Primary bone tumour

Plain radiographs

- Negative radiographs but persistent symptoms
  - Diffuse or nonspecific symptoms
  - Focal pain

- Bone scan
  - Negative
  - Positive

Benign features

- Suspected osteoid osteoma
- No treatment required

Malignant features

- Local staging
  - MRI ± CT
- Distant staging
  - Bone scan or PET/CT
  - CT thorax

- Biopsy
- MRI
- CT/MRI
- CT/ MRI
- MRI ± CT
- STOP
1 **Plain radiograph**
   1.1 Regional radiographs are necessary for suspected bone tumour and remain the initial technique for the detection and characterization of tumours and tumour-like lesions.
   1.2 For typical benign lesions, no further imaging is required unless there is a suspected complication or surgery is being considered.

2 **Nuclear medicine**
   2.1 Bone scan is helpful when bony metastasis is suspected.
   2.2 Baseline bone scan can exclude multicentricity.

3 **CT**
   3.1 CT is the preferred method for assessment of cortical involvement, cortically-based tumours, flat bones with little marrow, and demonstration of tumour mineralization or calcification. It is complementary to MRI in this regard.
   3.2 CT is indicated for confirmation and pre-surgical localization of osteoid osteoma following positive radiograph or bone scan.

4 **MRI**
   4.1 MRI is the imaging modality of choice for assessment of bone marrow, soft tissue, juxta-articular and neurovascular involvement (i.e. local staging).

5 **PET/CT**
   5.1 PET/CT has higher sensitivity and specificity than CT, MRI and bone scan for detecting distant metastases (except being less sensitive to pulmonary nodules).
   5.2 It also has high sensitivity (90%), specificity (96%) and accuracy (95%) for differentiating primary bone tumour from osseous metastases.

6 **Pathological diagnosis**
   6.1 Staging of the primary tumour should be completed first before any biopsy.
   6.2 Biopsy should be carried out in close consultation with the orthopaedic surgeon planning the definitive treatment.

**REFERENCES**