Case report - Carotid and imaging

Bilateral iliac artery dissection following severe complex unstable pelvic fracture

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1. Case report

An 18-year-old man was admitted to the hospital after a severe motorcycle accident. Polytrauma CT-scan revealed the suspect of a complete disruption of the right external iliac artery and a dissection of the left external iliac artery mainly caused by bilateral complex pelvic fractures type C, a subluxated horizontal fracture of the right acetabulum, and a transforaminal sacrum fracture is described.

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The case of an 18-year-old polytrauma patient with a complete disruption of the right external iliac artery and a dissection of the left external iliac artery mainly caused by bilateral complex pelvic fractures type C, a subluxated horizontal fracture of the right acetabulum, and a transforaminal sacrum fracture is described.

1. Case report

An 18-year-old man was admitted to the hospital after a severe motorcycle accident. Polytrauma CT-scan revealed the suspect of a complete disruption of the right external iliac artery and a dissection of the left external iliac artery mainly caused by bilateral complex pelvic fractures type C, a subluxated horizontal fracture of the right acetabulum, and a transforaminal sacrum fracture (Fig. 1, Video 1).

After osteosynthetic stabilisation of the pelvic fractures femoral pulse was palpable in the left groin but not in the right. Due to a concomitant urinary bladder rupture and the suspect of a bowel perforation (not confirmed) a median lower laparotomy was performed. Herein, the right external iliac artery presented with a wall haematoma indicating the dissection. Blood flow could not be restored by means of simple arterotomy and intimal fixation as well as patch plasty due to the small calibre of the vessel and a concomitant vasospasm. An endovascular stent was considered not helpful in this young patient. Leg perfusion was finally re-established with an autologous reversed saphenous vein bypass from the right iliac bifurcation to the proximal common femoral artery (additional groin incision). With respect to the palpable distal pulses, the left iliac artery dissection was treated conservatively. The postoperative course was prolonged due to deep wound infections with pseudomonas requiring vacuum-assisted therapy. The patient was discharged for functional rehabilitation after three months with palpable bilateral groin pulses. Ultrasound scan revealed a patent saphenous vein graft on the right and a patent external iliac artery with slight stenosis (20%) on the left.

2. Discussion

The incidence of iliac artery injuries in the civilian area is approximately 2% for stab wounds and 5% for blunt trauma [1]. The two usual mechanisms are stretching of the artery over the pelvic bones resulting in dissection/thrombosis or laceration of the vessel caused by bone fragments. In our case presumably both causes were combined. The ABC classification of pelvic bone injuries according to Tile is helpful due to the therapeutic consequences [2]. In the case of a type C fracture with complete pelvic instability, tissue injuries with massive blood loss from the fracture zones and branches of the internal iliac vessels are present and immediate stabilisation of fractures is mandatory [3]. An acute occlusion of the common or external iliac artery with subsequent ischaemia is an urgent indication for intervention. Depending on location and severity, local repair utilising thrombectomy, intimal fixation with or without patch plasty, and end-to-end anastomosis or an anatomic or extra-anatomic bypass procedure as well as interventional reconstructions are valuable options. In contaminated fields the use of autologous substitutes is recommended [4]. Ligation of the common or external iliac artery is never an option. It leads to ischaemia and limb loss in approximately 50% of cases [1]. Because of the diversity of different injuries an interdisciplinary approach is valuable. A retroperitoneal haematoma should not be corrected by unnecessary surgical measures since tamponade is often self-limiting and its existence is a positive prognostic factor [5]. Interventional radiology has its role in the treatment of persisting iliac artery bleeding.
despite surgical treatment or in case of complications such as arterio-venous fistula and pseudoaneurysm formation. The most frequent indication for embolisation with a 90% success rate is persistent bleeding from the iliac artery or its branches. Stentgrafts are placed to treat late compli-
cations such as fistula or aneurysms [1, 4]. These minimally-invasive techniques will evolve in the future despite the lack of long-term results and large series.

References