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CASE REPORT
Reconstructive

Composite Reparative Surgery of a Postoperative Through-and-through Facial Defect: Case Report

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Summary: We report our positive experience on the treatment of a patient with a composite facial maxillary defect. The stoma was formed following the removal of the adenoid cystic carcinoma of the maxillary sinus. We propose reconstruction repair of the postoperative facial maxillary defect using an inverted cutaneous flap and a split-thickness skin graft. *(Plast Reconstr Surg Glob Open 2021;9:e3601; doi: 10.1097/GOX.0000000000003601; Published online 25 May 2021.)*

Surgical treatment of through-and-through facial maxillary defects can be challenging due to mucosa and skin restoration.[1,2] There are plenty of materials about external scalp defect reconstruction in the literature.[3–5] However, through-and-through defect reconstruction results are little described.

In this clinical case, we demonstrate the result of surgical treatment of the postoperative through-and-through facial maxillary sinus defect that appeared after removal of maxillary sinus cancer, with inverted local tissue flap and split skin graft of medium thickness.

The operation is easy from a technical perspective and can handle a surgical treatment of through-and-through facial defects with no need for expensive microsurgery.

CASE REPORT

We report on a 64-year-old man who initially suffered from nasal congestion. Examination in Kazakh Research Institute of Oncology and Radiology confirmed the diagnosis of adenoid cystic carcinoma of the head and neck T3N0M0. Left hemimaxillectomy with no simultaneous reconstruction and adjuvant radiotherapy with 40 Gy was performed in 2016.

In June 2017, the patient presented to our hospital for reparative surgery. The patient's condition was satisfactory; rhinophonia was prominent. Postoperative skin and bone defect penetrated to maxillary sinus with partial hard palate defect. Skin defect size was 3 × 4 cm. Defect borders were inferior medial orbital sinus wall and medial malar edge. The skin around the defect was soft, elastic, and mobile. Facial skin and maxillary sinus mucosa were connected on the border of the stoma edge. The reparative surgery aimed to cover an aesthetic facial defect, with no bone grafting (Fig. 1).

A circumferential incision was made along the defect boundary. Tissues were mobilized so that the inverted dermal surface was a mucosa extension. The main skin flap was formed out of intact skin of the low defect edges. The skin was mobilized, inverted, and sutured to the skin on the opposite side of the defect. A flat "face-up" area was formed out of the sub-dermis (Fig. 2).

A split skin graft 0.3-mm thick was taken from the inner left thigh using an electrodermatom. The graft was transferred to the formed surface and sutured.

The patient's health condition improved. Total skin graft retention was observed. The patient was dismissed on the fourth day after the operation (Fig. 3).

A follow-up check was performed on July 12, 2017. The skin graft is adapted to the surface of the "inverted" flap. A slight retraction is observed (Fig. 4).

DISCUSSION

There are many schemes for facial surgery in which local tissues are used as a plastic material.[6–8] However, local tissue plastic repair is not always possible for composite defects due to the necessity of mucosa restoration and the lack of donor resources.

Grafting of the neck and scapular free flaps is sophisticated and often leads to complications such as necrosis. Besides, the outcome is not always satisfactory.

Microsurgery repair is used widely.[9,10] The operations involve microsurgery techniques used by trained surgeons. Also, to improve specialists' skills to perform the operations, a sufficient patient number is required. However, in small population countries like Kazakhstan, there will not be enough patients with the disorder.

A 2-stage operation is the most common for facial tumor cases in the Republic of Kazakhstan. At the first stage, the tumor is excised. The planned operation on the second

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Received for publication November 25, 2020; accepted April 6, 2021.

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DOI: 10.1097/GOX.0000000000003601

Disclosure: *All the authors have no financial interest to declare in relation to the content of this article.*

Fig. 1. Postoperative skin and bone defect penetrating into the maxillary sinus.

Fig. 3. The patient on the fourth day after the operation. Total graft retention.

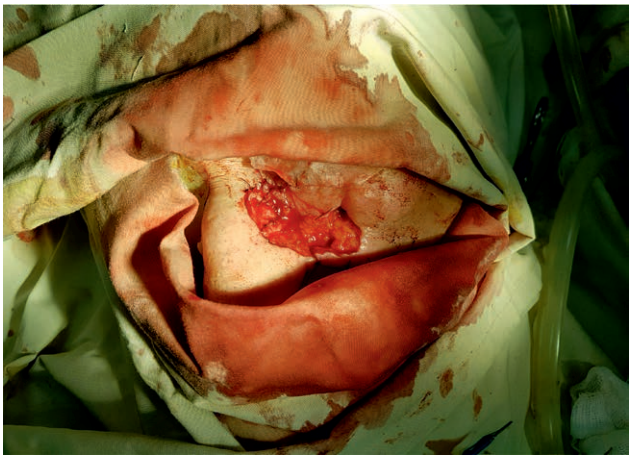

Fig. 2. A wound after mobilization and skin "inversion." Subcutaneous tissue area is prepared for transplantation.

Fig. 4. Transplanted graft 4 months after discharge (front view).

stage is aimed at postoperative defect cover. Microsurgery repair techniques in oncology are also undeveloped and rarely used within the country. So, the second stage of the operation is postponed without any date. The long-term defect presence leads to a change of the blood supply to the area being operated on, which can be used while reconstructing a through-and-through maxillary sinus defect.

We believe that this type of operation is acceptable when the time passed between the tumor removal and the anaplerosis is sufficient to form collaterals between the skin and mucosa blood vessels.

Skin adjacent to the defect can be used to form the inner lining. The skin is cut in a circle, inverted, and secured on the opposite side with the inside-out surface. A split skin graft is used to form the skin component. The skin graft is sutured. Due to potential graft perforation, a stapler is not advised. We believe that a split skin graft of a medium thickness (0.3–0.4 mm) engrafts well, does not wrinkle, and retains the color. A full-thick skin graft is a bad practice due to the rejection risk. It also creates a risk of complete failure.

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ACKNOWLEDGMENTS

The patient is treated within the guaranteed free medical care established by the Ministry of Health of the Republic of Kazakhstan. The study was approved by the local ethical committee of the National Cancer Research Center and was carried out in accordance with the principles of the Declaration of Helsinki.

PATIENT CONSENT

The patient has provided written informed consent for the publication and use of his photographs.

REFERENCES

1. Gong ZJ, Ren ZH, Wang K, et al. Reconstruction design before tumour resection: a new concept of through-and-through cheek defect reconstruction. *Oral Oncol.* 2017;74:123–129.

2. Olasz L, Nyárády Z. The role of platysma-based flaps in the reconstruction of massive through and through facial defects. *J Plast Reconstr Aesthet Surg.* 2008;61:1254–1256.
3. Wallace CG, Tsao C-K, Wei F-C. Role of multiple free flaps in head and neck reconstruction. *Curr Opin Otolaryngol Head Neck Surg.* 2014;22:140–146.
4. Hallock GG. The complete nomenclature for combined perforator flaps. *Plast Reconstr Surg.* 2011;127:1720–1729.
5. Posso C, Delgado Anaya D, Aguilar Henao J, et al. Nasolabial propeller perforator flap: anatomical study and case series. *J Surg Oncol.* 2018;117:1100–1106.
6. Kropotov MA, Stelmakh DK, Yakovleva LP, et al. Nasal skin cancer. Possibilities of plastic replacement of the defect during surgical treatment. *Head Neck Tumors.* 2014;1:4–10.
7. Schäfer K, Rudolph C, Cotofana S, et al. Large nasal defects with exposed cartilage: the folded transposition flap as an innovative alternative to the paramedian forehead flap. *Dermatology.* 2018;234:99–104.
8. Wong CH, Wei FC. Microsurgical free flap in head and neck reconstruction. *Head Neck.* 2010;32:1236–1245.
9. Pau M, Wallner J, Feichtinger M, et al. Free thoracodorsal, perforator-scapular flap based on the angular artery (TDAP-Scap-aa): clinical experiences and description of a novel technique for single flap reconstruction of extensive oromandibular defects. *J Craniomaxillofac Surg.* 2019;47:1617–1625.
10. Loeffelbein DJ, Hölzle F, Wolff KD. Double-skin paddle perforator flap from the lateral lower leg for reconstruction of through-and-through cheek defect – a report of two cases. *Int J Oral Maxillofac Surg.* 2006;35:1016–1020.