



Diplopia secondary to septal infiltration anesthesia: two cases

Septal infiltrasyon anestezisine baęlı Diplopi: İki olgu sunumu

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We describe two temporary diplopia cases secondary to local septal infiltration anesthesia during septoplasty operation. Both of the diplopia cases resolved without any treatment. Although diplopia was not refractory in our cases, when injecting anesthetics, special care must be taken to avoid injection either into the artery or to the vein.

Key Words: Complications; diplopia; infiltration anesthesia; local anesthetic; septoplasty.

Bu yazıda septoplasti ameliyatı sırasındaki lokal septal infiltrasyon anestezisine baęlı gelişen iki geçici diplopi olgusu tanımlandı. Her iki diplopi olgusu da herhangi bir tedavi gerektirmeden iyileřti. Her ne kadar bizim olgularımızdaki diplopi kalıcı olmadıysa da, anesteziik madde enjekte edildiğinde arter veya venlere enjeksiyon yapılmamasına özel dikkat gösterilmelidir.

Anahtar Sözcükler: Komplikasyon; diplopi; infiltrasyon anestezisi; lokal anestetik; septoplasti.

Septoplasty is a common operation in otolaryngology practice. Complications secondary to surgery are; epistaxis, nasal obstruction, synechia, septal hematoma, abscess, infection and septal perforation.^[1] Complications due to local anesthetic injection may also occur.^[2] To the best of our knowledge no diplopia case secondary to nasal septal local anesthetic injection was reported. Herein we describe two temporary diplopia cases secondary to local anesthetic injection for septoplasty.

CASE REPORT

Case 1- A 21-year-old male medical student was diagnosed with septal deviation. Prior to septoplasty a total of 6 ml local anesthetic, containing 20 mg/ml lidocaine hydrochloride and 0.0125 mg/ml epinephrine, was infiltrated into both sides of the septum using a 27 gauge needle. The infiltration was performed only to the septum, from posterior

to anterior, until the blanching of septal mucosa achieved. Following the infiltration within a few minutes, the patient started to complain about double vision. Examination of the right eye revealed partially mobility restriction in abduction, adduction and downgaze, and total restriction in upgaze. Reexamination after 10 minutes revealed no refractory sign. The patient has no problem related to prior complication in one year follow-up.

Case 2- A 42-year-old male underwent septoplasty for septal deviation. Prior to surgery; a total of 7 ml local anesthetic, containing 20 mg/ml lidocaine hydrochloride and 0.0125 mg/ml epinephrine, was infiltrated into the septum by using a 27 gauge needle. The infiltration was performed only to the septum, from posterior to anterior, until the blanching of septal mucosa achieved. Within two minutes after injection, patient started to complain

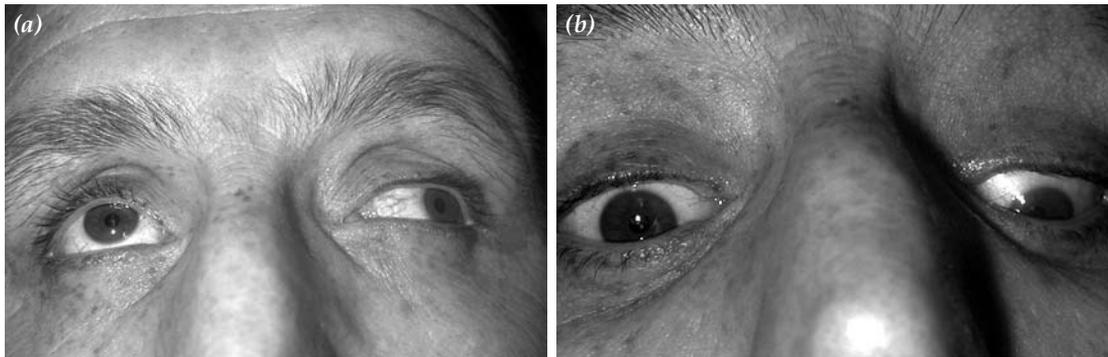


Figure 1. The picture taken at the moment of transient paralysis. (a) Showing the restriction of adduction in the right eye. (b) Showing the restriction of down gaze in the right eye (Case 2).

about blurred vision. Slightly droopy right upper eyelid, partially restricted motility in downgaze and adduction, and total restriction in abduction and upgaze were evident. Blurred vision resolved approximately in a minute. While the pictures were taken (approximately in the 3rd minute), the patient still had the symptoms of inhibition of motility in adduction and restricted downward gaze (Figure 1). The eye movements became normal in the 4th minute. In the 5th minute of infiltration, the eye movements returned to normal and no symptom was evident. Ophthalmic examination at the 10th minute was completely normal (Figure 2). The patient has no problem related to prior complication in one year follow-up.

DISCUSSION

Local anesthetics containing vasoconstrictor substance is commonly preferred for the infiltration anesthesia in septal surgery. Most frequent complications of local anesthesia in the oral region nearby septum are headache, dizziness, tachycardia, agitation, nausea and tremor.^[3] Blindness and unilateral mydriasis are reported as septoplasty complications.^[2] Complications both caused by local anesthesia and the operation performed in the adjacent areas may be temporary or permanent. Temporary diplopia cases in dental, endonasal and ocular



Figure 2. Recovery of eye movements within minutes (Case 2).

surgery,^[4-7] similar to our cases, and even persistent diplopia and strabismus after cataract surgery^[8] secondary to local anesthetics are noted complications. To the best of our knowledge this is the first case in the literature describing diplopia in septum surgery secondary to local anesthetic injection. Septal surgery is a common ear nose throat (ENT) procedure and septal infiltration is performed in almost all septal surgeries, it is interesting that such a complication has not been published in the literature. Although routine septal infiltration procedure is performed in our patients, the occurrence of this complication in two of our patients is questionable. One explanation of the absence of this complication in the literature may be the selection of general anesthesia in vast majority of the septal surgeries. Perhaps, transient complications due to local anesthetics may not be realized, when patients are under general anesthesia. And patients after recovery from general anesthesia, would not complain any temporary complications due to local anesthetics.

Diffusion of local anesthetics into the cranial nerves innervating orbital muscles or to the optic nerve is responsible for the orbital complications emerging after dental surgery. There are three hypotheses explaining how the nerves are affected as a result of the injection in the oral cavity.^[7,9] One of the hypothesis is; application or diffusion of intra-arterial local anesthetics directly to the related nerves through anastomosis. In this hypothesis, maxillary artery branches are supposed to be injected. Following maxillary artery, anesthetic agent may diffuse to the orbital region with the lachrymal branch of the ophthalmic artery and to the posterior orbital with middle meningeal artery, or may cause temporary vasoconstriction in these areas. Along with the blurred sight of the

patient, paralysis of almost all orbital movements, absence of paralysis in selective muscle or nerve and recovery in short period of time foregrounds arterial hypothesis. Second hypothesis is; diffusion of local anesthetics into venous circulation, reaching cavernous sinus and hence affecting cranial nerves is another hypothesis. Anesthetic agent penetrates into pterygoid venous plexus in infratemporal fossa and reaches from foramen ovale to cavernous sinus. Third, fourth and sixth cranial nerves lie in cavernous sinus. Penetration of local anesthetics into this area affects the circulation of nerves and this may explain some defects which form in innervation areas of these nerves. However, if temporary paralysis existed with this mechanism, the release of anesthetic agent from cavernous sinus would take longer and this would result in a longer recovery of paralysis.^[9] The third possibility which is the penetration of local anesthetic into orbita through direct diffusion is less probable. There fore, it is assumed that the anesthetic agent might reach to the orbital region from pterigomaxillary fossa through bone dehiscences. However, this is unlikely to develop within minutes as in our cases.

Taking all these possibilities into consideration, it is more likely that local anesthetic substance is induced through arterial cycles. Rapid development of our cases, supports this hypothesis. Such a rapid development of paralysis is expected neither with the direct diffusion nor the venous route.

Although most reported diplopia cases are transient and have good prognosis, when injecting anesthetics special care must be taken to avoid injection either into the artery or to the vein. Before the anesthetic agent is induced, controlling the injection by retracting the injector may be a simple precaution to prevent such complications.

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