

COMPARTMENT SYNDROME OF THE RIGHT ANTERIOR THIGH AFTER PRIMARY TOTAL HIP ARTHROPLASTY

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Compartment syndrome of the anterior thigh is a rare occurrence after surgery on the hip joint. The early diagnosis of compartment syndrome is most important in preventing serious damage to the underlying structures. We report a case of compartment syndrome of the anterior thigh in a 60-year-old man.

CASE REPORT

In June 1997, a 60-year-old man underwent a primary cemented total arthroplasty of the right hip joint after 2 years of pain located in the buttock, radiating to the back and groin. He could only walk about one block. Preoperative radiographs showed severe osteoarthritis of the right hip joint (Fig. 1). In February 1990, he had had a left total hip arthroplasty; despite prophylaxis with coumarin he suffered a deep venous thrombosis and pulmonary embolism. In January 1997 multiple myeloma was diagnosed. He underwent chemotherapy from February until April 1997 and was placed on the stem cell transplant list.

At operation, the right hip was exposed by a direct lateral Hardinge approach. After adequate exposure was achieved the hip was dislocated anteriorly with external rotation of the leg and anterior traction with a bone hook. An osteotomy of the femoral neck was done in a routine fashion. The acetabulum was reamed to accept a cementless Interfit (Smith & Nephew, Memphis, Tenn.) acetabular socket. After rasping and preparation of the femoral canal, a cemented Spectron (Smith &

Nephew) prosthesis was inserted (Fig. 2). The wound was copiously irrigated and cleansed, and hemostasis was achieved using electrocautery. The hip was reduced, and the wound was closed in a routine manner.

Postoperatively, the patient was placed on tinzaparin, a low-molecular-weight heparin agent, for prophylaxis against deep venous thrombosis, and cephalothin was given intravenously. Patient-controlled morphine was given intravenously for pain. Analgesia was stopped when the patient indicated that the pain was minimal. He was allowed to bear weight as tolerated and was doing so initially with a walker.

One day postoperatively, acute persistent right hip pain developed, radiating to the right thigh and knee, and not relieved with acetaminophen (Tylenol no.3) or intravenously administered morphine. On examination, the right thigh was markedly edematous and tender, but there was no neurovascular impairment. The pressure in the anterior compartment of the thigh was 62 cmH₂O when measured with a slit catheter. The patient's blood pressure was 180/90 mm Hg. A compartment syndrome of the right anterior thigh compartment was diagnosed.

The patient was taken immediately to the operating room for a fasciotomy of the anterior right thigh within 24 hours of the original operation. The tensor fascia lata was quite tense and the muscle burst outward upon splitting it. There was obvious quadriceps necrosis particularly in the vastus medialis, with about 250 mL of

necrotic tissue. The necrotic muscle was debrided. There was a minimal amount of hematoma. The fascia lata was left open, the wound was closed with loose retention sutures and rayon was placed over the exposed muscles. Within 48 hours, the patient was brought back for a repeat irrigation and débridement and delayed primary closure of the wound.

The wound remained dry and intact and the patient was allowed to ambulate and bear weight as tolerated. Doppler ultrasonography revealed a proximal deep venous thrombosis to the right anterior thigh. Treatment with low-molecular-weight heparin was continued. The patient was weight bearing independently with crutches by the time of discharge 1 week after the second fasciotomy. He was discharged home on tinzaparin, coumarin and Tylenol no. 3.

The patient regained functional strength in his right hip and knee. At 1-year follow-up he was doing well and was able to return to normal activities. His Harris hip score was 98 out of 100 with minor limitations in stair walking.

DISCUSSION

Generally, compartment syndrome of the anterior thigh is rare, because there is a large volume of tissue, and extravasation of a large volume of fluid is required to cause compression of the contained thigh structures. Anatomically, the anterior compartment of the thigh blends with the gluteal muscles, allowing extravasation of fluid out-

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FIG. 1. Anteroposterior radiograph of the right hip of a 60-year-old man with severe hip disability.



FIG. 2. Anteroposterior radiograph of the right hip, illustrating the hybrid Spectron/Interfit total hip prosthesis (Smith & Nephew, Memphis, Tenn.) placed in this patient.

side the compartment, thus decompressing the anterior compartment.^{1,2} The condition has been described in femoral fractures,^{3,4} following intramedullary fixation,³ with soft-tissue contusion,⁵ hip surgery⁶ and coagulopathy. However, anterior thigh compartment syndrome has not been described with primary total hip arthroplasty.^{7,8}

Laceration to the branches of the medial circumflex femoral arteries may occur during division of the upper part of the quadratus femoris.⁶ It can cause considerable hemorrhage if hemostasis is not achieved and if a patient is on deep venous thrombosis prophylaxis. In our case, a small hematoma with necrosis of the vastus medialis was found on fasciotomy; however, the definitive cause of the compartment syndrome remains a mystery.

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