

Clinical Practice Guideline
For
*Oral Biopsy
Surgery Department*



ORAL BIOPSY

1.0. Definition

There are oral lesions whose diagnosis can be made relying on data gathered during the history and/or physical examination, but there are others where histopathological studies are needed to confirm the presumed clinical diagnosis.

Biopsy is a surgical procedure performed by dentists to obtain tissue from a living organism for its microscopical examination, usually to reach a diagnosis

2.0. Objectives

The aim of the biopsy is to:

- 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.

3.0. Indications

Biopsy is indicated for diagnostic confirmation of suspected malignant lesions, precancerous lesions such as leukoplakias or erythroplakias and chronic ulcerations of unknown cause. It is also indicated for the histological confirmation of certain systemic disorders and is recommended for apparently inflammatory lesions that do not improve within two weeks of removal of local irritants. Other lesions that should also be biopsied include:

- Lesions that interfere with oral function, such as fibrous hyperplasias and osseous lumps.
- Lesions of unclear aetiology, particularly when associated with pain, paraesthesia or anaesthesia
- Interstitial lesions in lingual, buccal or labial muscles
- Radio lucent or radio-opaque osseous lesions.

4.0. When is oral biopsy not needed?

- There is no need to biopsy normal structures
- There is no need to biopsy irritative/traumatic lesions that respond to the removal of a presumed local irritant
- There is no need to biopsy inflammatory or infectious lesions that respond to specific local treatments, as pericoronitis, gingivitis or periodontal abscesses
- No incisional biopsies should be performed on suspected angiomatous lesions.

5.0. Types of biopsy [refer to diagram 1 & 2]

According to the procedures applied, oral biopsies can be classified by:

5.0. (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

5.0. (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 – refer to diagram 1.
- Excisional biopsy: is aimed at the 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 – refer to diagram 2.

5.0. (c) By the timing of the biopsy:

- Pre-operative
- Intra-operative
- Post-operative when aimed at checking the efficiency of a treatment.

6.0 General principles of oral biopsy

Before the procedure is undertaken, the characteristics of the lesion (size, shape, colour, 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.

6.1. Regarding the surgical technique:

- Regional block local analgesia rather than infiltrative techniques is preferred;
- Elliptical incisions should be attempted in order to ease suture;
- Incisions parallel to nerves and vases are preferred;
- If the lesion is smaller than 1 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 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[only if available]

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 to use to avoid artefacts is controversial. Scalpel biopsy is the most widely accepted technique and the one that shows fewer limitations for obtaining samples from the oral cavity.

7.0. Scalpel technique for biopsy taking

In order to obtain good visibility, good illumination is needed. A retractor type separator or similar instrument to retract the lips and cheeks, and moderate-volume surgical aspiration are required.

The instruments suggested are:

- Cartridge-type local anaesthetic syringe
- Fine, single use, two-sided needles
- Cartridges of local anaesthetic solution
- Small and short scalpel blades (no. 15, 11, 12 or even 5)
- Mosquito forceps
- Allis tweezers
- 2/0 to 5/0 non-traumatic suture material
- Gauze
- Container with fixing solution [Formalin 10%]

A biopsy technique can be reduced to six steps: selection of the area to biopsy, preparation of the surgical field, local anaesthesia, incision, handling of the specimen and suture of the resulting wound.

7.1. Selection of the area to biopsy

When dealing with small-sized lesion, an excisional biopsy will be performed, whereas incisional biopsy performed in the most representative area of the lesion is used for large lesions (long axis larger than 1 cm). If there is any doubt about the malignant character of the lesion, vital staining with toluidine blue can be used as an adjunct to select representative areas. Toluidine blue [if available] is a basic dye that fixes to nucleic acids and stains the nuclear content of malignant cells; in these cases samples should be taken from areas with deep blue patches, as light blue areas are not significant. Toluidine blue is used in three steps:

- Wash the area with 1% acetic acid
- Apply a 1% toluidine blue water solution for 1 minute
- Mouthwash with 1% acetic acid

The sample must include healthy tissue at the margin of the lesion.

7.2. Preparation of the surgical field

The surgical area is disinfected - A 0.12- 0.20 % chlorhexidine solution is preferred.

Iodine-containing surface antiseptics should not be used, as they may stain the tissues.

7.3. Local anaesthesia

An amide-type local anaesthetic with vasoconstrictor [Adrenaline] should be used and infiltrated away from the lesion to avoid introducing artefacts in the sample.

7.4. The incision

Oral tissues should be immobilized far from the area to biopsy with non-toothed tweezers. A clean and defined incision is performed to obtain a slice of tissue when aiming at incisional biopsy. Soft tissue incisions should be elliptical in shape producing a "V" wedge that includes both the lesion and healthy margins. If various lesions are present, multiple biopsies should be taken.

7.5. Tissue handling

The specimen is handled gently to avoid crush artefacts and introduced in the fixing solution. The role of the fixing agent is to preserve the cellular architecture of the tissues.

The best fixing agent is a 10% formalin solution, as it induces less ultrastructural alterations in the samples. 70% ethanol can also be used. The samples should never be put in isopropyl or methyl alcohol, saline or distilled water - as severe alterations may be provoked.

The volume of the fixing agent should exceed 10 to 20-fold the volume of the sample.

When immunofluorescence or immunostaining are needed, specimens should not be fixed, but sent as soon as possible to the laboratory for freezing.

When the material is sent to the pathologist, it should be accompanied with a detailed report that includes identification of the patient, clinical records, clinical signs and a probable diagnosis as well as the orientation of the sample. An explanatory diagram of the biopsy area may be useful for this purpose.

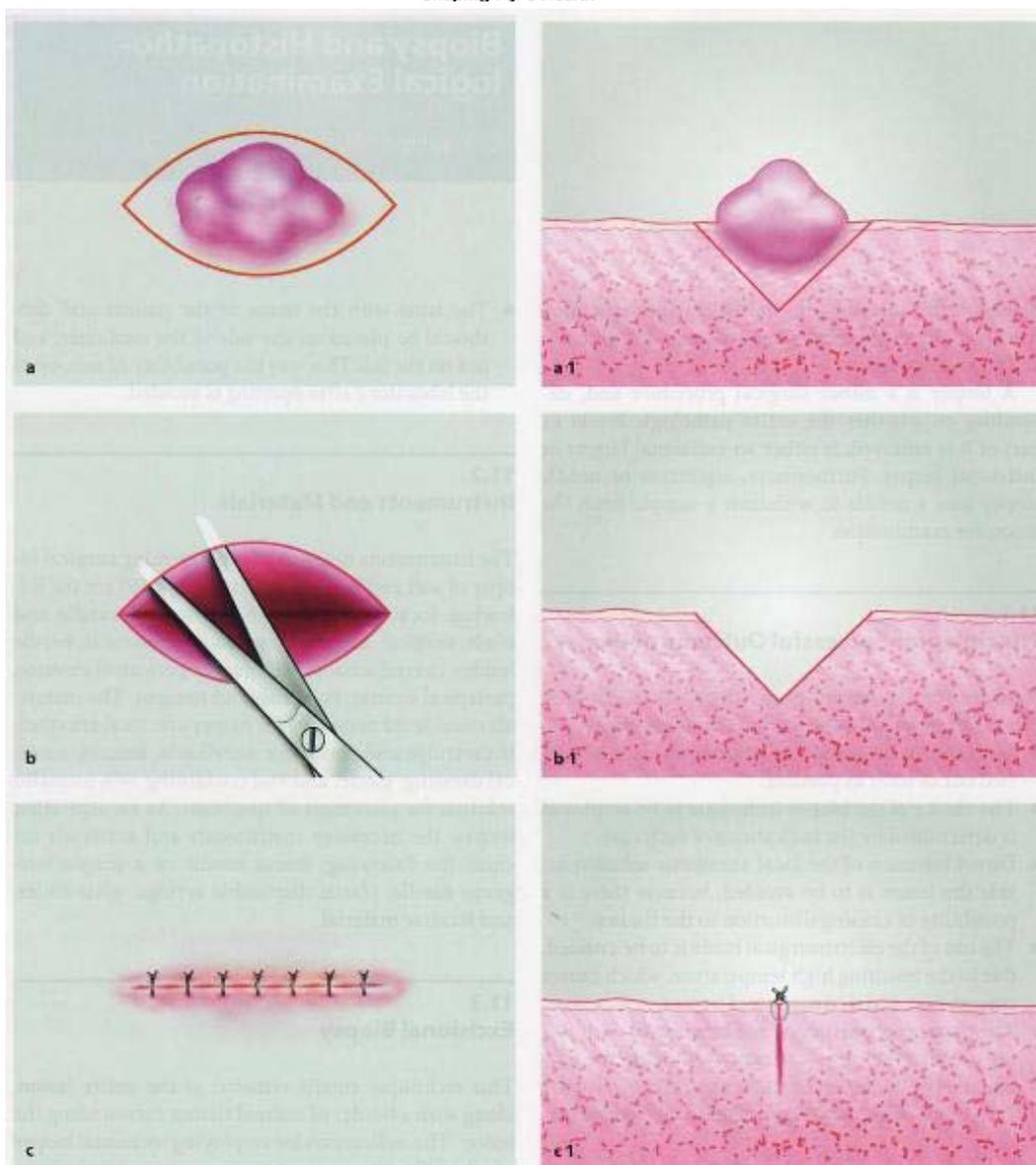
7.6. Suture

The suture should achieve good haemostasis, facilitate healing and should be removed after 6-8 days. If there is no Non Resorbable Suture than Resorbable Suture can be used and reviewed 6-8 days after closure.

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

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

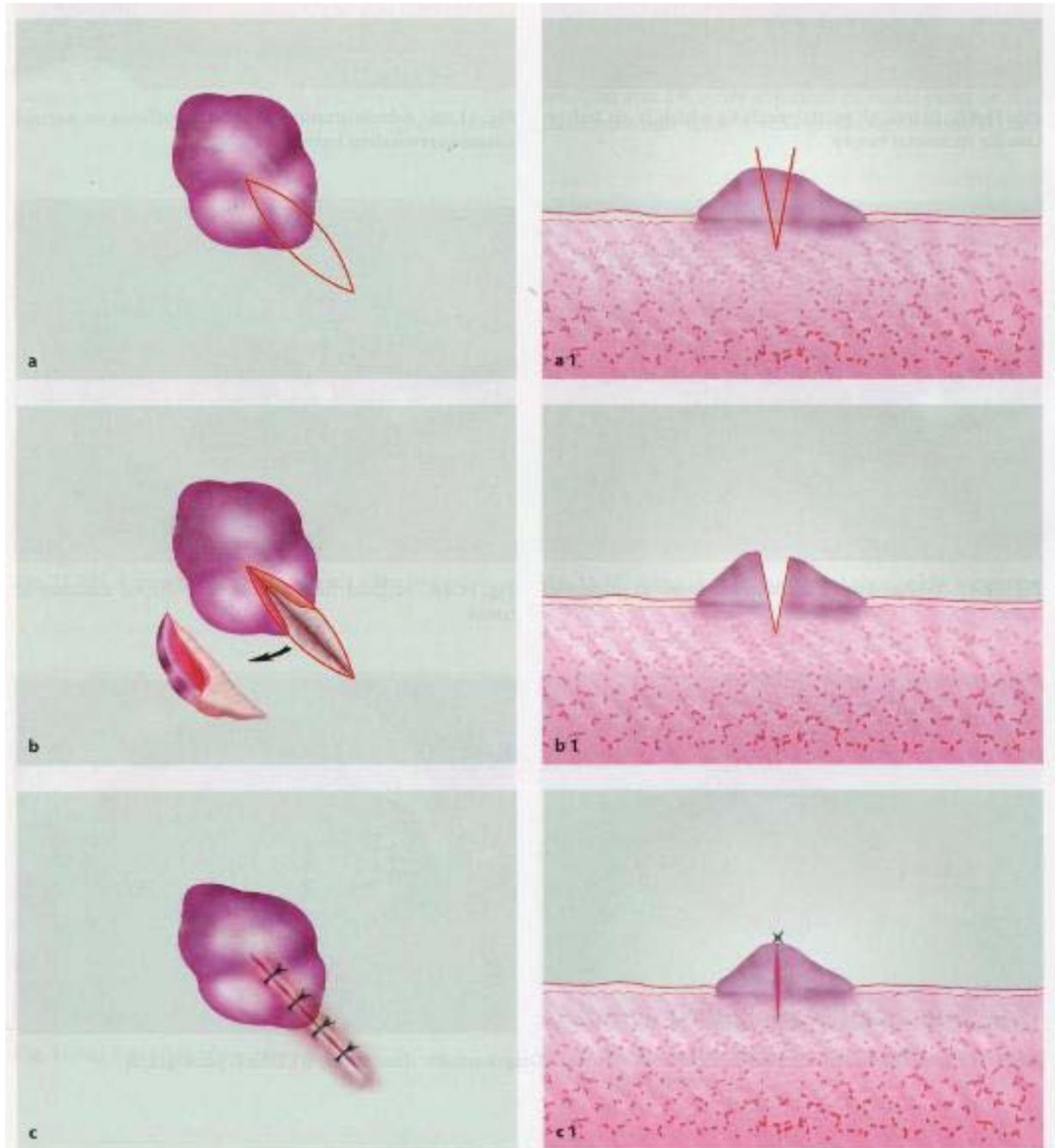
- Pressing the sample with the tweezers, particularly if toothed, as may produce tissue tears and "pseudomicrocysts"
- Infiltrating anaesthetic solution within the lesion, as it can cause sample alterations
- Applying products to the lesion that induce tissue modifications
- Using an insufficient volume 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.



Diagrammatic representation of excisional biopsy technique.
a Incision around lesion. **b** Blunt under mining of mucosa of wound margins after removal of lesion.
c Operation site after suturing.

a₁, b₁, c₁ Steps correspond to **a, b, c**, in a vertical cross-sectional view

DIAGRAM 1.



Diagrammatic representation of incisional biopsy technique
a Demarcation of incision. b Surgical field after removal of specimen.
c Operation site after suturing. a₁, b₁, c₁ Steps correspond to a, b, c, in vertical cross-sectional view

Diagram 2

8.0 Post Operative Instruction

The biopsied area will be sore and any discomfort can be controlled by painkillers such as *paracetamol* or *brufen*.

You will be able to eat and drink as normal immediately after the biopsy but avoid anything too hot for the first 24 hours.

Try not to rinse out the mouth for at least 24 hours.

Do not do any physical exertion for the next 24 hours as this can make the swelling worse or dislodge the blood clot at the site of operation encouraging more bleeding.

Use either a warm salty mouthwash or an antiseptic mouthwash for the next few days, starting 24 hours after the procedure. This should lessen the chance of infection at the biopsy site and hasten the biopsy site's healing.

For postoperative bleeding, infection or pain you may attend to the nearest Health Centre or Hospital as soon as possible.

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