Oral biopsy: Techniques and their importance

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Abstract
Accurate diagnosis and treatment of the dental diseases is very important component of patient’s dental care and also important for the development of high quality dentistry. Among various methods used for diagnosis of dental diseases, oral pathological evaluation plays a vital role. The ability of a pathologist to accurately interpret a lesion largely depends on biopsy performed by the dental surgeon. Thus it is important that the dental surgeon should have basic thorough knowledge of planning of the biopsy procedure. In the present review article an attempt has been done to explain comprehensively the various techniques and their importance in oral biopsy.

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Introduction

Biopsy is a Greek derived word (bios (life) and opsis (vision), translated as vision of life [1]. Ernest Besnier introduced the term biopsy in medical terminology in 1879 [2]. Biopsy is the removal of the tissue from the living organism for the purpose of microscopic examination and diagnosis. In general dental practice dentists often come across patients having oral pathology. Therefore, it is very important that dental practitioners should be aware of the pathology when it presents and should have an understanding of investigative techniques that might assist in making a diagnosis [3-5].

Microscopic or histopathological examination of tissue is not only gold standard for the diagnosis of many lesions but also provide information on the clinical behavior of the lesion and, in some instances, give prognostic information – all of which have direct impact on the management of the patient [4].

Although biopsy is a basic subject, many of the dental practitioners are not aware of its importance and techniques. Therefore the present article highlights the importance and principles of the biopsy.

Objectives of taking biopsy [3, 6-8]

To establish confirmative diagnosis.
• For the confirmation of clinical and radiographic findings.
• To determine whether an abnormality has been completely removed.
• For the proper surgical management.

• Biopsy reports are used as medicolegal records if need arises.

Biopsy indications (Soft tissue lesions) [9,10]
• Any remaining lesion after a 2-week period, which proves refractory to local therapy.
• Persistent changes in color or any new growth noted on examination.
• Any persistent hyperkeratotic or red-white lesion.
• Any lesion suspected as neoplasm.
• For the detection of certain systemic illnesses, which require histological confirmation e.g. amyloidosis, scleroderma, or Sjögren’s syndrome.
• A biopsy is also used as complement in the diagnosis of certain disorders of infectious origin, such as lesions of syphilis or tuberculosis.
• Another indication for biopsy is confirmation of the diagnosis of certain vesiculobullous lesions.

Biopsy indications (hard tissue lesions) [9,10]
• Bony lesions accompanied by pain, paresthesia or other symptoms.
• Bone lesions showing important changes or rapid expansion as evidenced by successive radiological evaluations.
• Lesions with rapid bone loss, irregular widening of the periodontal ligament, spiking root resorption and tooth mobility in the absence of trauma.
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or an identifiable source of inflammation.

Biopsy contraindications [3,10,11]
- When the general health condition of the patient is very poor.
- When acute, virulent, pyogenic infection is present.
- In the case of suspected vascular lesions such as hemangiomas, due to the risk of persistent and massive bleeding.
- Biopsy is contraindicated in very seriously ill patients, in those subjects with some systemic disorder that may worsen, or where secondary complications may develop.

Selection of biopsy site
In case of large lesions there are discrepancies in the histological features found from one site to another. Thus site selection is important, as it should be representative of the overall pathology that is present in the lesion. For example, in case of large ulceroproliferative lesion there may be some areas which demonstrate obvious invasive disease, while others may indicate epithelial dysplasia. For very large lesions, multiple specimens can be taken [6-8].

Excisional biopsy is usually advised for the smaller lesions. vital staining like toluidine blue staining can also be helpful in the selection of most advanced portion of the lesion. (Figures-1 and 2) Areas near to teeth, bone or cartilage should be avoided if possible because this is where tumor invasion is less and are frequently sites of necrosis [4,8,12].2

Types of oral biopsy techniques [13,14]
Biopsy can be direct or indirect depending on the characteristics of the target lesion as Direct-located superficially, with easy access, indirect: when the lesion lies in depth and is covered by normally appearing mucosa or tissue. According to the technique involved, biopsies classified as incisional or excisional, on the basis of material used, they are scalpel biopsy, punch biopsy or the lasers biopsy, based on timing of biopsy it can be intraoperative or extraoperative. Other techniques such as aspiration biopsy, exfoliative cytology and frozen section biopsy, brush biopsy, tru-cut biopsy are also types of biopsies.

Surgical considerations
Obtaining adequate and appropriate tissue sample is very important for the diagnosis purpose. Fragmented specimens, small specimens or specimens of inadequate depth are insufficient for accurate microscopic interpretation and are often difficult to orient properly for sectioning and mounting on a slide. An ideal mucosal biopsy should be of sufficient depth to include the entire layer of epithelium and a portion of the underlying connective tissue. [9,15]

Scalpel biopsy is preferred to lasers and electrocautery, as the heat produced by lasers and electrocautery often distorts the tissue, making diagnosis difficult
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[9]. Handling of the tissue specimen is also important, as crushing with tissue forceps during the surgical procedure can destroy the diagnostic histological features, rendering accurate microscopic assessment difficult. Fixation of tissue after its removal is also important. Routinely used fixative is 10% formalin. Biopsy performed in the area of previous biopsy site or surgery can have area of healing and mask diagnostic histological features.

Conclusion
Accurate diagnosis by the oral pathologist depends on the proper biopsy techniques followed by the dental surgeon, so that it can be beneficial to the patient’s health. Thus every dental surgeon should have good knowledge of the oral biopsy indications and the surgical techniques.

References
