■ CASE REPORT

Arthroscopic excision of a giant-cell tumour of the ligamentum teres

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Primary giant-cell tumour of soft tissue arising in the ligamentum teres has not been previously described. We report a case of such a tumour in a 46-year-old woman. The lesion was only detected at the time of hip arthroscopy despite pre-operative MRI being performed. It was successfully excised arthroscopically with resolution of the symptoms.

Primary giant-cell tumour (GCT) of soft tissue was first described in 1972.¹ It is a rare soft-tissue tumour located in both superficial and deep sites. Histologically, the lesions bear a close resemblance to their bony counterpart, GCT of bone.

A review of the literature showed no reports of giant-cell tumour of the ligamentum teres. Because of the increasing number of hip arthroscopies being undertaken, pathology of the ligamentum teres has been increasingly recognised.² We now report a case of a GCT of the ligamentum teres.

The articular cartilage on the head of the femur is thicker at the apex than at the circumference. It covers the entire surface with the exception of the fovea capitis femoris, to which the ligamentum teres is attached. The latter is a triangular, somewhat flattened structure attached at its base by two bands, one each into either side of the acetabular notch. Between these bony attachments it blends with the transverse ligament. It is ensheathed by the synovial membrane, and varies greatly in strength in different individuals. Occasionally, only the synovial fold exists, and in rare cases even this is absent.

The ligamentum is made tense when the hip is semiflexed and the limb abducted or externally rotated. It is relaxed when the limb is adducted.^{3,4} An artery passes to the head of the femur within the ligament which may or may not persist into adulthood.

Case report

A 46-year-old woman presented with an 18-month history of pain in the left thigh, groin and buttock. It awoke her at night and her walking ability was limited because of the pain. Examination revealed a full range of movement of the hip, but a positive impingement sign when the hip was in flexion, adduction and internal rotation.

She was also noted to be very flexible. Plain radiographs showed mild hip dysplasia and an MR scan suggested a labral tear.

Arthroscopy was undertaken and the labral tear was debrided. However, inspection and probing identified an ovoid lesion measuring 17 × 13 × 15 mm attached to the ligamentum teres. It was red and brown in colour (Fig. 1) and was excised in its entirety using arthroscopic instruments.

Histological analysis after staining with haematoxylin and eosin showed the typical features of a localised GCT with a collagenous stroma in which there was a variable cellular infiltrate. There were scattered multinucleated giant cells, mononuclear cells, clusters of foamy macrophages and xanthoma cells (Fig. 2). There was no evidence of malignancy and the excision margins were clear.

The post-operative course was unremarkable. At the last follow-up at five months she was asymptomatic and there was no limitation of movement or of activities of daily living.

Discussion

We describe the first case of a GCT of the ligamentum teres excised at hip arthroscopy. The nomenclature in the pathology literature of GCTs occurring in relation to tendon sheaths, joints or intra-articular sites is somewhat confusing. This reflects the lack of agreement concerning the basic nature and line of differentiation and whether it represents a reactive lesion producing histiocytes, osteoclasts and synoviocytes, or is possibly derived from neoplastic cell lines since some studies have reported clonal cytogenetic abnormalities.⁵⁻⁷

Weiss and Goldblum⁸ describe two types.⁹ The first is a localised GCT of tendon sheath, which is also known as tenosynovial GCT,

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Fig. 1a

Fig. 1b

Arthroscopic photographs showing a giant cell tumour of the ligamentum teres (A, Ligamentum teres tumour, B, fat pad in cotyloid fossa, C, femoral head).

Fig. 2

Photomicrograph showing the histology of the tumour (haematoxylin and eosin $\times 100$).

localised type. Some authors use the term nodular synovitis. Therefore, GCT of tendon sheath, localised type and nodular synovitis may be used to describe the same lesion. The second type is a GCT of tendon sheath, diffuse type, also referred to as tenosynovial GCT, diffuse type, and pigmented villonodular synovitis. The localised tumours with the first description usually affect the small joints such as in the fingers, whereas the diffuse tumours affect the larger joints particularly the knee but also sometimes the hip.

Our diagnosis based on the histology was of GCT of tendon sheath given its location in the ligamentum teres, which has a cone of synovial membrane. Although the diffuse type of GCT is occasionally seen in the hip, the localised form

involving the ligamentum teres, has apparently not been previously reported.

Both the diffuse and localised forms of GCT of tendon sheath have a capacity for local recurrence. In all, 56 cases had been reported by 2002.^{1,10-12} The patients described had a median age of 43 years (5 to 80).¹³ The size of the tumours varied between 0.5 cm and 10 cm in diameter. Their consistency was firm and non-tender and they appeared as fast-growing masses in the skin or subcutaneously. Approximately 50% presented in deep soft tissue. GCT of soft tissue shows nuclear mitosis and vascular invasion but its atypia is mild to moderate. The lower limbs are the most frequent location (50%), followed by the trunk (31.8%) and the upper limbs (13.6%).¹³

Complete removal with clear surgical margins should ensure that there is no recurrence. However, lung metastases have been reported in cases in whom there were positive surgical margins. The recurrence rate is 28% in skin and 45% in deep soft tissue¹² but recurrences have occurred when there were positive surgical margins. The current pathological consensus is that GCT of soft tissue is distinct from more aggressive sarcomas or the former malignant GCT.^{13,14} Metastases and tumour-related death are exceedingly rare if GCT of soft tissue is treated adequately by complete excision.^{13,15} Clinically and radiologically lesions of the ligamentum teres remain elusive. In 925 consecutive hip arthroscopies Rao, Villar and Zhou¹⁶ found that in only four was a correct diagnosis given before the arthroscopy was undertaken.

A GCT of the ligamentum teres can be easily visualised and removed arthroscopically with resolution of symptoms. A GCT of the tendon sheath can recur, but are benign.

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