

CLINICAL CASE

INCIDENTALLY DISCOVERED PULMONARY NEOPLASIA IN A PATIENT WITH POSTTRAUMATIC AVULSION OF CALCANEAL REGION - A BLESSING IN DISGUISE**D. Dumitrescu^{1,3}, C. Savlovschi^{1,3}, Meda Comandașu^{1,3}, D. Șerban^{1,3}, B. Socea^{2,3}, V. Dumitrescu^{1,3}**¹Surgical Clinic IV of the Emergency University Hospital Bucharest²Surgical Clinic of the Emergency Clinical Hospital “Sfântul Pantelimon”³“Carol Davila” University of Medicine and Pharmacy, Bucharest

Corresponding author: Meda Comandașu

Phone no: +40722654911

E-mail: meda.comandasu@gmail.com

Abstract

In the last century, foot and ankle related traumatic pathology became more and more frequent. A 75 years old male with associated peripheral arterial disease presented himself in ER with an infected, contusive wound at the left foot sole and calcaneum. After local treatment (debridement, hyaluronic acid derivatives and antibiotics), the wound evolution was good. During the extensive clinical and paraclinical investigations preceding cardiovascular surgery for the pre-existing peripheral arteriopathy), a pulmonary tumor in resectable stage was discovered. So, the patient underwent pulmonary bilobectomy and afterward a cutaneous free groin flap reconstruction of the foot. The local wound evolution was good, and the patient could stand and walk after a month. He is currently under oncological supervision. Although skin grafts are recommended in lesions affecting weightbearing zones, in this case, given the arteriopathy, it was preferred a free skin flap. In this case with complicated, intricated pathology, the traumatic episode played also a beneficial role by helping the early diagnosis of an operable lung cancer.

Keywords: *posttraumatic avulsion, calcaneum, lung cancer, free skin flap***Introduction**

During evolution, the man adopted biped position, therefore the importance of pelvic members grew because of supporting the body weight and because feet are the main pillar of statics and dynamics of human organism.

In the last century, as a consequence of industrialization, automobile invention and increase of populational density, traumatic pathology, especially ankle and foot related, is continuously growing. In US, ankle and foot

traumatism represent approximately half of total traumatic lesions of the inferior members [1]-[3].

Case presentation

This is the case of a 75 years old male which underwent a traffic accident (pedestrian) and presented himself in IV Surgical Ward in Emergency University Hospital Bucharest being transferred from a county surgical unit, four days after the accident.

Local clinical examination shows an infected, contusive wound at the left foot sole and calcaneum, with necrotic tissue, sutured per primam, with foreign bodies inclusions (dirt), with a lack of substance of approximately 10x15 cm (type II in Hidalgo and Shaw classification) [4] (Figure 1). The wound affects the skin, subcutaneous cellular tissue, muscle layer and partly calcanean periosteum. By implicating calcaneum, the lesion impairs plantar support area of the body weight, with consequences upon equilibrium and walking.



Figure 1 – Extensive laceration of sole and calcaneal region affecting skin and muscular tissue.

Clinical examination shows a normal weighting patient, non-smoker (abstinent for 25 years), with moderately high blood pressure (150 over 90 mm Hg), under treatment with enalapril, indapamide, atorvastatin, acenocoumarin, pentoxifylline with stage IV Fontaine peripheral arterial disease.

As a result, the surgeon opted for surgical intervention. All the necrotic debris were resected just above calcaneum by the point that healthy tissue appeared, and bleeding was present. The lesion was largely opened and washed with oxygenated water, betadine and warm saline solution (Figure 2). A mesh was introduced in the wound. Local bacteriological exam showed *Klebsiella* spp., for which linezolid and cefuroxime IV treatment was instituted.



Figure 2 – The wound after debridement and lavage.

The wound was dressed daily with hyaluronic acid derivatives. After 7 days of treatment the wound was again debrided (Figure 3). The bacterial culture was sterile. Topic treatment with hyaluronic acid derivatives and antibacterial agents continued for another three weeks.



Figure 3 – Calcaneal region after seven days of treatment.

A cardiovascular surgeon was consulted for concomitant pathology (peripheral arterial disease, stage IV Fontaine) in order to perform surgical and endovascular re-vascularization.

Abdominal angiography with digital subtraction showed non-graftable arteries, with critical stenosis. An iliac stent was mounted, and the vascular surgeon proposed left inferior limb amputation.

During the extensive clinical and paraclinical investigations preceding cardiovascular surgery, the patient was diagnosed with mitral valve insufficiency,

tricuspid insufficiency, but also a right lung tumor. The patient was transferred to Thoracic surgery and the tumor was removed (inferior right bilobectomy). Histopathology report confirmed pulmonary acinar adenocarcinoma without invasion of the bronchi resection limit, without regional lymph node invasion (stage T2aN1).

Patient's local evolution was slow, but definitely favorable, with the beginning of granulation, so it has been decided to temporize radical surgery intervention such as thigh amputation, recommended by the cardiovascular surgeon. The patient was referred to Plastic surgery and abided a cutaneous free groin flap reconstruction of the foot (Figure 4).



Figure 4 – The final aspect of calcaneal region after plastic surgery reconstruction.

The local wound evolution was good, without any postoperative complications. Walking and bipedal position are resumed after one month. The patient is currently under oncological monitorization.

Discussions

Posttraumatic lesions of inferior limbs were described from ancient times. First written mention dates from Roman period [2] and the elective treatment was established as being the amputation of affected limb. From those times on, medicine has evolved, as well as the treatment possibilities.

Given the extension, depth, localization and etiology, posttraumatic lesions of the foot are classified in three types (Hidalgo) [4]:

- I. small soft tissue loss less than 3 cm²;
- II. large tissue loss greater than 3 cm², without bone involvement;
- III. large tissue loss with bone involvement.

Lesions type I can be treated medically. Lesions type II and III must be surgically treated, using free skin flaps or skin grafts [1],[4],[5]. Although some authors [2] recommend free skin flaps, in lesions which affects weightbearing zones (sustaining bodyweight), skin grafts are much more resistant. In this case, considering the pre-existing arteriopathy, the surgeon preferred to apply a free skin flap, with viable vascularization.

Conclusion

This paper presents a case with complicated, intricate pathology: cardiological, vascular, posttraumatic and neoplastic. Patient's evolution, torpid at the beginning, improved gradually. He recovered with relatively little sequelae, with functional capacity partly preserved, without the loss of inferior limb.

The patient presented an association of atherosclerotic and posttraumatic pathology in the same leg and, although dramatic, the acute traumatic episode had also a beneficial role, making possible the early diagnosis of a pulmonary cancer and constituting a blessing in disguise.

References

- [1]Chen Y, Liu L. Clinical analysis of 54 cases of large area soft tissue avulsion in the lower limb. *Chinese J Traumatol - English Ed.* 2016;
- [2]Santanelli F, Editor C. *Foot Reconstruction System.* 2017;1–2. Available from: http://orthosol.com/wp-content/uploads/2014/06/OS-TD-00137_18-iss-3-Foot-Reconstruction-System-Product-Rationale.pdf%0Apapers3://publication/uuid/F89B0080-7B51-4CA5-AD9C-4BF884426C0B
- [3]Aprilie M, Tanasescu C, Patruseu D, Perisanu S, Chis F, Antonescu M. Difficult case of toraco-abdominal injury after motor vehicle accident. 2011;(2):265–8.
- [4] Hidalgo D, Shaw W. Reconstruction of foot injuries. *Clin Plast Surg.* 1986;13(4):663–80.
- [5]Smith A, Sloan J, Wass A, Draycott S. Soft tissue injury commissioned series: 6 Lower leg, ankle and foot. *Emerg Med J.* 2009 Mar 1;26(3):193 LP – 200.
- [6]Tobin GR. Muscle and Musculocutaneous Flaps. *Plast Reconstr Surg.* 2006;84(5):850–1.