In The Name Of God

Case presentation

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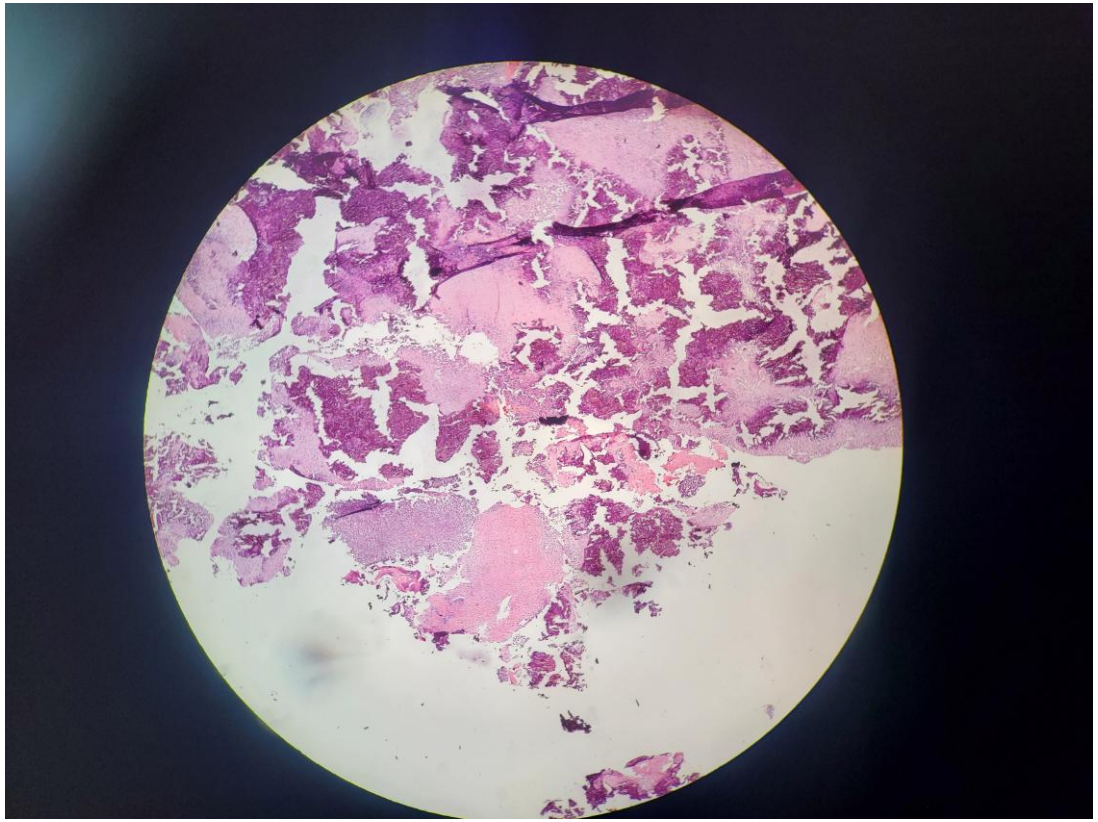
Presented by: Z.Hemati Farsani

Case history

A 13y/o male with chief complaint of femur pain.

x10



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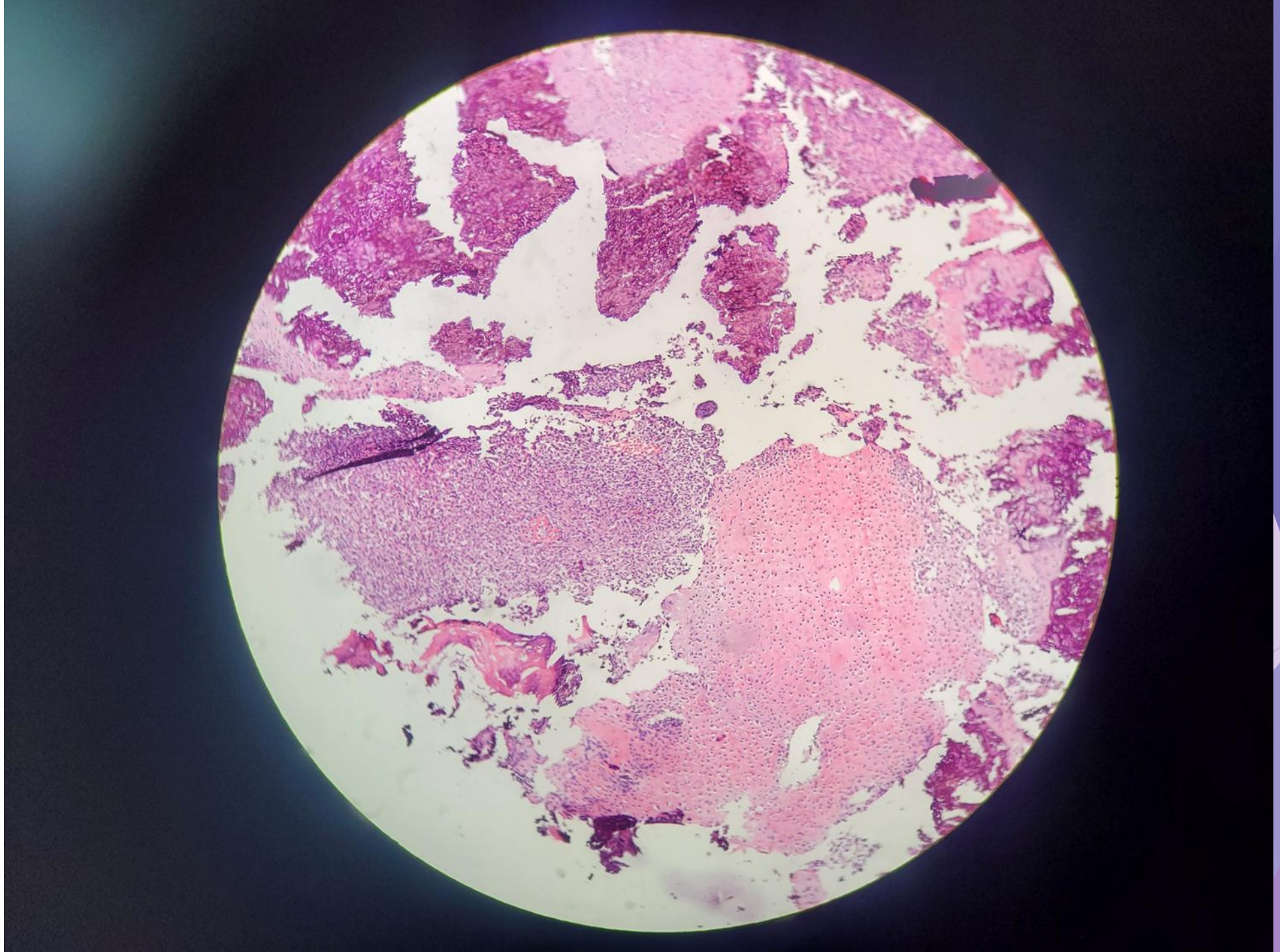

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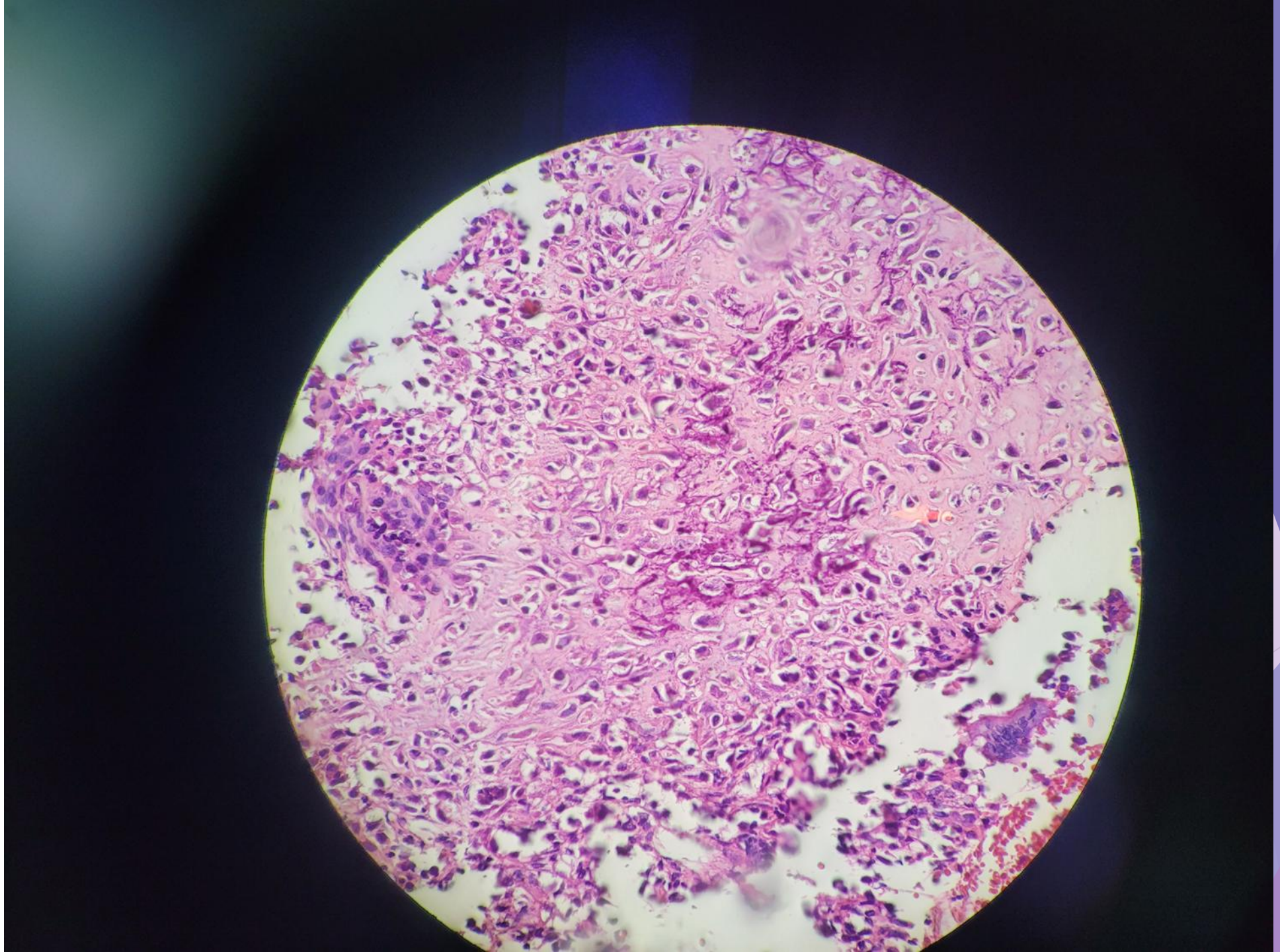

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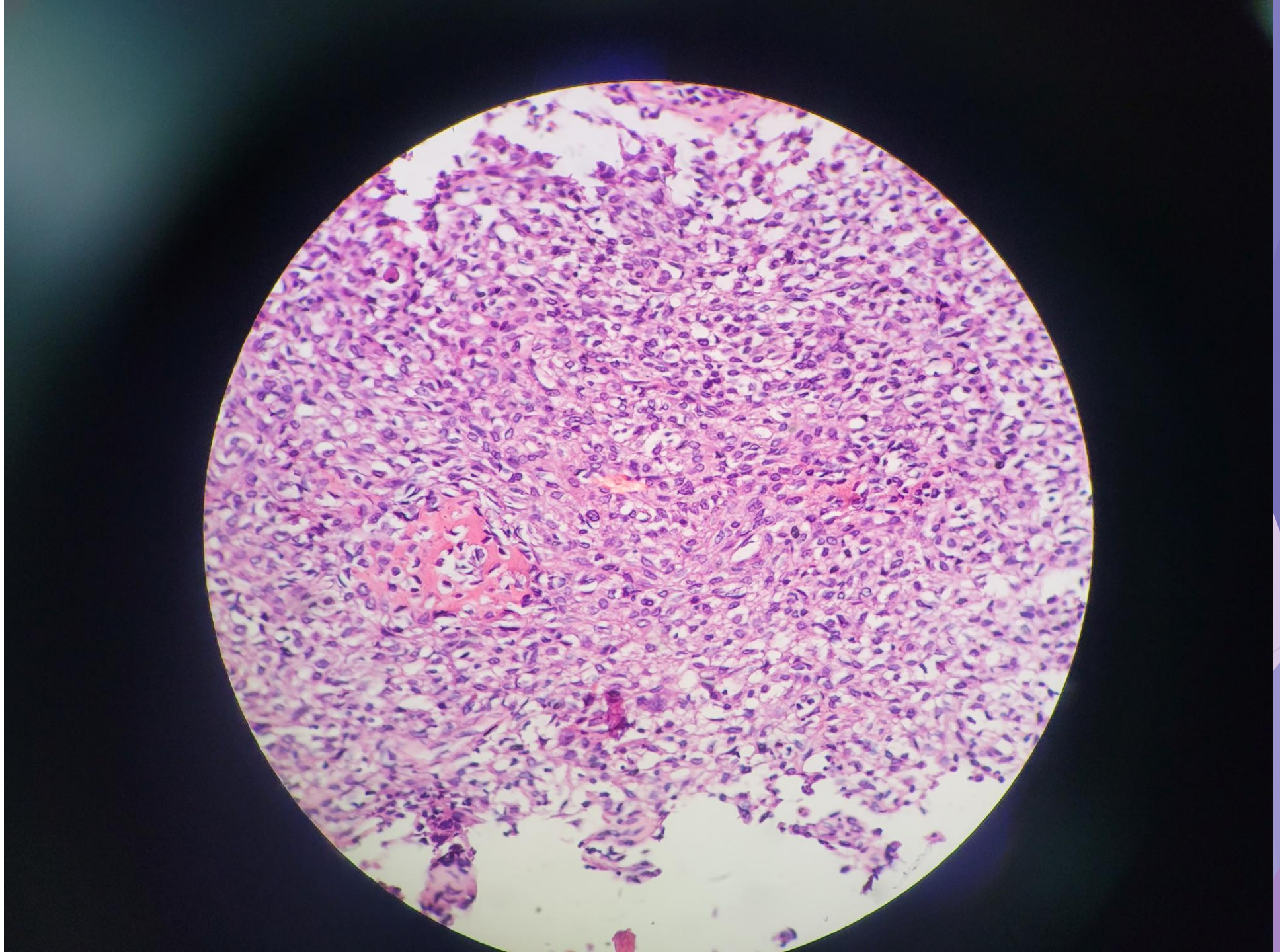
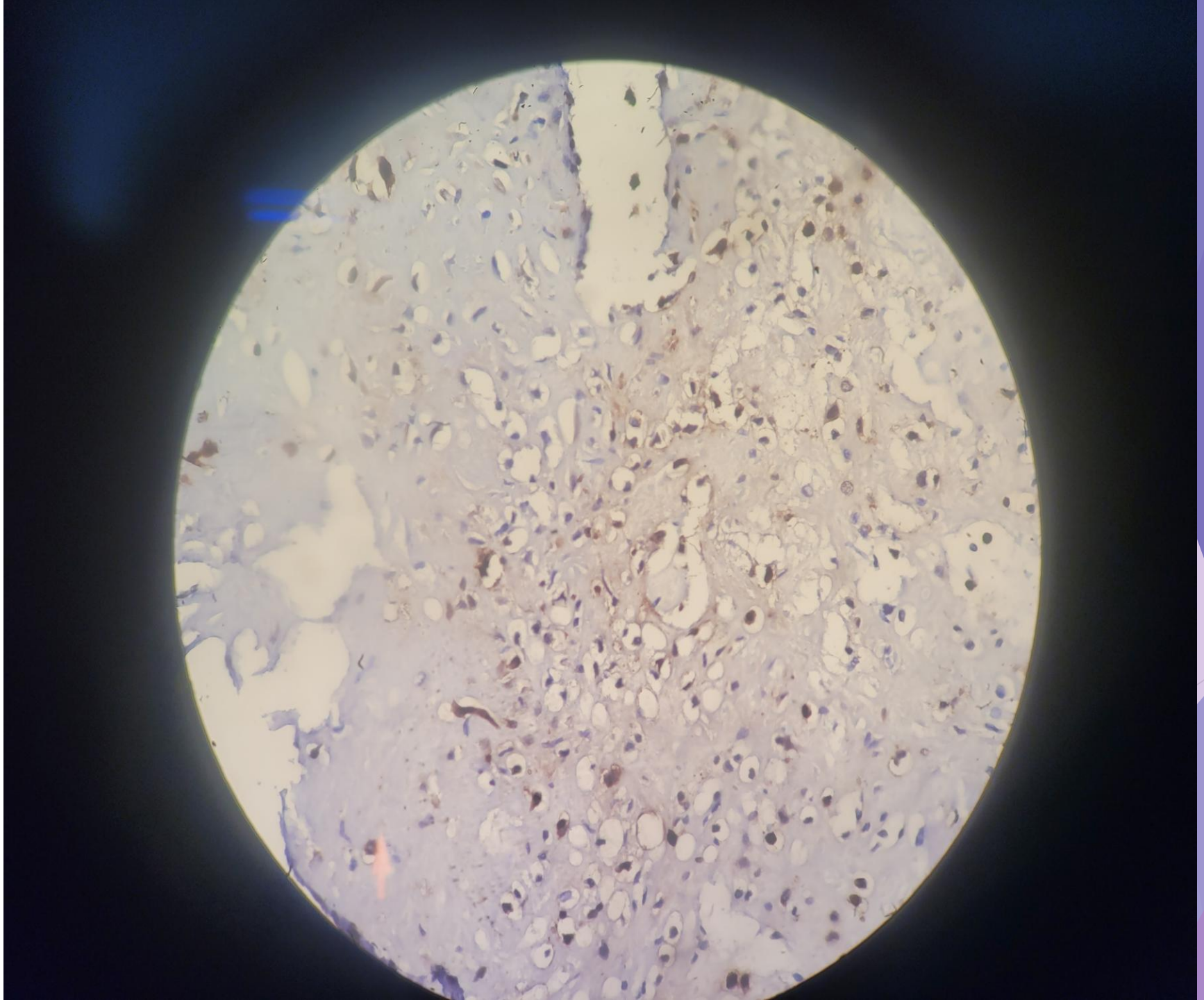
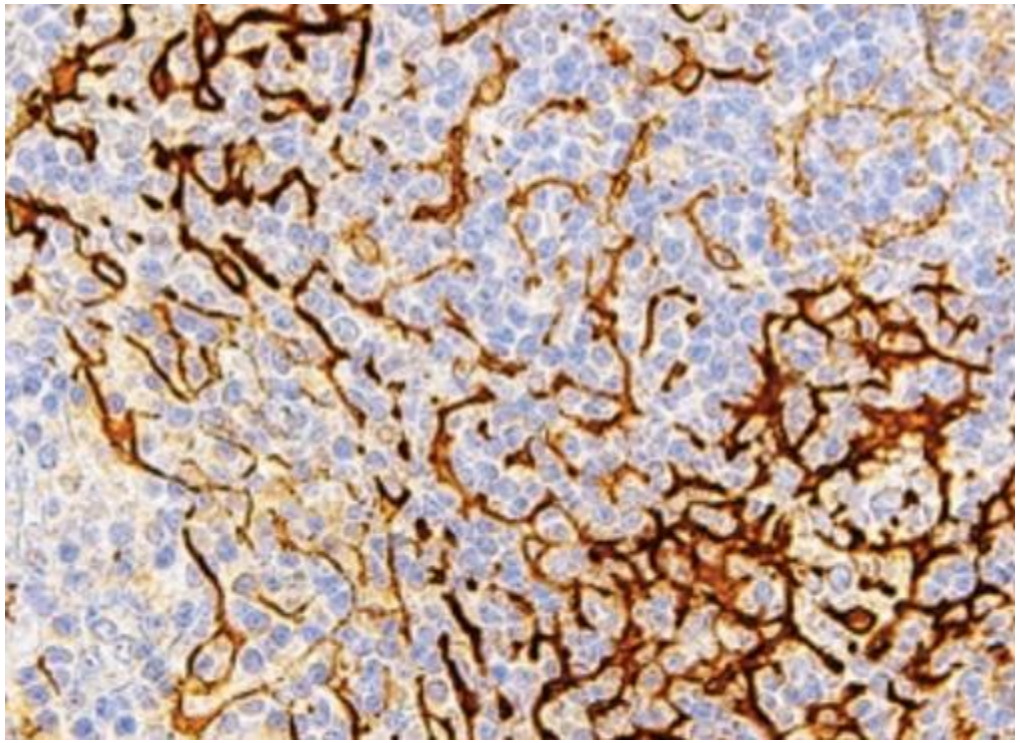


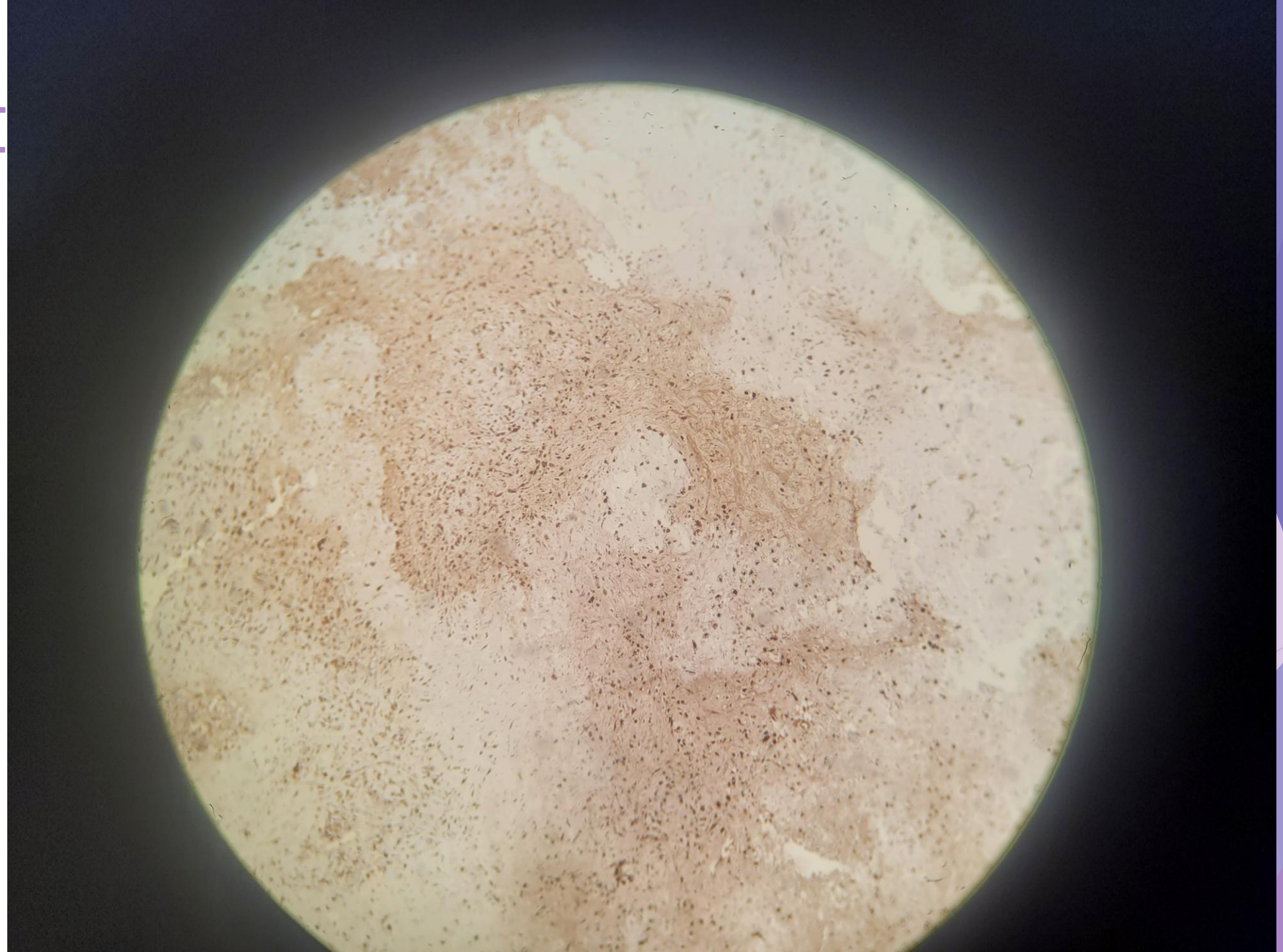
S100



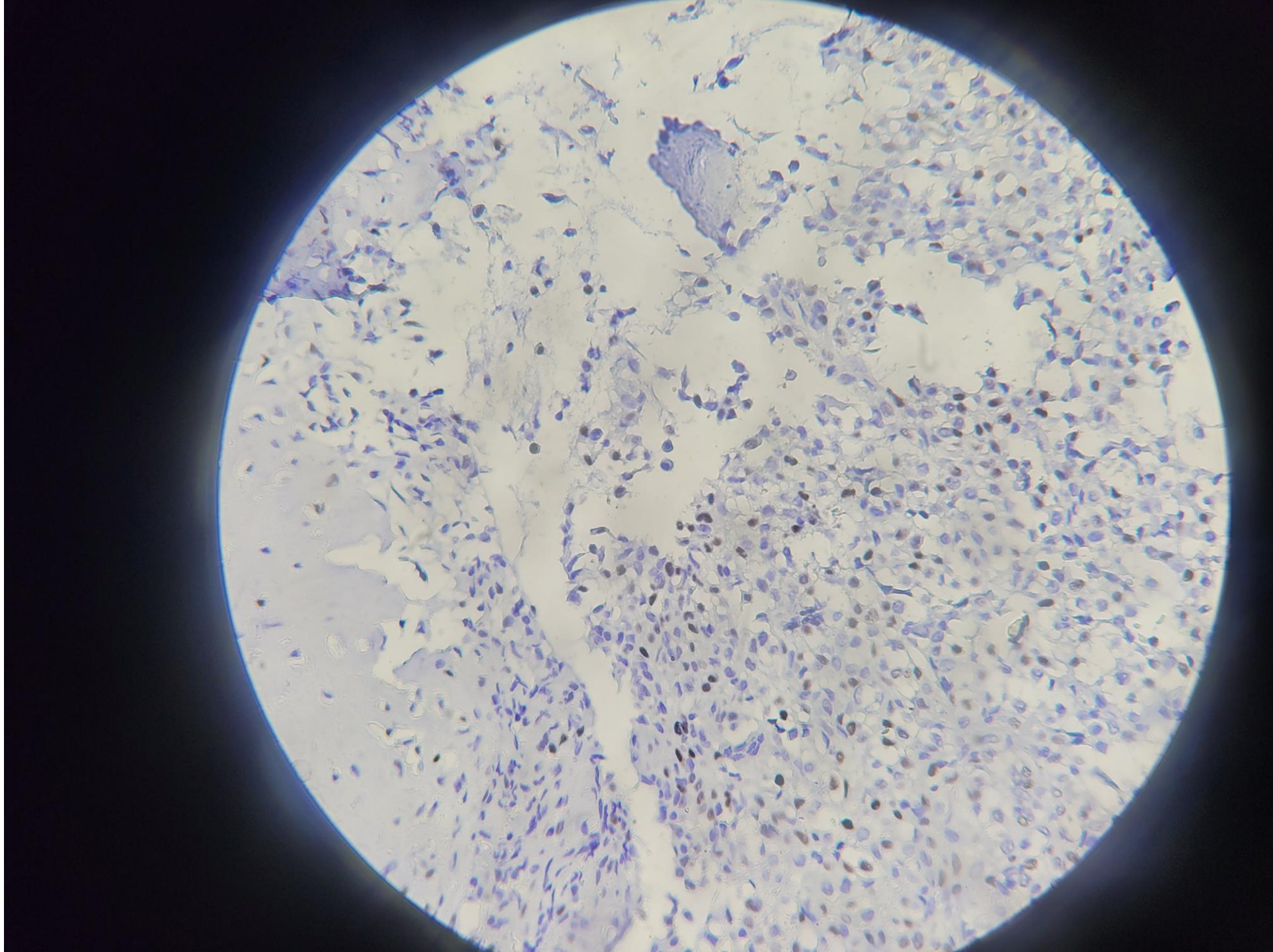
Vimentin



NSE



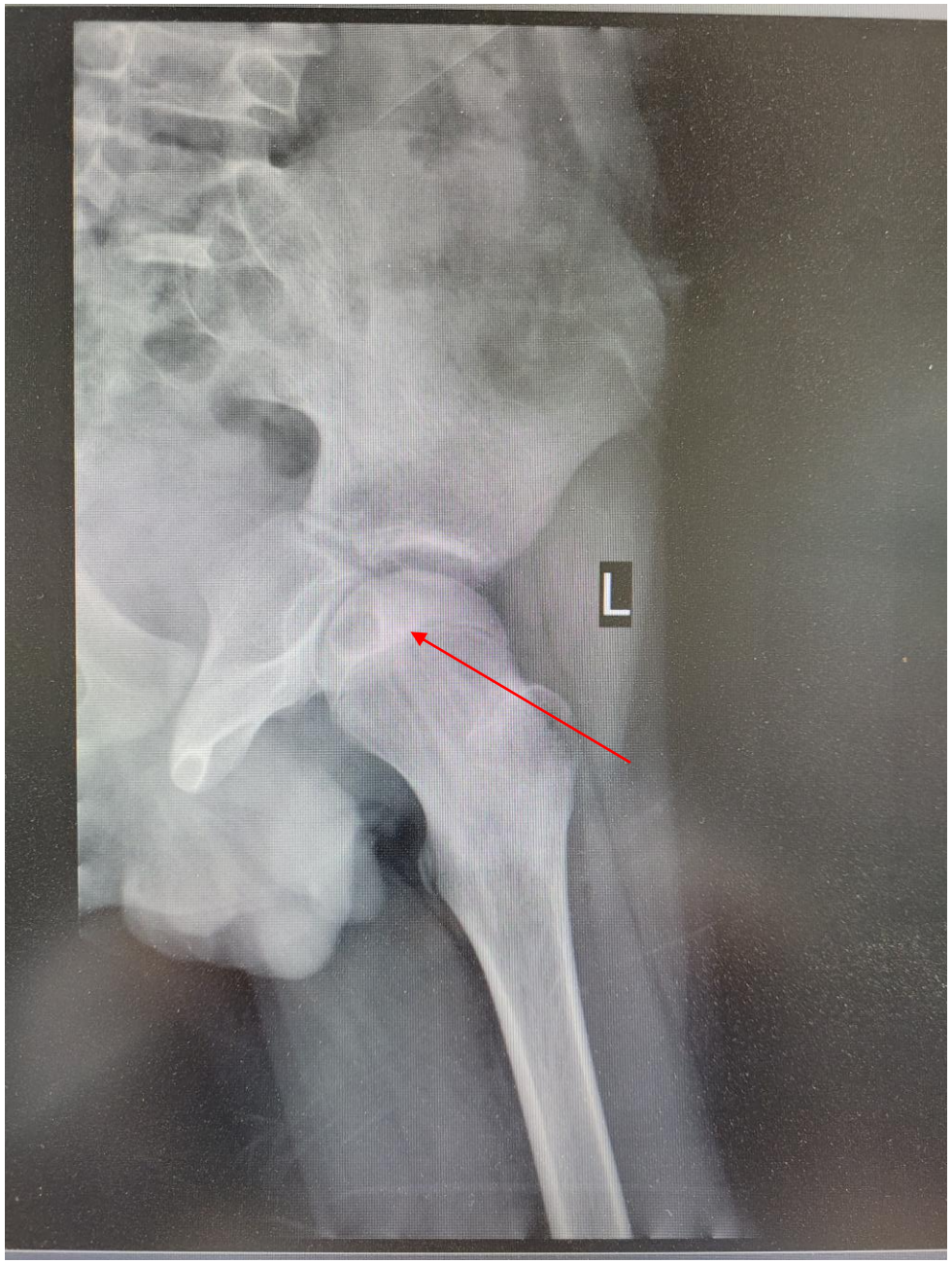
P63



What is your diagnosis?

DDX :

- Chondroblastoma
- Giant cell tumor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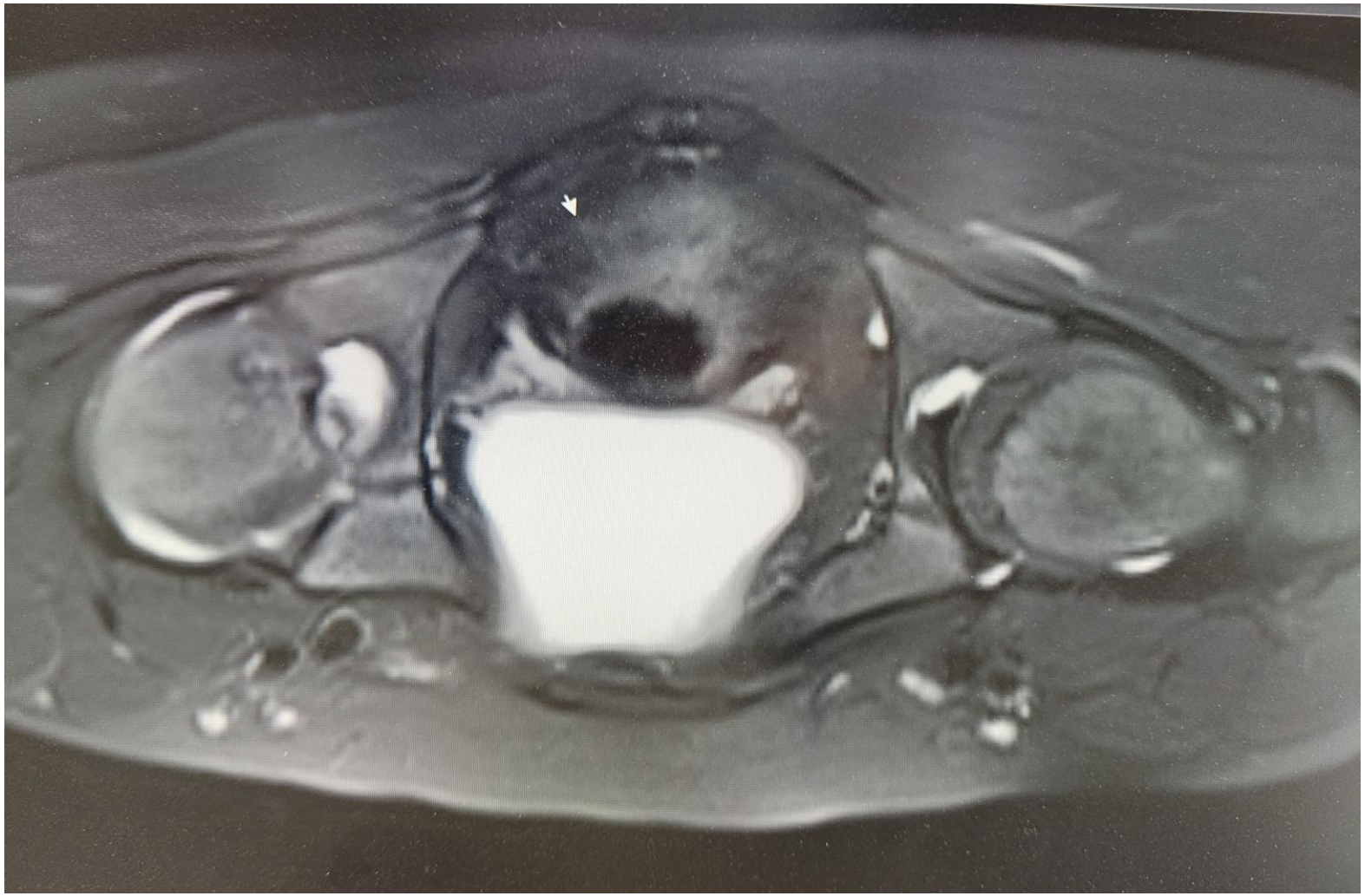
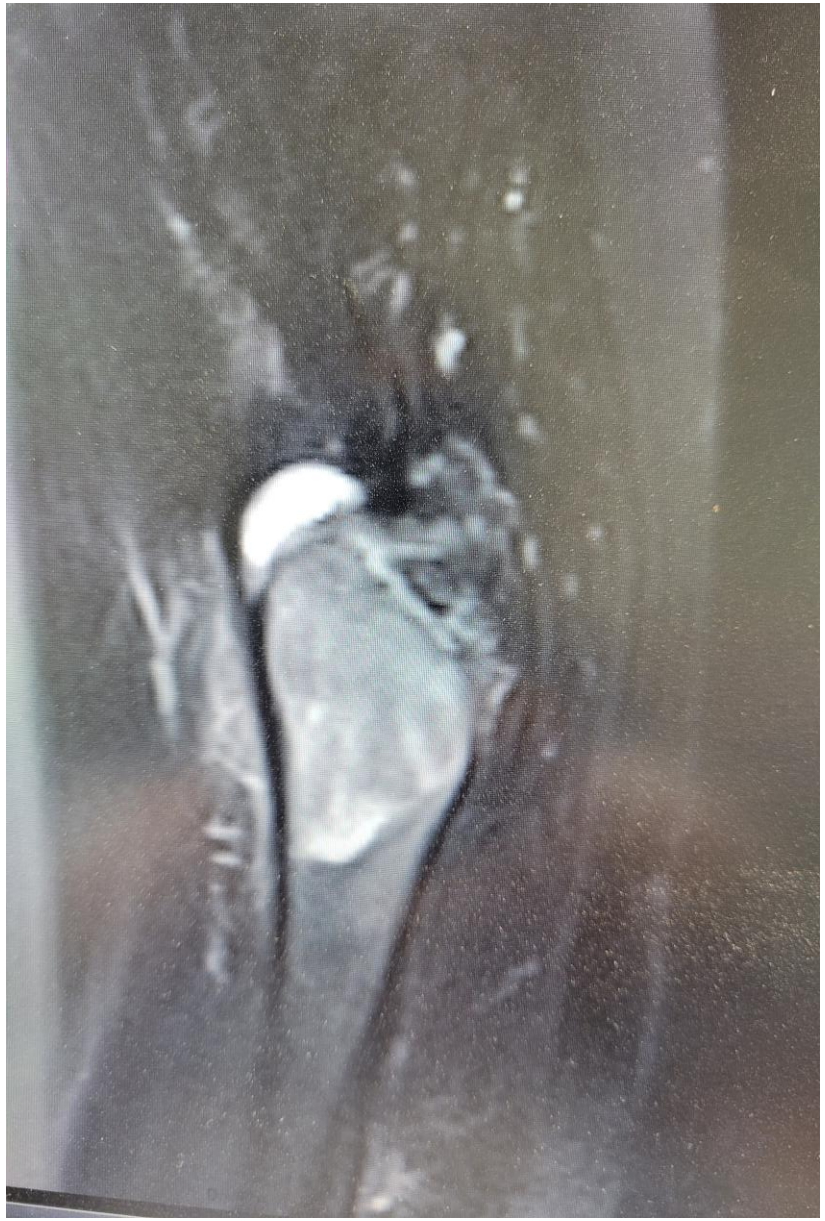




Macroscopic descripancy:

Clinical data: Acording to MRI reported suggestive for chondroblastoma

Received specimen consist of several soft creamy-gray pieces total measuring 2x1x0.5 cm.

Microscopic description:

Section show bone tissue composed of round chondroblast with abundant eosinophilic cytoplasm and a few spindle shape cell, nuclei are oval with some giant cell and pericellular lace-like or chicken wire calcification among degenerative chondroblast in cartilaginous matrix.

IHC staining :

-S100 : positive

-Vimentin: positive

-P63: positive in a few cell

-NSE:Positive

Diagnosis:

-IHC staining and morphological findings in favor of chondroblastoma

Chondroblastoma

- Chondroblastoma occurs predominantly in skeletally immature patients under 20 years of age and can be quite painful.
- It usually arises in the epiphysis or apophysis of long bones prior to skeletal maturity, particularly in the distal femur, proximal humerus, and proximal tibia.
- Radiographically, chondroblastoma usually appears as a sharply circumscribed radiolucent lesion. MRI typically shows extensive perilesional edema.
- From the epiphysis, it may extend into the metaphyseal area or the joint space.

Chondroblastoma

- Microscopically, this lesion may be confusing because of its extreme cellularity and variability.
- The occasional scattered collections of giant cells may lead to an erroneous diagnosis of giant cell tumor .
- The basic tumor cell is the chondroblast with only a limited capacity for the production of a cartilaginous matrix.
- The shape of this cell is usually epithelioid, although spindle elements can also be present.
- Chondroblasts have sharply circumscribed cytoplasmic borders, and the nuclei vary in shape from round to indented and lobulated; some resemble those of Langerhans cells with a prominent longitudinal nuclear groove.
- Mitoses are not prominent. Recurrent lesions may show some degree of atypia, a feature that should not be interpreted as a sign of malignant transformation.
- A distinctive microscopic change is the presence of small zones of calcification.

Chondroblastoma

- The calcifications range from a network of thin lines (“chicken wire”) to obvious deposits surrounded by giant cells. The cartilaginous matrix in chondroblastoma often has an immature, eosinophilic appearance, and hyaline cartilage is uncommon.
- Secondary aneurysmal bone cyst is present in a significant number of chondroblastomas.
- IHC:the cells of chondroblastoma coexpress vimentin and S-100 protein.
- They may also be immunoreactive for SOX9, low-molecular-weight cytokeratins, p63, NSE, and muscle-specific actin.

Chondroblastoma

- Curetting with bone grafting, which is the preferred treatment, provides local control in over 80% of the cases. Local recurrences can be treated similarly.

- Several cases of chondroblastoma, microscopically indistinguishable from the rest, have behaved locally in an aggressive fashion, invading the soft tissues and developing tumor thrombi in angiolymphatic channels.
- A few others have given rise to distant metastases, usually to the lungs.
- In nearly all of the reported cases of this phenomenon, the metastases have occurred after surgical manipulation of the primary tumor.

Giant Cell Tumor

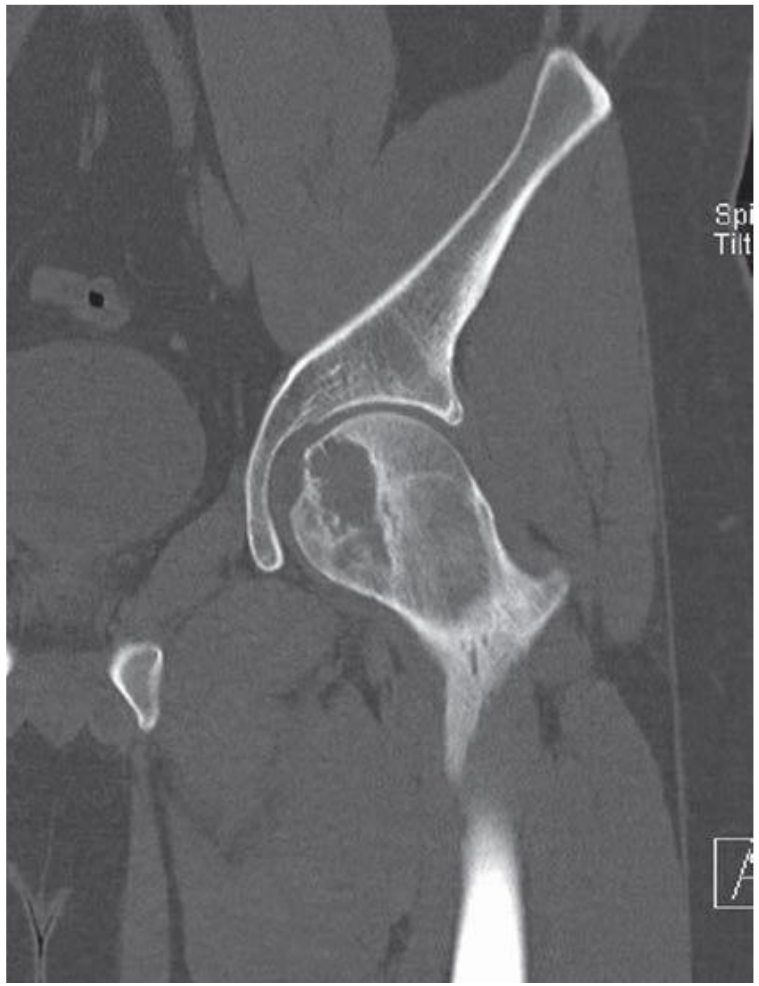
- Giant cell tumor is usually seen in skeletally mature patients over 20 years of age.
- It is more common in women than in men and seems to occur more frequently in China than in Western countries.
- Giant cell tumors involve the epiphysis of a long bone, from which they may spread into the metaphyseal area, extend through the cortex, or even cross a joint space via structures such as the anterior cruciate ligament or ligamentum teres.
- The sites most commonly affected (in order of frequency) are the distal femur, the proximal tibia, and the distal radius.

Giant Cell Tumor

- Although giant cell tumor has been documented at all of these sites, the occurrence of a giant cell–containing lesion in any of these locations should suggest an alternative diagnosis.
- Radiographically, the typical appearance of a giant cell tumor is that of a radiolucent lesion involving the epiphysis and metaphysis.
- The lesion is usually well circumscribed, but lacks surrounding reactive bone. Giant cell tumor may be confined to the bone or extend into adjacent soft tissue. Secondary aneurysmal bone cyst formation is better appreciated with CT or MRI.
- Grossly, the cut surface is solid or friable and has a variegated red–brown and yellow appearance. Hemorrhage and necrosis may be prominent. When the cortex is thinned or destroyed, a thin rim of reactive bone may surround the tumor.

Giant Cell Tumor

- Microscopically, the two main components of giant cell tumor are the so-called stromal cells and giant cells.
- The giant cells are usually large and have over 20 or 30 nuclei. The giant cells are evenly dispersed among a population of mononuclear stromal cells, which are round to oval, and the nuclei of the two components frequently resemble one another. Mitoses can be prominent in the mononuclear stromal cells.
- Secondary changes, including hemorrhage, necrosis, fibrohistiocytic changes, or aneurysmal bone cyst may obscure the classic histologic features of giant cell tumor.
- In such cases, correlation of the histologic features with the radiographic findings is necessary for diagnosis.



Giant Cell Tumor

- Giant cells tend to be distributed regularly and uniformly in giant cell tumor (except in areas showing secondary changes such as hemorrhage, fibrosis or fibrohistiocytic reaction), whereas in the lesions that simulate it, foci containing numerous, clumped giant cells alternate with large areas completely lacking this component. Additionally, most of these lesions are distinguishable with careful radiographic correlation as well.

Thank you for your attention