SURGERY IN ORAL MEDICINE

BIOPSY OF ORAL LESIONS

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WHAT IS A BIOPSY?

- Biopsy is a procedure that involves the removal of cells or tissues from a living body for the purpose of microscopic examination by a pathologist to achieve a diagnosis
- Diagnose a condition and to measure how severe it is or at what stage of the condition it is in
- Facilitate treatment required

INDICATIONS FOR BIOPSY OF ORAL TISSUE

- Assessment of any unexplained oral mucosal abnormality that persists despite treatment or removal of irritants
  - Lesion persistent for >2 weeks with no obvious etiology
- Suspicion of malignancy when persistent oral mucosal lesions are red and white or ulcerated, indurated or fixated to deep tissue
- Persistent lesion that bleeds easily or rapidly growing
- Unexplained pigmented oral mucosal lesion that are new or changing
  - Unless the pigmented lesion been present for >5 years
- Lesion interfering with local function
  - Lesion causing trismus, sudden loosening of teeth e.g. Langerhans cell histiocytosis
- Persistent visible or palpable swelling with normal overlying tissue e.g. Lymphoma
- Bone lesions that can not be diagnosed by clinical and radiological findings

CONTRAINDICATIONS ??

- **No absolute contraindications**
- Whether you would proceed with biopsy depends on:
- Dental clinician's training, level of skill, interest, participation
- Patient's medical condition that has increased surgical risks
  - Anticoagulation therapy
  - Immunocompromised
  - Multiple system disease
  - Multiple medications
  - Physically frail or unwell
- Surgical difficulty – access, surgical equipment, surgical skill
- Malignant potential – refer to specialist for management to avoid delay
- Suspected vascular lesions
- **Or if unsure, consider referring to Oral and Maxillofacial surgeon**

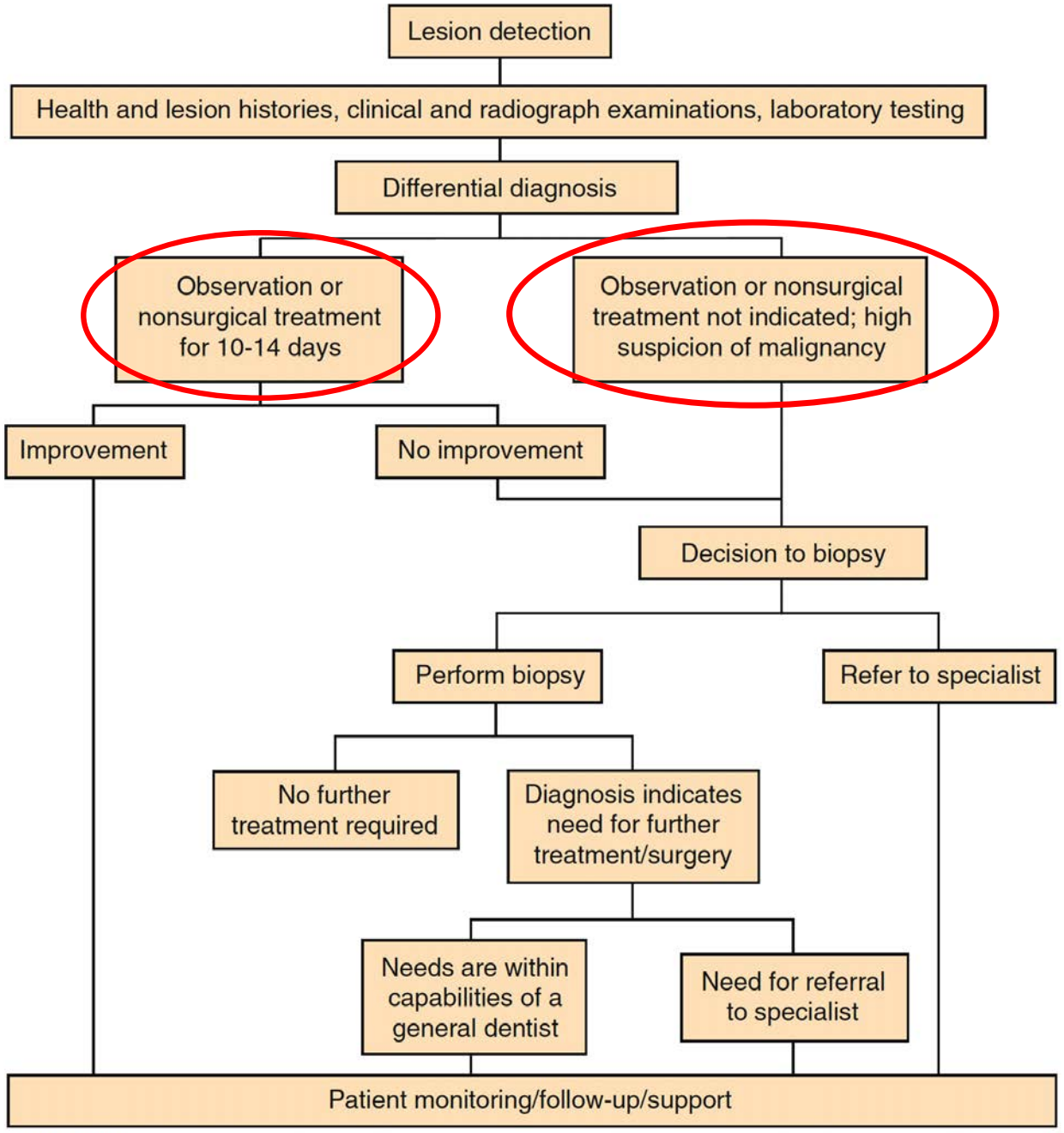


FIGURE III-2. Decision tree diagram for managing suspicious lesions. Reprinted with permission from Hupp[1].

PATIENT MANAGEMENT

- **History of presenting complaints**
  - How long has the lesion been present
    - New lesion vs lesion been there for several years (likely to be benign)
    - Patient awareness of the lesion
  - Has the lesion changed in size
    - Enlarged in a short period of time → aggressive lesion and possible malignancy
    - Slow growth → possibly benign but not always
  - Has the lesion changed in character or features
    - Mass starts to ulcer; vesicle turning into an ulcer
  - Were there any symptoms
    - Pain, altered sensation, taste, odor, dysphagia, trismus
  - Anatomical location
    - Certain lesions have a predilection for certain anatomic areas; keratinized or non keratinized tissue
  - Any systemic symptoms
    - Fever, malaise, nausea
    - Viral conditions – measles, mumps, mononucleosis, herpes, AIDS,
    - Autoimmune condition – pemphigus, lichen planus, erythema multiforme, STI
  - Surrounding event associated with onset of the lesion
    - Trauma, recent treatment, new medications, exposures to toxins, travels

PATIENT MANAGEMENT

- **Medical History**
  - Systemic illnesses can have oral manifestations
  - Different tests required instead of biopsy
- **Medication History**
  - Medication induced conditions
    - Steven Johnsons syndrome
    - Aspirin burn
    - Petechiae
- **Allergy History**
    - Antibiotics
    - NSAID’s
    - Iodine
    - Others

CLINICAL EXAMINATION

- **Inspection and palpation of the lesion**
  - Anatomical location: differential diagnosis can be obtained based on the location
    - Different pathologies can arise from the following types of tissues: Epithelium/mucosa, submucosal connective tissue, muscle, tendon, nerve, bone , blood vessels, lymphatic or salivary gland
  - Physical Characteristics
    - Bullae
    - Crusts
    - Dysplasia
    - Erosion
    - Hyperkeratosis
    - Hypertrophic
    - Hyperplastic
    - Keratotic
    - Leukoplakia
    - Malignant
    - Macule
    - Nodule
    - Papule
    - Plaque
    - Pustule
    - Scale
    - Stomatitis
    - Ulcer
    - Vesicle

CLINICAL EXAMINATION

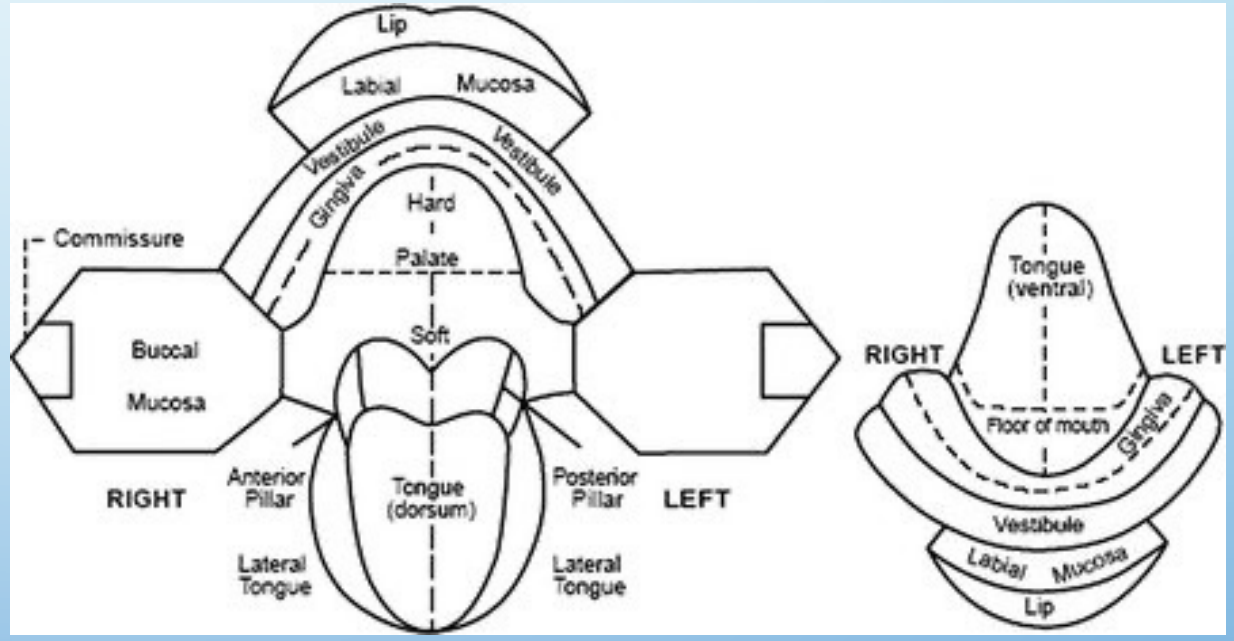
- Single vs Multiple lesions
  - E.g. Single ulcer vs multiple ulcers, infections (viral/bacterial/fungal), trauma, autoimmune
- Size, Shape and growth
  - Regular margin vs irregular margin, exophytic vs endophytic, sessile vs pedunculated
- Surface appearance
  - Smooth, verruciform, irregular, ulcer margin – rolled, flat, raised or everted
  - Base of ulcer can be smooth, granulated, fibrin membrane, slough, haemorrhagic scab
- Colour
  - Dark blue can suggest vascular lesion, blue may resemble mucous retention cyst
  - Pigmented lesion can range from metallic tattoo to melanotic tumor
  - Erythematous lesion can represent severe dysplastic changes than a white lesion

CLINICAL EXAMINATION

- Mobility
  - Fixted to surrounding deep tissues or freely mobile
  - Determine if this is coming from the underlying surrounding structure or infiltration
- Consistency
  - Soft compressible (lipoma, abscess, mucous retention cyst)
  - Firm/Indurated (fibroma or cancer)
  - Hard (bony exostosis)
  - Fluctuant (abscess, fluid filled cavity, mucous retention cyst)
- Pulsation
  - Vascular lesion
- Lymph nodes
  - Lymphadnopathy and location can indicate spread of disease

CLINICAL EXAMINATION

- Careful documentation of the lesion
- Drawing or graphic schematic of the lesion, location, orientation, shape, dimension
- Digital photographic record



FEATURES SUSPICION OF MALIGNANCY

- **Bleeding** – on gentle manipulation
- **Duration** – persisted for more than 2 weeks
- **Erythroplasia** – red lesion or speckled red and white lesion
- **Fixation** – attached to adjacent structures
- **Growth rate** – rapid growth in size
- **Induration** – lesion and surrounding tissues are firm to touch
- **Ulceration** – lesion is ulcerated or persistent ulcer

GENERAL PRINCIPLES OF BIOPSY

- Removal of tissue from living body for microscopic diagnostic examination
- It is the most precise and accurate of all diagnostic tissue procedures
- Performed whenever a definitive diagnosis cannot be obtained using less invasive procedures e.g. cytology, brush cytology, FNA
- Primary purpose of biopsy is to determine the diagnosis precisely so that proper treatment can be provided

TYPES OF BIOPSY

- Surgical Biopsy
  - Punch Biopsy
  - Incisional
  - Excisional
- Fine Needle Aspiration Cytology (FNAC)
- Core Biopsy
- Cytology
- Brush Biopsy
- Frozen section Biopsy

Main focus for dentist in general practice

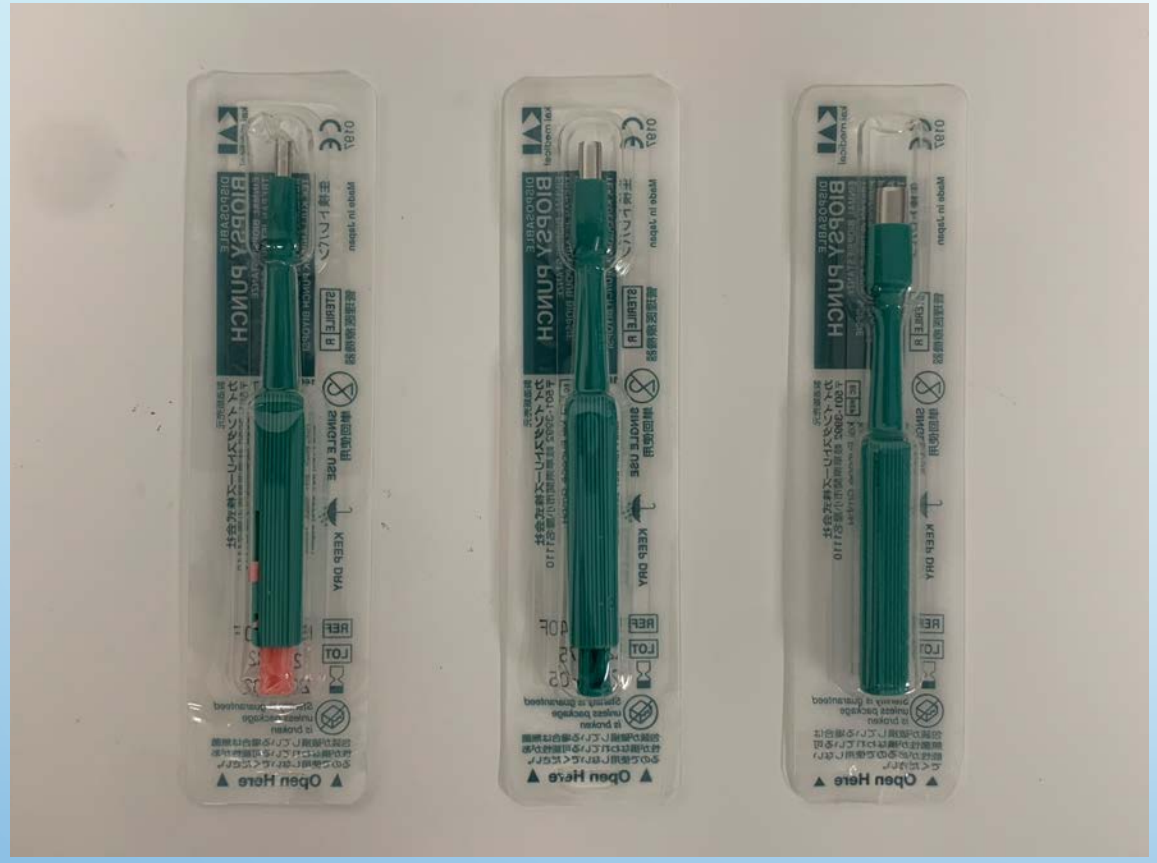
BIOPSY PROCEDURE

- Identify and mark the area for biopsy
- Preparation of surgical field
- Local anesthesia
- Collect sample
- Handling of specimen
- Management of wound

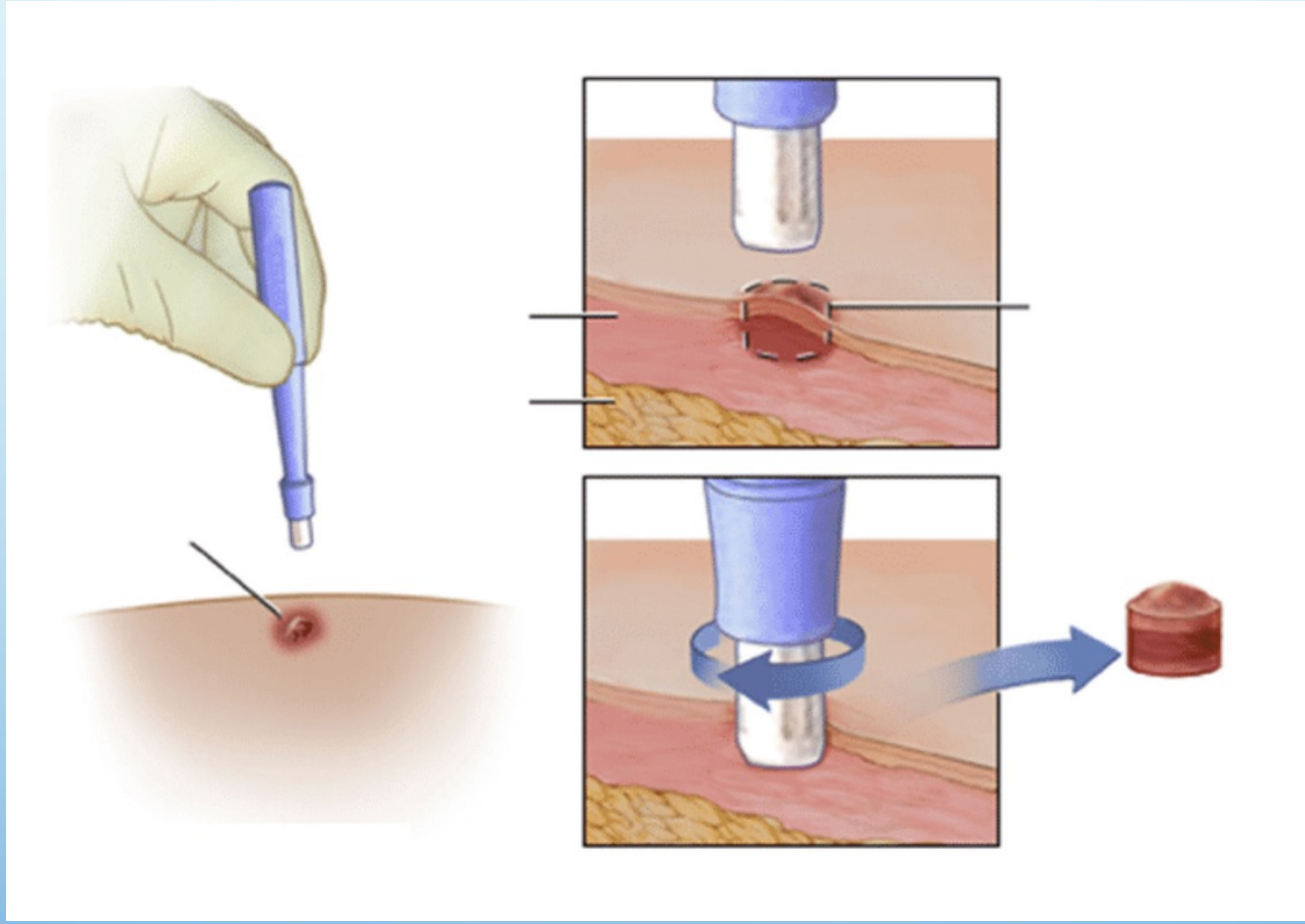
BIOPSY TECHNIQUES

- Punch Biopsy
- Incisional
- Excisional

PUNCH BIOPSY



PUNCH BIOPSY



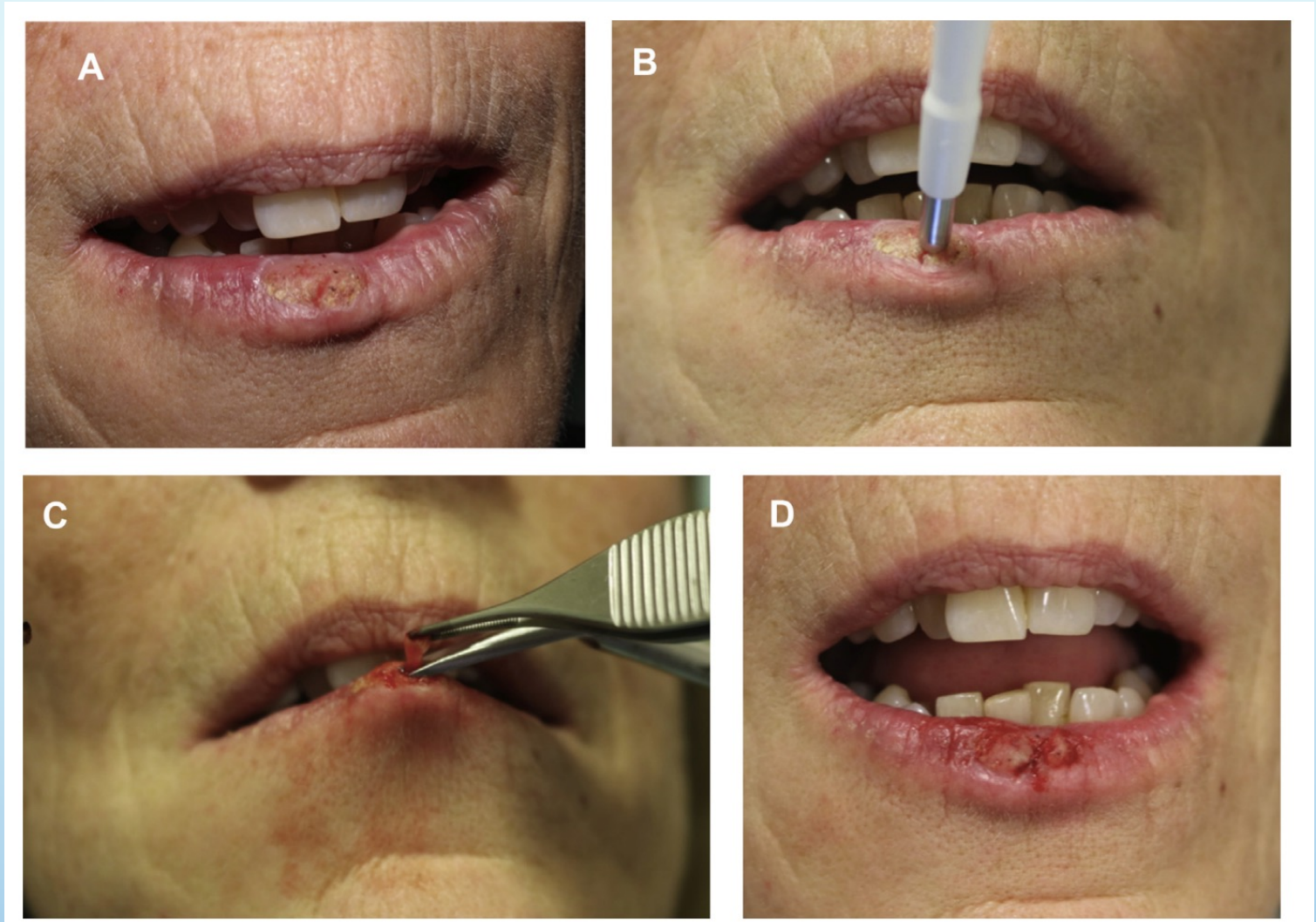


Fig. 3. (A) Ulcerative lesion of the right lower lip with final diagnosis of squamous cell carcinoma. (B) Use of 3 mm punch biopsy with firm twisting action to cut through lesion and deeper layers. (C) Use of scissors to amputate tissue specimen. (D) Reapproximation of tissue edges with use of 3-0 Vicryl (polyglactin 910) suture manufactured by Ethicon, Somerville, NJ, USA.

- Shanti RM, tanaka T, stanton DC. Oral biopsy techniques. Dermatologic clinics. 2020 oct 1;38(4):421-7.

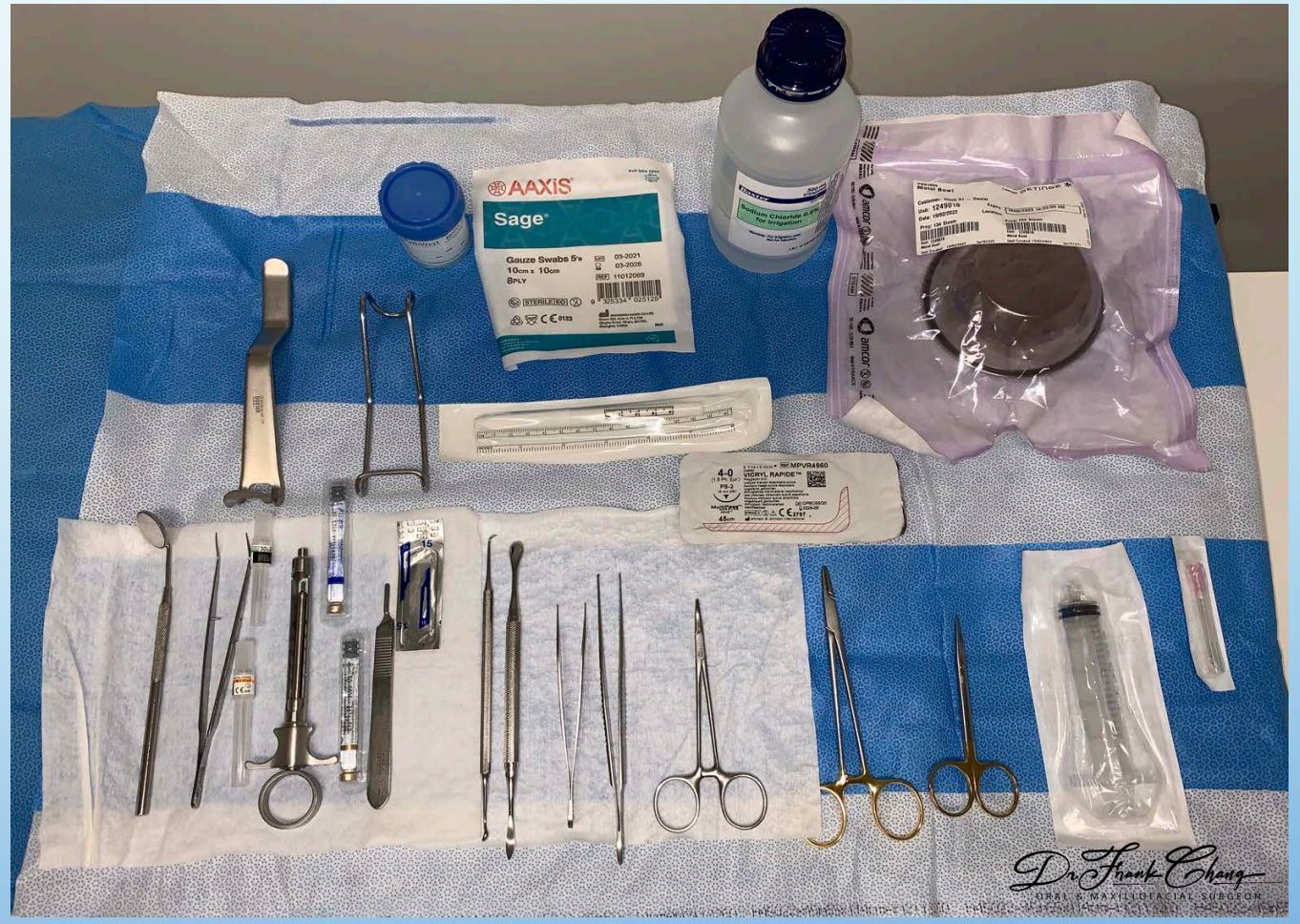
PUNCH BIOPSY

- Easy technique
- Suture may not be required if a small diameter punch were used
  - If sutures are required, often one suture is sufficient
- Easy to use against soft tissue that are bound down like gingiva, alveolar soft tissue, hard palate
- More tedious on mobile soft tissue

SURGICAL BIOPSY

INCISIONAL AND EXCISIONAL BIOPSY

- Instrument setup for surgical biopsy
- Incisional biopsy
  - Large lesion
  - Multiple different characteristics in different areas
  - Malignant lesion
- Excisional biopsy
  - Small lesion that can be completely removed with a surrounding normal tissue




AAXIS
Sage
Gauze Swabs 5's
10cm x 10cm
8PLY
STERILE EO
4-0
VICRYL RAPIDE
MPVR4960
45cm
Sodium Chloride 0.9%
for Irrigation
amcor
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INCISIONAL BIOPSY

- Suspicion of malignancy
- Location restriction – vessels, nerves, ducts
- Large area of lesion

- Taken in a wedge in an area that can represent the lesion
  - Often the worst looking area
  - Multiple samples
- Normal margins are included within the biopsy and deep margins

INCISIONAL BIOPSY

- Disadvantages
  - Due to small sampling, handling of tissue can cause crushing and hemorrhage of the sample resulting in artefacts
  - Seeding of malignant cells into surrounding normal tissue

INCISIONAL BIOPSY

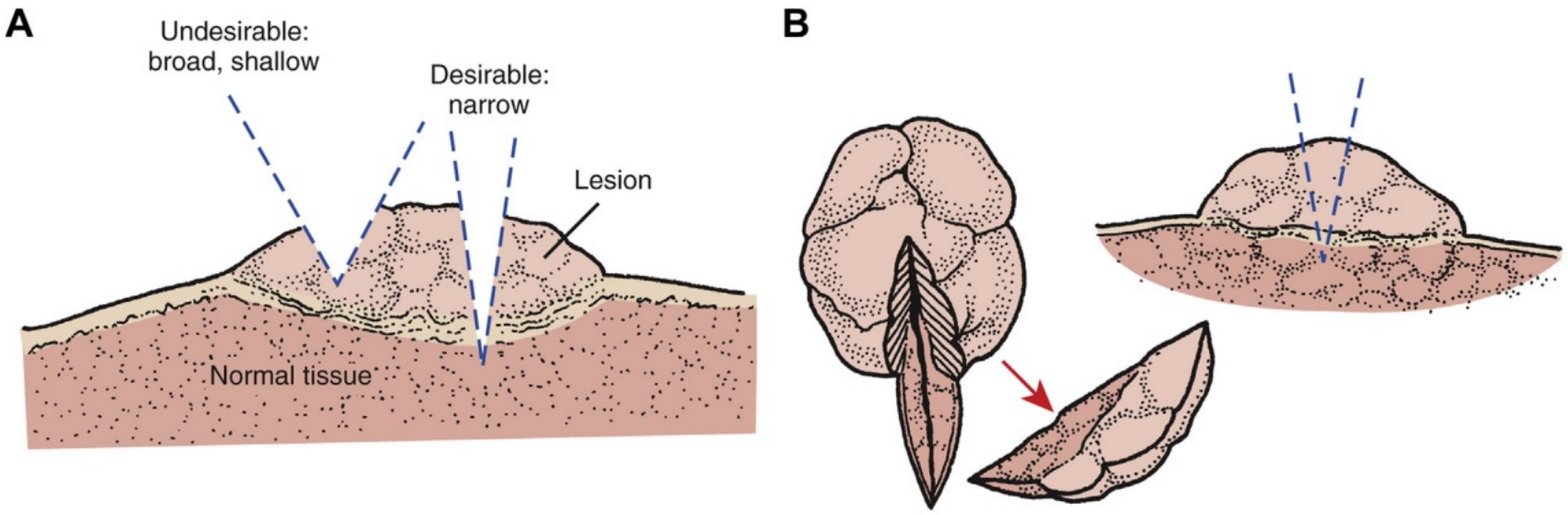


FIGURE III-12. *A,* Desirability of obtaining a deep specimen, rather than a broad and shallow specimen, when incisional biopsy is performed. If malignant cells are present only at the base of the lesion, then a broad and shallow biopsy might not obtain these diagnostic cells. *B,* Desirability of obtaining incisional biopsy at the margin of the soft tissue lesion. The junction of the lesion with normal tissue frequently provides the pathologist with more diagnostic information than a biopsy specimen taken only from the center of the lesion. This is particularly important when a biopsy of an ulcer is performed. Reprinted with permission from Hupp[1].

- Hupp JR, ellis III E, tucker MR: contemporary oral and maxillofacial surgery (ed 6). St. Louis, MO, elsevier, 2014

EXCISIONAL BIOPSY

- Complete removal of the lesion
- Indicated for smaller lesions that can be completely excised with a normal margin without distortion of the wound
- Clinically benign lesion

- Removal of entire lesion with 2-5mm of normal appearing tissue surrounding the lesion
- Mark biopsy sample to orientate specimen
  - If there are infiltrative lesion it will be easier to remove further soft tissue

EXCISIONAL BIOPSY

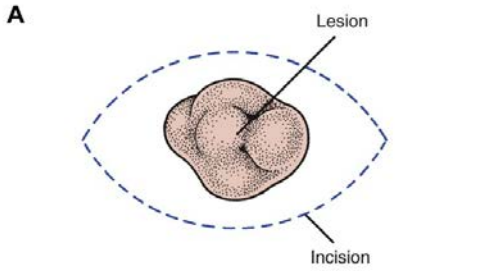


FIGURE III-14. Excisional biopsy of soft tissue lesion. *A*, Surface view. An elliptical incision is made around the lesion, at least 3 mm away from the lesion. *B*, Side view. The incision is made deep enough to remove the lesion completely. *C*, End view. Incisions are made convergent to the depth of the wound. An excision performed this way facilitates closure. Reprinted with permission from Hupp[1].

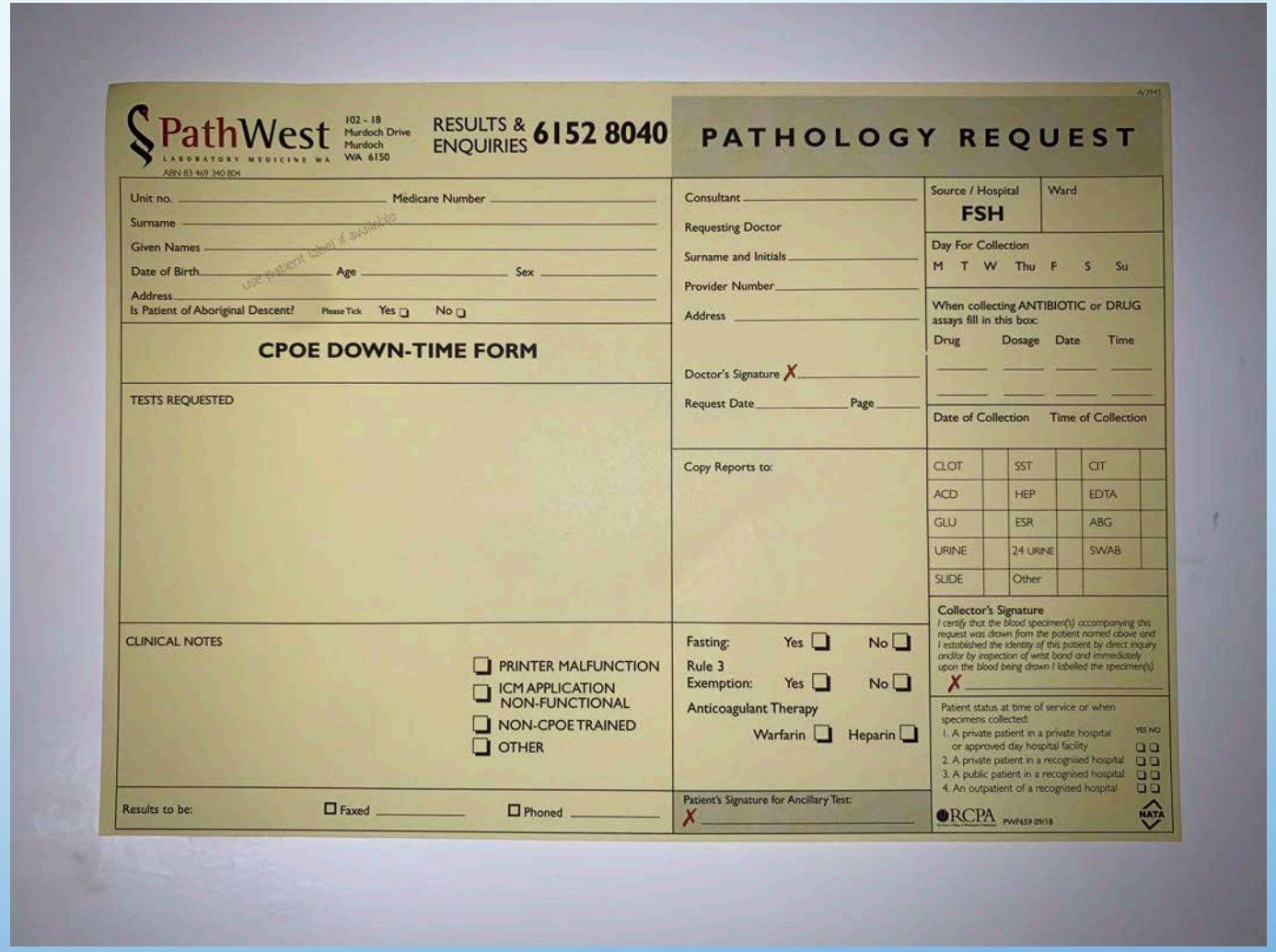
- Hupp JR, ellis III E, tucker MR: contemporary oral and maxillofacial surgery (ed 6). St. Louis, MO, elsevier, 2014

FINE NEEDLE ASPIRATE

- Aspiration of fluid, cells, tissue products using a fine needle and examined under microscope
- Used for biopsy of fluctuant lesions, collect cellular samples from lymph nodes
- Easy technique with minimal pain
- Cheap technique
- Minimal wound
- Rule out vascular lesions
- Can be used for deep lesions found incidentally on CT scans
  - Ultra-sound guided FNAC

PATHOLOGY REQUEST

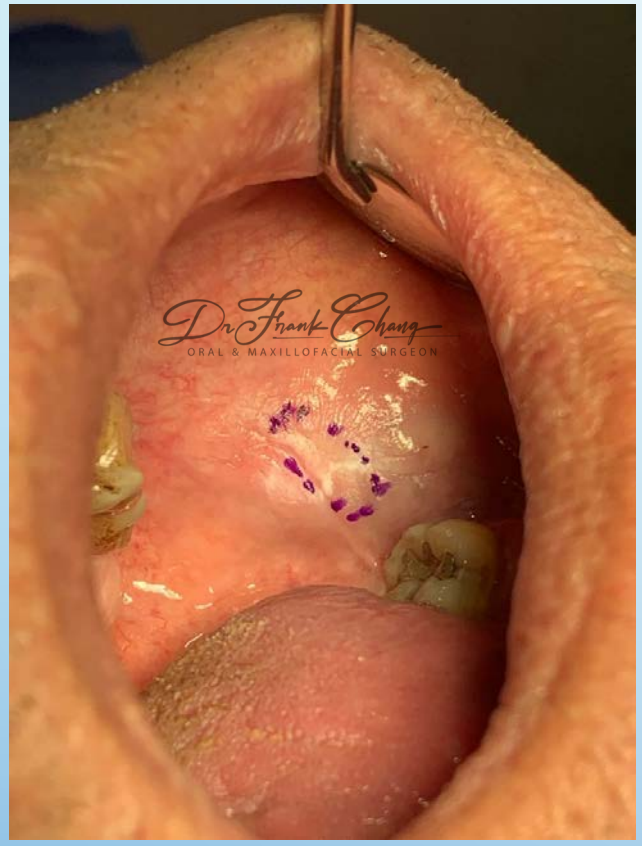
- Accurate patient details
- Test required
  - Histopathology
  - Cytology
- Detailed clinical notes to assist pathologists achieve accurate diagnosis
  - Where is the lesion
  - How long has the lesion been present
  - Size of the lesion and any changes
  - Characteristics and features of the lesion and changes
  - Associated symptoms
  - Differential diagnosis



TRANSPORT OF SPECIMEN

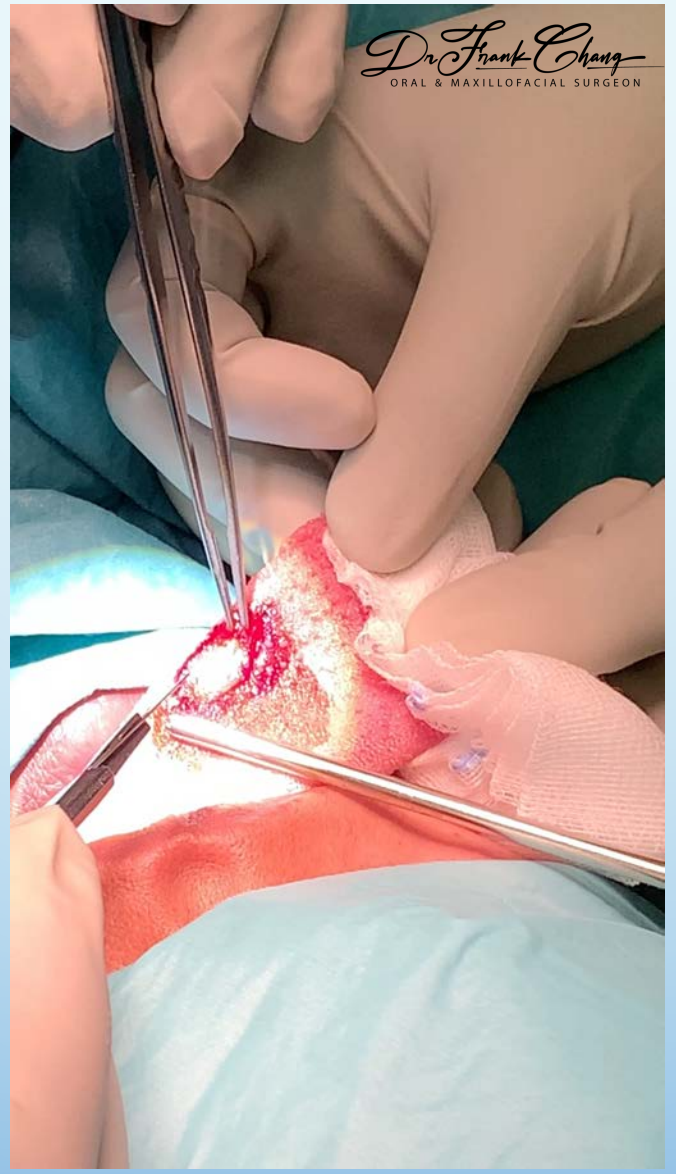
- Haematoxylin and eosin (H&E) light microscopy is the routine test for most biopsies and should usually be transported in 10% buffered formalin solution
- Tissue for DIF can be submitted in a sterile pot with saline-soaked gauze. Delays in specimen collection and processing can result in reduced diagnostic accuracy
- Tissue for DIF can also be submitted in a transport medium such as Michel's medium when there is less urgency in processing the specimen
- Tissue for microbiological culture can be submitted fresh in a sterile container. If unsure, consult your pathology provider
- The sample pot(s) should be labelled with patient identification details, the precise anatomical body site of the biopsy, time and date of biopsy, and all information checked against the request form for consistency

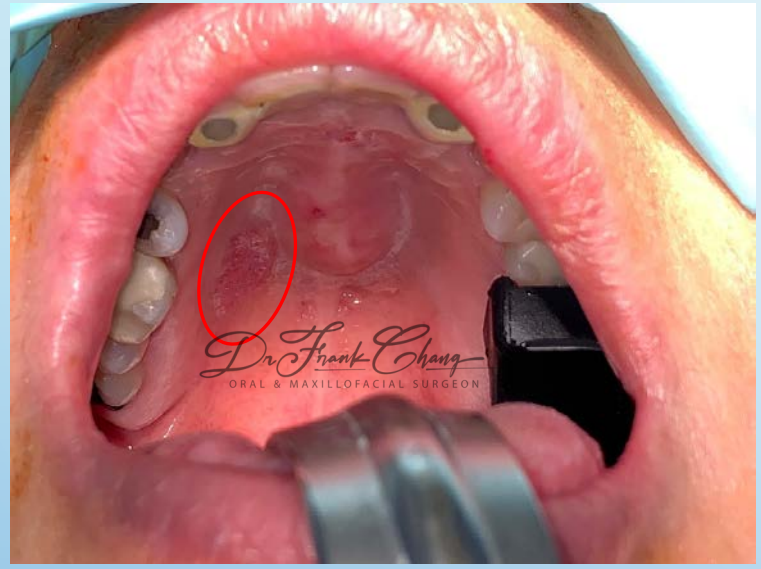
INCISIONAL BIOPSY



EXCISIONAL BIOPSY

EXCISIONAL BIOPSY

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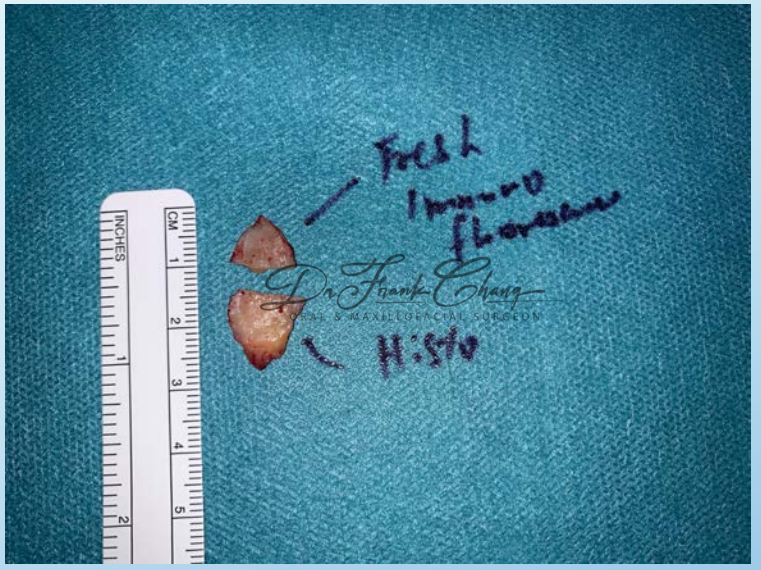
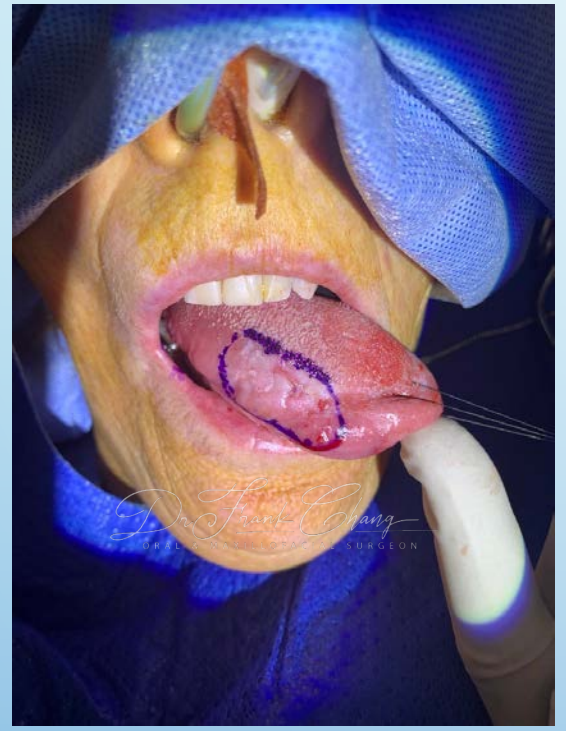
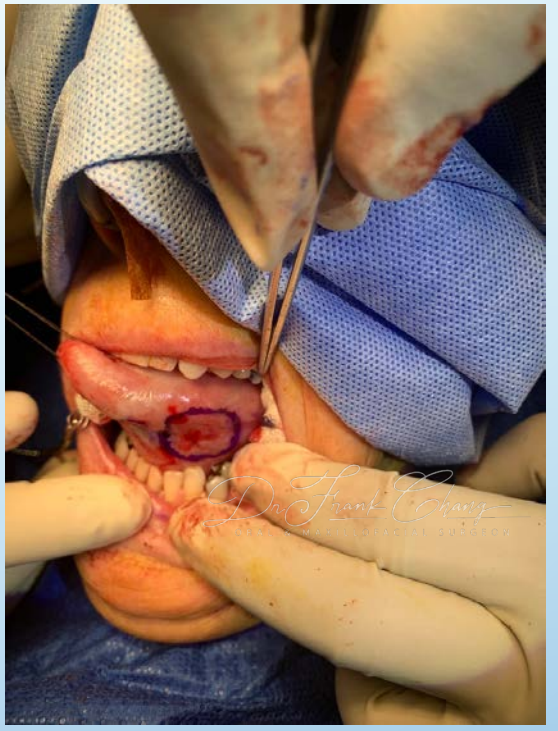
Anterior
Medial
posterior
INCHES
CM


Fresh
Dr Frank Chang
INCHES
CM




Right lateral
tongue
Ant
Dorsal
Floor
Post




Ant left lat
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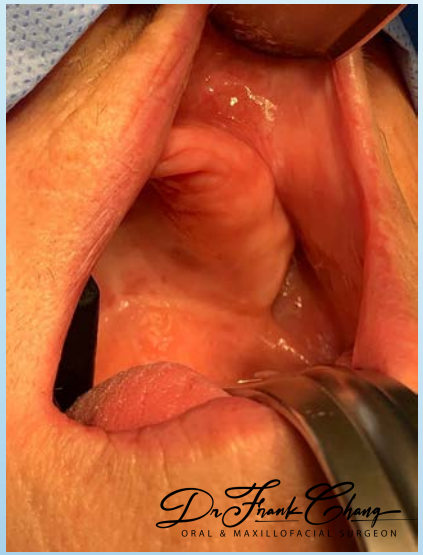
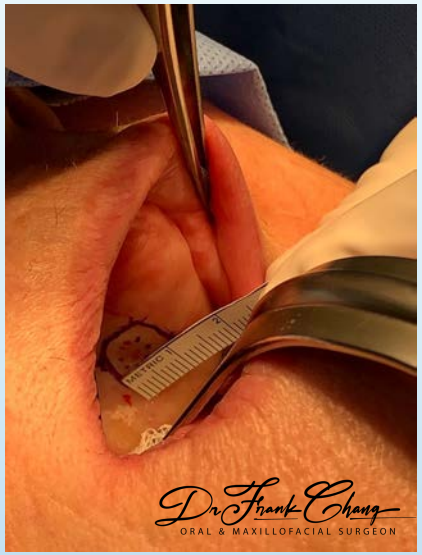
EXCISIONAL BIOPSY



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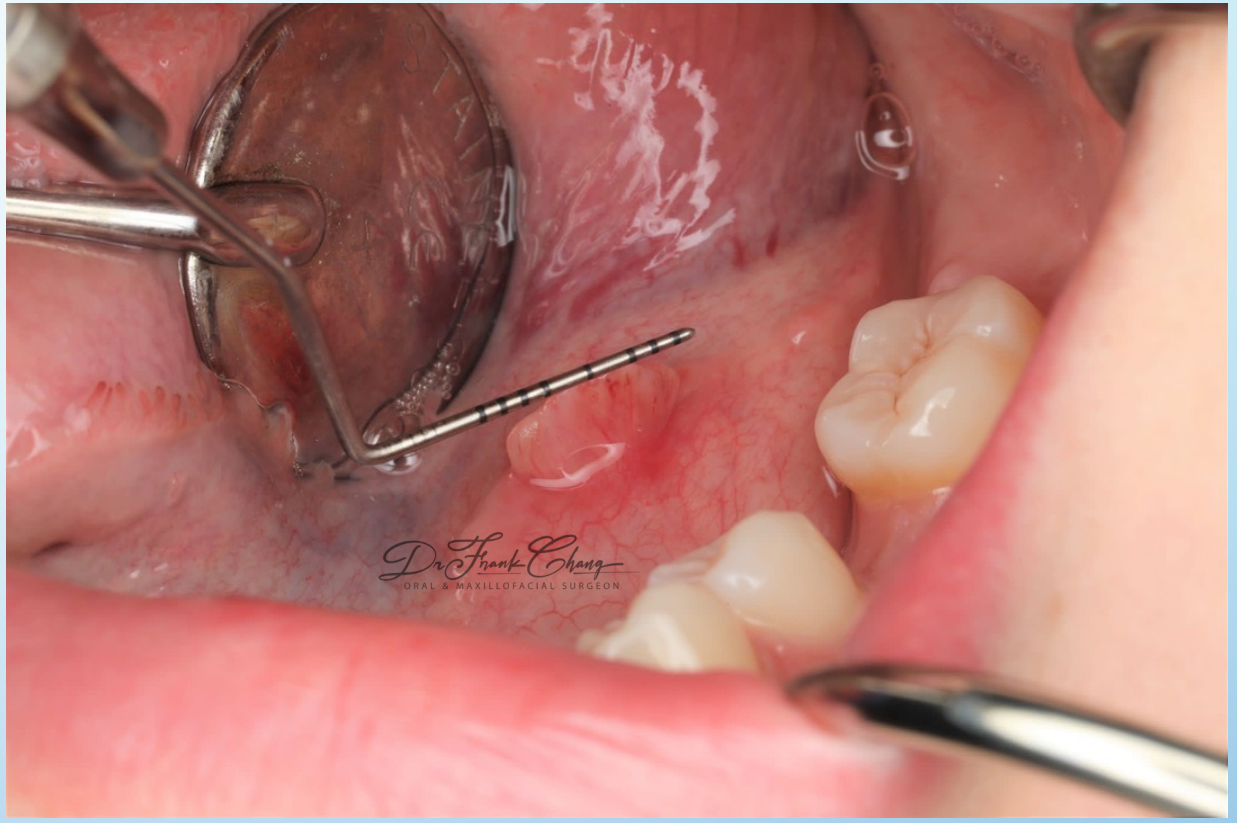
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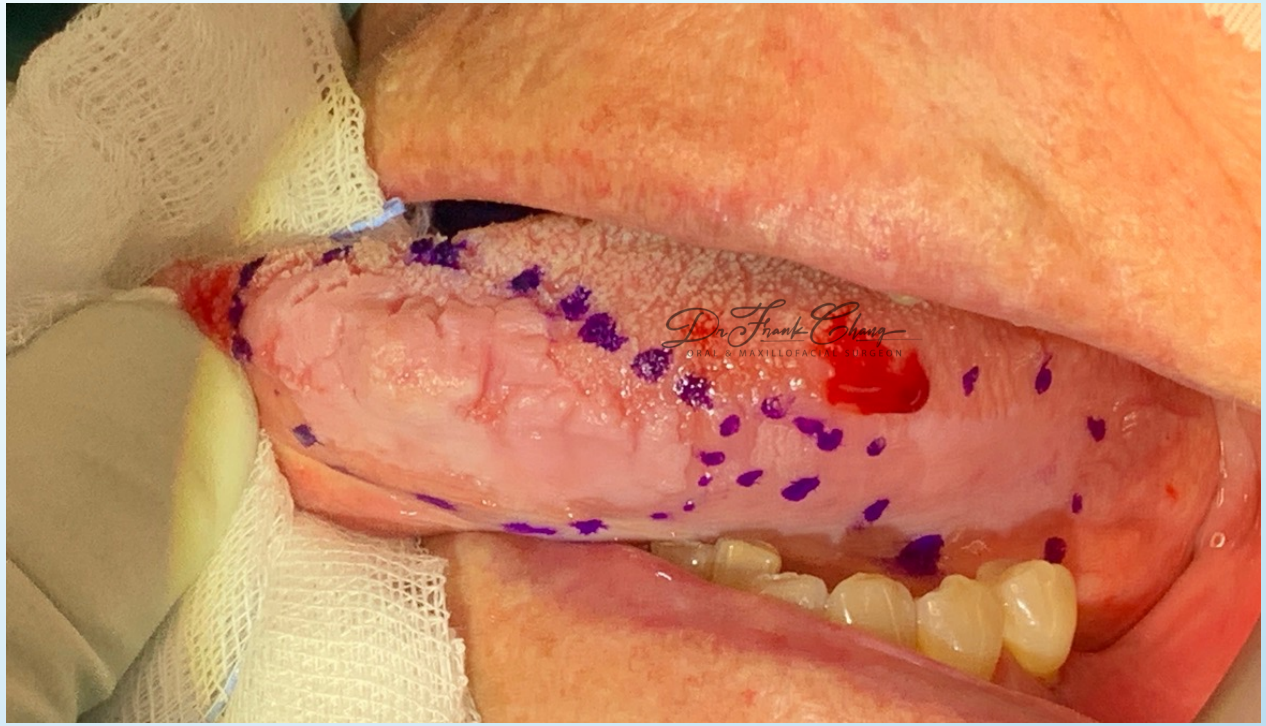
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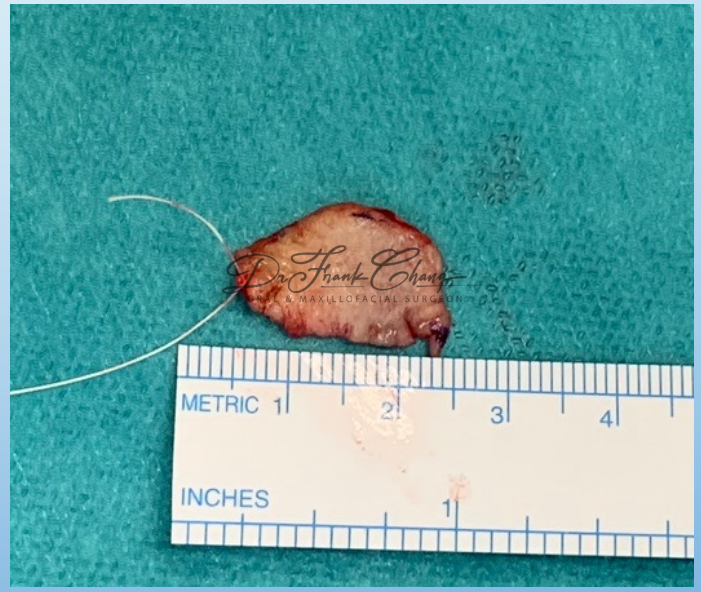
INCHES 1 2


METRIC 1 2 3 4
INCHES 1

Clinipath Pathology
Quality is in our DNA

[redacted]

Referrer Dr Frank Chang
Address DR ALBERGHINI & DR LEWIS 76A SOUTH TERRACE SOUTH PERTH WA 6151
Phone 0894742133

Copy to SOUTH PERTH HOSPITAL:MEDICAL RECORDS (0893670222)

Requested 01/12/2021
Collected 01/12/2021 00:00 AWST
Received 01/12/2021 19:37 AWST

Specimen No : 162071-21CL

Histopathology Report

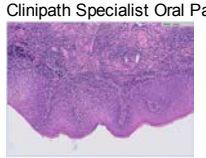
Clinical Details:
70M. Right lateral tongue raised lesion with rough surface and healing ulcer posteriorly. (photos available on request).

Macroscopic Description:
Right side tongue lateral: An orientated irregular mucosal fragment 14 x 9 x 3mm. A marking suture is present at the anterior pole designated at 12 o'clock. The 3 o'clock margin is inked green, the 9 o'clock margin is inked black. Transversely sectioned into five pieces and processed in two blocks. 5-2A TPM

Microscopic Description:
1A. and 1B. Six levels of each examined. These sections show mature fibrous connective tissue covered by parakeratinised stratified squamous epithelium with a papillary surface configuration. Ulceration is not seen at these levels. Features of epithelial dysplasia including nuclear pleomorphism and hyperchromatism and irregular stratification are seen. These features are confined to the lower half of the epithelium. An eosinophilic coagulum is seen in the basement membrane zone. A moderately intense chronic inflammatory cell infiltrate composed predominantly of lymphocytes and macrophages can be seen in the connective tissue and disrupts the epithelium. No PAS-D positive fungal elements are seen.

Conclusion:
Right lateral tongue: Parakeratosis with moderate epithelial dysplasia possibly on a background of oral mucosal lichen planus. Mild dysplasia extends to peripheral margins. Clinical correlation is required.

Case reviewed with Dr Norman Firth using remote digital microscopy.
Pathologist: Dr Jason Lau, jlau@clinipath.net , 08 9371 4519
Clinipath Specialist Oral Pathology Service.



Clinipath Pathology NATA No: 2619-2612

Sonic Dx RESULTS
These results have been generated by Sonic Dx and may be an incomplete extract of the full pathology report.
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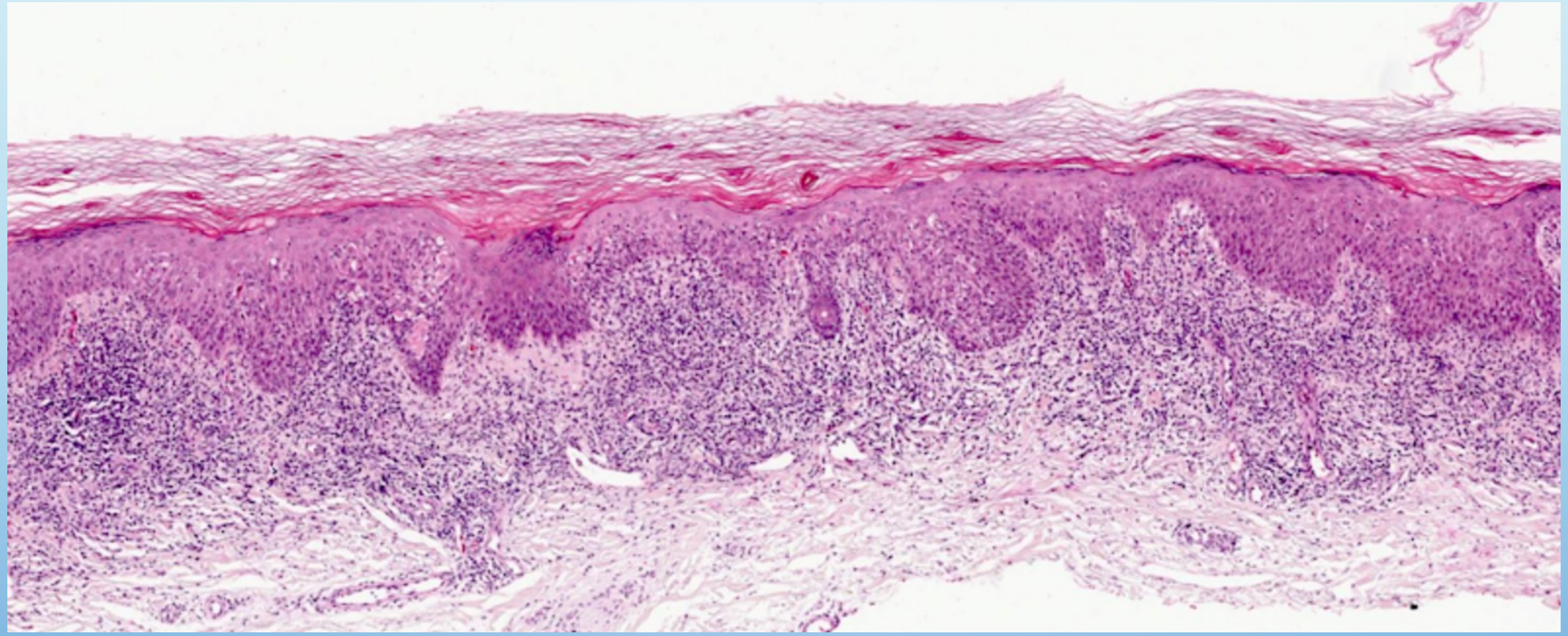

THANK YOU

QUESTIONS

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