BIOPSY

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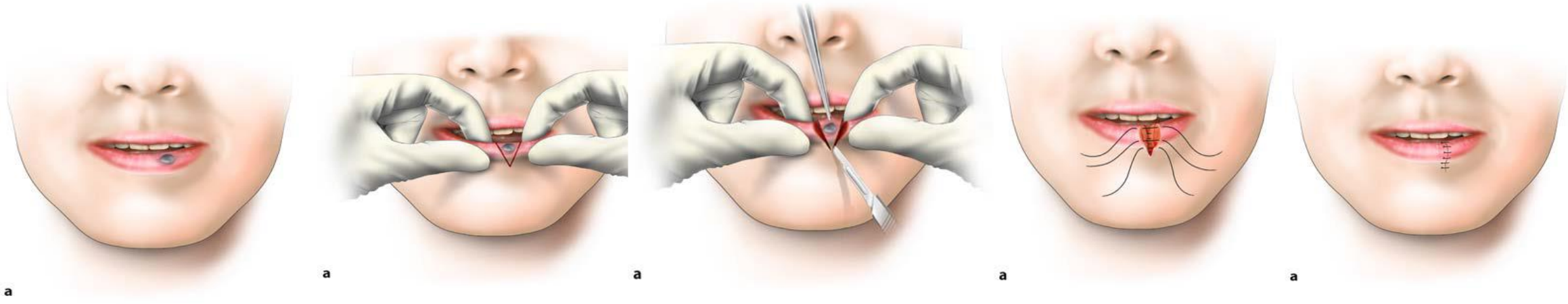
What is Biopsy?

Biopsy is

- the surgical removal of a tissue specimen from a living organism for microscopic examination and final diagnosis.
- a minor surgical procedure and, is called ***excisional biopsy*** or ***incisional biopsy***, depending on the entire pathologic lesion or part of it is removed.
  - ***aspiration or needle biopsy*** uses a needle to withdraw a sample from the lesion for examination.



Indications

- if there is an undiagnosed lesion for more than 2 weeks
- Presence of inflammatory lesions that do not respond to local treatment, has a worsening prognosis, and if the lesion does not heals for more than 14 days
- Identification of a surgically removed lesion
- Diagnosis of unidentified bone lesions
- To make a definitive diagnosis if malignancy is suspected
- Examination of ulcers and white lesions
- Presence of visible or palpable tumoral growths

Contraindications

- **Local contraindications**

1. Presence of acute infection in the relevant area
2. Receiving radiation therapy from the relevant area
3. Lesions with bleeding or metastatic features such as hemangioma, malignant melanoma

- **Systemic contraindications**

1. If the patient's systemic condition will not tolerate surgery
2. If the lesion is known to be definitively malignant

Lesions suspected of malignancy;

1. ulcerations
2. recurrence or resistance (lesions that persist for more than 2 weeks)
3. They have high growth potential and grow fast.
4. their consistency is firm and the lesions are fixed to adjacent tissue
5. They may bleed easily on palpation or spontaneously.

Materials required for hard and soft tissue biopsies

- 1. Local anesthesia syringe, needle, and ampule.
- 2. Scalpel and blade.
- 3. Periosteal elevator.
- 4. Scissors.
- 5. Surgical forceps and anatomic forceps.
- 6. Periapical curette.
- 7. Needle holder.
- 8. Hemostats.
- 9. Rongeur forceps.
- 10. Towel clamps.
- 11. Suction tip.
- 12. Sutures.
- 13. Sterile gauze.
- 14. Retractors.

Principles of Biopsy

- In cases where premalignancy is suspected, a biopsy should be taken from the most suspicious area.

- Local anesthetic should not be injected into the lesion.
- Ring block at least 1 cm away or regional anesthesia should be preferred.
- In addition, topical anesthesia should not be used for edema and tissue as it will cause distortion.

- Healthy tissue margins should be determined.

- The lesion should be stabilized with a finger or any other tool.

- The tissue sample should not be compressed with forceps.

Principles of Biopsy

- It should be taken from all tissue layers in a ”V” style.
- The biopsy specimen should contain the surrounding intact tissues.
- For the large lesions, biopsy should be taken from more than one place (as it may show different characters in different places).
- Tumoral lesions should not be palpated excessively because of the risk of metastasis.
- After bleeding control is achieved, sutures should be placed and a post-operative prescription should be written.

There are 4 main types of biopsy techniques used in oral and surrounding tissues. These are;

1. Oral cytology
2. Aspiration biopsy
3. Incisional biopsy
4. Excisional biopsy

Oral Cytology

- It is useful for examining superficial cell debris.
- This method is not performed as a biopsy, but to support the biopsy.
- It is not an alternative to surgical biopsy.
- It is applied for the purpose of obtaining bacteriological information.
- <u>It is applied in the following cases;</u>
- In the presence of dysplastic changes involving large areas (lichen planus, leukoplakia, irritation injuries, fungal infections, pemphigus, herpes, etc.)
- In the presence of atypical cells
- In cases where surgical biopsy is contraindicated.

Oral Cytology

<u>Advantages;</u>

- It can be done easily and quickly.
- It does not require local anesthesia.

<u>Disadvantages;</u>

- It may give false results.
- A definitive diagnosis is not possible.

Methods for Oral Cytology

❑Exfoliative cytology;

- The lesion is scraped from the surface with a cement spatula or tongue depressor.
- Cells taken as a surface swab are applied on the glass slide.
- The cells are fixed where they are transported with a solution in the form of a spray
- After the cells are stained, the glass slide will be examined under a microscope.

❑Oral brush biopsy;

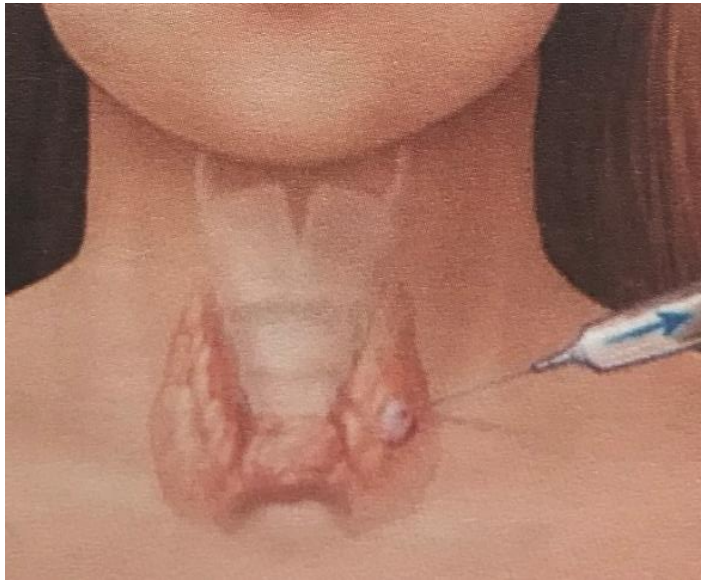
- It is a frequently used method.
- Epithelial cells are collected via a hand-held rotated brush and spread on a slide.
- It is superior to exfoliative cytology.

Aspiration Biopsy

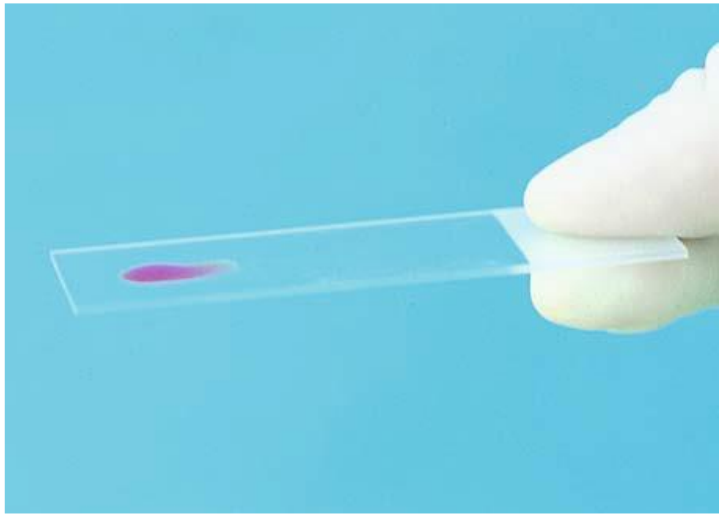
- It is aspiration of content from a suspected lesion with the aid of a needle and syringe.
- Absence of fluid or the presence of air means that the lesion is hard.
- It is a noninvasive method.

❑<u>indicated for;</u>

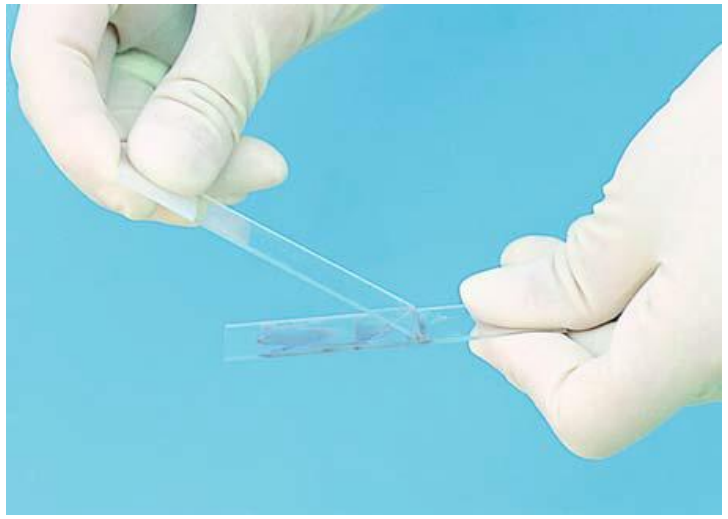
- cases where the lesion is not accessible for histopathological examination
  - (eg, parotid tumor, lymph nodes, cysts, etc.).



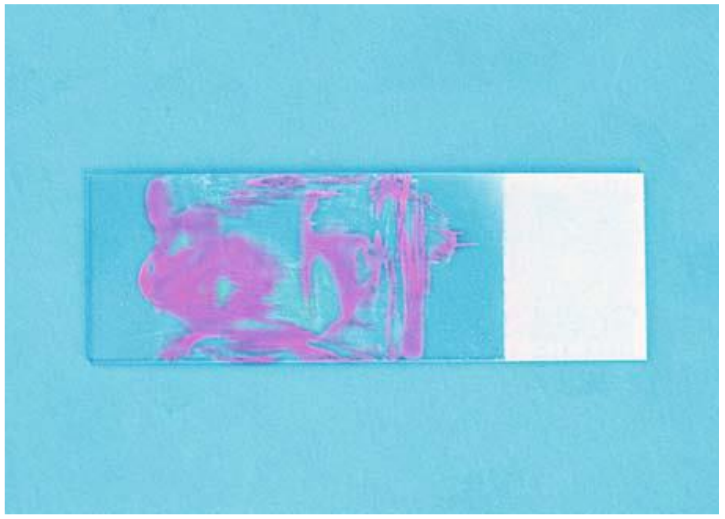
1)Aspiration biopsy from a mandibular cyst



2)Glass slide with material obtained by aspiration biopsy



3)Smearing of aspirate



4)Glass slide after smearing and fixation of aspirate with hair spray

Methods for Aspiration Biopsy

- Routine aspiration biopsy

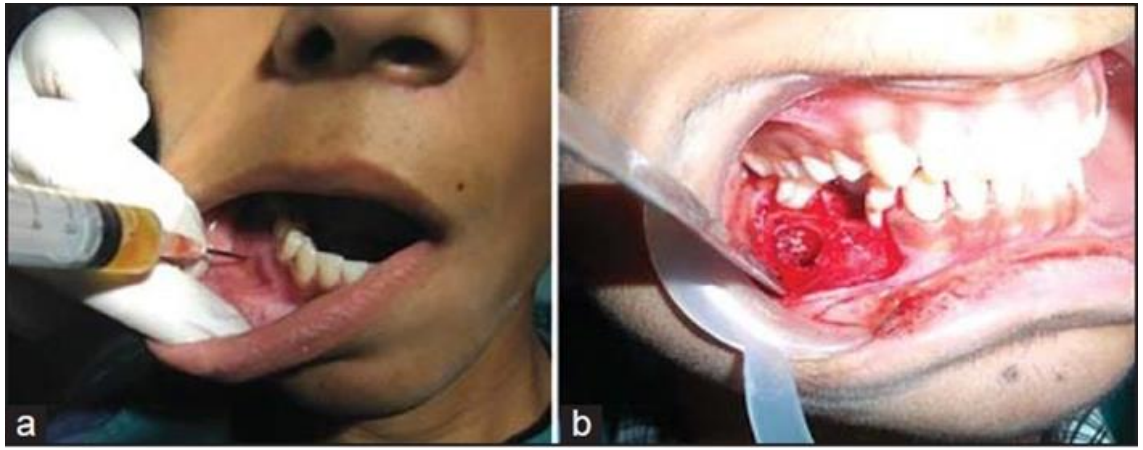
A 16-18 gauge needle is used.

It is especially taken from lesions thought to have fluid content.

Provides understanding of intraosseous lesion content.

With this method, we can understand if the lesion has vascular contact or not.

It does not give a definitive diagnosis.



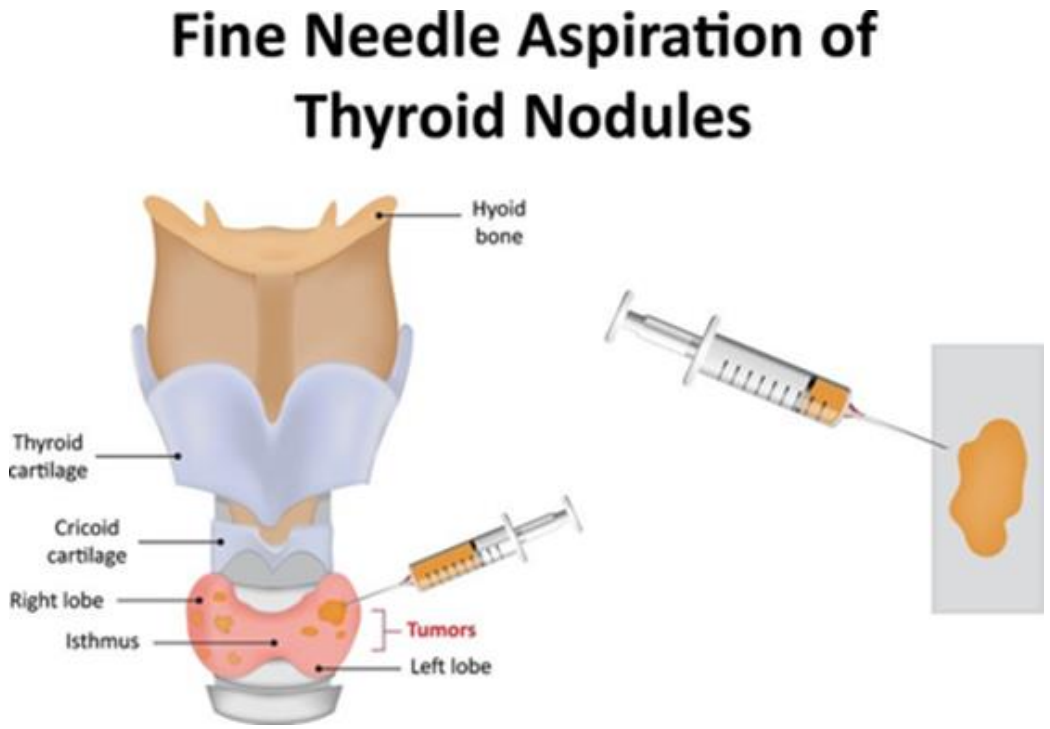
Methods for Aspiration Biopsy

❑Fine needle aspiration biopsy

- A 21 gauge needle is used.
- Since the needle is thin, there is no damage to the surrounding anatomical structures.

Indications

- It is applied for the diagnosis of neck masses that are difficult to perform surgical biopsy.
- If the patient has aesthetic concerns about scar formation.
- In order to reduce the risk of spread of malignant cells due to surgical biopsy.



Incisional Biopsy

- It is the sampling of one or more areas of the lesion (not the entire lesion!!) for diagnostic purposes.

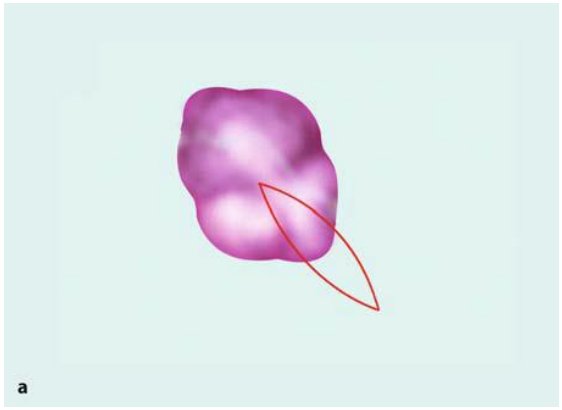
❑<u>It is applied in the following cases;</u>

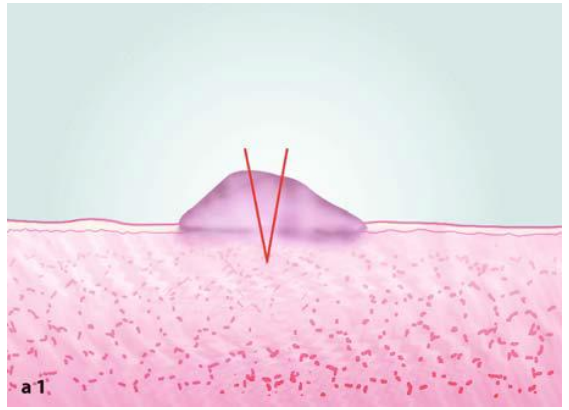
1. It is applied if it is aimed to diagnose first and then treatment.
2. If the lesion is localized where it has a chance to damage anatomical structures in an operation.
3. If the lesion is larger than 1 or 2 cm.
4. When the lesion is suspected to be malignant.

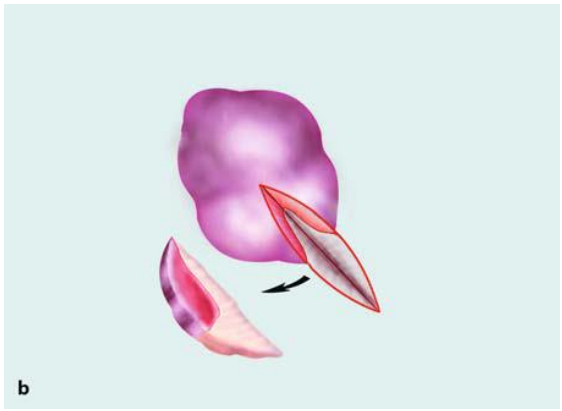
Incisional Biopsy

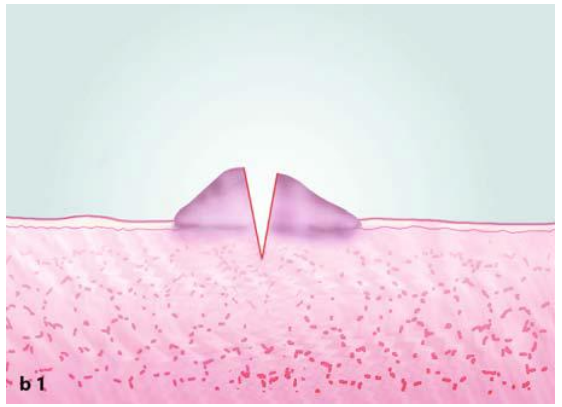
the incisional biopsy technique involves the following.

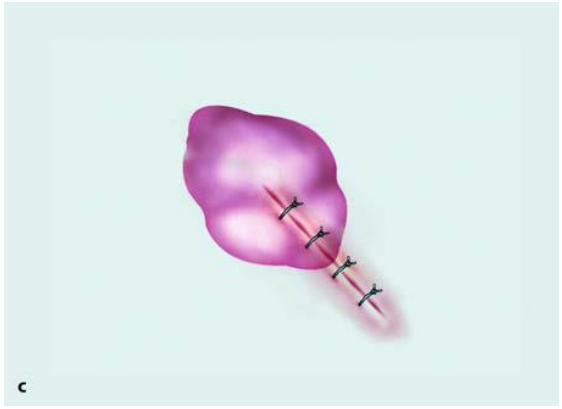
- After local anesthesia, a wedge-shaped ('V' shaped) portion of the most representative part of the lesion is removed, usually from the periphery of the lesion, extending into normal tissue as well
- When the lesion is located in deeper tissues, surgical access is accomplished after an incision on the mucosa.
- Necrotic areas should be avoided.
- After the bleeding control, the area is closed primarily with sutures.

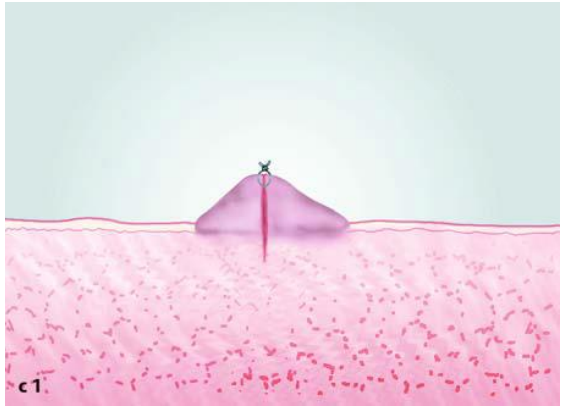






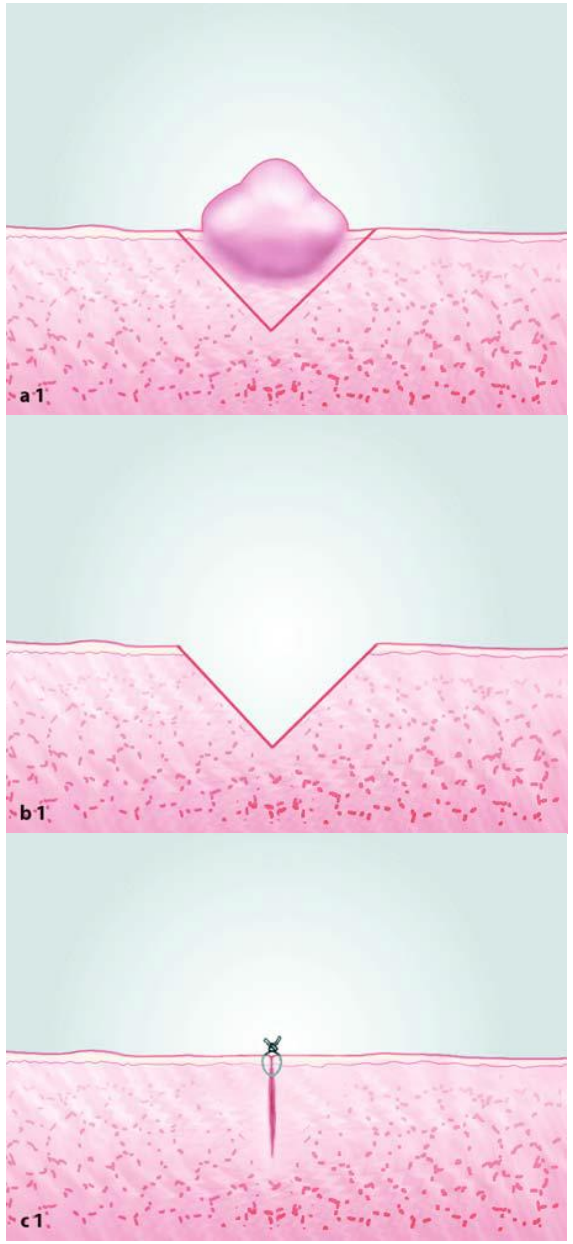






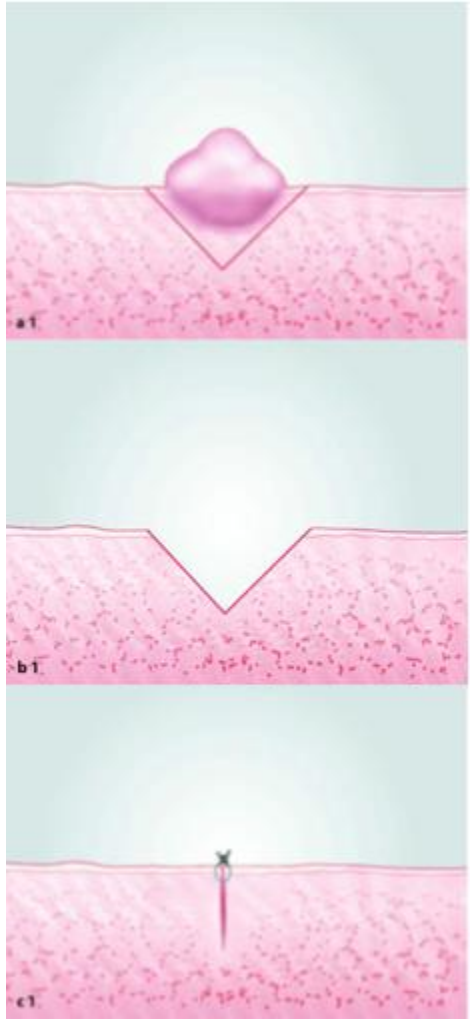
Excisional Biopsy

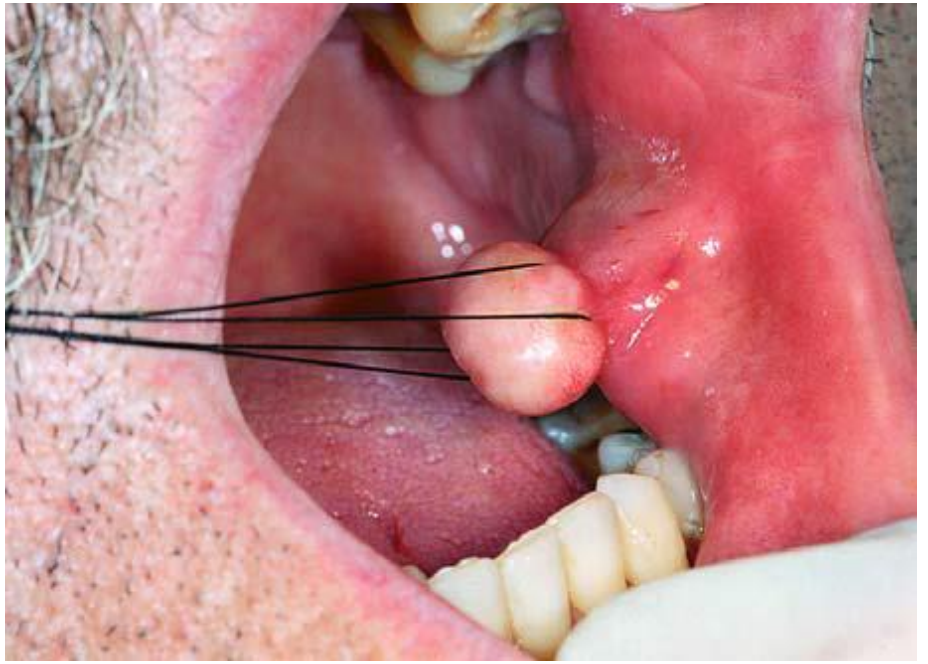
- It is the removal of the entire lesion with 2-3 mm of healthy tissue around it.
- It is for both diagnostic and therapeutic purposes.
- It is applied in the following cases;
- If the lesion is less than 1 cm in diameter and lesions that considered as benign.
- Eg. Papilloma, traumatic fibroma, hemangioma,
- peripheral fibroma, peripheral giant cell granuloma,
- leukoplakia and a few pigmented lesions.

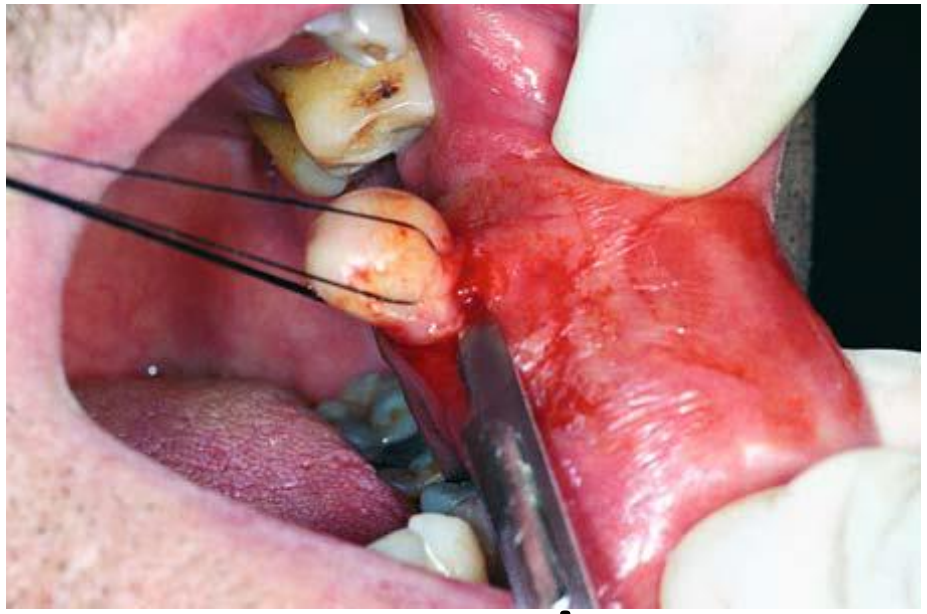


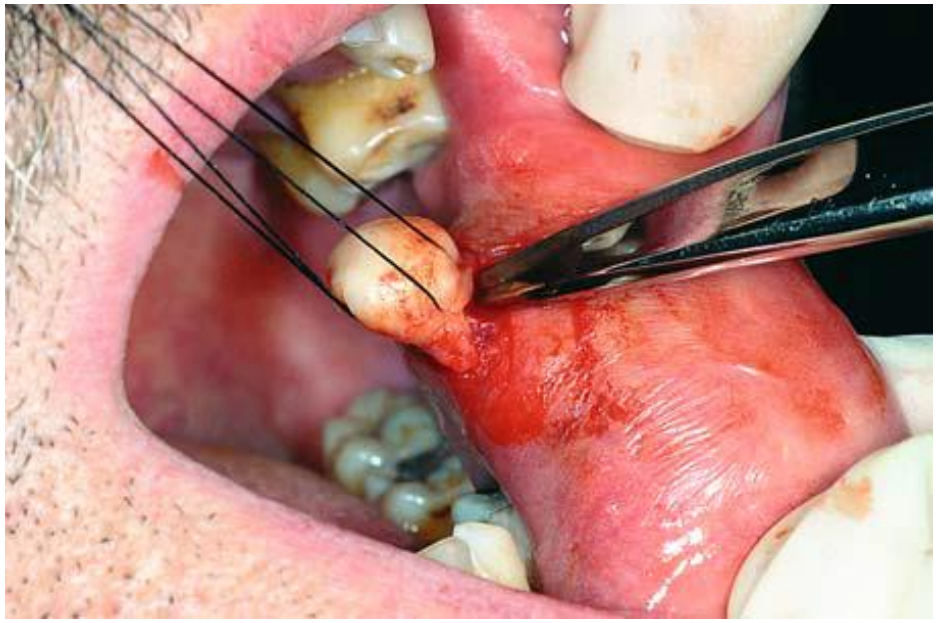
Excisional Biopsy

- Generally, the procedure for performing the biopsy is as follows.
  - After administration of local anesthesia, which is performed at the periphery of the lesion and not directly inside the lesion, two elliptical incisions are made on normal tissue surrounding the lesion, which are joined at an acute angle. The lesion is then removed, the mucosa is relieved using blunt scissors, the wound margins are reapproximated, suturing is performed, and healing is achieved by primary intention.
  - If the lesion is located at the gingiva or palate, suturing is not possible. In such a case, a surgical dressing is applied and the wound heals by secondary intention.

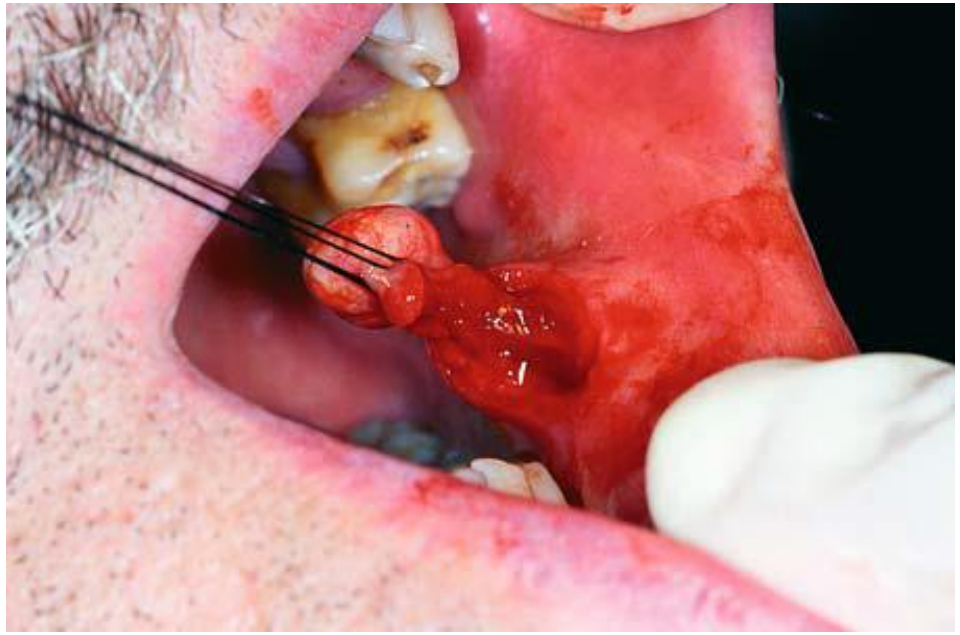


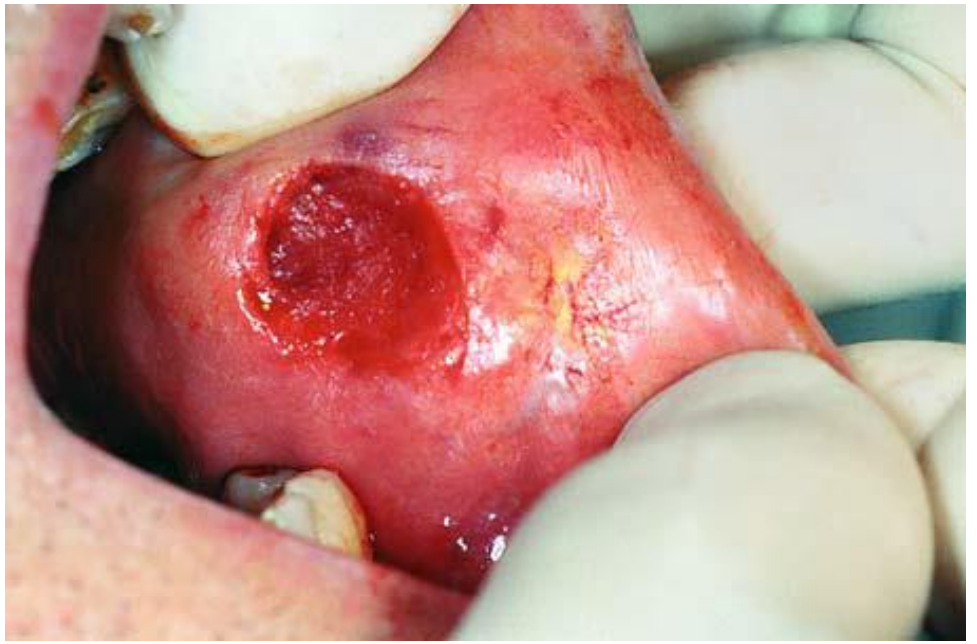


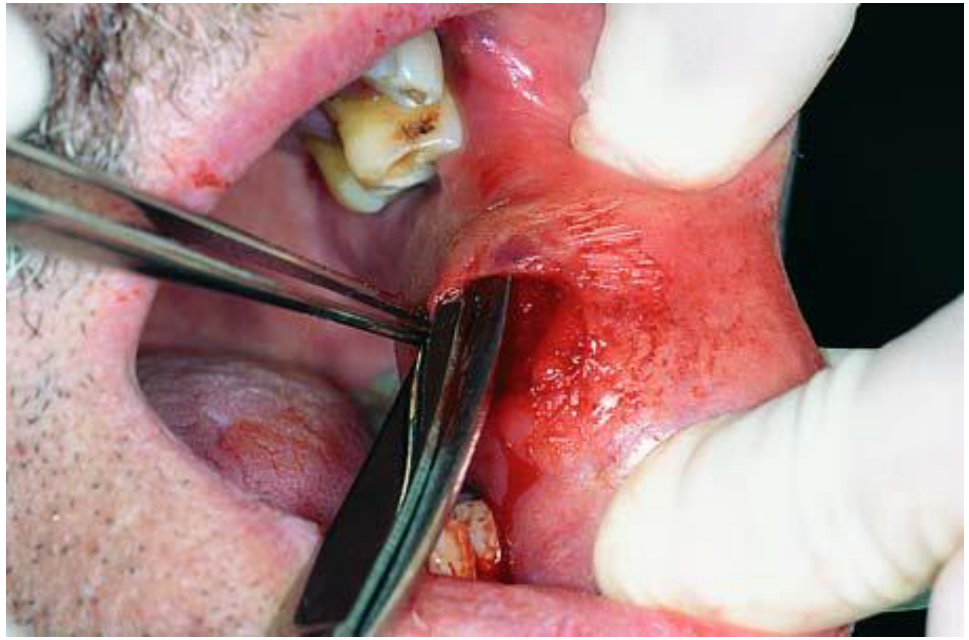




Traumatic Fibroma

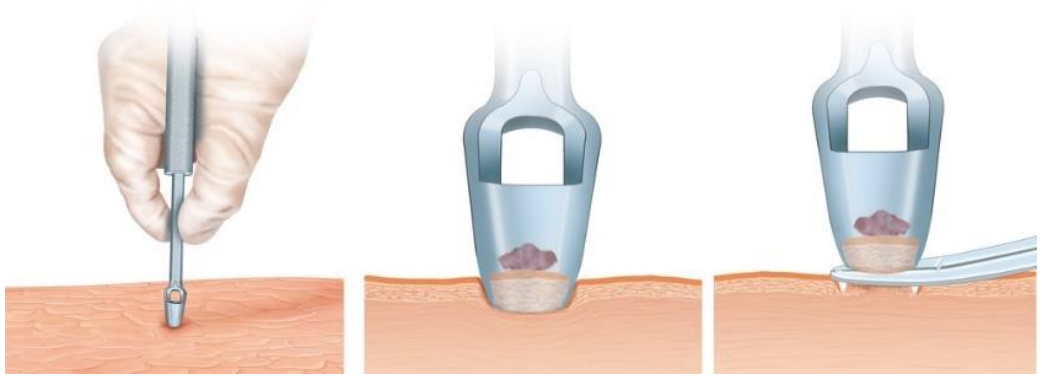






Punch biopsy

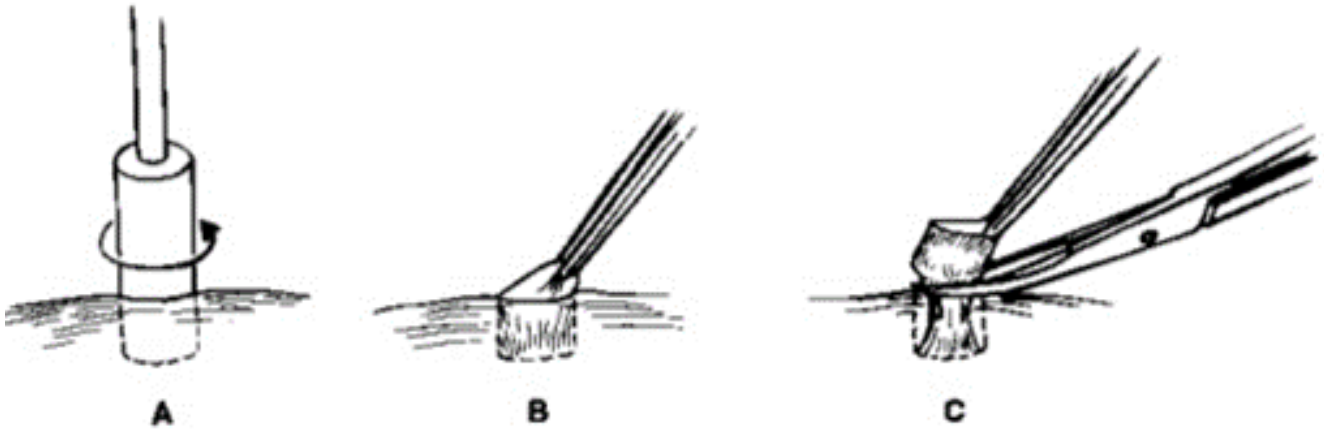
- It is a method used for incisional or excisional biopsy procedures.
- There are different biopsy punches up to 2-10 mm in diameter.
- It is not recommended to use the punches with small diameters as they can destroy while removing lesion and it can damage the tissue.
- Usually no sutures are used, surgical wound left to secondary healing



Punch biopsy

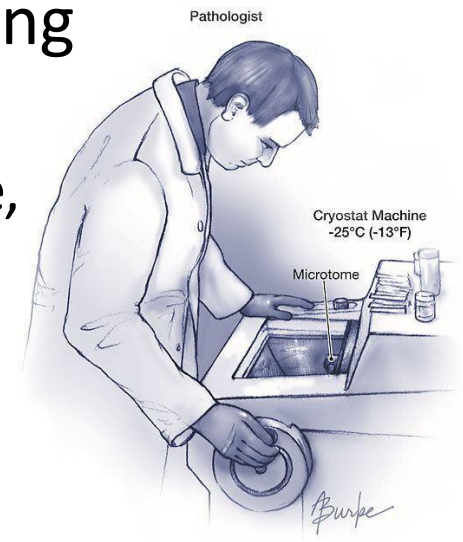
Disadvantages:

- insufficient amount of the lesion
- inability to take samples at a depth that can show the lesion's characteristics.



Frozen Section Biopsy

- It is the immediate examination of the tissue taken during the operation by a pathologist.
- Operation is guided by the result of the biopsy.
- It enables histological examination within 10 minutes.
- It is frozen at -70 C° with liquid nitrogen and examined by taking sections with a microtome.
  - If cancer cells are found in the surgical margin in the examined tissue, a wider excision is performed,
  - if not, the procedure can be finalized by closing the area.



Preservation of The Biopsy Sample

- Transporting and preserving the tissue under appropriate conditions will help the histological examination prosedures.
- The amount of fixative used should be at least 20 times the volume of the specimen.

- The most commonly used, best fixative solution;
- 10% formalin (4% formaldehyde)

The most common mistakes made when moving a sample:

- Crushing
- Drying
- Using incorrect fixator
- Frozening the specimen

Biopsy Form

- When the biopsy form is filled, the sample should be sent immediately.
- All information about the lesion is transferred with the form.
- The following must be written on the form:

1. Clinician's name
2. the date of specimen was taken
3. Main features of the specimen
4. The location, size, color, number, borders, associated radiographic image of the lesion
5. If there is a radiographic image of the lesion, it should be forwarded to the pathologist.

Conditions caused by wrong histological results;

1. Damaging during excision or fixation of pathological tissue
2. Insufficient depth or size of the specimen for diagnosis
3. When there are different types of disease with the same histological findings
4. If there are differentiations in different parts of the pathology and different pathologies coexist
5. If inflammation masks the signs

Thank you..