

Staged operation for large malignant proliferating trichilemmal tumor of the scalp: A case report

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The authors report a case of large malignant proliferating trichilemmal tumor of the scalp with calvarial destruction undergoing a successful staged operation to completely excise the tumor. The reconstruction of the scalp was delayed due to considerable amount of intraoperative blood loss and the negative pressure wound therapy was applied to the wound. The reconstruction with a free an anticoagulant thigh flap was subsequently performed 5 days later. Five weeks postoperatively, the patient had transient visual impairment from dural venous sinus thrombosis that was successfully treated with anticoagulation. On 1 year follow up, there was no evidence of tumor recurrence.

Keywords : *Trichilemmal tumor, staged operation, anterolateral thigh flap, dural venous sinus thrombosis.*

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คณะผู้ศึกษาได้ทำการรายงานตัวอย่างผู้ป่วยของมะเร็งปุ่มรากผมบริเวณหนังศีรษะ (*Malignant proliferating trichilemmal tumor*) ที่มีขนาดใหญ่และลุกลามเข้าสู่กะโหลกศีรษะ โดยได้รับการวางแผน ผ่าตัดแบบแบ่งเป็นชั้นตอนประสบความสำเร็จในการนำก้อนมะเร็งออกได้หมด การผ่าตัดเสริมสร้างปิดหนังศีรษะได้รับการชะลอเพื่อควบคุมปัจจัยการหล่อเลี้ยงของเลือดบริเวณแผล และใช้การดูแลแผลโดยใช้แรงดันลบ (*negative pressure wound therapy*) หลังจากการผ่าตัดครั้งแรก 5 วันคณะผู้ศึกษาจึงได้ทำการผ่าตัดปิดหนังศีรษะโดยใช้เนื้อเยื่อจากบริเวณหน้าตัก ด้านข้างหลัง การผ่าตัดแบบแบ่งชั้นตอนเป็นระยะเวลา 5 สัปดาห์ ผู้ป่วยมีอาการตัวมัวชั่วคราว และตรวจพบภาวะแองเจ็ดดำอุดตันจากลิ้มเลือดแข็งตัวผิดปกติ (*Dural venous sinus thrombosis*) และได้รับการรักษาด้วยยาละลายลิ่มเลือดการติดตามผลการรักษาในระยะเวลา 1 ปีต่อมาไม่พบการกลับเป็นซ้ำของก้อนมะเร็ง

คำสำคัญ : มะเร็งปุ่มรากผม, การผ่าตัดแบบแบ่งชั้นตอน, การปิดแผลโดยใช้เนื้อเยื่อจากบริเวณหน้าตักด้านข้าง, แองเจ็ดดำในสมองอุดตันจากลิ้มเลือด.

The malignant proliferating trichilemmal tumor (MPTT) is a very rare skin cancer arising from hair follicle.⁽¹⁻⁵⁾ Typically, the MPTT occurs in the scalp of elderly women and can be locally aggressive.⁽⁴⁾ The mainstay treatment remains adequate surgical excision, which can be very challenging due to the aggressive behaviour of the tumor.⁽²⁾ In this article, the authors' reported a young woman with a large MPTT of her posterior scalp with calvarial destruction undergoing a successful staged operation to remove the tumor and to reconstruct the large scalp defect.

Case Report

A 33-year-old Thai female patient presented with a huge ulcerative mass on the back of her head

for 5 years. She had scalp lesion excision 9 years ago but the pathological report of the lesion was unavailable. Physical examination demonstrated a huge (15 × 16 cm) ulcerative cauliflower mass on the posterior scalp of the patient (Figure 1). She had no cervicle lymphadenopathy and no neurological deficit. Magnetic resonance imaging (MRI) of the brain showed a large infiltrative mass at the occipital and bilateral parietal regions with adjacent calvarial destruction and dural invasion (Figure 2). The incisional biopsy of the lesion showed atypical squamous cell neoplasm. The diagnosis of squamous cell carcinoma of the scalp was made and the patient was then planned for surgical excision.



Figure 1. A 15 × 16 cm ulcerative cauliflower mass on the posterior scalp of the patient

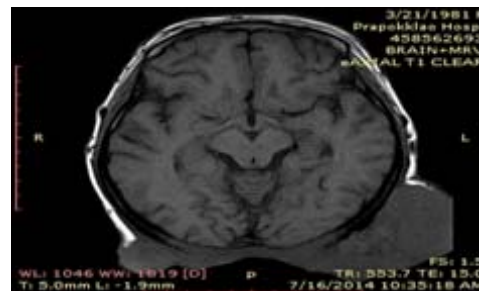


Figure 2. Magnetic resonance imaging (MRI) of the brain showed a large (5.4 × 15.6 × 15.8 cm) infiltrative and exophytic scalp mass at the occipital and bilateral parietal regions with adjacent calvarial destruction and dural invasion.

On the operation, the patient was positioned in the prone position. The wide local excision was performed by a team comprising a plastic surgeon (the second author) and a neurosurgeon (the first author). The attempted skin margin was 1 cm and the underlying skull was also removed (Figure 3). The deep (dural) margin was confirmed to be free by frozen section, therefore, the dura was left intact. Nevertheless, the operation took 6 hours for complete tumor removal and by that time the intraoperative blood loss was 4,500 cc and the patient was mild hypothermic. Hence, the surgical team decided to postpone the reconstruction and applied the negative pressure wound therapy (NPWT) to the posterior scalp defect. The patient was subsequently transferred to the intensive care unit for blood component transfusion and rewarming. Five days later, the patient

was brought back to the operating room for defect closure with the free anterolateral thigh (ALP) flap using the left superficial temporal vessels as recipient vessels (Figure 4, 5). The postoperative course was uneventful except for visual impairment caused by dural venous sinus thrombosis discovered on the 5th postoperative week that was successfully treated by low molecular weight heparin administration. The pathologic examination revealed malignant proliferating trichilemmal tumor of the scalp with negative skin resection margin but with positive anterior skull margin. The patient was discharged on the 10th postoperative week and subsequently received external beam radiation with the dose of 6,600 cGy. The patient was doing well on 1 year follow up visit with no evidence of tumor recurrence.



Figure 3. Surgical removal of the tumor. (A) The patient was positioned in the prone position. (B) Wide local excision of the tumor was performed with an attempted skin margin of 1 cm (C) and the underlying skull was also removed (D).

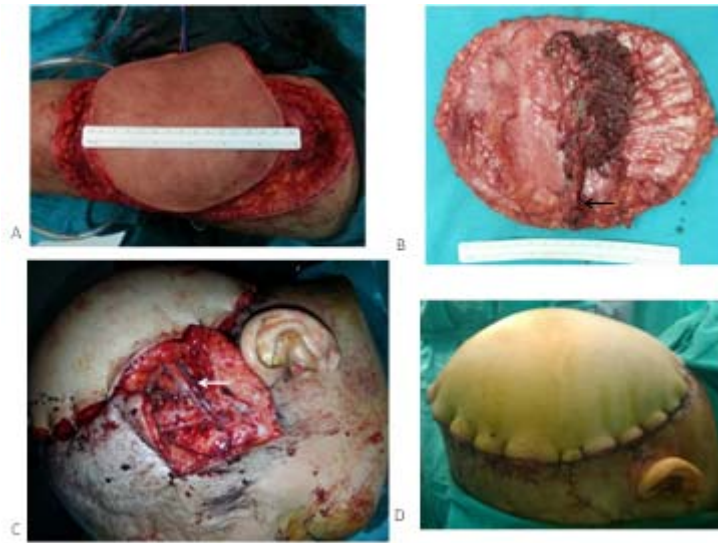


Figure 4. The reconstruction phase of the operation with the free anterolateral thigh (ALP) flap was performed 5 days after the wide local excision. (A) & (B) The free ALP was taken from the patient's right thigh, the black arrow identifies the descending branch of the right lateral femoral vessels as a pedicle. (C) & (D) The free ALP flap was subsequently brought to cover the scalp defect, the white arrow identifies the left superficial temporal vessels as the recipient vessels.



Figure 5. Postoperative 8 weeks. The free ALP flap was completely healed.

Discussion

The MPTT of the scalp is a very rare malignant tumor; therefore, the current knowledge regarding the MPTT comes mainly from case reports.⁽¹⁻⁵⁾ Given the aggressive behavior for local invasion, the treatment of MPTT usually requires aggressive surgery for complete tumor removal.^(2,4) Hence, surgical treatment

of the MPTT of the scalp is very challenging in terms of 1) adequate surgical resection that may require en bloc skull removal, and 2) a complex reconstruction to cover the defect as seen in the present patient. Therefore, a multidisciplinary team consists of a plastic surgeon and a neurosurgeon is essential in treating these particular patients. Because of the high

vascularity of the tumor and the scalp per se and the extent of surgery in the present patient, considerable amount of blood loss was expected and encountered, making immediate reconstruction to cover the defect seem inappropriate. The use of NPWT to temporarily cover the head/neck wounds and cranial wounds is well accepted even in the presence of infection^(6, 7), thus the authors used NPWT as a bridge to definitive wound closure while the patient's condition was optimized in the intensive care unit.

While there are several options for scalp defect coverage, the authors chose the free anterolateral thigh (ALP) flap since it gives a large amount of skin and soft tissue that tolerates pressure well which makes it suitable for the posterior scalp defect. Furthermore, 2 teams can work simultaneously (one team at the scalp and the other team at the thigh) without repositioning the patient; hence the operative time could be significantly shortened.⁽⁸⁻¹⁰⁾ The ALT flap works well on the present patient in terms of defect coverage, however, the aesthetic result is not excellent because of the bulky appearance and the lack of hair (Figure 5).

Conclusion

The staged operation for the treatment of a large head and neck cancer such as the MPTT is an acceptable strategy that can defer the reconstruction phase of the operation until the patient's condition permits (i.e., when the patient is in a good physiologic condition and free of infection). A multidisciplinary surgical team is important when dealing with a large MPTT invading the skull.

References

1. Goyal S, Jain BB, Jana S, Bhattacharya SK. Malignant proliferating trichilemmal tumor. *Indian J Dermatol* 2012 Jan;57(1):50-2
2. Deshmukh BD, Kulkarni MP, Momin YA, Sulhyan KR. Malignant proliferating trichilemmal tumor: a case report and review of literature. *J Cancer Res Ther* 2014 Jul-Sep;10(3):767-9
3. Morgado B, Agostini P, Rivero A, Silva N. Extensive and ulcerated malignant proliferating trichilemmal (pilar) tumour, arising from multiple, large, degenerated trichilemmal (pilar) cysts. *BMJ Case Rep* 2016 Feb 8; 2016. pii: bcr2015209785
4. Durairaj AR, Mahipathy SR, Vivakaran TT, Harikrishnan V, Esakki M. Malignant proliferative trichilemmal tumour of the nape of the neck - A case report. *J Clin Diagn Res* 2016 Feb;10(2):PD19-20
5. Alici O, Keles MK, Kurt A. A rare cutaneous adnexal tumor: malignant proliferating trichilemmal tumor. *Case Rep Med* 2015; 2015:742920
6. Yang YH, Jeng SF, Hsieh CH, Feng GM, Chen CC. Vacuum-assisted closure for complicated wounds in head and neck region after reconstruction. *J Plast Reconstr Aesthet Surg* 2013 Aug; 66(8):e209-16
7. Ahmed O, Storey CM, Zhang S, Chelly MR, Yeoh MS, Nanda A. Vacuum-assisted closure of necrotic and infected cranial wound with loss of dura mater: A technical note. *Surg Neurol Int* 2015 Jan 22;6:11

8. Larra๑aga J, Rios A, Franciosi E, Mazzaro E, Figari M. Free flap reconstruction for complex scalp and forehead defects with associated full-thickness calvarial bone resections. *Craniomaxillofac Trauma Reconstr* 2012 Dec;5(4):205-12
9. Khadakban D, Kudpaje A, Thankappan K, Jayaprasad K, GorasiaT, Vidhyadharan S, et al. Reconstructive indications of anterolateral thighfree flaps in head and neck reconstruction. *Craniomaxillofac Trauma Reconstr* 2016 Mar;9(1):40-5
10. Simunovic F, Eisenhardt SU, Penna V, Thiele JR, Stark GB, Bannasch H. Microsurgical reconstruction of oncological scalp defects in the elderly. *J Plast Reconstr Aesthet Surg* 2016 Jul; 69(7):912-9