CASE REPORT

Extrinsic Compression of the External Iliac Vein Following Total Hip Arthroplasty

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Introduction

Non-thromboembolic vascular complications of total hip arthroplasty (THA) may pose a serious threat to both the limb and the life of the patient. Admittedly rare, the incidence of these injuries is probably higher than that reported, and they will become increasingly prevalent to the vascular surgeon as the procedure becomes more widespread in an aging population. Prior to 1984, no postoperative complications of THA involving the external iliac vein had been described in the literature. This report illustrates a rare case of major venous obstruction presenting 7 years after THA.

Case Report

A 74-year-old female presented to the rheumatology service with a recent exacerbation of chronic bilateral, left greater than right, hip pain on ambulation, which had progressed to limit the patient to a wheelchair. Longstanding osteoarthritis involving both hip joints had previously necessitated successive bilateral total hip arthroplasties in 1984 and 1985. It was noted on initial examination that the patient’s left leg was swollen with tense oedema extending to the level of the upper thigh (Fig. 1). Otherwise, distal neurovascular examination of the extremity was entirely normal. Abdominal examination revealed a scar from a previous transabdominal hysterectomy, but was otherwise unremarkable. The patient denied any past history of deep vein thrombosis and coagulopathy, and had otherwise been well.

Initial routine blood tests, including CBC, electrolytes and both renal and liver function tests, were all normal. Chest X-ray and electrocardiogram were within normal limits. A Color Flow Duplex scan of the deep venous system was reported to be normal. The patient was initially managed conservatively with bedrest and application of a compression stocking to the left leg. Consultation was arranged with the vascular surgical service.

Fig. 1. Photograph of both ankles and feet showing swelling of the left as compared to the right.

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Subsequent venogram of the left leg revealed extrinsic compression with resultant severe narrowing at the level of the junction of the external iliac vein with the common femoral vein (Fig. 2). No apparent deep vein thrombosis was present. At this point, an intravenous heparin infusion was initiated and the patient was prepared for surgery.

At surgery under regional anaesthetic, the vasculature in question was approached by both suprafemoral retroperitoneal exposure and a separate distal groin incision. After dissecting free both the external iliac vein and the common femoral vein, it was evident that the external iliac vein had been deviated anteromedially by central acetabular protrusion of the arthroplasty hip socket. This had resulted in medial impingement of the junction of the external iliac vein with the common femoral vein against the unyielding fibres of the inguinal ligament. Simple sharp incision of these impinging fibres resulted in complete decompression of the distal venous hypertension with rapidly progressive relief of the lower extremity oedema during the immediate postoperative course. Intravenous heparin was discontinued postoperatively and repeat venography revealed radiographic resolution of the extrinsic defect (Fig. 3). The patient recovered well and was discharged from hospital 6 days after surgery.

A 20-month follow-up was satisfactory. There was no oedema to the left leg, and the patient was able to ambulate with cane support.

Fig. 2. Ascending venogram showing severe stenosis (dark arrow) of external iliac vein and medial migration of acetabular prosthesis.

Fig. 3. Postoperative ascending venogram showing resolution of critical stenosis (dark arrows).
Discussion

In 1990, Shoenfeld et al., in discussing the management of vascular injuries resulting from THA, reviewed the English-language literature to report on a total of 74 injuries in 68 cases. There were 66 arterial injuries and only eight venous injuries, six involving the external iliac vein. Overall, there appears to be a female dominance, as well as a predominance of these complications on the left side. The majority of injuries reported involve laceration, thrombosis, pseudoaneurysm or arteriovenous fistula of arterial vessels. Acute perioperative injuries tend to give rise to severe haemorrhage, whereas delayed presentations manifest with local pain, limb ischaemia or severe haemorrhage during extraction of the prosthesis.

The iliac vessels are in close proximity to the inner cortex of the pelvis in the region of the acetabulum, and the intervening distance lessens with advancing age. Computed tomography study of pelvic vascular anatomy reveals that the intervening iliopectineus muscle maintains the external iliac artery 1.0–1.5 cm from the cortex throughout its course in this region. However, the more posteromedial external iliac vein is 0–0.3 cm from the medial cortex of the ilium, being directly in contact with bone at the level just anterior to the acetabulum.

The clinical suspicion of postoperatively delayed vascular complications related to THA is reinforced by the finding of marked intrapelvic protrusion of the acetabular component with a relatively tense distal femoral vein on palpation. Preoperative workup of the patient may require any combination of arteriography, venography, intravenous pyelography and duplex scanning. In contrast to the case presently reported, extensive injury to the external iliac vein may require venorrhaphy, autogenous venous bypass, with or without an arteriovenous fistula creation, and least desirably, ligation. Furthermore, ultimate extraction of the prosthesis may be required. The presence of chronic infection in the area will complicate both the orthopaedic and the vascular intervention.

References


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