Biopsy SDL

Biopsy and Histology Report

Objectives:
At the end of this module you should be able to:
•Describe different types of biopsies
•Understand the indications for a biopsy of an oral lesion
•Describe how to take a biopsy from an oral lesion and describe how various types of specimens should be handled by the clinician and transported to the laboratory
•Describe how specimens are processed in the laboratory

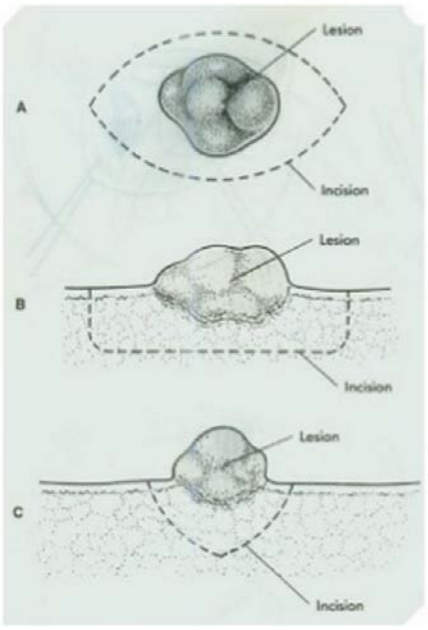
Self Directed Learning:
To prepare yourself for this module read through:
Introductory notes for biopsies
Case history for biopsy examination

Also read the following article:
Oliver RJ, Sloan P & Pemberton MN. Oral biopsies: methods and applications. British Dental Journal 2004 196(6): 329-33.
Make particular note of Table 2, which outlines the various types of biopsy and the settings they should be performed in (i.e. which types of biopsy can be performed by a general dentist)

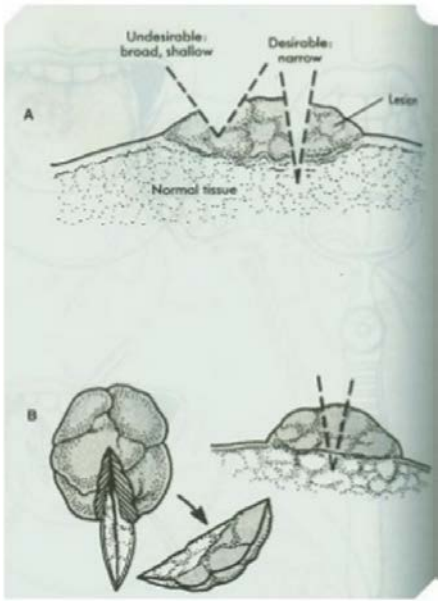
Types of biopsy

Core Needle Biopsy (or core biopsy)
Is used for the diagnosis of head and neck tumours. This technique is more definitive and can be used in inaccessible lesions.
Instruments and techniques:
A needle 2mm in diameter is inserting into the lesion. The needle is then advanced within the cell layers to remove a sample of the core. The needle has a cutting tip that helps in removing tissue.
Needle biopsy is also a type of percutaneous (through the skin) biopsy (typically under CT imaging guidance).

Surgical Biopsy (or Excisional Biopsy)
Surgical biopsy can be excisional (removal of an entire lesion) or incisional (removal of a piece of a lesion).
Excisional biopsy – complete removal of the lesion, usually performed when the lesion is small. If the lesion is benign the entire lesion with 2-3 mm of normal surrounding tissue is removed.



Incisional biopsy – provides a representative sample of tissue for diagnostic purposes. It is the method of choice when the differential diagnosis includes malignancy. The margins of the sample extend into normal tissue and necrotic tissue is avoided.



Instruments and technique:
An elliptical incision is made using a size 15 scalpel blade or laser
The inferior incision is made first, so that haemorrhage does not obscure the surgical field.

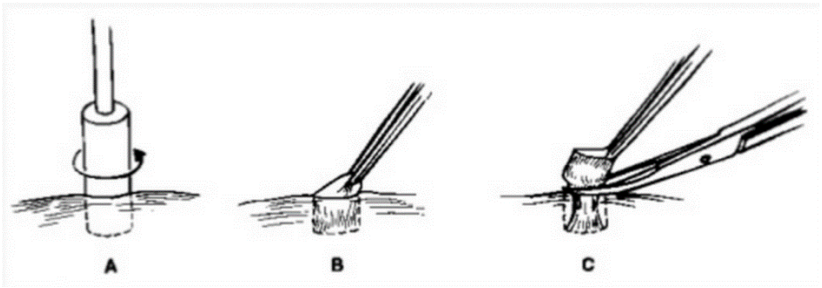
Surface Smear
This type of biopsy is used to collect cells from the surface of and subsurface of a suspected lesion
Instruments and technique:
A round stiff bristle brush is rotated at the site of the lesion scraping of the surface layer of mucosa. The sample is placed on a microscopic slide for examination under the microscope (eg for Candida)

Punch Biopsy

This type of biopsy is useful to obtain tissue samples from the skin and mucous membrane. It can be used for lesions such as oral cancers, precancers and moles. A punch biopsy may not be appropriate for all types of lesions.

Instrumentation and technique:

After a local anaesthetic is injected, a biopsy punch, which is similar in function to a small (3 mm to 4 mm or 0.15 inch in diameter) version of a cookie cutter, is used to cut out a cylindrical piece of skin. The punch biopsy device is applied with a downward and twisting motion.

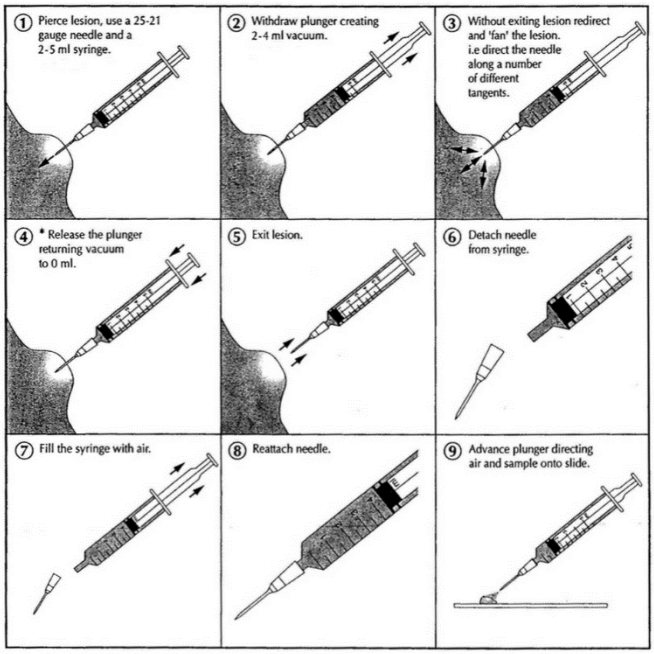


Aspiration or FNA Biopsy

This type of biopsy is commonly performed in case of glandular or cystic lesions. Tissue material is aspirated from inside a lesion.

Instruments and technique:

A fine gauge needle (22 gauge or 25 gauge) needle attached to a syringe is inserted in the lesion, the tissue sample is then aspirated. The sample is used to prepare a smear.



Embedded Video: https://www.youtube.com/watch?v=Dlgb4zhkGZA
Shows punch biopsy and incisional biopsy with suture

Biopsy Procedure

Armamentarium
-blade handle and no. 15 blade
-fine tissue forceps (preferably Adson forceps)
-syringe and local anaesthetic
-retractor appropriate for the site
-sutures, if needed
-needle driver
-curved scissors
-haemostatic agents (silver nitrate or absorbable gelatine sponge)
-gauze sponges
-specimen bottle containing 10% neutral buffered formalin
-biopsy data sheet

Indications for biopsies:

Indication	Example	Type of biopsy
Lesions with premalignant or neoplastic features	Leukoplakia/Erythroplakia Lichen planus Pigmentations, Swellings	Incisional or punch
Persistent lesions of uncertain aetiology	Soft or hard tissue	
Persistent lesions unresponsive to treatment	Ulcerations bone lesions(radio opaque - lucent)	Incisional including margins
Persistent focal lesions of perio/gingiva	Lumps ulcers non healing extraction socket	
Confirmation of clinical diagnosis	Labial gland biopsy for Sjogren's syndrome Minor salivary gland tumour -palate -upper lip Major salivary gland tumour	Excisional Incisional Excisional Fine Needle Aspiration
Lesions which cause patient extreme concern	Patient may request excision of a red, white or pigmented lesion	Excisional

Notes for Biology and Histology Report:
Case History for Biopsy Examination

All tissues which are sent to the pathologist for a microscopic examination and diagnosis should be accompanied by a history which must include all of the following information:

I. Information about the Patient

The patient's names
The patient's gender
The patient's age and date of birth
Relevant medical history, including current medication. Information about tobacco and alcohol intake is useful for mucosal specimens.

II. The Clinical History of the Lesion

When the lesion first appeared i.e. its duration.
Any increase in size there has been since it appeared.
Note any traumatic or irritative factors such as cheek biting, ill-fitting dental appliances, or smoking.
What symptoms are there? Pain, numbness, nothing unusual.
Any history of previous lesions?
Any previous treatments - medical, surgical or radiotherapy.

III. The Gross Description of the Lesion

Examination of the lesion as it exists in the mouth should be thorough and orderly and should cover some or all of the following points where they are appropriate:

The exact location of the lesion.
The size of the lesion, length, breadth and height.
The colour of the lesion.
The contour or nature of the surface - whether smooth, rough, ulcerated, papillary, lobulated.
The attachment or character of the base, e.g. some lesions are attached by a broad base, others by means of a stem or pedicle.
The consistency of the lesion, its base and the surrounding tissue should be determined by palpation - whether soft, fluctuant or hard.
The mobility of the lesion should be determined. Some tumours, such as osteomas growing off bone, are immovable; others are freely movable.
Signs of inflammation, ulceration, necrosis, or bleeding should be recorded.

A photograph of the lesion should be taken if possible as it will assist the pathologist.

IV. The Results of Other Investigations

Any information from clinical examination of relevant extra-oral areas should be provided.
Regional lymph nodes should be examined and findings recorded.
Include the results of radiographic, CT, MRI imaging. A copy of relevant radiographs is often useful for the pathologist.
Results of haematological and microbiological tests should be included.

V. The Surgical History

It must be decided whether to remove the entire lesion or to remove a representative ellipse or wedge-shaped section. If the lesion is small then excision of the entire lesion is usual.
You should note and record the type of biopsy carried out eg excisional or incisional.
Certain facts relative to the operation are useful, especially when the lesion is suspected to be a neoplasm and all findings should be recorded.

Resistance to the knife encountered in cutting through it.
Presence of a capsule about the lesion. Some tumours are definitely encapsulated; others are well circumscribed but non-encapsulated, while others infiltrate the surrounding tissue.
The amount of bleeding.
It is always desirable to obtain a representative sample of the base of a tumour.
Any exudates or fluids encountered should be described and saved, if possible.

BIOPSY RULES

1. Do not delay as a definitive diagnosis made as early as possible will improve the prognosis.
2. Prepare a good case history to accompany each specimen sent to the pathologist.
3. Submit radiographs and photographs whenever possible.
4. At all stages maintain highest standards of infection control.
5. Remove the entire specimen with some normal tissue where possible (especially if the lesion is small). If malignancy is suspected, surrounding normal tissue will allow for the determination of which layer of tissue the malignancy is arising from.
6. If sub-total excision is carried out, be sure the sample is representative and that normal tissue has been included as well as the tissue in question. If the lesion is malignant, margins of normal tissue will ensure the entire malignant lesion is excised.
7. Avoid coloured disinfectants before surgery. This is to ensure the sample tissue colour is a true representative of the colour of the lesion.
8. Avoid injecting local analgesic solution directly into the specimen. Sampling of tissues at the site of the local anaesthetic will produce artefactual tissue oedema or distortion.
9. Avoid serrated forceps - use smooth forceps or a ligature to hold the specimen gently.
10. Use a scalpel to remove the specimen. Do not use punches or other types of sampling instruments.
11. Use wide mouth plastic containers.
12. Use a large volume of fixative. The recommended fixative is 10% neutral buffered formalin. Large volume of fixative is used to ensure the specimen is completely immersed in the fixative, the fixative volume should be at least ten times the volume of the specimen.
13. Inform the pathologist if the specimen contains calcified material or foreign bodies. Some specimen may require a decalcification procedure before they are processed for examination.
14. Pack the specimen carefully to avoid breakage. Flexible plastic containers are preferable to glass for shipment. The plastic container should be placed in a plastic bag and then wrapped in bubble wrap, prior to being couriered to the laboratory. The specimen and the formalin are potentially harmful to those handling it, hence extensive packaging measures are put in place.
15. Ensure the specimen is promptly transported to the laboratory. This is done to ensure the sample can be stored appropriately if it is a fresh tissue sample.
16. Be sure all specimen containers and pathology forms are carefully labelled. This is to allow any misplaced documents and tissue samples to be reattached to patient documents.
17. Enclose the pathology form. This enables the pathologist to perform the appropriate preparations to the tissue sample.

References

Avon, S.L., & Klieb, H. B.E. (2012) Oral Soft-Tissue Biopsy: An Overview. *Journal of Canadian Dental Association, 78*

George, A. [Arun George]. (2014, October 25). *Punch Biopsy…..Easy way of Biopsy from Oral Cavity* [Video file]. Retrieved from https://www.youtube.com/watch?v=Dlgb4zhkGZA

Oliver, R.J., Pemberton. M. N., & Sloan, P. (2004) Oral biopsies: methods and applications. *British Dental Journal, 196,* 329-333. doi: 10.1038/sj.bdj.4811075