Skin Cut Up

DR ROKIAH ALI
CONSULTANT DERMATOPATHOLOGIST STH

General Instructions

- 5.1.1 The type of biopsy is documented.
- 5.1.2 Orientated or not (suture indicating what margin according to hours on the face of a clock). If more than one suture, indicate which margins these represent.
- 5.1.3 The no. of fragments (if more than one, either mention exact no. e.g. two or if multiple e.g. for greater than 10, then mention multiple) is documented.

General Instructions

- 5.1.4 Small biopsies (less than 5 mm) are submitted intact and three automatic levels requested.
- 5.1.5 If biopsy size is between 5 mm & 10 mm, decision to slice or not depends on individual case. If uncertain, this is to be discussed with the supervising consultant .

General Instructions

- 5.1.6 All small biopsies are submitted in mesh bags to prevent loss of tissue.
- 5.1.7 Measurements are in three dimensions; length(L), width(W) and depth(D).
- 5.1.8 Type of lesion should be described (e.g. nodule, macule) etc.
- For dysplastic naevus – size of lesion, pigmentation (uniform or variable), type of lesion (macule, nodule or nodule in macule), borders(regular/irregular).
- For blistering disease – presence or absence of blister.

General Instructions

- 5.1.9 Lesion should be described as centrally located or peripheral towards any one edge.
- Measurement of the lesion is made. The nearest resection margins whether involved or clear should be recorded macroscopically.
- 5.1.10 Best practice suggests inking the surgical margins of specimens. This is more relevant to all neoplastic skins in general and particularly when there is clinical query of atypia or malignancy. Inking of margins also helps orientation during embedding and when sections are cut, helps in obtaining full-face sections.

General Instructions

*If no obvious lesion, describe skin surface

- 5.1.11 If specimen is orientated with one suture, indicate what margin the suture indicates.
- The suture usually is indicated or taken to represent the 12 o'clock margin unless stated otherwise (to represent some other margin).

General Instructions

- The 12-3-6 o'clock resection margin is inked (inclusive of the deep margin on this half of specimen) & the 12-9-6 o'clock margin is either left un-inked or a different colour is used.
- The specimen is then sliced serially from 12 to 6 o'clock position & tissue submitted maintaining the sequence/order of slices.

General Instructions

- 5.1.12 If two sutures are present. Comment indicating the margins these represent.
- Process as explained above and additionally mention in which cassette the section corresponding to the second suture margin is submitted, to enable accurate assessment and specific comment of this margin (which often the clinician is concerned about).

General Instructions

- 5.1.13 The no. of fragments placed in each cassette should be documented. This should be double checked when reporting to ensure that all fragments submitted are examined. This can sometimes also be helpful in detecting mislabelling or when cases get mixed up.
- 5.1.14 If order of slices obtained are to be maintained, either this is submitted one section per cassette or up to a maximum of two slices in sequential order (agar can be used for denoting the sequence of order).

General Instructions

- 5.1.15 If polar margins are included for microscopy, it is advisable that the section does not include lesional tissue, so that it does not necessitate request for levels through the block to accurately assess the margins.
- This will sometimes render fairly small pieces of polar margins (especially if lesion is close to this margin) but this should not be too small that there is a risk of loss of tissue.
- Both polar margins can be submitted in one cassette if the specimen is not orientated.

General Instructions

- If dealing with orientated specimens, they can be submitted with the next section in sequential order or separately in sequence.
- It is useful at this point to remember that the more the number of tissues in a cassette, the more difficult it is to ensure that all the fragments are well orientated at embedding.
- Also mixtures of small and larger pieces makes it more difficult to obtain full-face sections of all pieces without cutting in too deep and hence risking cutting out of smaller fragments.

General Instructions

- 5.1.16 It should be documented if all tissue has been taken (all taken – AT, only representative sections sampled – RST, all lesional tissue sampled but tissue remaining – ALTS).
- 5.1.17 Documentation if tissue stored or no tissue stored/empty (TS or E).
- 5.1.18 If there is any doubt in dealing with the specimen, it is best to seek help from the supervising consultant or if no consultants are available (e.g. at a departmental meeting), the specimen should be left aside to be dealt with later when help is available.

General Instructions

- 5.1.19 Remember that once a tissue is cut-up suboptimally it is very difficult to salvage the specimen & usually this causes difficulties at reporting (either diagnostically or in providing prognostic parameters e.g. clearance margins).

General Instructions

- 5.1.20 Microscopy should always include comments on margins irrespective of type of biopsy (margins expected to be involved or not!).
- Stating completeness or incompleteness of excision implies intent and may not be relevant to all sample types. It may be preferable to simply state if the margin is involved or clear, whereby this represents a factual finding.

General Instructions

- This information is often useful, more so, if lesion recurs at surgical site e.g. in context of a recurrent naevus.
- Sometimes the type of biopsy may not reflect the clinician's expectation e.g. punch excision for small lesions.

Punch Biopsy

Punch Biopsy

- 6.1.1 These are usually done for diagnostic purposes of neoplasia and inflammatory skin diseases. Occasionally these serve therapeutic removal of a small lesion (punch excision).
- 6.1.2 The punch biopsies vary in diameter – usually ranging between 3 and 5 mm. The specimen is measured in two dimensions: diameter and depth. All punch biopsies should be submitted in mesh bags to prevent loss of tissue. These are submitted intact.

Punch Biopsy

- 6.1.3 Punch biopsies ideally should not be bisected unless the biopsy is greater than 5 mm diameter and the lesion is central, in which case care must be taken so that the specimen is bisected into two equal halves (which may be difficult to obtain!) and each submitted separately in two different cassettes. This may help to cut straight into the lesion without the necessity of trimming in deep, to get to the lesion (however the risk of poor tissue sections due to difficulty in bisecting the biopsy should be carefully considered first!).

Punch Biopsy

- 6.1.4 Routinely most centres perform three automatic levels (saving spares for any special stains or immunocytochemistry later on if needed) for all punch biopsies.
- 6.1.5The punch biopsies should be orientated on edge at the time of embedding to ensure that the plane of section is across all tissue layers (epidermis, dermis & subcutis).
- 6.1.6 For neoplastic disease, margins should be commented although in most cases this is expected to be involved.
- 6.1.7However, sometimes the punch is meant as a therapeutic tool with the aim of complete clearance of a small lesion.

Shave Biopsy

- These are usually done either for confirmation/removal of a benign lesion or as a diagnostic biopsy for a suspected atypical or malignant lesion.
- The number (one, exact no. of fragments or multiple) and size of the biopsy (at least two dimensions and if possible in three dimensions) is noted.
- It is recommended to place the fragment/fragments in a mesh bag to prevent any loss of tissue. The shave biopsies are usually submitted intact.

Shave Biopsy

- Transversely slicing into one or more sections is recommended if the size of specimen is relatively big (length or width more than 10 mm) and of sufficient depth.
- If the specimens are thin, it is better to leave the specimen intact to enable better handling at time of embedding.
- At time of embedding, the specimens should be orientated on edge, so that the plane of section is through all tissue layers.
- Although the margins are usually involved, this should be documented in the microscopy.

Curettage

- The indications are similar as for shave biopsies.
- 6.4.1 This is done alone or in combination with cryo or cautery. This usually results in multiple fragments.
- 6.4.2 The number of fragments and size is documented.
- 6.4.3 Usually slicing is not possible and not necessary unless the specimen is relatively large (more than 10 mm).

Curettage

- 6.4.4 It may be useful to select diagnostically relevant pieces of tissue if there are too many fragments.
- 6.4.5 In some cases, it may be helpful to separate the fragments more likely to be diagnostic and to submit the rest in another cassette (e.g. keratin).
- 6.4.6 The fragments are all submitted intact in a mesh bag.
- 6.4.7 Although the margins are usually involved, this should be documented in the microscopy.

Incision Biopsy

- These are usually done for inflammatory skin diseases or as a diagnostic biopsy for neoplastic conditions.
- 6.5.1 These are usually ellipses of skin and therefore gross examination does not help in alerting the individual cutting-up that this is an incision biopsy, and therefore the importance of reading the request form carefully.

* Inking is optional but usually useful

Incision Biopsy

6.5.2 It is usually a single fragment that includes both the abnormal area and the adjacent normal skin. The specimen is measured and processed intact unless the specimen is too wide. In that case, the specimen can be sliced longitudinally to maintain the relationship of the normal skin to abnormal skin. If specimens are bisected longitudinally, it is preferable to place only one half in a cassette.

Incision Biopsy

- 6.5.3 It is absolutely vital that incisional specimens especially in cases of inflammatory skins are not sliced transversely.
- 6.5.4 One peripheral margin is usually involved and this should be documented.

Excision Biopsy

- These are usually done for neoplastic skins including benign lesions (naevi, seborrhoeic keratosis), dysplastic conditions e.g. squamous actinic keratosis, dysplastic naevi and for malignancies (basal cell carcinomas, squamous cell carcinomas and malignant melanomas).

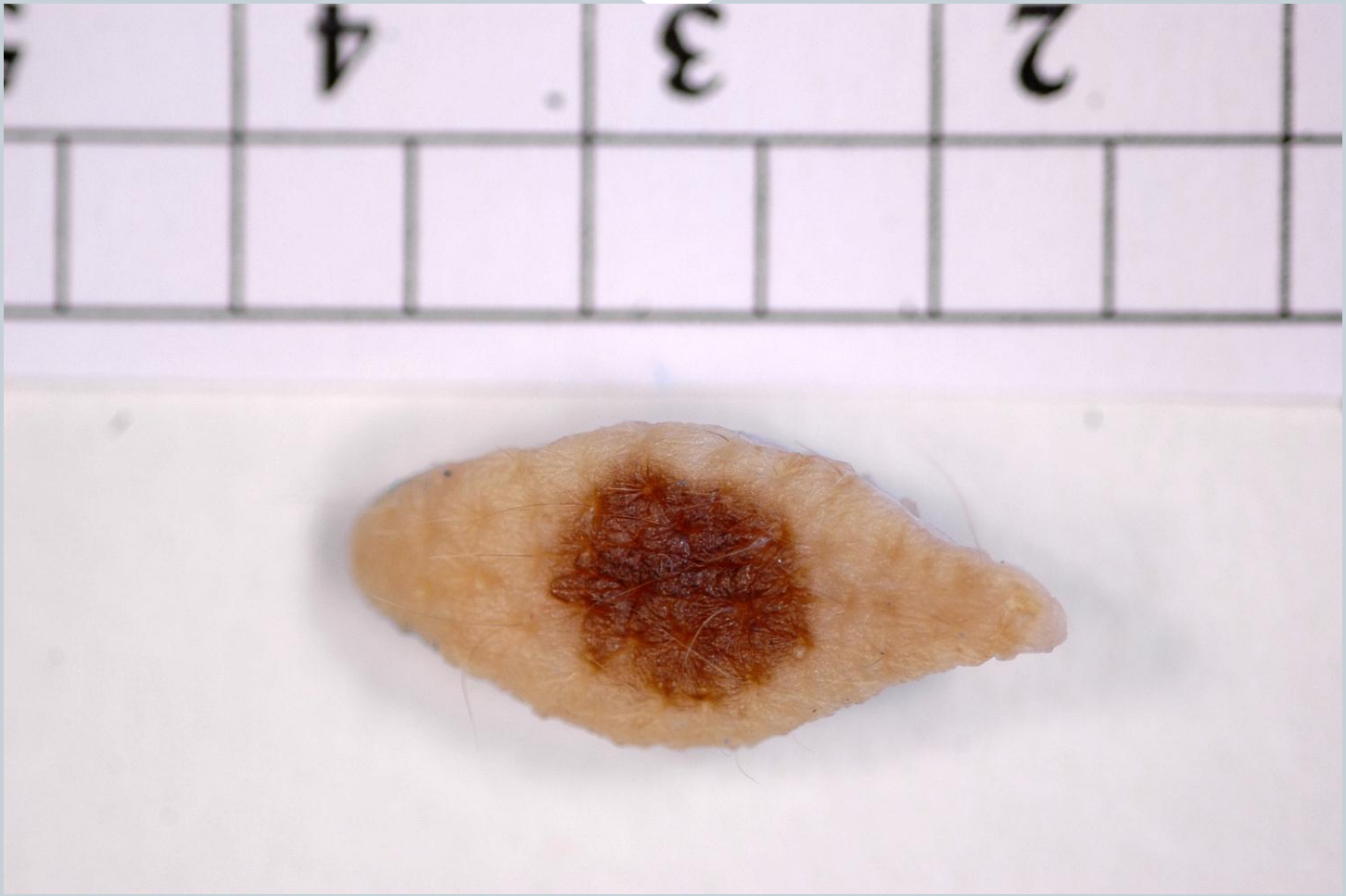
Excision Biopsy

- 6.6.1 The specimen should be measured in three dimensions as recommended.
- 6.6.2 The presence or absence of a grossly discernible lesion should be documented. If lesion is present, this is described (size, colour, nature of lesion – nodule, macule, vesicle etc.).
- 6.6.3 If lesion is centrally located, this is very useful information to be included as this reflects the fact that the nearest margins are likely to be the circumferential peripheral margins and that the polar peripheral margins are probably uninvolved.

*Perfectly reasonable to sample lesion only

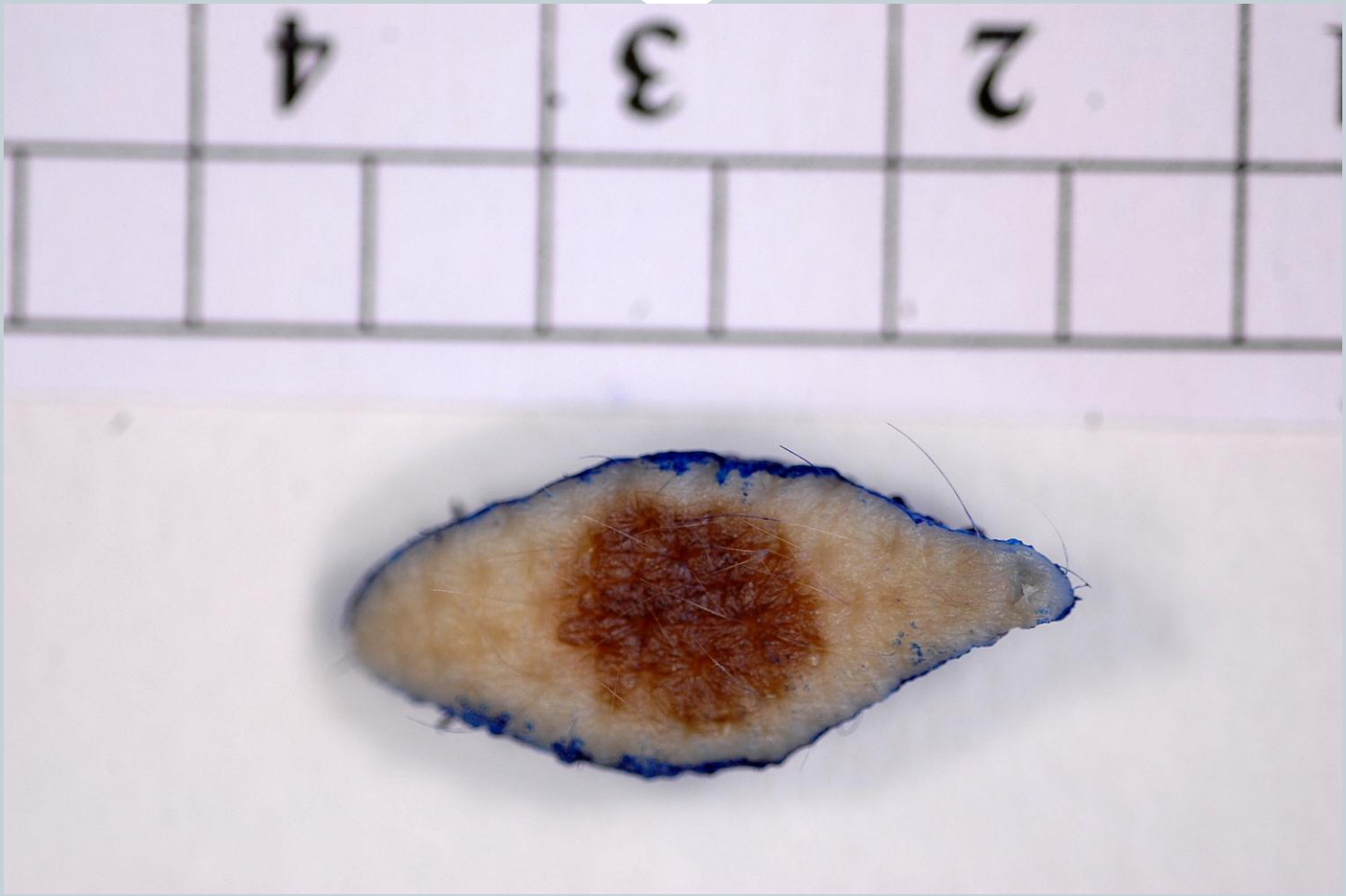
- 6.6.4 If lesion is not central i.e. peripherally located towards one edge of the biopsy, this should also be mentioned.

Not Orientated

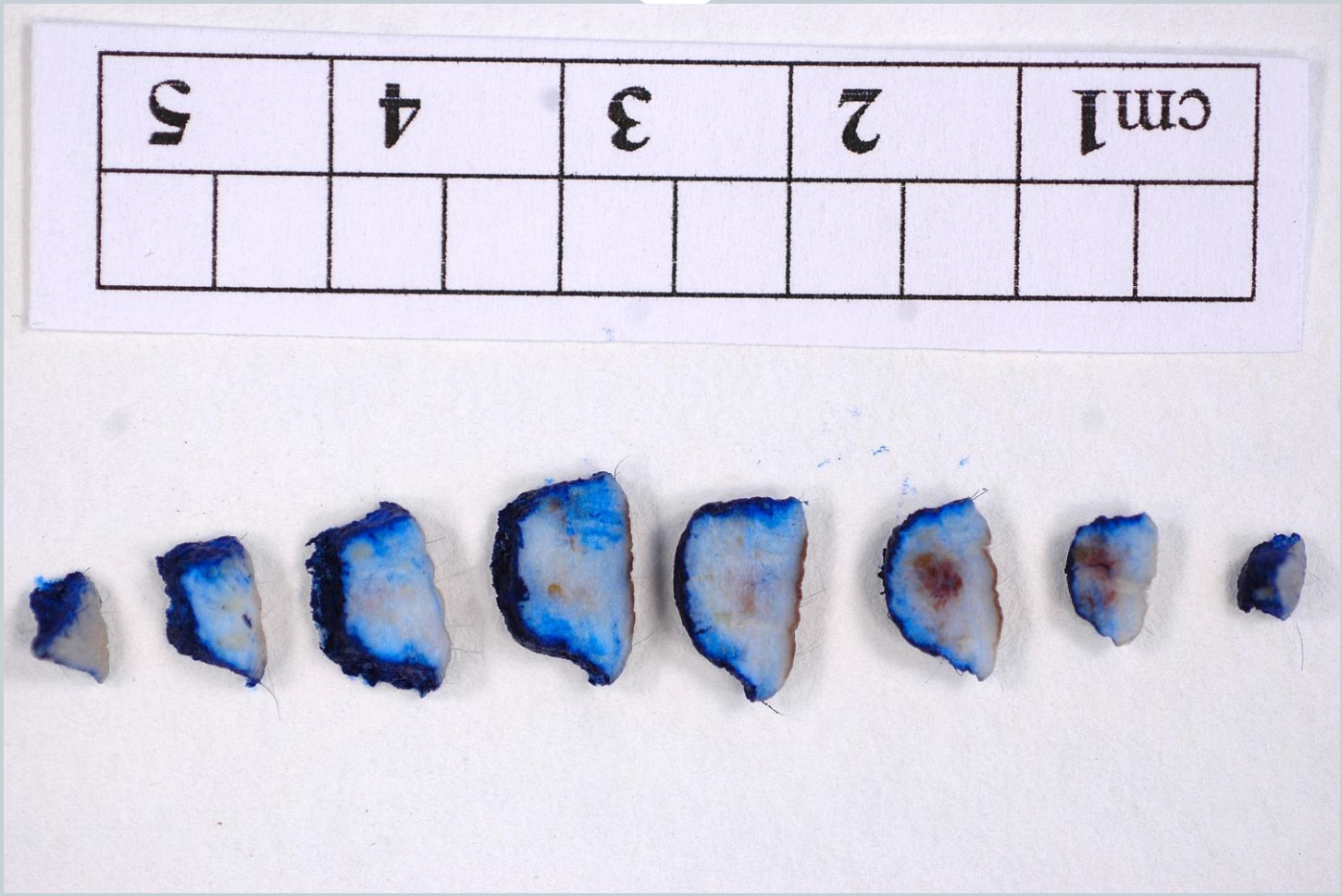


Not Orientated

Not Orientated



Not Orientated



Excision Biopsy

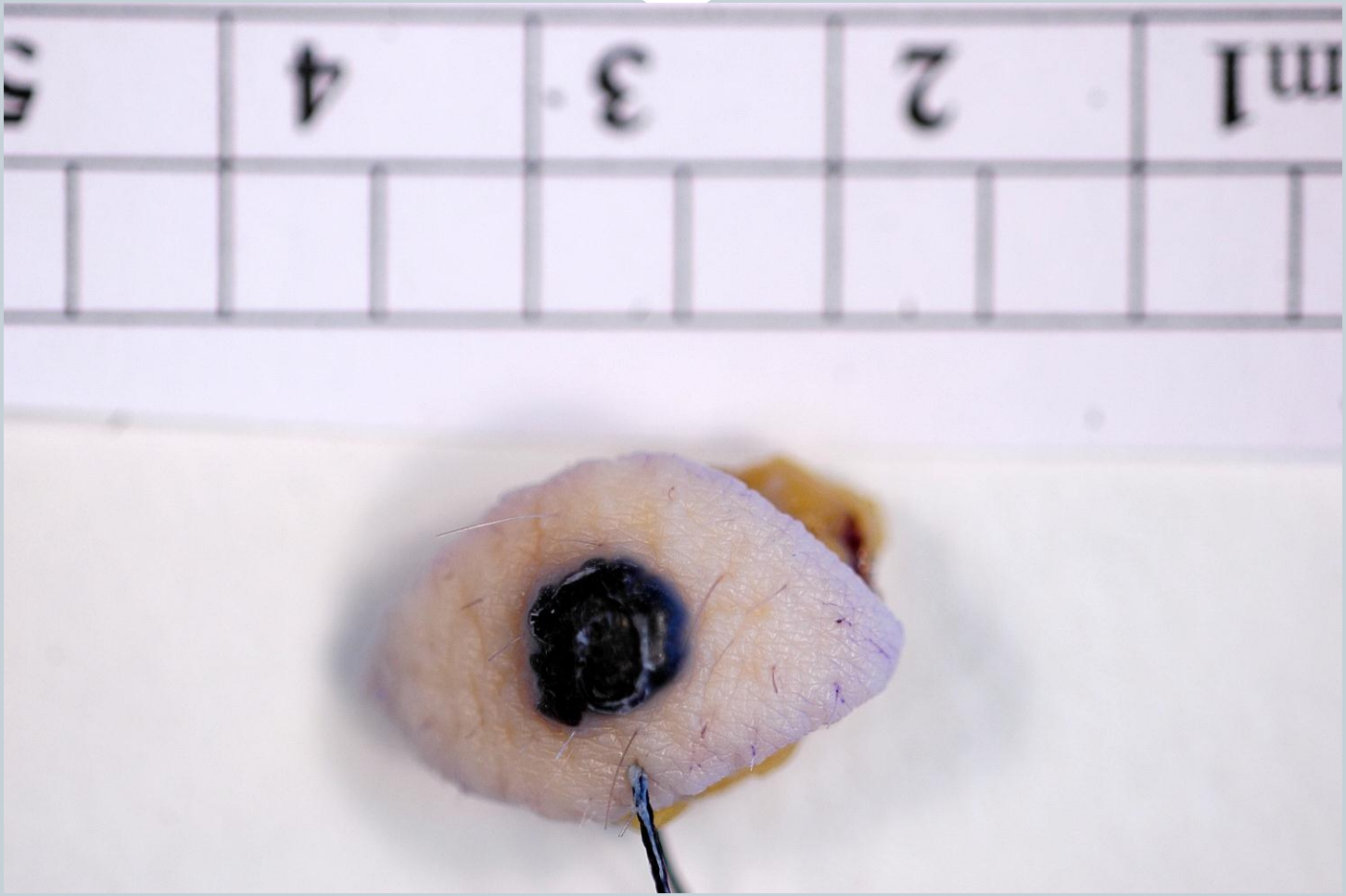
- 6.6.5 If possible the nearest margins as appreciated grossly should be measured and documented.
- 6.6.6 If no lesion can be visualized, the appearance of the skin surface should be described e.g. nodular, keratotic or irregular.
- 6.6.7 If the whole skin appears normal, this should be mentioned. In these cases, it is important to examine the whole specimen by inking the margins and 'bread slicing' the specimen from one end to the other and processing in entirety.
- 6.6.8 If the biopsy is too small and slicing is awkward or difficult, please submit intact after inking margins.

Excision Biopsy

- 6.6.9 If specimen is orientated with one suture, indicate what margin the suture indicates.
- The suture usually indicates the 12 o'clock margin unless otherwise stated to represent some other margin.
- The 12-3-6 o'clock resection margin is inked (inclusive of the deep margin on this half of specimen) & the 12-9-6 o'clock margin is either left un-inked or a different colour is used.
- The specimen is then sliced from 12 to 6 o'clock position & tissue submitted maintaining the sequence/order of slices.

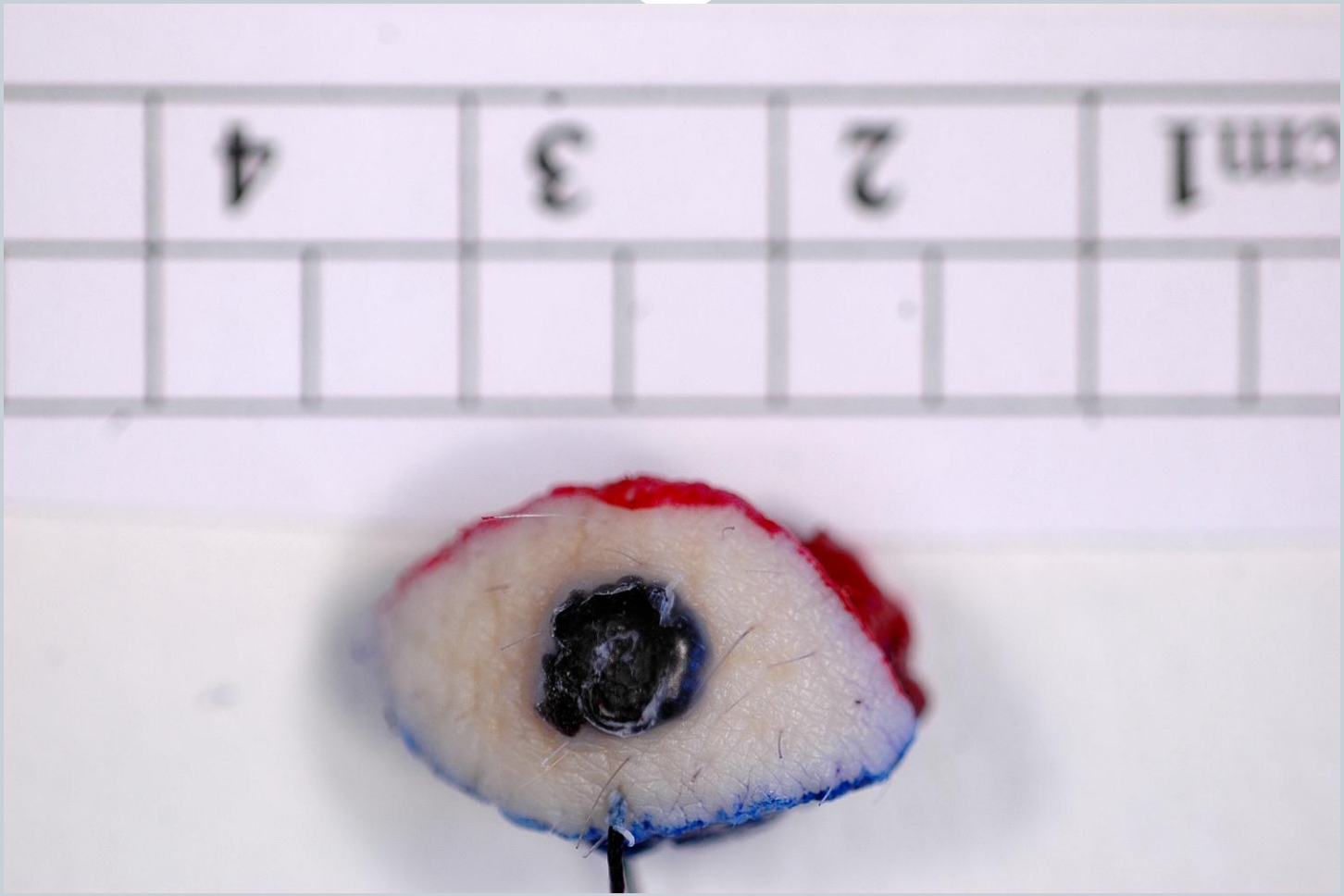
* Vertical vs. horizontal ellipse and disc of skin

One Suture



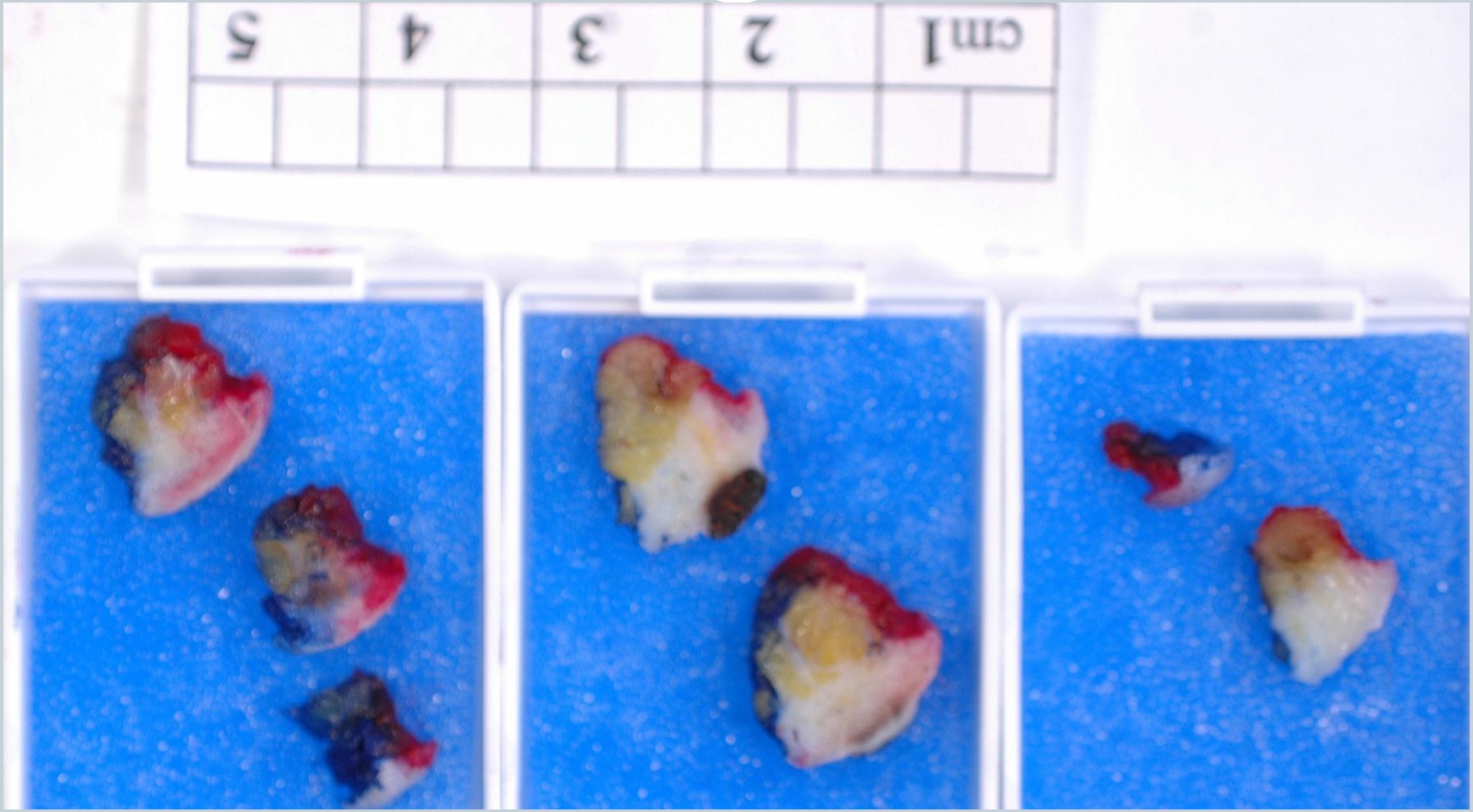
One Suture

One Suture



One Suture

One Suture



Excision Biopsy

- 6.6.10 If two sutures are present. Comment indicating the margins these represent.
- Process as explained above and additionally mention in which cassette the second suture margin is submitted to enable accurate assessment and specific comment of this margin during microscopy (which often the clinician is concerned about!).
- 6.6.11 The alignment is maintained preferably by submitting each piece in one cassette in sequential order or if using agar to indicate sequence, up to no more than two sections in one cassette.

Excision Biopsy

- 6.6.12 If the specimen is large (dinner-plate type), it is advisable to do a thorough gross examination so as to enable selective sampling.
- Two different inks can be used as recommended previously. However, in centres dealing with a large number of plastic surgery excisions, 4 different inks are commonly used to indicate the 4 quadrants for easy reference and orientation.

* Jumbo blocks

Excision Biopsy

- Sampling can be limited to examination of the tumour and the nearest margins.
- For the former, representative sections of the tumour (often large) is sampled.
- For the latter, cruciate blocks including tumour and the nearest margins are recommended (often this can be fairly well appreciated grossly). Documentation of sampled sections and margins are very important to assist microscopic examination and reporting.

Excision Biopsy

- 6.6.13 Correct orientation at embedding is relatively easy as this is embedded with the cut surface down.
- 6.6.14 Microscopy should include clearance margins.

Wide excision/Re-excision

- This is usually done either to ensure complete clearance of a tumour which involved the surgical margins or in cases where the surgical margins were clear in the primary excision, this is done to ensure the amount of clearance is in-line with the British Association of Dermatologists guidelines advocated or as per management decision made at the skin cancer MDT.

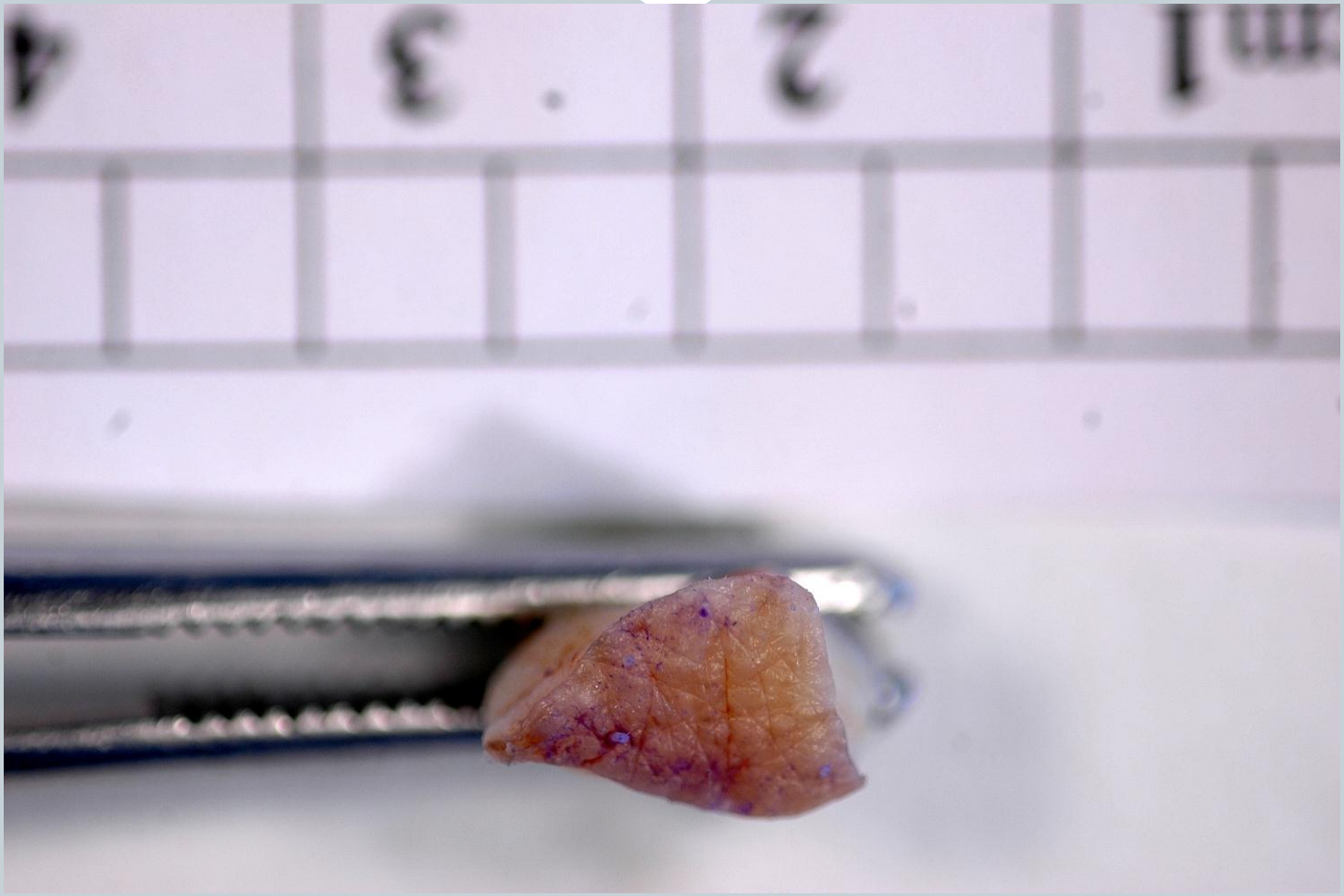
Wide Excision/Re-excision

- Measure specimen, ink margins
- Comment on scar if present and measure this
- Comment if any other lesion or residual lesion present
- These are usually dealt with as for an excision specimen by ‘bread-slicing’ and submitting all tissue, maintaining the sections in sequence.

Wide Excision/Re-excision

- In case of melanoma re-excisions, if the original report indicates involvement of margins, the specimen should all be processed as described above.
- In cases where the primary biopsy records clear margins but the wide-excision is advocated for adherence to recommended margin of clearance, one section from the middle, incorporating the scar may suffice but more blocks may be taken according to individual preferences. In this case, knowledge of the previous histology report and the clearance margins would be relevant. (*Audit)

‘Dog-Ear’ Specimen



‘Dog-Ear’ Specimen

‘Dog-Ear’ Specimens

- 6.9.1 The British Society of Dermatological Surgery guidelines definition states:
- Dog ears are redundant tissue at the end of an excision line. The redundant tissue is tented with a skin hook and either divided along the roof into two triangles which are then excised, or pulled to one side and the base divided on one side then the other (giving one piece of tissue). These represent the untidy excess of skin which is excised to enable cosmetically acceptable apposition of margins after excision of lesions.
- 6.9.2 They are common in the following situations:
- 6.9.2.1 Sides of excision are unequal lengths
- 6.9.2.2 Broad ellipse or circular defect

‘Dog-Ear’ Specimens

- 6.9.2.3 Altered skin elasticity
- 6.9.2.4 Convex surface e.g. forearm
- 6.9.3 Often these are not of any clinical concern but sometimes there is a genuine concern in these specimens especially if lesional tissue is thought to be present. Sometimes this incidentally displays presence of tumour or other significant pathological changes. These therefore have to be processed for examination.
- 6.9.4 Simple general rules of dealing with specimen include -

‘Dog-Ear’ Specimens

- 6.9.4.1 Measuring the specimen and processing all tissue.
- 6.9.4.2 If tissue is small, submit intact.
- 6.9.4.3 However, usually the specimen needs bisecting/trisecting for proper orientation at embedding.
- 6.9.4.4 Sometimes the margin of concern is expressed and this may be sent inked. In that case, handling of this specimen is dependant of the margin of concern and assessed on an individual basis.

Direct Immunofluorescence

- 6.11.1 Usually two specimens are sent; one for histology and the other DIF
- 6.11.1.1 The one for histology will be sent in formalin as usual and dealt with as explained above.
- 6.11.1.2 If this is for a blistering disorder, submit intact.
- 6.11.1.3 The other specimen for DIF will be sent in saline soaked gauze/saline/Mitchel's medium.
- 6.11.1.4 This is sent to lab to be kept frozen and handled as per the DIF specimen standard operating procedure (SOP).

Electron Microscopy

- Usually two specimens are sent, one for histology and the other for EM
- The one for histology is sent in formalin and handled appropriately
- The one for EM should be sent in Glutaraldehyde but this is often not available in minor surgery units and Gluteraldehyde can also cause severe allergic contact dermatitis in susceptible individuals. Therefore these specimens are often sent in formalin or soaked in saline.

Electron Microscopy

- Formalin as media of transport does not alter the cytological/nuclear details too much to hinder in the EM interpretation but this should be limited to only a short period. Formalin is preferred over saline soaked gauze as the latter can dry out tissue if left unattended.
- As soon as received in the lab, these specimens need to be transferred in Glutaraldehyde and sent to EM unit for processing.

MOHs

- 6.13.1 MOHs surgical excision technique has been developed to excise neoplastic lesions (particularly basal cell carcinomas) with as little surrounding normal tissue as possible.
- In theory, MMS should enable the physician to successfully excise all cutaneous tumours that are contiguous.
- The limitation of the procedure revolves around the ability of the surgeon to accurately identify neoplastic cells by frozen section and the difficulty of the MOHs technician to consistently prepare sections that are histologically complete without distracting artefact.
- The lesion is often curetted first and then a series of shave excisions is undertaken, with frozen sections being assessed to determine clearance at each stage.

MOHs

- The frozen sections are routinely interpreted by the MOHs surgeon who is usually a Dermatologist trained to perform the procedure and to interpret the histopathology.
- The MOHs surgeon usually prefers toluidine blue stain to haematoloxylin and eosin for their histology interpretation.
- Uncommonly, if there is difficulty with interpretation the MOHs surgeon may seek help directly or via the BMS for help in the histological interpretation.

MOHs

- When interpretation is complete, the frozen specimens are then transferred to formalin for fixation and subsequently processed in the normal way.
- The paraffin sections are then used to confirm the frozen section findings.
- Thus, the main laboratory usually receives a series of formalin processed, (previously frozen) sections, the residual tissue from each of the shave excisions and residual curetted tissue.

MOHs

- 6.13.2 Each shave excision biopsy should be measured (preferably in three dimensions) and then placed intact into the tissue cassette with its cut surface (marked with blue ink) face downwards. Sandwiching the tissue between pieces of foam helps to ensure that the cut face is as flat as possible for embedding.

MOHs

- 6.13.3 Minimal curettings are usually received. The tissue should be described with an indication of the size/amount of tissue present (see 6.4). The entire specimen should be submitted for processing in a mesh bag.

Thank you for listening

I would like to express my gratitude to:

Ms. Susan Cossins

Ms. Louisa Millward

Ms. Cathryn Leng