

CASE REPORT

A Post-Rhinoplasty Complication: Nasal Abscess And Preseptal Cellulitis

Arda Ozdemir¹, Nijat Babayev¹, Yasemin Aydınlı², Necip Sefa Özden¹, Burak Kaya¹

¹Ankara University School of Medicine, Department of Plastic Reconstructive and Aesthetic Surgery

²Şanlıurfa Education and Research Hospital, Şanlıurfa, Turkey

Abstract

Rhinoplasty is one of the most frequently performed cosmetic surgeries and it may cause serious complications. Although it is a non-sterile operation, infection develops in less than 1% of the cases due to the facial abundant blood flow. Herein, we present a case diagnosed with preseptal cellulitis accompanied with progressive edema and tenderness that developed in the nasal tip and nasal dorsum one week after the rhinoplasty operation. Group A β hemolytic streptococcus was detected in the abscess culture, and the infection was treated successfully with antibiotics. Vital sequels and complications were prevented by early diagnosis and appropriate antibiotic treatment. The patient was discharged without any complications.

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Correspondence Address: Beytepe mah. Orhan Gazi Bulv. Güneşpark Evleri, No: 19/30, Çankaya
06500 Ankara - Türkiye **Phone:**+90 506 662 37 36 **e-mail:** burakys@gmail.com

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Introduction

Rhinoplasty is gaining more and more popularity in the last decades; nevertheless, the complications of the operation are overlooked by both the surgeons and the patients. There are various complications related to rhinoplasty operation, which can be grouped as infectious, traumatic, hemorrhagic, and systemic. Although those complications rarely occur, they can cause disastrous results by both aesthetical and functional means. Infection is a rare but severe complication and can be seen in 0.1-0.5% of all rhinoplasty cases.¹ Post rhinoplasty infection is believed to be developed due to devascularised bone spicules or hematoma.² In this case, we present a nasal dorsum abscess and bilateral periorbital cellulitis after rhinoplasty operation.

Case Report

A thirty-three-year-old male patient admitted to our clinic with the complaint of a nasal deformity due to a nasal trauma in his childhood. The patient had a dorsal hump, inadequate tip support, and inadequate rotation at the inspection.



Figure 1: The preoperative appearance of the patient.

Both airways were open and intact at the rhinoscopy. An open structural rhinoplasty under general anesthesia was planned with the diagnosis of nasal deformity. The preoperative complete blood count and coagulation parameters were in normal ranges, and viral markers were negative.

The patient was not given a prophylactic antibiotic or premedication prior to surgery. Intranasal

hair removal was performed intraoperatively prior to initial incision. The nasal flap was elevated using V-shaped trans-columellar and intercartilaginous incisions. After the subperichondrial and subperiosteal dissections, the dorsal hump was excised using a rasp. There was no need for spreader flaps or grafts since the airway was patent. Only a caudal septal excision was made and the cartilage graft was used as a columellar strut. Then, paramedian and lateral osteotomies were performed. No bone spicules were observed on the nasal dorsum during the operation. Likewise, unusual or any kind of excessive bleeding problems were not encountered. Any kind of alloplastic material was not used, and a further septoplasty was not performed. Power-assisted devices like piezoelectric systems that can be considered potential damage sources to the nasal flap vasculature were not used during the surgery. Doyle silicone splints were placed and sutured after surgical corrections. A thermoplastic splint was used for nasal bone stabilization. The patient was discharged on the first postoperative day after scheduling the follow-up examinations.

The patient was prescribed oral antibiotic therapy which included 2 x 1000 mg Amoxicillin/clavulanic acid for 1 week. Nasal splints were removed on the third postoperative day.

Fifteen days after the surgery, the patient applied to our clinic with complaints of edema and pain in the nasal dorsum, bilateral lower eyelid and infraorbital area, and erythema on the skin.



Figure 2: The appearance of the patient on the postoperative 15th day.

Moderate purulent rhinorrhea was observed. A paranasal computed tomography (CT) scan was performed for the differential diagnosis of cellulitis and abscess. CT scan report was as follows; “Tissue augmentation in the frontal part of the nasal dorsum and central tissue collection was observed, abscess?”. Since the mass in the nose was well-circumscribed, an abscess was considered instead of cellulitis as the initial diagnosis and no further radiologic investigations were made.



Figure 3: The CT scan of the patient.

In the complete blood count, leucocyte count was 15,000/mm³, the neutrophil ratio was 77%, and CRP was 57,2. Other biochemical laboratory results were in the normal ranges. Blood and throat cultures were negative. The patient was consulted with the infectious disease department; sulbactam-ampicillin 4 x 1,5 gr and metronidazole 3 x 500mg treatments were initiated empirically. The abscess in the nasal dorsum was drained percutaneously. Group A β hemolytic streptococcus was shown in the culture of the drainage material. This result was reconsulted with the infectious diseases department. Ampicillin 4 x 1,5 gr IV treatment was maintained. No other additional treatment was given.

Clinical remission was observed in edema, pain, and skin erythema during the final treatment process. Leucocyte and neutrophil values were regressed. On the seventh day of the hospitalization, edema and all other symptoms were regressed, and the patient was discharged.



Figure 4: The appearance of the patient on the postoperative 22th day

Discussion

The high concentration of sebum releasing adipose tissue in the nose supports facultative anaerobic bacteria such as *Propionibacterium acnes*.³ According to the study of Rudolph R, Slavin SA, Rees TD., pathogen bacteria *Staphylococcus aureus* and *Streptococcus viridans* were detected in nasal cultures of one-third of the rhinoplasty patients⁴ Therefore, the nose is one of the most contaminated and most colonized regions in the body.

Sebben found that 20% of microorganisms on the skin remain in the regions where soaps and antiseptic solutions cannot reach.⁵ Therefore the antiseptic choice is vital in septorhinoplasty operations.

The most commonly preferred antiseptics are alcohol-based (ethyl alcohol, propyl, or isopropyl alcohol), or iodine-based antiseptics (Povidone-Iodine), and chlorhexidine. Alcohol-based antiseptics are more effective on bacteria and viruses than other antiseptic types.⁶ Rutala stated that alcohol-based antiseptics with 30 – 100 % concentration need a minimum of 10-15 seconds to gain bactericidal or virucidal effects.⁷ Iodine-based antiseptics are routinely in use for rhinoplasty surgery in our clinic.

Post-rhinoplastic infection may spread through skin, subcutaneous fascia, and muscle. The access points of microorganisms may be the areas where skin integrity is damaged, such as trauma lines, surgical incisions, and external osteotomy lines.

Vestibulitis and cellulitis are the most commonly occurring postoperative complications and can

be treated by a local antibiotic. If an abscess presence is seen, it should be drained. Also, in the cases of graft material implantation, the graft should be removed.

The most prevalent bacterial causes of post rhinoplasty infections are *Staphylococcus* and *Streptococcus*⁸ However, there are other pathogens shown in the literature, such as *Pseudomonas*, *Actinomyces*, *Haemophilus influenzae*, and non-tuberculous mycobacteria^{8,9}

The presence of bone spicules on the lateral osteotomy lines and rhinoplasty accompanied by sinus surgery in the presence of purulent sinusitis are within the risk factors that might cause infection after rhinoplasty. In addition usage of acellular dermal matrix is another cause of nasal infections.¹⁰

There is no consensus in the literature on prophylactic antibiotherapy. Infection rates were found similar between the groups treated with and without prophylactic antibiotics in studies examining prophylactic antibiotic treatment. Prophylactic antibiotic treatment is suggested under the following conditions; active infection within the surgical area, keeping nasal tampons more than 24 hours, presence of hematoma, placing alloplastic implant, cases in which graft is used, revision surgeries, immunosuppression and, metabolic diseases.¹¹ The presented case was not given a prophylactic antibiotic.

Machida et al. reported a case of resistant face cellulitis after rhinoplasty, who had cord blood stem-cell transplantation.¹² It should be kept in mind that complications can arise after cosmetic surgery in immunosuppressed patients. Rhinoplasty can cause serious orbital and periorbital complications such as orbital bleeding, enophthalmos, exophthalmos, periorbital cellulitis, and blindness.¹³ Orbital cellulitis is differentiated from preseptal cellulitis by ptosis, restriction of eye movements, and optic nerve damage. Orbital cellulitis is a potentially fatal emergent complication. Thus, these two complications should be differentiated, both clinically and radiologically such as using a CT scan. Since there was no ptosis and restriction of eye movements, this presented case was considered as preseptal cellulitis, which was also confirmed by a CT scan.

Additionally, since streptococcal periorbital necrotizing infection cases were reported, it is crucial to differentiate postoperative eyelid swelling and infective conditions. Systemic penicillin treat-

ment prevents eyelid necrosis in those cases^{2,13,14}

Toxic shock syndrome (TSS) is a rare post-rhinoplasty complication. Although the actual incidence of post rhinoplasty TSS is not precisely known, Jacobson JA, Kasworm EM reported that it is seen 16,5 in a million (15). Nasal pads/tampons are present in 98% of post-surgical TSS cases. Prodromal symptoms of TSS are fever, nausea, vomiting, erythroderma, and hypotension.¹⁵ These symptoms were associated with *Staphylococcus aureus*, which releases exotoxins and exists on nasal pads/tampons.⁵

The area between the oral commissure and glabella covering the nose and maxilla is known as "The Triangle of Death." Infections occurring within this area can lead to cavernous sinus thrombosis in a retrograde way due to the deep anastomosis of the valve-free facial veins with superior orbital and pterygoid plexus. The occurrence of thrombosis may lead to complications such as blindness, facial nerve paralysis, meningitis, cerebritis, and brain abscess. If cavernous sinus thrombosis occurs, high dose intravenous antibiotic treatment must be initiated emergently¹⁶

Although bacteremia after septorhinoplasty is seldom, it was detected in 3-12% of submucosal resection cases in which a nasal pad was used. Coursey reported a case that had staphylococcus endocarditis after septorhinoplasty.¹⁷

In conclusion, in this case we presented a nasal abscess and preorbital cellulitis, which are rare postoperative complications after a rhinoplasty operation. Vital sequels were prevented by early diagnosis and appropriate antibiotic treatment. In order to prevent this complication, the operation should be delayed in patients who have an active skin infection or purulent sinusitis. Bone dust, hematoma, and spicules remaining on osteotomy lines and dorsum after osteotomy should be removed. Although the desired cosmetic results were not fully achieved when the preoperative and postoperative photographs were examined, patient satisfaction was ensured and a secondary operation was not required.

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