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Fixation

The five functions of fixation

1. To set organs or parts of organs so that the microanatomical arrangement of tissue elements will not be altered by subsequent processing.
2. To set intracellular inclusion bodies so that the histologic and cytologic conditions of cells may be studied.
3. To arrest autolysis and putrefaction and other changes.
4. To bring out differences in the refractive index of tissues.
5. To render cell constituents insoluble and make them resistant to subsequent processes necessary to make a histologic preparation.

Specimens must be fixed ASAP after removal from the blood supply.
Specimens must be fixed in an adequate volume of fixative.

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An Introduction to Grossing Skin Specimens: Start to Finish

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Introduction

- Biopsy specimens are grossed as an initial step in the preparation of a slide.
- The objective in preparing slides is to provide the pathologist with a clear and informative microscopic picture of the specimen.
- Proper grossing techniques are essential for accurate diagnoses.
- Poor technique can make slide preparation difficult.
- Mistakes are serious and difficult to correct.
General Points

- The name and number on the biopsy request slip must match the name and number on the bottle.
- Read the biopsy request slip.
- Note biopsy method, specimen site, clinical impression, and specific instructions.
- Specimens should be placed on a clean surface.
- Measure length and width of the epidermis and the vertical depth from the epidermis to the base of the specimen.
Curettages and Fragments

- Submit all retrievable fragments of tissue.
- Lens paper or tea bags are used to wrap fragments so that tissue is not lost.
Curettages and Fragments

- Filter specimen bottle for minute fragments.
- Use a red tissue dye to easily identify white tissue fragments.
Slices and Shaves

- Measure length, width, and depth of specimen.
- Cuts are made along the long axis of the specimen.
Slices and Shaves

• The general rule in bisection is to keep the width of each section between 3-4mm.
Pigmented Slices and Shaves

- In pigmented lesions, where the borders are not a consideration, the long axis of the lesion rules even when this conflicts with the long axis of the specimen.
Pigmented Slices and Shaves

- Try and bisect through the middle of the pigmentation so both pieces demonstrate the entire breadth of the lesion.
Pigmented Slices and Shaves

- When pigmented lesions show no clear margins, then bisect through the specimen in order to show that the margins are involved.
Pigmented Slices and Shaves
Large Slices or Shaves

- Large slices or shaves producing 3 or more pieces of tissue are treated as an excision.
- Use a modified excision method.
Large Slices or Shaves

• Specimen must be flattened as best as possible to enable the grosser to depict the best view for the pathologist.
Punches

- 1-3mm. Punches are submitted whole.
- 4-7mm. Bisected
- Anything greater than 8mm. Is trisected according to the lesion.
Punches

- Cut perpendicular to the epidermis.
- Each half of the punch is symmetrical and contains epidermis.
- Pigmented lesions are bisected through the pigmentation.
Fibromas, Papilloma, and Skin Tags

- Locate the base of the specimen.
- Ink the base with red tissue stain so that it is easy to find when embedding.
- Bisect through the base.
Cyst

- Submit a representative sample of cyst wall and/or contents for diagnosis.
- Note when there is no epidermis submitted.
Cyst

- Excisions do not require inking.
- Submit a representative sample of cyst wall and/or contents for diagnosis.
Excision

• Check for specific instructions (i.e. check margins, cut for borders, step section, suture, ink for orientation, staples, or re-excision).
• Ink all soft tissue with tissue stain.
Excision

- Draw an accurate representation of the specimen and mention all irregularities
- Bread loaf specimen keeping sections between 3-4mm.
Large Benign Excision

- Measure and draw specimen.
- Use tissue stain to ink margins.
- Send representative sections of biopsy.
Large Excision (Re-excision)

- Draw an accurate representation of the specimen.
- Note any ulceration or scabs present.
- Bread loaf specimen keeping sections between 3-4mm.
Large Excision (Re-excision)

- Bread loaf excision.
- Use red tissue stain and mark the way the specimen should be embedded.
- Submit no more than 6 sections per cassette depending on size.
Large Excision (Re-excision)

- Submit sections going directionally from the outside to the inside keeping everything in pairs when possible.
Excision
Excision
Orientated Excision

- Suture or marking is removed only after all inking is complete. This is so orientation is not lost.
- A minimum of 2 different colored inks are used to show exact margins.
Orientated Excision

- The two halves are inked in different colors.
- The specimen is cut so that each section has both colors of ink.
Orientated Excision

- Site and location of the suture orients exact location.
- This is important in case of any positive margins.
Excision of Ear

- Specimen is inked with tissue stain on all soft tissue.
- After bread-loafing, the sections will have epidermis on both sides. In this case the ear has it wrapped around the cartilage.
Large Excision

- Excisions with deep ulceration must be carefully sectioned.
- This is to keep the uniformity of each section.
Excision

- Example on left is of an excision for margins.
- Orientation of margins: the old margin is on the inside and new margin is on the outside.
- Straight cuts are needed to keep the sections together. This may be difficult due to the texture and fragility of the tissue.
Excision

- Example of excision for margins with orientation.
- The pathologist must have clinical and descriptive information so that orientation of excision is not lost at grossing.
Excision

- Excision for margins with orientation.
- Sub-cutaneous fat will help hold the specimen together during sectioning.
Excision

- Specimen on left is a large excision
- Contains ulceration and nodules
- Excess hair in specimen is removed. This is done carefully to preserve specimen.
Summary

• Grossing is the first step to an accurate diagnosis.
• Orientation of biopsy is achieved through careful documentation, site and location of sutures, and margins.
• Poor techniques are difficult to correct.
• Accurate diagnosis is achieved by using appropriate preservation solutions, applying correct cutting techniques, inking parts of the specimen in different colors, and communicating all clinical information to the pathologist.
CPT Codes

88302 – Level II – Surgical pathology, gross and microscopic examination
  • Skin, Plastic Repair

88304 – Level III – Surgical pathology, gross and microscopic examination
  • Skin – Cyst/Tag/Debridement

88305 – Level IV – Surgical pathology, gross and microscopic examination
  • Skin, Other than cyst/Tag/Debridement/Plastic Repair
References


