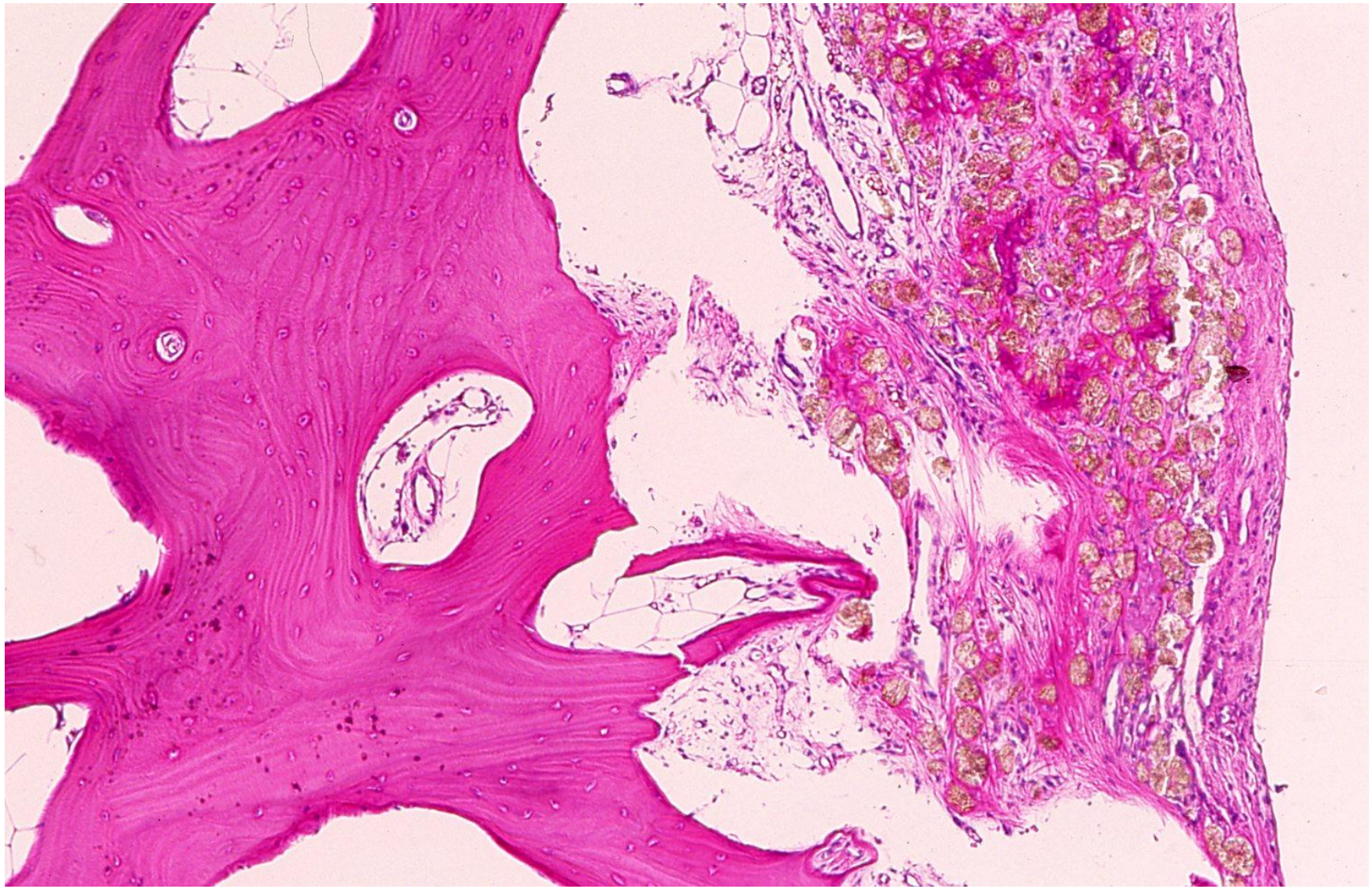
Oxalate arthropathy

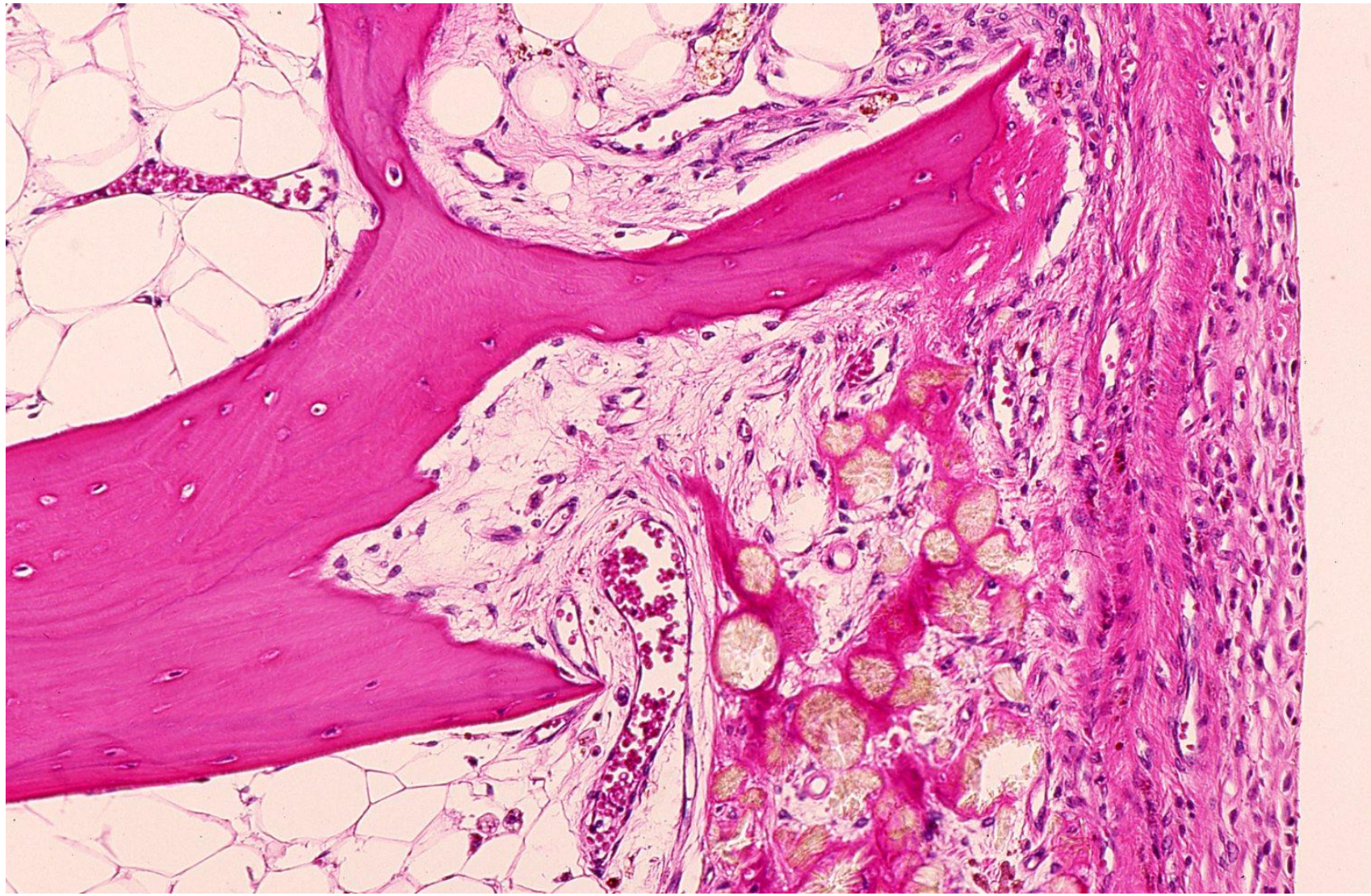
Oxalate arthropathy, featured by deposition of calcium oxalate crystals in synovial fluid, is a rare cause of crystal arthropathy. The common etiology of crystal arthropathy includes gout (sodium urate deposition) and pseudogout (calcium pyrophosphate deposition). Oxalate arthropathy may be seen in patients with underlying primary or secondary hyperoxaluria. Primary hyperoxaluria is a group of genetic disorders resulting in endogenous overproduction of oxalate. Secondary hyperoxaluria results from gastrointestinal disorders associated with fat malabsorption and increased absorption of dietary oxalate. In both conditions, deposition of oxalate crystals in the kidney leads to renal failure. Since oxalate is eliminated into the urine, systemic oxalosis may follow in renal failure, in addition to urinary oxalate stones. The following organs are involved, including the bone, joint, heart, eye and skin. Renal failure and oxalosis may precede the diagnosis of hyperoxaluria. However, oxalate arthropathy is most commonly seen in patients with chronic renal failure under hemodialysis or peritoneal dialysis.

Ref.-1: Lorenz EC, et al. Update on oxalate crystal disease. Curr Rheumatol Rep 2013; 15(7): 340. doi: 10.1007/s11926-013-0340-4

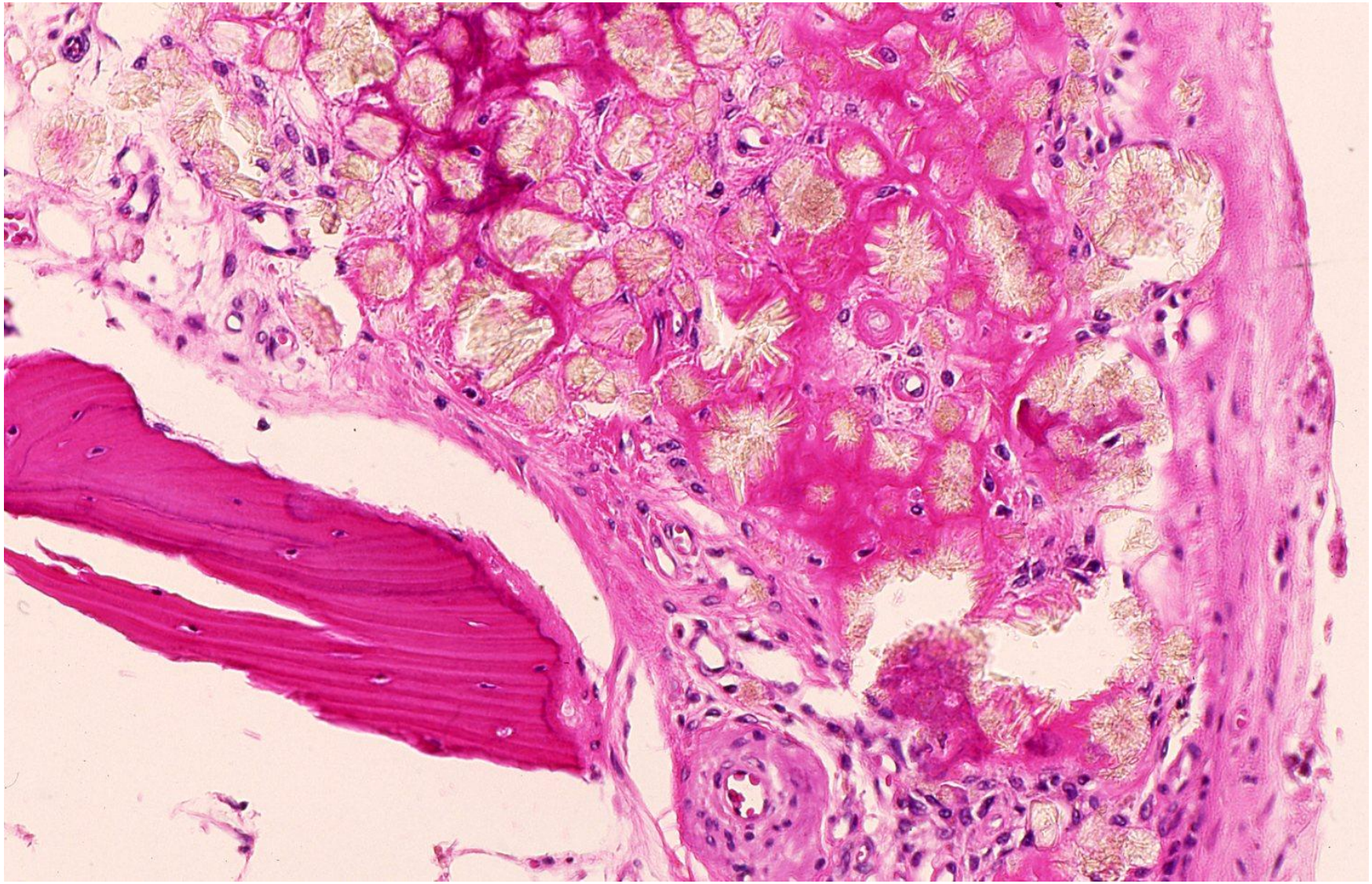
Ref.-2: Chaplin AJ. Histopathological occurrence and characterisation of calcium oxalate: a review. J Clin Pathol 1977; 30(9): 800-811. doi: 10.1136/jcp.30.9.800



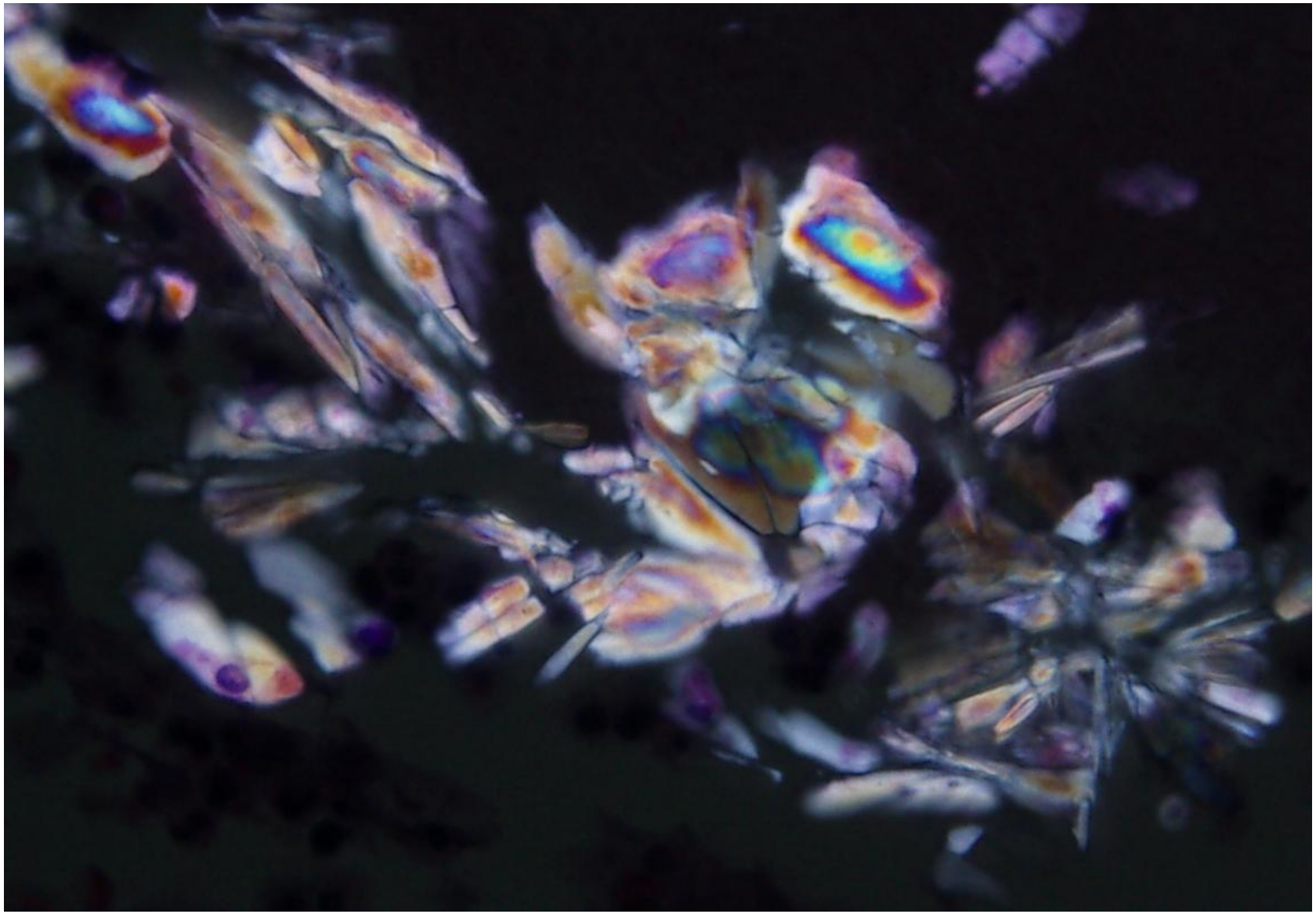
Oxalate arthropathy seen in a 52 y-o female patient with chronic renal failure under hemodialysis. The synovia of the knee joint is heavily deposited with calcium oxalate crystals. Foreign body reaction is scarcely noted (H&E-1).



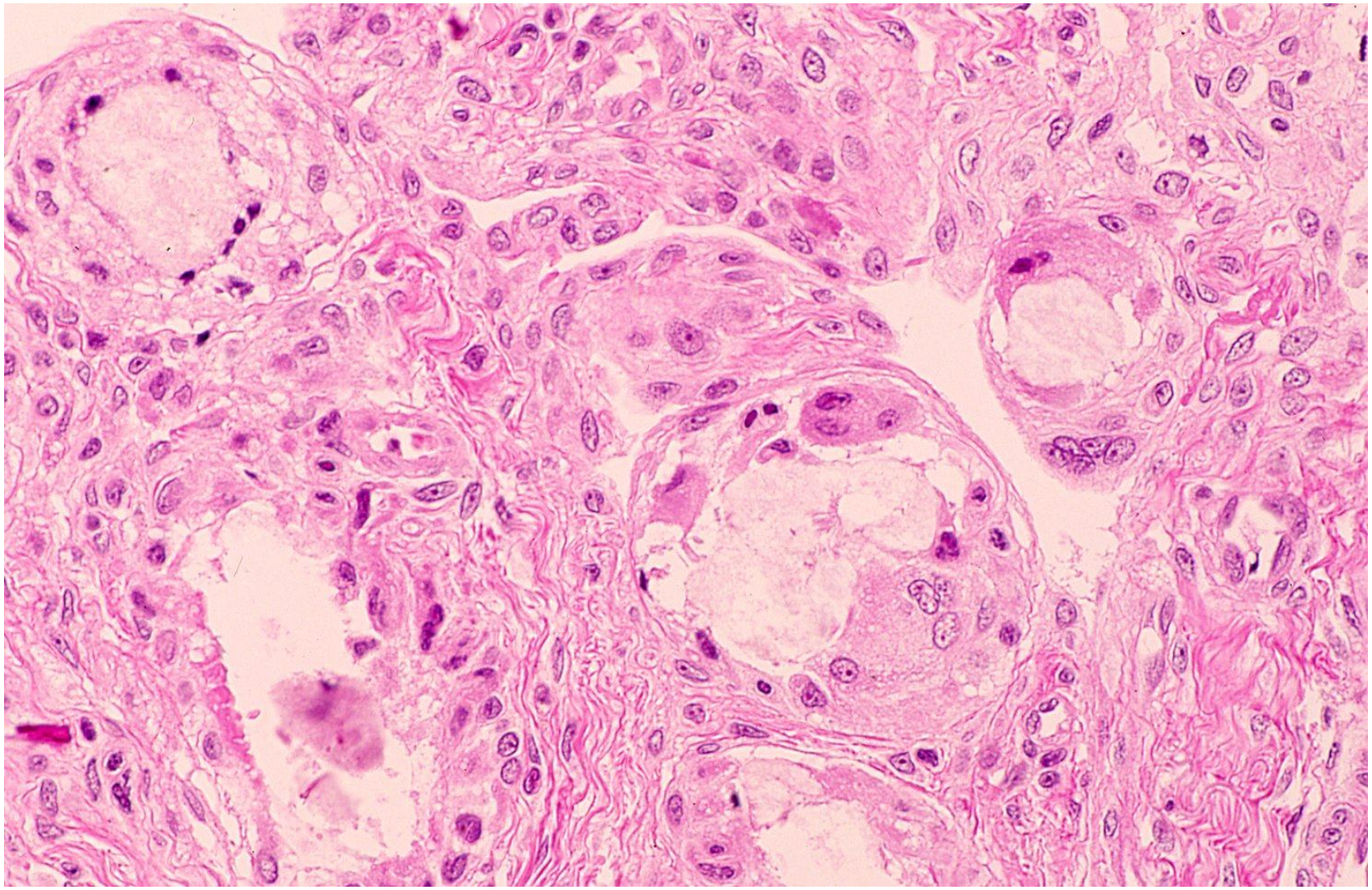
Oxalate arthropathy seen in a 52 y-o female patient with chronic renal failure under hemodialysis. The synovia of the knee joint is heavily deposited with calcium oxalate crystals. Foreign body reaction is scarcely noted (H&E-2).



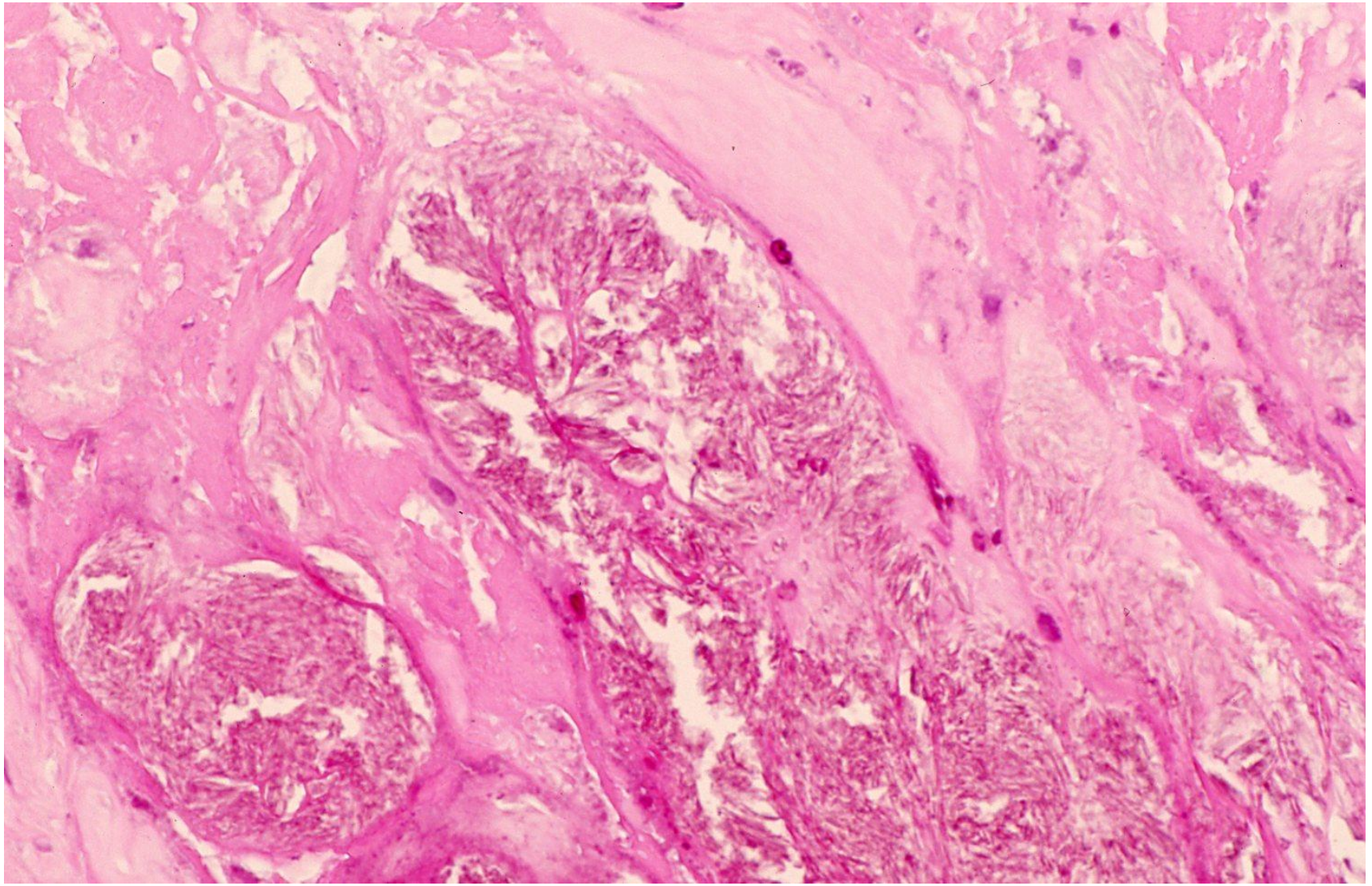
Oxalate arthropathy seen in a 52 y-o female patient with chronic renal failure under hemodialysis. The synovia of the knee joint is heavily deposited with calcium oxalate crystals. Foreign body reaction is scarcely noted (H&E-3).



Oxalate arthropathy seen in a 52 y-o female patient with chronic renal failure under hemodialysis. Observation with a polarizing microscope in H&E-stained preparation clearly demonstrates polarized crystals of calcium oxalate.

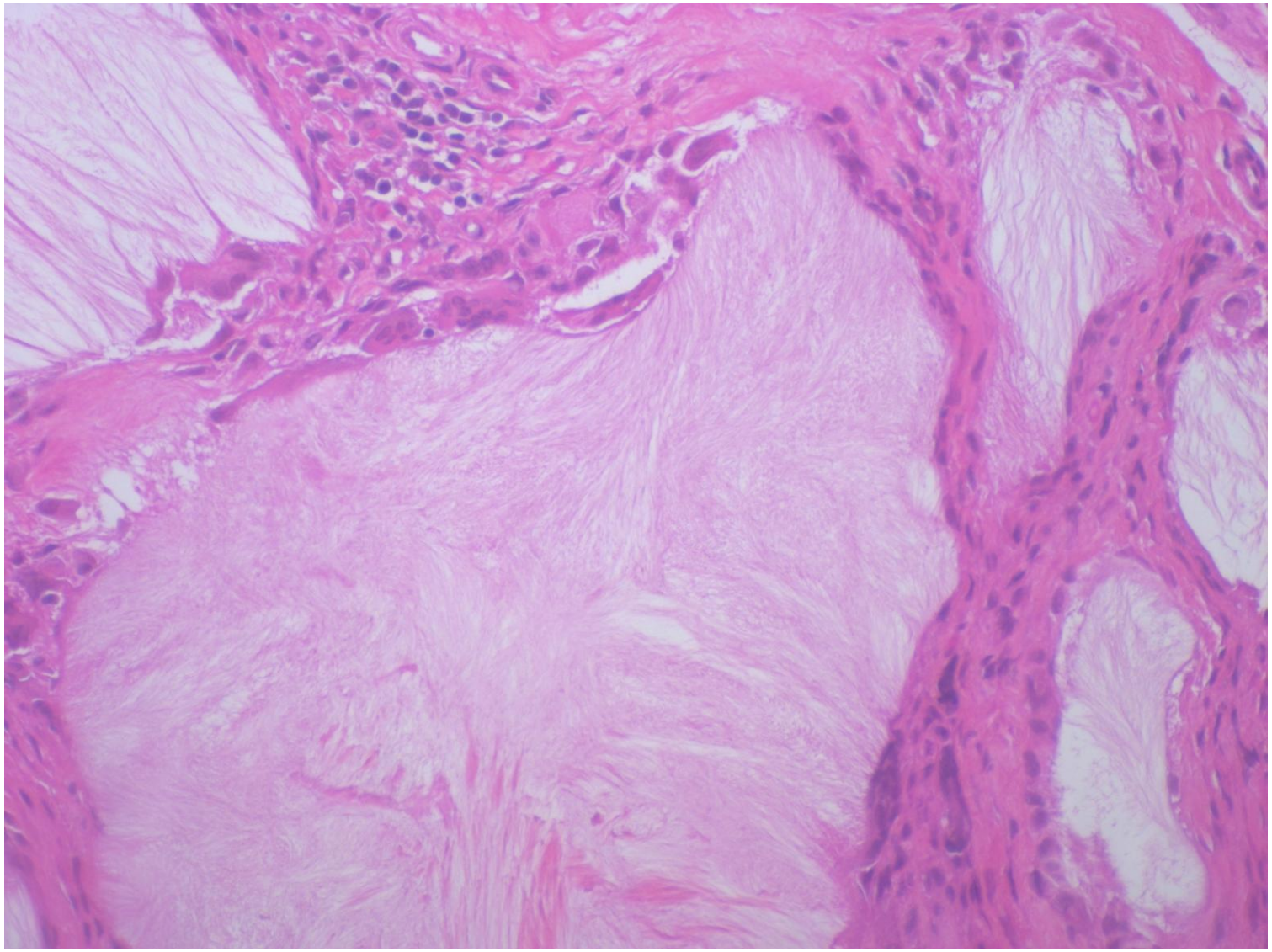


Reference case-1. Crystal arthropathy caused by pseudogout (deposition of calcium pyrophosphate) in the wrist joint of a 72 y-o female patient. Foreign body reaction is evident (H&E).

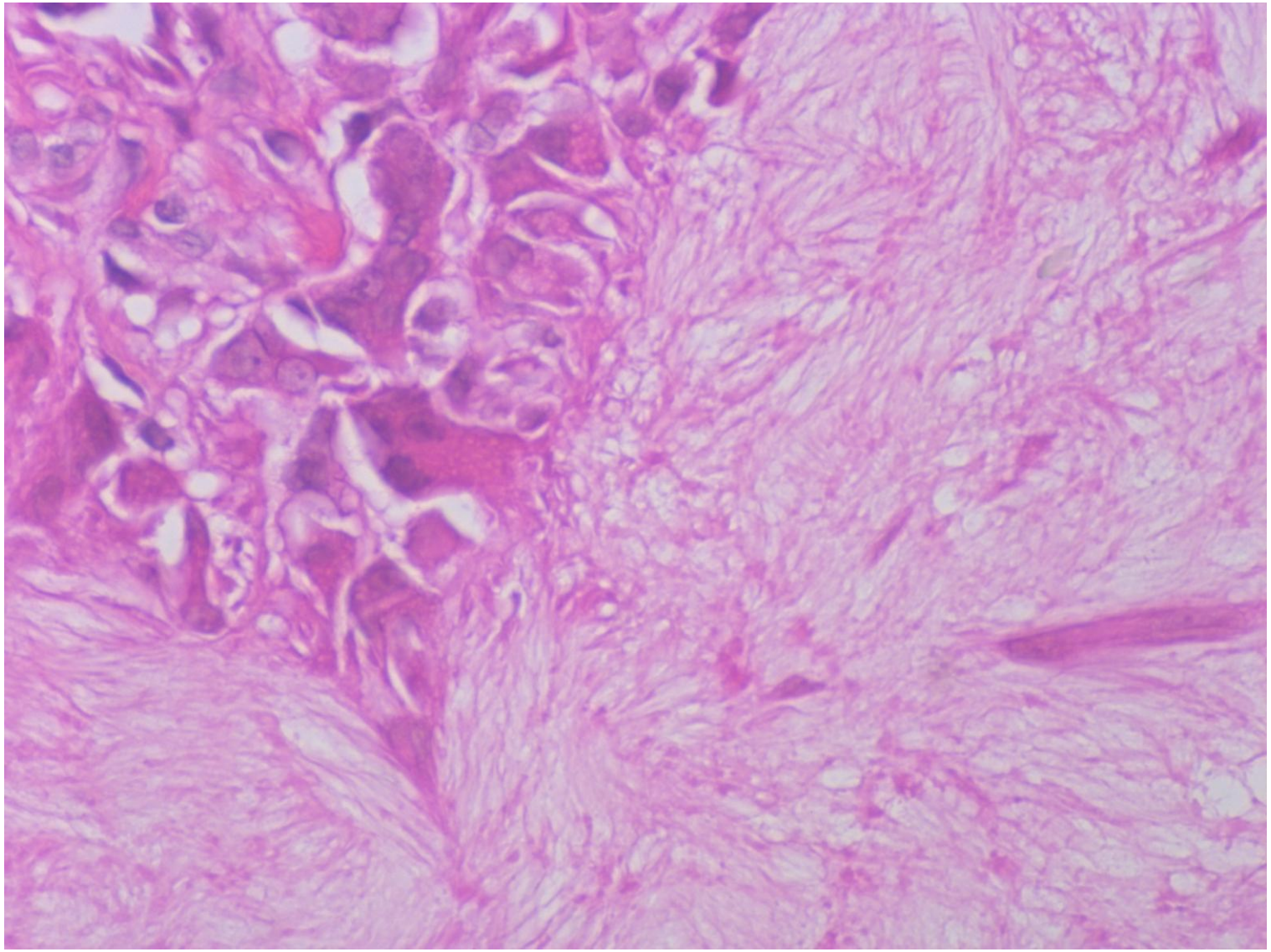


Reference case-2. Crystal arthropathy caused by pseudogout (deposition of calcium pyrophosphate) in the elbow joint of a 60 y-o male patient, presenting with tumoral (tophaceous) pseudogout (H&E).

51M, toe



Reference case-3. Crystal arthropathy caused by gout (deposition of sodium urate) in the toe joint of a 51 y-o male patient, presenting with tophus. Foreign body reaction against needle-like crystals is observed (H&E).



Reference case-3. Crystal arthropathy caused by gout (deposition of sodium urate) in the toe joint of a 51 y-o male patient, presenting with tophus. Foreign body reaction against needle-like crystals is observed (H&E).