Legg-Calvé-Perthes' disease—synovitis, cartilage, remodeling

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This thesis evaluates and correlates the findings in a series of children with Legg-Calvé-Perthes' Disease at the Departments of Orthopedics, University Hospitals in Lund, Sweden and Odense, Denmark during 1984–1993. It focuses on the importance of synovitis and its effect on the intracapsular pressure and on the cartilage, on the shape of the femoral head in the early phases of LCPD and on femoral head remodeling after proximal femoral varus derotation osteotomy.

Synovitis, i.e., inflammation and edema of the synovium with or without joint effusion, can be diagnosed sonographically in LCPD. Significantly increased concentrations of proteoglycan fragments and stromelysin-1 in hip joint effusions, confirm the presence of synovitis. It causes an increase in intracapsular pressure, the magnitude of which may intermittently compromise the blood supply to the proximal femoral epiphysis and metaphysis.

Synovitis persists late in the course of the disease and seems to be an important factor as regards symptoms and prognosis; It causes pain and decreased range of motion and, if persistent, contracture of the joint. Moreover, synovitis may be responsible for the cartilage hypertrophy and subsequent lateral subluxation with poor containment, deformation and incongruency.

Consistent signs of fat necrosis in the proximal metaphysis with reactive, reparative changes, indicates previous episodes of ischemia in a prognostically poor subset of LCPD.

The bony shape seen on conventional radiography does not adequately reflect the cartilage shape of the femoral head on MRI or on arthrography. MRI provides early and reliable information about the cartilaginous outline of the head of the femur, thus constituting a potential, early prognostic tool. MRI also provides earlier and more reliable information on the remodeling of the femoral head in LCPD than conventional radiography does.

In a subset of prognostically poor cases of LCPD, there is an early, continuous spherical remodeling of the femoral head following proximal femoral varus derotation intertrochanteric osteotomy.