Osteoid osteoma or Osteoblastoma.

Mr Colin Senior
Bone producing tumours.

Both have similar histology.

               2. Radiological appearance.
               3. Gross pathological findings.
Osteoid Osteoma

- Unknown aetiology
- 10% of all benign bone tumours.
- Male to female ratio 2:1.
- Peak age range 5-25 years.
- Any bone.
Osteoid Osteoma

- Small
- Benign
- Solitary
- Painful
Osteoid Osteoma
Osteoid Osteoma

- Relieved by aspirin.
Osteoid Osteoma
X-Ray appearance

- Lytic nidus.
- Surrounded by sclerotic bone.
- Centre of nidus may be calcified.
Osteoid Osteoma
CT.
Osteoid Ostema
Bone Scan

- Focus of increased radiotracer uptake on bone scan (very hot).
Osteoid Osteoma
Pathology

- Nidus less than 1.5cm.
- Nidus contains an interlacing network of osteoid trabeculae.
- Variable mineralization.
Osteoid Osteoma Pathology

- Distinct demarcation between nidus and reactive bone.
Osteoid Osteoma
Differential

• Brodie's abscess
• Bone island
• Osteoblastoma
• Fatigue fracture
Osteoid Osteoma

Treatment

- Non-operative.
  - NSAIDs
- Operative.
  - Nidus excision.
  - Percutaneous radiofrequency coagulation.
Operative.

- Intraoperative localisation with:
  - 1. Bone scan.
  - 2. Tetracycline (4mg tetracycline per kg qid 1-2 days pre operatively -> specimen excised under UV light).
  - 3. CT.
  - 4. X-Ray excised tissue -> contains nidus.
Operative.

• Complete removal of the nidus by curettage.

• Hand or power instruments.
Operative complications

- May be difficult to identify.
- May recur if not completely removed.
- Removal can be extensive.
- Risk of fracture.
Percutaneous radiofrequency coagulation

- Involves percutaneous insertion of a biopsy needle under CT scan guidance.
Percutaneous radiofrequency coagulation

- Involves percutaneous insertion of a biopsy needle under CT scan guidance.

- A tissue biopsy is taken in order to prove that the needle is properly located.

- Then a radiofrequency electrode with a 5 mm exposed tip is introduced thru the cannula.
Percutaneous radiofrequency coagulation

The electrode is connected to a radiofrequency generator which raises the temperature of the tip to 90 deg C (which is maintained for 6 minutes)

Within 24 hours patient usually states “tumour has gone”

Painfree at 2-3 days.
Percutaneous radiofrequency coagulation

As noted by Rosenthal et al 1998, results of this technique are comparable to the standard open technique.
Rosenthal et al
JBJS(Am) 1998

• Retrospective study.
• Excluded spinal lesions.
• Or if another diagnosis made after excision.
• Complications recorded.
• Questionnaire.
87 patients managed with operative excision.
38 managed with percutaneous radiofrequency.
Spinal lesions excluded.
Minimum follow up 2 years.
• Surgical resection.
• 6 of 68 of primary tumours recurred.
• 2 of 19 of recurrent lesions recurred.
• Radiofrequency.
• 4 of 33 recurrence of primary lesions.
• 0 of 5 for recurrent lesions.
  - No Significant difference. (Fisher exact test)
Rosenthal et al
JBJS(Am) 1998

• Average length of hospital stay;
  • Surgery 5 days
  • Radiofrequency 0.2 days
Rosenthal et al
JBJS(Am) 1998

• Two patients had complications after surgery.

• No complications in the radiofrequency group.
Rosenthal et al
JBJS(Am) 1998

- Radiofrequency has replaced operative excision.
- Shorter convalescence.
- Requires fewer resources.
Oswestry
Skeletal Radiology, Nov 2005
Cribb et. al.

- 45 patients
- 12 month follow up
- 7 local recurrences
- Non-diaphyseal lesions more likely to reoccur.
MR-guided laser induced thermotherapy of osteoid osteoma
MR-guided laser induced thermotherapy of osteoid osteoma

- 5 patients
- Dill hole
- Biopsy
- Laser
- All pain free and no recurrence at 6 months
Osteoblastoma

- Less than 1% of benign bone tumours.
- Peak age 10-35 years.
- 40-50% are vertebral.
- Less painful.
Osteoblastoma
X-ray appearance

- Well demarcated osteolytic lesion sometimes containing flecks of calcification
- Less reactive bone than osteoid osteoma

13 year old boy with 6 months of shoulder pain
Osteoblastoma
X-ray appearance

- May have aggressive features
- metaphyseal
- enlarges bone
- periosteum intact
Osteoblastoma
X-ray appearance

- Bone destruction with or without the reactive bone formation seen with osteoid osteoma.
- Sometimes has the moth-eaten appearance of malignancy.
Osteoblastoma

Histology

• As for Osteoid osteoma but increased size (2 - 10 cm).
• Vascular stroma, abundant irregular areas of mineralised bone and osteoid. More organised than an osteoid osteoma.
• Tends to merge with normal bone trabecular.
Osteoblastoma

Histology

- Texture gritty and friable
- Malignant change has been reported
Treatment

- Intra capsular resection → 20% recurrence. High speed burr.
- En bloc resection → no recurrence
- Use cryotherapy as adjuvant
Prognosis

- Tumours are aggressive locally but do not metastasize.
- One case of malignant change reported.
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<tr>
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<th>Osteoid Osteoma</th>
<th>Osteoblastoma</th>
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<tbody>
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<td><strong>Incidence</strong></td>
<td>Common</td>
<td>Rare</td>
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<tr>
<td><strong>Clinical</strong></td>
<td>Pain relieved by aspirin</td>
<td>Pain partially relieved by aspirin</td>
</tr>
<tr>
<td><strong>Pathology</strong></td>
<td>nidus &lt;1-2cm; woven bone; surrounded by reactive bone</td>
<td>nidus 3-10cm; sheets of woven bone</td>
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<td><strong>X-Ray</strong></td>
<td>small central nidus surrounded by dense reactive bone</td>
<td>lucent or dense lesion</td>
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