Introduction: With the introduction of the metal-on-metal bearing to hip resurfacing there has been a recent and rapid increase in hip resurfacing. Hip resurfacings are particularly used in younger, more active patients because of the limitations of conventional hip replacements. Metal-on-metal bearings have better wear properties than conventional metal-on-plastic bearings (1).

Recently we have observed a number of patients presenting with varied symptoms following their hip resurfacing. A common feature identified in a substantial number of cases is a soft tissue mass close to the implant. This mass is non-malignant and is not infective in nature. We have therefore described it as a “pseudotumour” (2).

We report on the clinical findings of a group of 20 metal-on-metal resurfaced hips (17 patients) presenting with a mass associated with various symptoms.

Materials and Methods: A heterogeneous group of 17 patients experiencing problems after hip resurfacing have been identified to date; within this group there were three patients who have had bilateral implantations, giving a total of 20 hips.

Fourteen hips were implanted with the Birmingham Hip Resurfacing (Smith and Nephew, Memphis, TN, USA), four had the Conserve Plus (Wright Medical, Memphis, TN, USA), and in two cases the Cormet (Corin Group PLC, Cirencester, UK) was implanted (Table 1). The patients presented at varying time periods after their index procedure. The common factor in all these cases was the presence of a soft tissue mass.

All patients underwent plain radiography; CT, MRI and ultrasound investigations were also performed for some patients. Where samples were available histology was performed. Blood metal ion levels were measured in six patients for chromium and cobalt; and also for the joint fluid from one patient.

Results: All patients in this series were female. The average time postoperatively at which the patients presented was 22 months (range 0 to 60 months), there was considerable variation in the time of presentation. Presentation was variable; the most common symptom was pain. Other symptoms included spontaneous dislocation, nerve palsy, a noticeable mass or a rash.

In none of the cases did plain radiographs show significant radiolucency either around the femoral component or the acetabular component. Ten patients underwent cross sectional imaging, including ultrasound (US), magnetic resonance imaging (MRI) and computed tomography (CT); two patients had arthrograms. Three of the cases had bilateral abnormalities. There were two main types of imaging abnormalities: a) a predominantly cystic mass positioned lateral or posterior to the joint, b) a mass, usually predominantly solid, positioned anteriorly involving the psoas bursa and muscle. The commonest finding, seen in nine hips (seven patients) was the presence of a mainly cystic mass posteroslateral to the joint.

The common histological features were extensive necrosis with lymphocytic infiltration.

The blood cobalt and chromium levels varied considerably between the six patients that had these measurements. The median blood chromium level was 3.8 μg/L (range 0.8 to 23 μg/L) and that for cobalt was 11.5 μg/L (range 2.1 to 15 μg/L). The synovial fluid sample taken from a single joint contained much higher metal levels, 701 μg/L for chromium and 329 μg/L for cobalt.

Twelve of the 20 cases have so far required revision to a conventional hip replacement.

Discussion: We have not observed this type of pseudotumour occurring with a conventional hip replacement. We therefore believe it is a new type of complication that relates primarily to hip resurfacing. We estimate that about 1% of patients develop pseudotumours during the first five postoperative years.

Such a series of soft tissue mass in relation to MOMHRA has not been described before. Boardman et al (3) did describe a single case report of a benign psosas mass in relation to a MOMHRA. It was associated with presences of metal wear particles and needed excision of the mass and revision to a conventional THR. There was also lymphocyte infiltration reported in the fibrous tissue around the psosas. The inflammatory changes found in the pseudotumours we describe would be in keeping with those previously described as ALVAL (4), but were characterised by a more diffuse lymphoid infiltrate as well as extensive necrosis. In these cases, the presence of a granulomatous response was also noted. These changes may represent a delayed hypersensitivity to nickel–chromium or chromium-cobalt (5) of varying degree in different hosts.

The cause of these pseudotumours is unknown and further work is required to define this; they may be manifestations of a metal sensitivity response. The metal ion measurements show elevated levels in the blood for some of the subjects and the levels in the joint were very high for the one subject in which these were measured. We are concerned that with time the incidence of these pseudotumours will increase.


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