POPLITEAL ARTERY COMPRESSION: A COMPLICATION OF GORE-TEX ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION

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Use of the Gore-Tex polytetrafluoroethylene (PTFE) braided ligament (W. L. Gore & Associates Inc, Flagstaff, Arizona) for reconstruction of the anterior cruciate ligament (ACL) is associated with high rates of recurrent effusion and ligament rupture (Indelicato, Pascale and Huegel 1989; Fu and Olson 1992). In addition, osteolysis in the tibial tunnel has been reported due to a histiocytic response to PTFE particles released by abrasion (Seemann and Steadman 1993).

We report a case in which a cyst which formed around the femoral insertion of a ruptured Gore-Tex ligament resulted in intermittent claudication.

**Case report.** In 1985, a 37-year-old male competitive hockey player had reconstruction of an ACL with a Gore-Tex PTFE prosthesis using the ‘over-the-top’ route. He returned to sport but four years later noticed increasing instability.

In June 1993 he suddenly developed a cramping pain in the right calf after walking 100 yards; this settled with rest but returned on further exercise. His peripheral pulses were normal but the ankle-brachial index (ABI) was 0.7. Venography was normal. The calf claudication continued for two weeks before disappearing spontaneously and then reappearing during the next month. Femoral arteriography and Doppler wave forms were normal. A stress test produced severe cramping pain in the calf and a decrease in the ABI from 1.21 to 0.25.

At this stage, his pain-free walking distance was 300 metres; he denied any altered sensation or footdrop. He was not diabetic but smoked 20 cigarettes a day. Clinical examination of the knee showed mild varus alignment with medial compartment crepitus, no evidence of function of the Gore-Tex ligament but no effusion. His lumbar spine, peripheral sensation and pulses were normal. Radiographs showed tricompartmental osteoarthritis with posterior osteophytes and CT revealed that a large cystic structure was compressing and displacing the neurovascular bundle (Fig. 1a).

At exploration, the cyst was 2.5 cm by 5 cm; it lay immediately proximal to the origin of the lateral head of gastrocnemius. The fluid within the cyst contained multiple ruptured and abraded fibres of Gore-Tex (Fig. 1b). Excision of the cyst and graft gave complete resolution of the calf pain.

**Discussion.** The Gore-Tex PTFE braided ligament was introduced in the 1980s and obtained FDA approval in 1986. As follow-up increased, recurrent effusion rates of 25% to 34% and a ligament rupture rate of 12% were
reported after two to four years of follow-up (Marks, Harner and Fu 1994).

Wear particles produced by abrasion of the ligament have been shown in vitro and in vivo to cause the release of inflammatory mediators and the activation of synoviocytes leading to synovitis and recurrent effusion (Fu and Olson 1992) while osteolysis of the tibial tunnel has been reported in two patients six and seven years after Gore-Tex reconstruction (Seemann and Steadman 1993).

In our case, there was some osteolysis around the femoral tunnel with an associated expanding cyst. The early transient improvement in symptoms may have been due to spontaneous decompression of the cyst and the variable vascular findings to an exercise-induced increase in the intracystic pressure.

Compression of the popliteal artery has been reported in association with a fibular osteochondroma (Longo et al. 1990) and a Baker’s cyst (Prichard, Gilliland and Lewis 1990), but not after knee ligament surgery (Marks et al. 1994). Dynamic anteroposterior compression of the popliteal artery is difficult to diagnose on an arteriogram performed at rest. Biplanar arteriography, CT or ultrasonography are essential for the investigation of a young patient with unilateral claudication.

Our case illustrates another complication of the use of synthetic material for ACL reconstruction. Until the issues of wear debris and biocompatibility of synthetic implants are resolved, their use cannot be recommended.

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REFERENCES

SUBHEPATIC MIGRATION OF A HIP PROSTHESIS

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The intrapelvic migration of an acetabular cup is a known complication of hip arthroplasty (Eftekhari and Nercessian 1989) but it is usually associated with pain or visceral complications. We report an exceptional case of migration which was painless and without any such complications.

Case report. In 1978 a retired construction worker had a Charnley arthroplasty of his right hip for osteoarthritis. In July 1985 he fell and sustained a subtrochanteric fracture around the stem which was treated with two plates and Partridge bands. This failed with nonunions and at a revision operation in November 1985 a long-stemmed cemented prosthesis was implanted (Fig. 1).

The early postoperative course was uneventful, but the patient was lost to follow-up until October 1994 when at the age of 85 years, he complained of knee pain after a fall and a haemarthrosis was aspirated. There was, however, gross shortening of the right leg, with the hip fixed in slight abduction and external rotation. There was no thigh or groin pain and the femoral pulses were present. A hard, painless mass was palpable in the right side of the abdomen but there were no urological complaints and no sign of systemic or local infection.

The patient reported that during the time he had been lost to follow-up, he had needed progressively larger raises on his right shoe. Radiographs showed cephalad migration of the entire prosthesis into the abdomen by 15 cm (Fig. 2). There appeared to be probable union of the midfemoral shaft to the pelvis. CT showed that the prosthesis had not compressed any intraperitoneal organs but was very close to the kidney and liver.

The patient was symptom-free, could walk with the help of a walking stick, and did not want any further surgery. No active treatment was given, but careful follow-up was continued.

Discussion. Various case reports of the migration of hip prostheses have detailed vascular, neurological or urological complications. In our case there was no such complication, but the 15 cm extent of the migration is very unusual. Migration usually ceases when the trochanter or femoral diaphysis makes contact with the pelvis. In our patient the extreme displacement was possible because...