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Surgical Treatment of the Oroantral Fistula in a Patient with Myasthenia Gravis: Clinical Considerations and Anesthetic Management

Miyastenia Gravisli Bir Hastada Oroantral Fistülün Cerrahi Tedavisi: Klinik ve Anestezi Yönetimi

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ABSTRACT

Myasthenia gravis (MG) is an autoimmune neuromuscular disease characterized by muscle weakness and fatigue. MG affects neuromuscular junctions and is characterized by the development of antibodies immunoglobulin G against postsynaptic acetylcholine receptors cause disease. Definitive diagnosis is made by electromyogram. Women are more affected than men. Fluctuating weakness and easy fatigability of skeletal muscles are observed when the limbs are involved. The weakness may involve a single muscle group or may be generalized. The muscle group is the ocular muscles and often causes diplopia and ptosis. On this rare occasion, careful perioperative anesthetic management is required to avoid life-threatening complications in both intraoperative and postoperative periods. In this case report, a 47-year-old female patient with MG requiring oroantral fistula treatment is described. Anesthetic management was performed under local anesthesia using appropriate doses, and the postoperative patient follow-up was uneventful.

Keywords: Anesthesia, dental treatment, myasthenia gravis

ÖZ

Miyastenia gravis (MG), kas zayıflığı ve yorgunluğu ile karakterize otoimmün nöromusküler bir hastalıktır. MG, nöromusküler kavşağı etkiler ve postsinaptik asetilkolin reseptörlerine karşı antikolların immünoglobulin G gelişmesiyle karakterizedir. Kesin tanı elektromiyogram ile konur. Kadınlar erkeklerden daha fazla etkilenir. Uzunlar tutulduğu zaman iskelet kaslarında zayıflık ve kolay yorulma gözlenir. Kaslardaki zayıflık, tek bir kas grubunu içerebilir veya generalize olabilir. Göz kasları etkilendiğinde sıklıkla diplopi ve pitozise neden olur. MG nadir görülen bir durumdur, hem intraoperatif hem de postoperatif dönemlerde hayatı tehdit eden komplikasyonlardan kaçınmak için dikkatli perioperatif anestezi değerlendirilmesi yapılmalıdır. Bu olgu sunumunda MG'li 47 yaşında bir kadın hastanın oroantral fistül tedavisi anlatılmaktadır. Anestezi yönetimi uygun dozda lokal anestezi altında yapıldı ve postoperatif hasta takibi sorunsuz bir şekilde gerçekleştirildi.

Anahtar Sözcükler: Anestezi, diş tedavisi, miyastenia gravis

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INTRODUCTION

Myasthenia gravis (MG) is a chronic autoimmune neuromuscular disorder characterized by a decrease in the nicotinic acetylcholine receptor of the post-synaptic membrane of the neuromuscular junction, leading to muscle fatigue and weakness (1). Oropharyngeal and facial muscle weakness is frequent at the onset of the disease; therefore, dentists are often the first healthcare workers to encounter patients with MG (2).

Management of MG is a challenging issue for oral and maxillofacial surgeons. In dentistry, routine dental procedures for MG patients are difficult and special considerations are required (3).

In the present case report, the surgical management of an oroantral fistula in a 47-year-old female patient with MG under local anesthesia is described. The clinical features and treatment of MG have also been discussed along with the use of medications, perioperative considerations, and anesthetic management (4).

CASE REPORT

A 47-year-old female patient was referred to the oral and maxillofacial surgery department for an oroantral fistula in the left maxillary molar region. Her medical history included MG and thymectomy. The medications included azathioprine and pyridostigmine. During pre-operative examination, the patient had muscular weakness such as ptosis, diplopia, dysphagia, decreased ability to swallow, and fatigue. During clinical examination, an oroantral fistula in the left maxillary molar region was observed. Radiological examination

with panoramic radiography and cone beam computed tomography revealed perforation of the floor of the left maxillary sinus. Based on the clinical and radiographic findings, a diagnosis of oroantral fistula was made (Figure 1). The treatment plan included double-layered closure of the oroantral fistula with a buccal fat pad and oral mucosa.

a. Anesthetic Management

Anesthetic and postoperative medical management were planned according to the consultation with the patient's neurologist. The operation was performed under local anesthesia. The patient was ordered to take her medications 1.5 h before surgery. Non-invasive blood pressure, heart rate, and peripheral oxygen saturation were monitored and recorded 5 min apart.

Posterior superior alveolar anesthesia and local infiltration anesthesia were performed using 2 carpules containing 2% lidocaine buffered with 1:100,000 epinephrine.

b. Surgical Management

A trapezoidal mucoperiosteal flap was created using a sulcular incision along the alveolar ridge. The oroantral fistula was explored, and debridement of the maxillary sinus was performed by cadwell luc approach (Figure 2) Considering the anatomical position of the papilla parotidea, a 1 cm vertical incision was made posterior to the zygomatic buttress. Buccal extension of Bichat's fat pad was explored by blunt dissection through the buccinator muscle. The necessary amount of Bichat's fat pad was mobilized with light pressure to completely cover the oroantral fistula entirely (Figure 3) (5,6). The

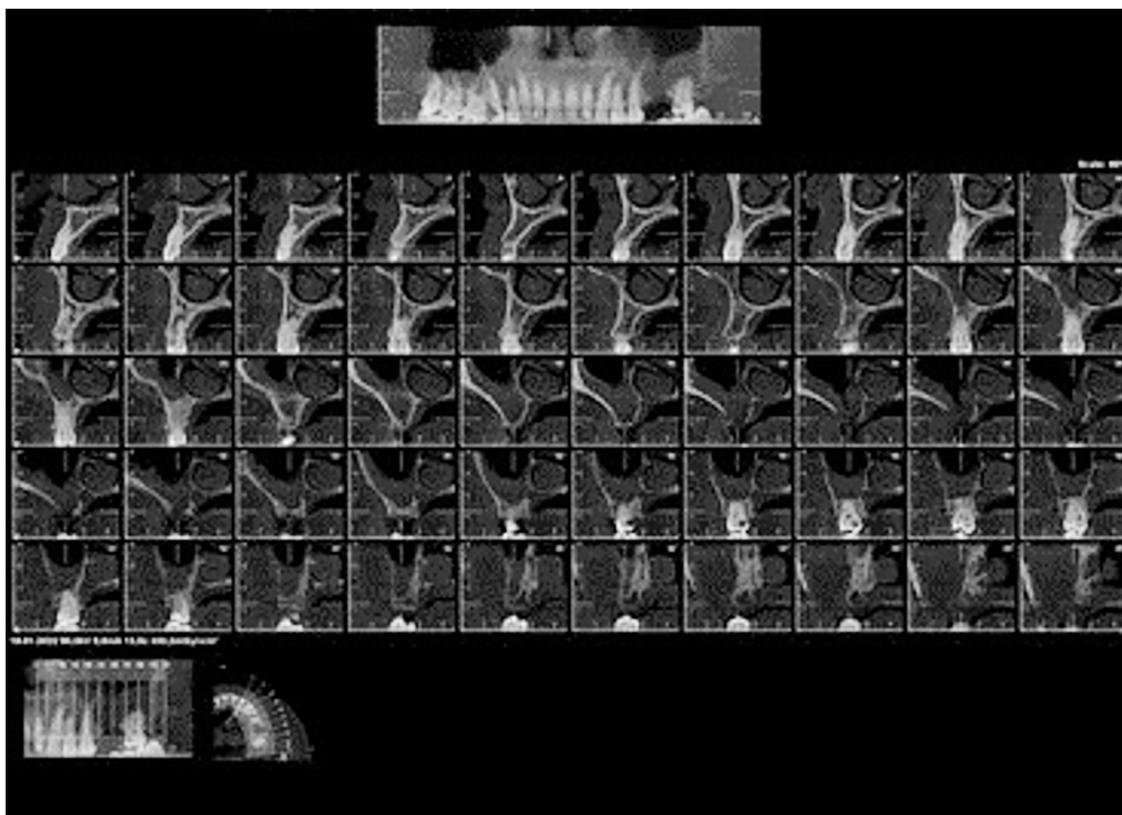


Figure 1. CBCT imaging showing the oroantral fistula and sinus pathology.

CBCT: Cone-beam computed tomography.

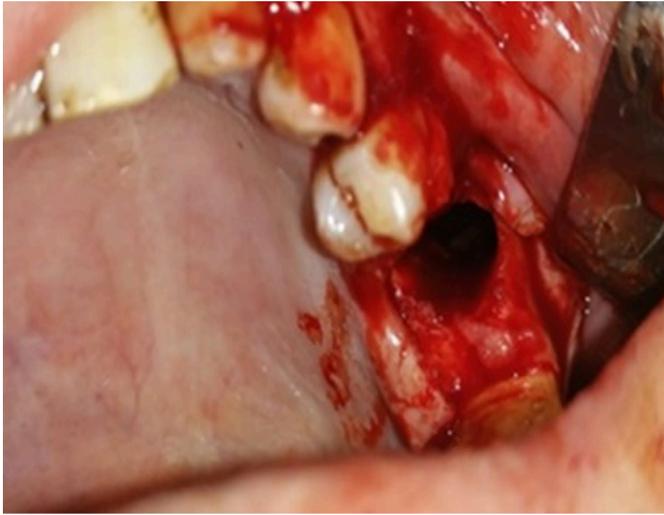


Figure 2. Intraoperative view of the oroantral fistula.

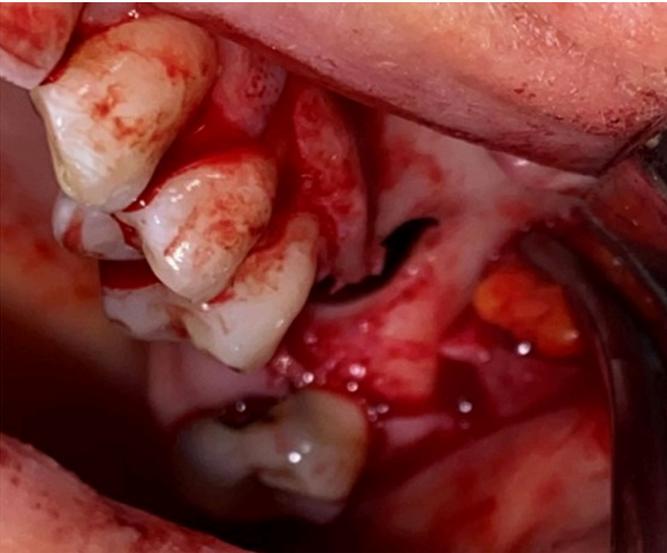


Figure 3. Bichat adipose tissue was used to close the entire defect.

mucoperiosteal flap was sutured with 4.0 resorbable suture without tension (Figure 4).

Amoxicillin 500 mg (Devamox, Deva, İstanbul, Türkiye) and paracetamol 500 mg (Parol, Atabay, İstanbul, Türkiye) were prescribed twice daily for 7 days. During the postoperative period, the patient was followed up in the recovery room, and blood pressure, oxygen saturation, and heart rate were monitored for 2 h. The postoperative recovery period was uneventful, and no anesthetic complications were observed.

DISCUSSION

MG is an autoimmune disorder characterized by skeletal muscle weakness and fatigue (3). Antibody-mediated autoimmune attack directed toward the acetylcholine receptors may cause muscular weakness and fatigue (7). The disease is most frequently observed in the muscles of the eyes, face, neck, and shoulders (3). The first peak for women occurs in the second and third decades, whereas the peak in men is observed in the fifth and sixth decades (7).



Figure 4. The mucoperiosteal flap was sutured without tension.

Myasthenic crisis is a result of severe involvement of the respiratory muscles and may lead to a life-threatening respiratory collapse, which may necessitate mechanical ventilation (3). Infections, surgical procedures, and emotional stress may be the precipitants of myasthenic crisis (1). In case of elective surgery, the time period when the patient is on minimal medication and in a stable phase should be selected (8). In this case, the medical history revealed that the patient had been stable for 4 years.

Dental treatment is a stressful procedure because of the fear of pain, local anesthesia, and the dental setting. Stress may trigger a myasthenic crisis and should be taken into consideration before the surgical procedures (7). Morning appointments with a short duration should be preferred to minimize muscle weakness (9). Patients with MG also have greater muscular strength in the morning. Oral anticholinesterase agents should be administered 1.5 h before the surgical operation. Therefore, the effect of medications can be maximized during the treatment session (7,9). In this case report, the patient was recommended to take her medications 1.5 h before the procedure and scheduled for the morning appointment.

The commonly prescribed drugs and anesthetics used for dental procedures have a potential risk of inducing muscle weakness and fatigue, thereby leading to respiratory (8). Dental treatments may be performed under local anesthesia (9). Ester-type local anesthetics are contraindicated, whereas amide local anesthetics can be safely applied (4,9). Ester-type local anesthetics are primarily inactivated by plasma cholinesterases and have decreased efficacy in MG patients on AChE treatment (10). Lidocaine, including 1:100,000 epinephrine, is advantageous for maximizing anesthesia efficiency at the surgical site, while minimizing the total anesthetic dose (4). Local infiltration, intraligamentary, and intrapulpal injections may help to reduce the doses of local anesthetics in comparison with regional blocks (3). Bilateral inferior alveolar nerve blocks may cause swallowing difficulties and must be avoided in MG patients (3). General anesthesia is also preferred for specific conditions. Local anesthesia (using amide local analgesics in minimal dosage) is preferred to general anesthesia (9). Anti-cholinesterase agents may increase the effect of succinylcholine and inhibit the effect of

non-depolarizing neuromuscular blocking drugs (11). Sensitivity to non-depolarizing agents has been reported in patients with minimal effected patients. Intermediate and short-acting non-depolarizing agents should be preferentially (12). Volatile anesthetics enhance the effects of non-depolarizing agents; therefore, it is important to be aware of their impact on patients with MG (13). In patients with MG, barbiturates and propofol can be used for general anesthesia without unwanted effects. Opioid analgesics in therapeutic concentrations do not interfere with neuromuscular transmission; however, central respiratory depression may appear when opioids are (12). Considering these factors, we preferred to perform the surgical treatment under local anesthesia instead of general anesthesia.

The oroantral communication is an unnatural ostium-mucosal connection between the maxillary sinus and oral cavity (5). In the literature, the technique of closing the oroantral fistula with a Bichat fat pad has been described as a successful technique (5,6). The advantages of using a buccal fat pad include easy access, minimal dissection, excellent blood supply, reduced donor site morbidity, low risk of infection, short operation time, and minimal scar formation (6). Based on these advantages, Bichat's fat pad was preferred for the treatment of the oroantral fistula in a patient with MG.

MG is a rare autoimmune disorder that presents challenges for oral and maxillofacial surgeons. Therefore, close monitoring of vital signs increases the chance of early diagnosis of complications that may occur in the patient. Moreover, to avoid complications that may be caused by the disease, it is essential to understand the nature of the disease and make the right choice of medication.

Ethics

Informed Consent: It was obtained.

Authorship Contributions

Concept: T.K., Design: E.B.Y., Supervision: E.B.Y., Resources: Y.K., Materials: N.Ş., Data Collection or Processing: T.K., Analysis or Interpretation: Y.K., Literature Search: T.K., Writing: E.B.Y., Critical review: Y.K.

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