

Soft Tissue Biopsy Techniques for the General Practitioner, Part 2

by Robert A. Convissar, DDS, FAGD, MALD

Part 1 of this 2-part article reviewed basic principles of oral soft tissue biopsy technique, including indications, timing, the types of lesions to be biopsied, and sites in the oral cavity where general practitioners can usually perform these procedures. In this article, a simple step-by-step procedure for harvesting soft tissue biopsy specimens is described.

SOFT TISSUE BIOPSY TECHNIQUE

Patient Assessment

The first and most important step in the biopsy procedure is the patient assessment/patient history. This step will determine whether the clinician feels comfortable performing the procedure or prefers to refer the patient to a more experienced practitioner. What stands out in the patient's medical history? Is the patient taking any medications? Is the patient currently under treatment for a medical condition that would contraindicate a surgical procedure? Does the medical or dental history reveal the diagnosis without the need for a biopsy?

A few of the medical conditions that may predispose to referring the patient are rather common in the general population. For example, the clinician may choose to refer a poorly controlled diabetic patient to a more experienced practitioner. Little and Falace¹ list poor wound healing and increased incidence of infection as potential complications in these patients. Performing a large excisional biopsy when there is a chance of poor healing, sloughing of tissue, or infection of the wound site may indicate the need to refer the patient to a more experienced practitioner.

Patients taking a low dose of aspirin every day to prevent or treat cardiac problems, or those taking a more potent anticoagulant

(coumadin) may not clot quickly. Lockhart² believes that if the patient has a history of aspirin use in the past 10 days, the dentist should consider testing for bleeding time before dental treatment, and that aspirin should be discontinued at least 5 days before elective dental surgery.

Patients with other identified or suspected medical problems warrant careful evaluation prior to biopsy. There are ethical³ and legal⁴ issues regarding referral of HIV+ patients. While infected individuals who are severely immunocompromised may be better managed in a hospital dental service or dental school setting, these patients can generally be managed successfully in the office of a general dental practitioner. Oral lesions identified in pregnant women should be carefully evaluated. Is the lesion specifically associated with pregnancy (ie, pyogenic granuloma or "pregnancy tumor") or is the lesion unrelated to the pregnancy? Another consideration is the timing of the pregnancy. It is generally agreed that the second trimester is the best time to provide dental treatment to pregnant patients.

Lesion Assessment

Assuming there is nothing in the patient's medical history that would contraindicate performing the procedure, the lesion should be carefully examined. Are the borders of the lesion completely visible? Does the lesion begin in the maxillary tuberosity region and extend distal to the hamular notch where visibility may be a problem? The anatomical landmarks in the surgical site should be carefully assessed, and any complicating anatomy should be identified. Is the lesion between the mandibular bicuspid in the region of the mental foramen? Can the clinician be certain that a palatal lesion can be removed without disturbing the

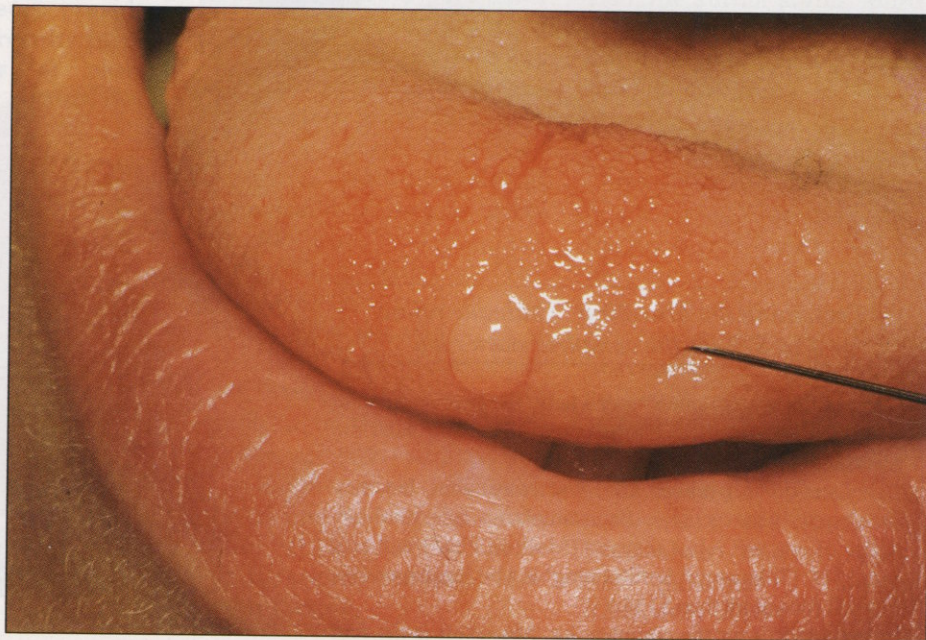


Figure 1. Infiltration anesthesia must be at least 1 cm away from the lesion to prevent distortion of the specimen.



Figure 2. Traction suture in place holding the lesion.

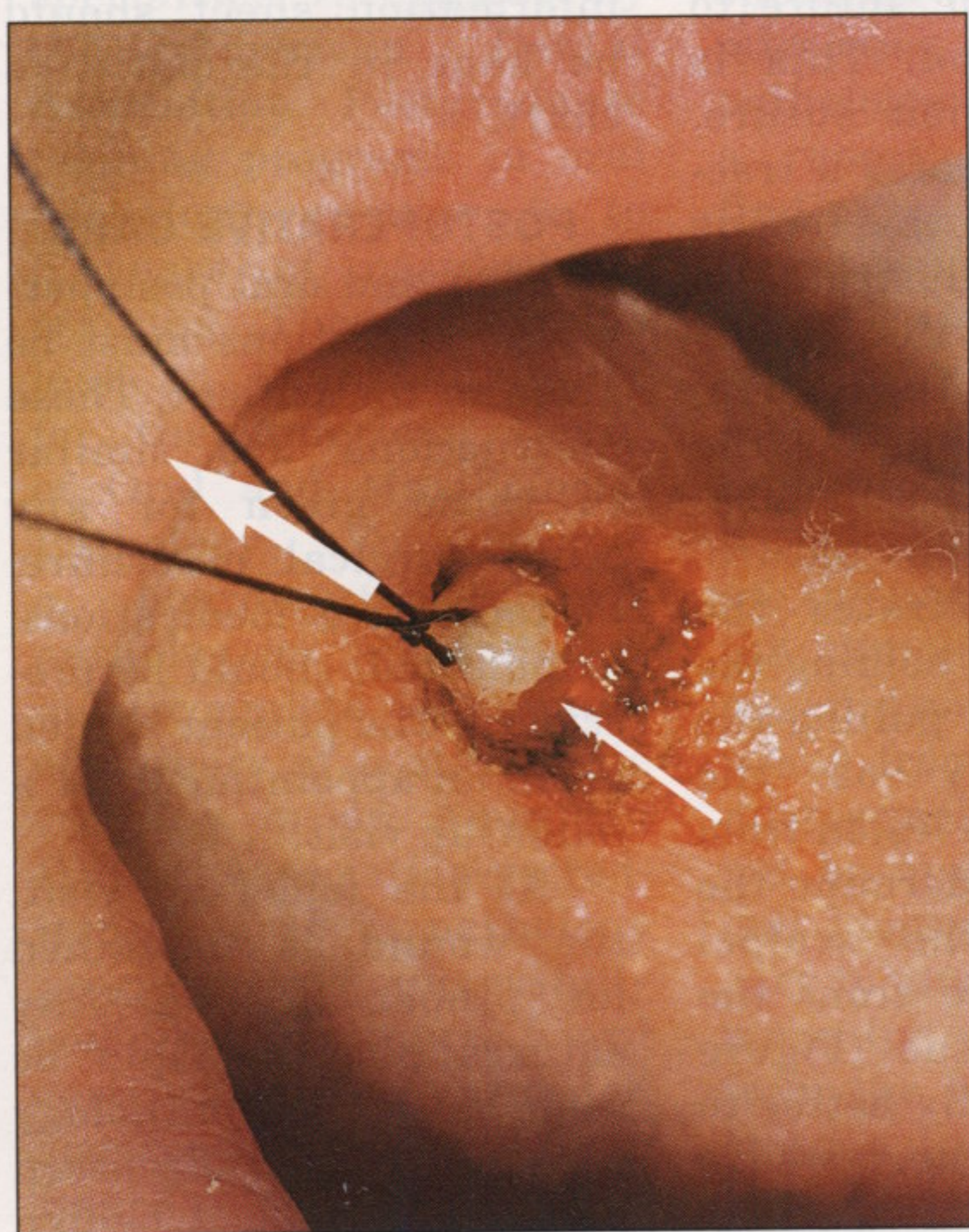


Figure 3. Traction suture pulling the lesion distally (large arrow) as the scalpel blade undermines the lesion from the mesial (small arrow).



Figure 4. Lesion freed from tongue before placement in biopsy jar.



Figure 5. Immediate postoperative view of surgical site. Hemostasis has been achieved.

REQUEST FOR TISSUE EXAMINATION			
MEDICARE NO.	DATE OF BIRTH	ACCESSION NO. (FOR OPL USE ONLY)	
OTHER INSURANCE			
PLEASE PRINT			
PATIENT'S NAME LAST	FIRST	AGE	SEX
Doc	John	50	M <input checked="" type="checkbox"/> F <input type="checkbox"/>
IF MINOR, NAME OF PARENT		DATE OF BIOPSY	
ADDRESS NUMBER AND STREET		APT. NO.	TEL. NO.
1234 Main Street			712-355-5212
CITY		STATE	ZIP
Anytown		NY	12345
DOCTOR			
Robert Convissar 1679			
ADDRESS			
200 Park Avenue South Suite 1414			
CITY	STATE	ZIP	AREA-TELEPHONE
New York	NY	10003	(212)255-5730
BIOPSY SITE:	RADIOGRAPHIC AND OTHER DATA:		
Tongue	(CHECK BOX IF ENCLOSED <input type="checkbox"/>)		
STORY			
Patient Bit His Tongue One Month Ago Lesion Appeared Soon After. Has not Changed in Size or Shape. Not Painful But Interferes with His Speech.			
DESCRIPTION OF LESION:			
Round Lesion At Tip of Tongue 1/2 cm Diameter.			
MICROSCOPIC DIAGNOSIS			
Fibroma (?)			
CHECK APPROPRIATE BOX(ES):			
<input type="checkbox"/> PHONE DIAGNOSIS	<input type="checkbox"/> PLEASE MAIL BIOPSY KITS		
	<input type="checkbox"/> PLEASE MAIL CYTOLOGY KITS		

Figure 6. Sample biopsy report sheet.

SURGICAL PATHOLOGY CONSULTATION			
			LAB. ACCESSION NUMBER
			0000-00000
PATIENT'S LAST NAME	FIRST NAME	AGE	SEX
Anterior Tongue			
TISSUE REMOVED FROM		Biopsy Date: 07/25/2000	DATE REPORTED
		07/27/2000	07/28/2000
CLINICAL DIAGNOSIS		SURGEON	
		R. Convissar	
The technical component was completed at N.Y. Hosp. Medical Center of Queens, 36-45 Main St., Flushing #1 11355			
GROSS DESCRIPTION			
Submitted is formalin fixed tissue, measuring 0.4x0.3x0.2 cm., stated to be from the anterior tongue. The specimen consists of one piece of tan soft tissue. One section submitted.			
MICROSCOPIC DESCRIPTION			
Multiple sections show parakeratotic, acanthotic stratified squamous epithelium covering a core of interwoven fibrous connective tissue fascicles. Numerous capillaries and a diffuse infiltrate of lymphocytes are noted in the stroma.			
ICD code	DIAGNOSIS		
210.4	Fibroma		
Lab Access. No. 00-08586			
DOCTOR <i>Robert Convissar</i> DDS			

Figure 7. Sample pathology report.

larger palatal vessels? Knowledge of the local anatomy is critical in deciding whether a biopsy procedure can be successfully performed in the office.

If the anatomy presents no problem, the differential diagnosis should be considered. Could the lesion be malignant? Many general practitioners might feel more comfortable referring a suspected

malignancy to an oral surgeon. A good mnemonic that can help determine whether to perform the biopsy procedure or to refer is "FIG RUB."

F = Is the lesion FIXED to the underlying tissue? This is suggestive of a malignancy. Benign lesions are usually freely movable in the tissue.⁵

I = Is the lesion INDURATED?

Does the lesion feel hard or pebbly? Benign lesions are usually softer to the touch.⁵

G = Has the lesion GROWN rapidly? Rapid growth is a cardinal sign of malignancy.⁵

R = Is the lesion RED or red and white? Erythroplasia is a sign of malignancy.⁵

U = Is the lesion surface ULCERATED? Benign lesions are

usually not ulcerated.⁵

B = Does the lesion BLEED easily? A lesion that bleeds easily upon touch is suggestive of malignancy.⁵

Other symptoms that can occur in patients with a malignancy are sudden weight loss, swollen regional lymph nodes, and lesions with poorly demarcated margins.⁶ While these are generalizations, and are not definitive for determining if a lesion is benign or malignant, two or more of the above characteristics may suggest the need for referral. Aphthous ulcers, for example, are always ulcerated, but rarely are associated with other findings noted above. A fibroma may be indurated, but these lesions are rarely fixed to the underlying tissue, usually grow slowly, and do not bleed easily.

Anesthesia

Block and infiltration anesthesia are both acceptable methods for pain control. The only precaution regarding anesthesia is determining where to infiltrate. Peterson et al⁵ advise infiltrating at least 1 cm from the lesion. If infiltration is too close to the lesion, the solution could distend the tissue and complicate the histologic diagnosis. If the solution is deposited irregularly around the lesion, the clinician may inadvertently have to cut slightly shallower or deeper to remove the entire lesion. Figure 1 illustrates the correct method of infiltration anesthesia. Note the lesion on the tip of the tongue. Lidocaine with epinephrine 1:100,000 is deposited more than 1 cm from the lesion. The infiltration

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is performed completely around the lesion.

Incision

The incision should be made at least 2 to 3 mm from what the clinician believes to be the border of the lesion. In this manner, a border of normal tissue is included with the lesion.

Use tissue pickups to hold the tissue taut and cut around the lesion. Care must be taken to avoid crushing the lesion with the pickups. Sometimes it helps to place a single suture in the lesion and use

the ends of the suture to hold the lesion. This is called a traction suture. Figure 2 illustrates a traction suture in the tongue lesion that is illustrated in Figure 1. As the cut is made around the lesion, maintain tension on the lesion with the tissue pickups or traction suture. Figure 3 illustrates the traction suture holding the lesion taut and pulling the lesion distally as the scalpel cuts the lesion from the mesial. Undermine the lesion with the scalpel until it is free from the underlying tissue (Figure 4). It is generally better to take a narrow, deep wedge of tissue rather than a wide superficial specimen since, if the lesion is malignant, the deeper part of the specimen may contain tumor cells.

Place the specimen in the biopsy jar and make sure that it is submerged in the formalin, not adherent to the side of the jar. Ensure that there is hemostasis (Figure 5). When a laser or electro-surgical device is used for tissue removal, hemostasis can be achieved with the same device. With a scalpel procedure, hemostasis may be achieved by the application of pressure or by suturing the wound. The biopsy information sheet is then completed (Figure 6). Besides the obvious information (name and address of patient and dentist), the sheet also contains information that will be helpful to the pathologist in the identification of the lesion (patient's age, gender, presentation of the lesion including location, size, shape, and color). A history of the lesion is also important, including how long the lesion has been present and if there have been any changes in size, shape, or color. Habits can also provide important information. Does the patient smoke? Is the patient more than a casual user of alcohol? Does the patient habitually bite the cheek or lip? The dentist's differential diagnosis should also be included. If available, it is also helpful to send a photo of the lesion to the oral pathologist. A copy of the

information sheet should be kept in the patient's chart.

POSTOPERATIVE CARE

Written and oral postoperative instructions must be given to the patient. These instructions are similar to those given for any other surgical procedure. Postoperative medications, if indicated, should be prescribed. The patient is then given an appointment for a follow-up visit.

At the follow-up visit, the wound is examined for proper healing. Any sutures placed should be removed. The pathology results are then discussed with the patient. A benign report from the pathologist does not imply that treatment is complete. The patient must be recalled periodically to examine the site of the lesion and ensure that the lesion has not recurred. If an incisional biopsy report is benign, the clinician must decide with the pathologist whether it is safe for the remainder of the lesion to be left in place, with periodic recalls to ensure that the lesion does not change over time. The pathologist may advise that the remainder of the lesion should be removed if it is a benign lesion with the possibility of malignant transformation. In the case of some idiopathic white lesions, the rate of transformation from benign to malignant may be as high as 17%.⁷ In the case of a malignant report, referral to an oral and maxillofacial surgeon or head and neck surgeon may be appropriate. Once again, the oral pathologist should serve as a resource for the general dentist, discussing the diagnosis and appropriate follow-up treatment.

THE ROLE OF THE ORAL PATHOLOGIST

Selection of a pathologist to process the specimen and diagnose the lesion is the final important step in the biopsy process. Although there are general pathologists (physicians) who can identify oral lesions, it is best to utilize an oral pathologist. Oral pathology is one of the nine dental

1. Apply retraction cord 2. Place Comprecap over prepared tooth 3. Bite on Comprecap for 2-3 minutes 4. Carefully remove Comprecap and cord 5. The result: A clean, dry and open sulcus

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- Post operative tissue is pink and non-necrotic. (Patient can eat and brush teeth immediately afterwards) Cosmetic appearance is beautiful.
- Often painless, little or no blocker needed, greatly reduced postoperative discomfort.
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- No service contract to sign or pay for, (saves you up to \$4500 in extended costs over some other brands).
- We guarantee a "free" loaner by 8:30am the following day, should anything ever happen to your laser. Your complete customer satisfaction is our greatest concern.

YOU DON'T WANT

- Thermal cutting/coagulation via carbonized optical fiber to temperature of 750°F.
- Pain and swelling caused by thermal effect.
- Bleeding, necrotic tissue blanching and/or charring (Oreo-cookie effect).
- Tissue recession from thermal shock (risky to do impressions as necrotic tissue will slough).
- Uncontrollable depth penetration.
- Heat included coagulation (similar to electrocautery).
- Jackhammer effect (may crack teeth when navigated near hard tissue).
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- Limited guarantee (many only offer one year).
- Expensive service agreement (most laser manufacturers recommend these for units that require tune-ups, service adjustments, and flash lamps needing replacements every 500-100 hours). Plus, you must wait for the service agent to come to you.

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specialties recognized by the American Dental Association. Postgraduate training programs in oral pathology require 3 to 5 years of postdoctoral training. These programs lead to board eligibility for the American Board of Oral and Maxillofacial Pathology. To become a board-certified oral pathologist, a candidate must complete a minimum of 3 years of postgraduate training in an American Dental Association-accredited oral pathology program, and successfully complete a 2-day board certification examination sponsored by the American Board of Oral and Maxillofacial Pathology. Only board-certified oral and maxillofacial pathologists are allowed to be directors of oral pathology laboratories.

Oral pathologists have specialized training in the microscopic diagnosis of biopsy specimens collected from the oral and maxillofacial region. They are the only pathologists with such specialized training and, therefore, are usually much more qualified than general pathologists (physicians), who have minimal, if any, training in oral and maxillofacial pathology. In addition, oral pathologists are originally trained as dentists, and are therefore much more qualified than physician pathologists to consider the unique aspects of the oral cavity. The oral pathologist does not need to be located close to the general dentist's office. Since biopsy specimens are usually mailed to the pathology laboratory, the oral pathologist can be anywhere in the United States. For the location of the nearest oral pathology laboratory, call the nearest dental school. Many dental schools offer oral pathology laboratory services or can provide an appropriate referral. Clinicians can also contact the American Board of Oral and Maxillofacial Pathology in Tampa, Florida (Address: PO Box 25915, Tampa, FL 33622-5915. Ph: 813-286-2444).

The oral pathology laboratory will process the

specimen and examine it microscopically, and the pathologist will then issue a report concerning the findings (Figure 7). The report will usually include gross and microscopic descriptions and a diagnosis of the lesion. It must be understood that the oral pathologist can only evaluate the tissue received from the clinician. If the specimen did not include enough tissue from the lesion, the microscopic diagnosis may not be appropriate. A second biopsy may be necessary to give the pathologist more (or different) tissue from the lesion. Here, discussion with the oral pathologist is important. Again, a recall system is crucial for the long-term evaluation of suspicious lesions.

CONCLUSION

The soft tissue biopsy can be one of the simplest and most professionally satisfying procedures a dentist can perform. This article should serve as a good introduction for dentists who want to perform this vital service. Continuing education courses in oral pathology, oral anatomy, and biopsy procedures are recommended for those interested in becoming proficient in this technique. ♦

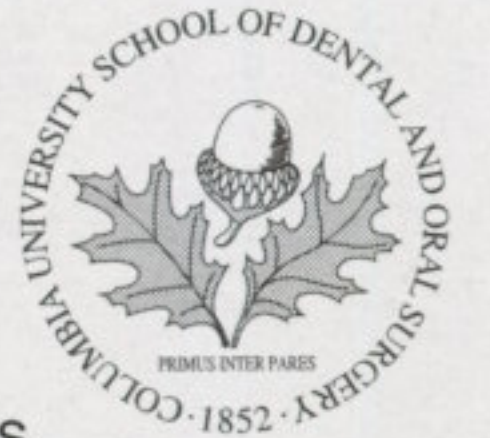
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Continuing Education Exercise No. 10.1

**DENTISTRY
TODAY**



To submit Continuing Education answers, use the answer sheet on page 169. On the answer sheet, identify the article (this one is Test 10.1), place an X in the box corresponding to the answer you believe is correct, detach the answer sheet from the magazine, and mail to *Dentistry Today* Department of Continuing Education.

The following eight questions were derived from the article *Soft Tissue Biopsy Techniques for the General Practitioner, Part 2* by Robert A. Convissar, DDS, FAGD, MALD, on pages 46 through 49.

Learning Objectives

After reading this article, the individual will learn:

- 1) how to evaluate lesions for biopsy.
- 2) a technique for performing a soft tissue biopsy.
- 3) how to send specimens to the oral pathologist.

1. If a patient has a history of aspirin use in the past 10 days, it is advisable that aspirin be discontinued for ___ days prior to elective dental surgery.

- a. 2.
- b. 5.
- c. 10.
- d. 14.

2. Pyogenic granuloma is a lesion associated with:

- a. diabetes.
- b. HIV infection.
- c. pregnancy.
- d. leukemia.

3. The following characteristic is generally (although not always) associated with a malignant lesion.

- a. lesion is freely movable.
- b. lesion is soft to the touch.
- c. lesion is indurated.
- d. lesion has a history of slow growth.

4. It is advisable to infiltrate local anesthetic at least ___ from the lesion prior to biopsy.

- a. 5 mm.
- b. 1 cm.
- c. 1.5 cm.
- d. 2 cm.

5. During biopsy, the incision should be made at least ___ from what the clinician believes is the border of the lesion.

- a. 2 to 3 mm.
- b. 5 to 8 mm.
- c. 10 to 12 mm.
- d. 15 mm.

6. It is generally advisable to take the following type of tissue sample during biopsy:

- a. a narrow superficial specimen.
- b. a wide superficial specimen.
- c. a narrow deep wedge of tissue.
- d. a circular superficial specimen.

7. In the case of some idiopathic white lesions, the rate of transformation from benign to malignant may be as high as:

- a. 5%.
- b. 12%.
- c. 17%.
- d. 23%.

8. Poor wound healing and increased incidence of infection are potential complications to consider prior to taking a biopsy specimen from a patient who:

- a. is pregnant.
- b. is taking an anticoagulant.
- c. is taking steroid medications.
- d. is a poorly controlled diabetic.