Principles of Tumour Biopsy

A24

P. Hammond and C. A. Hajivassiliou

Principles

A description of the wide range of available techniques for tumour biopsy is beyond the scope of this chapter. However, some general principles can be outlined:

- Incisional biopsy is usually required rather than excisional biopsy (though some small lesions may be amenable to primary excision with consideration given to adequate margins).
- Ensure adequate preoperative imaging to guide biopsy if required.
- Prior discussion with the pathologist is vital to determine which technique will give an adequate sample to allow accurate diagnosis.
- Consideration may be given to intra-operative 'frozen' section to assess adequacy of biopsy.
- Biopsy solid elements – avoid necrotic or cystic tissue samples if possible. Multiple specimens reduce the likelihood of false negatives.
- Send fresh samples expeditiously to laboratory. Fresh specimens are generally required for genetics and electron microscopy in addition to routine tests.
- Avoid damage to adjacent vital structures.
- Design biopsy site to be excised at subsequent surgery if possible.
- Observe the patient for bleeding or other complications postoperatively.

Practice

Open Biopsy

An open biopsy is seldom employed routinely.

A good technique to avoid bleeding during open visceral biopsy is to pre-site deep mattress sutures to cover a wider area than the planned tissue sample. The sutures are tightened postbiopsy to achieve haemostasis, either with or without a roll of SURGICELL in the biopsy 'bed' to act as a tamponade.

Percutaneous Biopsy (see figures 1–6)

- Ultrasound guidance may be safest.
- Several cores are best.

Laparoscopic Biopsy

The laparoscopic approach allows clear visualization of the tumour for direct biopsy and enhances the accuracy of percutaneous biopsy.

Fine-Needle Aspiration

Usually fine-needle aspiration is inappropriate in paediatric population (check with pathology).

Philip Hammond (✉)
Consultant Paediatric and Neonatal Surgeon
Philip.Hammond@ggc.scot.nhs.uk

Constantinos A. Hajivassiliou
Consultant Paediatric and Neonatal Surgeon
ch27z@udcf.gla.ac.uk

R. Carachi, S. Agarwala, T.J. Bradnock (Eds), *Basic Techniques in Pediatric Surgery*
DOI: 10.1007/978-3-642-20641-2_24,

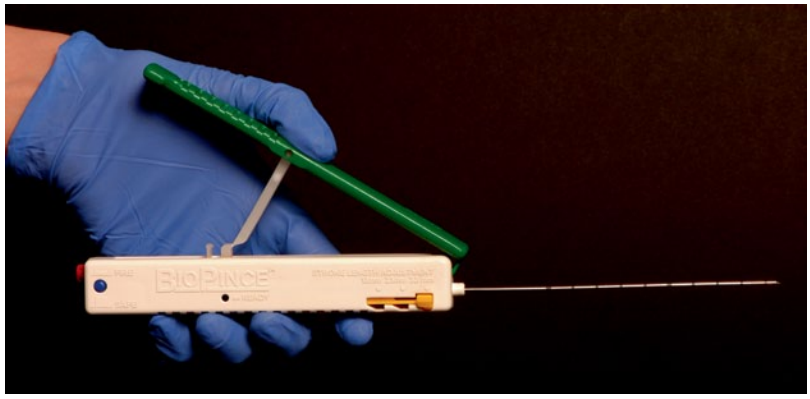

Fig. 1 Spring-loaded core-needle biopsy gun

Fig. 2 'cocked' spring (depth of biopsy may be determined with yellow ratchet)

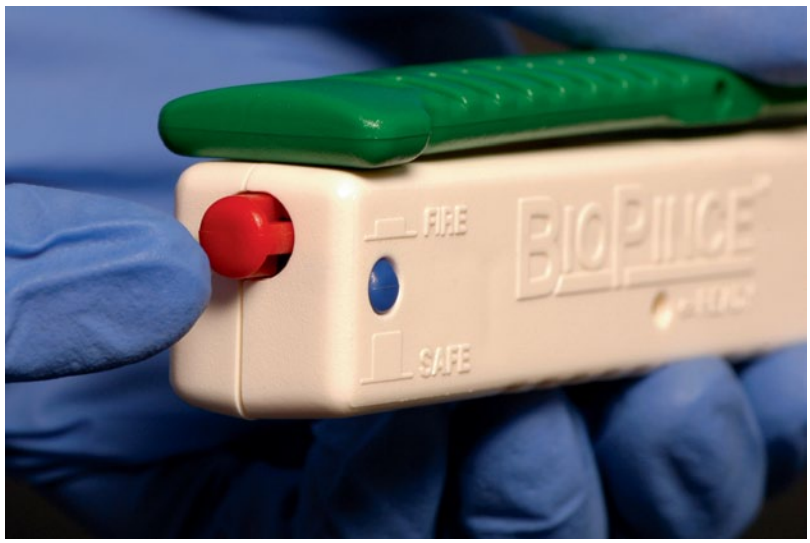

Fig. 3 Ready to 'fire'

Fig. 4 Suitable core biopsy

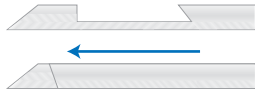

Fig. 5 Spring-loaded blade takes biopsy

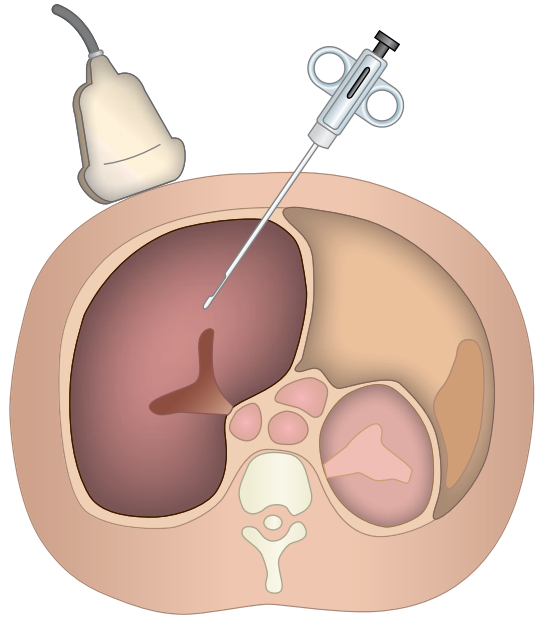

Fig. 6 Ultrasound guidance reduces risk of complications and inadequate biopsy

Tips

- Tumour tissue is friable with abnormal vasculature. Bleeding is common. Methods for tamponade should be used as far as possible.
- If in any doubt opt for biopsy under local vision, as viscera (especially loops of bowel) could be adherent to the tumour and when collapsed may not be demonstrated on routine imaging modalities. Interposed loops of bowel are at risk of damage during blind biopsy attempts.

Common Pitfalls

- Primary re-excision may be required if an inadequate excision biopsy is attempted.
- Non-diagnostic biopsy is more likely if necrotic or non-solid elements are biopsied.