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Case Report **ENT**

Post-Traumatic Rhinoplasty in a Subsaharan African Country - About a Case

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Abstract

Rhinoplasty (RPT) is one of the most commonly performed cosmetic and functional procedures in facial plastic surgery worldwide. More than 200,000 cases are performed each year in the United States. This reconstruction technique is rarely performed in West Africa. After reviewing the literature, no cases have been reported to date. It is in this context that we undertook this work, which aims to describe the technical aspects and results of a functional rhinoplasty case treated in the maxillofacial and plastic surgery department of the military hospital in Dakar, with a review of the literature. We report on closed rhinoplasty for post-traumatic nasal deviation with functional impairment in a 31-year-old police officer who was referred to the department for a specialist consultation reconstructive plastic surgery. The surgical approach consisted of nasal reconstruction combined with septoplasty using the endonasal approach technique under general anesthesia. Four months after surgery, the patient was very satisfied with the morphological and functional results. African noses are generally described as having thick skin and abundant subcutaneous fibro-adipose tissue. The success of the procedure is based on functional and/or aesthetic results and is reflected in patient satisfaction. This African rhinoplasty requires a fundamental understanding of acceptable beauty standards, the associated psychological underpinnings, and the facial and nasal characteristics specific to Africans. Considered one of the most complex procedures, this reconstruction technique deserves to be mastered and practised in Senegal and even in West Africa in order to reduce medical evacuations and medical tourism.

Keywords: Nasal obstruction; African rhinoplasty; Ethnic rhinoplasty, cosmetic surgery, reconstructive surgery, maxillofacial, Dakar.

INTRODUCTION

Rhinoplasty (RPT), a three-dimensional surgery, is a transformative procedure of the nasal pyramid that leaves an indelible mark not only on facial aesthetics but also on nasal functionality, ultimately influencing the individual's quality of life [1-3]. RPT is one of the most commonly performed cosmetic and functional procedures in facial plastic surgery worldwide [2-6]. According to a report by the American Society of Plastic Surgeons (ASPS), more than 200,000 cases are performed each year in the United States [2,7].

Beyond a harmonious nose, patients of African origin particularly want results that are consistent with their ethnic background, regardless of their aesthetic preferences [8,9].

Functional rhinoplasty aims to correct a nose following facial trauma, congenital malformation, or nasal obstruction of rhinological or carcinological origin [10]. Endonasal rhinoplasty is a minimally invasive approach that achieves aesthetic and functional improvements using only intranasal incisions rather than transcolumellar incisions [11]. Beyond these ethnic nuances, all classic RPT techniques are applicable for reshaping the African nose [8].

This reconstruction technique is rarely practised in West Africa. In Senegal, maxillofacial

reconstruction surgery has a success rate that could be improved in our regions [9]. After reviewing the literature, no cases have been reported to date.

It is in this context that we undertook this work, which aims to describe the technical aspects and results of a functional rhinoplasty case treated in the maxillofacial and reconstructive plastic surgery department of the military hospital in Dakar, with a review of the literature.

CASE REPORT

We report on closed rhinoplasty for post-traumatic nasal deviation with functional impairment in a 31-year-old police officer who was referred to the department for a specialist consultation in maxillofacial and reconstructive plastic surgery at the main hospital in Dakar. The interview revealed a history of midface trauma caused by a projectile thirteen months earlier. While on duty, he had been struck by a stone in the nasal pyramid, causing a fracture of the nasal bones (FNB). He had undergone an unsuccessful reduction attempt under general anaesthesia (GA). The outcome was marked by persistent nasal deformity associated with social discomfort.

His medical history includes atopy in the form of allergic rhinitis.

The preoperative examination revealed the following, based on the various views (Figures 1, 2, 3, 4):

- a lateral deviation of the nose on the right side when viewed from the front;
- a straight nasal dorsum with no saddle or bump when viewed from the side;
- a septal deviation on the right side with synechia, hypertrophy of the right inferior turbinate associated with a decrease in homolateral nasal flow;
- a deviation of the nasal dorsum towards the right side in the top view.

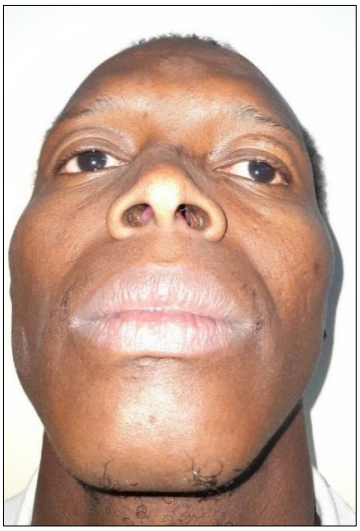
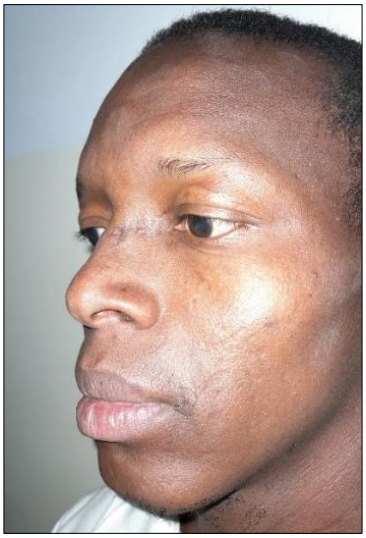


Figure 1: Lower view:



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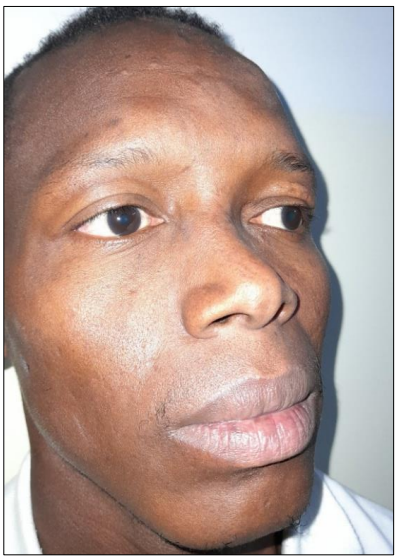

Figures 3:

Figure 4: Front view showing a dorsal nasal deviation

Maxillofacial computed tomography (CT) revealed findings suggestive of previous trauma with evidence of a fracture of the nasal bones, which were deviated to the right side, a septal deviation and hypertrophy of the right inferior turbinate.

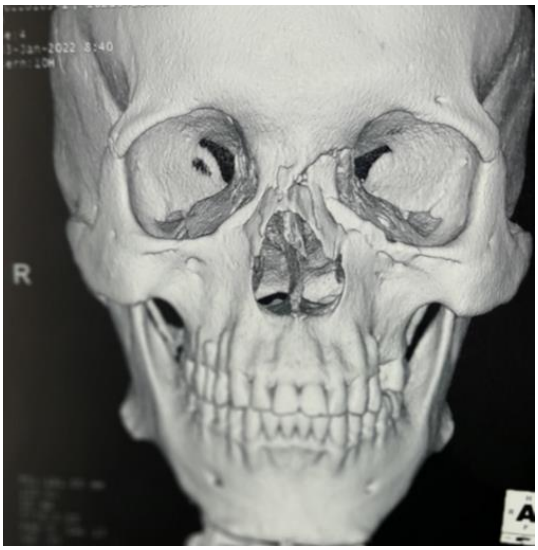

Figure 5: 3D CT reconstruction showing complex fracture of the nasal bones

Figure 6: Axial CT scan showing septal deviation

Figure 7: Axial CT scan showing left septal déviation and inferior turbinate hypertrophy

The rest of the pre-anaesthetic work-up was unremarkable

The surgical approach consisted of nasal reconstruction combined with septoplasty using the endonasal approach technique under general anaesthesia. Once the standard facial surgery setup was in place, we prepared the surgical site by inserting endonasal cotton swabs soaked in 5% lidocaine-naphazoline for 10 minutes, followed by betadine compresses for antiseptic purposes.

The endonasal or concealed approach begins with an inter-septum-columellar incision. This is preceded by an intranasal infiltration of 1/100 adrenaline serum to reduce bleeding at the surgical site. Next, septoplasty consists of an L-shaped resection of the nasal septum (Figure 8).

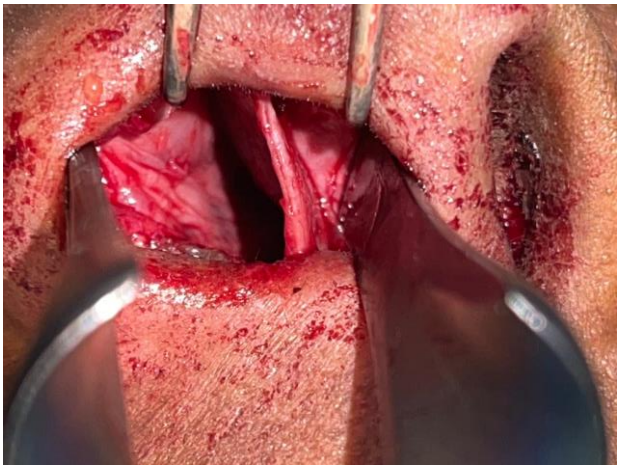

Figure 8: Operative view septoplasty using the endonasal approach

Finally, rhinoplasty begins with exposure of the nasal dorsum by subperiosteal rugination, followed by right and left median and paramedian osteotomies up to the nasofrontal junction. Lateral osteotomies are performed using the classic bottom-up approach, followed by manual reduction of the OPN under visual control (Figure 9); we inserted a spreader graft before closing the incision. Once the nasal morphology has been restored, internal support or endonasal packing uses a greasy dressing, while external support uses a metal nasal splint secured to the forehead with steristrips (Figures 10).

Figure 9: Operative view after osteotomy

Figure 10: Intraoperative view after

Post-operative care was straightforward, with a treatment protocol based on antibiotics, analgesics and anti-oedema drugs administered parenterally. The patient returned home on day 2, with regular daily check-ups to change the dressings. On day 7 post-operatively, we removed the dressings. The external metal splint was kept in place until day 21. The one-month check-up revealed a straight nasal morphology and a clear regression of functional symptoms. Four months after surgery, the patient was very satisfied with the morphological and functional results (Figures 11-15).

Figure 11: Clinical appearance of the concealed closed approach, highly aesthetic

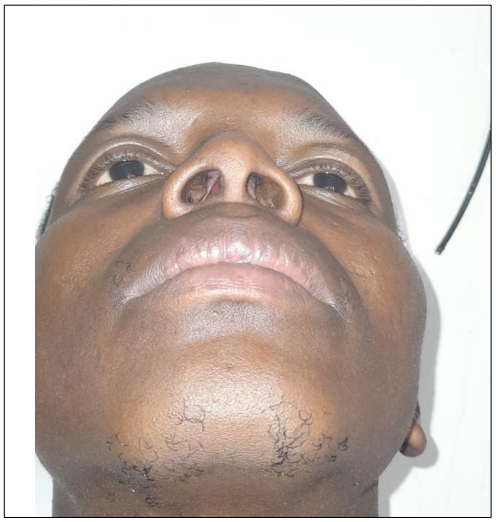

Figure 12:

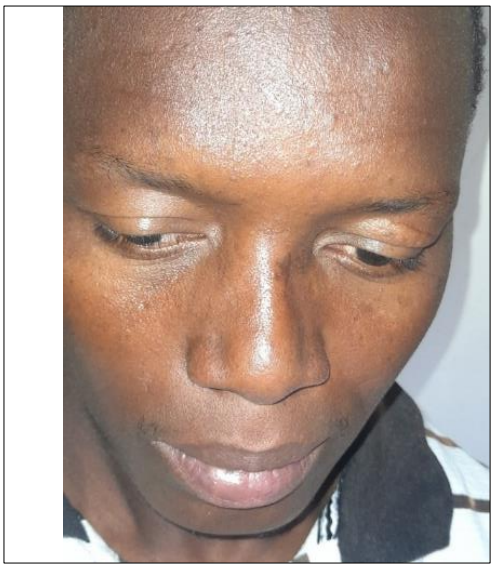

Figure 13: Control weeks after surgery / post-operative results

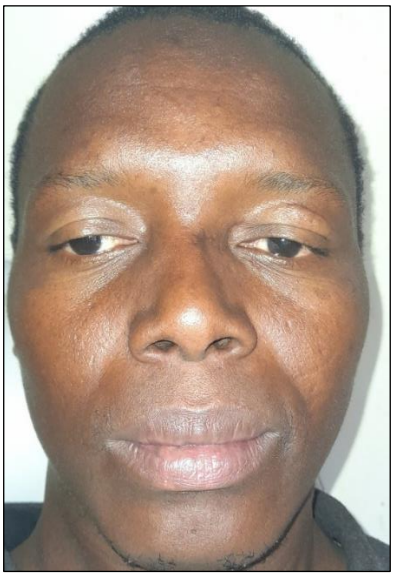

Figure 14: Profile view after several mouth

Figure 15: Clinical appearance of the concealed closed approach, highly aesthetic

DISCUSSION

During the initial consultation, it is essential to analyse the patient's aesthetic and functional concerns. The surgeon assesses the patient's motivations, expectations and psychological state and identifies any unrealistic requests that need to be discussed or ruled out from the outset [12]. This was the case with this patient, who was referred for a nasal deviation resulting from trauma. Facial structure, nose shape and aesthetic preferences vary considerably among patients of African origin seeking rhinoplasty [13]. Age, level of education, marital status and history of mental disorders such as dysmorphophobia and alexithymia may have a modest influence on satisfaction with surgery, hence the importance of patient-caregiver communication [4-6,14]. All rhinoplasty procedures require two preoperative consultations to discuss the issues and answer questions [1,12]. Functional disorders such as nasal obstruction, epistaxis, pain, anosmia and rhinorrhoea should be investigated [12]. Our patient presented with reduced nasal airflow and nasal deformity associated with social or aesthetic discomfort.

Rhinoplasty is considered one of the most complex procedures [15]. Rigorous planning and surgical skills are essential to achieve reproducible results [15]. The surgeon spends a great deal of time examining the patient's face and nasal anatomy in order to maintain or create overall harmony [2,12]. The clinical examination will take into account the patient's ethnic and family characteristics [12]. African noses are generally described as having thick skin and abundant subcutaneous fibro-adipose tissue [13]. Pre- and post-operative photographs are essential for the surgeon, who must archive them so that they can be produced in the event of a dispute [1]. We took seven photographs: front, right and left side, right and left three-quarter view, and finally top and bottom view.

Frontal X-rays, profile X-rays of the nasal bones, and soft-ray profile teleradiography may be useful in certain cases, such as deviated or post-traumatic noses. Computed tomography (CT) may be used when posterior or post-traumatic septal deviation is suspected, in which case the surgeon may be required to submit a request for prior approval [12]. In our observation, CT allowed us to confirm the extent of the injury and refine our treatment strategy.

More than 100 years after the first rhinoplasty, many controversies regarding indications and techniques remain unresolved [15]. The closed approach offers better predictability of postoperative scar retraction, thereby reducing the risk of secondary deformity, patient

dissatisfaction and reoperation [11]. For our part, we opted for the closed or concealed approach because it offered satisfactory control of the various procedures to be performed. Septoplasty and functional septorhinoplasty are the most commonly performed surgical procedures in Western countries to treat chronic nasal obstruction (CNO) of architectural origin [17]. As described in our observation, our surgical strategy consisted of performing septoplasty followed by rhinoplasty. Restoring or preserving nasal airflow is a crucial objective in functional rhinoplasty [2,7].

This is why we proposed functional rhinoplasty with preservation of the internal nasal valve through the placement of a spreader graft to our patient who was suffering from nasal obstruction. With regard to controlling intraoperative blood loss, Asghari's study demonstrated the significant impact of clonidine on reducing haemorrhaging during rhinoplasty. This reduction improves visibility and could contribute to a shorter surgical procedure [16]. Based on this principle, we proceed with endonasal packing using cotton swabs soaked in 5% lidocaine-naphazoline for 10 minutes, followed by infiltration of 1/100 adrenaline serum into the surgical site before the incision. External nasal splinting after rhinoplasty is an important part of the procedure [10]. There are three main categories of splints: plaster, metal and thermoplastic [10]. No type of splint has been proven to be superior to the others [10]. We opted for metal nasal splints because they are readily available and inexpensive.

The average length of stay after surgery, according to Goljanian Tabrizi *et al.*, was 2.33 ± 1.51 days [2]. Our patient was discharged on day 2 after surgery, which corroborates this study. Patient satisfaction is closely linked to the ability of individuals to communicate their expectations regarding surgical outcomes [14]. Patient information is imperative in all rhinoplasty procedures, whether purely cosmetic, cosmetic-functional or functional [1]. It is interesting to note that even in cases where rhinoplasty is primarily cosmetic, nasal function plays an essential role in postoperative satisfaction [2]. The success of the procedure is based on functional and/or cosmetic results and is reflected in patient satisfaction [2].

Patients who experienced less pain reported greater functional improvement [3]. This demonstrates the usefulness of implementing an effective pain management protocol based on VAS in addition to corticosteroid therapy and antibiotic coverage.

In primary rhinoplasty, several authors report that 70% of patients are very satisfied, 20% are satisfied and 15 to 30% of patients are dissatisfied [1,2]. Only 3% of patients who undergo rhinoplasty experience complications such as epistaxis, septal haematoma, cellulitis, abscess or even septal perforation, in addition to aesthetic problems [7]. This surgery requires an average of 17 to 25% of revisions [17]. We had no complications and the patient was very satisfied with the result.

Beyond a harmonious nose, patients of African origin particularly want results that are consistent with their ethnic background, regardless of their aesthetic preferences [8]. Rhinoplasty is a common procedure, but only a few surgeons have mastered its many technical nuances [15]. Regardless of its complexity, this reconstruction technique deserves to be mastered and practised in Senegal and even in West Africa, if only to reduce medical evacuations to Europe.

As author Boahene KDO points out, African rhinoplasty requires a fundamental understanding of acceptable beauty standards, the associated psychological underpinnings, and the facial and nasal characteristics specific to Africans [8].

CONCLUSION

Rhinoplasty is one of the most commonly performed cosmetic and functional procedures in the world, but it is rarely described in Africa.

The clinical examination will take into account skin characteristics in addition to facial and nasal features specific to Africans, without forgetting the patient's medical history.

African RPT is very demanding, as with other groups, because patients of African origin particularly want results that are consistent with their ethnic background.

Considered one of the most complex procedures, this reconstruction technique deserves to be mastered and practised in Senegal and even in West Africa in order to reduce medical evacuations and medical tourism.

Further studies will be necessary to add to the existing literature.

Acknowledgement: The authors declare that there is no conflict of interest.

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