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*Extraosseous, periarticular granulomatous lesion complicating
Total Hip Replacement*

Cysts arising from the hip joint have been associated with arthritis, trauma, infection, wear and loosening of hip prostheses (1). Cases of the cysts in the hip region causing complication after THR although rare have been reported in the literature (1, 2, 5). Malignant tumors have also been described in hip region following total hip replacement (3). We presented an unusual case of early granulomatous cyst formation after THR, non-related to loosening of the hip prosthesis.

CASE REPORT

A 63-year-old woman was operated on at the authors' department because of bilateral primary hip arthritis. Uncomplicated uncemented total hip replacement of the left hip was done in January 1999. In November 1999 a hybrid THR of the right hip was performed. The perforation of the anterior part of acetabular floor occurred during preparation of the bed for acetabular cup. The bone defect was repaired with morselized bone grafts from resected femoral head. The polyethylene, cemented cup was implanted with uncemented stem and ceramic 32 mm diameter head. The early postoperative period was complicated by deep vein thrombosis, successfully treated by LMWH injections. Early clinical result of both hips was very good. After 31 months the patient complained of swelling of her right leg. Clinical examination revealed a marked swelling of the right leg and presence of solid mass in her right groin. All pulses were present in the leg. The right hip was pain free. The plain radiographs showed 1.47 mm linear wear of polyethylene cup. No signs of prosthesis loosening or deep infection were noticed. Bone grafts were totally incorporated and remodeled. A Colour Duplex Ultrasound scan excluded a deep vein thrombosis but revealed a presence of solid tumor displacing the femoral vessels with no occlusion. Computerized tomography (CT) displayed detailed location of the tumor (Fig. 1). Puncture of the tumor failed to aspirate any fluid. The results of investigations raised the possibility of coincidental soft-tissue malignant tumor. At surgery tumor was totally excised (Fig. 2). The tumor base was firmly attached to anterior column of the acetabulum. Histopathological examination demonstrated the presence of thick connective tissue with histiocytes and macrophages in the capsule of the cyst. The inner part of the cyst contained reactive fibrous tissue, necrotic tissue, giant cells, macrophages, bone necrotic debris and jelly-like fluid. Large, microscopic particles of nonmetallic material, likely polyethylene particles were also found in these areas (Fig. 3). Neither malignant cells nor signs of infection were found. The wound was closed and the patient was referred to the ward. A few hours later the leg was recognized as cold with no pulse on popliteal artery. At revision operation the thrombectomy from femoral artery was done. Post-revision arteriography showed stop of the flow at foot arteries. Subsequent thrombolytic therapy (Actylise) restored circulation in the leg. Temporary pareses of peroneal and tibial nerves were present. The wound



Fig. 1. Computed tomography scan demonstrates a tumor adjacent to the anterior aspect of the acetabulum

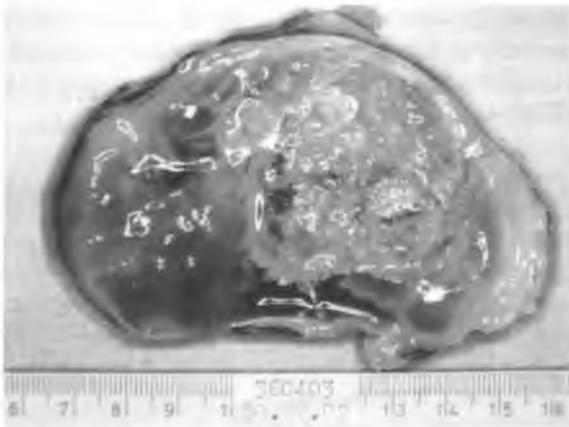


Fig. 2. The resected granulomatous lesion was enveloped in a fibrous capsule, the contents of which were granular and fluid

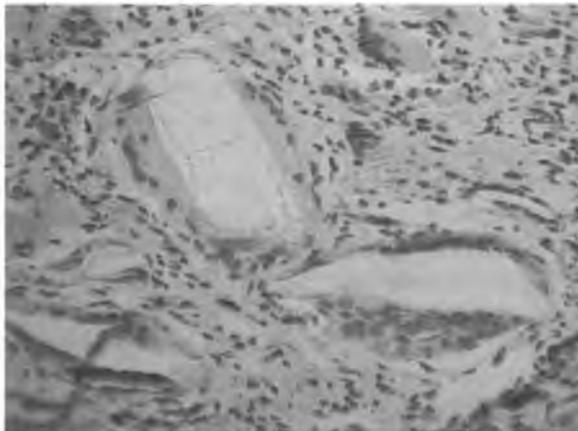


Fig. 3. Histophotomicrograph of the cyst demonstrating a large number of foreign-body giant cells as well as large particles which is likely polyethylene (hematoxylin and eosin, original magnification x160)

healing was complicated by deep infection, with communication with the hip joint. Five months later nerve palsy recovered. There is persistent limitation of the dorsal flexion of the foot and deficit in strength of extensor of the foot and toes. Excision arthroplasty was performed because antibiotic therapy was not effective to treat infected prosthesis.

DISCUSSION

Fluid and debris seek pathways through the weakest points, including bone. The perforation of the acetabular floor during total hip replacement can be etiology of the intrapelvic cysts (4). Polyethylene debris is the most likely cause of cyst formation of any design of hip arthroplasty (1, 2, 4). Expansion more commonly occurs anteriorly and can compress the femoral vessels from behind, which may lead to venous stasis, leg swelling with or without deep vein thrombosis and pain in the groin (1, 5). Plain radiographs usually show wear and loosening of the prosthesis. It has been reported that when the number of polyethylene particles released from the joint exceeds a critical number the particles accumulate within the tissue (1, 2). In the presented case perforation of the acetabulum, in connection with excessive wear of polyethylene might play a role in granuloma formation. Ultrasound or fluid aspiration can define cystic or non-cystic nature of the mass. The cystic nature of the described tumor was not recognized before surgery because of abundance of connective tissue. CT scan may help to localize the cyst and to define its relation to neuro-vascular structures (1, 2). An arthrogram of the hip can show relationship between cyst and hip joint only in fluid cysts (5). Surgical exclusion of the cyst as presented in literature appeared to be successful (1). Our case shows the risk of thromboembolic and infection complications in postoperative period. Resection of asymptomatic cysts may not always be necessary because encapsulated debris may not activate osteolysis (2). Histological analysis helps exclude malignant nature of the granuloma. We emphasize the importance of exact examination of any groin mass in routine surveillance of total hip replacement. Reactive granulomatous cyst should be considered in differential diagnosis of these cases. Operative treatment must be planned and performed with special caution.

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SUMMARY

A case of periarticular granulomatous lesion complicating THR is reported. Large groin granuloma caused compression of the femoral vein and leg swelling with no DVT. Initial diagnosis suggested non-cystic tumor. Finally it was recognized as a granulomatous reactive cyst. Postoperative period

was complicated by thrombosis of the femoral artery, deep infection of the wound and necessity of resection arthroplasty.

Pozastawowa torbiel płynowa wikłająca całkowitą protezoplastykę stawu biodrowego.
Opis przypadku

Autorzy opisują rzadkie powikłanie protezoplastyki stawu biodrowego pod postacią odczynowej torbieli płynowej. Zlokalizowana w pachwinie torbiel uciskała naczynia udowe, powodując obrzęk kończyny, nie spowodowała jednak zakrzepicy żyłnej. Początkowa diagnostyka sugerowała obecność litego guza. Ostatecznie rozpoznano odczynową okołostawową torbiel płynową. Przebieg pooperacyjny był powikłany zakrzepicą tętnicy udowej, zakażeniem rany pooperacyjnej i koniecznością usunięcia protezy.