

EDITORIAL

Biopsy in Musculoskeletal Tumors

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Diagnosis of a bone tumor is based on careful evaluation of clinical, imaging and a pathologic findings. So the biopsy of bone and soft tissue sarcoma is the final step in evaluation and a fundamental step in the diagnosis of the lesion. It should not be performed as a shortcut to diagnosis (1).

The biopsy should be performed to confirm the diagnosis or differentiate among few diagnosis after careful staging studies. Biopsy superimposes real and artificial imaging changes at the biopsy site, and these can alter the interpretation of the studies (1).

The correct management of a sarcoma depends on the accurate diagnosis. Inadequate, inappropriate, or inaccurate non-representative biopsy leads to poorer outcome interms of survivorship and limb salvage. An incorrect, and unplanned incision and biopsy may unnecessarily contaminate uninvolved compartments which converts a salvageable limb to amputation. Anatomic approach in specific location and biopsy technique may lead to success or catastrophe.

It is clear that there is a significantly higher incidence of the need to change treatment to a more radical procedure than would originally have been necessary or to convert to palliative rather than curative, and more likely to require adjuvant radiotherapy in patients with an inappropriate biopsy.

Sarcoma patients are best served by early referral to a specialized center where staging investigations and biopsy can be performed with minimal morbidity? (3)

Open biopsy is still considered the gold standard however, recent literatures suggest similar results for percutaneous core needle biopsy. Our study on 103 consecutive CNB and open biopsy the results is the same. Surgeon should be answered two questions before performing a biopsy:

- 1- Where is the best part of the lesion for biopsy?
- 2- What is the safest route without contaminating other anatomic structures? (4)

Carcinomas are homogeneous, and a simple CNB

is usually sufficient for diagnosis but in soft tissue sarcomas the periphery of the tumor is the growing part and usually represents the underlying malignancy authentically. The center of the tumor may be hemorrhagic or necrotic, so taking biopsy from this port may make an error in diagnosis, extraosseus part of a bone sarcoma is as representative as bony component of the tumor; violating of the bone and weakening of the cortex, predisposes for a pathologic fracture, so biopsy of an extraosseus part is sufficient for diagnosis if present (3).

The biopsy tract "open or CNB" is contaminated by tumor cells and should be widely excised if a wide excision or amputation is expected, so the biopsy incision or needle entrance should be in plan of definitive tumor excision to prevent more complications or altering treatment strategy (Figure A, B, C).

Open incisional biopsy provides sufficient material for microscopic diagnosis as well as immune-histochemical, cytogenetic, or electron microscopic studies. It has some disadvantages such as wound healing problems, infection, tumor cell contamination, nerve and vessel injuries (1).

For open biopsies the incision should be as small as necessary, and longitudinal, transverse incisions are not advisable, to perform an intraosseus biopsy the windows should be circular or oblong and as small as needed to prevent a pathologic fracture. Closing of the opening window by PMMA prevents tumor cell contamination. Compressing the PMMA exceeds chance of metastasis as a rule culture what you biopsy and biopsy what you culture. Use of a tourniquet without exsanguinations helps better visualization and meticulous hemostasis so prevents tumor cells spread in the hematoma. But is should be deflated before closing the wound (3).

The port of entry of drains, if necessary must be in continuity and proximity of the skin incision because this tract is contaminated and must be excised with the

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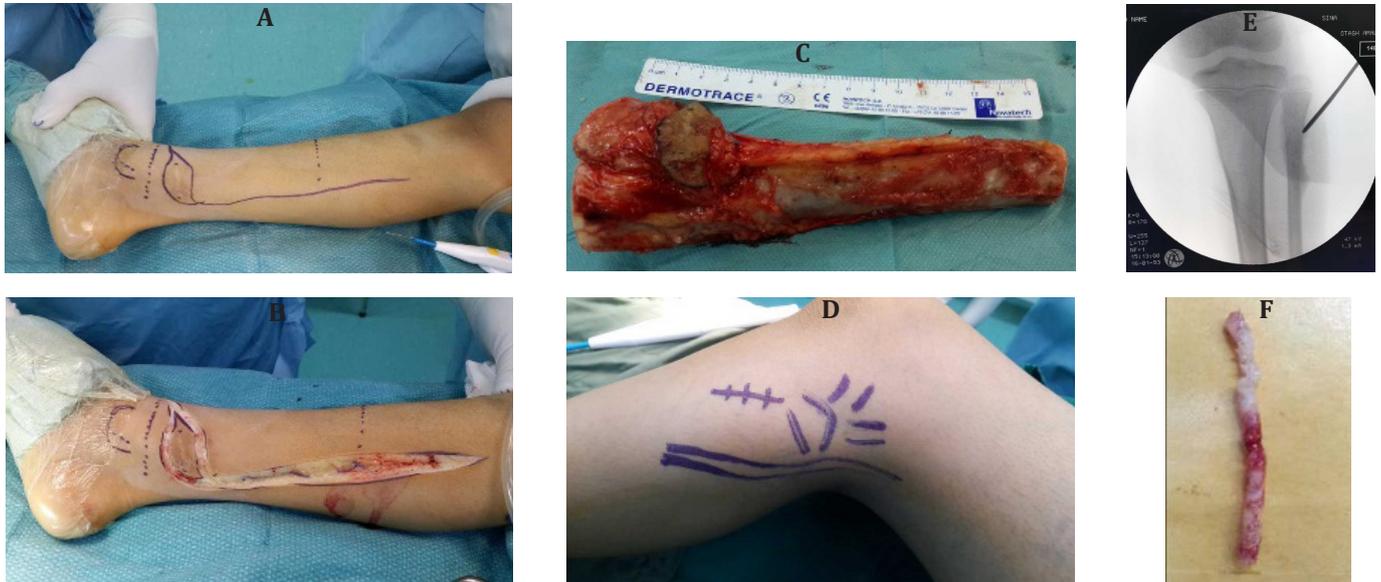


Figure 1. A) Biopsy done by transverse incision. B) and C) Biopsy tract should be removed at the time of tumor excision. D) Markate course of large nerve and vessels before biopsy. E) Localize biopsy site by fluoroscopy. F) The biopsy material Should be sufficient.

surgical specimen.

Imaging-guided core needle biopsy is a well-established technique for the diagnosis of bone and soft tissue tumors and tumor-like lesions in specialized orthopedic oncology centers.

Although large lesions of the limbs can easily be biopsied without image guidance, lesions in the spine, para spinal area, and pelvis are difficult to target, and benefit from C.T. guidance to improve the accuracy of targeting the lesion for biopsy purposes. We benefit from image intensifier for targeting of limb lesions rather than C.T. guidance and sonographic guide for soft tissue lesions (Figure D, E, F).

It is moderately inferior results for the percutaneous CNB compared to open biopsy in soft tissue tumor, whereas almost equal results for bone tumors, if the tissue has been taken correctly except for low-grade chondrosarcoma. CNB is a safe, minimal invasive, and cost effective technique for diagnosis of bone lesions if done by an experienced orthopedic oncologic surgeon and evaluated by an experienced anatomical bone pathologist (1, 3).

For soft tissue tumors CNB results depends to the size of the lesion, location and amount of tumor necrosis. Guided needle biopsy have become the standard technique in most orthopedic oncologic centers.

The accuracy of this method in our center is more than 90% for bone tumors. Cores should be taken in different directions, but from a single well planned entrance, including areas of central necrotic tissues. The processing is quick, especially for bone C.N.B. or soft tissue FNA and CNB, and diagnosis can be achieved within 24 – 48 hours. The material should be sufficient for immunohistochemistry evaluations (1-3).

Because I've seen 3 cases of tumor implantation at the towel clips puncture site "2 chondrosarcomas and a case of malignant schwannoma", so highly suggest that never crush the skin by towel clips specially when you do an open incisional biopsy (4).

In summery open, needle or core biopsy should be performed by a surgeon who is responsible for definitive surgery of a tumor and after complete staging evaluation to minimize the biopsy complications if we expect a successful outcome and longer survival (1-3).

References

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