Biopsy

To reach accurate diagnosis of the lesion in oral and maxillofacial region we should perform systematic approach which includes the followings: -

- Detailed history
- Clinical examination which includes: - extraoral and intraoral
- Special investigations (as appropriate)

1- radiography and other imaging techniques

2- biopsy

3- specimens for microbial culture

4- hematological or biochemical tests

Biopsy: removal of a part or the whole lesion for purpose of diagnostic examination

There are several types of biopsy: -

1- surgical biopsy

- Incisional
- Excisional

2- oral cytology

3- aspiration biopsy

The aims of the biopsy:

- Define a lesion on the basis of its histopathological aspect
- To establish a prognosis in malignant or premalignant lesions
- Facilitate the prescription of specific treatment
- Contribute to the assessment of the efficacy of the treatment
- Act as a document with medical-legal value

Biopsy is indicated for: -

- suspected malignant lesions,
- precancerous lesions such as (leucoplakias or erythroplakias)
- chronic ulcerations of unknown cause.
- inflammatory lesions that do not improve within two weeks of removal of local irritants.
- lesions that interfere with oral function, such as fibrous hyperplasia and osseous lumps.
- lesions of unclear etiology, particularly when associated with pain, paresthesia or anaesthesia
- interstitial lesions in lingual, buccal or labial muscles
- radiolucent or radio-opaque osseous lesions.

Types of biopsies

oral biopsies can be classified according to:

a) Features of the lesion:

• ***direct biopsy***: when the lesion is located on the oral mucosa and can be easily accessed with a scalpel from the mucosal surface.

• ***indirect biopsy***: when the lesion is covered by an apparently normal oral mucosa

b) Area of surgical removal:

• ***incisional biopsy***: consists of the removal of a representative sample of the lesion and normal adjacent tissue in order to make a definitive diagnosis before treatment.

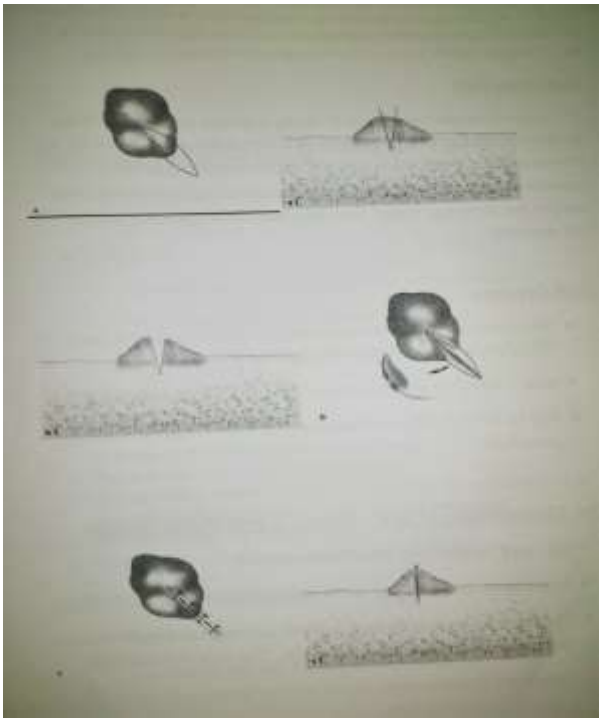
• ***excisional biopsy***: complete surgical removal of the lesion for diagnostic and therapeutic purposes. This procedure is elective when the size and location of the lesion allows for a complete removal of the lesion and a wide margin of surrounding healthy tissue.

c) By the timing of the biopsy:

• Pre-operative

• Intra-operative

• Post-operative: when aimed at checking the efficiency of a treatment.



Incisional biopsy

Excisional biopsy

General principles of oral biopsy:

Before the procedure is undertaken, the characteristics of the lesion (size, shape, color, texture, consistency, time of evolution, associated signs and symptoms,

regional nodes) should be described in the patient's clinical records together with a presumed diagnosis and possible differential diagnosis.

- The patient should receive information on the technique that will be performed and the reasons why it is performed, avoiding terms that may cause anxiety. Informed consent is required.
- Regional block local analgesia rather than infiltrative techniques is preferred
- elliptical incisions should be performed in order to ease suture
- incisions parallel to nerves and blood vessels are preferred
- if the lesion is smaller than 2 cm, excisional biopsy should be performed. If larger, an incisional technique including representative areas of the lesion with healthy margins should be chosen.
- when a malignant lesion is suspected, incisional technique is mandatory.
- Samples must be oriented with a suture or a piece of paper, and introduced in a container with a fixing solution (10% formalin).
- The number and location of the biopsies will be decided on the basis of the clinical appearance of the lesion. If a lesion shows several areas where biopsy would be indicated, more than one sample should be taken. In these cases, with precancerous or suspicious lesions, toluidine blue staining could be useful to choose the areas most relevant to biopsy.

The biopsy should be large enough to include normal and suspicious tissue and for the pathologist to give a diagnosis without further specimens (small samples are difficult to orientate and handle and certain processes as sample fixation may end in a reduction of the size of the specimen).

There are different procedures for undertaking oral biopsies. However, the selection of both technique and surgical instruments used to avoid artefacts is controversial. The use of CO2 laser for the procurement of diagnostic biopsy specimens is compromised by thermal cytological artefacts. Problems of this nature are also witnessed with electrocautery. Punch biopsy has been suggested to reduce artefacts although this has not been confirmed under controlled experimental conditions. Punch biopsy may tear the tissue in vesiculobullous conditions. Scalpel biopsy is the most widely accepted technique and the one that shows fewer limitations for obtaining samples from the oral cavity.

What are the most frequent errors that should be avoided when taking oral biopsies?

In order to obtain good quality, artefact-free oral biopsy that permits the pathologist establish a histological diagnosis, the clinician should avoid:

- pressing the sample with the tweezers, particularly if toothed, as may produce tissue tears and "pseudomicrocysts"
- infiltrating anaesthetic solution within the lesion, as it can cause sample alterations
- applying products to the lesion that induce tissue modifications
- using an insufficient volume of fixing solution
- inclusion of undesired material in the sample: glove powder, calculus, restorative materials, etc.
- taking insufficient amount of tissue in extension and depth.