



კლინიკური შემთხვევის აღწერა: პაციენტი ცეცხლნასროლი ჭრილობებით ყბა-სახის მიდამოში

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1. თბილისის სახელმწიფო სამედიცინო უნივერსიტეტი, სტომატოლოგიის ფაკულტეტი, თბილისი, საქართველო
2. ალექსანდრე ალადაშვილის კლინიკა, ყბა-სახის ქირურგიის დეპარტამენტი

აბსტრაქტი

უკანასკნელ წლებში თანამედროვე მედიცინის ერთ-ერთ მნიშვნელოვან გამოწვევად იქცა ყბა-სახის მიდამოს ცეცხლნასროლი დაზიანებები, რომელთა გამომწვევე მიზეზებს შორის პირველ ადგილზეა კრიმინალური ტრავმები, მეორე ადგილს იკავებს სუიციდის მცდელობა, ხოლო მესამე ადგილს - იარაღისადმი გაუფრთხილებელი და უცოდინარი მოპყრობა.

ზოგადად, ყბა-სახის ორგანოების ცეცხლნასროლი დაზიანების ხარისხი დამოკიდებულია ქსოვილების ელასტიურობაზე, სიმტკიცეზე, ჰისტოლოგიურ შენებასა და გასროლის მანძილზე. ეს ყველაფერი კი, თავის მხრივ, კლინიკურ სურათსა და მკურნალობის მეთოდზე აისახება.

ამ მხრივ, საინტერესო კლინიკურ შემთხვევას წარმოადგენს 38 წლის მამაკაცი, რომელიც ალ.ალადაშვილის სახ. კლინიკაში შემოყვანილ იქნა 2022 წლის მაისში. ეს გახლდათ გლუვლულიანი იარაღით მიყენებული თვითდაზიანება. აღინიშნებოდა ქვედა ყბის მთლიანობის დარღვევა; ლოყის, ქვედა ყბის და ყვრიმალის მიდამოებში რბილი ქსოვილების დეფექტი, დიდი რაოდენობით უცხო სხეულების (ტყვიის საფანტი) არსებობით.

დაზარალებულს გაეწია პირველადი დახმარება, რაც ეფუძნებოდა სწორ დიაგნოსტიკას, ასფიქსიისა და ტრავმული შოკის საწინააღმდეგო ღონისძიებებს.

ზუსტი დიაგნოსტიკისთვის გადაღებულ იქნა CT კვლევა და პაციენტი მომზადდა საოპერაციოდ.

ოპერაციის მსვლელობისას:

- ანტისეპტიკური დამუშავებისა და სისხლდენის შეჩერების შემდეგ ჩატარდა ჭრილობის გულდასმით რევიზია და ნანახი უცხო სხეულების მოცილება;
- ნეკრექტომია,
- ქვედა ყბის ოსტეოსინთეზი ტიტანის მინიფირფიტითა და ჭანჭიკებით;

- რბილი ქსოვილების დეფექტის დახურვა მოხდა როტირებული ნაფლეთებით, რომლის წარმოსაქმნელად, როგორც მოგეხსენებათ, კანზე ტარდება დეფექტის ერთ-ერთი კიდიდან დაწყებული მოხრილი, ნახევარკალოვანი განაკვეთი, შემდგომ მის მიერ შემოსაზღვრული უბანი აითიშება, წარმოქმნილი ნაფლეთი მოტრიალდება ცენტრალური წერტილის ირგვლივ და მოთავსდება დეფექტის არეში.

საბოლოოდ, ოპერაცია წარიმართა ყოველგვარი გართულების გარეშე და დასრულდა სასურველი შედეგით. პაციენტი ამჟამად გადის რეაბილიტაციას და გადამისამართებულია პლასტიკურ ქირურგთან ნაწიბურის კორექციისთვის.

ამგვარი კლინიკური შემთხვევების ერთ-ერთი მნიშვნელოვანი ნიუანსი არის ის, რომ სახის მძიმე დაზიანებისას წარმოშობილ დეფექტებს პაციენტები უკიდურესად მძიმედ განიცდიან და გაურბიან საზოგადოებასთან ურთიერთობას. აქედან გამომდინარე, კომუნიკაციური, სოციალური ფუნქციის აღდგენა დამაკმაყოფილებელი ესთეტიკური მდგომარეობისა და სხვა ფიზიოლოგიური ფუნქციების (ღეჭვა, ყლაპვა, მეტყველება, სუნთქვა) აღდგენასთან ერთად დღესდღეობით დიდ გამოწვევას წარმოადგენს ყბა-სახის ქირურგებისთვის.

ვთანხმდებით იმაზე, რომ ყბა-სახის მიდამოს ცეცხლნასროლი ჭრილობები ფართო მასშტაბის დაზიანებას გულისხმობს და სპეციფიკურ მიდგომასაც მოითხოვს დიაგნოსტიკისა და მკურნალობის თვალსაზრისით. რაც შეეხება გამოჯანმრთელების პროცესს, მისი მიმდინარეობა დიდადაა დამოკიდებული დაზიანების ზონის ანატომიურ-ფიზიოლოგიურ თავისებურებებსა და დაზიანების სიმძიმეზე.

საკვანძო სიტყვები: ყბა-სახის ცეცხლნასროლი დაზიანება, რეკონსტრუქციული ქირურგია, სუიციდის მცდელობა.

Clinical case report: a patient with gunshot wounds in the maxillofacial region

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Abstract

In recent times, gunshot injuries of the maxillofacial area are challenge of modern medicine. The main causes are criminal injuries, the second is suicide attempts and the third is careless and ignorant handling of weapons. Maxillofacial gunshot injuries require proficiency to determine a suitable treatment plan and surgical intervention. Treatment in these patients is very challenging. Moreover, posttreatment infections are a serious problem in such cases. Thus, step-by-step surgery is essential to obtain a better result in these patients. The majority of maxillofacial gunshot wounds are caused by suicide attempts. Today the gunshot wounds were caused mainly by assaults (37.3%), followed by aggression (33.3%), attempted homicide

(26.7%) and attempted suicide (2.7%). There was a predominance of the 21-to-30-year age group (38.7%) and the male gender (92%).

A case: it was a suicide attempt by smoothbore gun. A 38 years old man presented fracture of mandible, defect of soft tissues in the lower jaw, cheek and zygomatic area, with the presence of a large number of foreign bodies (buckshot). The most common clinical signs were pain, edema and trismus.

- With mandible fractures, paresthesia, increased salivation, malocclusion, bone exposure, deviation of mouth opening and premature contact were noted.
- When the zygomatic region was affected, otorrhagia, epistaxis, diplopia and paresthesia were noted.
- In maxillary fractures, Oro-antral and Oro-nasal communication predominated.

Finally, the operation was completed without any complications and ended with the desired result. The patient is currently undergoing rehabilitation and has been referred to a plastic surgeon for scar correction.

One of the important nuances of such clinical cases is that the patients suffer from the defects caused by severe facial injuries and avoid social interaction. Therefore, restoration of communicative and social function along with satisfactory aesthetic condition and restoration of other physiological functions (chewing, swallowing, speech, breathing) is a big challenge for maxillofacial surgeons today.

We agree that gunshot wounds of the maxillofacial area involve extensive damage and require a specific approach in terms of diagnosis and treatment. As for the healing process, its progress depends greatly on the anatomical-physiological features of the damaged area and the severity of the damage.

Keywords: maxillofacial gunshot injury, reconstructive surgery, suicide attempt.

Introduction:

Oral and maxillofacial gunshot injuries pose a significant challenge for reconstructive surgeons who are faced with a mixture of extensive soft tissue and bone defects. These tissue injuries are triggered during wars and conflicts, aggression, accidents and suicide attempts.

Gunshot wounds result from the transmission of kinetic energy from the bullet to the tissue with which it collides, with greater projectile speed leading to greater damage .

The initial wound depends on the impact of the bullet, with the occurrence of an air pressure wave within two milliseconds that distends the tissue, forming a temporary spindle-like pulsating cavity fourfold larger than the bullet. The pulsation of the temporary cavity aspirates bacteria from the skin to its interior, characterizing an additional source of infection.

To penetrate the skin, the bullet needs to be traveling at a velocity of 50 to 70 m/s, which causes abrasion to the dermis and epidermis. Axon degeneration occurs in the nerve tissue, giving rise to anesthesia, paresthesia and paralysis. The rigid bone is fragmented. A study on

ballistic impacts in the face established greater resistance to impacts to the frontal region, whereas the mandible and zygomatic region are considerably more fragile respectively.

Knowledge on factors such as impact velocity, release rate of kinetic energy, retardant effect, bullet design, bullet mass, type of weapon and ballistic coefficient is essential to proper treatment

Clinically, patients having suffered gunshot injuries may exhibit signs of shock, neurological impairment, rapidly expanding hematoma and obstruction of the airways. Thus, immediate priority treatment is the control of bleeding and unblocking the airways. In the face, tooth and bone fragments act as secondary projectiles, causing damage far from the original entry wound, which is difficult to diagnose. Analysis with both profile and anterior-posterior radiographs allows the adequate localization of projectiles.

Therapeutic conduct regarding facial damage is based on the analysis of the projectile and the treatment of bone fractures

Control Resuscitations (DCR) and Damage Control Surgery (DCS) have recently been emphasized. DCR is the non-surgical technique to reverse the lethal triad of the combination of acidosis, coagulopathy and hypothermia that usually follows hemorrhage from such injuries. DCS involves immediate hemorrhage control, reduction of contamination and temporary wound closure which should be initiated simultaneously with the involvement of all medical personnel in trauma management. Studies have shown the benefit of combined DCR and DCS in the management of maxillofacial and neck trauma.

The current review is to share our experience in the management of gunshot injuries to the maxillofacial region adopting the DCS and early definitive surgical intervention protocols.

A case report

Here, we describe a case report of maxillofacial gunshot injuries in 38-year-old man with a history of suicide attempt by a gun. He was referred to the hospital after trauma immediately. The patient suffered from mandibular fractures and deformity of his face. Soft tissue defect in the area of the cheek, mandible and zygomaticus, with the presence of large foreign bodies also.



Figure 1. Avulsive injuries of soft tissue and skin in mandibular, cheek and zygomatic region

The patient received first aid, based on correct diagnosis, measures against asphyxia and traumatic shock. A CT scan was taken for accurate diagnosis and the patient was prepared for surgery.

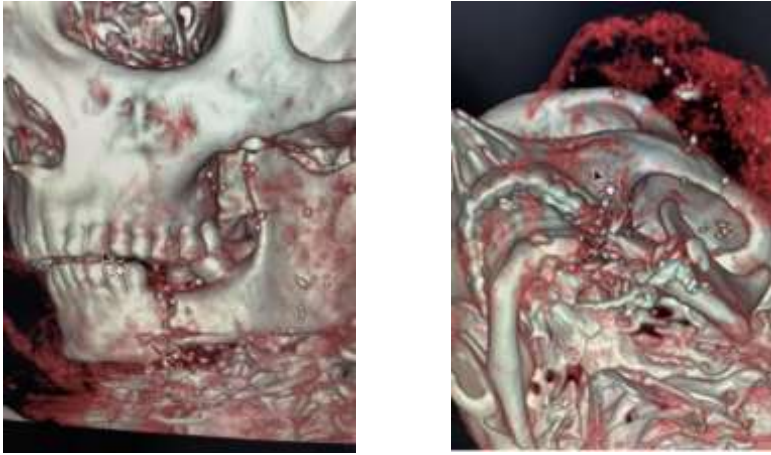


Figure 2. Anteroposterior view of preoperative 3-D CT scan showing comminuted fracture of mandible resulting from gunshot injuries.

During operation:

1. After antiseptic treatment and stopping of bleeding, a careful revision of the wound was performed and the foreign bodies were removed;
2. Necrotomy
3. Osteosynthesis of the mandible with a titanium miniplate and screws;
4. The soft tissue defect was closed with rotated flaps



A



B

Figure 3. A. Necrotomy; buckshot were extracted from the maxillofacial area

B. Intraoperative photo. Mandibular osteosynthesis with titanium miniplate and screws.



Figure 4. Reconstruction of the defect with rotation flap



C

D

Figure 5. C. The second day after operation

D. Seventh day after operation



Figure 6. 14 days later, the defect became small with new soft tissue replacement

A control panoramic radiograph was performed 1 month after the operation. Visualized metal-osteosynthesis, satisfactory positioning of the titanium miniplate and screws.



Figure 7. A panoramic radiograph. 1 month after the operation

The patient is currently undergoing rehabilitation and has been referred to a plastic surgeon for scar correction.

Methods Information such as etiology of injury, age and sex were retrieved from the daily data of the accident and emergency department. Classification of anatomical zones of the neck was based on Monson classification where Zone 1 extends from clavicles to cricoid, zone II from cricoid to angle of mandible, and zone III from angle of mandible to skull base. Entry and exit of the projectile were also noted. Also recorded were types of gunshot injury namely; penetrating, perforating, avulsive and combination and the adopted treatment protocols such as DCS, early definitive surgery, closed reduction and fixation as well as conservative management.

Discussion

For the past years, gunshot injuries became topical for maxillofacial surgeons. All injuries belong to the category of heavy traumas, but wounds due to suicide attempts using are considered as especially heavy - extensive injury of soft and hard tissues with tissue defects, chin, nose, upper jaws were torn off

Basic principle of surgical treatment of gunshot wounds is - one moment primary surgical treatment of wounds with fixation of bone fragments and application of plastic surgery methods to regenerate tissue defects.

Surgical management consists of three stages:

- ✓ Debridement
- ✓ Fracture fixation
- ✓ Primary closure

At the first stage, management of the involved soft tissue includes decontamination and debridement of the wound as well as removal of all loose fragments, projectiles, and nonviable tissues.

As for extensive and contaminated wounds, the best choices are irrigation with pulsed lavage system and prophylactic antibiotic therapy (immediately before surgery and continuing through the procedure, but not more than 24 hours post procedure). Antibiotic choices can be penicillin, cephalosporin and clindamycin that prescribed according to the circumstances. After debridement, the critical plan involves skeletal fixation and reconstruction of comminuted bone.

In cases with fractured mandible, it is initially important to regain mandibular continuity and occlusion. Fixation of fractured bone can be done by titanium plates and screws. Bone grafts can be used in defects larger than 5 mm in the midface and mandible regions.

In gunshot patients, it is better to apply a microvascular flap because in these defects, soft tissue often does not have a good quality. Free fibular osteocutaneous flap is a standard method to reconstruct mandibular defects larger than 6 cm. To obtain an optimal esthetic and a functional result, soft tissue reconstruction is so important in order to prevent infection. However, the best result comes from concurrent bony-soft tissue reconstruction.

Additionally, another important issue which causes lots of challenges in such patients is the infection which occurs after the treatment. It can be caused by bony sequestration, hopeless teeth, loose screws in the area, and opportunistic infections (as a result of patient's being hospitalization for long time). Even choosing suitable antibiotics to control their infections is challenging.

According to the experience, step-by-step treatment of these patients offers the best results. However, due to mental problems of these patients, since most of them have attempted suicide before visiting the doctor, they are truly difficult to manage. Multi-specialty management protocol include psychologists and psychiatrists for the management of anxiety and depression, low self-esteem and low quality of life, Post-Traumatic Stress Disorder Figure.

Conclusions

It should be noted that delayed and inadequate primary surgical treatment leads to the development of persistent, hard-to-correct scar deformities, which require multi-stage complex surgical interventions, which do not always give satisfactory results.

One of the important nuances of such clinical cases is that the patients suffer from the defects caused by severe facial injuries and avoid social interaction. This needs special multidisciplinary management protocol including psychologists and psychiatrists.

Therefore, restoration of communicative and social function along with restoration of satisfactory aesthetic condition and other physiological functions (chewing, swallowing, speech, breathing) is a big challenge for maxillofacial surgeons today.

In conclusion, we all agree that gunshot wounds of the maxillofacial area involve extensive damage and require a specific approach in terms of diagnosis and treatment. As for the healing

process, its progress depends greatly on the anatomical-physiological features of the damaged area and the severity of the damage.

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