

Rare Complications of Septorhinoplasty: Case Report

Septorinoplastinin Nadir Komplikasyonları: Olgu Sunumu

Ozan GÖKDOĞAN, MD¹, Hacer BARAN, MD², Tolgahan ÇATLI, MD³, Fikret İLERİ, MD⁴

¹ Ankara Memorial Hospital, Department of Otorhinolaryngology, Ankara

² Medical Park Hospital, Bursa

³ Bozyaka Research and Teaching Hospital, İzmir

⁴ Gazi University Faculty of Medicine, Department of Otorhinolaryngology Head&Neck Surgery, Ankara

ABSTRACT

Septorhinoplasty is one of the most common surgical interventions performed by facial plastic surgeons, and numerous complications are related with this procedure. Two rare early postoperative complications of septorhinoplasty “nasal dorsal skin defect and dacryocystitis” were presented in the article. Cases of nasal dorsal skin defect and inflammation in the lacrimal system which is adjacent to osteotomy line after septorhinoplasty were presented, and their treatments were discussed. For preventing possible complications, surgical interventions must be known and have to address some basic principles both in perioperative and postoperative period. Management strategies were also discussed with case presentations, and wide spectrum of septorhinoplasty complications were reviewed in the light of the literature findings about this topic.

Keywords

Septorhinoplasty; complication; dorsum skin defect; dacryocystitis

ÖZET

Septorinoplasti operasyonu yüz plastik cerrahisi ile uğraşanlar tarafından sıkça uygulanan, çeşitli riskleri bünyesinde barındıran bir müdahaledir. Cerrahi sonrası erken dönemde karşılaşılan “nazal dorsum cilt defekti ve dakriyosistit” gibi göreceli olarak nadir gözlenen iki farklı septorinoplasti komplikasyonu makalede sunulmuştur. Septorinoplasti sonrası gelişen nazal dorsum defekti ile ostetomi hatlarına komşu sistem olan lakrimal sistemde inflamasyon vakaları sunulmuş ve tedavi seçenekleri tartışılmıştır. Komplikasyonları önlemek için cerrahi müdahalelerin komplikasyonları bilinmeli ve ameliyat öncesi ve sonrasında bazı temel prensipleri yerine getirilmelidir. Vaka sunumları ile beraber tedavi seçenekleri tartışılmış ve septorinoplastinin geniş komplikasyon spektrumu diğer literatür bulguları ışığında irdelenmiştir.

Anahtar Sözcükler

Septorinoplasti; komplikasyon; nazal dorsum cilt defekti; dakriyosistit

This case report has been presented in 3rd Congress of European ORL-HNS, June 7-11, 2015, Prag.

Çalışmanın Dergiye Ulaştığı Tarih: **05.02.2016**

Çalışmanın Basıma Kabul Edildiği Tarih: **21.07.2016**

≈

Correspondence

Ozan GÖKDOĞAN, MD

Memorial Ankara Hospital,

Department of Otorhinolaryngology, Ankara, Turkey

e-mail: ozangokdogan@gmail.com

INTRODUCTION

Septorhinoplasty is one of the most common surgical procedure performed by otorhinolaryngologists and plastic surgeons. In order to achieve satisfactory results from surgery and avoid from postoperative complications, it is very important to perform step-by-step surgical planning and postoperative preventive strategies. As well as many other surgical procedures, several major or minor complications may occur after septorhinoplasty. The rate for major ones is reported to be 8% to 15% and can be classified as hemorrhagic, infectious, traumatic, functional, and esthetic complications.¹ While majority of these do not have a life-threatening potential, less frequently some major complications such as “rhinorrhea, pneumothorax, and subarachnoid hemorrhage” may be mortal.² Nasal skin “as an anatomic part of the external nose” has various structural properties, which are essential for achieving proper and precise aesthetic outcome after septorhinoplasty. Skin related complications might be seen in a dynamic range and these may rarely be serious and complicated as “nasal dorsum skin necrosis”. Although infectious complications of septorhinoplasty have numerous clinical features, infections of lacrimal system after septorhinoplasty are quite rare. Unfortunately close anatomic relation between the lacrimal system and nasal anatomy should be kept in mind either during or after septorhinoplasty in order to secure the lacrimal system.

In this article, we present two rare early postoperative complications of septorhinoplasty, “nasal dorsal skin defect and dacryocystitis” in order to warn rhinologists about these relatively uncommon situations. Additionally we aimed to share our management strategies and discuss the wide spectrum of septorhinoplasty complications in the light of the literature findings about this topic.

All patients’ informed consent form and photo release form were received before manuscript submission.

CASE REPORTS

Case 1

A twenty-one year old male patient was scheduled to undergo an open technique septorhinoplasty. After septal reconstruction, (bone and cartilage) nasal hump was removed by a 10-12 mm osteotome in order to

achieve hump reduction. Nasal bone irregularities were rasped. The created open roof was closed after both median and lateral osteotomies. After spreader graft placement and nasal tip contouring, Turkish delight was prepared and placed underneath the nasal dorsal skin. In order to prepare Turkish delight, harvested septal cartilages were diced into milimetric cubes and wrapped in a Surgicel® (Ethicon, Inc., a Johnson & Johnson company; Somerville, NJ). Graft was processed with patients’ own peripheral blood to obtain smooth graft surface. Bilateral nasal packing was done with nasal splints and nasal dressing was made by adhesive tapes. Gypsona® plaster of Paris bandages (Smith& Nephew Corporate, London, UK) were applied externally for bone fixation. Silicon splints and plaster were removed 5 and 7 days after the operation respectively. Physical examination and inspection of the nose revealed an approximately 0.5x0.5 cm reddish demarcated area on the nasal dorsum skin (Figure 1). Postoperative edema and eruption were blamed for this finding. Patient could not be seen on the control examination 3 weeks after the operation because of a personal reason. On the second visit, 0.6x0.5 cm diameter nasal dorsal skin defect was observed and it was filled with crust. The patient was evaluated for autoimmune disorders and wound healing problems and no possible abnormal findings have been found. Skin defect was explored under local anesthesia and all crusts were removed. The edges of the defect were undermined in all directions. Adequate amount of skin was undermined and primarily sutured in the middle without tension. Controlled and complete wound healing was achieved in a few days after repair. Minimal scar tissue was observed over the area of defect in the long-term follow up (Figure 2).

Case 2

A thirty-five year old male patient was scheduled to undergo an open technique septorhinoplasty. In first postoperative day, bilateral mild orbital swelling had occurred. In the early hours it has been considered as a usual postoperative soft tissue edema. Although left sided edema was mild and solved after a one-week period, right sided edema was progressive in nature even under systemic antimicrobial medication. Especially around the medial and inferior region of the right orbital, periorbital edema was still continuing in progressive fashion. Patient was free of any preoperative risk factors for developing infectious complications and surgery was also free of complications. The procedure was completed approximately 2 hours after the anesthesia



Figure 1. Early postoperative skin necrosis.



Figure 2. Scar tissue on nasal dorsum after revision surgery.

induction. All usual steps of open technique septorhinoplasty were performed. Septal corrections, dorsal-hump resection, both median and low to low lateral osteotomies were done in an orderly fashion. Pieces of harvested cartilages were used as a camouflage graft on the nasal dorsum. Bilateral nasal packing and external nasal dressing were performed. Signs of a local infection such as “tenderness, hyperemia, swelling and pain” had occurred on the right periorbital area especially around the lacrimal drainage pathway (Figure 3). The patient was hospitalized and intravenous third generation cephalosporin and topical antibiotic ointment was administered. Ophthalmologic examination revealed no loss of vision. A full blood count was performed and showed a white blood cell count (WBC) of $13,000 \text{ mm}^3$, with 70% segmented neutrophils. Computer-aided tomographic (CT) scans of paranasal sinus and orbital region revealed an inflammation only around the medial and inferior part of right periorbital region. Orbita was

free of any suspicious infection and any complications such as orbital cellulitis etc. Patient was diagnosed with postoperative left sided dacryocystitis as a complication of septorhinoplasty procedure. After the initial systemic antibiotic treatment, the infection resolved progressively. On the 5th day of the intravenous therapy, the patient was free of symptoms and signs of an acute dacryocystitis except minimal edema over the left sided lacrimal sac. Edema was resolved in two weeks without any trace. Lacrimal gland and drainage system functions were in normal ranges 3 months after the operation.

DISCUSSION

In the recent decades, the septorhinoplasty procedure has gained more popularity in relation to the desire of human beings to be charming and good-looking. Graft materials are used to maintain or strengthen the structural framework, to provide contour or camouflage for defects and to restore the nose from irregularities. The main property of an ideal graft is being biocompatible and having strong physical properties and long-term stability. There are three main categories of graft and implant materials currently available: autografts (derived from patient's own tissue) homografts (derived from tissues obtained from a different donor of the same species) and allografts (semisynthetic or entirely synthetic).

Cartilage is almost the perfect graft material due to its high biocompatibility, low risk of infection and extrusion. Cartilage possesses excellent elasticity and resistance. It is also easy to shape and it has good vitality with poor blood supply and minimal risk of resorption.³



Figure 3. Right dacryocystitis after septorhinoplasty.

Different forms of cartilages such as warped, diced and crushed can be used for reconstruction. 'Turkish delight' is a composite implant material made of autogenous cartilage, usually harvested from nasal septum. Diced cartilages (0.5-10 mm cube shaped particles) are wrapped in Surgicel (Methylcellulose; Ethicon, Inc., a Johnson & Johnson company; Somerville, NJ) and mixed with 1 ml of patients' blood to achieve structural stability. The length and width depends of the patient's requirement. Surgicel (Ethicon, Inc., a Johnson & Johnson company; Somerville, NJ) is absorbed in a few weeks to months.⁴

There are numerous graft related complications in literature as extrusion, infection, and resorption of the graft material and less commonly foreign body reaction, warping, skin changes and cyst formation. There are two possible etiologic factors in our case. The first one is the disturbance of blood supply of the skin. The blood supply of the skin may be affected from the uncorrected subdermal placement of graft material instead of subperiosteal placement. Overpressure of Gypsona® plaster of Paris bandages (Smith & Nephew Corporate, London, UK) may also affect the blood supply of the skin in the affected region. The second possible reason is the over inflammation in the affected region. Although cartilage itself has an excellent biocompatibility, Surgicel seems to be the best explanation for the inflammatory or infectious reaction, which may have occurred in our patient.

Instead of blaming a technique, surgical steps must be checked to explain a complication. In the treatment of such complications, first of all skin edges of the defect must heal and the crust must resolve spontaneously instead of removing. Surgical reconstruction as primary closure, free skin grafting is designed for the defect. Reconstruction of the defect is planned according to the size and location of the defect.

To avoid such hazardous effects, the most important step is working with proper surgical plans. Also some authors used patients' own temporalis fascia graft instead of using Surgicel or other foreign materials.⁵ There are some similar cases which accuse surgicel in the etiology of nasal dorsal skin defect.⁶ However, Erol OO who defined the 'Turkish delight' graft presented very low complication rates in 9398 cases.⁷

It is important to prepare adequate space for the graft pocket and it is also important to smooth the edges of the graft to allow for optimal insertion. For grafts that re placed in dorsal region, stabilization is also very important. It must be sutured if displacement is possible. Also placement must be as deep as possible.^{8,9}

Dacryocystitis is the inflammation of the lacrimal gland. It mostly occurs from bacterial infection that is caused by *staphylococcus aureus* and *streptococcus pneumoniae*. Upper respiratory tract infections, sinusitis, orbital trauma, ocular or periocular infections and systemic infections increase the risk of dacryocystitis.¹⁰ Lateral osteotomies can be associated with several complications. Violent hemorrhage, prolonged edema, ecchymosis, functional nasal obstruction subject to excessive narrowing, post-rhinoplasty deformities and lacrimal gland injury are the main complications. Violent osteotomies have been suggested as a potential factor for the injuries of the lacrimal system if it is localized proximal to the lacrimal canal.¹¹ The surgeon has to be alert not to pass the medial canthal ligament while performing osteotomies to protect the lacrimal apparatus.¹² Laceration of the lacrimal sac can cause acute purulent dacryocystitis and should be treated with the intubation of the lacrimal system.¹¹ In our experience, acute infection of the right lacrimal apparatus seems to be related with violated lacrimal system according to the deep and brutal lateral osteotomy. Antibiotic prophylaxis during septorhinoplasty can be prescribed in order to protect patients from possible infectious complications such as dacryocystitis.¹³

In conclusion we revealed that dorsal augmentation with foreign materials such as Surgicel® (Ethicon, Inc., a Johnson & Johnson company; Somerville, NJ) may promote skin related problems as nasal dorsal skin necrosis and violated lacrimal apparatus may cause dacryocystitis. Surgeons have to be alert during the grafting of the nasal dorsum and performing lateral osteotomies not to cause skin related complications and the violation of the lacrimal system respectively. Additionally, temporalis muscle fascia may be used instead of Surgicel while creating dorsum graft. Besides, prophylactic antibiotic therapy may be administered to avoid infectious complications.

REFERENCES

1. Nemati S, Golchay J, Alizadeh A. Frequency of minor skin and soft tissue complications in facial and periorbital area after septorhinoplasty. *Iran J Otorhinolaryngol* 2012;24(68): 119-24.
2. Koçak A, Gürlek A, Kutlu R, Celbiş O, Aydın NE. An unusual complication of septorhinoplasty: massive subarachnoid hemorrhage. *Ann Plast Surg* 2004;53(5):492-5.
3. Araco A, Gravante G, Araco F, Castri F, Delogu D, Fillingeri V, et al. Autologous cartilage graft rhinoplasties. *Aesthetic Plast Surg* 2006;30(2):169-174.
4. Daniel RK, Calvert JW. Diced cartilage grafts in rhinoplasty surgery. *Plast Reconstr Surg* 2004;113(7):2156-71.
5. Guerrerosantos J, Trabanino C, Guerrerosantos F. Multifragmented cartilage wrapped with fascia in augmentation rhinoplasty. *Plast Reconstr Surg* 2006;117(3):813-6.
6. Eskitascioglu T, Kemaloglu AC. Skin necrosis in nasal dorsum following rhinoplasty. *Eur J Plast Surg* 2010;33(1):49-51.
7. Erol OO. Long-term results and refinement of the Turkish Delight Technique for primary and secondary rhinoplasty: 25 years of experience. *Plast Reconstr Surg* 2016;137(2):423-37.
8. Cochran CS, Ducic Y, DeFatta RJ. Current concepts in the postoperative care of the rhinoplasty patient. *Sout Med J* 2008;101(9):935-9.
9. Balaji SM. Avoiding complications in cosmetic rhinoplasty. *Ann Maxillofac Surg* 2015;5(1):3
10. Barat M, Shikowitz MJ. Nasofrontal abscess following rhinoplasty. *Laryngoscope* 1985;95(12):1523-5.
11. Yiğit O, Cinar U, Coskun BU, Akgul G, Celik D, Celebi I, et al. The evaluation of the effects of lateral osteotomies on the lacrimal drainage system after rhinoplasty using active transport dacryocystography. *Rhinology* 2004;42(1):19-22.
12. Celebioglu S, Keser A, Ortak T. An unusual complication of rhinoplasty: subcutaneous emphysema. *Br J Plast Surg* 1998;51(3):266-7.
13. Rechtweg JS, Paolini RV, Belmont MJ, Wax MK. Postoperative antibiotic use of septoplasty: a survey of practice habits of the membership of the American Rhinologic Society. *Am J Rhinol* 2001;15(5):315-320.