



Anna Jephcott

The Surgical Management of the Oral Soft Tissues: 3. Biopsy

Abstract: Offering patients a broad range of services, whilst inspiring patient confidence and reducing their anxiety and waiting time, is an advantage for a general dental practitioner wishing to perform simple biopsies. But which lesions need a biopsy, which lesions are suitable to biopsy in practice, and how should this be done? This article covers the basic knowledge and technical skills required to perform simple biopsies in general practice.

Clinical Relevance: The recognition of lesions which require a biopsy is fundamental to general dental practice. It is vital that the general dental practitioner can recognize potential lesions, treat or biopsy what is possible in practice, and know when and what to refer.

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Biopsy

A biopsy is the removal of part, or all, of a lesion to enable histopathological examination and definitive diagnosis. Careful handling of the soft tissues is imperative to ensure the pathologist receives a representative sample of the lesion, in order to make an accurate diagnosis.

A study by Diamanti *et al*¹ investigated the concerns of GDPs in undertaking biopsies in general practice. Practitioners were worried that their perceived poor practical skills would lead to incorrect diagnosis by the pathologist; other factors included the site and size of the specimen, and the potential risk of spreading tumour cells around the body. Legal implications also ranked highly. Many of these concerns will be covered in this paper.

There are a number of questions to which the GDP must know the answers if they are to perform biopsies in general practice:

- What lesions need biopsy?
- Which can I do myself?
- Which should I refer?
- Which type of biopsy is most appropriate?
- What does the pathologist need to know?

These questions will all be answered in this paper, as well as discussing the skills required to perform the surgery.

There are a number of indications for biopsy:

- Any lesion that persists for more than 3 weeks, for which no cause can be found;
- An inflammatory lesion which does not resolve following removal of the cause, eg sharp tooth;
- Lesions which interfere with function, eg epulis or fibro-epithelial polyp;
- All red patches;
- Most white patches, especially if speckled or non-homogeneous, for which no cause is found;
- Any lesion which possesses malignant signs, such as induration, fixation to underlying tissues, rapid growth, bleeding or ulceration.

Once it has been determined that a lesion requires biopsy or removal, the clinician must decide if they have the skills needed to complete the process. These include not only the surgical skills and the equipment required, but also

the interpersonal skills required to give the final diagnosis to the patient. This is clearly of paramount importance with malignancies, as a patient needs to have immediate advice from a multidisciplinary oncology team. Table 1 is adapted from Oliver *et al*² and gives referral guidelines for the more common lesions. A practitioner should be aware of these guidelines, but also his/her own abilities; if not entirely confident then it is always acceptable to refer.

Having decided that a lesion requires biopsy, the type of sample to be taken must be considered. Some principles are alike, independent of the type of biopsy. Local anaesthetic should be placed away from the site which is to be removed, as this would cause damage to the specimen. The biopsy sample should include a portion of clinically normal tissue. The site of the sample should be from an area that is most representative of the rest of the lesion and, if the lesion contains regions of varying clinical appearance, multiple biopsies should be taken. Areas of necrosis or ulceration should be avoided as they are of limited diagnostic use. Table 2 shows suitable methods for a number of different lesions. The vast majority of biopsies performed in the oral cavity are either excisional or incisional, therefore we will concentrate on these.

Anna Jephcott, BChD, MFDS RCS(Eng), Clinical Lecturer in Oral Surgery, The School of Dentistry, University of Birmingham, Birmingham B4 6NN, UK.

| Clinical Diagnosis | Suitable for General Practice? |
|--|---|
| Chronic ulcer or squamous cell carcinoma | No - Urgent referral to hospital |
| Erythro or leukoplakia | No - Refer to hospital |
| Lichen planus | GDP needs surgical experience Best to refer if erosive |
| Bullous lesions, eg pemphigoid | No - Refer to hospital |
| Granulomatous disease, eg Crohn's | No - Refer to hospital |
| Mucocele | Yes, but needs care |
| Fibro-epithelial polyp, pyogenic granuloma, epulis | Yes |
| Minor salivary gland tumour | No - Urgent referral to hospital |
| Hard tissue lesions | No - Refer to hospital |

Table 1. Referral guidelines for common oral lesions (adapted from Oliver *et al*²).

| Type of Biopsy | Amenable Lesions |
|-------------------------------|---|
| Excisional | Small Benign Lesions: Fibro-epithelial polyps Pyogenic granuloma and epulis Fibroma Papilloma Hyperplastic tissue Mucocele |
| Incisional | Large or suspicious lesions: Chronic ulcer Squamous cell carcinoma Leuko/erythroplakia Lichen planus Bullous lesions |
| Punch | Bullous lesions |
| Fine Needle Aspiration | Soft tissue masses or bony cysts prior to surgical exploration: Nodes Salivary glands |

Table 2. Method of biopsy for common oral lesions.

Excisional biopsy

An excisional biopsy removes the entire lesion and a small margin of normal tissue. It is therefore both curative and diagnostic. It is the ideal treatment

for small lesions (<1cm), which are presumed benign. The majority of biopsies performed in general practice are of this type.

When removing a fibro-



Figure 1. Illustrates a holding suture.

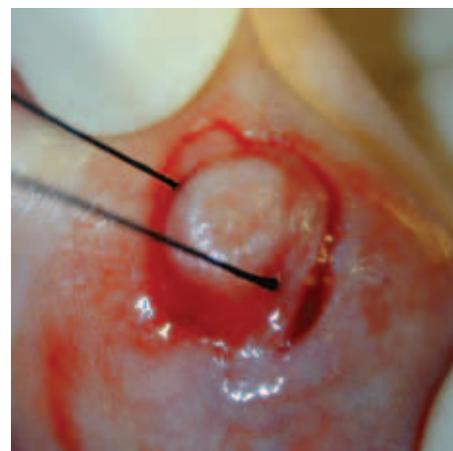


Figure 2. Example of an elliptical incision.

epithelial polyp from the left buccal mucosa (Figure 1), a suture (usually black silk) can be placed beneath the lesion, and a very loose knot tied and held with an artery clip. This is used to apply tension to the lesion without causing crush artefacts, which can arise if tissue forceps are used instead to steady the tissue. It is important to ensure that the suture is placed beneath and not through the area of interest, as this could render the sample diagnostically useless. An elliptical incision is made around the base of the lesion, including a small margin of normal tissue around the lesion (Figure 2). Blunt or sharp dissection is then used to separate the lesion from the underlying tissues. If the lesion is superficial, such as a fibro-epithelial polyp or a viral wart, then use sharp dissection. For deeper or fragile lesions, such as a mucocele, blunt



Figure 3. Closure of biopsy site with resorbable sutures.



Figure 4. Example of a pathology pot containing 10% formalin provided by laboratories.

Patient details: DOB, name, gender, race

History of lesion

Medical history – detailing drugs

Social history – smoking and alcohol consumption

Clinical appearance of lesion

Associated pathology or restorations

Investigations with results

Biopsy type

Labelled diagram

Clinical diagnosis

Consultant's (Dentist's) name and address

Table 3. Summary of information to be noted on the pathology form.

dissection is preferred. Closure is achieved with superficial, simple, interrupted sutures. Resorbable sutures (Vicryl™) are most often placed (Figure 3), although black silk can also be used.

Incisional biopsy

This is indicated when

complete removal of the lesion would be difficult, for example, lichen planus or a diffuse white patch. It is also the technique of choice if the clinical diagnosis is uncertain. The specimen should be deep enough to include the basement membrane and underlying connective tissue (at least 3–4 mm), as a shallow sample will fail to show characteristic features which can lie within these tissues. The length depends largely on the area chosen to biopsy, but a general guide may be to make the length three times that of the width. The specimen must include normal tissue, together with abnormal, to act as a reference. An elliptical incision is made to the required depth and the sample of tissue excised. This is done by holding one end and lifting the ellipse with tissue forceps or a holding suture as before, ensuring either is well away from the pathology, and carefully dissecting the sample out. Primary closure is achieved with sutures.

Information for the pathologist

From the pathologist's point of view, there are a number of artefacts within specimens which can affect the diagnostic value of the specimen. As surgeons, we must be aware of these in order to prevent them.

An artefact is something which alters the appearance of a sample of tissue when mounted on a

microscopic slide and can result from crush injuries from forceps, haemorrhage, fragmentation and splits. A recent paper by Seoane *et al*³ investigated the artefacts in oral biopsies taken by general dental practitioners. These looked at incisional biopsies performed by the technique previously described. The study showed that crush artefacts were the most common in biopsies performed by GDPs, significantly more than the number found in biopsies carried out by oral and maxillofacial surgeons. The same was true for haemorrhage artefacts. Crush artefacts result from grasping the soft tissue with forceps, using a suture for traction and tying the knot over the lesion too tightly, or by using a blunt scalpel blade. Haemorrhage is usually the result of intralesional injection of local anaesthetic, and can therefore be avoided by infiltrating LA away from the area of interest, or via a regional block.

The pathologist needs as much information about the lesion and the patient as possible to aid diagnosis (summarized in Table 3). A labelled diagram on the pathology form is very useful, showing the position and size of the lesion and indicating where the specimen was taken from. Full clinical details should be noted:

- Size;
- Shape;
- Duration;
- Changes;
- Colour;

Local anaesthetic

Scalpel with No 15 blade

Sharp-pointed scissors

Small clip (mosquito)

Fine tissue forceps

Needle holders and suture material

Sterile gauze and saline

Biopsy pot containing 10% formalin

Pathology form

Table 4. Instrumentation required for soft tissue biopsy in general practice.

- Texture;
- Radiographic appearance;
- Relevant medical or social history;
- Clinical diagnosis by surgeon, when possible.

Obtaining the specimen is the first step in the diagnostic process, but it is also important that the sample is correctly managed post-operatively. Ideally, the specimen should be placed immediately into a sealable container with 10% neutral buffered formalin. There should be at least ten times more fixative than specimen. Some samples need to be sent fresh to the pathologist, such as vesiculo-bullous disorders which require immunofluorescent techniques. However, these should not be attempted in general practice. If in doubt regarding the transport medium required, the specimen should be placed in normal saline in the meantime. When sending specimens from general practice through the post to the laboratory, the container should be surrounded with absorbent material to absorb leakages. It should then be placed in a sealed plastic bag and in turn this should be packaged into a rigid box and labelled 'PATHOLOGICAL SPECIMEN' and 'Fragile - Handle with care'. Full details can be sought from the postal service regulations. Most pathology labs will provide request forms, containers with fixative (Figure 4) and boxes for posting, if requested.

The advantages of performing simple biopsies in general practice for the patient are clear:

- The confidence of having a known and trusted clinician performing the procedure;
- Less waiting time for the procedure and the results; and
- Less travelling.

The benefit to the hospitals is a reduction in referrals and therefore waiting lists. That said, before embarking on biopsies in general practice, the GDP must ensure that, not only does he/she have the equipment required (Table 4), but also the technical skill and knowledge to achieve the best result for the patient.

Summary

In summary, despite the vast amount of information and literature on this subject, the most important factors are the practitioner's confidence, experience and skill. Even a very simple biopsy should not be attempted unless the surgeon trusts sufficiently in his/her own skill to ensure a good result for the patient.

References

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