



Chondrolysis of the Nasal Cartilages as a Sequela of Rhinophyma Treatment: A Case Report and Literature Review

B. Nshimirimana^{1*}, A. Jaifi¹, M.S.K. Hattab¹, D. Ndelafei¹, Z. Aziz¹, N. Mansouri-Hattab¹

¹Cadi Ayyad University, Mohammed VI University Hospital, Stomatology and Maxillo-facial Surgery Department, Marrakech, Morocco

*Corresponding Author

B. Nshimirimana

Cadi Ayyad University, Mohammed VI University Hospital, Stomatology and Maxillo-facial Surgery Department, Marrakech, Morocco

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Abstract: Chondrolysis is a rare pathology that can complicate rhinophyma surgery. The resulting defect poses more complex repair challenges. We report a case of chondrolysis of the nasal cartilages as a sequel to rhinophyma treatment. Our objective was, based on this case and literature data, to present our therapeutic approach. This concerned a 65-year-old patient, presented with a voluminous rhinophyma evolving for 15 years, causing not only aesthetic impairment but also nasal obstruction. The excision was performed in one piece with an electric scalpel, hemostasis achieved using a bipolar coagulating forceps while preserving the nasal cartilages. The excision site was left for directed healing. Postoperative outcomes for our patient were marked by transfixing apexo-alar nasal substance losses following chondrolysis of the nasal cartilages. Faced with this defect, a repair surgery was undertaken not only to fill the substance loss but also to restore an appearance as normal and aesthetic as possible, ensuring functional reconstruction.

Keywords: Rhinophyma, excision, Chondrolysis, reconstruction.

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INTRODUCTION

The destruction of the cartilaginous framework of the nose, also known as chondrolysis, is a rare pathology that can complicate dermatological tumor surgery, including rhinophyma [1]. Faced with this lesion, it is generally accepted that surgery is the treatment offering the only chance of cure [2]. Currently, there is a range of surgical options, but none constitutes the “gold standard”; moreover, no method appears to be free of complications, and all involve a certain degree of morbidity [2, 3].

The resulting tissue losses can be superficial and amenable to surface repairs or transfixing, posing more complex repair challenges [8]. We report a case of chondrolysis of the nasal cartilages as

a sequela of rhinophyma treatment. Our objective was, based on this case and literature data, to present our therapeutic approach.

CASE REPORT

This concerned a 65-year-old patient with no notable history or chronic alcoholism, who sought medical attention in May 2022 for a nasal swelling that had been evolving for 15 years. This mass was causing bilateral nasal obstruction, predominantly on the right, without any olfactory disturbances. The patient also reported snoring, with no clinical signs of sleep apnea. In addition to functional complaints, the patient was distressed by the unaesthetic appearance of the mass on his face, leading him to habitually conceal his nose.

The clinical examination revealed: Thickened skin with violet and dilated follicular openings in the

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glabellar and malar regions. A bosselated nasal mass with sebum drainage through follicular openings. The

clinical diagnosis of rhinophyma was established (Fig. 1).



Fig. 1: Clinical Appearance of the Patient

The treatment involved surgical excision under general anesthesia. The excision was performed as a single block using an electric scalpel, with hemostasis achieved using a bipolar coagulating forceps while preserving the nasal cartilages. The

covering perichondrium was also preserved, except for two areas where the alar cartilage was exposed. The excision site was left for directed healing. It is noteworthy that the alar and triangular cartilages remained intact (Fig 2: C-D).



Fig. 2: Surgical Excision of Rhinophyma under General Anesthesia: (A, B): Intraoperative view before excision. (C, D): Intraoperative view after excision: superficial loss of substance of the nose.

The histopathological analysis confirmed the diagnosis, revealing the presence of multiple infundibulo-pilosebaceous cysts filled with keratin and hyperplastic sebaceous glands within connective tissue exhibiting fibrosis and inflammatory infiltrate. Antibiotic therapy with amoxicillin-clavulanate (3 g/24 h) was initiated immediately post-surgery and continued for ten days.

excision site, was administered for 15 days. Our patient's postoperative course was marked by transfixing apexo-alar nasal tissue loss following chondrolysis of the nasal cartilages (Fig. 3 A-B). In response to this defect, a later decision was made for a full-thickness nasal reconstruction. The deep mucosal plane was constructed from hinged skin flaps, supported by a conchal cartilage graft, while the cutaneous plane was formed using the frontal flap (Fig. 3 C-F).

Local care, involving the application of fusidic acid ointment and paraffin gauze to the





Fig. 3: Reconstruction of Nasal Tissue Loss: (A, B): Appearance of the tissue loss. (C): Intraoperative view of the reconstruction of the deep mucosal plane using hinged skin flaps. (D): Intraoperative view of the reconstruction of the intermediate cartilaginous plane. (E, F): Intraoperative view of the reconstruction of the cutaneous plane using the frontal flap.

The skin graft from the donor site (upper part of the frontal flap dissection) was performed after two weeks, and the weaning of the flap occurred after three weeks of the reconstruction (Fig. 4). The postoperative course was uneventful, with no

complications or recurrence of rhinophyma. Although the flap was slightly thick, the patient was satisfied with the result and did not require any touch-ups.



Fig 4: (A, B): Result 1 month after the weaning of the frontal flap; (C): Result 1 month after the total skin graft at the donor site.

DISCUSSION

Rhinophyma is characterized by a slow and progressive hypertrophy of the nasal skin, resembling a tumor that does not spontaneously resolve [2]. As most authors in the literature indicate, it is a rare condition primarily observed in men after the age of 50 [3]. Surgery is the only effective treatment. There are various surgical therapeutic procedures, but none qualifies as the “gold standard”. These include:

- Laser (CO2, Argon, Nd: YAG);
- Mechanical dermabrasion;
- Hydrodis section (Versajet™ system); - Surgical excision.

The use of lasers, dermabrasion, and hydrodis section is reserved for resurfacing early lesions, while more advanced lesions require cold blade or electric scalpel excision. Ideally, the lesion should be resected while preserving the

perichondrium of the different nasal cartilages to limit the risk of chondrolysis. Excision can be done in multiple stages by layer-by-layer removal, corresponding to the 'onion peel' decortication technique; this does not require skin grafting, as epidermization occurs from the islands of healthy skin left in place. Excision can also be performed in a single stage, as in our case. The excision site can be grafted immediately or left for directed healing, with secondary grafting respecting aesthetic subunits. In other cases, the use of a local flap may be proposed [1,5].

In our case, we performed a single-stage excision, as a whole, using a cold blade and electric scalpel under antibiotic coverage. The areas where the alar cartilages were exposed were the source of chondrolysis, leading to transfixing apexo-alar bilateral tissue loss [1]. Faced with this defect, repair becomes one of the most challenging surgical issues in cervicofacial reconstructive surgery.

The primary concern is, of course, the aesthetic aspect, as the nose is a crucial element for facial balance, and its deformation quickly results in significant cosmetic impairment. Secondly, the restoration of good respiratory permeability is also essential to consider [6].

The appropriate choice of therapeutic indication is crucial for the quality of nose reconstruction. It relies on adhering to three principles:

- Firstly, a precise analysis of the tissue loss: its topography, extent, and depth.
- Adhering to the principle of analogy governing all facial reconstruction: it is essential to replace each tissue with its best equivalent. The best equivalents are adjacent, local, or regional tissues because their coloration, texture, thickness, flexibility, and strength are similar.
- Finally, it is often recommended to respect aesthetic subunits, as described by Burget and Menick. This rule is nuanced: as the skin of the nose generally heals well, scars are discreet, and the non-compliance with the principle of aesthetic subunits becomes generally tolerable [7]. Furthermore, other imperatives must be respected during nose reconstruction: maintaining symmetry of the nasal wings and the position of the tip, avoiding traction on periorificial areas [4].

Faced with extensive full-thickness tissue losses, especially in an elderly patient or with unfavorable conditions, it is important to discuss and explain to patients the possibility of using a

prosthesis. This prosthetic solution is a genuine alternative to three-dimensional nasal pyramid reconstruction surgery; results are often aesthetically superior when the entire nasal pyramid needs to be rebuilt.

When a surgical solution is chosen for repairing a disruptive loss of nasal tissue, three surgical methods can be considered [6]. The choice depends on the characteristics of the tissue loss: its extent, topography, and the patient's capacity to undergo one or multiple surgical procedures [8, 9].

1. The composite graft is an excellent solution for limited disruptive tissue losses of 1 to 1.5 cm in diameter; the donor area is predominantly the earlobe of the same or opposite side.
2. The nasogenian flap folded onto itself, following the technique of Préaux, and possibly reinforced with a cartilaginous framework, allows for a one-stage repair.
3. The three-plane repair, involving mucosal, cartilaginous or bony, and cutaneous layers according to the Burget procedure, typically yields better aesthetic and functional results [6, 8, 9].
 - a. The cutaneous plane is usually harvested from the frontal region (mainly paramedian frontal flap, and more rarely Converse frontal scalp flap) or exceptionally from the retroauricular region (Washio flap).
 - b. The deep mucosal plane is preferably composed of the septal or nasal valve mucosa, hinge skin flaps, occasionally neighboring skin flaps; flipped onto themselves, such as nasogenian flaps.
 - c. The intermediate plane is formed either by cartilage harvested from the earlobe, especially the concha, or more rarely from costal cartilage. The use of iliac or parietal bone becomes necessary when constructing a columellar strut [8, 9].

In our context, the tissue loss was transfixing, involving both apexo-alar regions; superficial at the tip and the lower third of the nasal dorsum. We opted for the three-plane repair, involving mucosal, cartilaginous, and cutaneous layers according to the Burget procedure, as the tissue loss was not extensive enough to warrant a prosthesis. The deep mucosal plane was preferentially composed of hinge skin flaps. The cartilaginous framework was harvested from the concha of the earlobe, given its ability to provide an appropriate quantity of cartilage, especially due to its low morbidity and the simplicity of its retrieval compared to costal cartilage [10].

For skin coverage, a skin graft was not feasible in this case due to the absence of an underlying vascularized plan. According to Menick, local flaps are not usable when tissue loss exceeds 1.5 cm in length because scar retraction phenomena may lead to the collapse of cartilage grafts. Regional flaps are most commonly employed [9].

In our case, the frontal flap provided an interesting alternative for extensive skin coverage due to its coloration, texture, thickness, proximity, simplicity of execution, and vascular reliability [4, 6]. Its main drawback, as in our case, is that it requires a multi-stage surgery, and the aesthetic sequelae of the donor area are more visible but less so than the Converse flap. As described in the literature, the use of nasal conformers throughout the reconstruction period seemed crucial to maintaining an opening and combating nasal obstruction and dead spaces, sources of hematomas, fibrosis, and thickening [11].

According to the literature, the possibility of closing the upper part of the frontal flap dissection depends on the size of the tissue loss, which will be closed if possible, entirely on itself or left for directed healing and/or grafted secondarily.

Flap weaning is usually performed after 3 to 4 weeks. Some authors conduct a prior clamping test [4, 6]. In our case, the skin graft from the donor site was performed after two weeks, and the weaning of the flap occurred after 3 weeks post-intervention.

CONCLUSION

Chondrolysis is a rare pathology that can complicate rhinophyma surgery, especially when the perichondrium of different nasal cartilages is not preserved. The resulting transfixing defect requires a challenging repair for the surgeon. Indeed, repairing each of the three constituent layers poses specific challenges, particularly given limitations imposed by the quantity and quality of available material, especially true for the lower third of the nose.

Therefore, reconstructive surgery aims not only to fill a tissue loss but also aspires to restore as normal and aesthetic an appearance as possible, ensuring that the reconstruction is functional.

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