

Epithetic reconstruction after subtotal rhinectomy

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Introduction

The prominent, central position of the external nose in the face decisively shapes an individual's appearance. Its partial or total loss, as a result of extensive basal cell or squamous cell carcinomas and their recurrences, can cause facial disfigurement with the associated, and often considerable, psychological consequences. The complex reconstruction of such defects, performed mostly in elderly, multimorbid patients, often requires surgical interventions under general anesthesia that can last from several hours to several days. Against this background, epithetic restoration must be weighed against extensive reconstruction methods in the event of loss of the cartilaginous or bony supporting framework.

New materials, better impression techniques and fixation options make epitheses a justifiable alternative today. This restoration requires, in addition to surgical experience, close cooperation with the epithetist. In addition, the patient must possess sufficient vision and manual skills to master postoperative handling of the epithesis.

Technique

Preoperative management

An 84-year-old female patient presented with an extensive recurrence of G3-differentiated squamous cell carcinoma of the external nose (Figure 1a). Computed tomography (soft

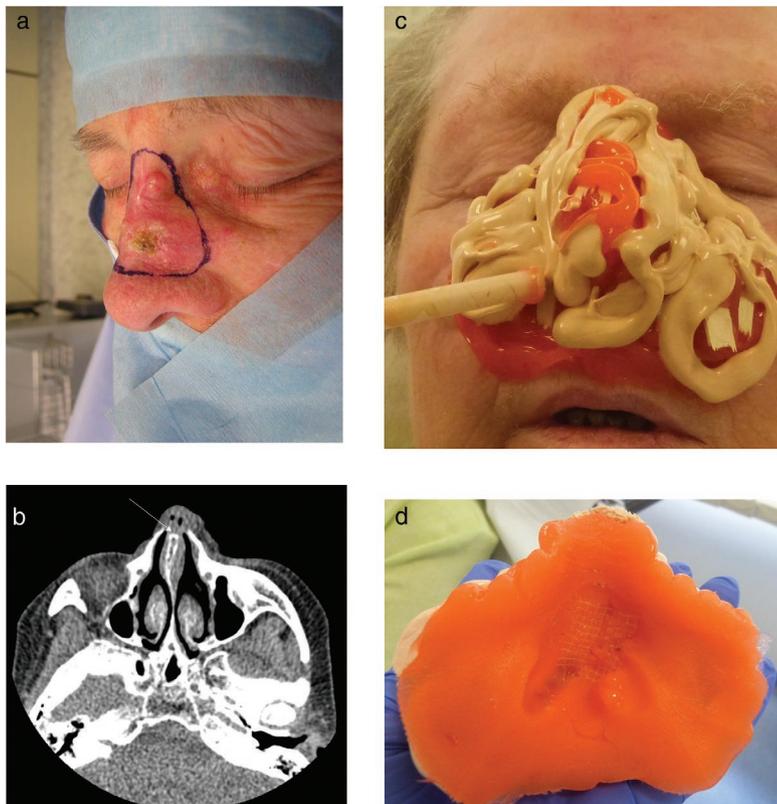


Figure 1 Preoperative findings. Extensive relapse of a squamous cell carcinoma of the external nose (a). Computed tomography of the paranasal sinuses (slice thickness 2 mm). In the soft tissue window isodense tumor with intranasal infiltration (arrow) in transition from osseous to cartilaginous nasal frame (b). Preoperative imprint of the external nose by the epithetist (c). Imprint as negative template for the wax model (d).

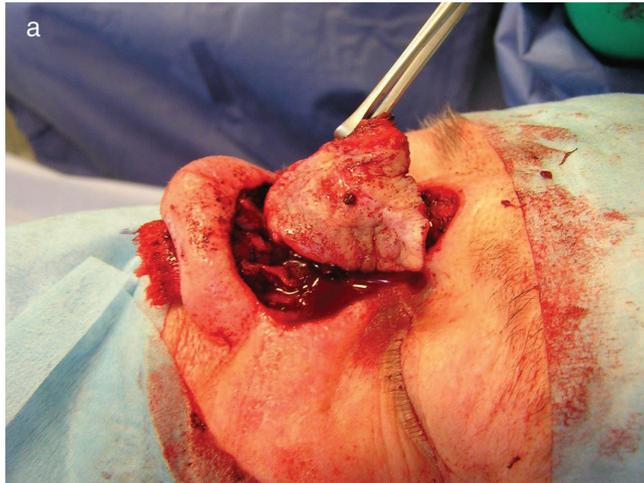


Figure 2 Subtotal rhinectomy. En-bloc resection of the external nose with conservation of the tip of the nose. Removal of ossa nasalia, cartilagines laterales and, in part, of septum nasi (a) Postoperative view. Wound closure between skin of the midface and mucous membrane of the nose over apertura piriformis. Rotation flap from the glabella region covering processus frontalis ossis nasalis (b). Findings one week postoperative (c).

tissue window) revealed a 1.5-cm mass in the paranasal sinus at the junction of the cartilaginous and bony nasal framework, with the tumor traced intranasally to the nasal ridge (Figure 1b). After considering all therapeutic options together with the patient, a decision was reached for surgery. As a precautionary measure, while preparing for surgery contact was established with the Institute for Epithetics. The patient's health insurance company required written notification before the operation for reimbursement of the costs of the epithesis. The patient was informed in detail by both the surgeon and the epithetist about the planned surgical and treatment steps. Prior to surgery, the epithetist created an initial impression of the external nose and the adjacent midface (Figure 1c,d).

Subtotal rhinectomy

Initially, a perforating incision was made between the tip and dorsum of the nose up to the apertura piriformis. The nasal

septum was separated vertically between the cartilaginous and bony portions. Laterally, the os nasale was exposed on both sides (Figure 2a). With the aid of a chisel, the tumor could be excised *en bloc* with the os nasale on both sides and part of the bony septum at the nasal root. In addition to tumor resection, another important step at the surgical stage was preparation of the epithesis site. Due to the advanced age of the patient and the condition of the bone at the apertura piriformis, an adhesive epithesis was indicated. Compared to osseointegrated epitheses, it was therefore not necessary to insert bone anchors in the central midface intraoperatively. After edge-to-edge adaptation of the skin margins in the central midface and the mucosa of the nasal cavity, their mucocutaneous anastomosis was achieved with 3/0 and 4/0 monofilament non-absorbable sutures. In the same manner, the remaining septal mucosal sheets were joined. The skin defect over the processus nasalis ossis frontalis was closed with a rotation flap from the glabellar region (Figure 2b). Based on a secondary finding, a solid basal cell carcinoma on

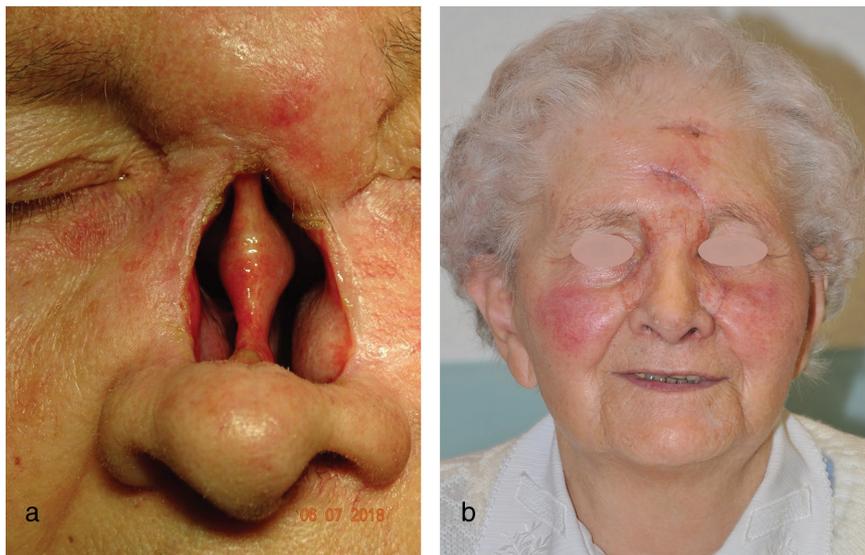


Figure 3 Findings five weeks postoperative. Scars between skin and mucous membrane without irritation (a). Findings with nasal epithesis (b).

the forehead was also removed frontally with primary wound closure. In addition to a sterile wound dressing, the patient's residual nasal cavities were tamponaded with nasal tamponades (Rhinotamp®) (Figure 2c). Histographically controlled resection with intraoperative diagnosis of frozen sections of all surgical margins ensured complete removal of the tumor. The carcinoma had been growing *per continuitatem* from the outer skin to the respiratory epithelium of the nasal mucosa, infiltrating both the perichondrium and the periosteum.

Postoperative care - Epithetics

A calculated and risk-adapted intravenous antibiotic therapy with clindamycin was initiated perioperatively and continued postoperatively for ten days *per os*.

A nasal and eye ointment containing dexpanthenol was applied several times daily to maintain the mucosa. The suture material could be removed normally after 14 days. Already a week after surgery, an initial fitting of the epithesis, created in a multi-step procedure by the epithetist, could be conducted. To match the color and texture of the individual skin to be replaced, the epithesis comprised different colored medical grade silicone layers. For secure fixation with a two-component adhesive to the perilesional skin in the central midface, an appropriate contact surface was required at the margin of the epithesis. Starting with the initial impression, a plaster model was used to make a wax model, for which photos of the patient were helpful for making the design as detailed as possible. The wax model was then inserted into a polymerization mold. Heat application causes the wax to run out, creating a cavity into which different medical silicones can be layered. After they have hardened under pressure, the epithesis cast can be manually reworked.

Under the guidance of the epithetist, the patient quickly learned how to handle and clean the epithesis. To ensure regeneration of the skin around the apertura piriformis, the epithesis was removed at bedtime. The patient was very satisfied with the functional and esthetic result (Figure 3a, b).

At the last consultation nine months after surgery, no recurrence of the tumor could be seen.

Discussion

For the treatment of large complex soft tissue defects, especially in cases with cartilage or bone loss in the region of the external nose, two basic treatment approaches are available: plastic reconstructive techniques and epithetic reconstruction [1, 3]. The choice of treatment depends on factors such as age, past diseases, past operations and the patient's wishes. At the same time, in our opinion, epithesis reconstruction of the external nose should remain a last resort.

In recent decades, the use of silicones for construction of facial epithelial prostheses has become established. They are easy to shape, can be colorized according to the individual skin tone and are optically and haptically superior to all preceding materials [2]. With regard to fixation, a distinction is made between osseointegrated and adhesive epitheses. The former are easier for patients to handle than adhesive or spectacle-mounted epitheses. In addition, the epitheses can be made thinner, which improves the esthetic result [3, 4]. Skin irritation due to the two-component adhesive occurs significantly less frequently [3, 4]. However, postoperative radiotherapy often has an unfavorable effect on implant healing and frequently results in loosening [5]. Nevertheless, the implant-supported, magnetically attached epithesis is currently considered the gold standard [3, 6–8]. One disadvantage is

the need for a two-stage procedure, since the implant must first be inserted with skin covering followed by exposure of the implant anchor by excision of the overlying skin. As a result, an average of five months elapses from the time of primary surgery until fitting of the epithesis, which cannot always be expected of patients who are often very elderly and multimorbid [9]. In our case as well, the patient opted for ablative tumor surgery as a single-stage procedure with postoperative fixation of the epithesis with a two-component adhesive. The great advantage of this procedure is that patients can be discharged into their familiar surroundings of home after only a few days of hospitalization, and they do not feel externally stigmatized for long [10, 11]. It is also important, in addition to further medical care in the context of tumor follow-up, to have continued support from the epithetist. An epithesis inspection should take place about every nine months to make any minor adjustments needed. Statutory health insurance agencies cover the costs for follow-up care every two years.

Conflict of interest

None.

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