



Case Report

Complete femoral artery transection following handlebar trauma

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ABSTRACT

Complete transection of the common femoral artery is more frequent after penetrating injuries than after blunt trauma, with most of the cases occurring in combination with fractures. Contusion from a bicycle handlebar is a rare form of injury to the femoral vessels. Hereby, we present a case of complete common femoral artery transection caused by a direct bicycle handlebar trauma. The patient suffered severe hypovolemia during his transfer to the Emergency room. He required an emergency intervention and a bypass reconstruction.

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Introduction

Blunt trauma of the femoral artery is relatively rare, with most cases occurring in combination with fractures and presenting contusion or thrombosis of the femoral vessels. Less frequently, bicycle or motorbike handlebar trauma can cause injury to the common femoral artery [1,2]. In this present case, femoral artery transection was caused by a direct fall onto a bicycle handlebar. To the best of our knowledge, there is only one other case in the literature [4] of a complete femoral artery transection, secondary to handlebar trauma. Patient consent was obtained for publication.

Case report

A 20-year-old male suffered direct contusion on the left groin after falling onto the handlebar of his bicycle (Fig. 1). During his transfer to a hospital, he presented severe hypotension of up to 80 mm Hg/40 mm Hg, requiring volume support. An emergency computed tomography angiography (CTA) of the abdomen, pelvis and legs showed the occlusion of the common femoral artery, with reconstruction of the distal common femoral via collaterals (Fig. 2). Also, a retroperitoneal hematoma extending to the contralateral pelvic side without any acute signs of bleeding was observed. The patient was transferred to our centre for evaluation by a vascular surgeon. When admitted he was hemodynamically stable. Giant, non-pulsatile groin hematoma was observed along his left thigh. He also presented coldness with absent pulses, although sensibility and motility were preserved. Color Doppler ultrasound (DUS) examination confirmed the findings described by the CTA.

The patient was taken to surgery for revascularization. Because the groin hematoma extended into the pelvis, a contralateral percutaneous approach was performed in order to achieve a proximal bleeding control or even endovascular treatment. We proceeded to percutaneous puncture of the right common femoral artery and progressed with a 0.035-inch Terumo Glidewire (Terumo Europe N.V., Leuven, Belgium) and ContraFlush catheter (Boston Scientific Corporation, Natick, MA) crossing to the

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Fig. 1. Groin hematoma and impact of the handlebar end can be observed.

left common iliac artery. An arteriography was performed with multi-perforated Straight catheter (Tempo, Cordis Corporation) without observing any pelvic bleeding. Proximal control of bleeding was achieved by placing an 8 × 80-mm Oceanus dilatation balloon catheter (iVascular, BCN) in the distal left external iliac artery.

After performing a left inguinal incision and removing the hematoma, the Terumo Glidewire could be seen outside the femoral artery. Inflating the balloon device in the distal external iliac artery allowed us proximal bleeding control (Fig. 3). The common femoral artery was contused and completely ruptured. Both ends had vasospasm, while fresh thrombus was shown by means of an examination of the distal artery end. Good reflux was obtained after distal thrombectomy. Given the contusion and retraction of the distal end, primary repair was not feasible. Therefore, revascularization of the common femoral artery was performed with an 8-mm, polytetrafluoroethylene (PTFE) bypass graft (Propaten, W. L. Gore & Associates, Flagstaff, AZ). Due to small ipsilateral saphenous vein size and likely surrounding vein contusions, vein graft was not used. Distal pulses were recovered immediately. The patient had an uneventful recovery and was discharged from hospital on the third day after surgery. Six months after the operation, the patient had no claudication, but had regained palpable femoral and distal pulses and normal DUS arterial and vein examination.

Discussion

The common femoral vessel is the most commonly affected vascular structure. Blunt injury of the common femoral artery, not associated with fracture, is a rare phenomenon. A common site for these injuries is at the inguinal ligament, where the femoral artery is superficial and follows through from the anterior to the superior pubic ramus and femoral head. As such, it is prone to compression against the underlying osseous structures. A well-recognized form of common femoral artery blunt injury is the “motorcycle handlebar syndrome”, in which the common femoral artery suffers a direct blow by the handlebar of a motorcycle or bicycle as the rider falls forwards [1–6]. In such a case, as the rider falls, the bicycle front wheel and handlebar rotates at a

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