Case Report

Malar Fat Pad Flap for the Reconstruction of the Orbit: Case Report

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ABSTRACT

Sebaceous carcinomas are rare malignant tumors of the eyelid. For defects of the orbit, the temporal muscle/fascia and peri-cranial flaps are the preferred options. However, these flaps require extensive dissection, leave obvious scars, and pose a risk of injury to the peripheral nerves. Malar fat flap (MFP) has not been previously described for the reconstruction of the orbital defects. In this paper, we aimed to present a case with an orbital defect after sebaceous carcinoma resection. The MFP was dissected laterally and inferiorly and then rotated superolaterally to fill the defect. The upper and lower eyelids were fixed to the lateral orbital rim to mimic the lateral canthus. No additional scar was created. The magnetic resonance imaging revealed good flap viability after 2 years. The flap was oncologically safe; no recurrence was reported during the 2-year follow-up period. Pedicled MFP offers a reliable and safe option for minor defects of the orbit.

Keywords: Fat pad, orbit, reconstruction, sebaceous gland neoplasms, pedicled flap

Introduction

Reconstruction of orbital soft tissue includes several options. The temporalis muscle flap is one of the most preferred flaps for this purpose [1]. Other popular flaps include the pericranial flaps in which the galea and periosteum are delivered into the orbit [2]. Although these flaps are useful, they require extensive dissection and pose a risk of injury to the peripheral nerves [3].

The malar fat pad (MFP) has a triangular shape with its base at the nasolabial fold and its apex at the malar eminence. It is situated between the skin and the superficial musculoaponeurotic system (SMAS). It is loosely attached to the SMAS and firmly attached to the skin [4]. Like other fat pads of the face, the MFP has its own blood supply that comes from perforator vessels [5]. To our knowledge, the MFP flap has not been used as a pedicled flap to reconstruct lateral defects of the orbit. In this article, we aimed to present a case of orbital reconstruction with a pedicled MFP flap after the resection of sebaceous gland carcinoma.

Case Report

An 83-year-old female patient was admitted to our clinic with the complaint of a mass around the right eye (Figure 1A). At physical examination, a 4x2 cm mass with ulceration and small bleeding foci was located at the lateral border of the orbit. Magnetic resonance imaging (MRI) revealed a solid mass lesion of heterogeneous character, filling the anterolateral side of the globe. The mass extends towards the extraconal fatty tissue lateral to the right globe. At this level, no distinction could be made between the right lateral rectus muscle and the mass (Figure 2A). The upper and lower eyelids were incised next to the mass and retracted superiorly and inferiorly, respectively. By performing subperiosteal dissection, the mass was resected. The involved lateral margins of the eyelids, the lacrimal gland, and the lateral rectus muscle were also resected (Figure 1B). The lateral and lower orbital borders were revealed. The dissection was continued to the posterior border of the globe. The resulting defect had dimensions of approximately 4 by 1.5 cm, exposing the medial wall of

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the zygomatic bone, the superior border of the maxillary bone, the inferior border of the frontal bone, and the lateral border of the globe. Mohs frozen sections revealed negative surgical borders. The resulting defect was planned to be reconstructed with the pedicled MFP flap. In order to reach the MFP, the lower eyelid was retracted. Dissection beneath the subcutaneous tissues started from the superior edge of the flap. By elevating the skin, dissection continued laterally



Figure 1. A) The preoperative view of the mass, B) The resulting defect after the excision of the mass, C) The pedicled MFP flap after being dissected. Note the rotation arc of the flap, D) Fitting the MFP flap into the defect. Red cycle indicates the stitches that were used to stabilize the flap by fixing it to the periost of the superior orbital rim MFP: Malar fat flap



Figure 2. A) MRI revealing a mass at the anterolateral aspect of the right globe. White arrow indicates the mass, red arrow indicates the flap, B) Postoperative 2nd year MRI revealing a healthy fatty tissue (MFP flap) without any sign of pressure or fibrosis

MRI: Magnetic resonance imaging, MFP: Malar fat flap

and inferiorly with the medial connection of the fat pad being preserved (Figure 1C). The flap had approximate dimensions of 6×2 cm. The infraorbital foramen formed the medial border of the dissection. Then, the flap was rotated superolaterally and inserted into the orbit (Figure 1, panel D). It was ensured that the flap rotated easily to avoid pressure on the pedicle. A few dissolving stitches were enough to stabilize the flap by fixing it to the remaining periosteum of the superior orbital rim (Figure 1D). To reconstruct the lateral canthus, the upper and lower eyelids were approximated and sutured to each other and to the bone of the lateral orbital rim. During early postoperative management, the patient received artificial tear drops 24 times daily for the first three days, then 12 times daily for a week, and antibiotic ointment 1 once daily for a week. Unfortunately, the patient did not attend her plastic surgery follow-up appointments; thus, we were unable to evaluate the functional outcomes. However, by accessing her oncological follow-up records, we found that in the second postoperative year, MRI revealed normal fatty tissue on the lateral side of the globe without any signs of pressure (Figure 2B). Her records revealed no recurrence during the two-year follow-up period.

Discussion

Facial fat pads are generally used for aesthetic procedures. They can be resected, transferred, or modified to obtain the desired shape and volume. MFP is often modified during lower blepharoplasty or midface lift procedures to enhance the aesthetic appearance [6]. Another example is Bichat's fat pad, which is generally resected in aesthetic operations to provide the cheeks with a thinner shape [7]. However, Bichat's fat pad is also the most preferred facial fat pad for reconstructive procedures. This is because Bichat's fat pad has a stable anatomy, a dominant vascularization, and can be transferred easily to cover intraoral defects [8].

With age, the MFP tends to move downward due to gravity. In the aesthetic procedures, this fat pad is dissected and elevated in the upward direction without any morbidity in the donor area [9]. In the technique we used, the fat pad was also dissected and elevated upward with a minimal donor area morbidity. Larger flaps may be preserved for large defects such as those resulting from enucleation procedures. In the case we present, the eyeball was not involved in the carcinoma invasion. Thus, the resulting defect was not large enough to require a larger flap. As observed from the MRI scan, the utilized flap provides an optimal volume that fits the defect very well. Moreover, the globe is originally surrounded by fatty tissues. Thus, reconstructing defects that are in close proximity to the globe using fatty tissues will provide more natural results.

Based on the localization, dimensions, and rotation arc of the flap, we can conclude that this flap is suitable for mild (2-5 cm) soft tissue defects that are located at the lower or lateral borders of the orbit. The flap is also suitable for covering exposed bone of the lower orbital rim, as reported in a case of SOOF flap [10]. Muscle flaps tend to develop fibrosis, which is not suitable for mobile parts of the body, such as the globe [11]. Fat flaps provide a more flexible bed for the mobile globe.

In our case, MRI findings revealed healthy fatty tissue without any signs of pressure or fibrosis. On the other hand, since the flap was dissected from the same incision, no additional scar was created. In contrast to other fat pads, such as Bichat's fat pad, the vascularization of MFP, is not well documented. Circulation in the relevant area is thought to be supplied by the branches of the transverse facial artery, internal maxillary artery, and angular vessels without a defined predominance [5].

In our case, the MFP flap was designed to be medially based. The MRI revealed good flap viability after two years. This may indicate that the MFP flap has a vascular supply through the angular artery. The simplicity of this flap makes it a good choice for defects that don't involve the globe. In our case, the remaining skin was used to cover the top of the flap. However, in cases where large skin excision is required, split-thickness skin grafts may be considered. The flap was oncologically safe. During the two-year follow-up period, no recurrence was reported.

Conclusion

Pedicled MFP flap is reliable and safe for use in small and minor defects of the orbit. In this technique, the flap can be delivered from the lower eyelid without any additional incisions. The flap has a wide rotation arc, which makes it suitable for both lower and lateral orbital regions.

Ethics

Informed Consent: The consent form was filled out by the participant.

Footnotes

Authorship Contributions

Surgical and Medical Practices: M.D., Concept: M.D., Design: M.Z., M.D., S.K., Data Collection or Processing: M.Z., Literature Search: M.Z., S.K., Writing: M.Z., S.K. **Conflict of Interest:** No conflict of interest was declared by the authors.

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