

## Infected late false aneurysm of the superficial femoral artery - case report

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**A 24-year-old Croatian soldier sustained explosive fracture of femur and after stabilization with AO external fixation an infected late false**

**aneurysm of the superficial femoral artery developed. The aneurysm was removed and the artery reconstructed by a safenous vein.**

**Key words:** infected false aneurysm

External skeletal fixators are used to immobilize open or comminuted fractures. Their use can be associated with many complications, mostly pin - related ones (2, 3, 12). Pin-track infections and chronic pin-track osteomyelitis occur frequently, but in general do not have particularly adverse consequences. Muscle or tendon impalement and neurovascular injuries have also described (2, 3, 4, 5, 11, 12, 13). Pin-related vascular injuries seem to be rare (2, 5, 12). We found only a few published case reports (1, 4, 12) and in several large series of treatment by external fixations these complications were absent (3, 7, 9, 10, 13). A patient treated recently at the General Hospital in Vinkovci experienced false aneurysm of the superficial femoral artery which developed at the tips of Steinmann pins. A false aneurysm may be misdiagnosed as an abscess (3, 8, 11). On the other hand, an infected false aneurysm of the superficial femoral artery has not been previously described.

### CASE REPORT

A 24-year-old Croatian soldier was wounded near Vinkovci in Eastern Slavonia on 10<sup>th</sup> October, 1992 and sustained explosive fracture of the right femur in trochanteric zone. We used skeletal traction through tibial tuberositas during four weeks, and after that the fracture was stabilized by an AO 130 angled plate. During extension, antibiotics were administered, as suggested by the Medical Headquarters of the Republic of Croatia (15).

After the wound had healed, the patient was sent

to rehabilitation centre, where he fell down and sustained fracture of the femur at the same location. The fractured angled plate was changed with an AO external fixation device (6) on January, 18<sup>th</sup> 1993. After two weeks of hospitalization, the patient was to rehabilitation centre again. Surgical examinations were done monthly and fracture healed correctly, but the developed a walk-related pain in the medial part of the thigh. X-ray examinations showed the two bottom Steinmann pins positioned too far medially (Figure 1).

Neurovascular status of the limb was not affected. We believed that the pain originated from the pin-muscle contact. The patient was admitted with a fever of 38° C and a swelling in the posterolateral part of the right thigh, both lasting for several days. Sanguinopurulent material was apparent along the three bottom pins, and a coagulase positive *Staphylococcus aureus* was isolated in the culture. Other signs of infection were present: leucocytes over 23,000/mm (3) and accelerated sedimentation. We made an incision of the lateral part of right thigh and diffuse soft-tissue inflammation was found. Femur was without signs of infection. The operation was ended by irrigation and drainage.

After the operation the temperature lowered but remained pathologicae. Two synergistic antibiotics (asodium fucidine and gentamycine) were administered. Five days later the patient developed a fever (40°C) and we noticed a swelling of the upper medial part of the right thigh. Following the incision of skin and femoral fascia, serious bleeding occurred. An infected false aneurysm of the superficial femo-



**FIGURE 1.**

**X-ray examination after external fixation. The two bottom pins are significantly prominent. SLIKA 1.**

**Rendgenska snimka nakon vanjske fiksacije. Dva donja čavla su značajno izražena.**

ral artery was found. It was obvious that it was caused by two prominent tips of Steinmann pins which pierced the A artery. The aneurysmatic sack was 12 x 8 centimeters big. Aneurysm was removed and the artery reconstructed by a 12-centimeter long autograft of the safenous vein. The two bottom pins were positioned laterally; one of them was removed easily and we believe that the infection occurred along that pin. The wound was drained and loosely closed. Postoperative angiography showed good result (Figure 2). Histopathological examination confirmed the operative diagnosis.

#### **DISCUSSION**

External fixators are frequently used in the treatment of grade II or III of open fractures (7, 9, 10, 11, 13). They combine rigid fixation of the fracture fragments with easy access to wounds and allow early mobilization of the patient (3, 10). However, com-

plications occur frequently (2, 5, 8, 10). Pin-track infection, delayed union, chronic pin-track osteomyelitis, and transfixion of muscle or tendon are most frequent complications (2, 3, 4, 5, 11, 12). Except for delayed union, all these complications are pin-related. Vascular injuries by external fixation have also been reported, but their incidence is low (2, 4, 5, 8, 11, 12). To our knowledge, late appearance of an infected false aneurysm of the superficial femoral artery in relation to a screw tip protruding through the medial cortex of the femoral shaft has not been reported. Late erosion of vessels has been discussed anecdotally or as a theoretical complication, but no specific case report exists (2, 5, 8, 12). Our case shows that the treatment of this complications is relatively simple if it follows the lines of war artery reconstruction (14). The best choice of graft is autologous venous graft placed in anatomical or extraanatomical way (14).



**FIGURE 2.**  
**Angiography after reconstruction of the superficial femoral artery. Arrows show safenous graft.**

**SLIKA 2.**  
**Angiografija nakon rekonstrukcije površne natkoljenične arterije. Strelica pokazuje venski graft.**

#### LITERATURA

1. Braitto W, Montanari C, Caracciolo F, Paroni G, Domenella G. False aneurysm of the anterior tibial artery in lower leg fractures treated with the Ilizarov external fixator. Case report. *Ital J Orthop Traumatol* 1992;18(1):135.
2. Chervu A, Quinones-Baldrich WJ. Vascular complications in orthopaedic surgery. *Clin Orthop* 1988; 235:275.
3. Green SA. Complications of external skeletal fixation. *Clin Orthop* 1983;180:109.
4. Jakim I, Kastanos K, Sweet MBE. Delayed presentation of a vascular injury by an Ilizarov external fixator. *Injury* 1993;24(2):135.
5. Kessler W, Hoffman R. Gefassverletzungen bei orthopädisch-traumatologischen Eingriffen. *Helv Chir Acta* 1985; 52(2):273.
6. Koržinec K, Pavlović K, Gregurić I, Koržinec M. CMC (Croatian Medical Corps) External Fixator for War Surgery. *Cro Med J* 1992;33(War suppl 1):71.
7. Labeau F. External fixator: treatment of choice in war traumatology. *Acta Chir Belg* 1985;85(4):251.
8. McCorkell SJ, Harley JD, Morishima MS, Cummings DK. Indications for angiography in extremity trauma. *Am J Roentgenol* 1985;145(6):1245.
9. Melendez EM, Colon C. Treatment of open tibial fractures with the Orthofix fixator. *Clin Orthop* 1989;241:224.
10. Oberli H. War surgery and external fixation. *AO/ASIF Dialoge* 1991;4(1):1.
11. Onusal E, Bedirhan MA, Sonmez B, Krgi A, Barlas C. Arterial complications following orthopaedic reconstructions. *J Cardiovasc Surg (Torino)* 28(6):731.
12. Paul MA, Patka P, Hauzen van EP, Koomen AR, Rauwerda J. Vascular injury from external fixation: case reports. *J Trauma* 1992;33(6):917.

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13. Rommens P, Gielen J, Broos P, Gruvez G. Intrinsic problems with the external fixation device of Hoffmann-Vidal Adrey: A critical evaluation of 117 patients with complex tibial shaft fractures. *J Trauma* 1989; 29(5):630.
14. Tonković I, Šoša T, Petrunić M, Čohadžić E, Romić B, Luetić V. Ratne ozljede krvnih žila. *Liječ Vjesn* 1991; 113(7-8):226.
15. Vodopija I, Francetić I, Tonković I, Kelenić S, Luetić V. Zaštita od infekcije nakon ranjavanja. *Liječ Vjesn* 1991; 113:289.
16. Wozniak JJ. A new suturless method for the anastomosis of blood vessels. *Biomater Med Devices Artif Organs* 1985; 13(1-2):51.
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## **Sažetak**

### **INFICIRANA KASNA LAŽNA ANEURIZMA POVRŠNE NATKOLJENIČNE ARTERIJE**

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Kod otvorenih prijeloma II i III stupnja najčešće se primjenjuje stabilizacija ulomaka vanjskom fiksacijom koja uključuje rigidnu fiksaciju s mogućnošću lakog pristupa zoni prijeloma uz ranu mobilizaciju bolesnika.

Pin-track infekcije, odgođeno cijeljenje kostoloma, kronički pin-track osteomijelitis, te transfiksacija tetiva ili mišića su dobro dokumentirane komplikacije ove metode.

Osim kod odgođenog cijeljenja, sve su komplikacije vezane uz čavao.

Korektno postavljanje čavala može svesti ove komplikacije na minimum.

Iako su zabilježene i vaskularne ozljede kod primjene vanjskih fiksatora, njihova incidenca je vrlo mala, a najčešće se spominju kod primjene Ilizarovljeva vanjskog fiksatora i to osobito na potkoljenici.

U članku je opisan slučaj 24-godišnjeg pripadnika Hrvatske vojske koji je zadobio eksplozivni prijelom proksimalnog okrajka natkoljenice, koji je liječen trakcijom i potom stabilizacijom kutnom pločom, a nakon pucanja sječiva ploče postavljen je vanjski fiksator čija su donja dva pina uzročila inficiranu lažnu aneurizmu površne natkoljenične arterije.

Aneurizma je odstranjena, a arterija je rekonstruirana izolognim venskim graftom.

Sličan slučaj nije do sada zabilježen u MEDLINE i CURRENT CONTEST bazi podataka, te ga smatramo vrijednim objavljivanja.

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**Ključne riječi:** inficirana lažna aneurizma,