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Case report

FRACTURE OF THE TIBIAL PLATEAU SCHATZKER V AND SOFT TISSUE NECROSIS OF THE DISTAL TIBIA IN A PATIENT WITH UNCONTROLLED DIABETES – CASE REPORT

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Abstract

Tibial plateau fractures or proximal tibial fractures occur mostly due to car accidents, fall from a height or during sports activities. Usually these are injuries sustained due to a great force, and because of the proximity of the bone tissue to the skin they are often accompanied by a significant damage of the surrounding soft tissue. Having in mind the injuries of the soft tissue, an appropriate definitive plan is important. Certain plans need to be focused on the presence of blisters, open injuries and compartment syndrome.

We present a case of a 57-year-old patient who was admitted to the University Clinic for Traumatology due to a lower leg fracture as a result of high-energy trauma. The patient was injured in a car accident and suffered a platotibial fracture of the right leg according to the Schatzcker classification type V, and a patellar fracture without dislocation.

Despite the successful surgical treatment, the patient developed infection distal of the operated area, after which a necrosis of the soft tissues ensued, followed by a compartment syndrome. This type of complication has been described in the literature. We cannot be certain about the origin of the infection, but the obesity and the uncontrolled diabetes are definitely increasing the risk of infection and delayed wound healing.

Keywords: tibial plateau fracture, Schatzker type V, compartment syndrome

Introduction

Tibial plateau fractures or proximal tibial fractures occur mostly due to car accidents, fall from a height or during sports activities[1]. Usually these are injuries sustained due to a great force, and because of the proximity of the bone tissue to the skin they are often accompanied by a significant damage of the surrounding soft tissue[2]. Having in mind the injuries of the soft tissue, an appropriate definitive plan is important. Certain plans need to be focused on the presence of blisters, open injuries and compartment syndrome[3,4]. All of these factors affect the surgical treatment, the plan of whether an external fixation should be placed, as well as the location of the incisions during the definitive plan of the inner fixation.

For a positive outcome from the surgical treatment of proximal tibial fractures, it is of primary importance to have a suitable treatment of the soft tissue injuries. It is important to have in mind the fact that the bone tissue is in immediate proximity to the skin, hence the soft tissue damage can occur both on the inside and the outside (of the bone), which makes these types of injuries complex in their treatment. At the same time, the percentage of possible complications rises exponentially[5,6]. When considering skin proximity, the medial proximal part of the tibia, tibial tubercle with sartorius, gracilis and the semitendinous muscle have to be in mind. The position of the peroneal nerve, which spins around the head of the fibula and is relatively exposed to these types of injuries, may be a huge problem in the definitive treatment.

Another important aspect in these types of injuries is the mechanism of the injury. The most important mechanism of injury is the direct impact which occurs in car accidents, sports injuries and industrial injuries. This means that the injuries have been caused under the impact of a great force and may potentially cause major damage of the soft tissues[7].

Case report

We present a case of a 57-year-old patient who was admitted to the University Clinic for Traumatology due to a lower leg fracture as a result of high-energy trauma. The patient was injured in a car accident and suffered a platotibial fracture of the right leg according to the Schatzcker classification type V, and a patellar fracture without dislocation (Figure 1,2). The patient had multiple comorbidities including: uncontrolled diabetes, high blood pressure, gastritis, fat metabolism disorder and hypothyroidism. Clinical and paraclinical investigations were made, after which an indication for surgical treatment was made. On admission, transcalcaneal extension was placed. Two weeks later, the patient was treated surgically, with open reduction and fixation of the fracture with two locking plates and screws (Figure 3,4)

Fig. 1. CT scan – coronal view showing fracture of the tibial plateau (Schatzcker V)

Fig. 2. CT scan – axial view revealing fracture of the patella

After the surgery, there were no early signs of infection, only serous discharge from the distal part of the tibia. The discharge was clear at first, and later it turned greenish with signs of a compartment syndrome. Next, the wound was swabbed, after which the presence of *Corynebacterium* GR JK was confirmed, while at the medial part of the tibia *Enterococcus* vancomycin resistant (VRE) - *Enterococcus Gallinarum* was isolated (Figure 5) The infection was treated with antibiotics according to the antibiogram.

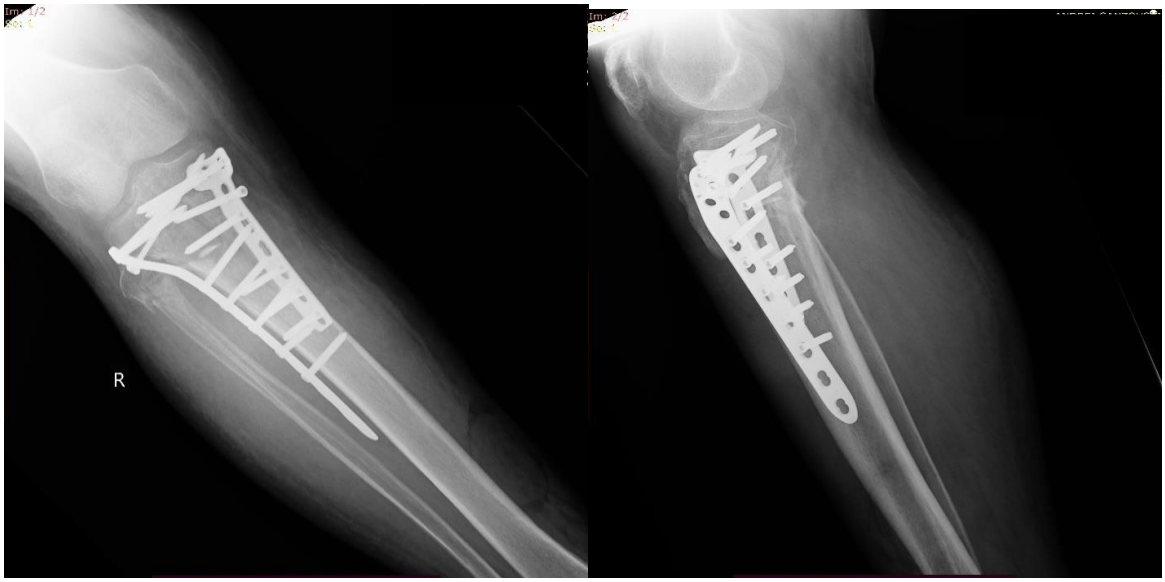

Fig. 3 and 4. Open reduction of the fracture and fixation with two locking plates and screws

Fig. 5. Postoperative wound infection with *Corynebacterium* GR JK, Enterococcus vancomycin resistant (VRE) - *Enterococcus Gallinarum*

The patient was hospitalized for 14 days at the University Clinic for Traumatology. Necrectomy of the necrotic tissue was made, and the patient also received anticoagulant therapy. He was released from hospital in a good general condition, and an advice for regular wound dress and follow up at the University Clinic for Plastic Surgery.

Discussion

In the cases of bicondylar fractures of the proximal tibia (Schatzker V and VI) surgical treatment with two locking plates is the common practice. The incidence of this type of injury is greater among younger population, with male predominance since they are more active and take part in sport activities.

Prasad did research on the functional results from a surgical treatment with two locking plates for Schatzker V and VI platotibial fractures in patients with the average age of 40. The male population had a higher incidence than the female[10].

The most frequent cause of injures was car accident, followed by sports activities.

Neogi analyzed data of 32 patients, 24 of whom were involved in a car accident and 8 were involved in a fall[10].

As for the time of the execution of the definitive treatment, it all depended on the admission of the injured patient at the hospital, the severeness of the injury, the swelling, the accompanied injuries, previous anamnesis, and the need of additional testing, like MRI or 3D CT[8,9].

Singh *et al.* reported an incidence of 3.3% infection rate in their study, which was most commonly treated with debridement of the wounds, while administrating antibiotics after the bacteria was isolated from the operated wound. It was affirmed that the operative soft tissue should be treated and patients should be given antibiotics preoperatively, as well. The most frequently used antibiotics were the third generation of cephalosporins, usually half an hour prior to the surgery as well as in the first 3 days after the surgery. In the study by Yong Zhang only 9 out of 79 patients had infection[9].

The healing time is the time when the fracture is clinically manifested without any palpable pain, painless threading and radiographic bone consolidation. Prasad in his study reported that the average healing time was 14 weeks[10].

Conclusion

Despite the successful surgical treatment, the patient developed infection distal of the operated area, after which a necrosis of the soft tissues ensued, followed by a compartment syndrome. This type of complication has been described in the literature. We cannot be certain about the origin of the infection, but the obesity and the uncontrolled diabetes are definitely increasing the risk of infection and delayed wound healing.

Conflict of interest statement. None declared.

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