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Oral Biopsy in General Dental Practice: A Review

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ABSTRACT
The identification of disorders of the oral mucosa and subsequent treatment planning are both deemed to require an oral biopsy. All medical disciplines routinely employ biopsies; yet, dental professionals do not frequently do them; this may be due to dental surgeons' ignorance of the procedure. The oral pathologist's aptitude for analysing a lesion is largely relies on a successful biopsy that the dental surgeon does. This review's goal is to discuss indications, oral biopsy contraindications and major potential hazards that may occur during the biopsy process, In an effort to better understand how dental surgeons identify pre-malignant and malignant lesions, Here, it is also explained how to aid in reducing the prevalence of oral cancer.

1. INTRODUCTION

The Greek words bios (life) and opsis (vision) are the roots of the English word biopsy. "The removal and excision of tissue or other material from the living body for the purpose of diagnosis" is the definition of a biopsy. [1] To obtain a definite diagnosis as soon as possible so that the appropriate therapy can be started right once, and to determine the prognosis in lesions that are malignant or premalignant. iv) serve as a document with medical legal value, iii) establish whether an abnormality has been totally eradicated. It must be remembered that a disease's prognosis and treatment planning greatly benefit from an early diagnosis. Missing an oral illness diagnosis could have serious consequences for both the patient and the dentist. [2] As a typical occurrence in their daily practise, malignant and pre-malignant lesions are seen by dental surgeons. By referring the patient to more advanced facilities, they can significantly influence the prognosis of oral malignancies. By identifying high risk patients and teaching them healthy habits, they can significantly reduce the incidence of the disease. [3,4]

Causes of Biopsy

1. Any lesion that lasts longer than two weeks without an obvious etiologic cause.
2. Any inflammatory lesion that, even after two weeks, does not improve following treatment.
3. Any hyperkeratotic lesion that is chronic.

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4. Any lesion that may be cancerous.
5. Lesions having an unknown cause, especially when they are accompanied by pain, paraesthesia, or anaesthesia.
6. Prolonged inflammation with an underlying aetiology that is unknown.
7. Conditions such fibrous hyperplasias and osseous tumours that affect mouth function.
8. Osseous lesions that are radiolucent or radioopaque.
9. Any tissue that is discharged voluntarily from a bodily opening.
10. Any tissue removed during surgery.
11. Content from a chronic sinus that drains but whose origin is obscure.
12. Lingual, buccal, or labial muscles with interstitial lesions.

Biopsy-refusing circumstances

1. Scheduling: The biopsy should be scheduled prior to the application of local anaesthetic. To reduce the possibility of harming minor structures, it is best to avoid major veins and nerves.

2. When performing a regional block, local anaesthetic should be used instead of infiltrative techniques, or if infiltration with local anaesthetic is necessary, it should be deep or performed in a field surrounding the desired biopsy site. Artifactual tissue odema or deformation results from taking a tissue sample from the injection site.

3. Inclusion: Surgeons should be aware of the regional anatomy, such as the location of nerves and blood vessels, and they should try to make incisions that are elliptical to make suturing easier. Incisions should also be placed parallel to where they are likely to be.

4. Excisional versus Incisional Biopsy: Excisional biopsy should be carried out if the lesion is smaller than 2 cms. If the lesion is greater than 2 cm, an incisional biopsy that covers representative lesion areas and healthy normal margins (i.e., 2/3 lesion and 1/3 normal tissue) is indicated. Excisional biopsies won't make up the majority of the procedures. Incisional biopsy method is required when a malignant lesion is suspected.

5. Site selection: Avoid taking a biopsy of an ulcer's or a necrotic area; instead, choose the area that looks the worst. Lesions that are smaller than 2 cm should be excised, meaning the entire lesion is removed together with the surrounding margins of healthy tissue. Incisional biopsy is used to sample the most representative spot from bigger lesions. Multiple smaller biopsies of the lesion may be performed in order to collect representative tissue for the oral pathologist to examine because there may be variations in the histological features identified at different sites within the lesion. Toluidine blue vital staining can be used as an additional tool to identify a representative area of a suspicious lesion or when there is uncertainty about the lesion's malignant characteristics.

6. Surgical field preparation: The ideal solution contains 0.20% chlorhexidine. Avoid using surface antiseptics that contain iodine.

7. Orientation: Before inserting a sample into a fixing solution, it must be orientated using a suture. The use of tags with the suture will be of great assistance to the oral pathologist and improve the correctness of his reports, particularly on clearance of tumour margins. This should be done with self-explanatory remarks and a schematic. By stitching through and through the tissue, marking the superior or inferior borders and the anterior or posterior surface. If the top and bottom sides significantly differ, be sure to include the dimensions.[6]

8. Fixation Method: The samples should never be placed in saline or distilled water; instead, 10% Formalin solutions are employed. Fixative solution's function is to halt putrefaction and

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autolysis while stabilising cell protein. At least 20 times the size of the tissue specimen should be in the specimen's overall volume. [7]

9. Sutures: Sutures help to achieve effective hemostasis and speed up the healing process. After a week, sutures can be removed.

10. Relevant details: A sheet with pertinent patient information, including the patient's name, age, gender, primary complaint, length of the complaint, clinical data, provisional diagnosis, and differential diagnosis, should always be included with the specimen. If at all possible, take radiographs, laboratory tests, and pictures of the lesion. [6]

11. Sample Bottles: Glass or plastic bottles are frequently used. To stop formalin from evaporating and specimen from spilling, the specimen vials must be tightly shut. "Pathological Specimen - Fragile (Handle with Care)" is written in large letters on the vial.

Dental surgeons should avoid using certain artefacts that are frequently produced during oral biopsies.

1) Injecting local anaesthetic into the lesion since it can change the sample. Around the suggested biospy site, local anaesthetics should be applied deep or in a field. It is also possible to utilise a regional block, but with a regional block, the haemostatic effect of the adrenaline in the local anaesthetic solutions is lost.

2) Using tissue forceps to crush the tissue during the procedure: According to Seone J et al. [8], "Crush Artefacts" are the most common cause of artefacts in specimens presented by dental surgeons. The procedure's tissue crushing with the tissue forceps has the potential to disrupt the tissue sample's histological characteristics and even result in tissue rips and "pseudomicrocysts." Placing a suture inside the tissue sample that needs to be removed and holding the sample with an artery forcep is a common technique used by oral surgeons.

3) Applying substances that cause tissue change to the lesion: Should coloured antispectics be used to clean the incision's surface at the mucosal location where the biopsy is to be taken? It is advised to use 0.12-0.20% chlorhexidine solution instead than specifically iodine-containing surface antisptics because they may stain the tissues. Staining is not hindered by toluidine blue.

4) Electrocautery should be avoided because it causes thermal damage and artefacts to the tissue biopsy, which make it difficult for the pathologist to assess, especially in the case of dysplastic and malignant lesions [5]. When tissue margins are not necessary and hemostasis poses a serious threat, electrosurgery may be utilised.

5) A biospy specimen should be immersed in a fixative solution as soon as it is removed from the oral cavity. 10% neutral buffered formaline6 is the fixative solution that is most frequently used for routine biopsies. Tissue deterioration brought on by inadequate fixing makes interpretation challenging. The fixative solution should be at least 20 times the volume of the specimen to ensure there is an adequate amount. [7] Avoid putting the specimen in gauze since it will absorb the fixative solution and make it harder to remove the specimen from the gauze afterwards.

6) Taking too little tissue: The quantity of the material is important for a proper interpretation of a bisopy. [5] The majority of the time, shrinkage happens during fixation and processing, which reduces the size of the biopsy.

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The world's population is ageing, growing, and adopting more cancer-causing activities, which together contribute to the rising global burden of cancer. [9] There are about 50,000 occurrences of oral cancer worldwide, making it the sixth most common malignant tumour. [11] Over the past few decades, the morbidity and mortality of other malignancies have declined, however mouth cancer has climbed. When oral cancer is detected early, treatment is often non-aggressive and simple, with a survival rate of about 80%.[12] According to a National Institute of Public Health study from February 2011, India is home to 86% of all mouth cancer incidences worldwide.[13] The main cause of this high prevalence is India's widespread use of tobacco. Recent data from the Global Youth Tobacco Survey show a high incidence of tobacco product use, particularly among young people. [14] There are around 300 dental colleges located in India. Despite the fact that many dental schools graduate dental surgeons, India continues to lead the world in the number of instances of oral cancer. For more than 150 years, a biopsy has been utilised to determine the diagnosis of an undiagnosed medical disease. [15] One of the most time-tested and trustworthy techniques now in use for making a conclusive diagnosis of clinical abnormalities in dentistry is biopsy. There are other extremely specialised procedures like immunofluorescence, immunohistochemistry, and electron microscopy that can be used, but none of them can replace a biopsy. [15] When in doubt, a diagnosis supported by a biopsy is always the best option. A general dental practitioner has the expertise and skills necessary to perform a biopsy (small incisional and excisional surgery). [6,15]Too many cases of oral cancer are still being discovered when they are already somewhat advanced because a biopsy was not done when the first symptoms of the disease were noticed.[16] In general dentistry clinics, intraoral pathology is a common complaint from patients. The ability to manage such disorders is essential for dental sergion. Whether the dentist performs the biopsy himself or sends the patient to a specialist, the referring dentist should be knowledgeable with the biopsy's techniques.[17] Dental surgeons can have a significant impact on the diagnosis of premalignant and malignant lesions in daily practise and the prognosis of oral cancers by sending patients to more specialised facilities. By identifying high risk patients and imparting healthy habits on them, they could significantly reduce the incidence of the disease. [2,3] Franklin and Jones[18] found that, despite the value of histological analysis of tissue, general practitioners do not submit specimens for examination in their survey on oral and maxillofacial pathology material supplied by general practitioners. A different study by Diamanti et al.[19] reveals that the majority of dental surgeons lack confidence and competence in handling the biopsy technique. A dentist sees oral pathological lesions very infrequently compared to other dental issues because of a lack of training for biopsy procedures. [18] It is the responsibility of dental surgeons to detect and treat oral pathology; if it is not treatable, it should be properly referred. Dental surgeons should have sufficient training to do oral biopsy operations, according to many authors.[15,17,19,20]

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