcinoma grows to a giant size, invading the underlying deep tissue and complicating the treatment and reconstruction modalities. A giant basal cell carcinoma on the scalp is in some cases treated with a combination of surgery and radiation therapy, resulting in local control, a satisfactory long-term cosmetic and functional result. We present a case with a neglected basal cell scalp carcinoma, treated with wide excision and postoperative radiotherapy, reconstructed with a free latissimus dorsi flap. The cosmetic result is acceptable and there is no sign of recurrence 1 year postoperatively. (*Plast Reconstr Surg Glob Open* 2014;2:e120; doi: 10.1097/GOX.000000000000066; Published online 14 March 2014.)

Basal cell carcinoma (BCC) is the most common skin tumor, which accounts for more than 75% of the nonmelanotic skin cancers and occurs in the head and neck region in 85% of the cases.¹ The BCC tumor is known to be readily excised and the skin lesion easily closed.²

In rare cases—0.5%—the BCC may grow to large dimensions, larger than 5 cm in diameter, known as giant BCC. The giant BCC can invade the underlying deep tissue such as the fascia, the muscle, and the bone, and when localized on the scalp, the giant BCC can invade the periosteum, the bone, the dura mater, and the brain.¹ Deep tumor invasion compromises treatment opportunities and challenges reconstruction methods.^{1–5}

Two-thirds of these giant BCCs are recurrent and in one-third of the cases neglect or denial is the responsible cause.⁶ When neglect is the responsible cause, medical attention is sought because of insistent family members or friends.⁷

Since the 1970s, the availability of microvascular free tissue transfer has been a major advance

in head and neck reconstruction, when it comes to complex and large tissue defects.³ In the past decades, the latissimus dorsi flap has been the “workhorse” for reconstructions in the head and is still one of the most frequently used free muscular flaps.³ The latissimus flap is transplanted as a microvascular muscle-only flap with split-thickness skin grafting or as a free myocutaneous flap.^{3–5} Free tissue transfer is a safe and reliable method resulting in a satisfactory long-term cosmetic and functional result. The literature describes success rates of 94–100% in moderate-sized series and reexploration rates about 2% in institutions that perform a high volume of this surgery.^{3–5}

In some cases, the surgical treatment is combined with pre- or postoperative radiotherapy to cure the patient.⁸ Advances in radiotherapy, such as 3-dimensional planning and intensity-modulated radiotherapy, has resulted in a better local control of head cancers.³

Radiotherapy may cause skin complications such as delayed healing, necrosis, moist dermatitis, or chronic vascular damage.^{8,9}

The ideal cancer therapy is eradication of the cancer and at the same time preservation of the structural and functional integrity of the organ and the surrounding structures.

In the present case, a giant scalp BCC was treated with surgery and postoperative radiotherapy. The large scalp defect was reconstructed using a micro-

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Received for publication January 2, 2014; accepted January 18, 2014.

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DOI: 10.1097/GOX.000000000000066

Disclosure: The authors have no financial interest to declare in relation to the content of this article. The Article Processing Charge was paid for by the authors.

surgical latissimus flap. The treatment was complicated by a superficial skin necrosis, which healed after re-skin graft transplantation.

CASE REPORT

A 48-year-old man, living in the city, was referred to the Department of Plastic Surgery, Copenhagen University Hospital Herlev, with a giant BCC tumor on the right side of the scalp. The patient had neglected his illness for more than 10 years. The medical attention was sought out due to the insistence of a family member. The tumor had grown to a giant size now measuring approximately 10 cm in diameter. The tumor was ulcerated, exuding, and bleeding upon touch, as shown in Figure 1A.

The medical history revealed neither previous radiotherapy, immunosuppressive treatment, nor a history of family tumors or any other known predisposing factors. Clinical examination revealed no lymphadenopathy. There was normal heart and lung function and blood biochemistry was normal. A full-body positron emission tomography–

computed tomography scan was performed and it showed the scalp tumor, but no signs of dissemination (Fig. 2).

The tumor was excised with a 1 cm margin and in depth to the bony calvaria leaving a large deep defect on the scalp (Fig. 1B). Because of uncertain radicality, reconstruction was delayed until conventional histology was available. The pathological examination of the tumor revealed that excision margin in the depth was not free of disease—the tumor had grown through the periosteum. The oncologic recommendation was a course of postoperative radiotherapy, without need for bone resection. The scalp defect was reconstructed using a free latissimus dorsi muscle free flap, microsurgically anastomosed to the superficial temporal vessels. The muscle was covered with a split-thickness skin graft (Fig. 1C).

Five weeks after reconstruction, the patient was referred to the Department of Oncology, Herlev Hospital, for scalp radiotherapy. Over a period of 3 weeks, the patient received 51 Gy in 17 fractions of 3 Gy using electron field (Fig. 1D).

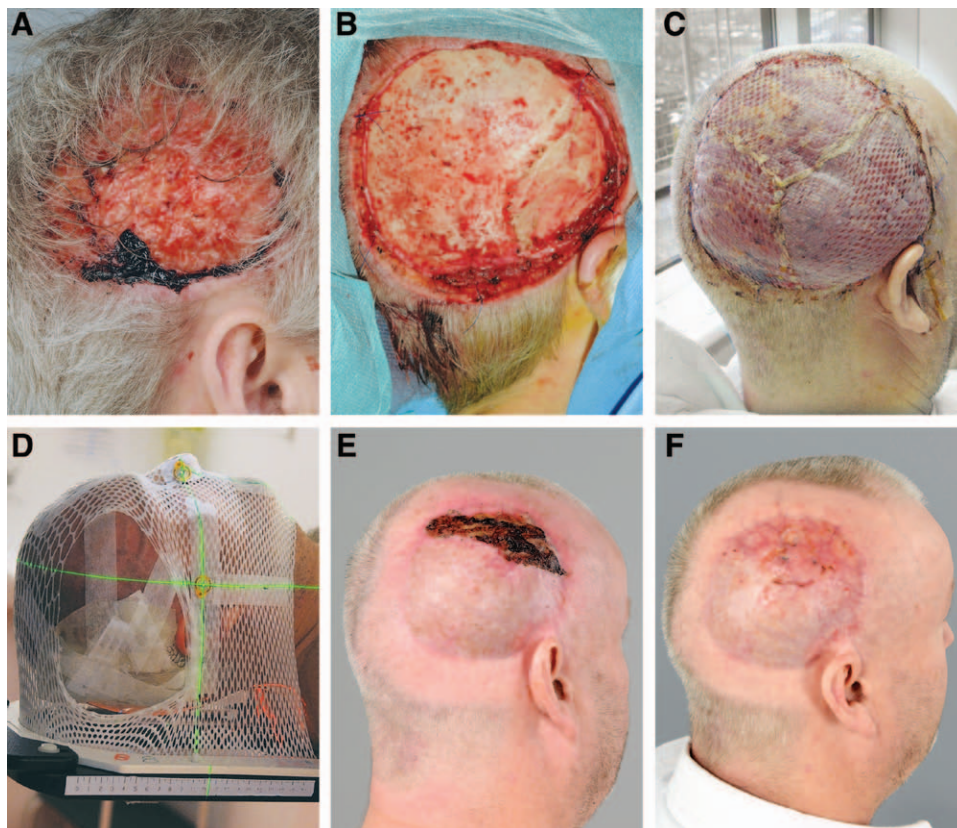


Fig. 1. A, The preoperative view of the giant basal cell carcinoma on the right side of the scalp. B, The preoperative view of the resulting skull defect after the excision. C, The scalp defect reconstructed using a latissimus dorsi muscle free flap, microsurgically anastomosed to the superficial temporal vessels. The muscle was covered with a split-thickness skin graft. D, Postoperative radiotherapy. E, The scalp reconstruction with the superficial skin necrosis. F, The result 12 mo after treatment.

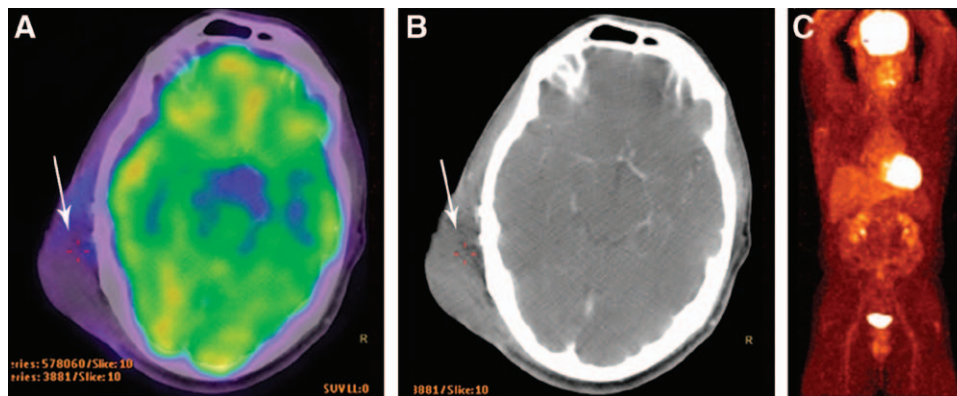


Fig. 2. 18F-fluorodeoxyglucose positron emission tomography/computed tomography scan showing the scalp tumor with positron emission tomography scan (A), computed tomography scan (B), but no signs of dissemination on the whole-body PET scan (C).

As a complication, the patient developed a superficial skin necrosis after radiotherapy. This necrosis needed revision, which was organized, but the patient neglected the wound and did not show up at the Department of Plastic Surgery for treatment. Despite repeated calls from several doctors through many months, the patient held out from follow-up. Finally, 10 months after treatment, the patient accepted a clinical examination and the patient revealed a superficial skin necrosis measuring 5×7 cm in diameter (Fig. 1E). The necrotic tissue was excised and the defect regrafted, which eventually resulted in complete healing (Fig. 1F). At 1-year follow-up, the latissimus flap had a good color and the residual scars of the recipient and donor sites were acceptable. The patient revealed a completely healed free flap.

DISCUSSION

The incidence of giant BCCs is 0.5%.¹ In these rare cases, BCC can develop aggressive behavior resulting in deep local invasion, recurrence, and potential regional and distant metastasis. Patient neglect is seen in one-third of the cases as the rea-

son why the tumor growth reaches the large size with duration of more than 1 year, as was the case with the presented patient who had disease duration of about 10 years. In the literature, tumor neglect of up to 20 years has been described.⁷ BCC is a slowly growing and painless tumor, which may cause a delay in the treatment.⁷ Patient neglect may also often dominate the postoperative recovery period and may also limit the long-term follow-up.² Other risk factors associated with giant BCCs are an aggressive histologic type or previous radiotherapy (Table 1).^{1,7}

Surgical excision of skin cancer has cure rates of about 90%.¹ Incomplete excision may be due to large tumor size, invasive growth, difficult location, histologic subtype, and recurrence. Giant BCCs have, because of their big size and extensively invasive growth to the extradermal structures, a risk of incomplete resection. In these cases, the surgical excision can be supplemented with radiotherapy.¹ Primary radiotherapy is advised in cases where tumors are deemed inoperable after initial staging. Another treatment option would be medical treatment with hedgehog inhibitors, which have shown high activity and is rec-

Table 1. Risk Factors Associated with Development of Aggressive Basal Cell Carcinoma

	Risk Factors	Comments
1	Neglected tumor or long-time presentation	More than 1 year
2	Location in a high-risk area	Periauricular zone, nose, medial canthus
3	Large tumor size	More than 1 cm in initial diameter. Giant basal cell carcinomas (5 cm and more) indicate the suspicion of intracranial involvement or metastasis
4	Histological features	Morpheaform, perineural and perivascular invasion, inflammatory infiltrate, fibrosis, palisadism, increased mitotic rate
5	Inadequately treated or recurrent tumors	Recurrent tumors are more aggressive and more demanding on reconstruction options
6	History of radiation therapy	Treatment of, for example, tinea capitis in childhood
7	Immunosuppression or heritable disease	Including AIDS and Gorlin syndrome

ommended for inoperable and/or previously irradiated tumors or where radiation is not recommended due to genetic syndromes.¹⁰

Wang et al¹¹ describe the use of postoperative radiotherapy to head and neck cancer patients with high pathologic risk factors such as lymph node metastasis with extracapsular extension, positive margins, multiple positive lymph nodes, and perineural invasions. In the study, 74 reconstructive flaps receive postoperative radiotherapy after surgery for head and neck cancers. The radiotherapy is initiated as soon as the skin is healed, from 2 to 6 weeks after surgery. The radiation dose ranges from 40 to 72 Gy over 4–7.5 weeks, administered in single daily fractions of 1.9. Choi et al⁸ describe head and neck cancers receiving postoperative radiotherapy with a median radiation dose of 66.6 Gy given 8 weeks (median time) after surgery.¹¹

In our case, the patient received postoperative radiotherapy because of incomplete excision with positive margins in the depth. The treatment was initiated 5 weeks after surgery and a total dosage of 51 Gy, administered in single daily fractions of 3 Gy.

Choosing the method of reconstruction, the focus must be to achieve primary wound healing, protecting the vital structures, restoring the contour, and maximizing the aesthetic and functional outcome.^{1,11}

The latissimus dorsi muscle is a commonly used free flap because it is a safe and simple free flap providing good contour on a scalp defect often leaving an acceptable cosmetic result.³ We thought that the latissimus dorsi muscle flap was suited for the type of case presented compared to a musculocutaneous flap.

Surgical complications to free microvascular reconstruction are total or partial flap loss, infection, hematoma, or skin graft loss because of necrosis. Donor-site complications include delayed healing, seroma, and infection.^{12,13}

Radiotherapy can induce tissue complications because the skin tissue cells divide regularly, are short-lived as individual cells, and are fairly highly radiosensitive.⁹ The vascular function is impaired and radiotherapy exerts unfavorable effects on endothelial cell function. Skin complications are partial skin graft loss or delayed healing and chronic epithelial or dermal changes.¹² In the presented case, the patient developed partial skin graft loss after radiotherapy but a regrafting procedure resulted in complete healing.

Primary radiotherapy could also have been considered, but as the present case was judged operable, the latter was preferred as primary treatment. In particular, in patients with neglect or poor compliance, surgery may be a good option as this is in principle a once-only procedure, whereas radiotherapy de-

mands that the patients adhere to a treatment schedule lasting several weeks.

This case report presents a typical example of patient neglect throughout the whole disease process, and the postoperative recovery and maybe neglect will dominate the long-term follow-up in the future as well.

CONCLUSIONS

In conclusion, it is possible to reconstruct a large soft-tissue defect on the scalp with a latissimus flap combined with a split skin graft and achieve an acceptable cosmetic result, even though postoperative radiotherapy may be needed in the intent to cure.

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ACKNOWLEDGMENTS

We are grateful to Helle Westergren Hendel, MD, PhD, the Department of Clinical Physiology and Nuclear Medicine at Herlev Hospital, University of Copenhagen, for providing the PET/CT scan pictures. We are also grateful to photographer Mr. Anders Jaegenoe, Department of Plastic Surgery, Herlev Hospital, for providing and arranging the clinical pictures to the case report.

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