Skin Biopsy: The Essentials

Skin biopsies are performed for diagnosis and also treatment, in some cases. This section presents the essentials and serves as a quick reference guide. For more detailed information on specific clinical situations and entities, please refer to the relevant documents. Depending on the clinical scenario, the options are: excisional biopsy (elliptical excision, saucerisation/shave excision, punch excision), incisional biopsy, superficial shave biopsy, punch biopsy and wedge biopsy. Curettage as a primary diagnostic procedure is not encouraged due to the limitations of the sample.

NON-PIGMENTED DISCRETE LESIONS

When malignancy is suspected and there are no high risk features*, **complete excision** with appropriate margins* is recommended.

Biopsy should be performed when the diagnosis is uncertain. Small and/or non-suspicious lesions can be removed by punch or shave biopsy if required.

*Refer to 1389 Squamous Cell Carcinoma, Guidelines for Management in the Primary Care Setting and 868 Basal Cell Carcinoma, Guidelines for Management in the Primary Care Setting.

Suspected keratoacanthomas should also be excised, if feasible, as the current recommended management is early excision. Distinction between keratoacanthoma and well-differentiated squamous cell carcinoma is often not possible on partial biopsy.

Saucerisation is ideal for broad lesions in sites that pose surgical or cosmetic difficulties, and in areas prone to keloid/hypertrophic scar formation.

Saucerised samples should be flattened on a piece of card to prevent excessive curling, which may impair assessment of margins.

Punch biopsy is preferable to superficial shave biopsy, particularly for thick keratotic lesions, as the latter is prone to sampling error.

Incisional or wedge biopsy may be used for large and deep lesions such as dermatofibrosarcoma protuberans, as assessment of the tumour interface with fat is essential for diagnosis.

For suspected lymphoma a separate biopsy should be sent for flow cytometry. This should be wrapped in saline soaked gauze or immersed in appropriate transport medium, such as RPMI, which is available from Tasmanian Medical Laboratories.

Such specimens should be marked "Urgent" and sent to the laboratory ASAP.

PIGMENTED LESIONS

Suspected melanoma should be excised with a 1-3mm margin as small or superficial biopsies may not be representative and may affect subsequent tumour staging.

Partial biopsies are appropriate:

- When the clinical suspicion of melanoma is low.
- In pigmented genital lesions as a significant proportion of these are benign melanotic macules that do not require disfiguring excision.
- For broad, suspicious lesions, or sites that pose surgical or cosmetic difficulties.

Consider sampling error and re-biopsy if a partial biopsy of a suspicious pigmented lesion yields a negative pathology report.

Saucerisation is suitable for complete removal of in situ/thin lesions. If any atypical/pigmented area is seen at the base following saucerisation, punch or elliptical excision of the area is required.

If partial biopsy of suspected melanoma cannot be avoided:

- Take one or more deep biopsies of the most suspicious, thickest areas
- For lentigo maligna-type lesions, multiple biopsies should be taken of each different area. In this instance, multiple small shaves are more appropriate than punch biopsies.

Dysplastic naevi that are not suspicious for melanoma do not need to be removed, but 'ugly ducklings' can be removed by saucerisation with a 0.5-1mm rim of normal skin beyond the pale brown halo.

Small suspicious acral lesions should be completely removed by saucerisation with a narrow rim of normal skin, as false positive results can arise from partial biopsy.

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RASHES/INFLAMMATORY CONDITIONS

A **4mm punch biopsy** is most commonly used, followed by **incisional biopsy** for larger and deeper lesions. **Saucerisation** may also be used to remove entire blisters.

*If **infection** is suspected, a swab or separate sample should be sent fresh for microbiology.*

If the DIF sample is accidentally placed in formalin, remove immediately and rinse in saline.

The biopsy should be taken from lesions that have not been excoriated or ulcerated, and should include lesional as well as a small rim of perilesional skin. Frictional sites and lower limbs should be avoided due to potentially confounding secondary features and false negative results. Concurrent biopsy of normal skin may also be helpful in disorders of pigmentation.

More than one biopsy from different sites may be helpful, particularly if the rash has a polymorphous appearance.

In **blistering conditions**, the biopsy should be wide enough to **keep the blister roof attached**. A separate biopsy of a non-blistered lesion or normal skin immediately adjacent to the lesion should be taken and submitted in immunofluorescence transport medium for **direct immunofluorescence microscopy (DIF)**. If transport medium is not available, phosphate buffer saline is suitable.

A sample for DIF should also be considered for **lupus erythematosus**, **dermatomyositis** and **vasculitis**. For these conditions, biopsy site is crucial. For lupus and dermatomyositis, biopsy an established lesion (>6 months old) that is still active for both routine histology and DIF. For vasculitis, biopsy an established purpuric lesion (>72 hours old) for routine histology and an acute lesion (<24 hours old) for DIF.

If **panniculitis** is suspected, a deep or incisional biopsy is recommended to ensure that sufficient subcutaneous fat is included. Send a sample for culture if necrosis is seen at the time of biopsy.

For **annular lesions** (such as porokeratosis), incisional biopsies are ideal and should be taken from the centre of the lesion outwards to include a 1mm rim of normal skin.

When incisional biopsies of inflammatory conditions are taken, it is essential that both the biopsy type and reason for biopsy are stated clearly on the request form, as this affects the way the sample will be handled.

Clinical description of the rash, its distribution, duration, course and other history including medications is essential. Clinical photographs (sent via email or text message) are also helpful. A clinical differential diagnosis is also required for accurate categorisation, as many rashes show similar histological patterns.

ALOPECIA

Ideally, **two punch biopsies (4mm diameter)** should be taken **in a plane parallel** to the direction of hair growth/ emergence.

The **biopsies should be at least 5-6mm** in depth to include subcutaneous fat and the entire follicular unit (i.e. there should be no hairs emerging from the deep aspect).

Two biopsies are required to enable vertical and horizontal sections to be examined.

Where to biopsy?

- Non-cicatricial alopecia: Area of greatest hair loss.
- Cicatricial alopecia: An active affected area that is at least 6 months old (i.e. an area with reduced hairs rather than a completely bald area). Look for signs of inflammation (e.g. scaling or changes in pigmentation). Dermoscopy may be helpful for detecting this. A separate biopsy from the same area can also be sent for DIF.

Adequate **clinical information** is important including area of scalp involved, race, duration and clinical differential diagnosis.

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