

REVIEW ARTICLE

BIOPSY PROCEDURES IN ORAL MAXILLOFACIAL PRACTICE: AN UPDATE

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ABSTRACT:

Biopsy is a necessary diagnostic tool to confirm the clinical diagnosis and to make diagnosis itself based on microscopy. For microscopic examination it is necessary to provide a representative sample of the lesion to interpret proper histopathological diagnosis. Present article is an attempt to update the various biopsy techniques in various oral disorders. We also emphasized on the need of careful handling of the specimens to avoid any artefacts in histological sections in order to obtain an accurate diagnosis.

Key words: Carcinoma, excisional biopsy, histopathology, incisional biopsy.

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INTRODUCTION:

IBiopsy is a necessary diagnostic tool to confirm the clinical diagnosis and to make diagnosis itself based on microscopy. Biopsy is the removal of tissue either partial or complete for microscopic examination to diagnose the lesions ranging from intra-osseous periapical granuloma to malignancies.^[1]The diagnosis of most oral pathology is made from history, clinical appearance and radiographic findings of the lesions. The overall medical status of the patient also helps in investigating a lesion like an oral manifestation of any systemic disease and in performing a biopsy in patients with preexisting medical problems which may affect the treatment of a patient. It is very important to take proper case history where leading questions should be asked like history of smoking, chewing tobacco, systemic diseases or taking any medications. Taking a proper history of the lesion may provide various clues in its diagnosis if it is a congenital lesion or a benign process or malignancy. For example; duration, size and growth, rate and

magnitude, associated pain, numbness of the region, dysphagia, tenderness, swelling of the lymph nodes, fever with nausea and anorexia, history of trauma, habits or use of topical medicines.

For microscopic examination it is necessary to provide a representative sample of the lesion to interpret proper histopathological diagnosis. Whatever the methods used for biopsy, preoperative planning prior to performing a biopsy is essential to provide a suitably representative portion of the lesion to the pathologist and also considering the postoperative healing related to the specific area.^[2]

BIOPSIES OF DIFFERENT TISSUE TYPES REQUIRE SPECIFIC TECHNIQUES.

Lesions associated with teeth like periapical granuloma, radicular cyst, residual cyst and other odontogenic cysts may involve either vital or non-vital teeth, erupted or unerupted teeth and are all submitted routinely for histopathological examination and diagnosis.

INCISIONAL AND EXCISIONAL BIOPSY OF DIFFERENT LESIONS



Figure 1: Excisional biopsy of fibroma of palate.

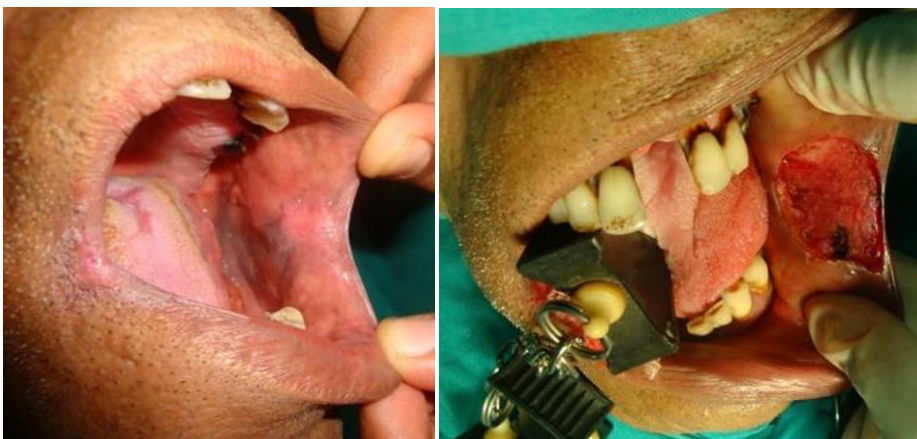
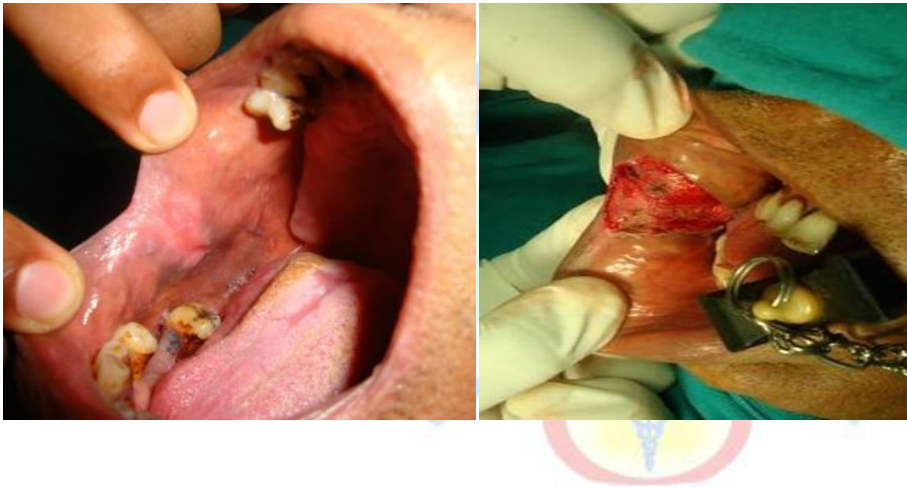


Figure 2: Excisional biopsy of leukoplakia right and left buccal mucosa.

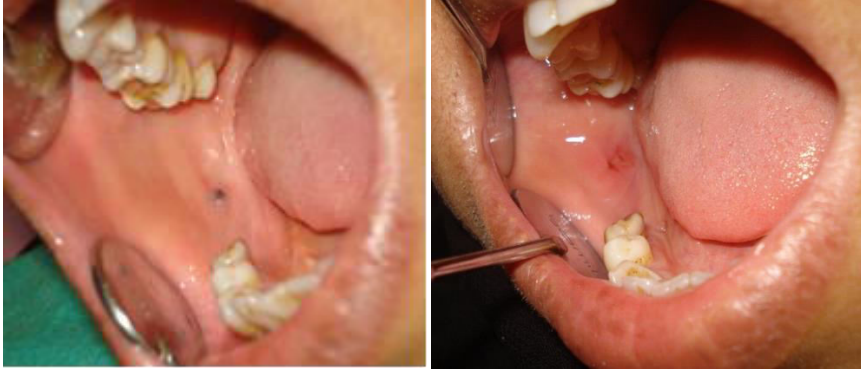


Figure 3: Excisional biopsy of nevi on right buccal mucosa.



Figure 4: Incisional biopsy of squamous cell carcinoma on lateral border of tongue.



Figure 5: Incisional biopsy of lichen planus on dorsal surface of tongue.



Figure 6: Incisional biopsy of a cyst present in periapical region of 46, 47.

For intra-bony lesions, it is mandatory to perform aspiration biopsy prior to open incisional biopsy to confirm if there is any vascular malformation. The incisional biopsy specimen submitted for examination should include maximum volume of abnormal tissue but not necessarily a border of normal tissue to establish a definitive diagnosis.^[3] For soft tissue and ulcerative lesions, specimen should consist of suspected diseased tissue and adjoining normal tissue which provides pathologist a picture of an accurate microscopic diagnosis. An incisional biopsy of rectangular or pie-shaped wedge is taken from the margins of such lesions. The specimen should include normal tissue deep to the lesion at appropriate depth to provide an accurate picture of histological changes which may be different than those in superficial tissue. It is necessary to prevent injury to any vital structures present. Tissue from necrotic areas should be avoided.

Mixed white and red lesions should be biopsied in an area from which both types of tissues can be obtained in the same specimen and submitted for histopathological examination routinely. Multiple incisional biopsies can be taken from such lesions from different areas in order to get the required representative sample of the lesion and each sample should be placed in separate biopsy bottles. Thin

A deep sections of tissues provide better results than shallow ones as superficial tissues may only present with inflammatory reactions. Deeper sections should always include both epithelium and connective tissue in the biopsy specimen.^[4]

Mucosal biopsies can be critical if a tumor or suspected malignancy or premalignant disease or any widespread mucosal disease is suspected. It is strongly recommended that biopsy in these cases being undertaken only after consultation by clinician who is going to treat the patient. Simple excisional biopsies of epulides, polyps, fibromas or granulomas can be of both therapeutic and diagnostic value.

The central part of any large tumor or ulcerative proliferative growth is not desirable for biopsy as it is always necrotic due to least blood supply and granulation tissue with inflammatory infiltrate and often does not yield diagnostic material. Biopsies from mucocutaneous lesions should include both erosive area and non-erosive lesional tissue.^[5]

SPECIMEN HANDLING

Careless handling of the specimen with forceps while taking incisional biopsy may cause traumatic damage to the specimen or crush artifacts and clefts in histological section. The specimen should be carefully grasped away from the main site of interest. The suction should be kept away from the surgical site to avoid sucking up the specimen. In

pre-cancerous lesions and suspected malignancy while performing excisional biopsy, a safe surrounding margin is included in the specimen and marking of the specimen with suture is necessary to help in locating precisely any left-out residual pathology.^[6] Specimen after removal should be avoided from drying out as it will cause cellular distortion and should be immediately placed in 10% formalin which acts as a fixative and prevents tissue autolysis. Formalin should be 10 times the volume of the specimen. Formalin forms intermolecular bridges between proteins and cross-links between proteins and groups. Formalin if not available, glutaraldehyde or normal saline can be used. It is necessary to provide adequate information to the pathologist which helps in making microscopic diagnosis easy and accurate which includes clinical and radiographic examination, listing of the differential diagnosis from the surgeon, age, sex, race and site of the biopsy. Removal of the specimen by the use of the laser or electrosurgical knife causes induced fulguration artifact and thermal necrosis which makes histopathological interpretation impossible.^[7]

CONCLUSION

After careful examination of the lesion, clinician needs to look for clues and consider various factors associated with the disease. Careful handling of the specimen and healing following the biopsy should be well planned.

REFERENCES:

1. Koivisto T, Bowles W, Rohrer M. Frequency and distribution of radiolucent jaw lesions: a retrospective analysis of 9,723 cases. *J Endod.* 2012;38:729–32.
2. Natkin E, Oswald RJ, Carnes LI. The relationship of lesion size to diagnosis, incidence, and treatment of periapical cysts and granulomas. *Oral Surg Oral Med Oral Pathol.* 1984;57:82-94.
3. Venkateshwar G, Girotra C, Mandlik G, Padhye M, Pandhi V, Kakkar S. Extensiveradicular cyst of the mandible: a rare case report. *Inter J Med Dent.* 2013;3:71-75.
4. Southam J C, Bradley P F, Musgrove B T. Fine needlecutting biopsy of lesions of the head and neck. *Br J Oral Maxillofac Surg* 1991;29:219-222.
5. Pearse A G E. The chemistry and practice of fixation. In Pearse A G E (Ed) *Histochemistry. Theoretical and applied.* Edinburgh: Churchill Livingstone, 1980:97-158.
6. Shi S R, Cote R J, Taylor C R. Antigen retrieval immunohistochemistry: past, present, and future. *J Histochem Cytochem* 1997;45:327-343.
7. Baughman R A. To biopsy or not. (Letter). *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 1999;87:644-645.

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