VERY SMALL BONE BIOPSIES

Processing the Biopsy Tissue

1. Usual precautions due to very small specimens

2. Probe to determine if decalcification is necessary. Small hard specimens can chip out of the block during rough cutting and be lost.

The Bone Biopsy in Veterinary Medicine

1. Trephine biopsies, dog – of 32 long bone neoplasms, 84% of biopsies from the center of the lesion and 54% from the periphery of the lesion had neoplastic tissue in the biopsy for a combined diagnostic accuracy of 94% (Wykes et al. 1985).
2. Jamshidi needle biopsy, small domestic animals – in 62 lesions, 92% of the biopsies contained sufficient tissue to accurately distinguish between neoplastic and non-neoplastic lesions and in 62% of the biopsies there was accurate subclassification of neoplasia (Powers et al.

The Bone Biopsy in Human Medicine

Investigation of the safety and accuracy of intraoperative gamma probe directed biopsy of bone scan detected rib abnormalities in prostate adenocarcinoma (Thurman et al. 2003)

Radiographic Evidence of Aggressive Bone Lysis

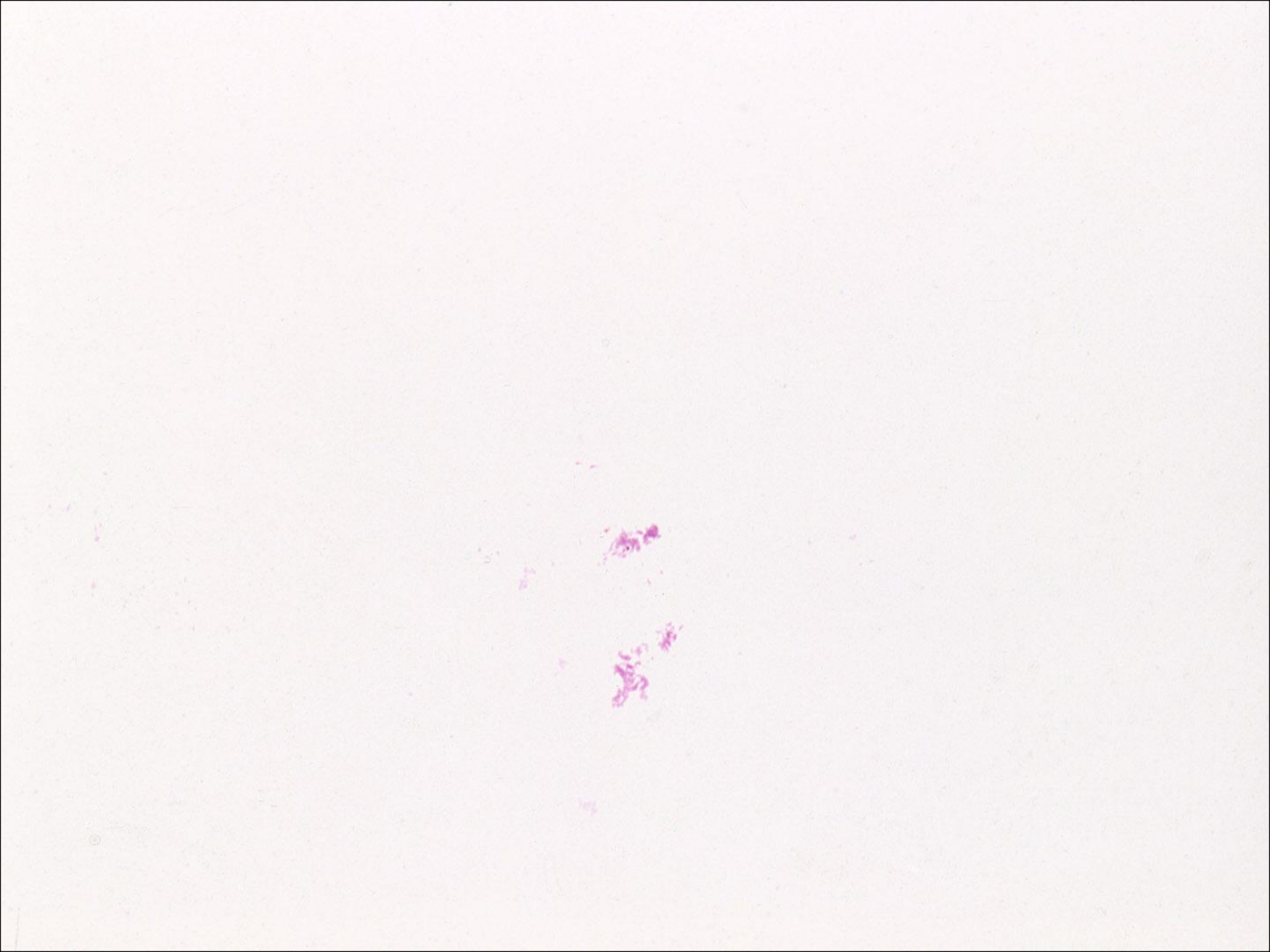
- Bone lysis in aggressive lesions (neoplastic and non-neoplastic) – permeative or “moth eaten” margins. Response of periosteum – Codman’s triangle.
- Bone lysis in non aggressive lesions (neoplastic and non-neoplastic) – sharp distinct margins with possible reactive rim. Response of periosteum – buttress formation.

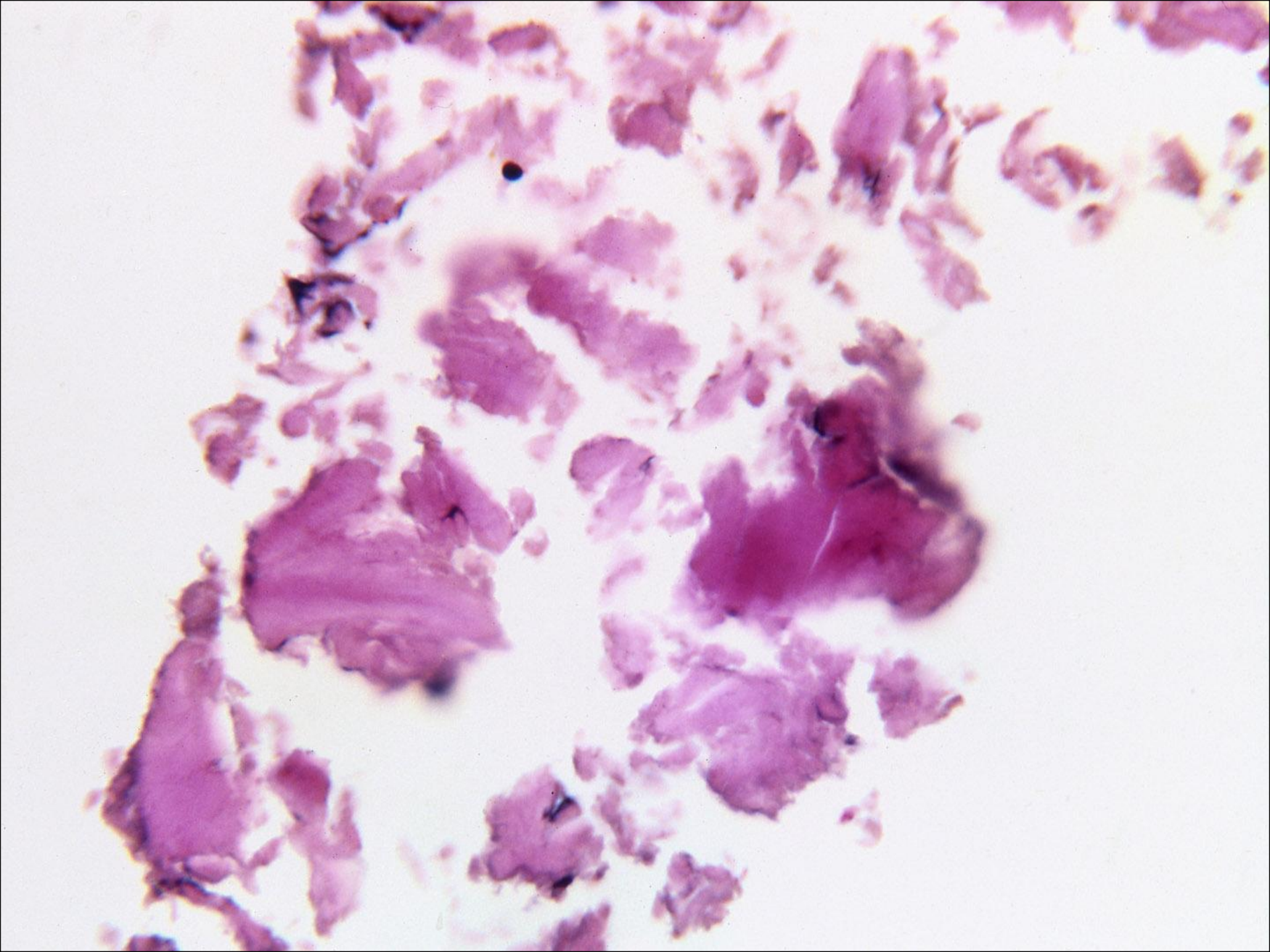
Suggestions for Comments Regarding Distorted/Crushed Specimens

Extensive crush artifacts/distortion of the tissue induced by the biopsy process make interpretation of these small fragments impossible. Additional biopsy material with less artifacts will be needed for definitive diagnosis.

Extensive crush artifacts/distortion of tissue induced by the biopsy process make definitive interpretation of these small fragments impossible. Changes present are suspected to represent X, Y, Z. Level of confidence in this interpretation is high/medium, low. Confirmation of this interpretation will require additional biopsy material with less artifacts.

No cellular elements are present likely due to damage of the tissue induced by the biopsy process. The changes present in the fragmented and distorted matrix are consistent with marked bone modeling (formation/lysis). It is not possible to determine the nature of the underlying process due to artifactual loss of cells. Additional biopsy material with less artifacts will be needed for definitive diagnosis.





Suggestions for Comments in Cases with No Relevant Clinical/Radiographic Findings Provided

Proliferation of well differentiated periosteal bone. Compatible with osteoma or response to trauma/mechanical instability or adjacent inflammation or neoplasia but there is no evidence of malignancy or inflammation in this biopsy material.

Reactive periosteal bone formation. Compatible with response to trauma/mechanical instability or adjacent inflammation or neoplasia but there is no evidence of neoplasia or inflammation in the biopsy material.

Marked modeling with increased reactive bone formation and bone lysis. Assuming this is a localized lesion it is compatible with response adjacent inflammation or neoplasia but there is no evidence of neoplasia or inflammation in the biopsy material.

Suggestions for Comments in Cases with Conflicts Between Biopsy and Clinical/Radiographic Findings

Periosteal reactive bone formation. No significant lesions in subjacent cortex, trabecular bone or marrow. No lesions present in these specimens to explain the lytic appearance you described radiographically. Biopsy containing the lytic lesions will be required to reach diagnosis.

No lesions present in these specimens. Normal trabecular bone, marrow and cortical bone are present. Specimens apparently are not representative of the lytic/proliferative process you described radiographically.

Suggestions for Comments on Non-Definitive Biopsies

Less than 5% of the specimen consists of atypical fibro-osseous tissue. If there is clinical/radiographic evidence of an aggressive lytic/productive lesion, this would be strong support for concluding this is a primary bone sarcoma. Definitive histopathologic confirmation will require biopsy containing more of the suspect tissue.

There is atypical fibro-osseous tissue present. It can not be determined if this is atypical reactive hyperplasia to the fracture you described or an underlying disease process. If the clinical duration of the fracture is less than 48 hours, this strongly suggests there is an underlying disease process. Osteosarcoma is suspected with H, M, or L degree of confidence. Definitive rule out of ostesarcoma at this time will require additional biopsy material. If the fracture fails to heal or a mass develops, rebiopsy recommended.