



Royal National Orthopaedic Hospital



NHS Trust

RNOH Stanmore

***Prevalence and Diagnostic
Significance of
Fluid/Fluid Levels
in
Soft Tissue Neoplasms***

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Introduction

- **Fluid / Fluid levels (FFLs):**
 - First described in aneurysmal bone cysts
- **Benign and malignant soft tissue tumours:**
 - Haemangioma
 - Synovial haemangioma
 - Myositis ossificans
 - Peripheral nerve sheath tumours
 - Synovial sarcomas
- **FFL result from layering:**
 - Blood products
 - Tumour necrosis
 - Separation of blood in cavernous spaces
 - Fat-fluid levels

Aim

- **Prevalence**
- **Diagnostic relevance**
- **Relationship to Final diagnosis**

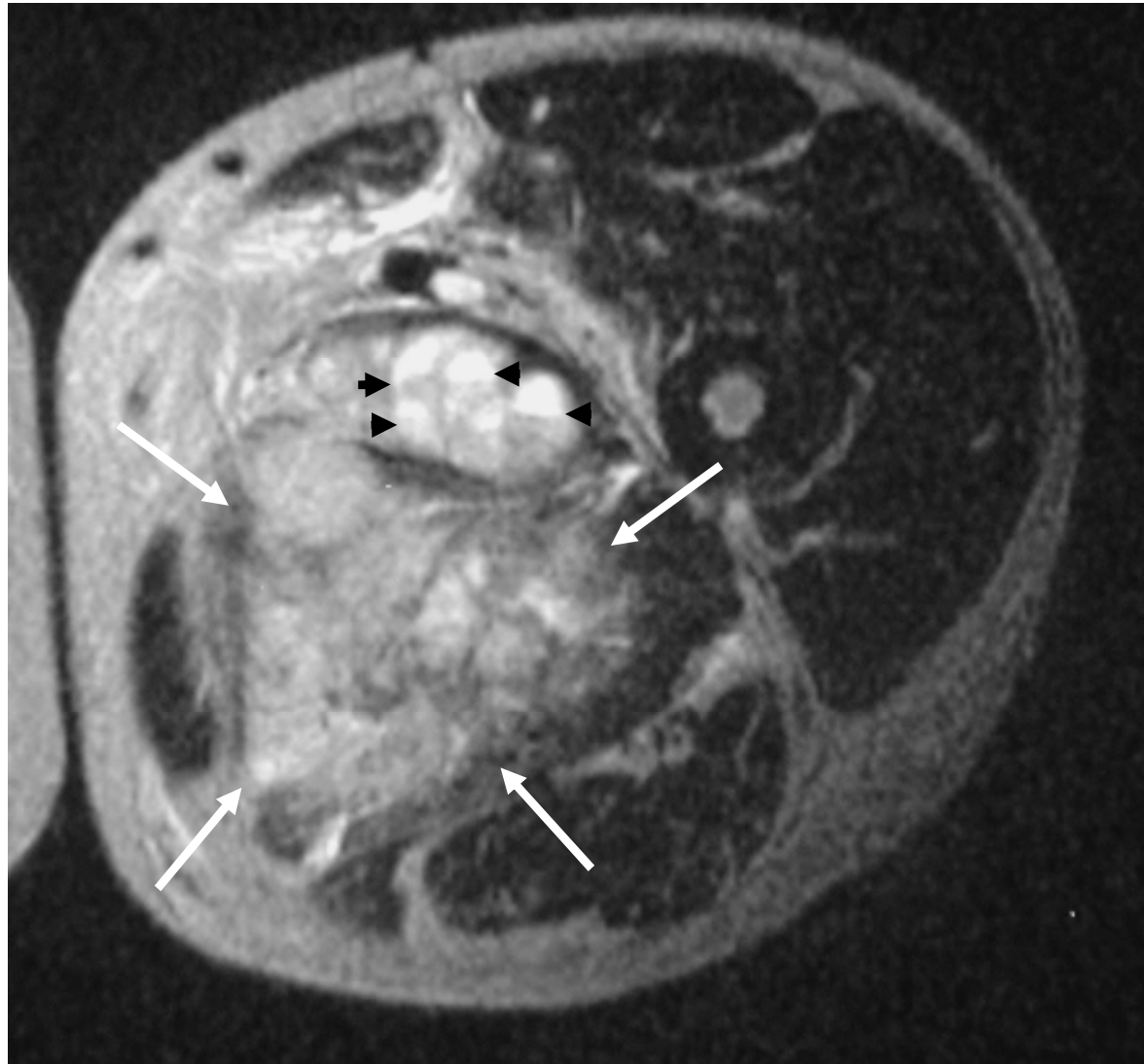
Subjects and Materials

- **722 new referrals**
- **Data collected**
 - Age: Mean 47.6y ± S.D. 20.1y
 - Sex: 361 females : 356 males
 - Imaging findings
 - Diagnostic category (non-neoplastic, neoplastic benign, neoplastic malignant)
- **Final diagnosis**
 - Histology/surgical resection
 - Characteristic imaging \clinical follow up

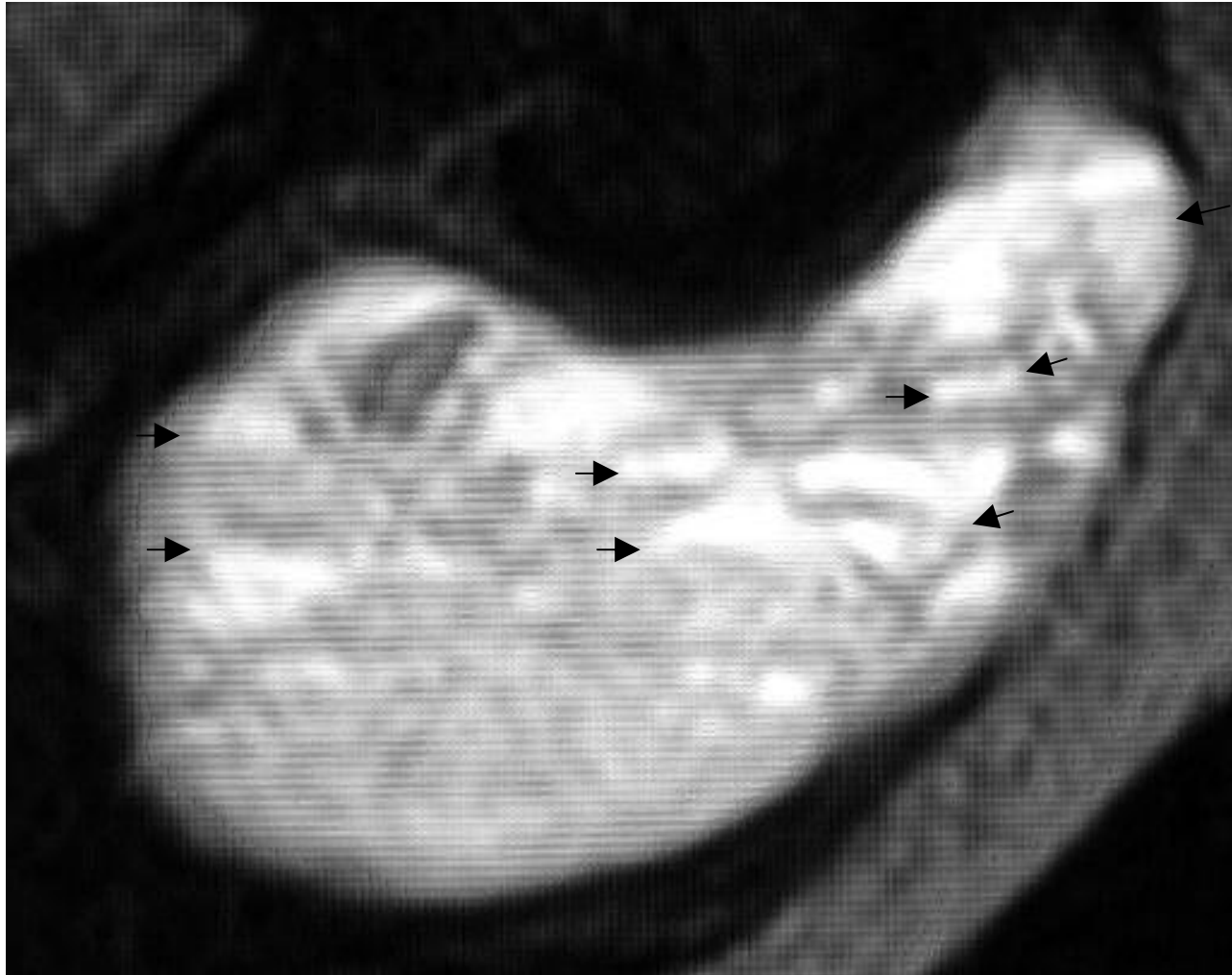
Subjects and Materials

- **Presence of FFL and proportion of FFL**
- **Blinded review T2/ STIR, sagittal, axial**
- **2 exclusions (hamartoma, spindle cell sarcoma)**

1/3 FFL



1/3-2/3



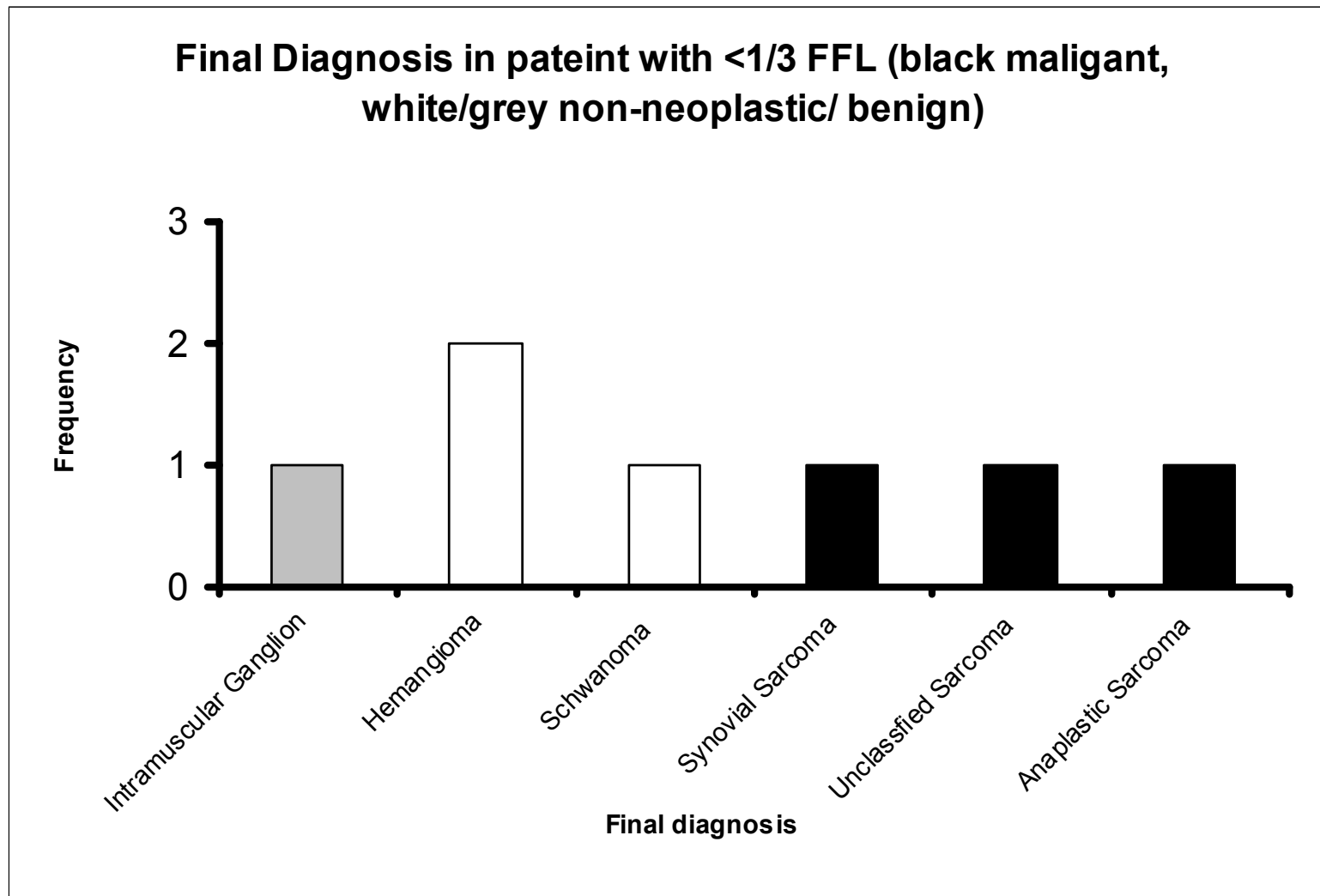
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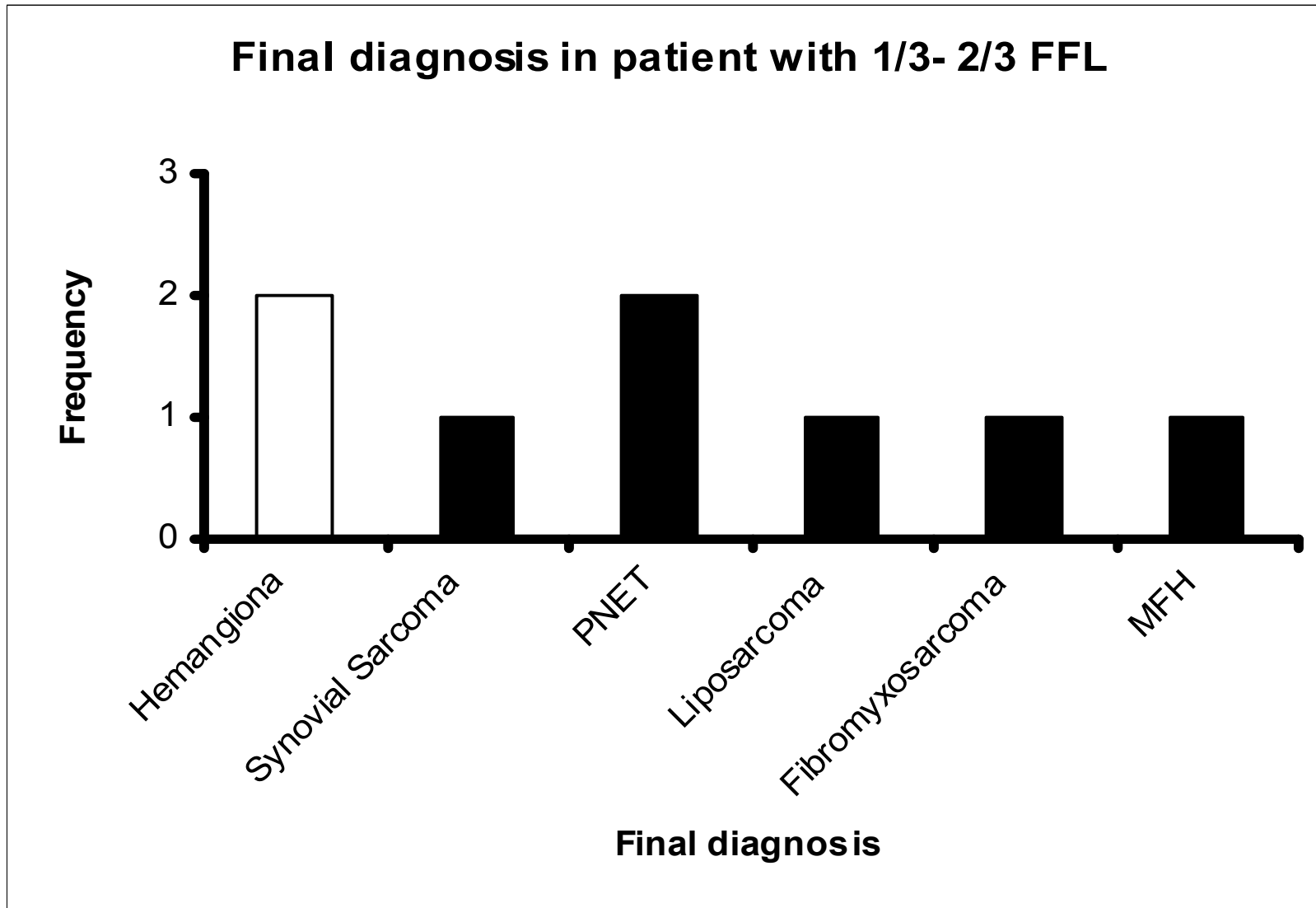
Results – 722 patients

- 19.2% (n=137) non-neoplastic
- 80.8% (n=585) neoplastic
 - 34.8% (n=251) benign
 - 46.0 % (n=334) malignant
- 24/722 (3.3%) FFL
 - 16 diagnosis - histology
 - 8 diagnosis - clinical/ radiological follow-up
 - (6 hemangiomas, 1 intramuscular ganglion and 1 schwannoma).

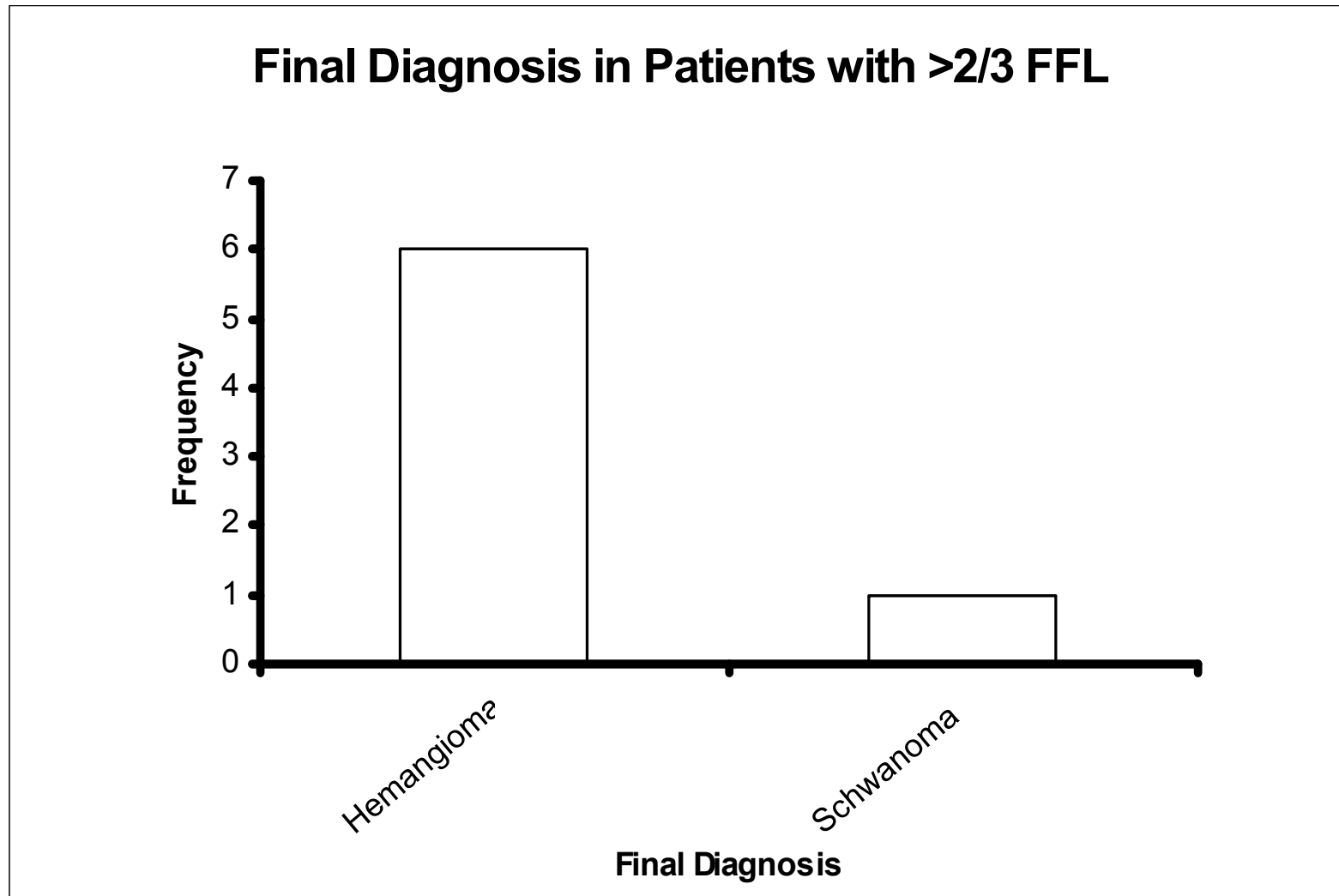
Results



Results



Results



Results

- | | | |
|---------|---------|------------------|
| >2/3 | - 100 % | Benign |
| 1/3-2/3 | - 75 % | Malignant |
| >1/3 | - 42.9% | Malignant |
- **48% (11/24) of tumours with FFL were malignant vs. 57% (322/564) non FFL group.**
- **95.8% (23/24) FFL lesions neoplastic vs. 80.5% (565/702) without FFL (p<0.05).**

Discussion

- Necrosis, haemorrhage, or cystic
- No previous description of FFL prevalence
- In bone tumours - 11.8%
- 18-25% Synovial sarcomas
- We describe-PNET, leiomyosarcomas, MFH, myxofibrosarcoma, haematomas and spindle cell sarcomas

Discussion

- **Diagnostic significance non specific and cannot distinguish benign from malignant**

Tsai, et al 90, Sone et al 92

- Few cases (3/12, 3/6)
 - Combined bone and soft tissue tumours
 - No quantification of portion of FFL
- **Greater no. malignant lesions in our group**
 - **Less characteristic lesion referred**

Conclusion

- **Prevalence of FFL is 3.3% in soft tissue tumours**
- **>2/3 FFL suggest benign rather than malignant disease**
- **Non-specific finding**