Head and Neck: Biopsy Difficulties With Squamous Lesions

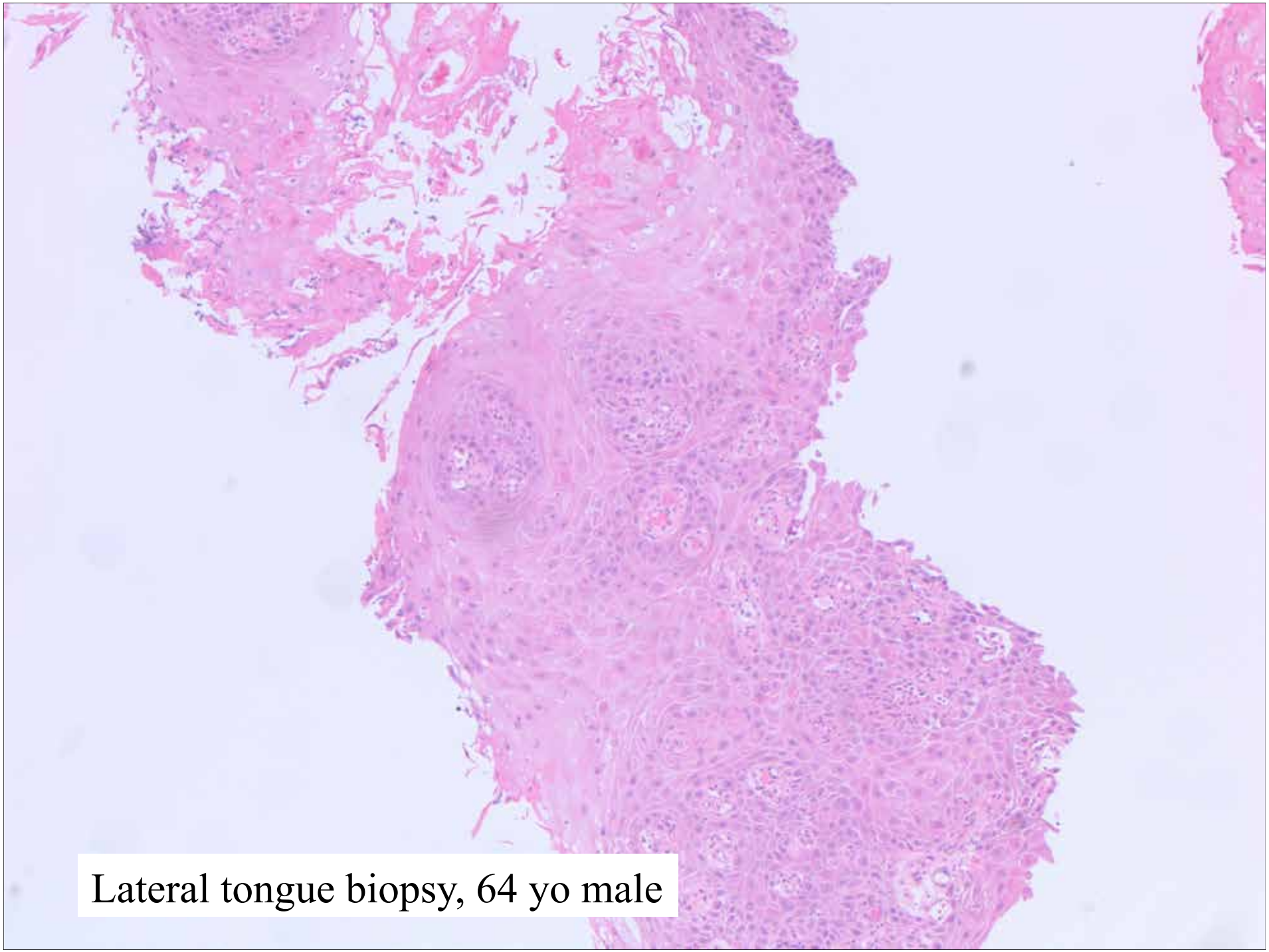
Ilan Weinreb, MD, FRCPC

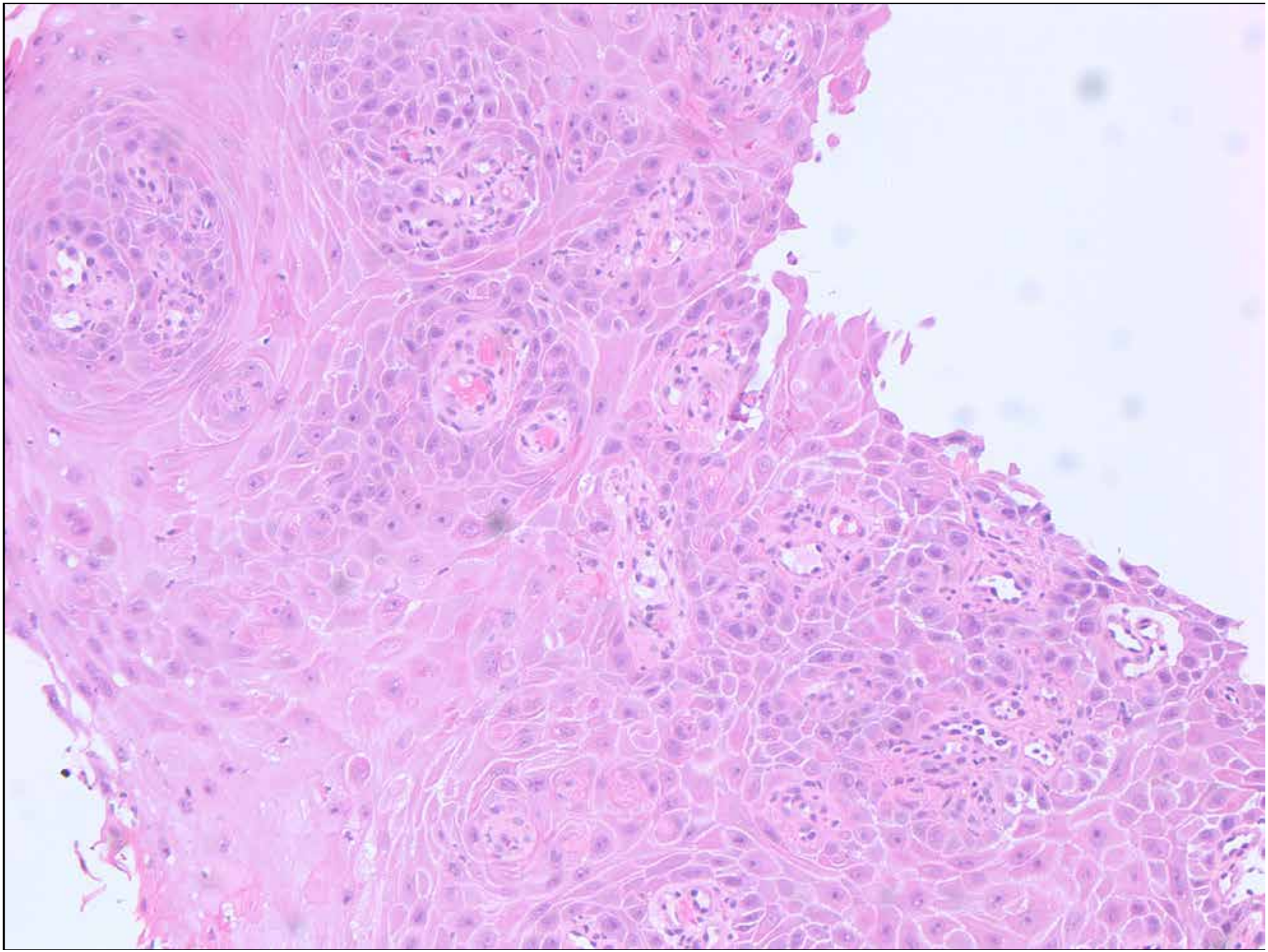
Department of Pathology, University Health Network

Toronto, Ontario, Canada

Today's "Leaps of Faith"

- There is no such thing as "mild dysplasia"
- Reactive squamous lesion/hyperplasia versus "well-differentiated SCC"
- High-grade dysplasia (moderate/severe/CIS) vs. "moderately differentiated SCC" (microinvasion)
- Oropharynx lesions are NEVER in-situ
- Do not call something "hyperplasia" on a biopsy.


Lateral tongue biopsy, 64 yo male



Diagnosis?

a. Reactive/hyperplastic squamous mucosa.

b. Mild squamous dysplasia, at least.

c. Severe squamous dysplasia/carcinoma in-situ.

d. Squamous cell carcinoma.

e. Cannot make a diagnosis.

Diagnosis?

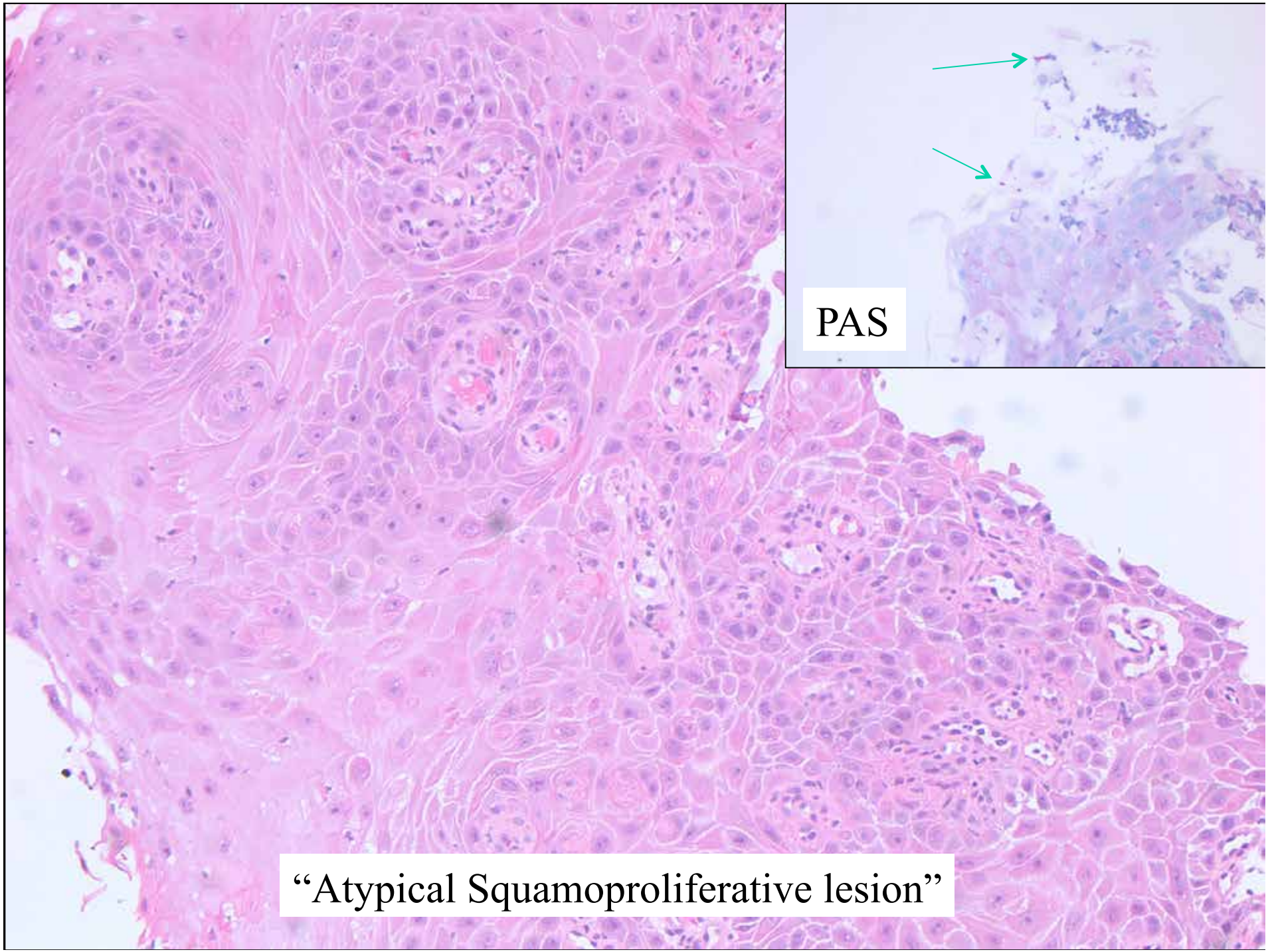
a. Reactive/hyperplastic squamous mucosa.

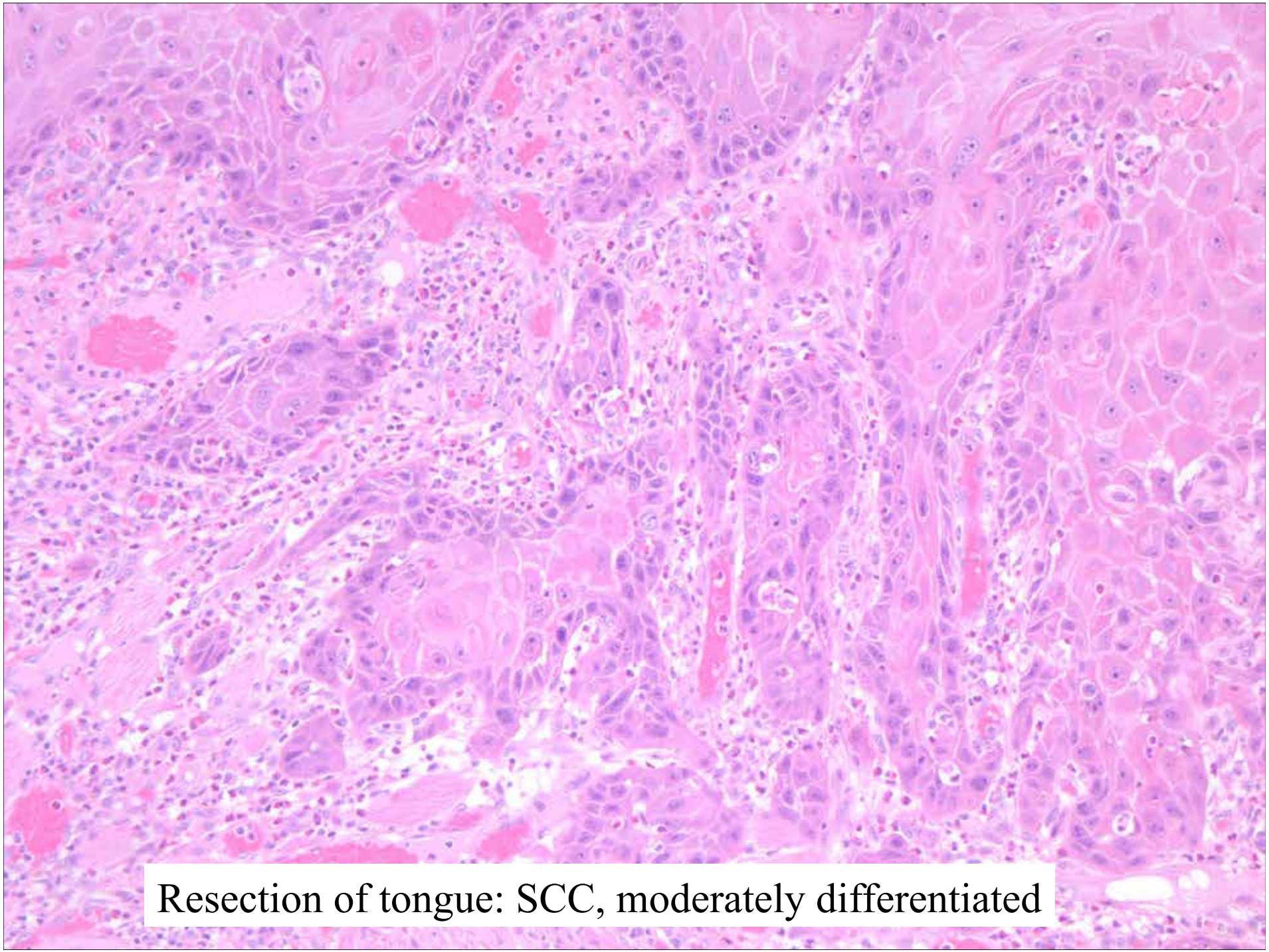
b. Mild squamous dysplasia, at least.

c. Severe squamous dysplasia/carcinoma in-situ.

d. Squamous cell carcinoma.

e. Cannot make a diagnosis.


PAS
“Atypical Squamoproliferative lesion”


Resection of tongue: SCC, moderately differentiated

Let's Make Grading of Squamous Cell Carcinomas More Meaningful to Clinicians (via "Ed's Insight")

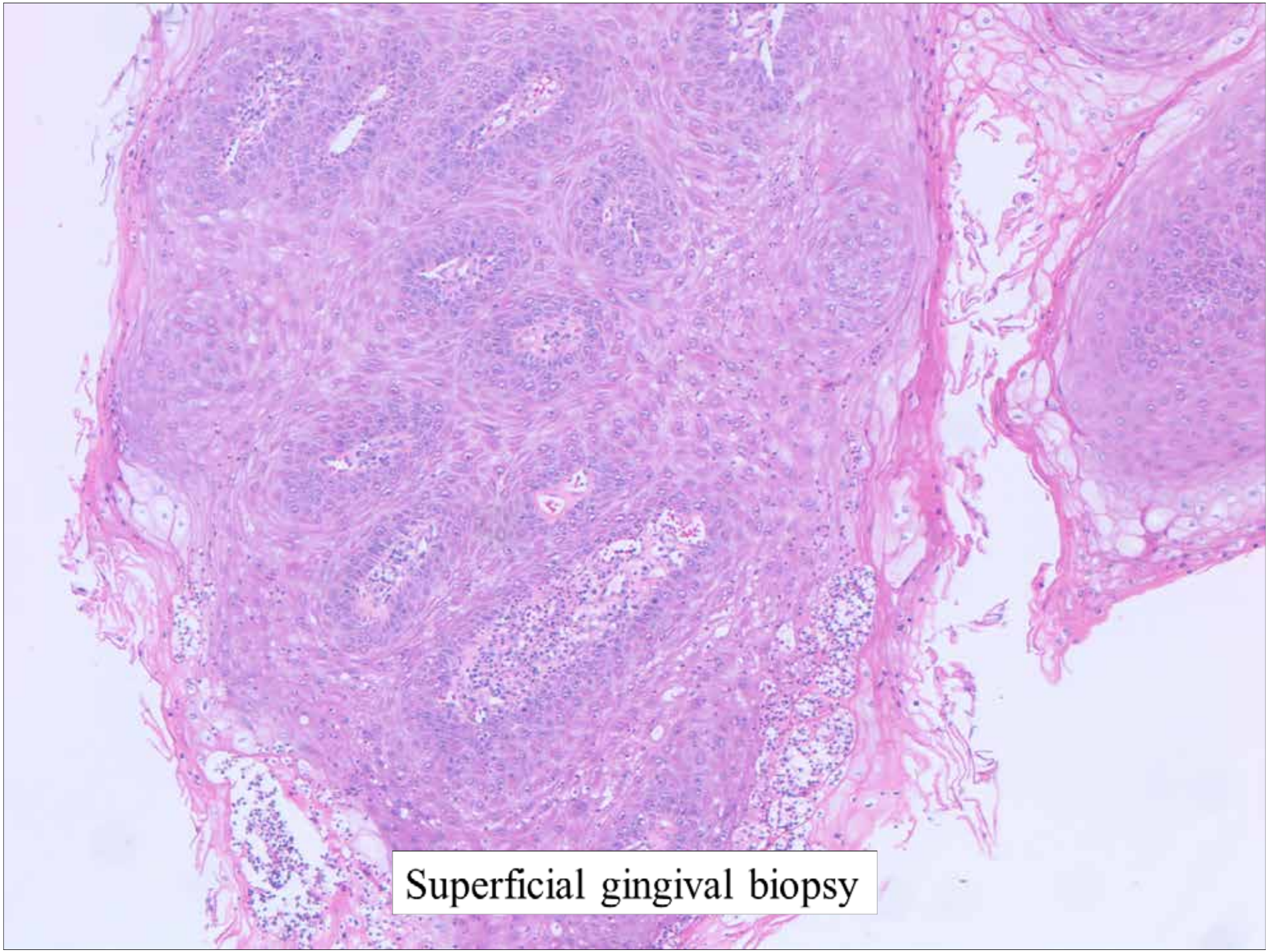
Dennis K. Heffner, MD

Ann Diag Pathol 2002;6;399-403

"When I look at a malignant tumor , probably a carcinoma, and I have trouble perceiving is a SCC vs something else... , then is a poorly differentiated SCC.

If I look at a squamous proliferation that is so well differentiated that I am having trouble deciding wether is malignant or not, but after struggling, I decide is malignant, then is well-differentiated SCC. Everything else is moderately-differentiated SCC".

Edwin (Ed) N. Beckman, MD


Superficial gingival biopsy

Diagnosis?

a. Reactive/hyperplastic squamous mucosa.

b. Mild squamous dysplasia, at least.

c. Severe squamous dysplasia/carcinoma in-situ.

d. Squamous cell carcinoma.

e. Atypical squamoproliferative lesion.

Diagnosis?

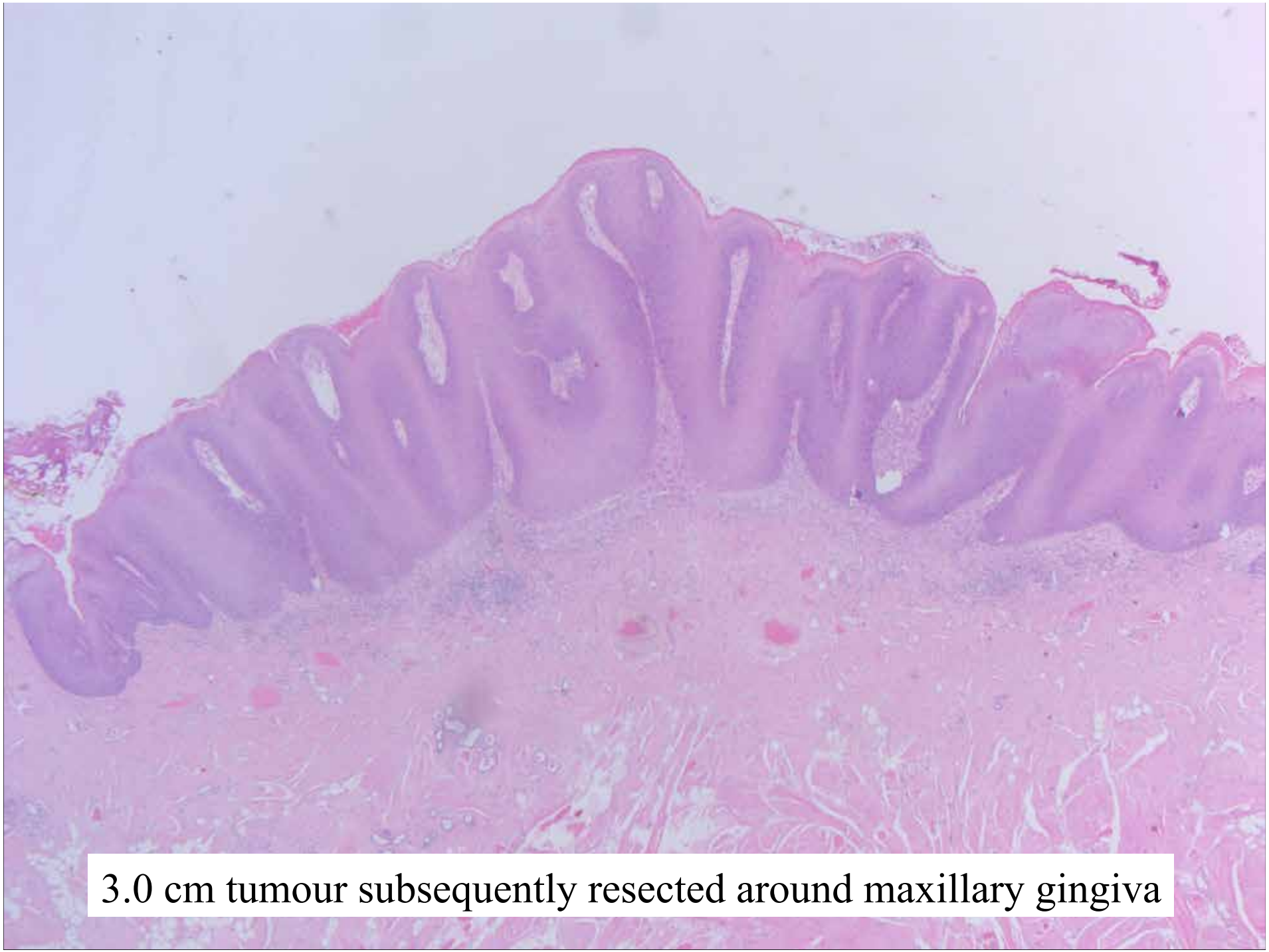
a. Reactive/hyperplastic squamous mucosa.

b. Mild squamous dysplasia, at least.

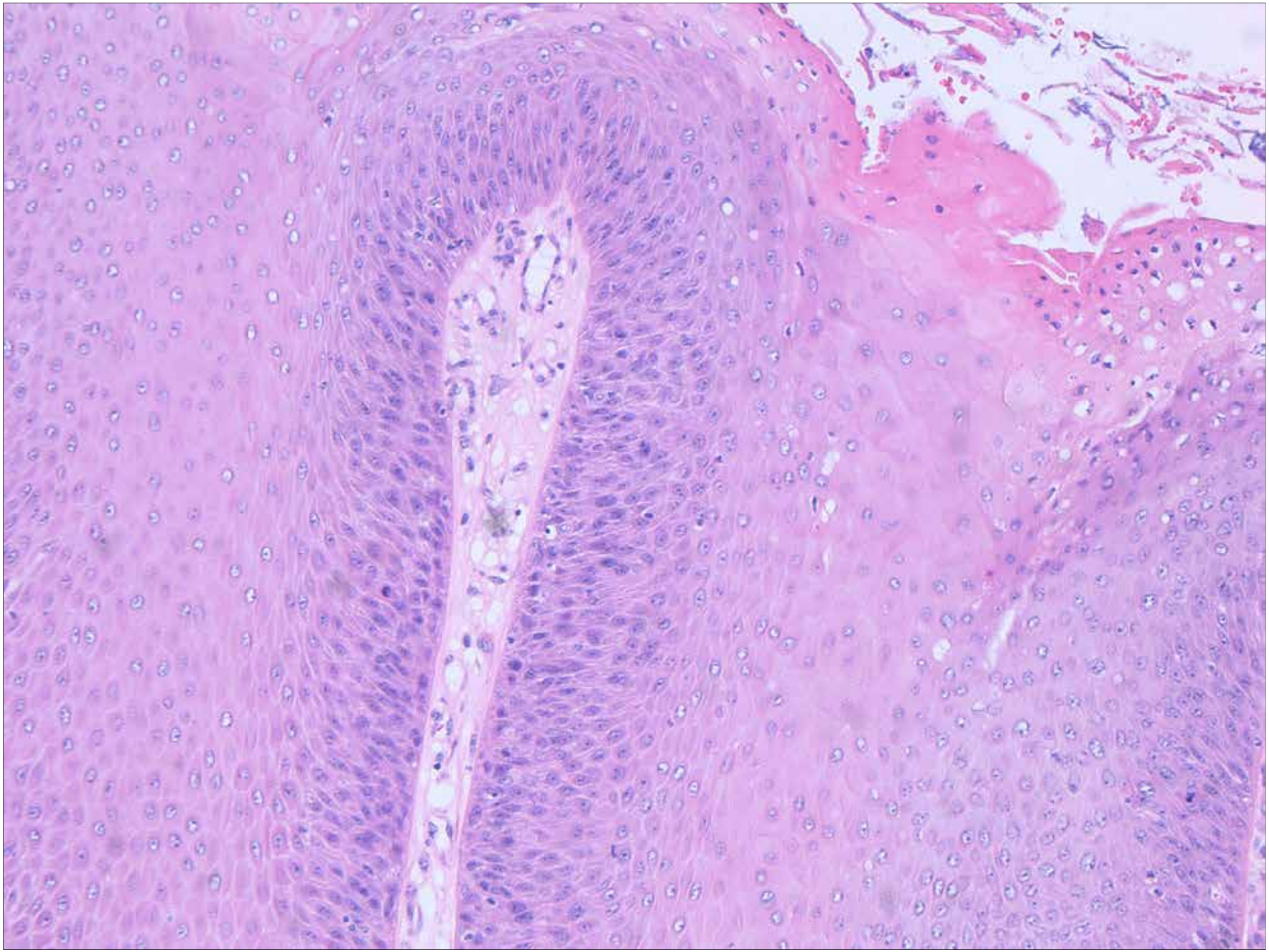
c. Severe squamous dysplasia/carcinoma in-situ.

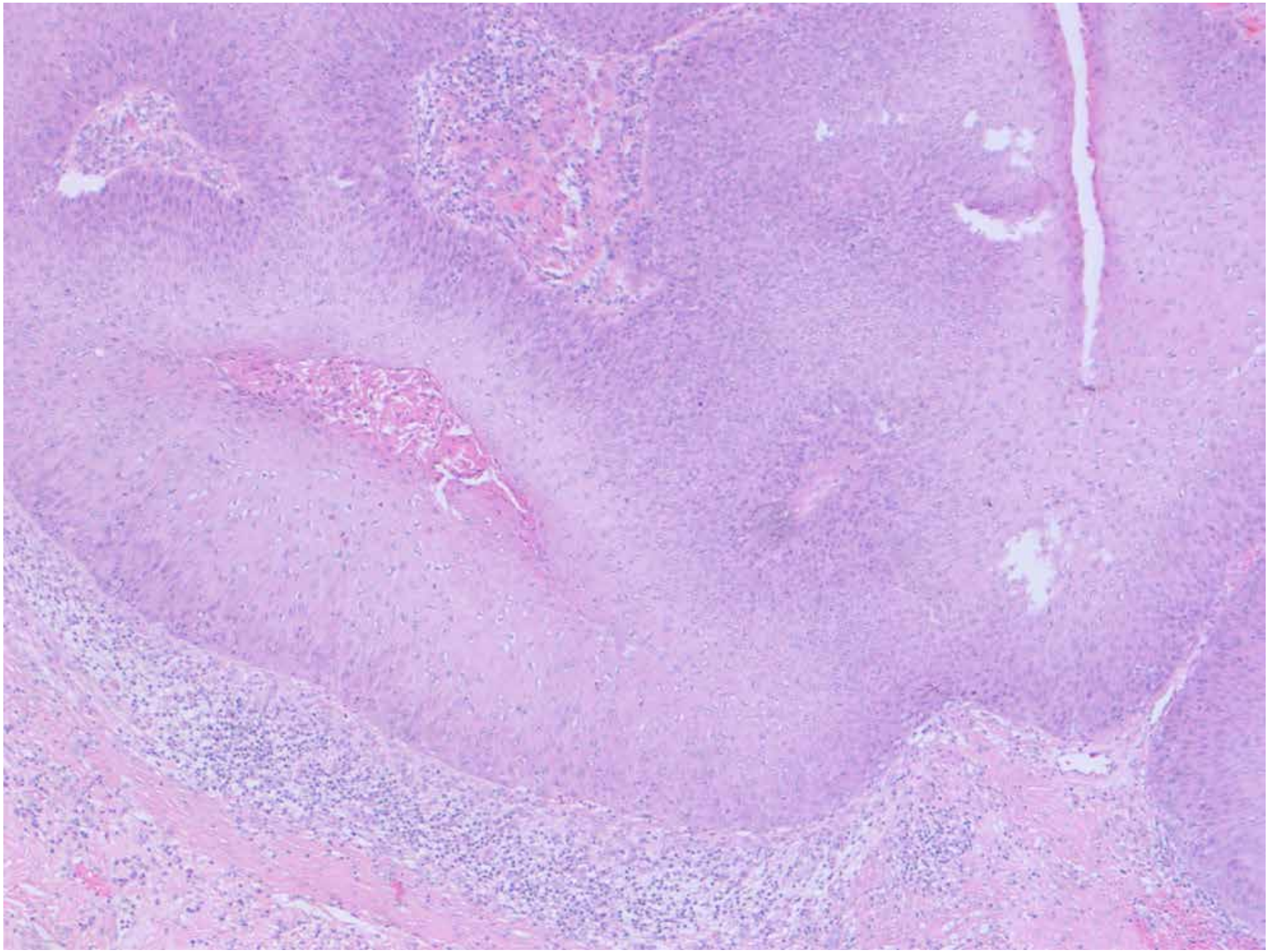
d. Squamous cell carcinoma.

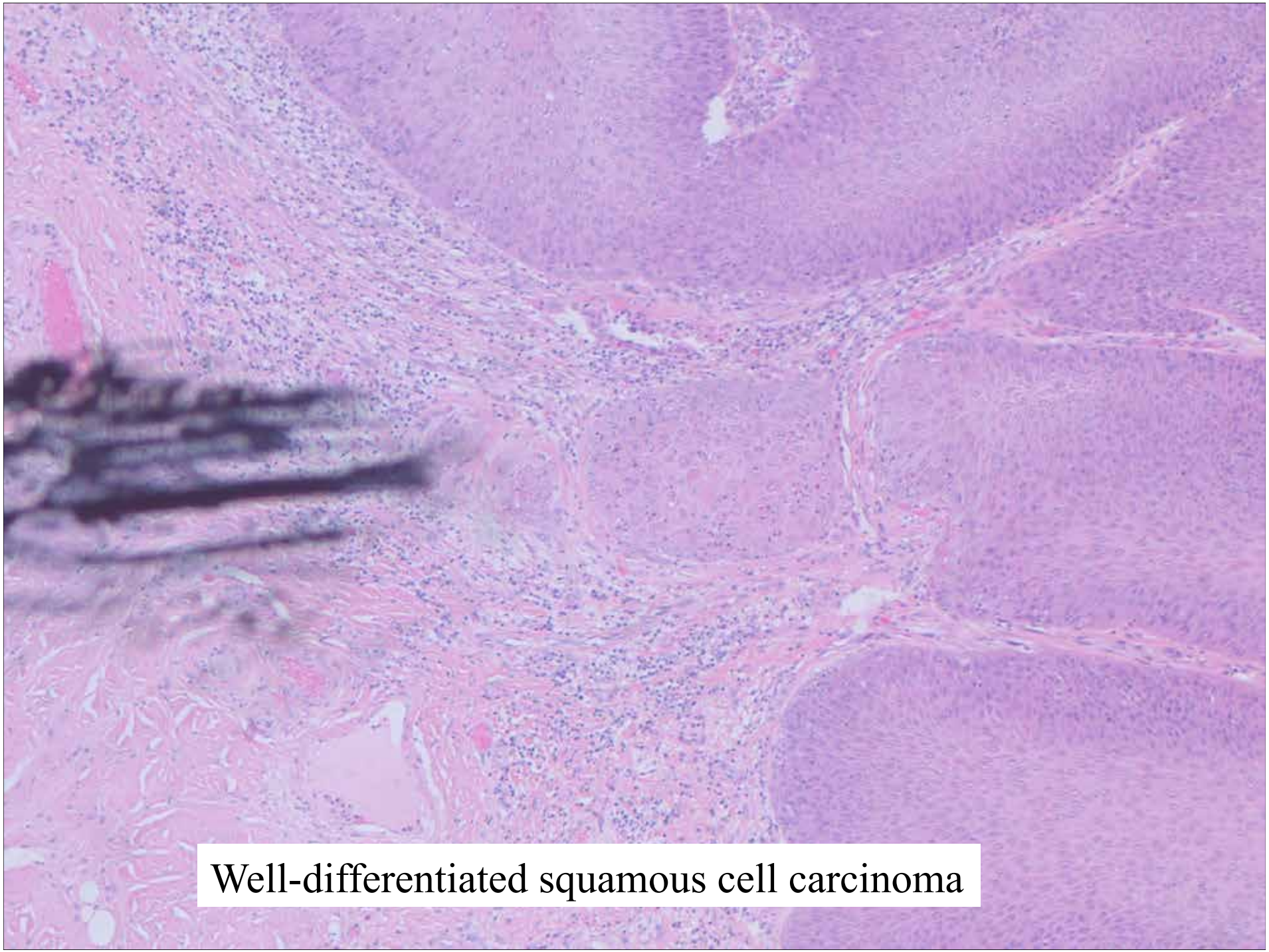
e. Atypical squamoproliferative lesion.



3.0 cm tumour subsequently resected around maxillary gingiva





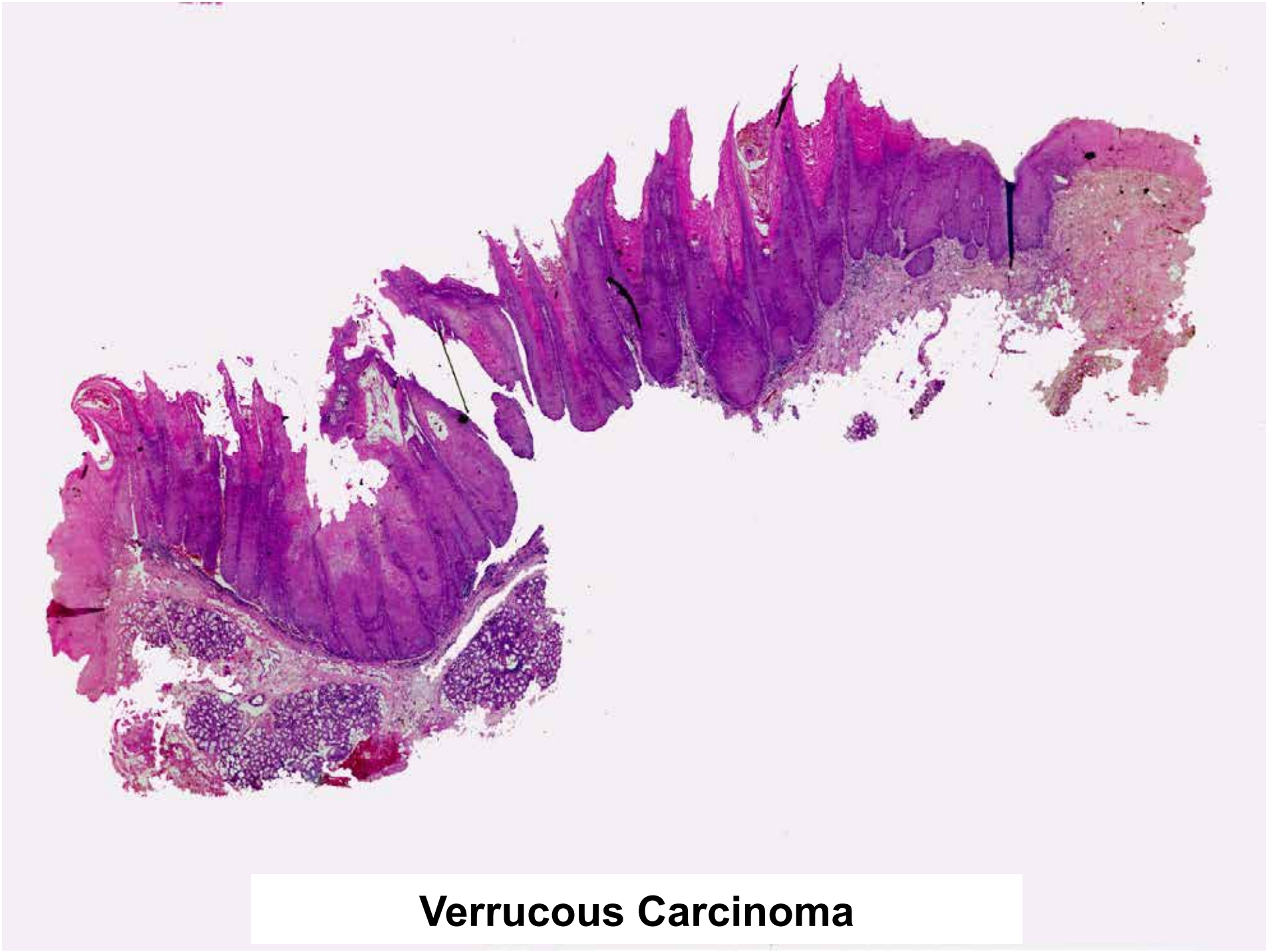

Well-differentiated squamous cell carcinoma

Verrucous Carcinoma

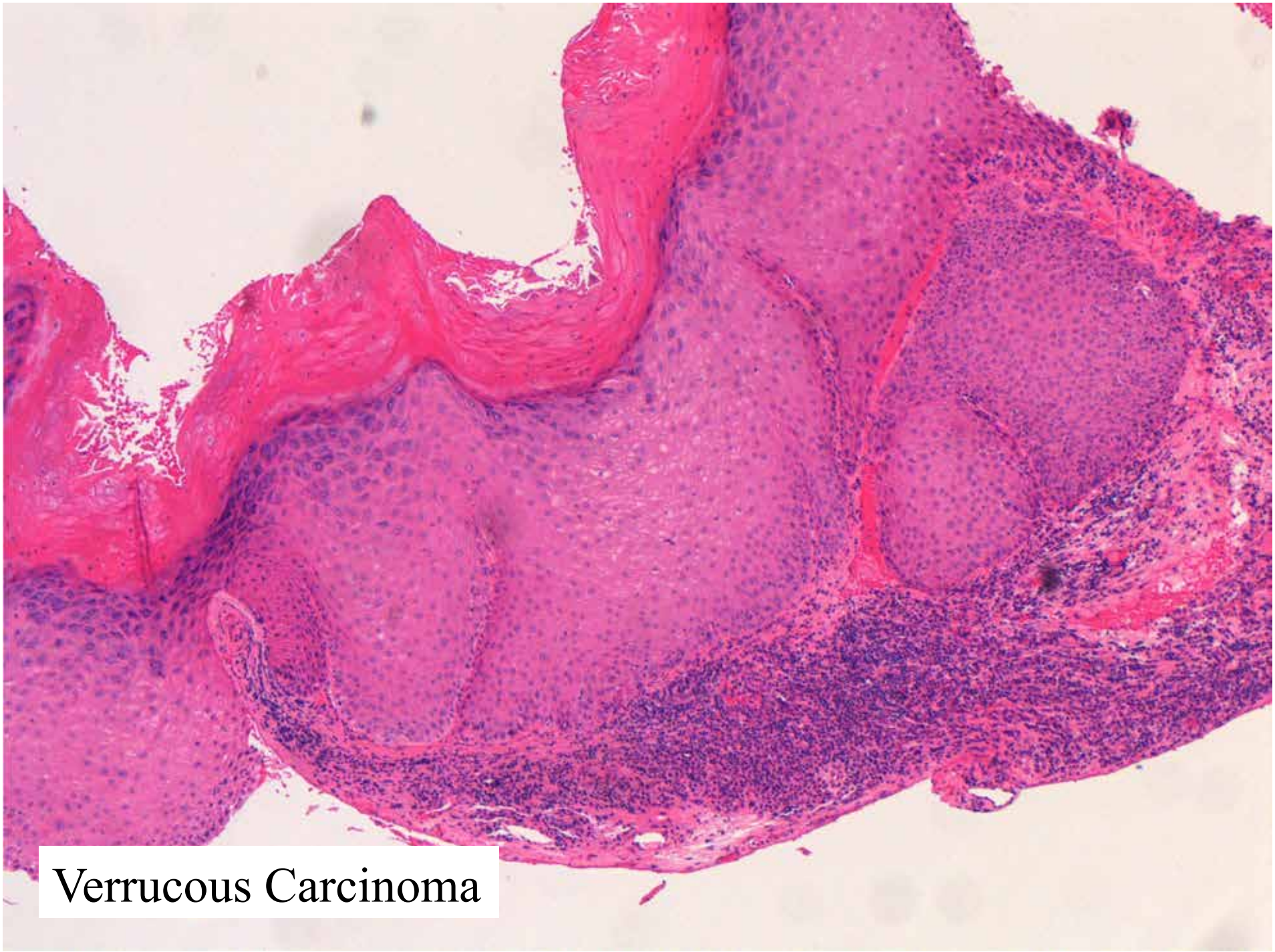
- Clinical
  - More common in elderly
  - Most common in oral cavity and larynx
  - Related to tobacco and poor oral hygiene

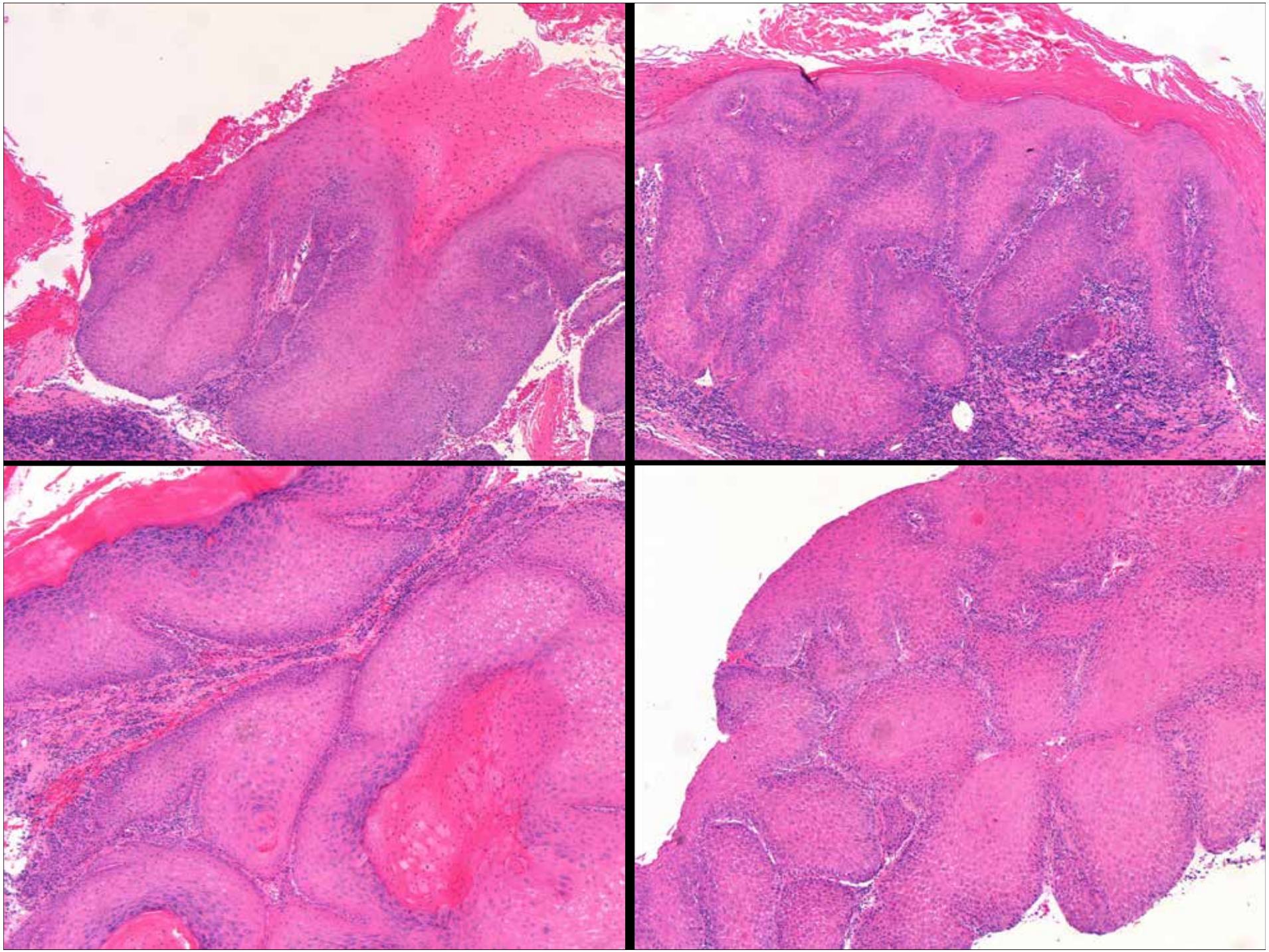
Verrucous Carcinoma

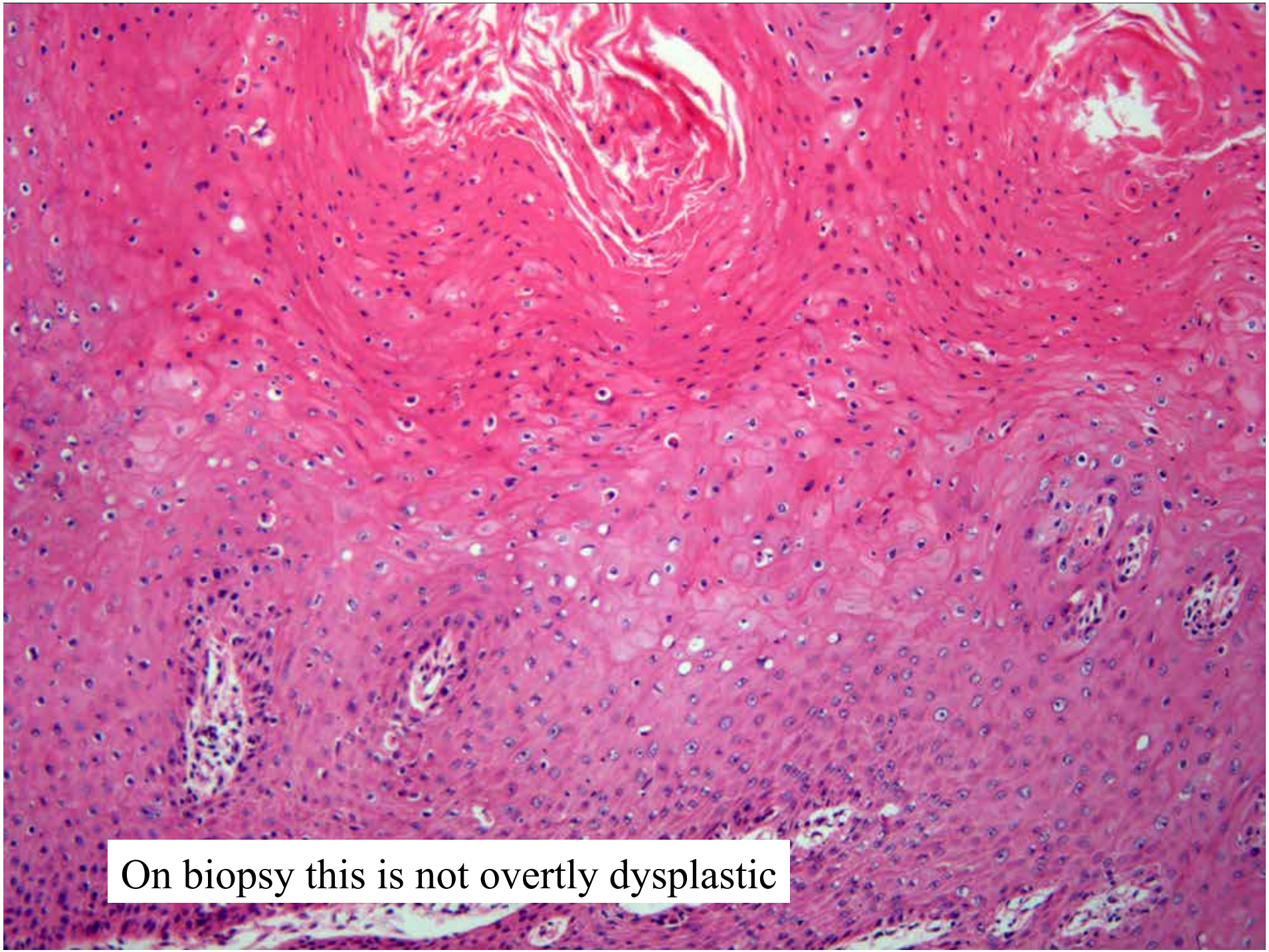
- Histology
  - Bulbous cauliflower like surface
  - Blunted club-shaped rete
  - Inflammatory infiltrates
  - Lack of cytologic atypia



Verrucous Carcinoma


Verrucous Carcinoma

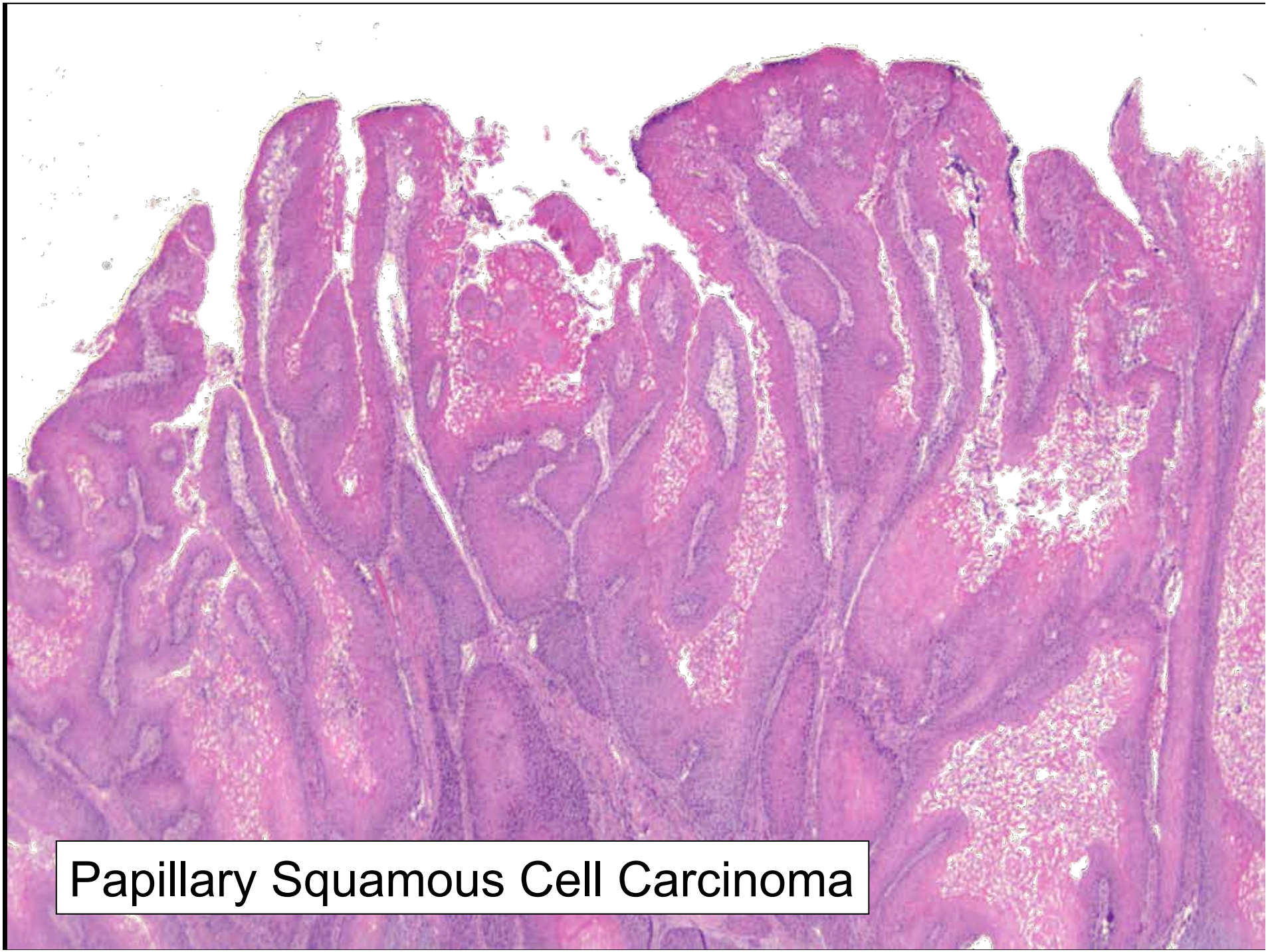


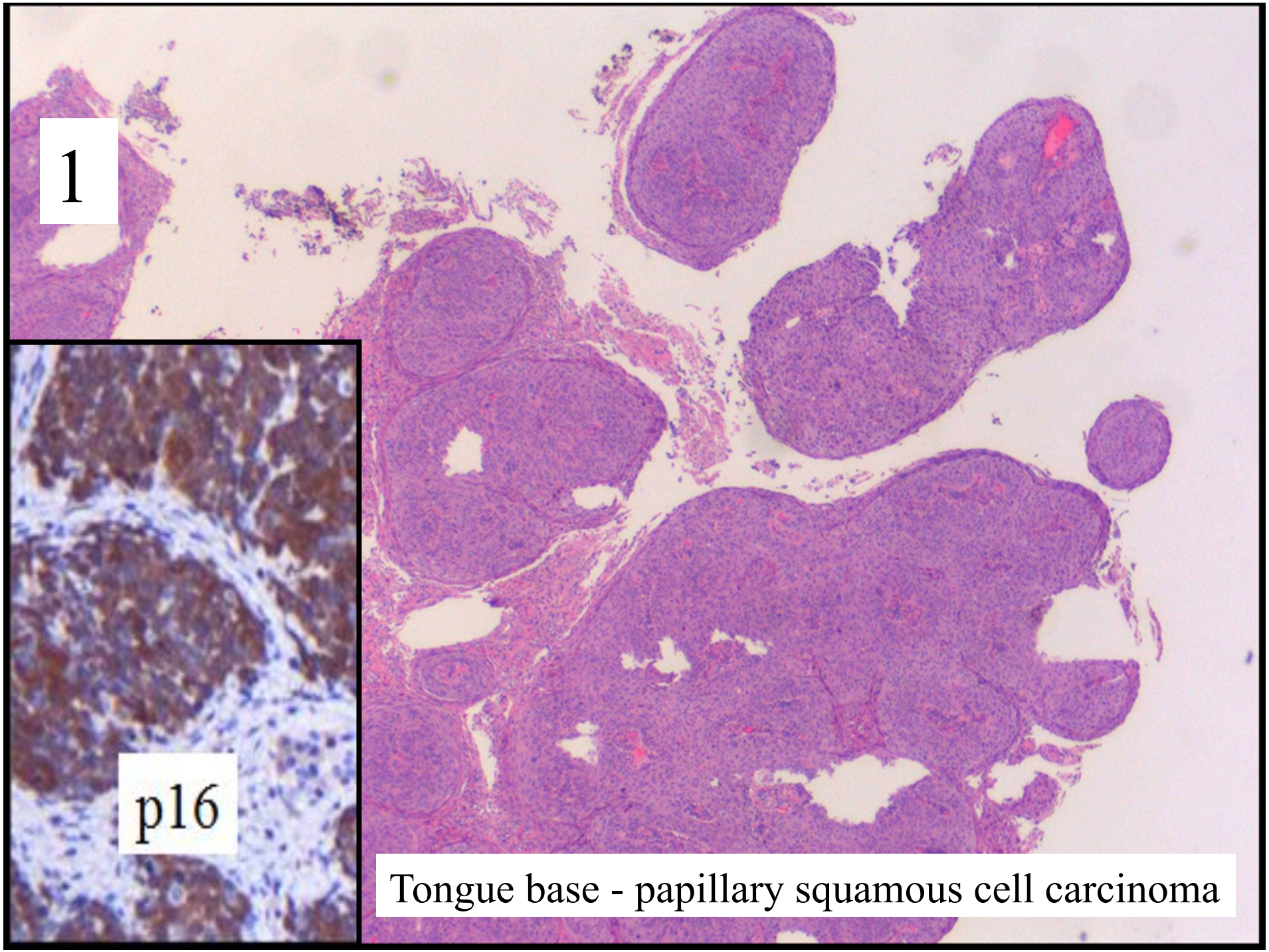

On biopsy this is not overtly dysplastic

Verrucous Carcinoma & WD Squamous Cell Carcinoma

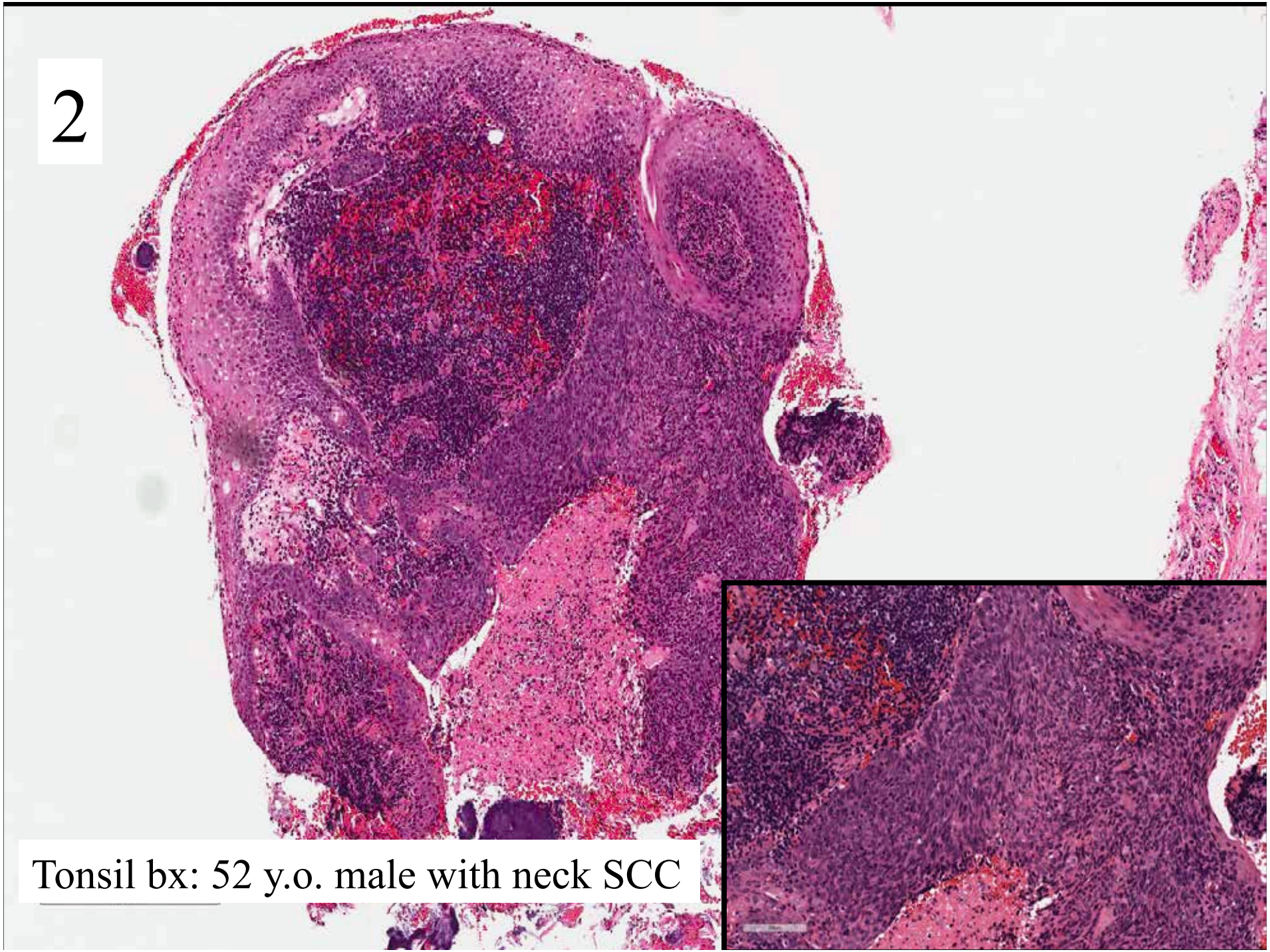
- Treatment
  - Excision with clear margins
  - Radiation (if difficult to treat location)

- Prognosis
  - Good
  - Extremely low risk of metastasis
    (unlike moderately differentiated SCC)


Papillary Squamous Cell Carcinoma


1
p16
Tongue base - papillary squamous cell carcinoma

2



Tonsil bx: 52 y.o. male with neck SCC

Diagnosis?

a. Reactive/hyperplastic squamous mucosa.

b. Mild squamous dysplasia, at least.

c. Severe squamous dysplasia/carcinoma in-situ, at least.

d. Non-keratinizing squamous cell carcinoma.

e. Cannot make a diagnosis.

Diagnosis?

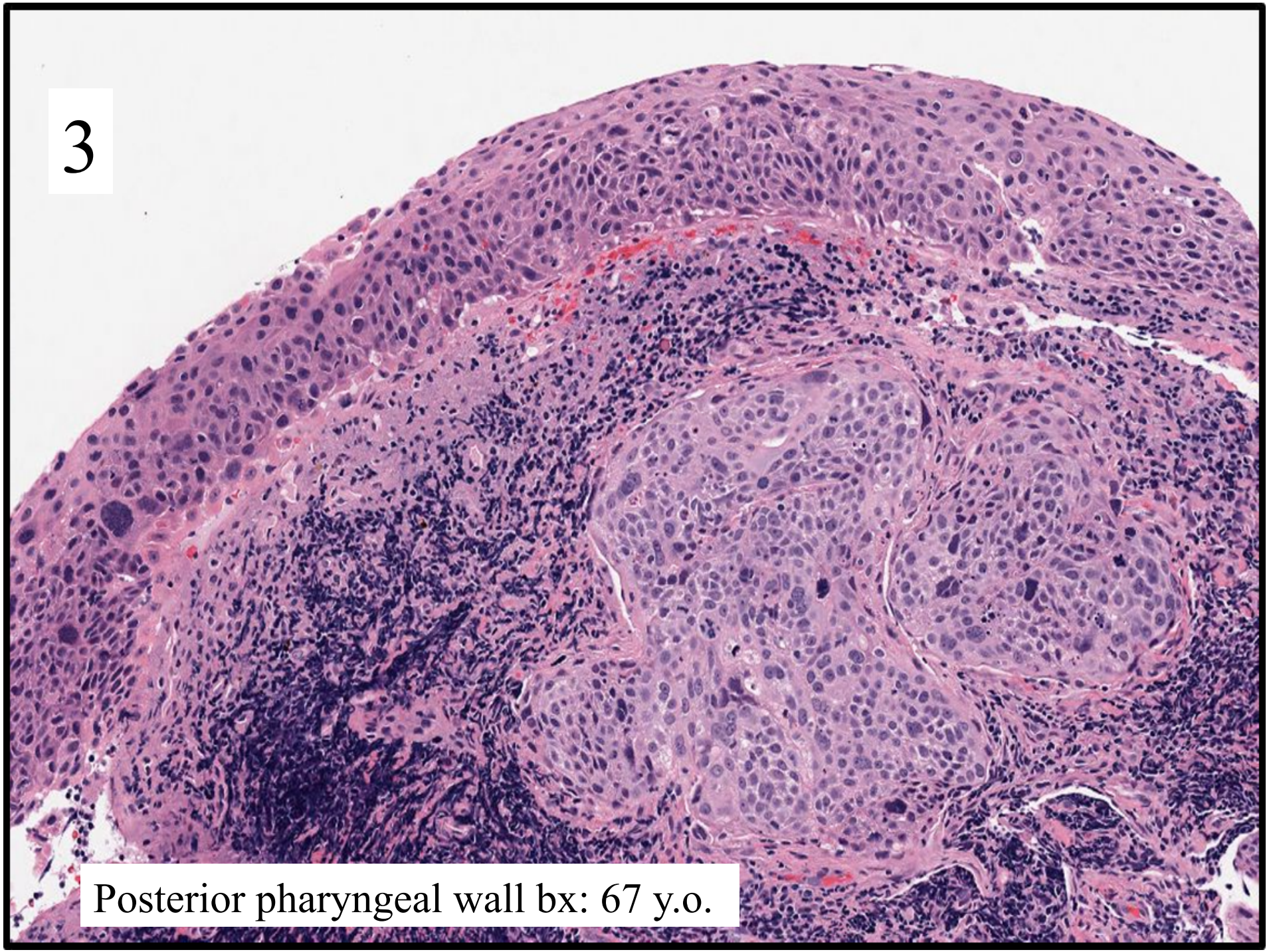
a. Reactive/hyperplastic squamous mucosa.

b. Mild squamous dysplasia, at least.

c. Severe squamous dysplasia/carcinoma in-situ, at least.

d. Non-keratinizing squamous cell carcinoma.

e. Cannot make a diagnosis.


3
Posterior pharyngeal wall bx: 67 y.o.

Oropharynx Non-Keratinizing Squamous Cell Carcinoma

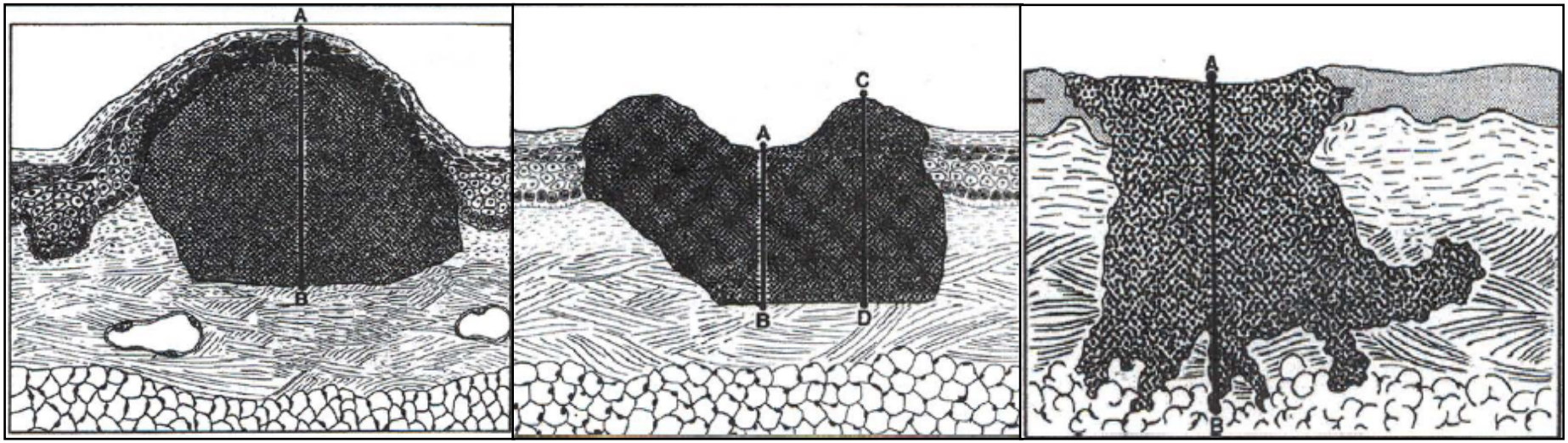
- The vast majority of HPV driven SCCs present with the lymph node metastasis first.
- There is no dysplasia-carcinoma sequence in the oropharynx where most HPV driven SCCs arise.
- Carcinomas begin in the crypts of the tonsil and base of tongue which have incomplete basement membranes.
- The crypts are in direct apposition to lymphatic channels.

Significance of Invasion

- Tumour that has breached the basement membrane
  - Access to lymphatics
  - Potential to metastasize
  - Oropharynx cancers have immediate access to lymphatics and potential to metastasize ie. no CIS

Tumor thickness or tumor depth?

***Tumor Thickness (pT1 and pT2 tumors) (Note B)**
*Tumor thickness: ___ mm
*Intact surface mucosa: ____; or ulcerated surface: ____



Exophytic Ulcerated Endophytic

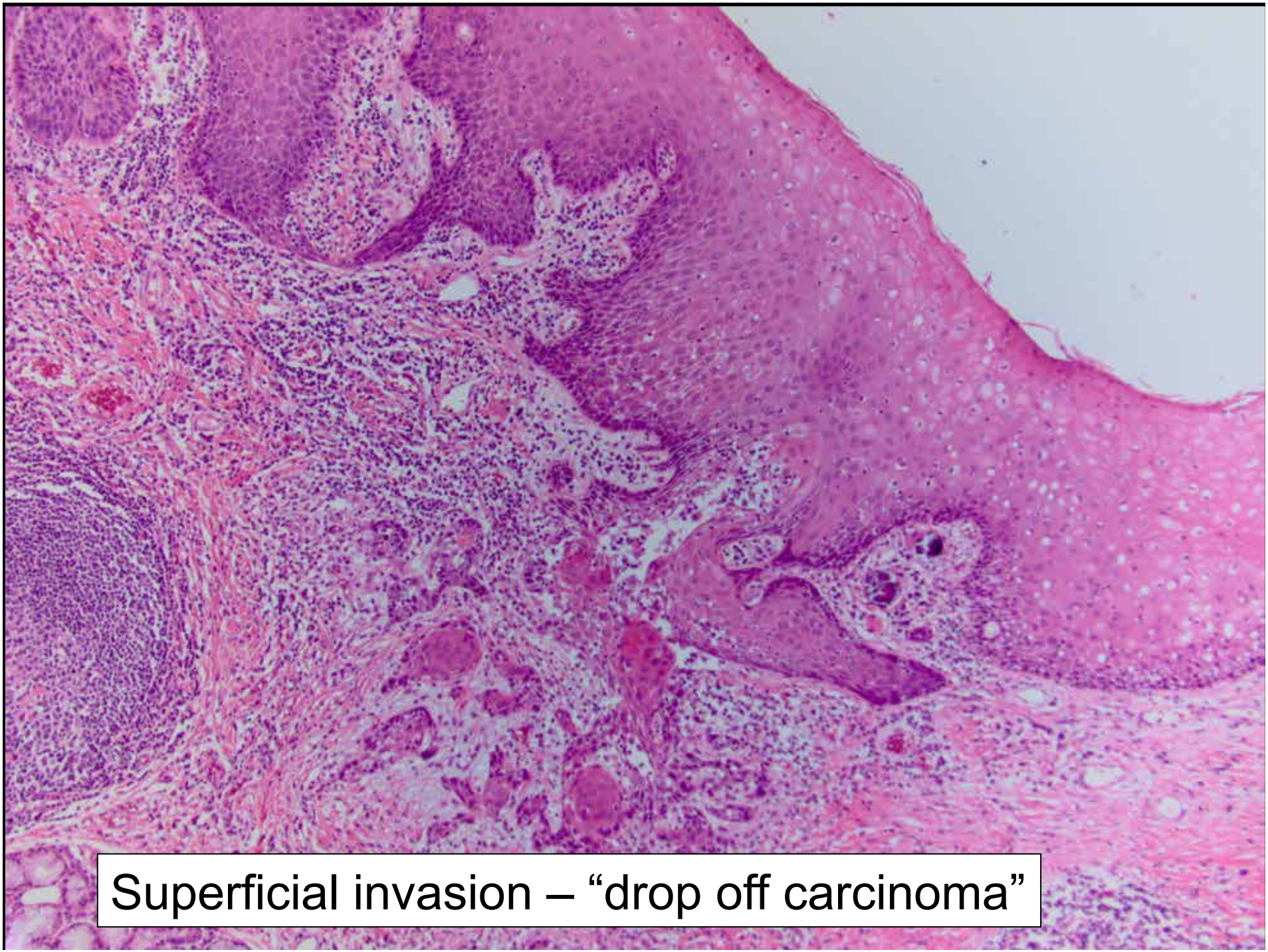
- Risk of lymph node metastasis: 8% in tumor with 3 mm thickness.

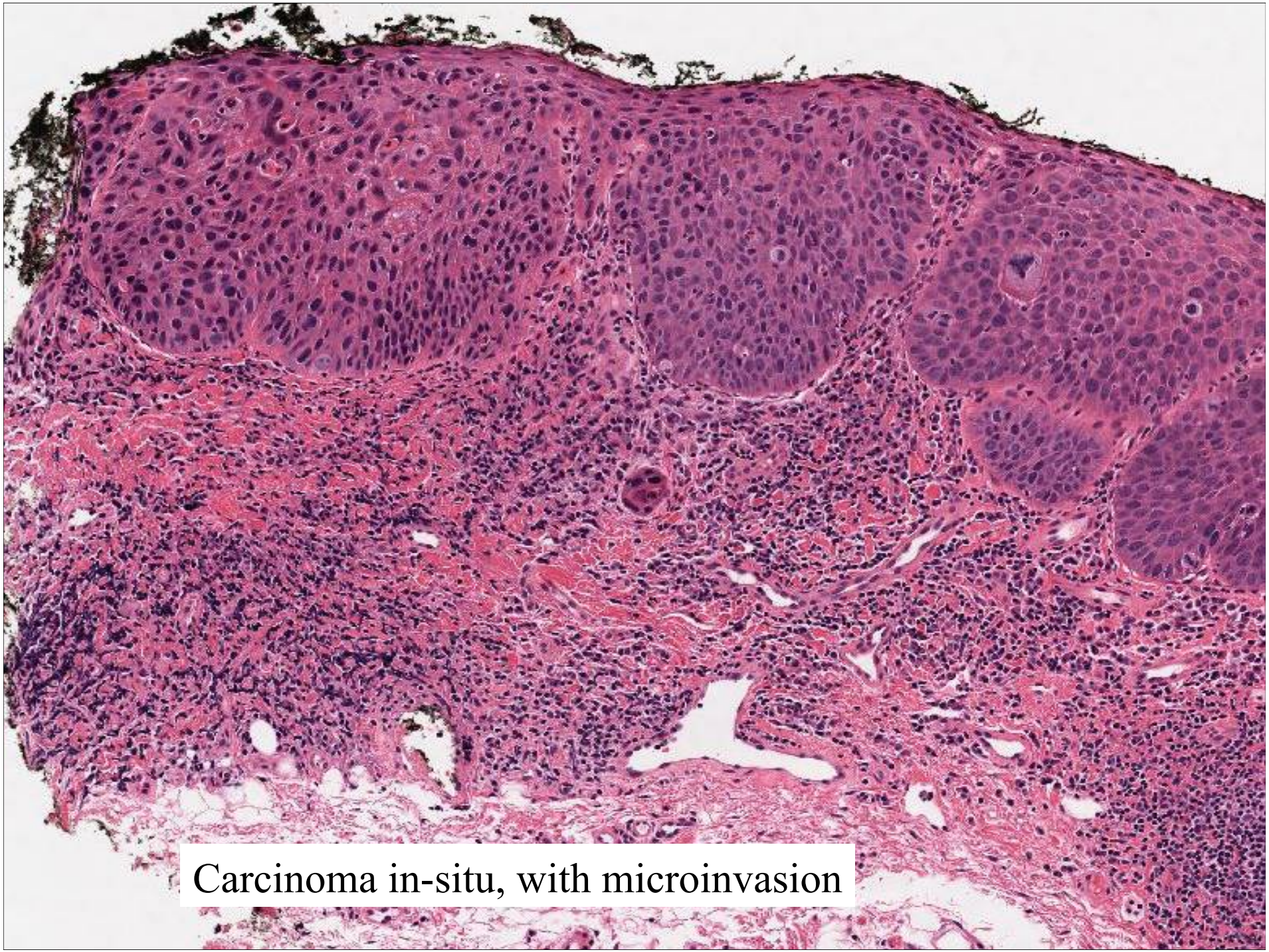
Identifying Superficial Invasion (in theory)

- Deep aberrant keratinization
  - Misplaced keratin pearls
  - Dyskeratosis
- Breach of basement membrane
  - Ragged borders
  - Single dropping off of cells
  - Desmoplasia/reaction around tumour cells

Superficial Invasion: Definition

Miller	12-50 cells present just below the basement membrane
Friedman	Scattered tongues or discrete foci of invasion through the basement membrane
Padovan	2 mm or less of invasion
Crissman	1-2 mm of invasion (no angiolymphatic invasion)
Barnes	0.5 mm of invasion, measured from basement membrane (no angiolymphatic invasion)


Superficial invasion – “drop off carcinoma”

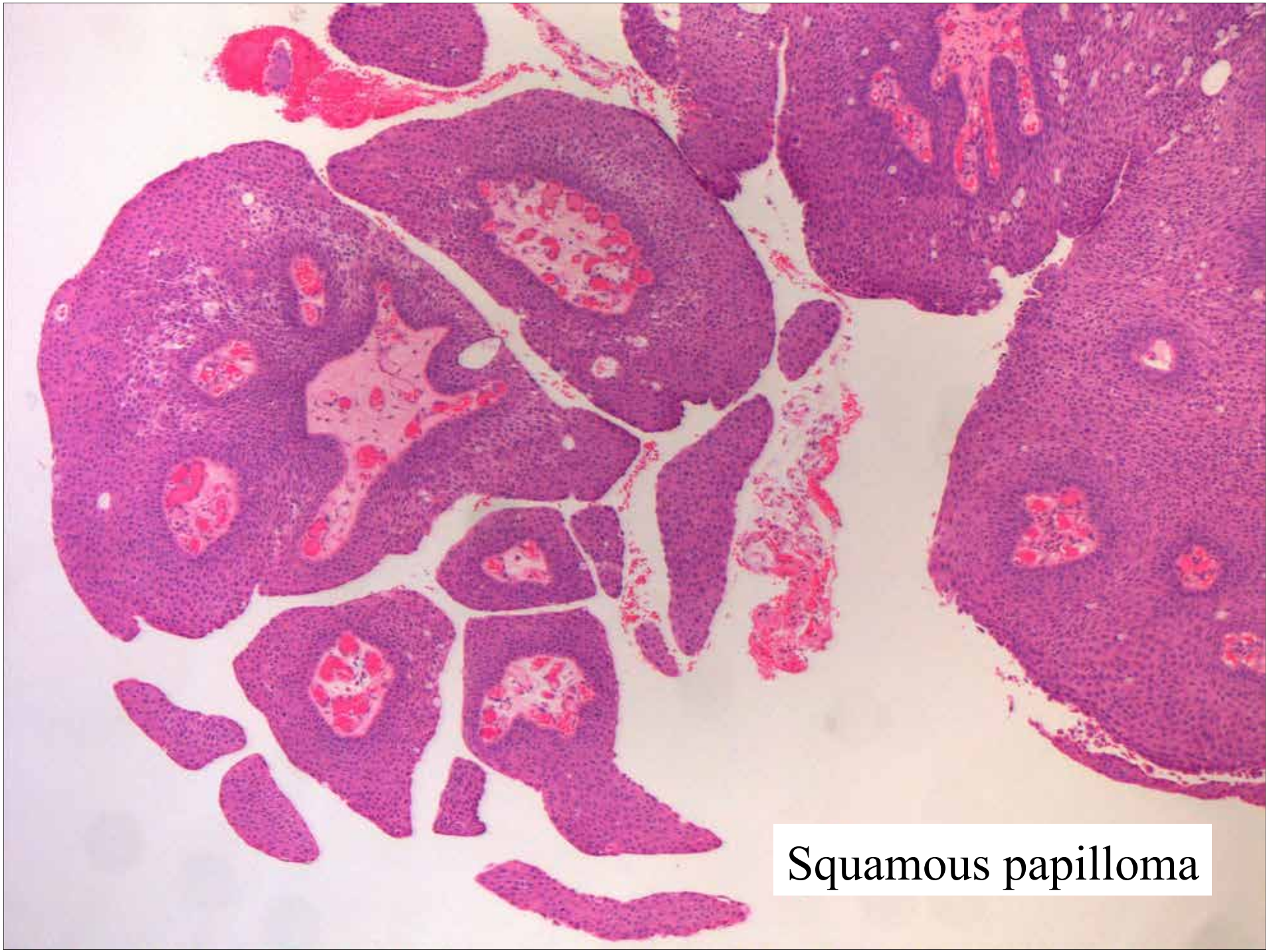

Carcinoma in-situ, with microinvasion

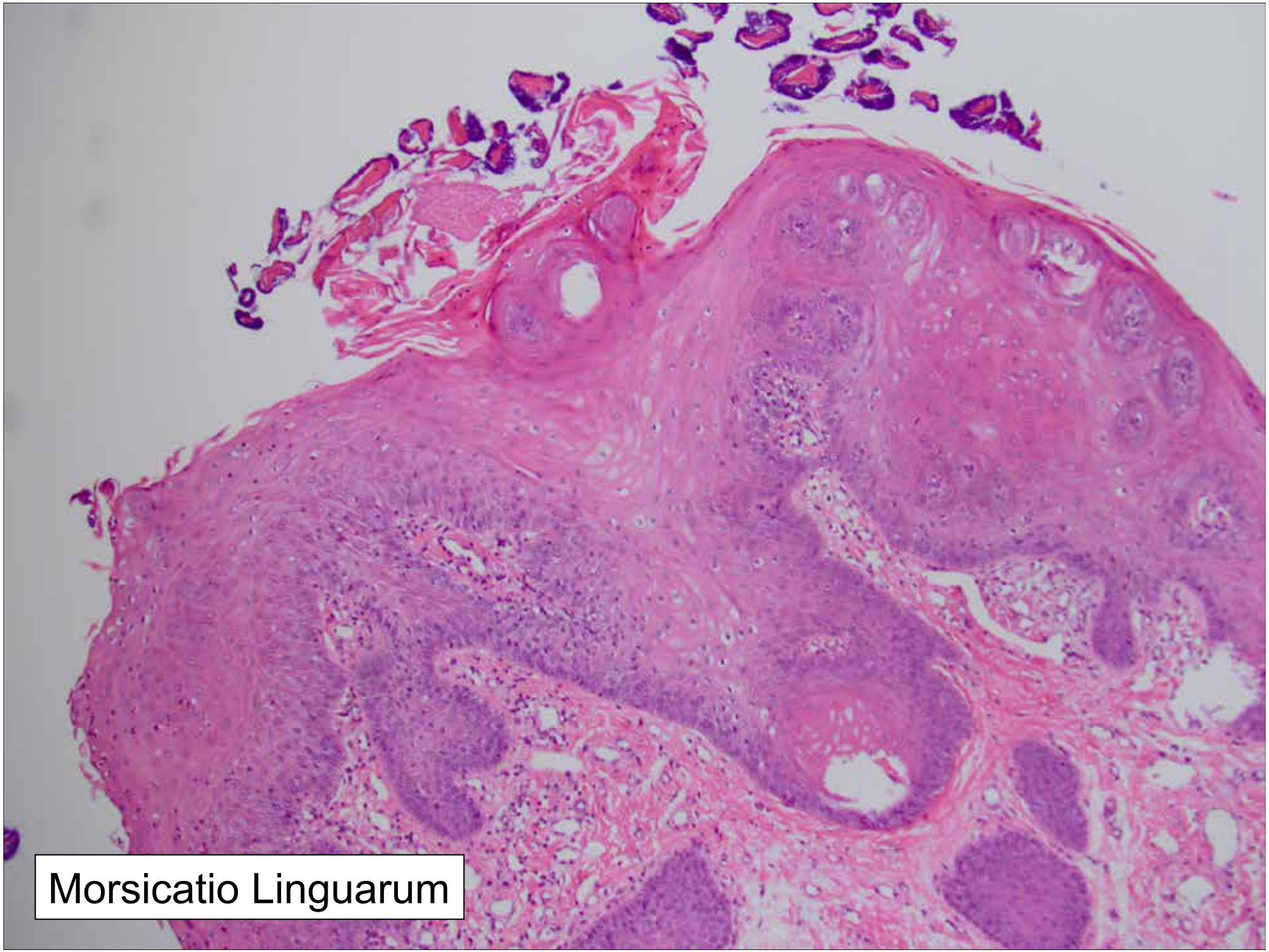
Benign Mimickers

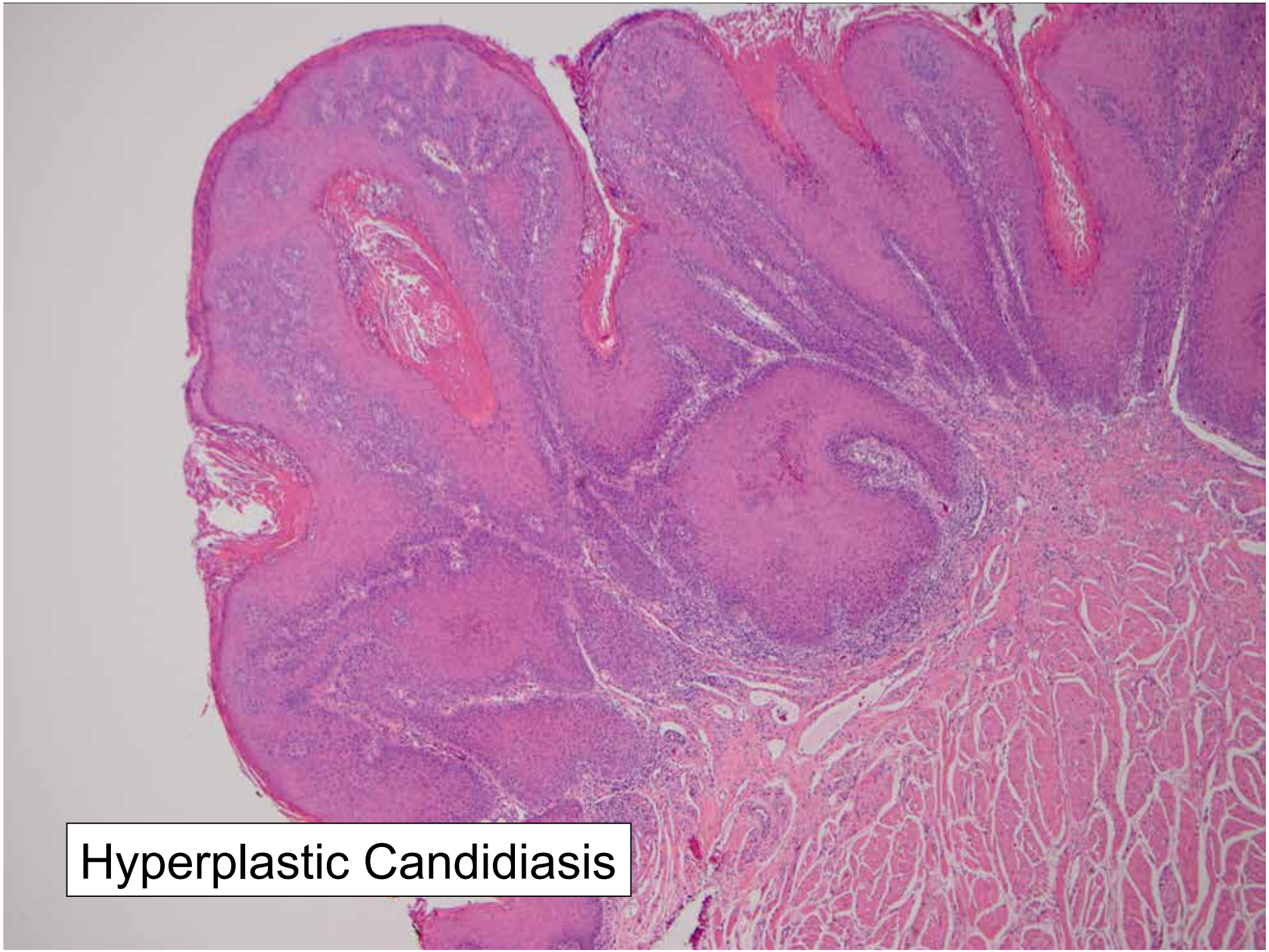
- Squamous papilloma
- Morsicatio buccarum and linguarum
- Infectious hyperplasia eg. candidiasis
- “Pseudoepitheliomatous hyperplasia” eg. granular cell tumour

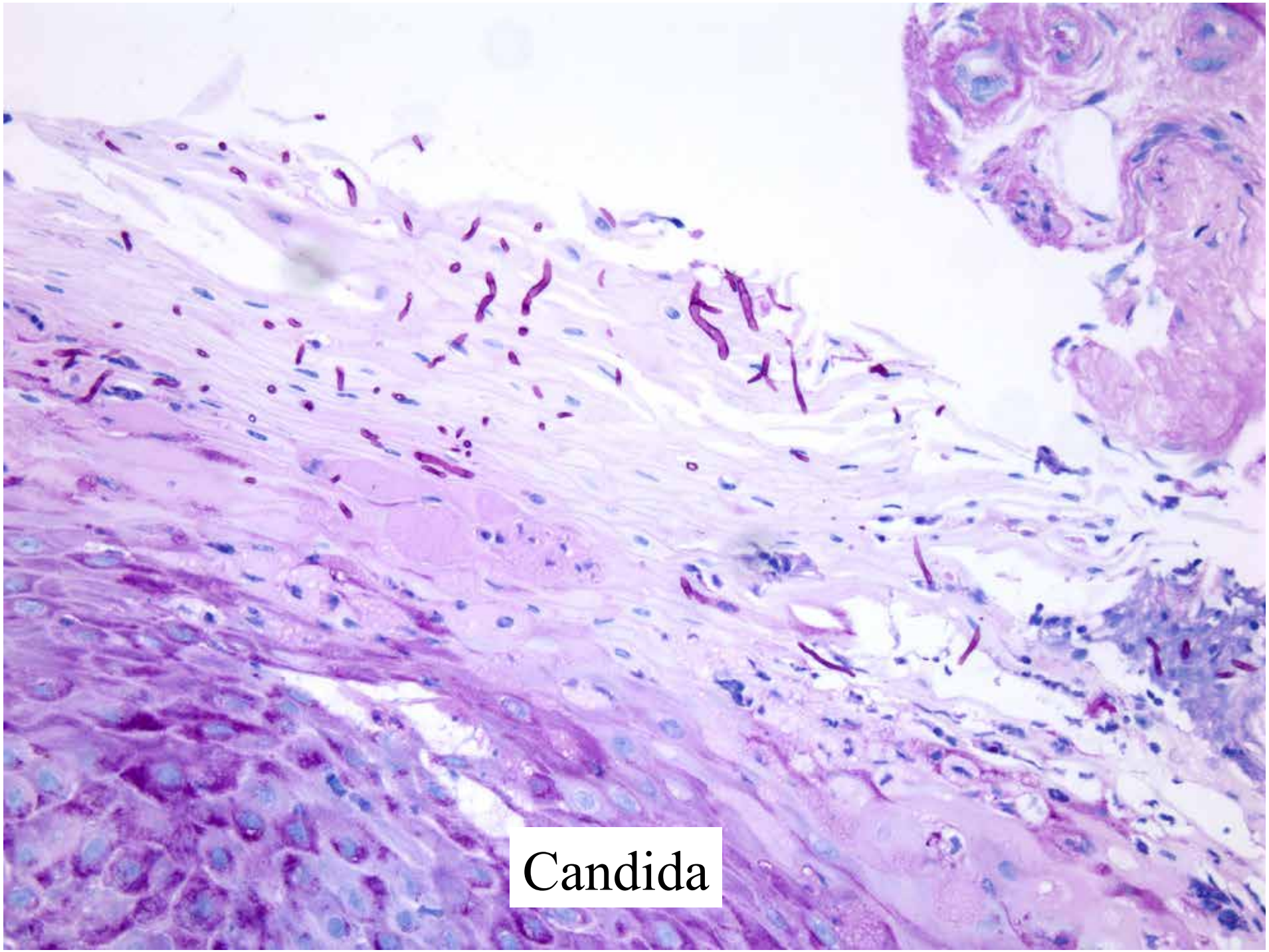
  - Reactive hyperplasias

- Necrotizing sialometaplasia
- Verruciform xanthoma

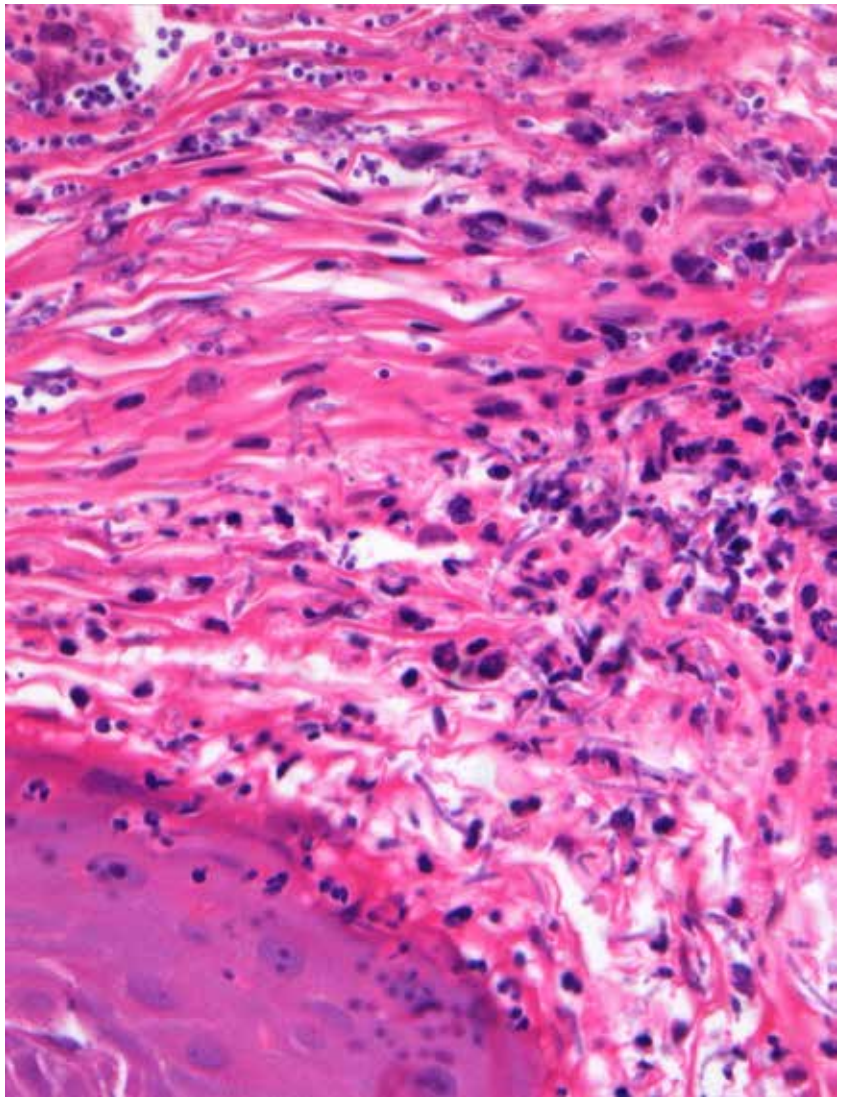

Squamous papilloma


Morsicatio Linguarum

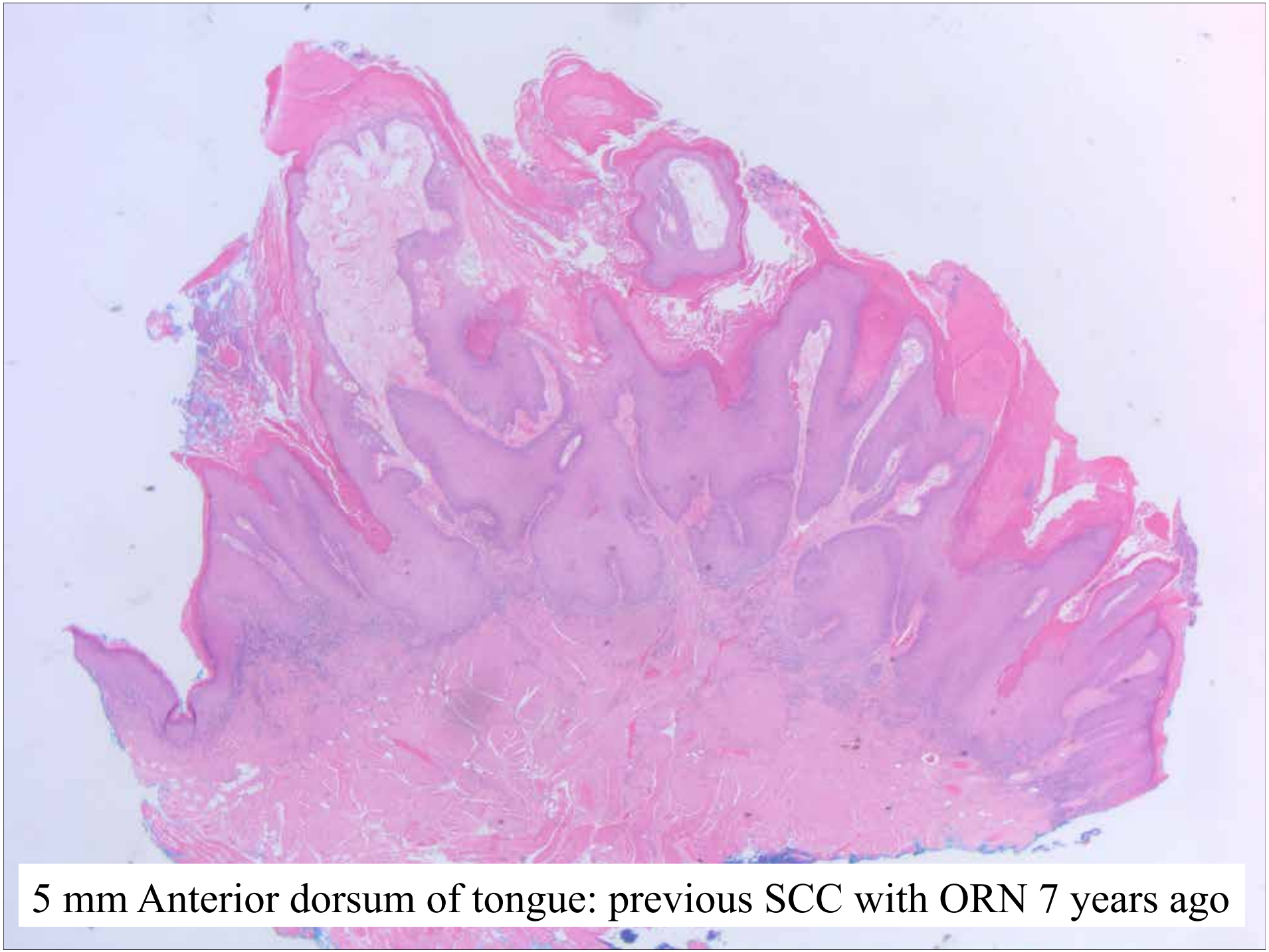

Hyperplastic Candidiasis


Candida

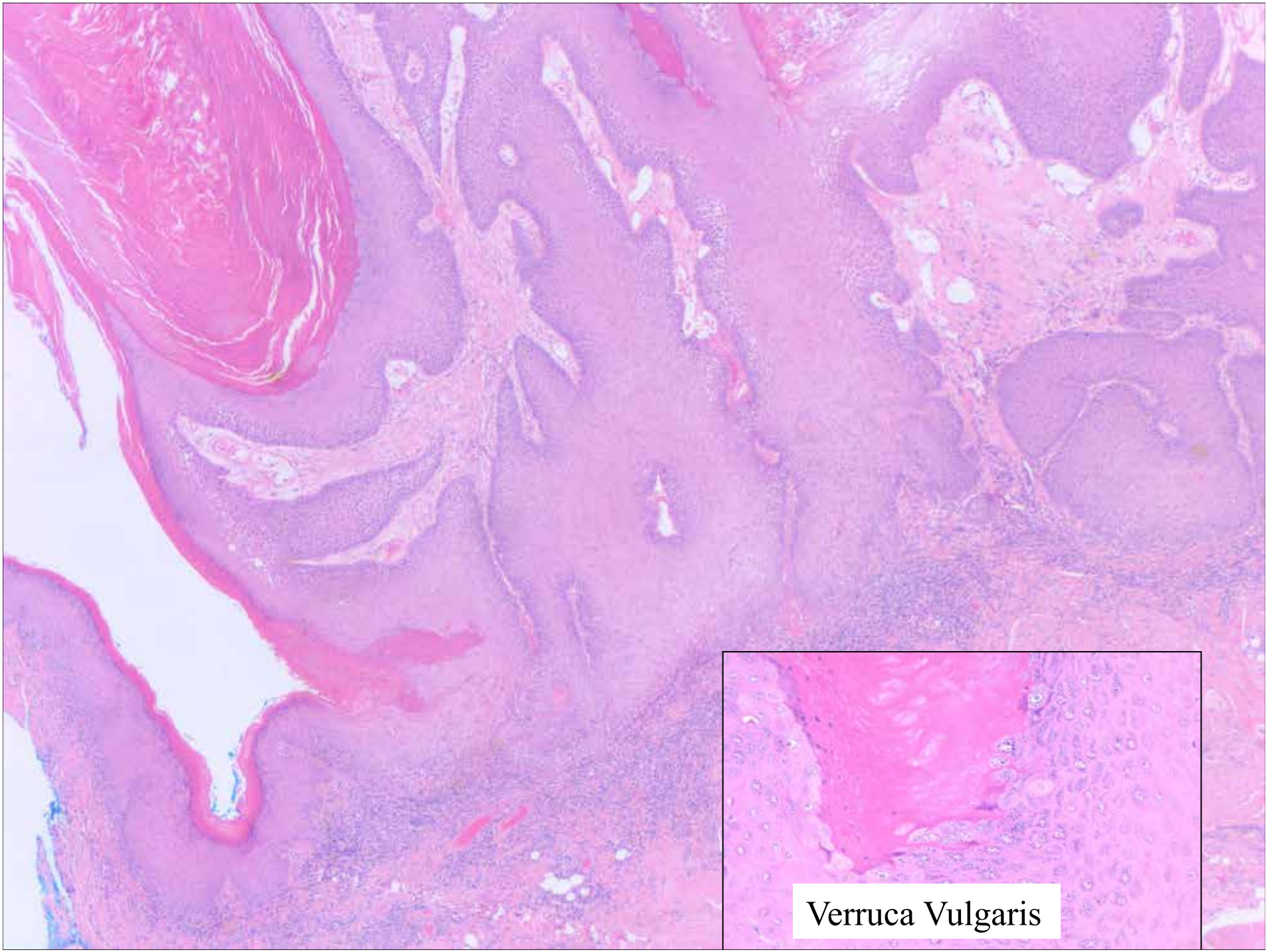
Candida in H&N



- NOT synonymous with reactive or benign.
- NOT necessarily the cause of the lesion so avoid making it sound like a diagnosis.
- Grows well on ulcerated and keratotic surfaces eg. radiated mucosa.
- Ideally you should have the whole lesion to call it “hyperplasia”

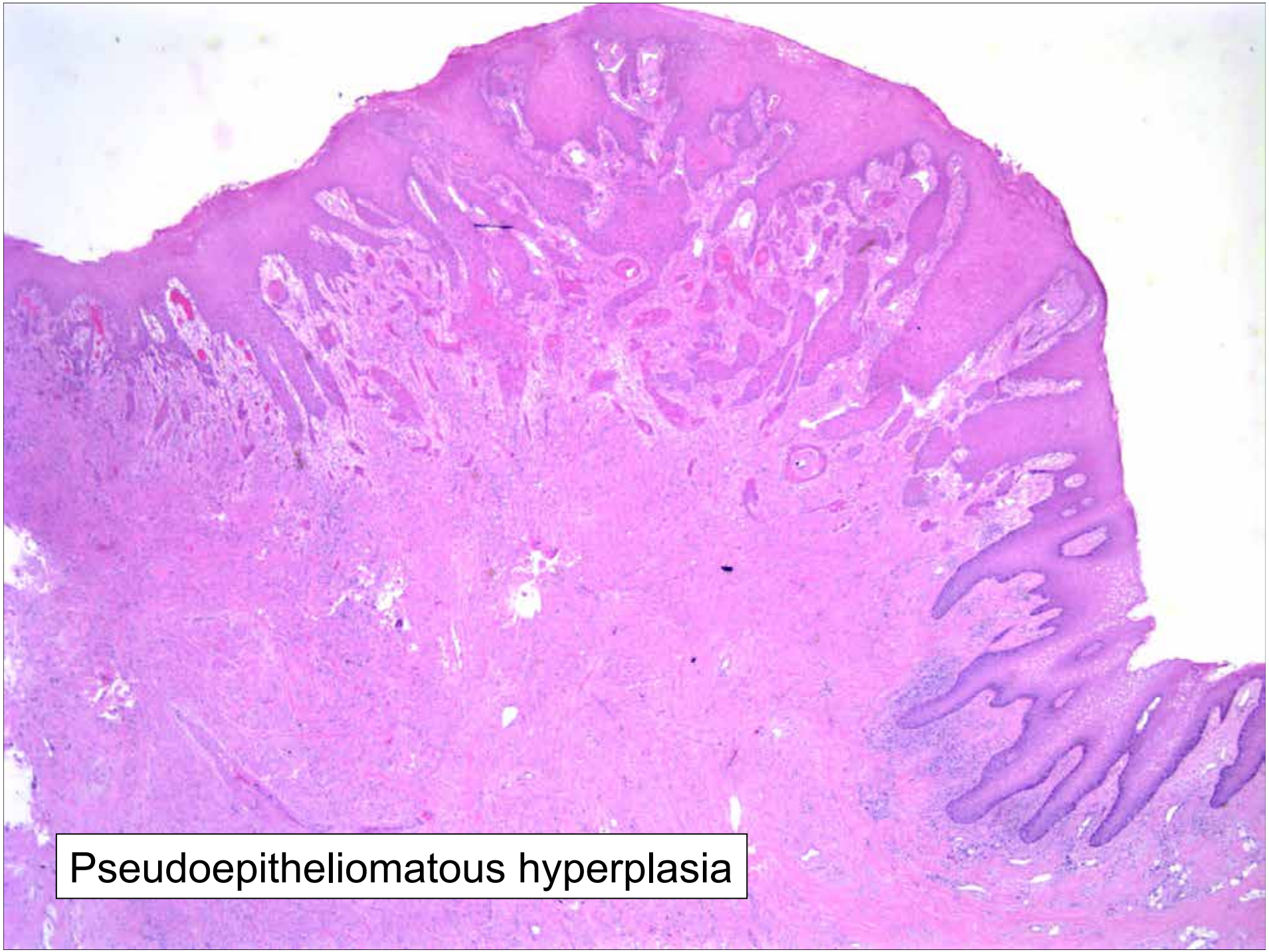


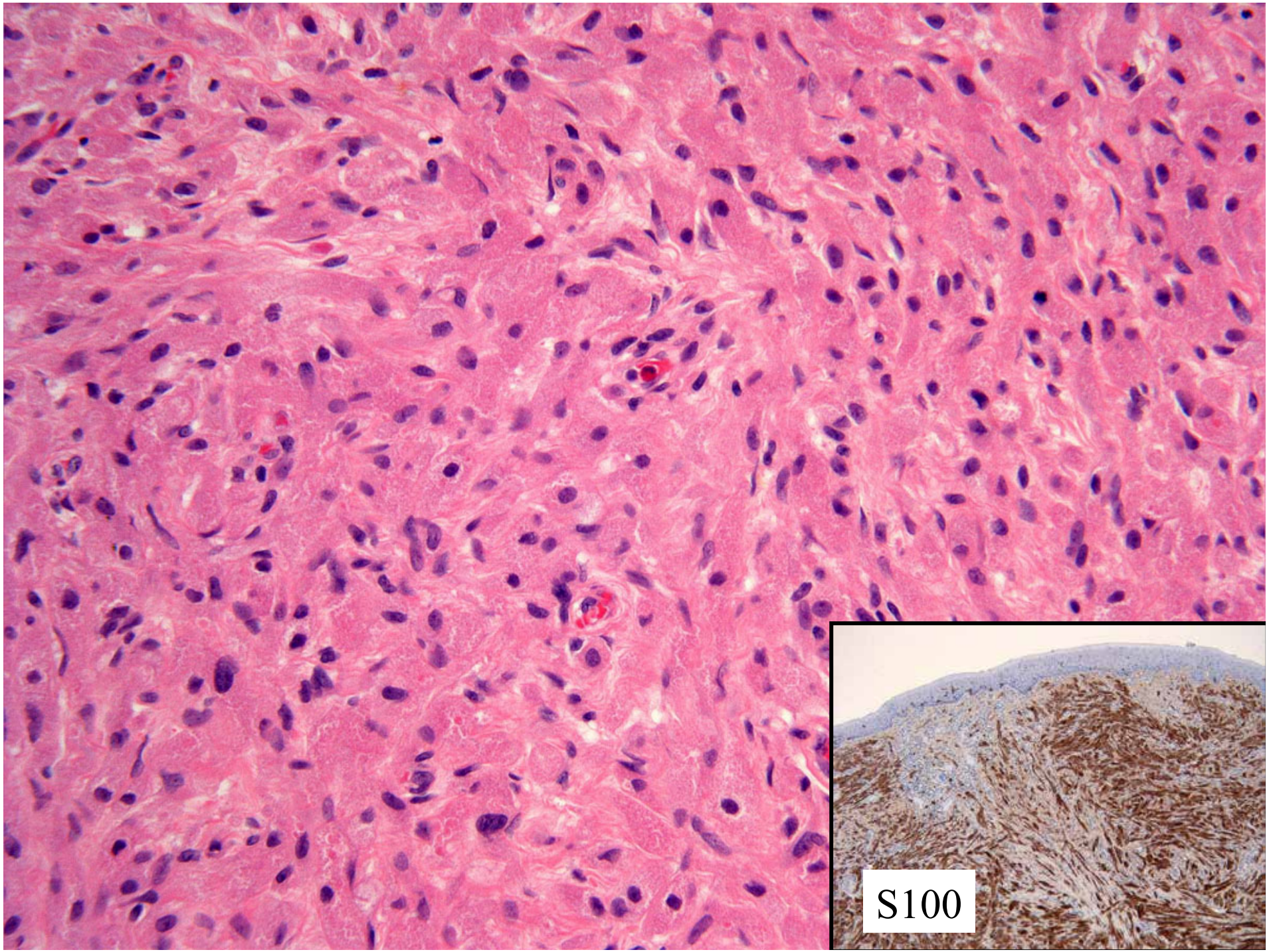
5 mm Anterior dorsum of tongue: previous SCC with ORN 7 years ago

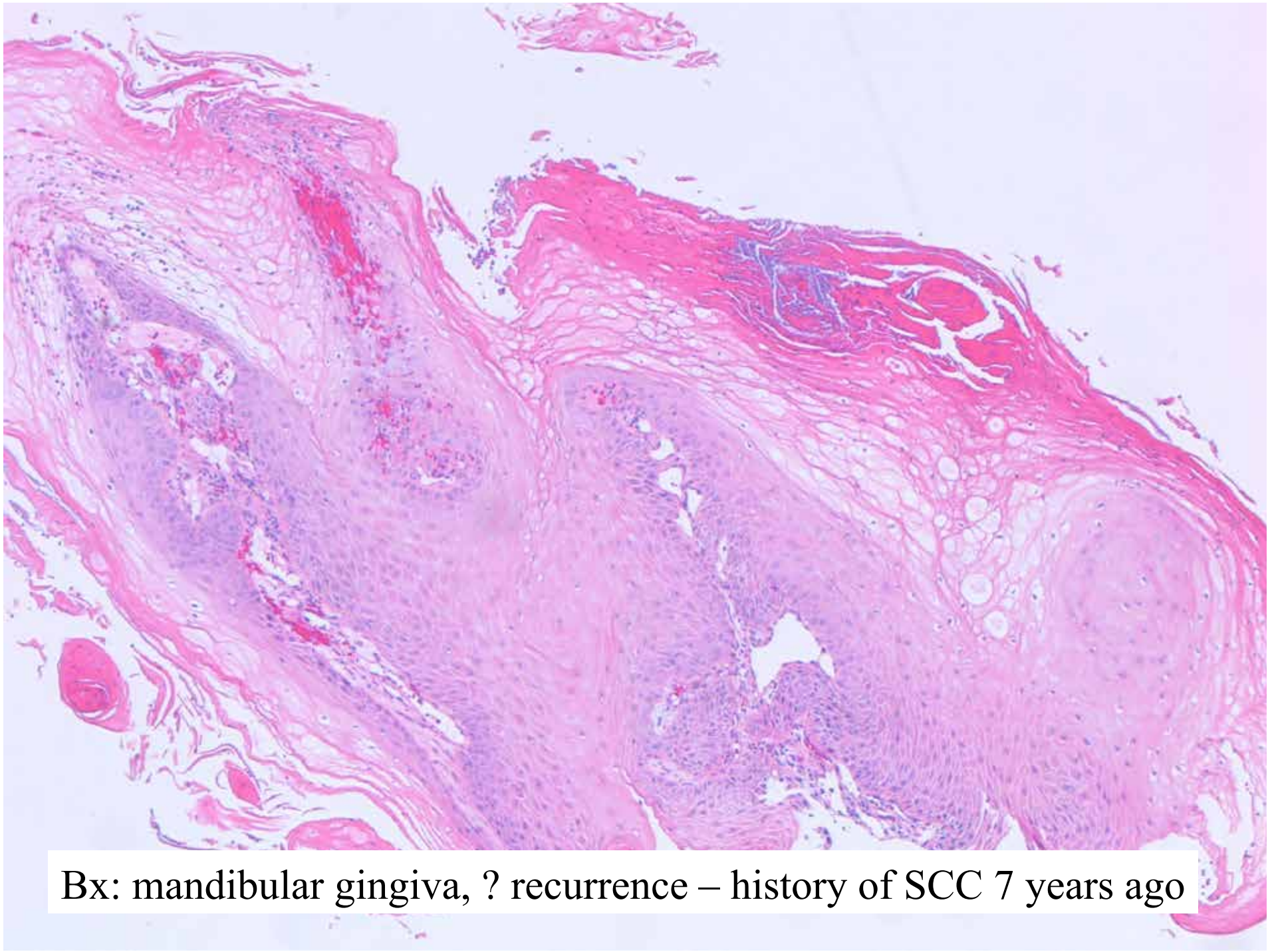

Verruca Vulgaris

“Clinical Pearl”

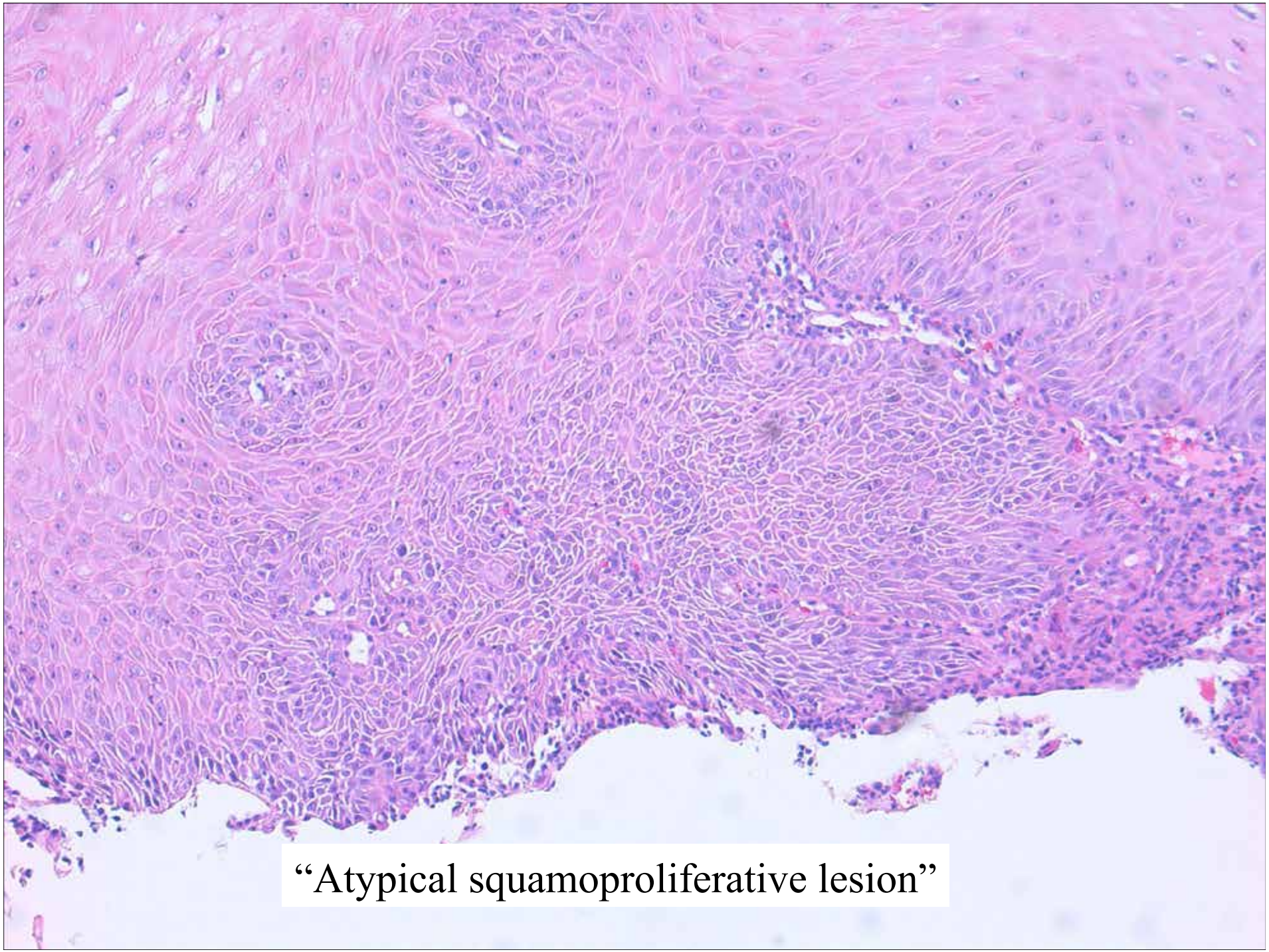
- Isolated midline dorsal tongue lesions are almost never malignant

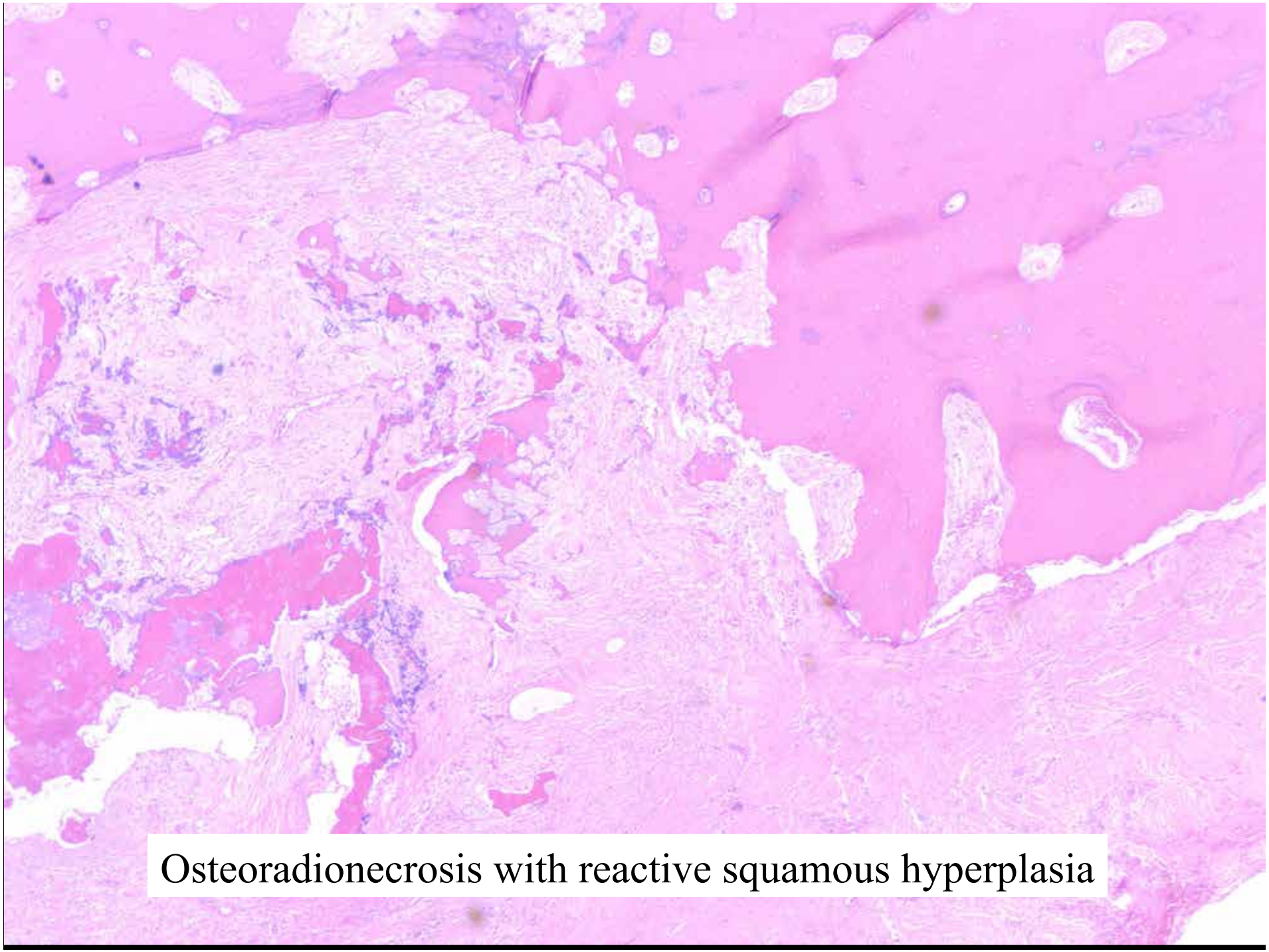

Pseudoepitheliomatous hyperplasia


S100

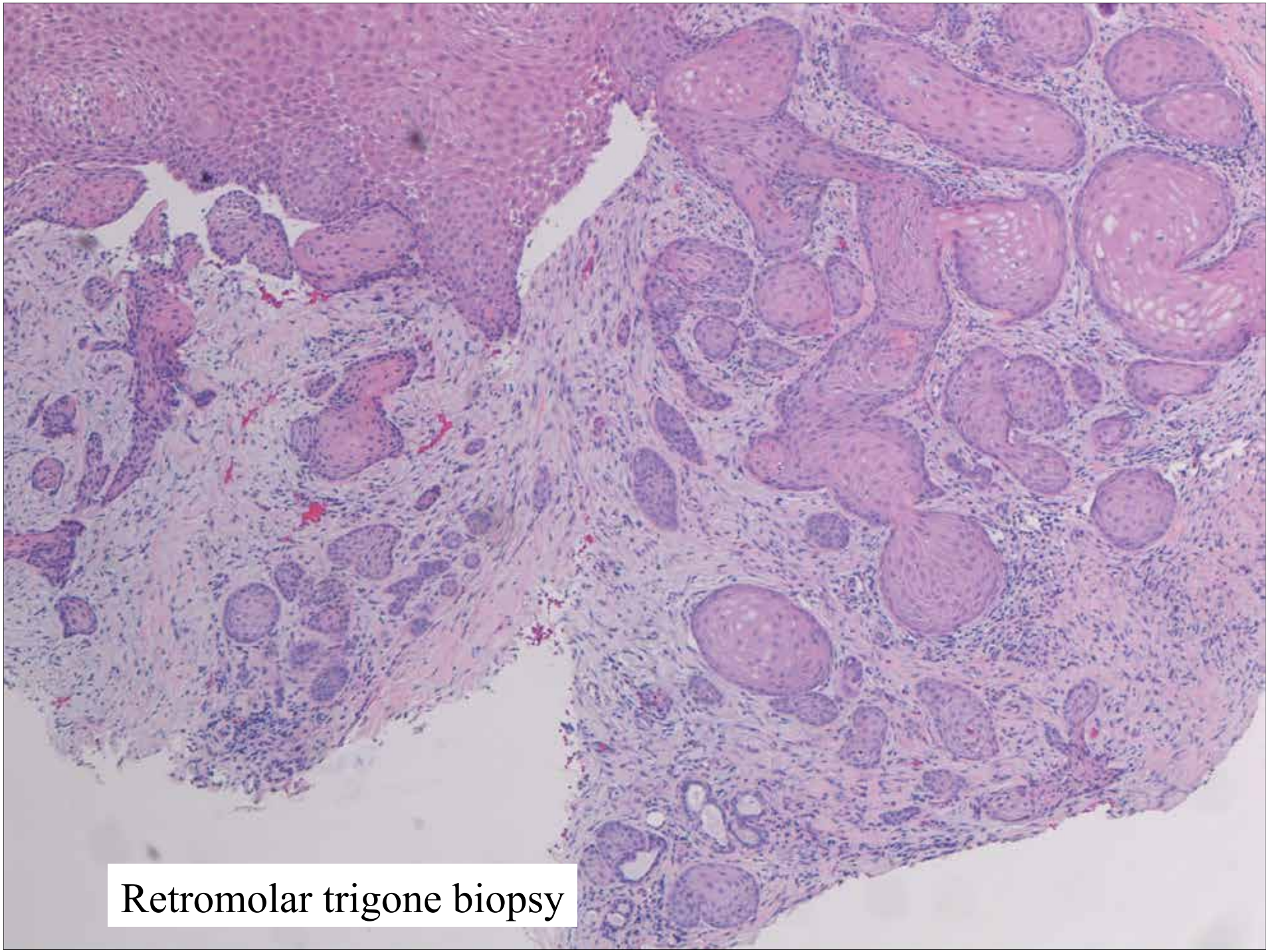


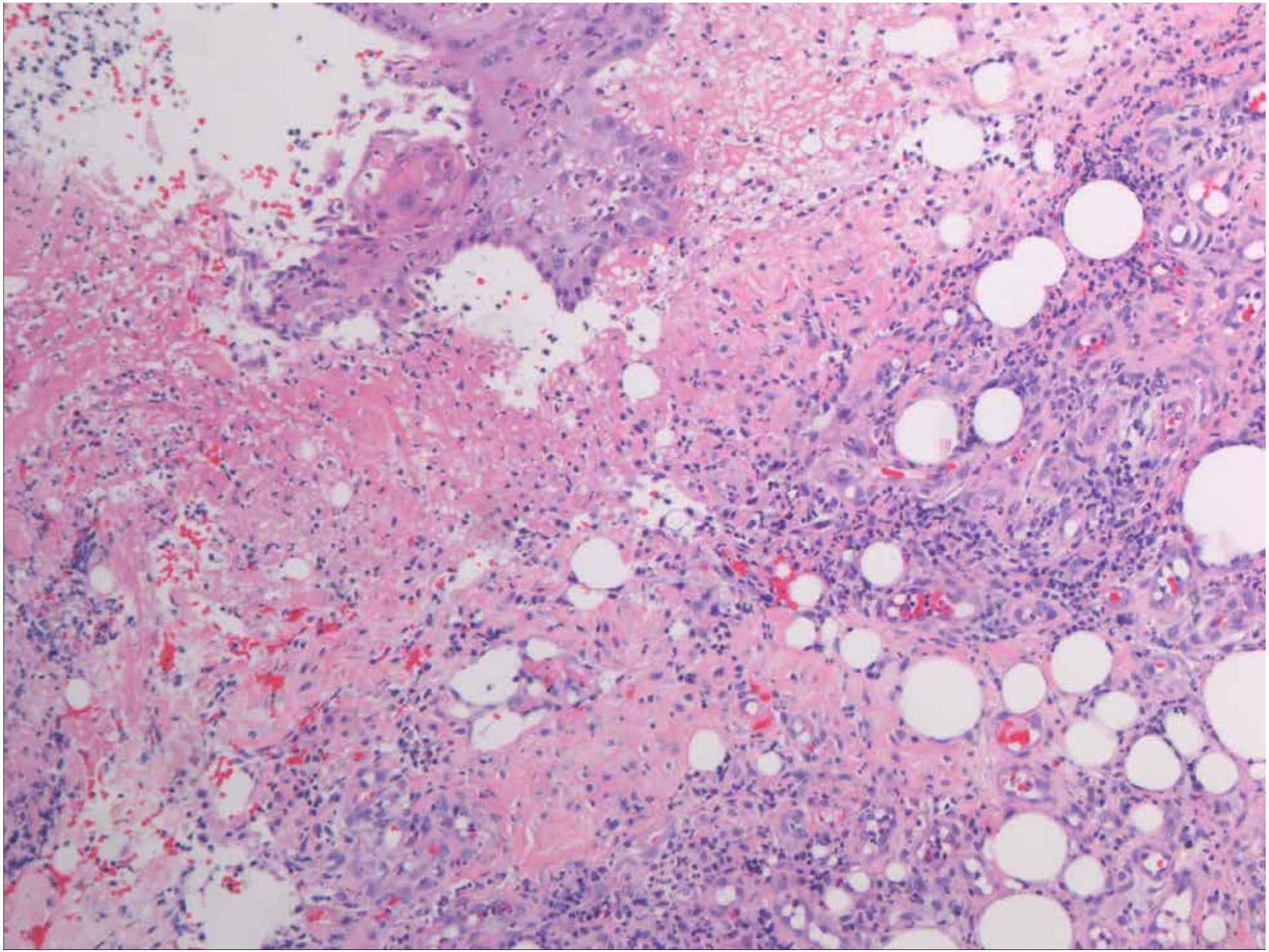
Bx: mandibular gingiva, ? recurrence – history of SCC 7 years ago

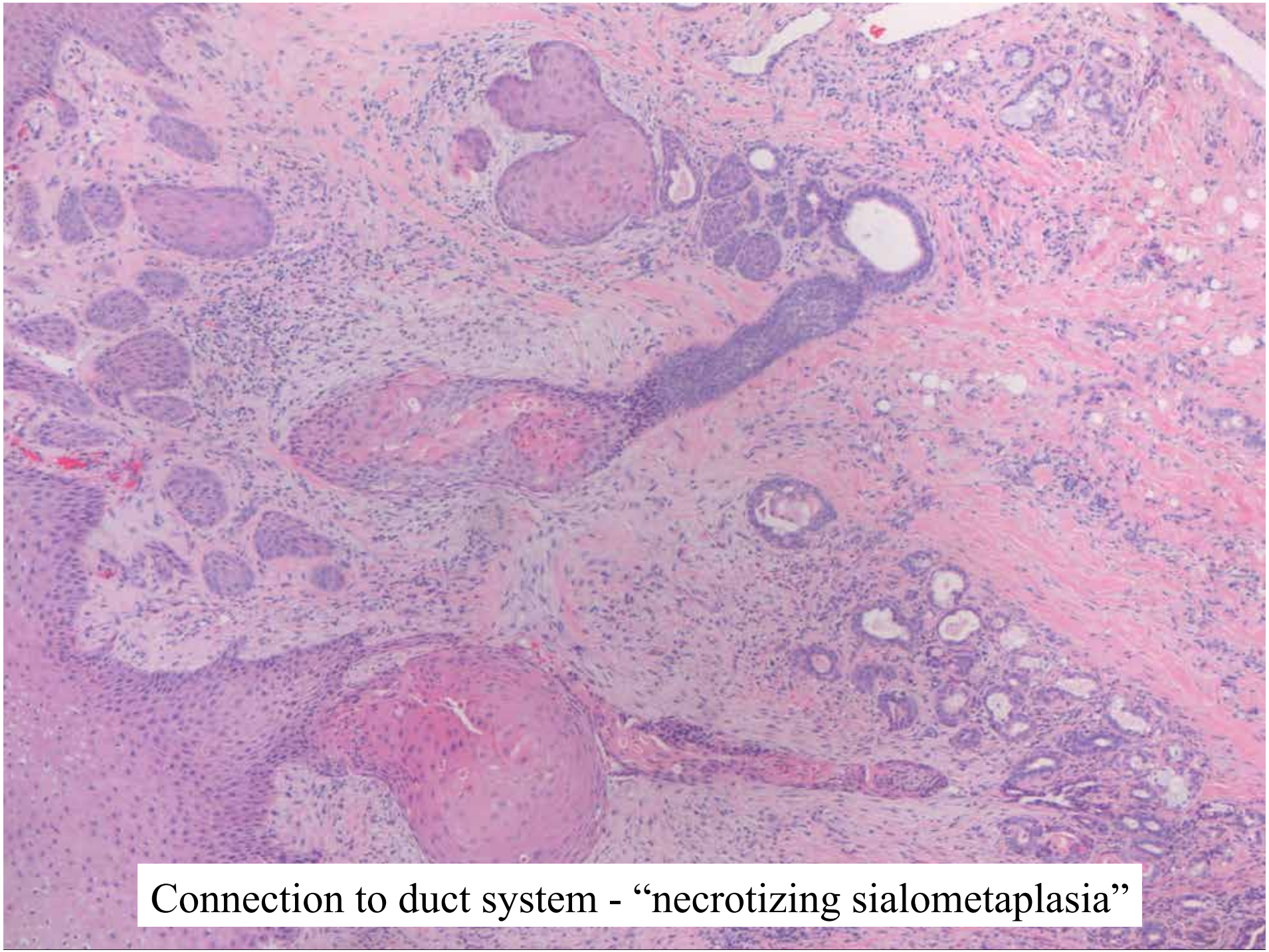

“Atypical squamoproliferative lesion”

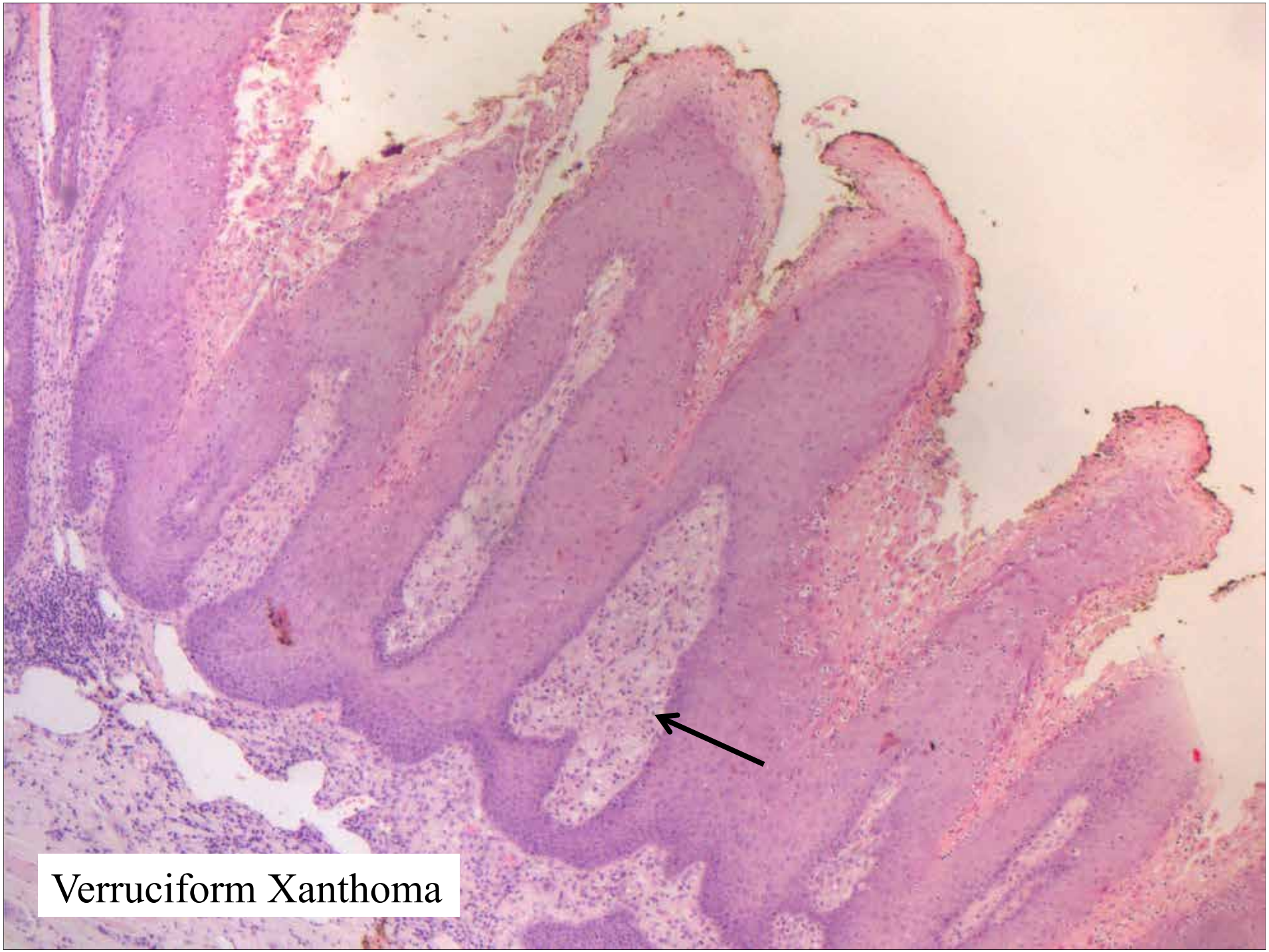


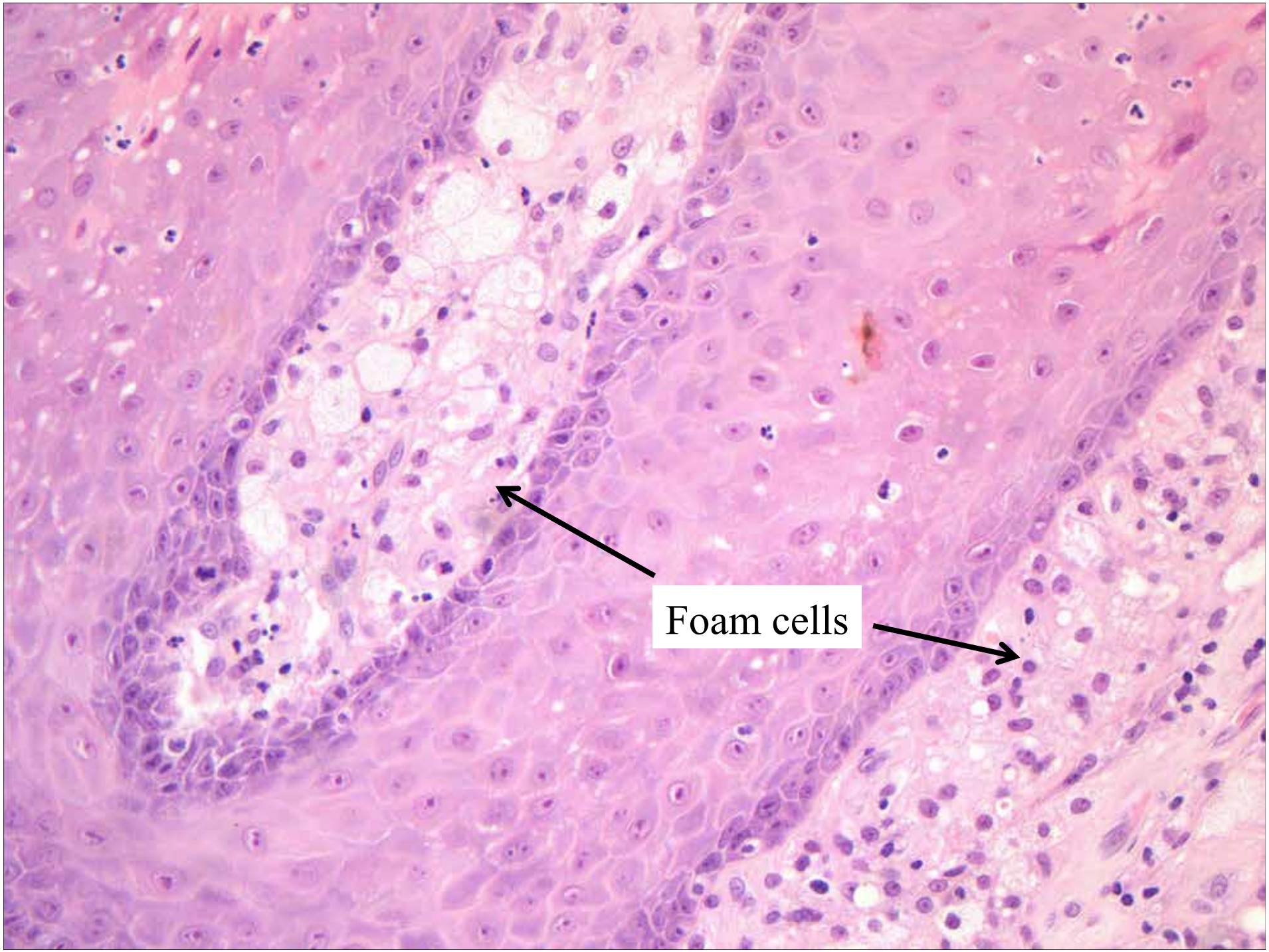
Osteoradionecrosis with reactive squamous hyperplasia


Retromolar trigone biopsy




Connection to duct system - “necrotizing sialometaplasia”


Verruciform Xanthoma


Foam cells

Today's "Leaps of Faith" and Take home messages

- Resist "mild dysplasia"
- DDX: Reactive/hyperplasia vs "WD SCC"
- High-grade dysplasia vs MD SCC (microinvasion)
- Oropharynx is NEVER an in-situ lesion
- Do not call something "hyperplasia" on an incomplete biopsy
- Midline dorsal tongue lesions are usually benign
- Candida is NOT a diagnosis!!!