

When an Intra-Articular Process Is More Than It Appears: Malignant Transformation of Synovial Chondromatosis to Chondrosarcoma

Authors: Jullian E. Dilley, Andrew F. Ormseth, Andre R. Spiguel, Mark T. Scarborough, C. Parker Gibbs, Elham Nasri

Significance

Synovial chondromatosis is a benign but locally aggressive process characterized by intra-articular cartilaginous nodules arising from the synovium. Malignant transformation to chondrosarcoma is extremely rare and difficult to recognize, particularly when imaging overlaps with other proliferative or inflammatory conditions.

We present the case of a 45-year-old male with progressive left hip pain and a pathologic femoral neck fracture. Imaging revealed extensive cortical scalloping and a destructive intra-articular process involving the synovium, acetabulum, and femoral head, without clear tumor extension into the fracture site. Radiologic differential diagnoses favored diffuse tenosynovial giant cell tumor, synovial vascular malformation, or infection rather than malignancy.

Approach

A biopsy demonstrated grade II chondrosarcoma. The patient subsequently underwent extra-articular resection of the proximal femur and acetabulum with reconstruction.

Results

Final pathology confirmed the unusual diagnosis of grade II chondrosarcoma arising in a background of synovial chondromatosis. The tumor extensively involved the synovium with direct extension into adjacent bone and soft tissue. Notably, complete sampling of the fracture site showed osteoporotic changes and remodeling without tumor involvement. Surgical margins were negative for tumor.

The postoperative course was complicated by chronic surgical site infection. 10 months after surgical treatment, the patient developed local recurrence in the surrounding soft tissue, ultimately requiring external hemipelvectomy for disease control.

Discussion & Impact

Malignant intra-articular lesions can closely mimic benign synovial processes on imaging. This overlap creates a potential diagnostic pitfall, particularly for rare diseases like this case. In such scenarios, reliance on imaging alone may lead to misclassification and suboptimal surgical treatment.

Malignant transformation of synovial chondromatosis is rare and may not be considered in the radiographic differential diagnosis. Thus, awareness of this entity is important to ensure appropriate oncologic planning and avoid inadequate initial management.