CASE REPORT

Reconstruction of the Major Defects of the Tissue Scalp

M. I. Muradov¹ · K. B. Mukhamedkerim¹ · A. A. Baiguzeva¹ · K. E. Kazantsev¹ ·
D. Zh. Koshkarbaev¹

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Abstract The problem of treating tissue defects of the scalp to date remains one of the actual problems of modern medicine. Low elasticity, stiffness, and the presence of hair follicles and skin deficit dictate the need for new treatments, cosmetic relevant requirements of this zone. The use of expander dermatension in recent years has found its wide distribution in the treatment of defects and deformities of covering tissue anywhere on the body. On the example of a patient K.32 years old hospitalized with diagnosis—basal cell epithelioma of the scalp—the defect of soft tissues, we demonstrated the use of expander plastic in the treatment of defect covering tissues of the scalp. Thus, when there is a defect or deformation of covering tissues of the scalp, the most optimal is defect removal by tissues expander plastic. Transposition of pre fabricated by dermatension tissue complexes allows to liquidate quickly the defect of soft tissues, restoring normal full layered structure of the affected area of the scalp, and get good aesthetic results of treatment in these patients.

Keywords Basal cell carcinoma · Reconstructive, plastic and esthetic microsurgery · Tissue scalp

Introduction

The problem of treating tissue defects of the scalp to date remains one of the actual problems of modern medicine. Low elasticity, stiffness, and the presence of hair follicles and skin deficit, dictate the need for new treatments, cosmetic relevant requirements of this zone [1–4].

The use of expander dermatension in recent years has found its wide distribution in the treatment of defects and deformities of covering tissue anywhere on the body [5, 6].

Objective of this paper is to demonstrate a method to resolve the problem by covering tissue expander dermatension treatment of tissue defects of the scalp.

Reconstructive, plastic, and esthetic microsurgery department of National Scientific Center of Surgery named after A.N. Syzganov for 2 years; four patients were operated with a defect tissues of the scalp, who underwent transposition of full layered flaps after dermatension expander. Of them, three patients were female and one male between the ages of 5 and 36 years. In the three patients, the soft tissue defect resulted from thermal burns, and the one, defect is formed due to overgrowth of basal cell epithelioma.

In addition to general clinical examination methods, patients underwent ultrasound research and anthropometry. Area of the defect ranged from 100 to 400 cm². Using ultrasound measured depth of tissue damage (line sensor was used to study surface tissues). All patients were identified covering tissue lesions within the periosteum of the skull bones.

First step consisted of implanting expander under tissue of intact areas of the scalp. Three patients with a burn scar deformity were implanted with two expanders (Company “Eurosilicone”, France) with a volume of 350.0 ml;

✉ M. I. Muradov
kimbasx@gmail.com

¹ Department of Reconstructive, plastic and aesthetic microsurgery, A. Syzganov’s National Scientific Center of Surgery, Zheltoksan 62, Almaty, Kazakhstan 05004

one patient with basal cell carcinoma was implanted with 1000 ml—one expander.

Within 2 months, tissues were performed dermotension. The second step was the extraction of expander and removal of defect with plastic by local tissues using stretched tissues by expander. The wounds of all patients healed by primary intention. In the late period (up to 2 years), all patients obtained a good result of treatment.

Case Presentation

Patient K.36 years old has been hospitalized with the diagnosis: “Basal cell epithelioma of the scalp”.

Patient complained on extensive, prolonged healing, occasionally bleeding wound of the scalp. From the words of the patient, he has been sick for 15 years when he first found small size wound on the temporal region (about 0.5 cm), which did not heal over time and increased in size.

He was consulted by oncologist, on the results of the biopsy-diagnosed-basal cell epithelioma. Patient has been recommended a various surgical options with covering defect formed after excision of ulcer by free skin graft, “Filatov’s” flap. In the initial stage of treatment, he got electrocoagulation and radiotherapy; however, due to the development as a result of treatment of extensive cosmetic defect of the scalp, the patient refused the proposed treatment. He was directed to the Department of Reconstructive, plastic, and esthetic microsurgery, a department of National Scientific Center of Surgery named after A.N. Syzganov.

Locally: in the left temporal region with the transition to the parietal region, there is a wound; the size is 12×15 cm with ulcerated and calloused edges. Bottom of the wound—hyper granulation tissue, towering over integuments 2 cm, covered with fibrin and blood clots (Fig. 1).

Fig. 1 Patient before surgery

Fig. 2 Implantation of tissue stretcher (expander)

The first stage involved the implantation of tissue stretcher (expander) in the scalp (Fig. 2). After postoperative wound healing within 1 month, expander dermotension (stage expander filling with solution) was made to a volume $V = 1000$ ml. The second stage underwent surgery: removal of the expander (Fig. 3), excision of basal cell carcinoma with the periosteum, and the seizure of healthy tissue 1 cm, then covering tissue defect consisted 15×20 cm (Fig. 4), covered by patterned fully layered flap of the scalp (Fig. 5).

Pathological and Histological Conclusion

Basal cell epithelioma of the scalp In the postoperative period kept under observation, he received antibacterial, anti-inflammatory therapy; post-surgical wounds healed by primary intention, blood circulation of the flap compensated,

Fig. 3 View of the patient after expander dermotension

Fig. 4 Macropreparations: basal cell epithelioma

Fig. 6 View of the patient after 1 year after two-stage surgery

Fig. 5 Preparation of the flap

and seams were removed on day 12. Control examination was performed after 1 year (Fig. 6).

Thus, when there is a defect or deformation of covering tissues of the scalp, the most optimal is defect removal by tissues expander plastic. Transposition of pre fabricated by dermotension tissue complexes allows to liquidate quickly the defect of soft tissues, restoring normal full layered

structure of the affected area of the scalp and get a good esthetic results of treatment in these patients.

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