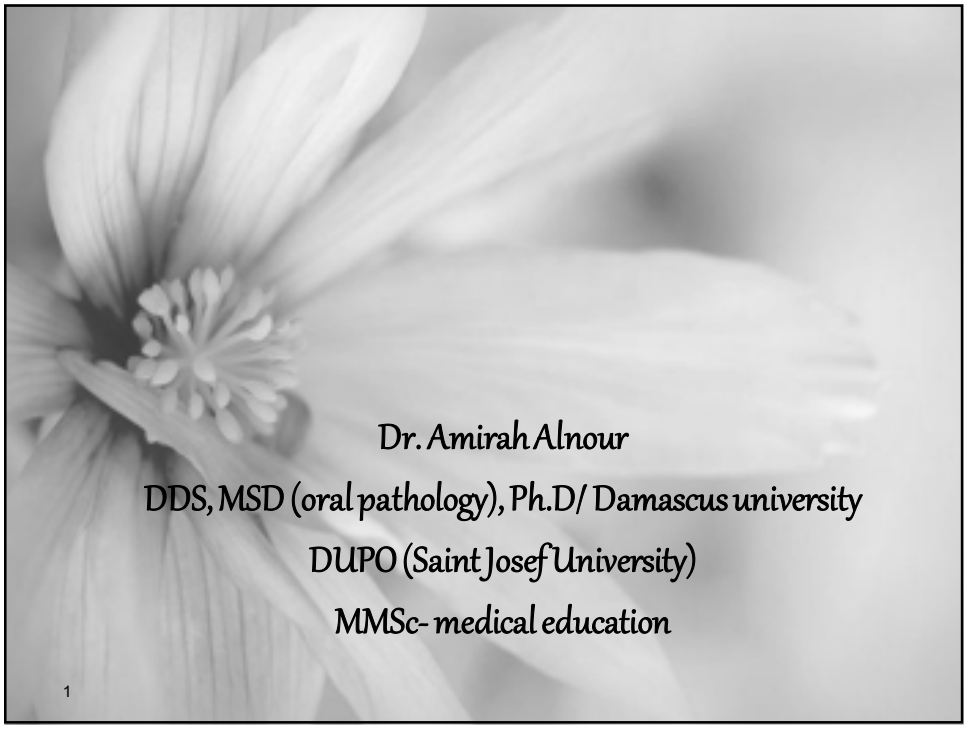
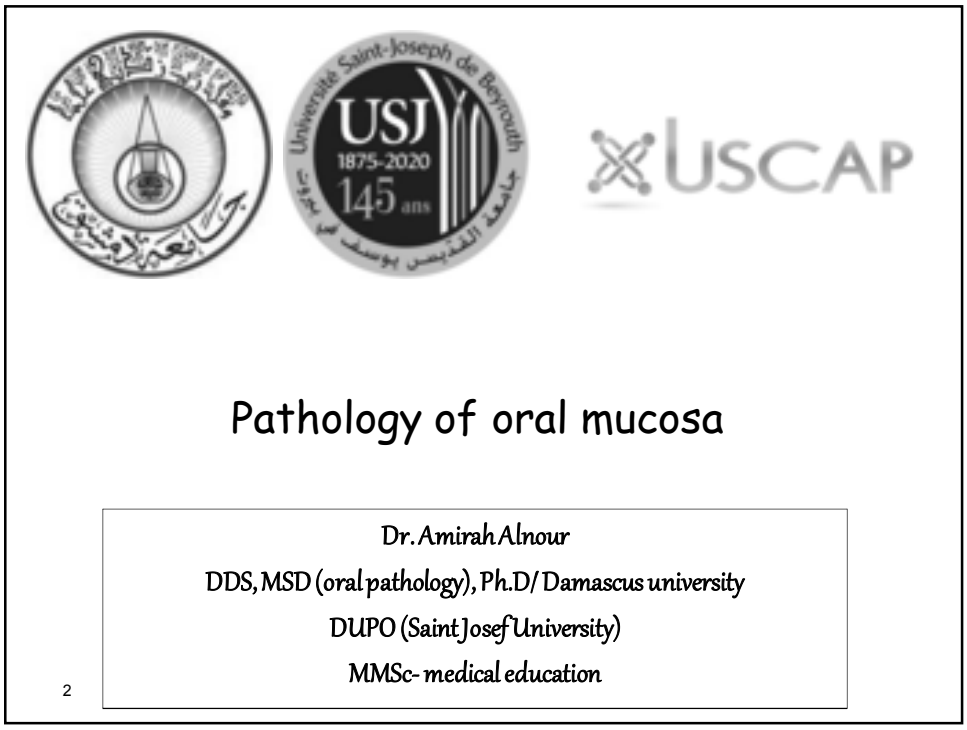

Dr. Amirah Alnour
DDS, MSD (oral pathology), Ph.D/ Damascus university
DUPO (Saint Josef University)
MMSc- medical education
1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Pathology of oral mucosa
Dr. Amirah Alnour
DDS, MSD (oral pathology), Ph.D/ Damascus university
DUPO (Saint Josef University)
MMSc- medical education
2

Lecture outlines

-Clinical view of oral lesions

-Oral potentially malignant disorders (OPMDs) & Oral epithelial dysplasia

- Atypical Verrucous Hyperplasia/ Keratosis/Proliferative Verrucous Leukoplakia

- Pitfalls in Diagnosis of OED and other OPMDs

- HPV- related oral epithelial dysplasia

- Histopathology reporting guide of oral cavity carcinoma recommendation from ICCR dataset

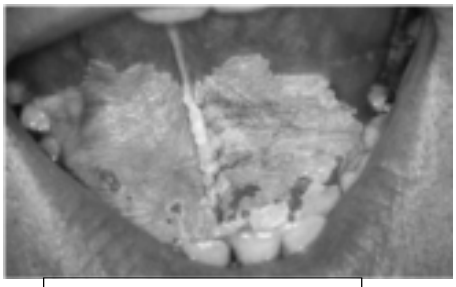
3

Clinical classification

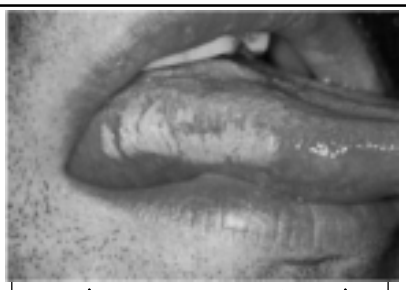
1. White lesions
2. Red lesions
3. Black and brown lesions
4. Vesiculobullous Lesions
5. Ulceration lesions
6. Papillary lesions

4

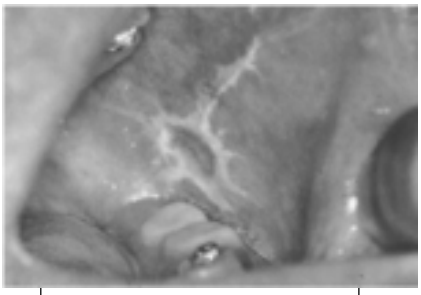
1. White lesions



Leukoplakia



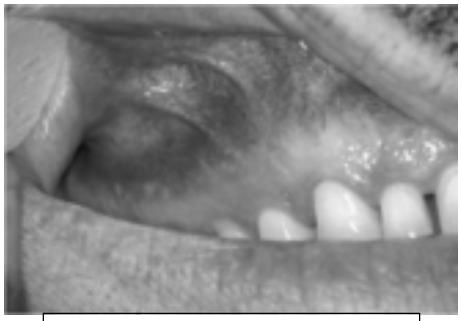
Hairy Leukoplakia



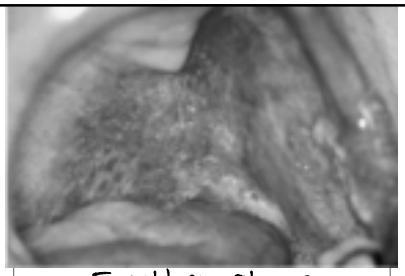
Lichen planus

5

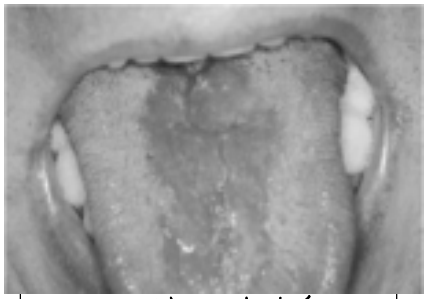
2. Red lesions



Sturge-Weber Angiomatosis



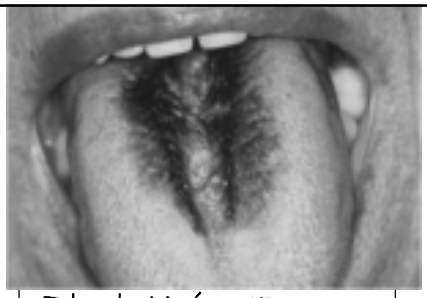
Erythematous Candidiasis



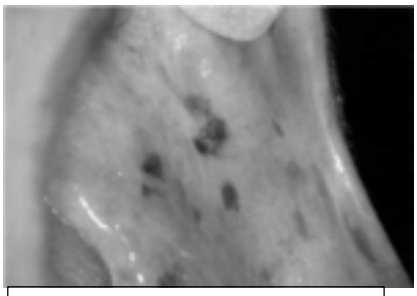
Erythroplakia

6

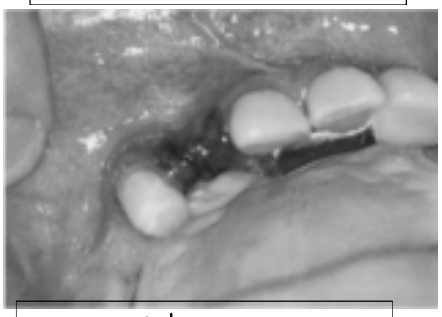
3. Black and brown lesions



Black Hairy Tongue



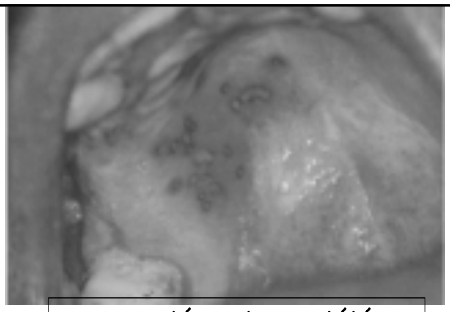
Peutz-Jeghers Syndrome



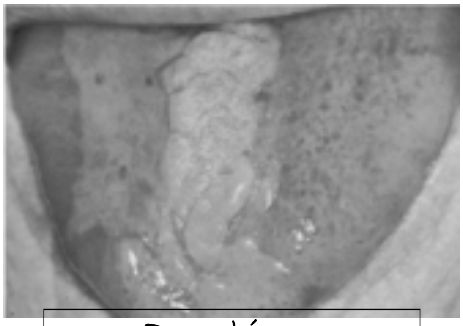
Melanoma

7

4. Vesiculobullous Lesions



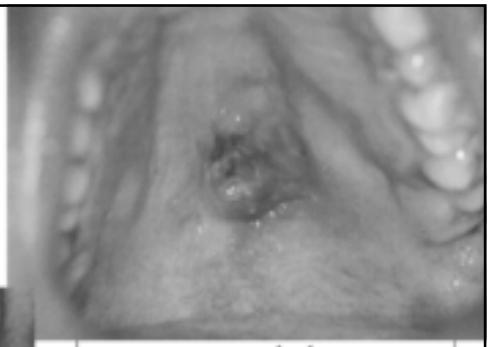
Herpetic Stomatitis



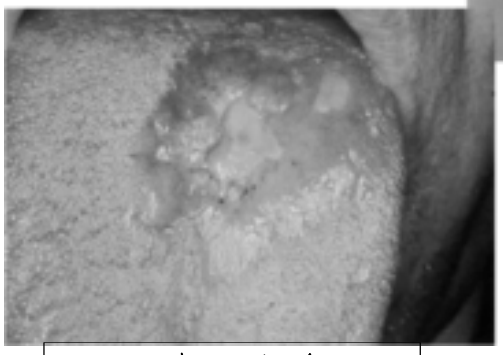
Pemphigus

8

5. Ulceration lesions



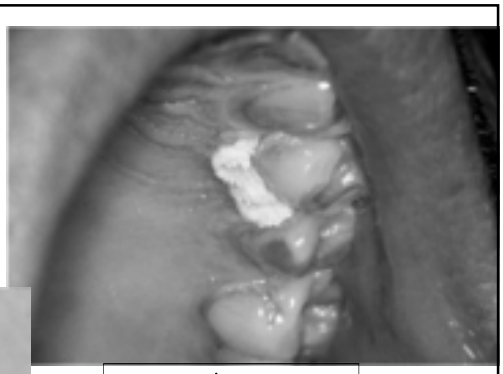
Necrotizing Sialadenometaplasia



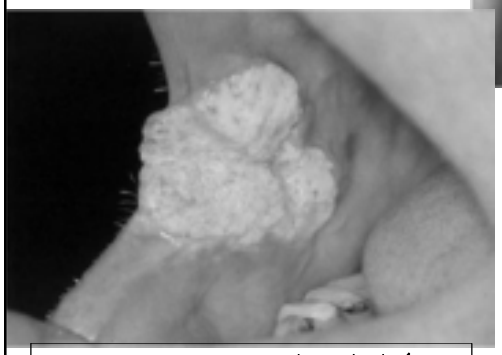
Tuberculosis

9

6. Papillary lesions

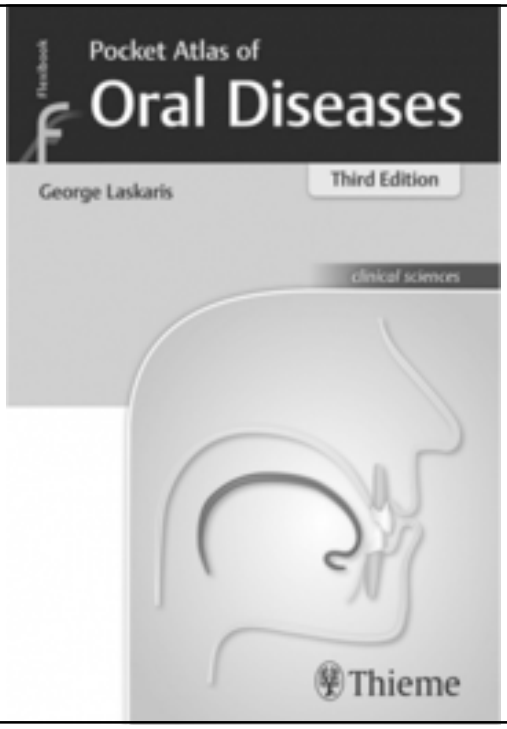


Papilloma



Verrucous Leukoplakia

10



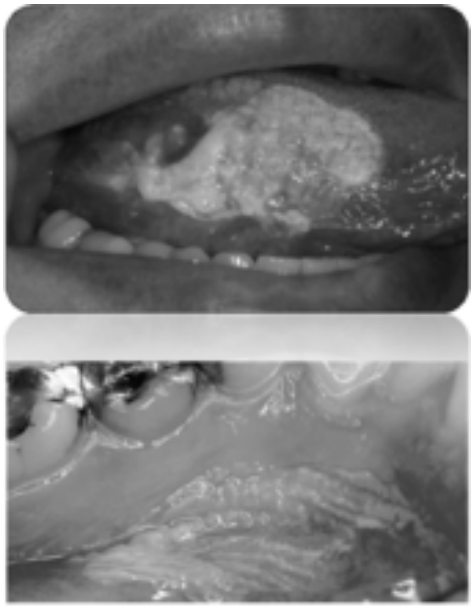
11

Oral Potentially Malignant Disorders (OPMDs)

12

OPMDs

Defines a *group* of lesions that carries an increased *risk of cancer* progression.

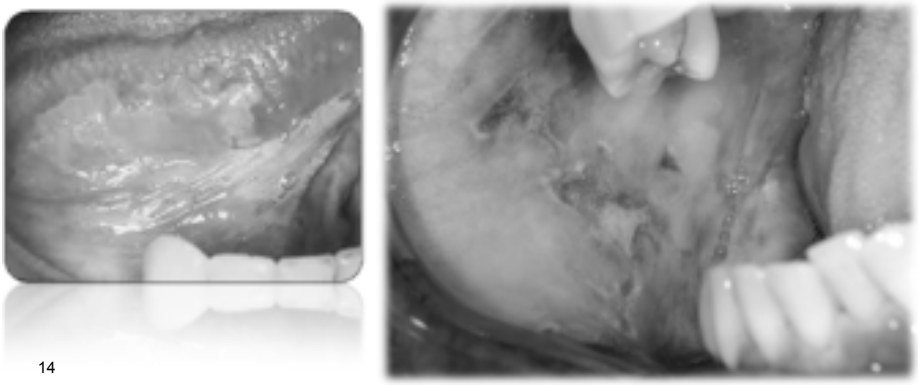


13

2017 *World Health Organization* (WHO) definition of OPMDs is:

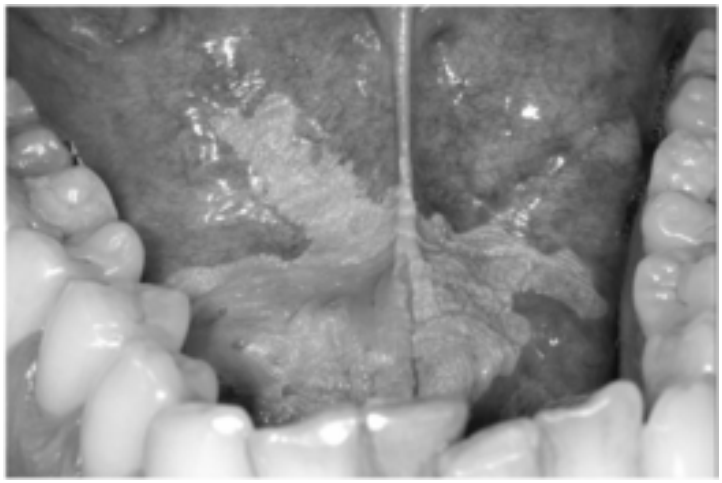
"clinical presentations that carry a *risk of cancer* development in the oral cavity, whether in:

1. a clinically definable precursor lesion
2. clinically normal mucosa.



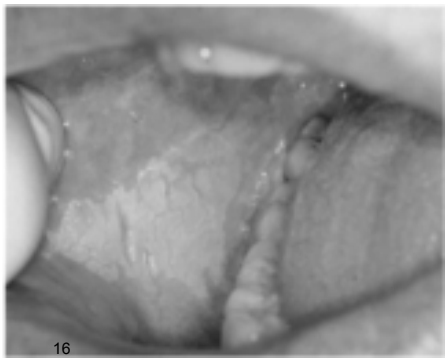
14

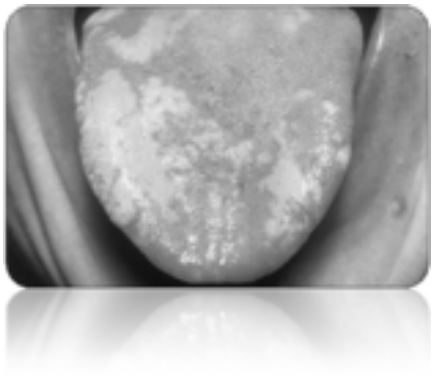
Oral leukoplakia, the *most common* OPMD, has a 1% prevalence and reported malignant transformation rates of 2% to 5%.



15

The *2017 WHO definition* of leukoplakia is “white plaques of *questionable risk*, once other specific conditions and *other OPMDs* have been *ruled out*

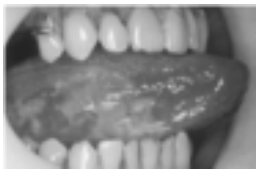
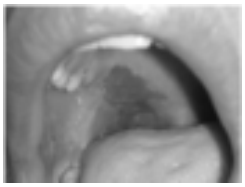
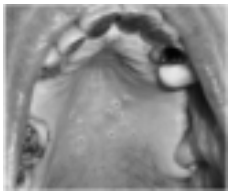
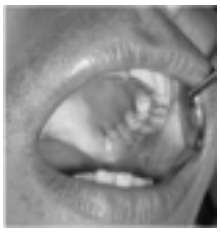
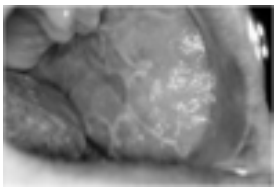




16

Other OPMDs include :

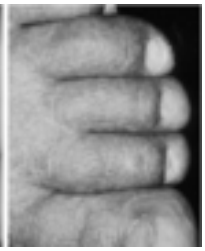
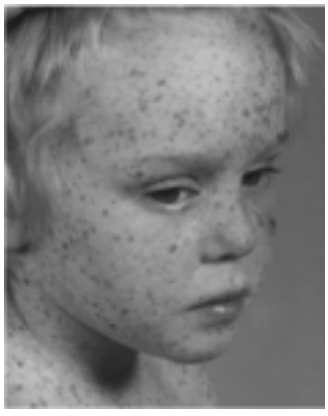
1. Erythroplakia,
2. Erythroleukoplakia,
3. Submucous fibrosis,
4. Lesions of reverse smokers,
5. Lichen planus

17

Rare *inherited genetic syndromes* that are associated with elevated *oral cancer* incidence:

1. Fanconi anemia,
2. Dyskeratosis congenita,
3. Xeroderma pigmentosa

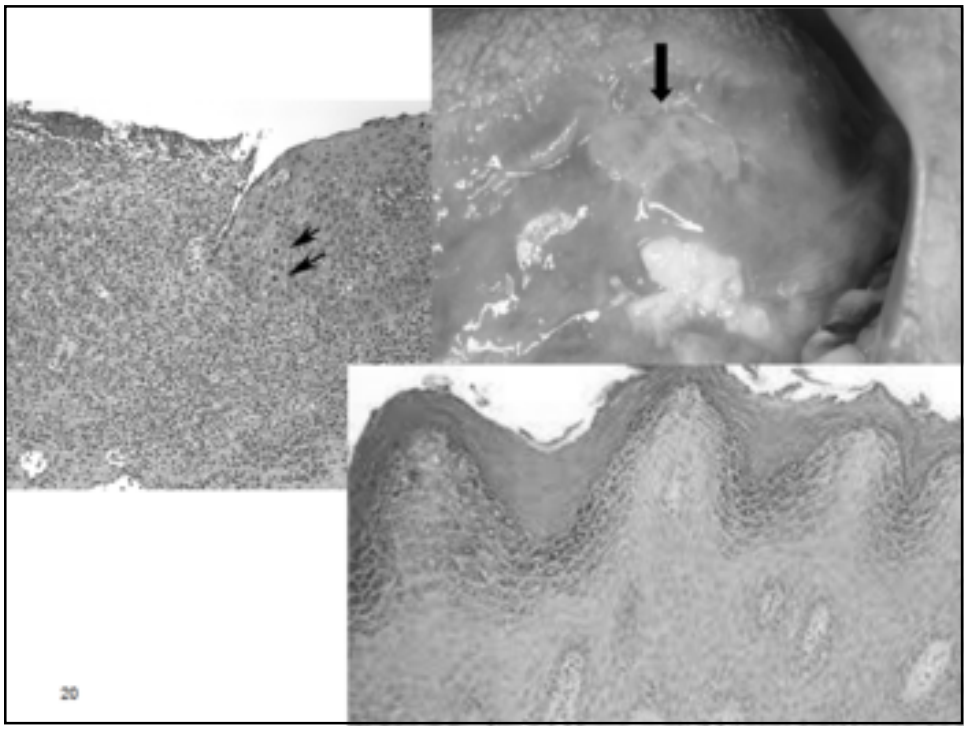




18

Oral Epithelial Dysplasia

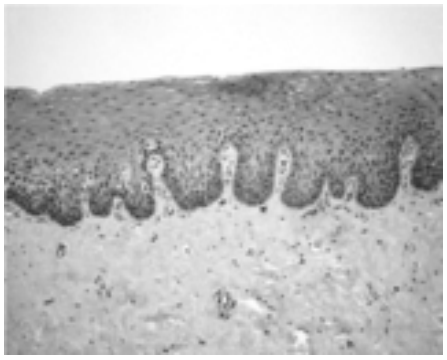
OED

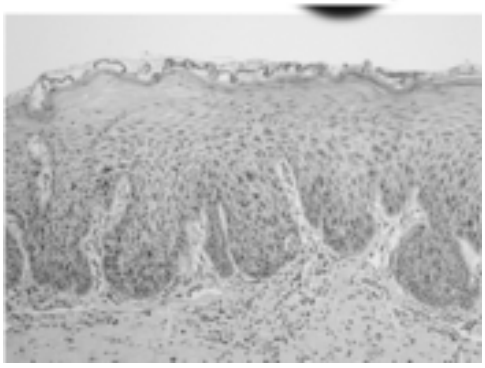
19



20

Grading of oral dysplasia suffers from both intrarater variability and interobserver *variability*.





21

The WHO (2017) grading:

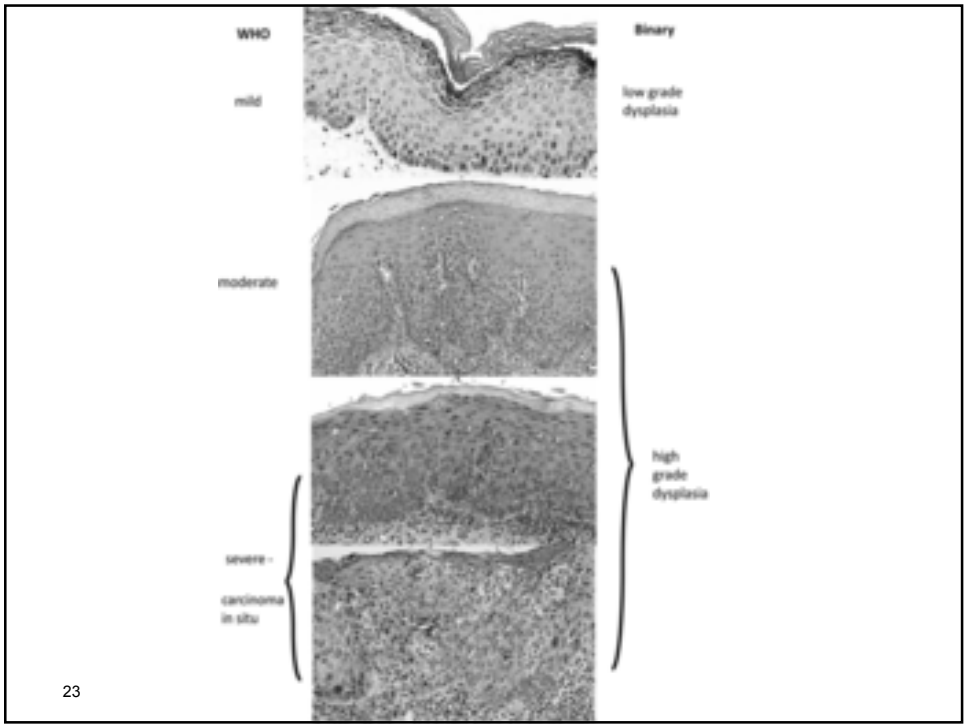
1. Mild dysplasia
2. Moderate dysplasia
3. severe dysplasia

Binary grading system:

1. Low-grade dysplasias
2. High-grade dysplasias

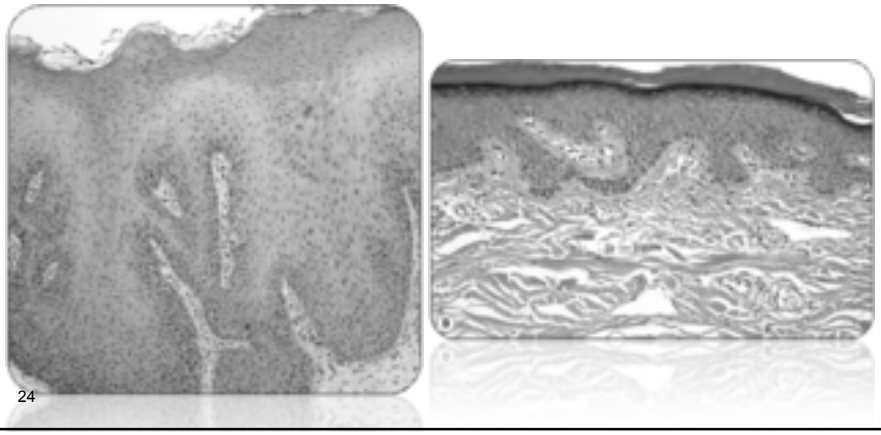
Carcinoma in situ is synonymous with *severe dysplasia* in this grading system.

22



23

Hyperplasia and/or *hyperkeratosis* without architectural or cytologic atypia is *not considered as OPMDs.*



24

There are some ***moderate dysplasias*** that may fall into the *low-grade dysplasia* category when using the binary system.

BUT, ***WHO*** has recommended that *more validation* is required before adopting the *binary* system.

25

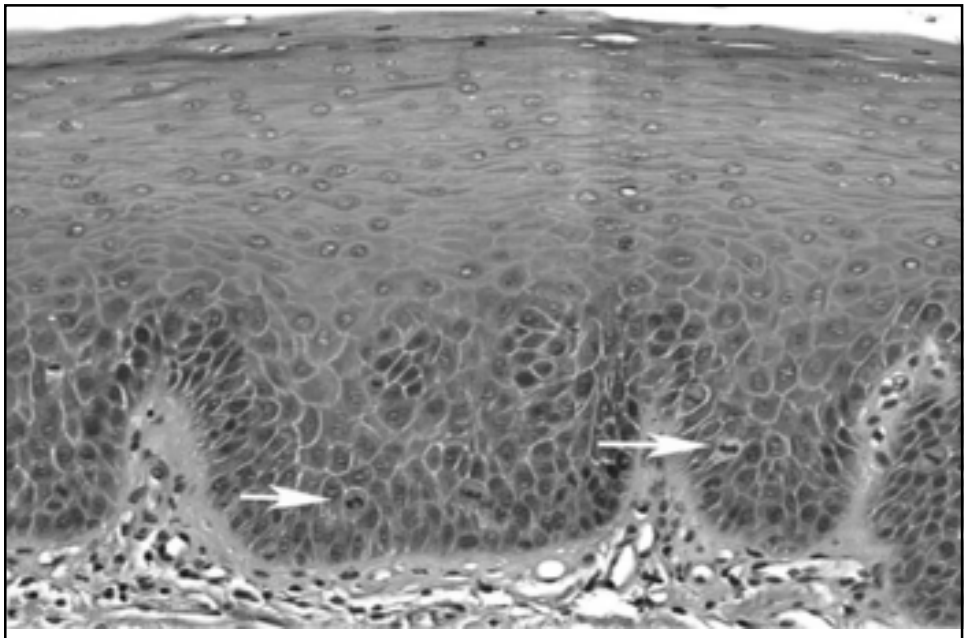
Architectural features	Cytologic feature
Loss of basal cell polarity	Abnormal variation in nuclear shape (nuclear pleomorphism)
Increased number of mitotic figures	Abnormal variation in cell shape (cellular pleomorphism)
Premature keratinization in single cells (dyskeratosis)	Atypical mitotic figures
Loss of epithelial cell cohesion	Hyperchromasia

26

Note

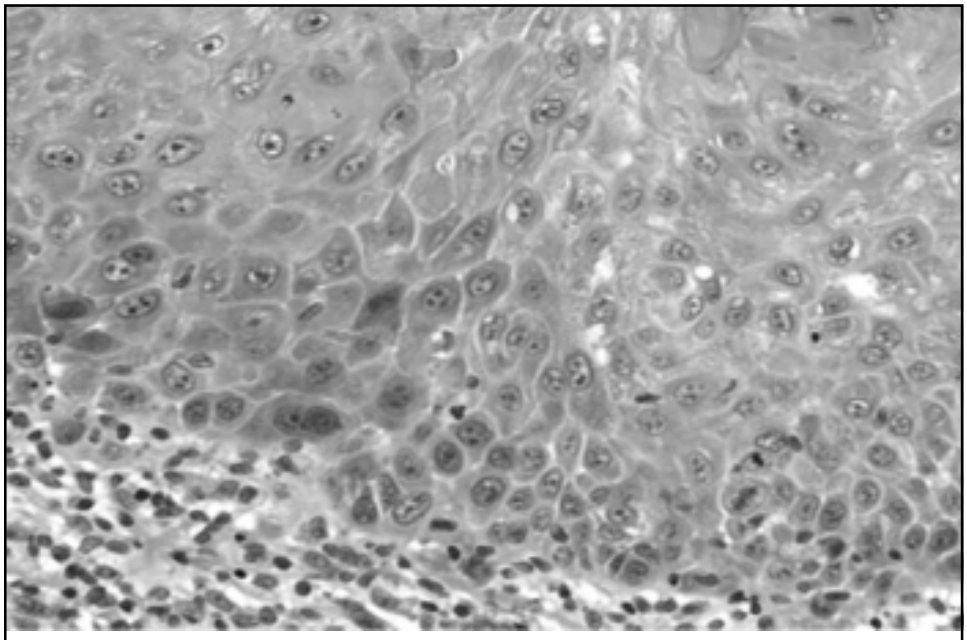
Severe cytonuclear atypia and dyskeratosis may be presented and restricted to the bottom third of an epithelial surface. Such lesions may give rise to so-called " drop-down carcinomas that seemingly drop from the base of relatively mature bland epithelium without gradual transition.

27



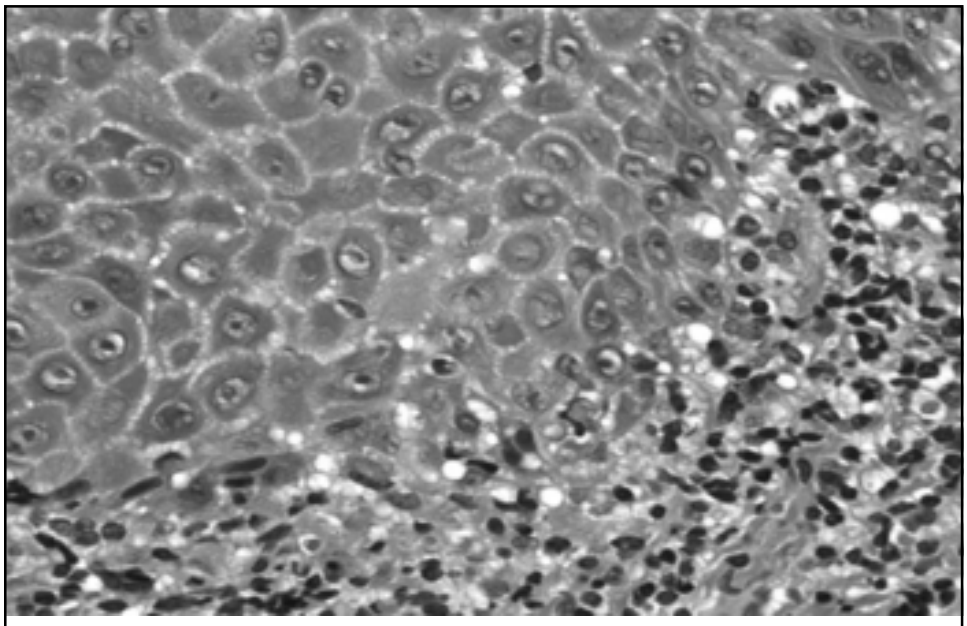
budding of the rete and increased number of mitotic figures

28



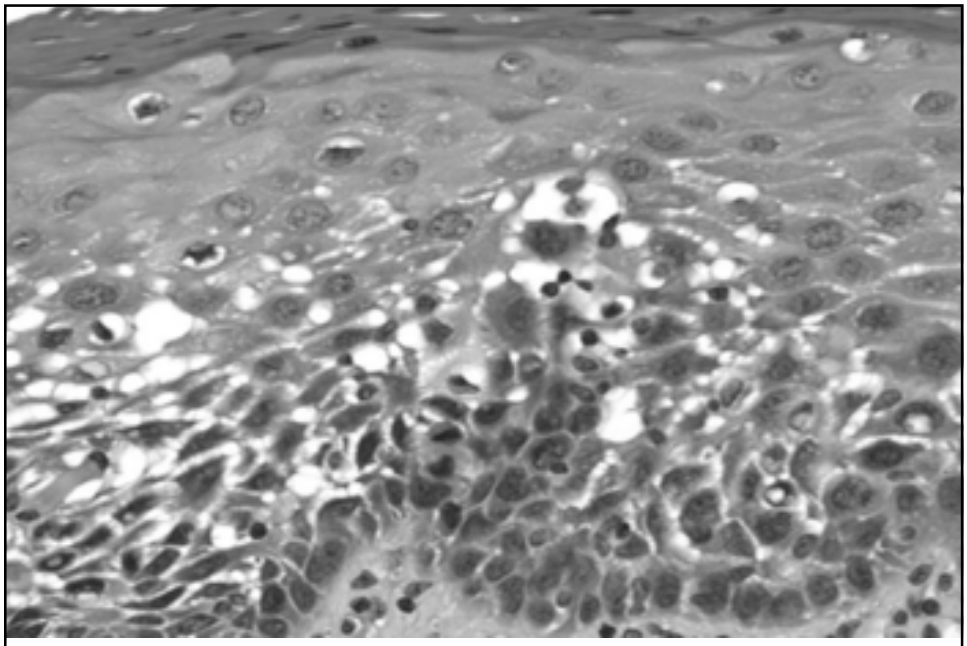
loss of basal cell polarity

29

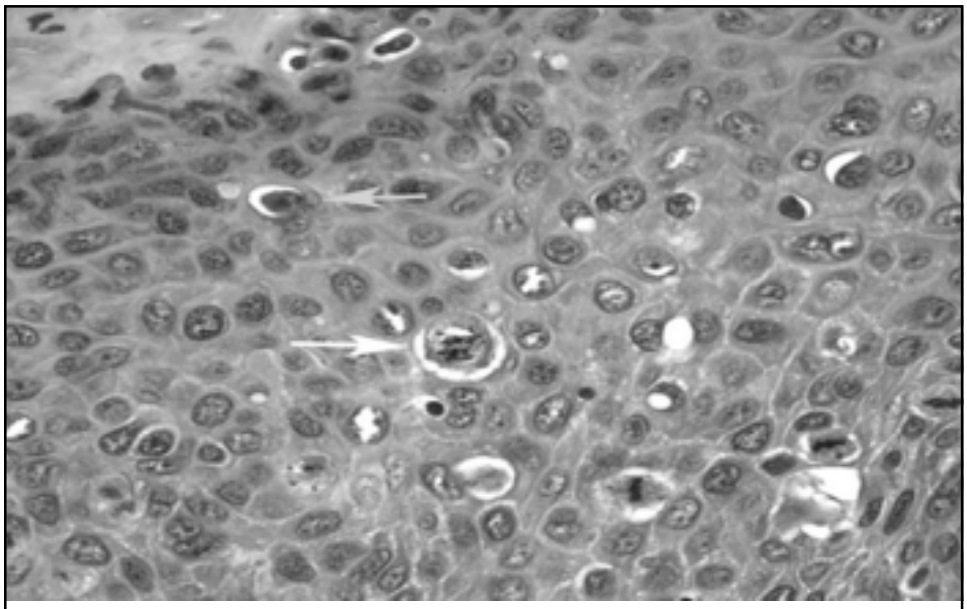


premature keratinization seen in the lower third of the epithelium along with loss of basal cell polarity

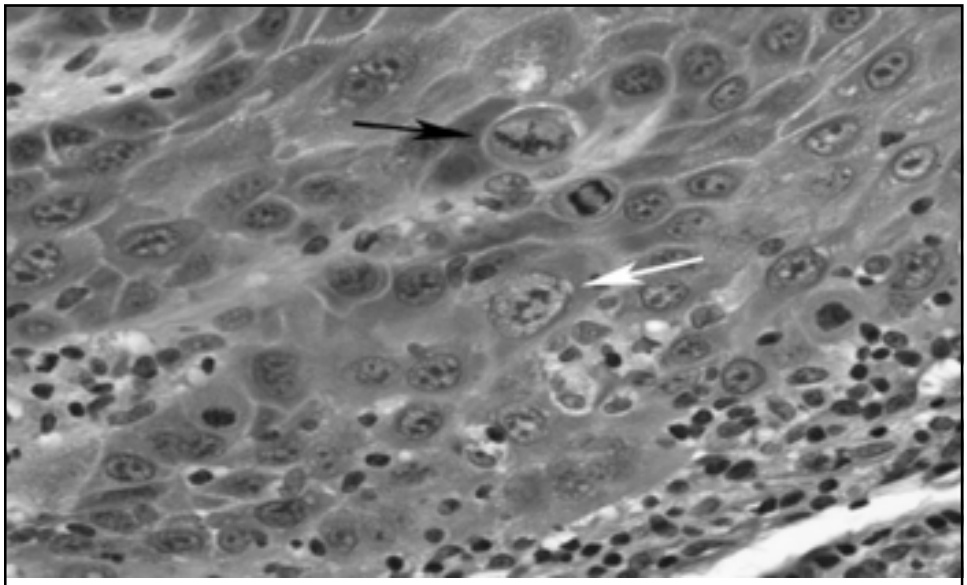
30



31 irregular epithelial stratification and loss of epithelial cell cohesion.



32 atypical mitotic figures (white arrow) and apoptotic cells characterized by eosinophilic cytoplasm and pyknotic nucleus (blue arrow).



marked cellular and nuclear pleomorphism, multiple nucleoli (white arrow), atypical mitotic figures (black arrow), increased nuclear/cytoplasmic ratio and hyperchromasia.

33

Oral Oncology (2006) 42, 987–993

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ORAL ONCOLOGY

ELSEVIER

Evaluation of a new binary system of grading oral epithelial dysplasia for prediction of malignant transformation

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Received 22 November 2005; accepted 9 December 2005

KEYWORDS
Oral epithelial dysplasia;
Grading systems;
Prediction;
Malignant transformation;
Potentially premalignant oral lesions

Summary The aim of this paper is to assess the reproducibility of a novel binary grading system (high/low risk) of oral epithelial dysplasia and to compare it with the WHO classification 2005. The accuracy of the new system for predicting malignant transformation was also assessed. Ninety-six consecutive oral epithelial dysplasia biopsies with known clinical outcomes were retrieved from the Oral Pathology archives. A pilot study was conducted on 28 cases to determine the process of classification. Four observers then reviewed the same set of H&E stained slides of 68 oral dysplastic lesions using the two grading systems blinded to the clinical outcomes. The overall inter-observer unweighted and weighted kappa agreements for the WHO grading system were $K_u = 0.22$ (95% CI: 0.11–0.35), $K_w = 0.63$ (95% CI: 0.42–0.78), respectively, versus $K = 0.50$ (95% CI: 0.35–0.67) for the new binary system. Interestingly, all pathologists showed satisfactory agreement on the distinction of mild dysplasia from severe dysplasia and from carcinoma in situ using the new WHO classification. However, assessment of moderate dysplasia remains problematic. The sensitivity and specificity of the new binary grading system for predicting malignant transformation in oral epithelial dysplasia were 85% and 80%, respectively and the accuracy was 82%. The new binary grading system complemented the WHO Classification 2005 and may have merit in helping clinicians to make critical clinical decisions particularly for the cases of moderate dysplasia. Histological grading of dysplasia using established criteria is a reproducible prognosticator in oral epithelial dysplasia. Furthermore, the present study showed

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High-risk lesion defined as:

at *least 4 architectural* changes.

Low-risk lesion defined as:

5 cytologic changes

weaknesses in their proposed grading classification: interobserver *agreement to be similar* in both the *WHO* grading system and their *binary* system

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Vol. 115 No. 1 January 2013

The binary oral dysplasia grading system: validity testing and suggested improvement

Paul Nankivell, BA, BMBCh, MRCS,[a,c] Hazel Williams, BDS, FDS, FRCPath, MSc, PhD,[b] Paul Matthews, BSc, FRCPath,[c] Sari Suortamo, FRCPath,[c] David Snead, MBBS, FRCPath,[c] Christopher McConkey, MSc,[d] and Hisham Mehanna, PhD, BMedSc (hons), MBChB (hons), FRCS,[a] Coventry, United Kingdom

Objectives. A binary system is reputed to be superior to the World Health Organization (WHO) system in grading oral

nostic ability over the WHO system. Importantly, it was also reported to improve differentiation of cases of moderate dysplasia into those most or least likely to transform. If true, this has important clinical implications. A workshop coordinated by the WHO Collaborating Center for Oral Cancer and Precancer in the U.K. identified the need for the reproducibility and prognostic ability of this new system to be independently validated. Only 1 study has independently assessed this system, but it neither evaluated the system's reproducibility nor compared its prognostic ability with the existing WHO system.[9]

We had 4 main aims for the present study: first, to validate the prognostic ability of the binary system proposed by Kujan et al. compared with the WHO system and in particular the ability of the binary system to separate moderate dysplasia into high and low risk groups; second, to independently evaluate in a larger cohort the interobserver variability of the binary system compared with the WHO system and establish which features may be contributing to the discrepancies; third, to assess whether the addition of clinical factors to the

Table 1. Individual architectural and cytologic features assessed with the WHO grading system for oral epithelial dysplasia

Architecture	*Cytology*
Stratification	Abnormal variation in nuclear size
Loss of polarity	Abnormal variation in nuclear shape
Drop-shaped rete ridges	Abnormal variation in cell size
Mitoses increased	Abnormal variation in cell shape
Abnormally superficial mitoses	Increased nuclear-cytoplasmic ratio
Premature keratinization	Increased nuclear size
Keratin pearls within rete ridges	Atypical mitotic figures
	Increased nucleoli
	Hyperchromatism

from the initial biopsy showing dysplasia were included. To assess the prognostic abilities of the grading systems, only cases with ≥12 months of follow-up were included in this cohort. Clinical data on tobacco and alcohol use along with lesion morphology and site were obtained from patient records. Ethical approval was granted for this study (10/H1210/9) and the research carried out in compliance with the Helsinki

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Refined the diagnostic threshold for moderate dysplasia using:

1. A *4 architectural*
2. A *4 cytologic* criteria

Found *less interrater variability* when using the *binary system*, rather than the WHO classification.

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- Speight et al. also looked at interobserver OED differences when using the WHO defined criteria creating new quantitative tools, such as oral cancer molecular and morphometric biomarkers.
- agreement of OED grading by 2 experienced oral pathologists ranged from 62% to 81%

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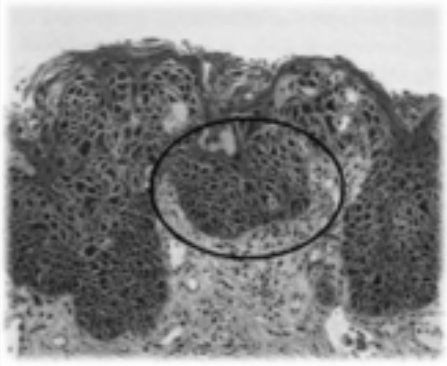
highest agreement among the *pathologists*:

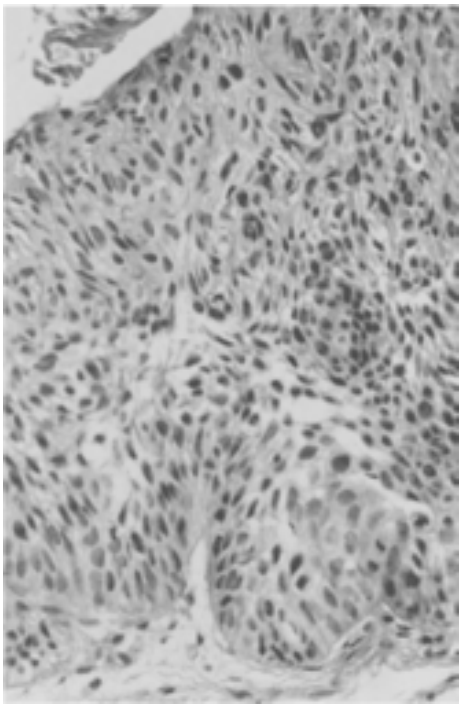
1. increased mitotic figures,
2. drop-shaped rete,
3. increased nuclear size,
4. cellular pleomorphism



39

Architectural features associated with the *clinical outcomes*, only:

1. drop-shaped rete,
2. loss of basal cell polarity,
3. abnormally superficial mitoses



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Special Topic: Potentially premalignant oral epithelial lesions (PPOEL)

Vol. 125 No. 6 June 2018

Oral epithelial dysplasia, atypical verrucous lesions and oral potentially malignant disorders: focus on histopathology

Susan Müller, DMD, MS

The term *oral potentially malignant disorders* (OPMDs) describes a recognizable group of mucosal diseases that have a risk of progressing to squamous cell carcinoma. Oral leukoplakia, the most common OPMD, has a 1% prevalence and reported malignant transformation rates of 2% to 5%. Other OPMDs include erythroplakia, erythroleukoplakia, submucous fibrosis, lesions of reverse smokers, and inherited genetic disorders, such as Fanconi anemia. The histopathologic assessment of OPMDs is an area of subjectivity, and oral epithelial dysplasia (OED) is fraught with both interrater variability and intrarater variability. Both architectural and cytologic changes are utilized when developing criteria for grading OED. However, the concept of atypical verrucous lesions, particularly as it pertains to proliferative verrucous leukoplakia, suffers from lack of histopathologic diagnostic criteria. Histopathologic mimics of OPMDs, including reactive/regenerative epithelium, frictional keratosis, and infection, can result in patient mismanagement. This review will focus specifically on the histologic features of OED, including human papillomavirus-associated dysplasia, as well as the histologic features of atypical verrucous keratoses/hyperplasia, particularly those that arise in the setting of proliferative verrucous leukoplakia along with OPMD mimics. (Oral Surg Oral Med Oral Pathol Oral Radiol 2018;125:591-602)

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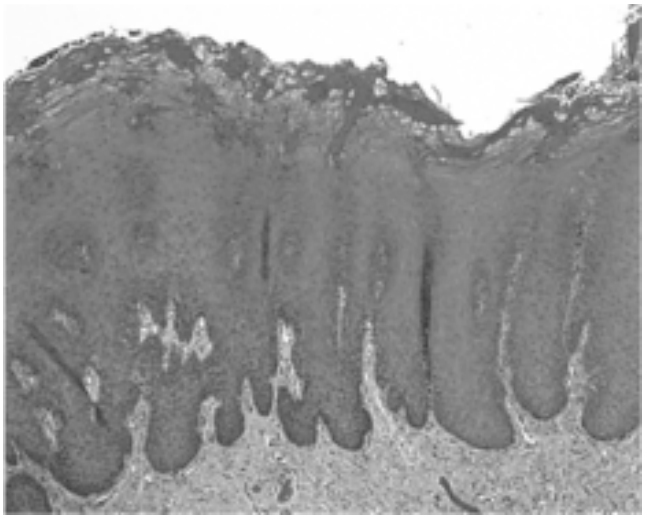
Pitfalls in Diagnosis of OED and other OPMDs

42

① Typical findings of frictional keratosis include a shaggy, hyperparakeratosis surface often with surface bacteria. The epithelium is acanthotic, and ballooned cells with intracellular edema are evident. No Inflammation



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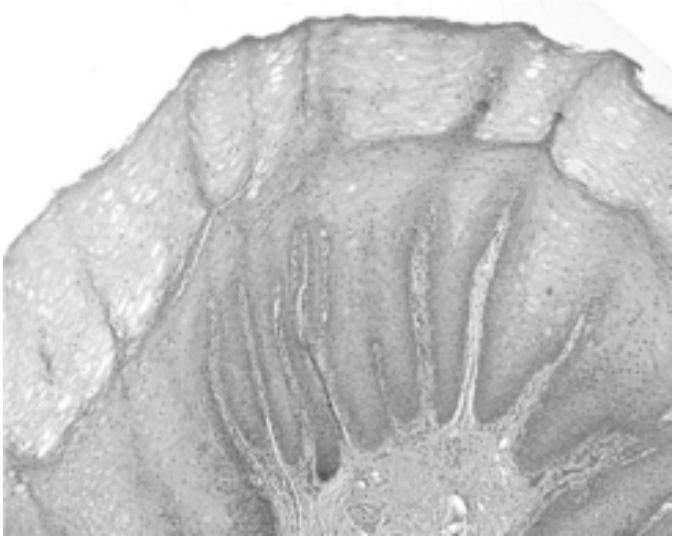
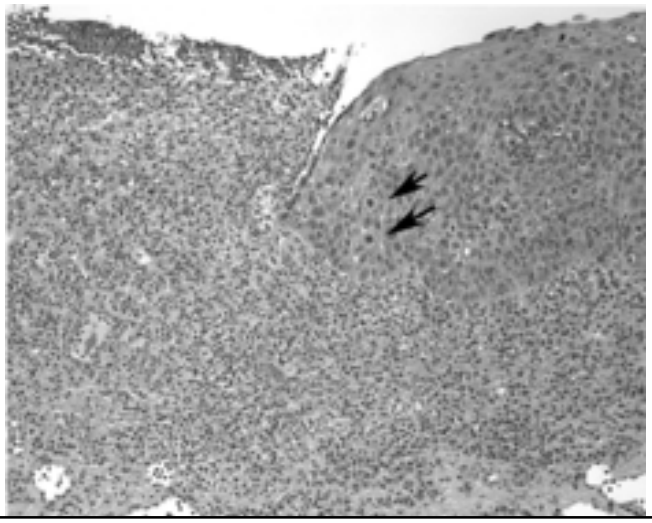
② Smokeless tobacco keratosis with chevron keratinization, *hyperparakeratosis*, and intracellular *edema*. The epithelium is acanthotic with elongated rete. *No dysplasia* is seen



44

③ Traumatic ulcerative granuloma. Cytologic atypia comprised of nuclear hyperchromasia and *mitotic figures* adjacent to the ulcer bed are present (arrows). These cytologic findings can be a normal component of regenerative epithelium



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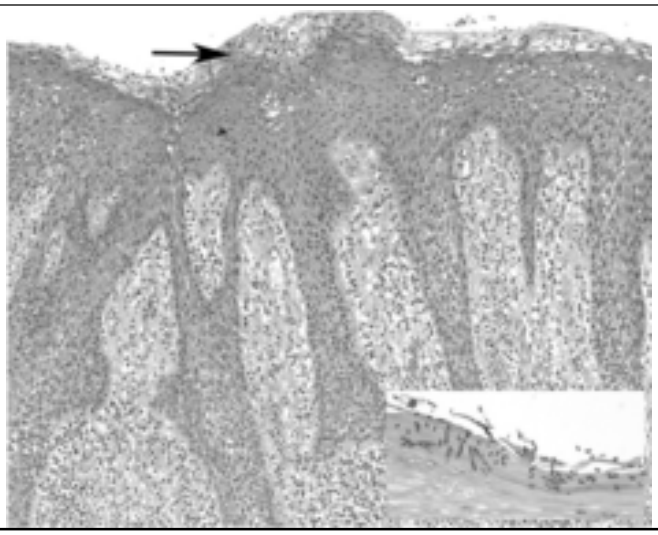
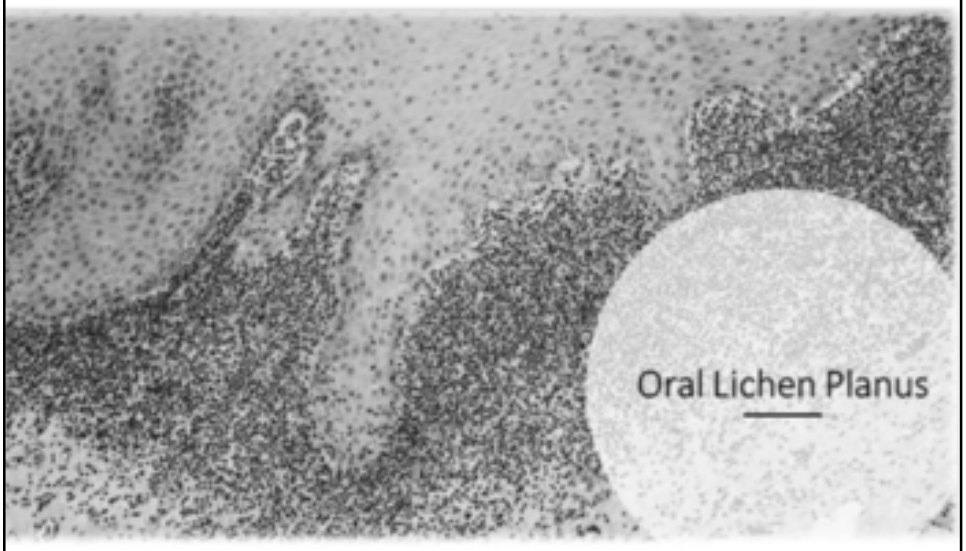
④ Hyperplastic candidiasis. Markedly elongated epithelial rete with inflammatory cell transmigration and neutrophilic microabscesses in the superficial keratin (arrow). Periodic acid– Schiff staining highlights the fungal pseudohyphae and spores (inset)



46

Diagnostic Challenges of Oral Epithelial Dysplasia and Precursor Lesions

47



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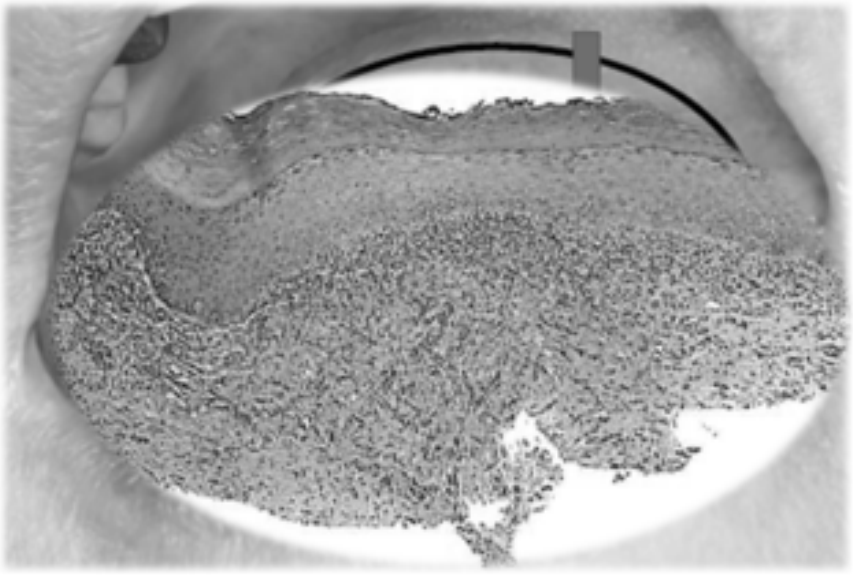

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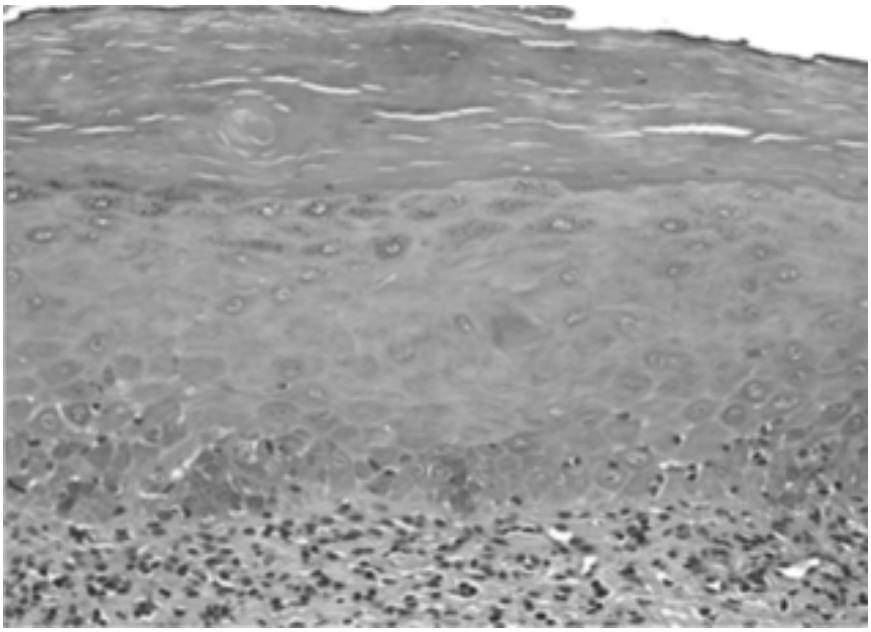

50

Dysplasia should NOT be present on lichen planus

51

Lichen planus is bilateral and/or multifocal disease

52

Should we make the diagnosis: lichenoid dysplasia?

The term may cause confusion and this may result in inadequate patient management

53

Modern Pathology (2017) 30, S54–S67

Oral lichenoid lesions: distinguishing the benign from the deadly

Susan Müller

Professor Emeritus, Emory University School of Medicine: Atlanta Oral Pathology, Decatur, GA, USA

Oral lichen planus is a chronic inflammatory disease of unknown etiology or pathogenesis with varied disease severity that waxes and wanes over a long period of time. Although a common oral mucosal disease, accurate diagnosis is often challenging due to the overlapping clinical and histopathological features of oral lichen planus and other mucosal diseases. Other immune-mediated mucocutaneous diseases can exhibit lichenoid features including mucous membrane pemphigoid, chronic graft-versus-host disease, and discoid lupus erythematosus. Reactive changes to dental materials or to systemic medications can mimic oral lichen planus both clinically and histologically. In these situations the clinical presentation can be useful, as oral lichen planus presents as a multifocal process and is usually symmetrical and bilateral. Dysplasia of the oral cavity can exhibit a lichenoid histology, which may mask the potentially premalignant features. Proliferative verrucous leukoplakia, an unusual clinical disease, can often mimic oral lichen planus clinically, requiring careful correlation of the clinical and pathologic features.

Modern Pathology (2017) **30,** S54–S67; doi:10.1038/modpathol.2016.121

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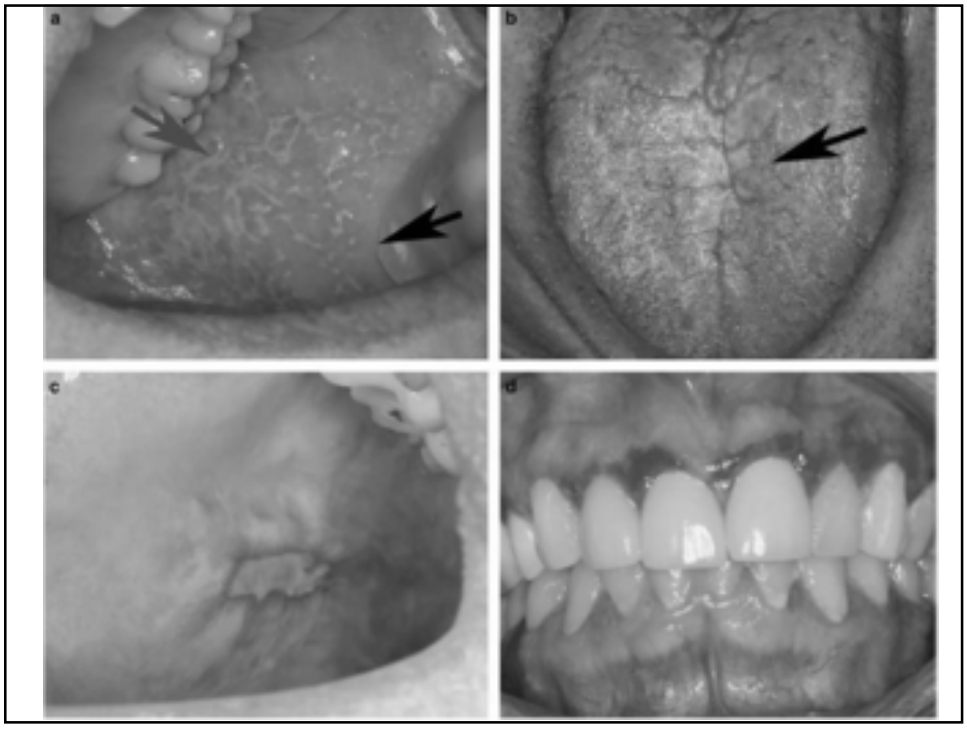
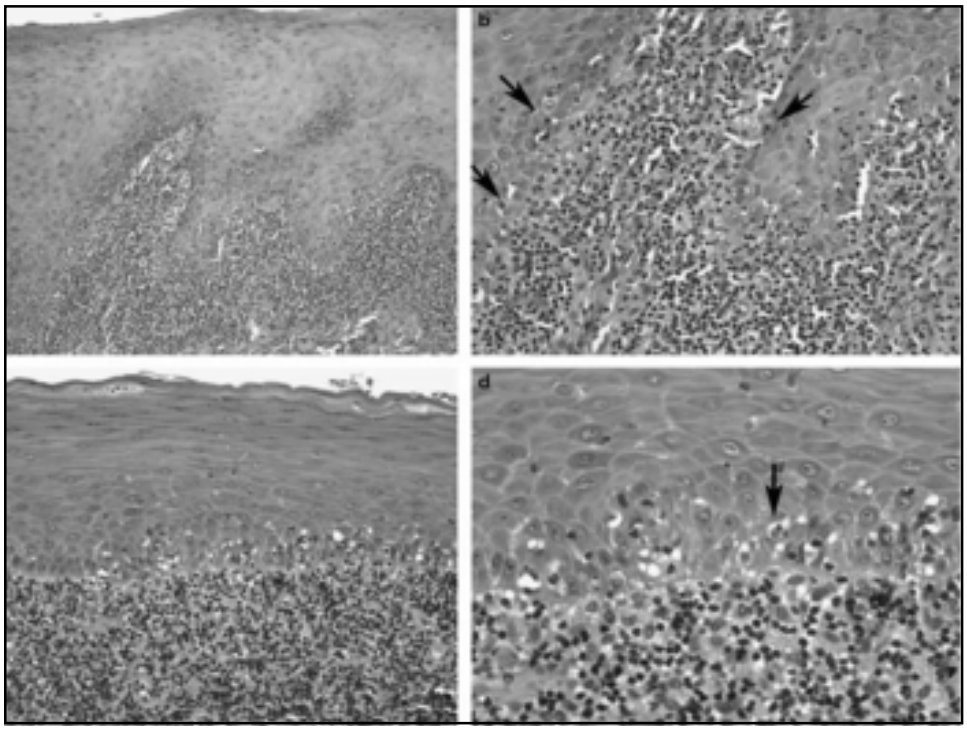
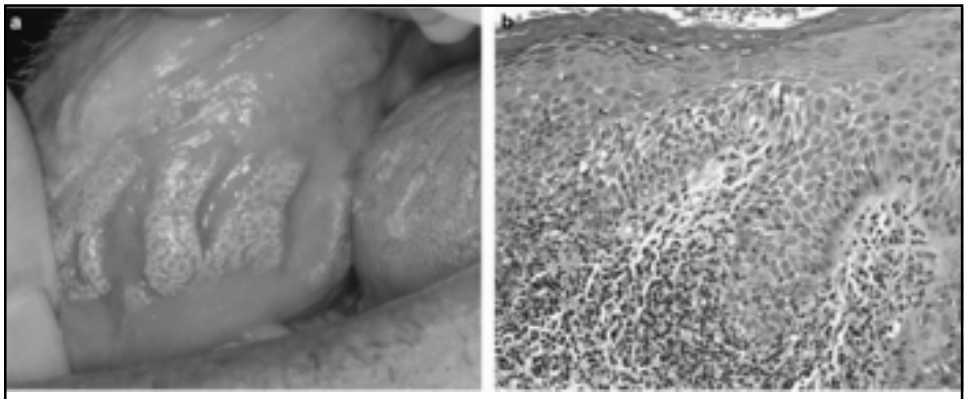






Oral lichenoid contact reaction to cinnamon flavored chewing gum. Within 10 days of discontinuing the gum, the lesion completely resolved. (a) The microscopic features of oral lichenoid contact reaction to cinnamon show marked epithelial acanthosis with elongation of the rete. Perivascular inflammatory cell infiltrate can be present as well as an occasional eosinophi

57

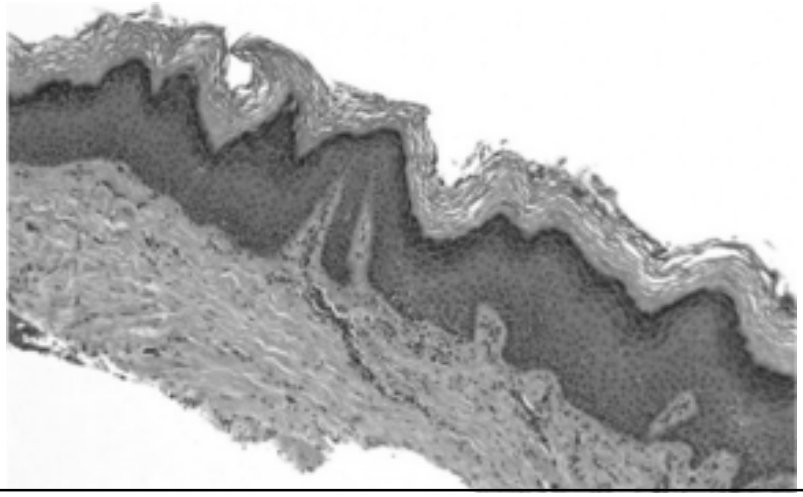
- Histologic grading based on morphology remains the accepted method for the diagnosis of oral dysplasia.
- Oral lichenoid lesions can be a diagnostic challenge for the pathologist due to the tremendous overlap in the clinical and pathologic presentation of many inflammatory, reactive, and immune-mediated disorders than commonly involve the oral mucosa.

58

Atypical Verrucous Hyperplasia/ Keratosis/Proliferative Verrucous Leukoplakia

59

atypical verrucous hyperplasia and/or keratosis (*AVH/AVK*) the microscopic diagnosis cannot be made without knowledge of the *clinical presentation*



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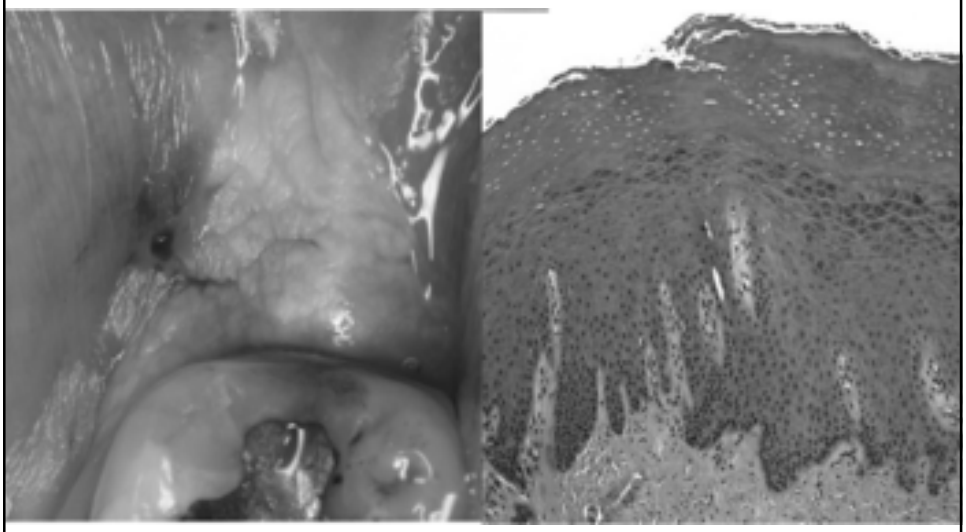
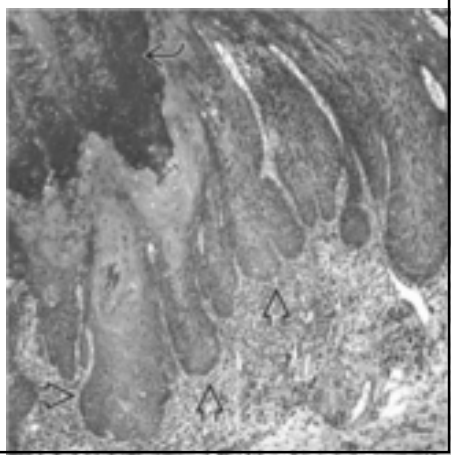


61

PVL malignant transformation rate of 60.7%:

1. gingiva/alveolar ridge (38.2%),
2. tongue (22.8%),
3. palate (15.4%),
4. buccal mucosa (11.8%)



62

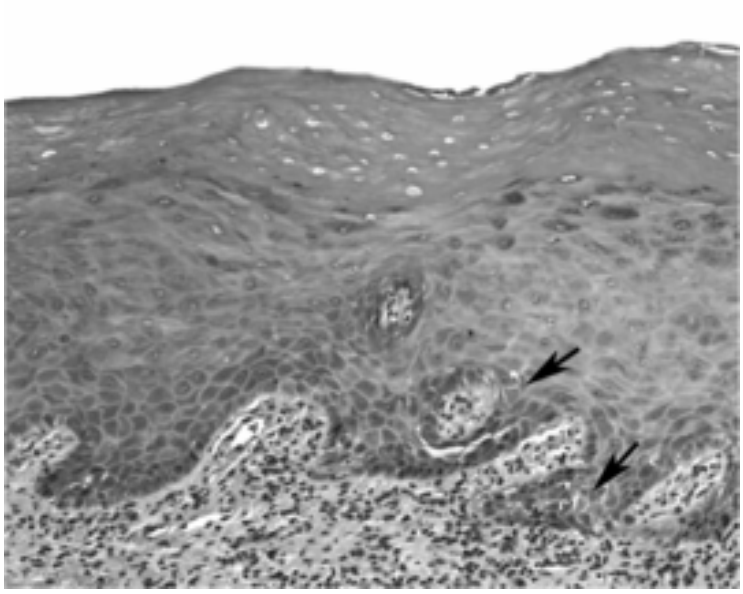
To date, there are **no standardized criteria** for the histologic diagnoses of AVK/AVH, particularly as it relates to PVL.

63

benign **keratoses** and leukoplakia without dysplasia

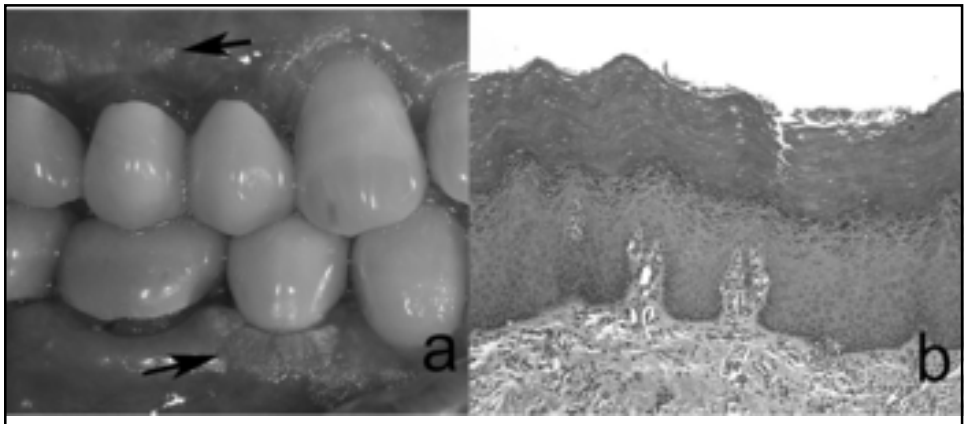
Early **PVL**

64



early oral PVL: orthokeratin with a slight corrugated surface. Dyskeratosis present in the basal/parabasal layer (arrows).

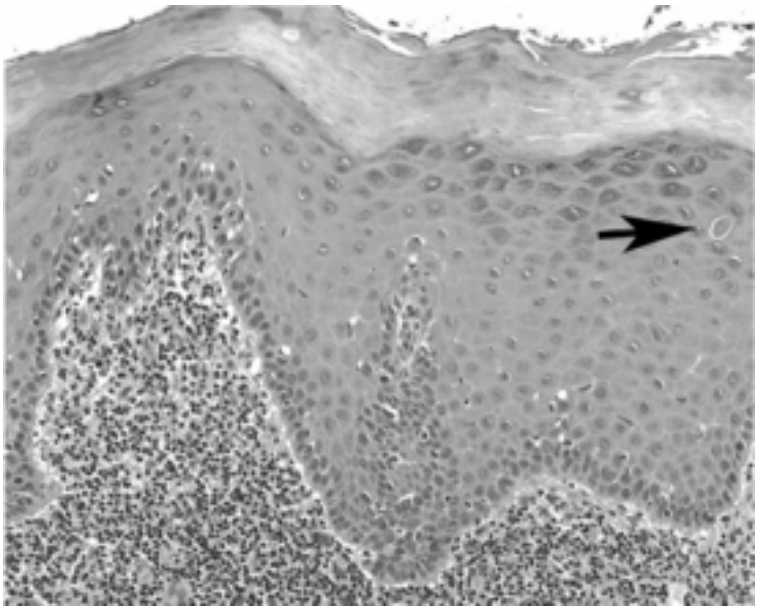
65



PVL : varied keratinization. With progression, the lesions can become more hyperkeratotic and verrucoid (arrows) (A); the histology corresponds to the clinical appearance: marked orthokeratosis with a verrucous architecture. A normal epithelial maturation is present (B)

66

PVL with lichenoid features



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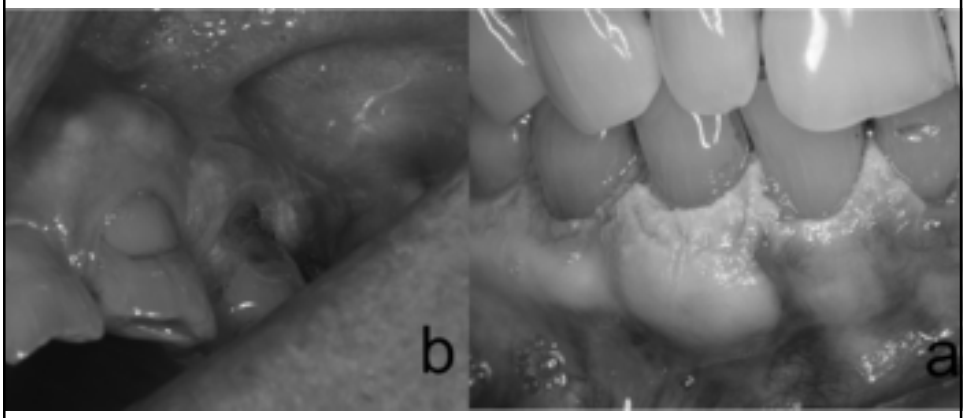
OLP of gingival:
- erythematous component
- lacks the thickened plaques

PVL often affects the attached gingiva



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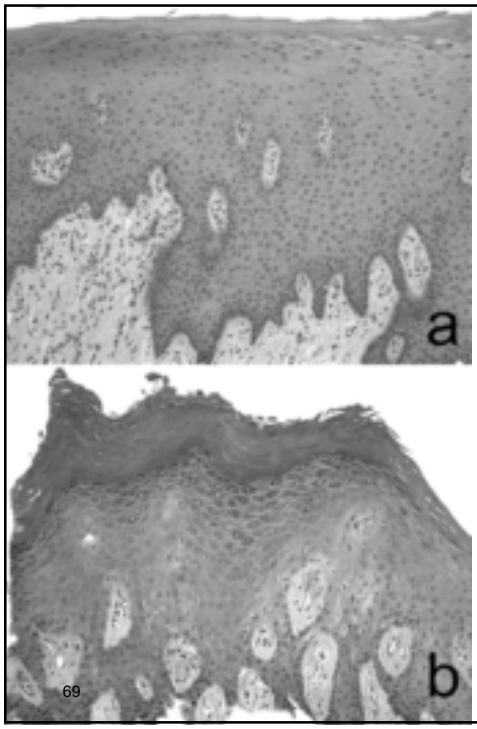
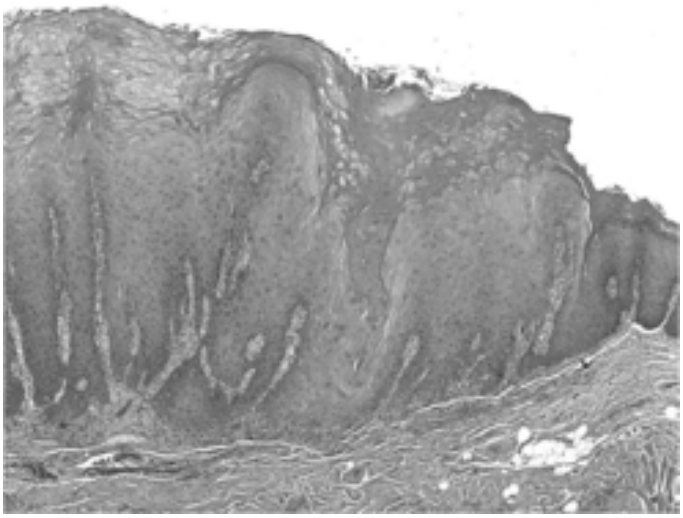


Alveolar ridge keratosis: can exhibit: *parakeratosis* (A) or *orthokeratosis* (B). The surface configuration can be flat or showed mild papillomatosis.

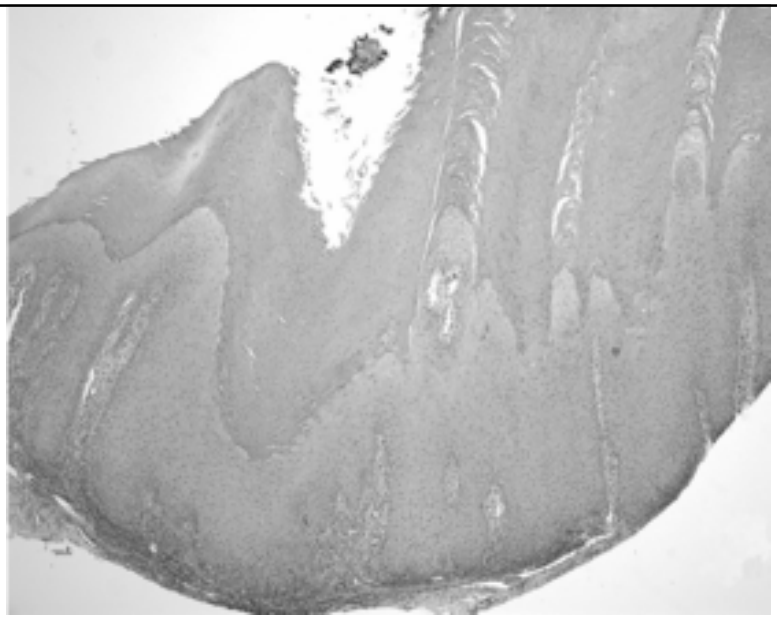
- *anastomosing* epithelial rete and lack of inflammation.
- *No dysplasia*

69



Atypical verrucous hyperplasia in a patient with PVL. Prominent keratosis with a verrucous architecture, hyperplastic elongated epithelial rete

70



Verrucous carcinoma exhibiting the typical bulbous rete

71

In **VC**:

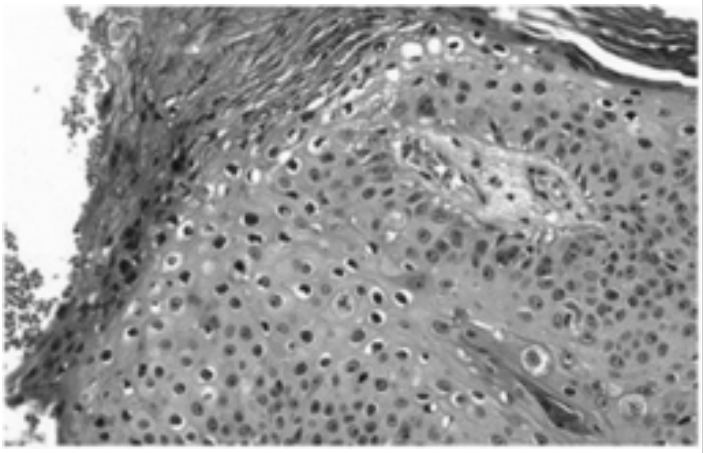
1. normal *mitotic figures* in the basal or parabasal layer,
2. *no cytologic* atypia.
3. exhibit *minimal dysplasia* and minimal *invasion*,

72

High-risk HPV-associated OED

73

In 1996, Fornatora et al. described 31 cases exhibiting histologic features of both high- and low-grade OED. BUT with prominent koilocytes, which they termed *koilocytic dysplasia*.



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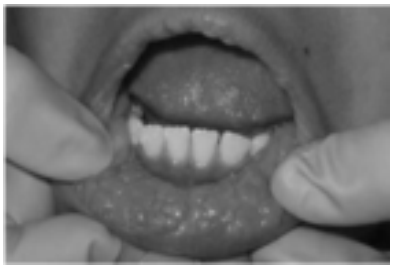
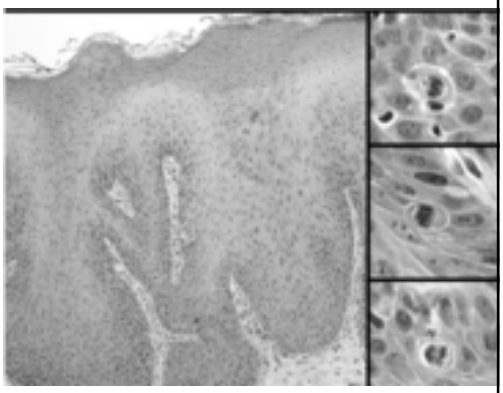
OED

- With koilocytes
  - 80% HR-HPV
    - 60% HPV16
- No koilocytes
  - No HR-HPV

75

Some of these cases of koilocytic dysplasia were most likely *multifocal epithelial hyperplasia* (Heck disease)





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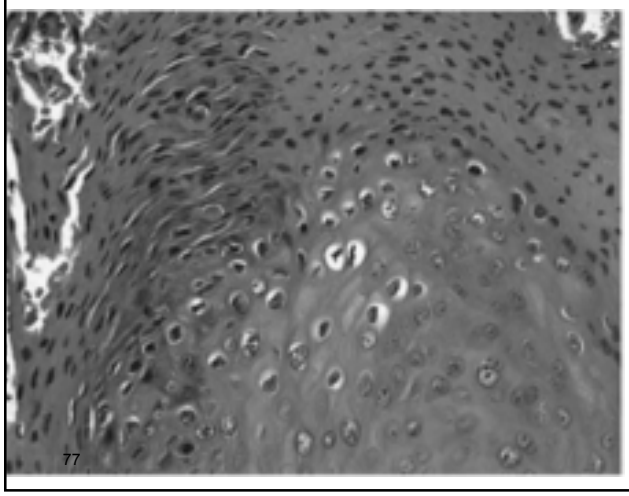
In *2013, Woo* et al. described a unique subset of OED associated with high-risk HPV, which they termed HPV associated oral intraepithelial neoplasia.



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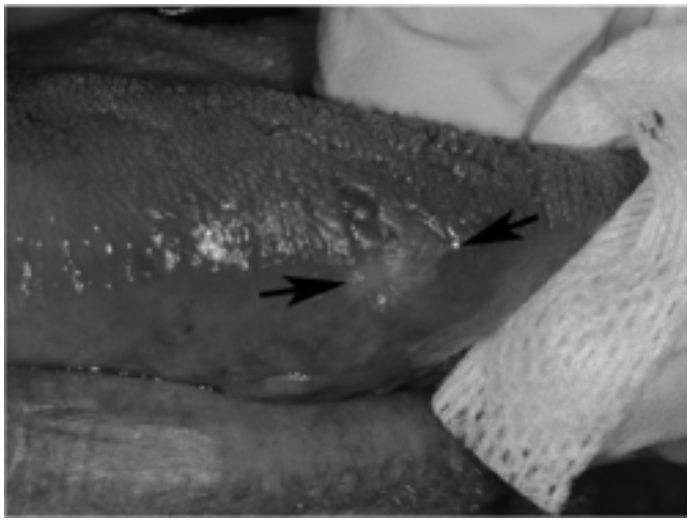
koilocytes and a few apoptotic cells



Human papillomavirus (HPV)-16–associated oral epithelial dysplasia arising on the lateral tongue of a 70-year old white male. The clinical presentation is indistinguishable from non-HPV dysplasia.

78

Koilocytes may or may not be present or, if present, usually in *small numbers*.

Prominent karyorrhexis, sometimes referred to as *mitosoid cells*, and *apoptosis* throughout the epithelium are the *hallmark of HPV-OED*

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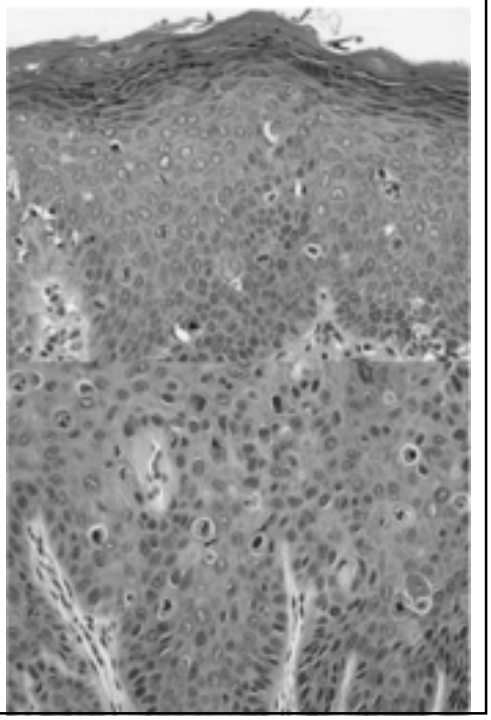
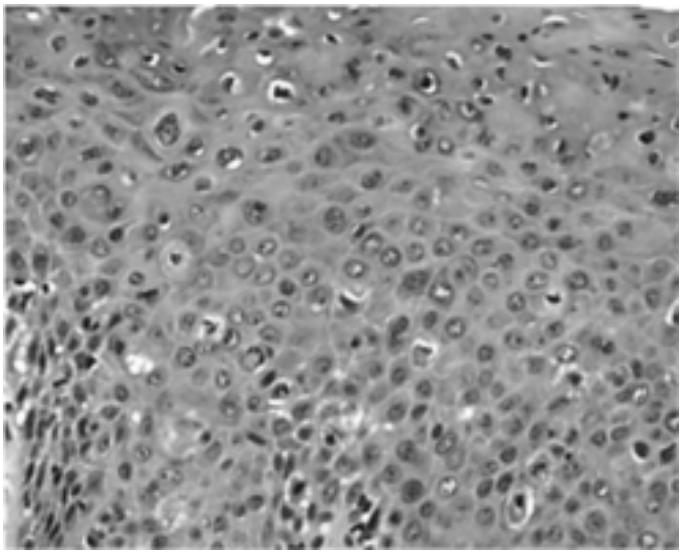


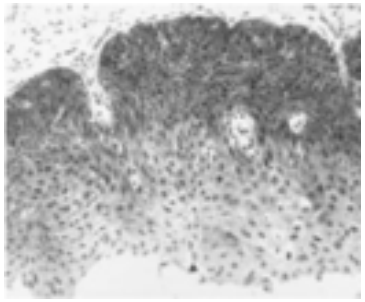


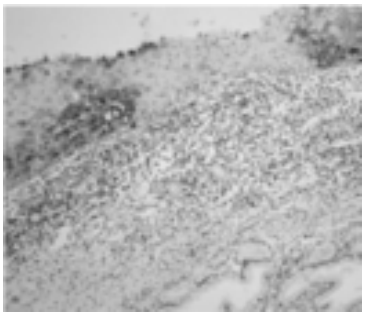
Marked karyorrhexis (mitosoid figures) and numerous apoptotic cells involving the full-thickness of the epithelium is presenta

80

p16 IHCs: diffuse and strong *nuclear and cytoplasmic* staining, usually as a *continuous band* with full thickness of the epithelium, excluding the keratin layer.

Often, the *demarcation* between the *affected epithelium* and the *normal* epithelium is striking.





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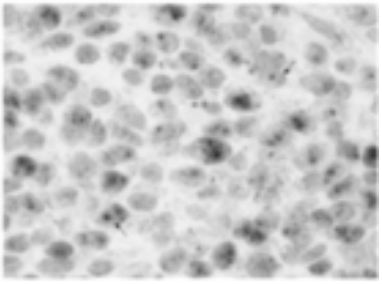
strong and diffuse cytoplasmic and nuclear staining with an abrupt transition to nondysplastic epithelium presenting as discontinuous staining (skip lesion).

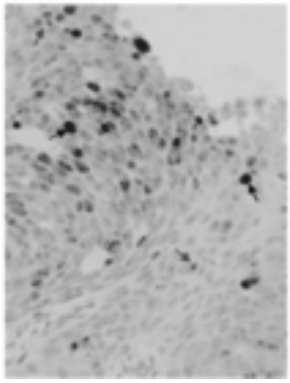
82

PCR amplification of HPV DNA is more sensitive but lacks specificity (*false positives*).

≠

HPV E6/ E7 *mRNA expression by in situ hybridization* has higher sensitivity and specificity in the oropharynx.





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Vol. 123 No. 5 May 2017

Histologic variation in high grade oral epithelial dysplasia when associated with high-risk human papillomavirus

Sujita Khanal, MS, PhD,[a] Patrick J. Trainor, MS, MA,[b] Maryam Zahin, PhD,[c] Shin-je Ghim, PhD,[d] Joongho Joh, PhD,[e] Shesh N. Rai, PhD,[c] Alfred Bennett Jenson, MD, MS, FACP,[f] and Brian S. Shumway, DDS, MS[g]

Objectives. Reported cytologic alterations associated with high-risk human papillomavirus (HR-HPV) in oral epithelial dysplasia (HPV-OED) need further characterization.

Study Design. Archival cases of high-grade oral epithelial dysplasia (hgOED) (N = 38) were assigned a cytologic score (CS) based on the average number of mitotic, karyorrhectic, and apoptotic cells per high-power field. Three groups were then generated on the basis of increasing CS: Focal (group 1, N = 14), Intermediate (group 2, N = 12), and Diffuse (group 3, N = 12). Polymerase chain reaction–based HPV genotyping and p16 immunohistochemistry were performed.

Results. HR-HPV was found significantly more in group 3 (83.3%) compared with groups 1 and 2 (group 1&2; 42.9% and 41.7%, respectively; $P = .047$). HPV16 predominated in HR-HPV-positive cases (90.5%). By location, the tongue or the floor of mouth was associated with all groups ($P = .04$). Increasing CS was associated with a slightly younger age ($P = .04$) and increased expression of p16 ($P = .005$). CS and p16 expression were not sensitive but were highly specific predictors for HR-HPV presence. Based on limited follow-up information, HPV-OED does not differ in clinical aggressiveness compared with conventional OED.

Conclusions. Increased CS in hgOED is strongly associated with HR-HPV (mostly HPV16) and p16 expression. CS and p16 expression are specific predictors of HR-HPV presence. Further molecular study and long-term follow-up of HPV-OED are needed. (Oral Surg Oral Med Oral Pathol Oral Radiol 2017;123:566-585)

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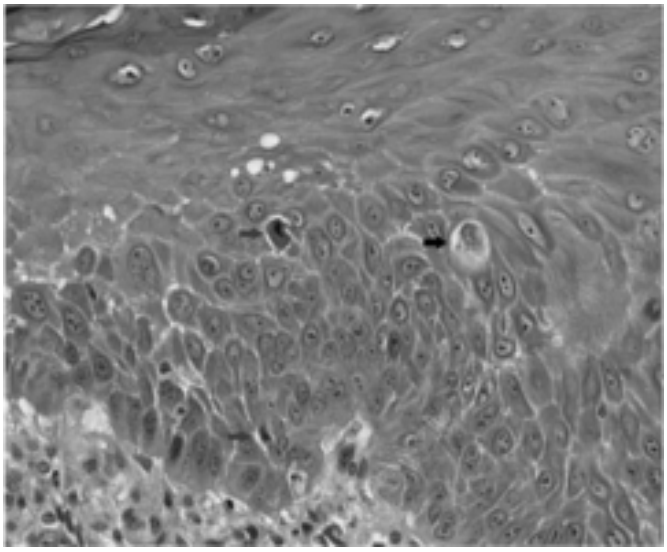
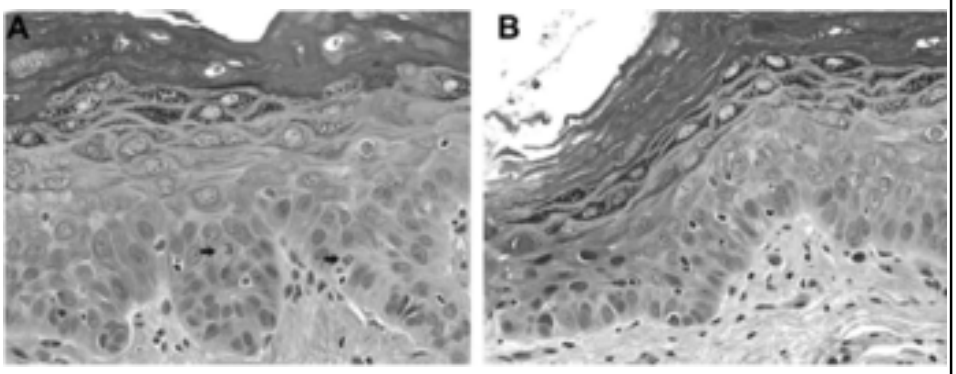


A few apoptotic cells (red arrows) and karyorrhectic cells (black arrows).

85

- P16 *positivity*: *strong* and *diffuse* or *patchy*
- Good *correlation* among *p16 expression*, and *positivity* for HPV.
- Despite the good correlation, have found ***outliers***, whereby OED is strongly p16 + /HPV– or p16–/HPV + .

86



A, A pair of karyorrhectic cells (black arrows). B, An apoptotic cell in an adjacent high-power field (red arrow).

87

Currently, *limited data* exist to determine if HPV-OED has a higher or lower *malignant transformation* to oral squamous cell carcinoma (OSCC) than non–HPV-OED

88

Now we have a clear view of OPMDs…

89

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Part 2

2

91

Histopathology reporting guide of oral cavity carcinoma recommendation from ICCR dataset

ICCR: Internaltional collaboration of cancer reporting

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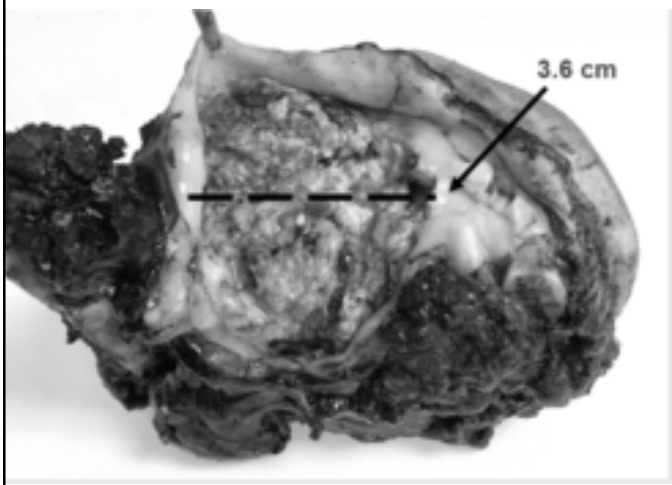

Both macroscopic and microscopic dimensions are included as core elements

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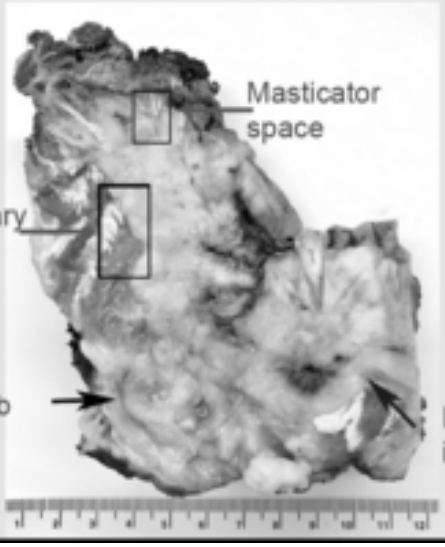
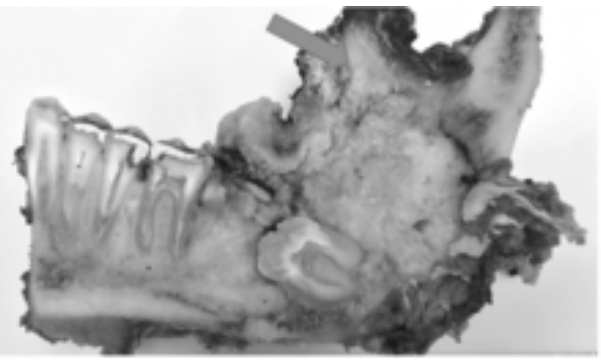


Tumor Dimensions – Macroscopic

Extension beyond the inferior border of mandible

94



Tumor Dimensions

- Microscopic dimensions should be the primary dimensions for pathologic staging
- Gross examination may under/overcall tumor extent
- Dysplasia, ulceration and inflammation may appear grossly as tumor

95

Primary tumour (pT)**

- TX Primary tumour cannot be assessed
- Tis Carcinoma in situ
- T1 Tumour 2 cm or less in greatest dimension and 5 mm or less depth of invasion***
- T2 Tumour 2 cm or less in greatest dimension and more than 5 mm depth of invasion or, tumour more than 2 cm but not more than 4 cm in greatest dimension and depth of invasion no more than 10 mm
- T3 Tumour more than 2 cm but not more than 4 cm in greatest dimension and depth of invasion more than 10 mm or tumour more than 4 cm in greatest dimension and not more than 10 mm depth of invasion
- T4a (Lip) Tumour invades through cortical bone, inferior alveolar nerve, floor or mouth, or skin (of the chin or the nose)
- T4a (Oral cavity) Tumour more than 4 cm in greatest dimension and more than 10 mm depth of invasion or tumour invades through the cortical bone of the mandible or maxilla or involves the maxillary sinus, or invades the skin of the face
- T4b (Lip and oral cavity) Tumour invades masticator space, pterygoid plates, or skull base, or encases internal carotid artery

Depth of Invasion

≤ 5 mm

> 5 mm

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Depth of Invasion

- UICC: does not define where it is assessed
- AJCC: defines it as horizontal of adjacent basement membrane
- RCPath: defines it as the epithelial surface

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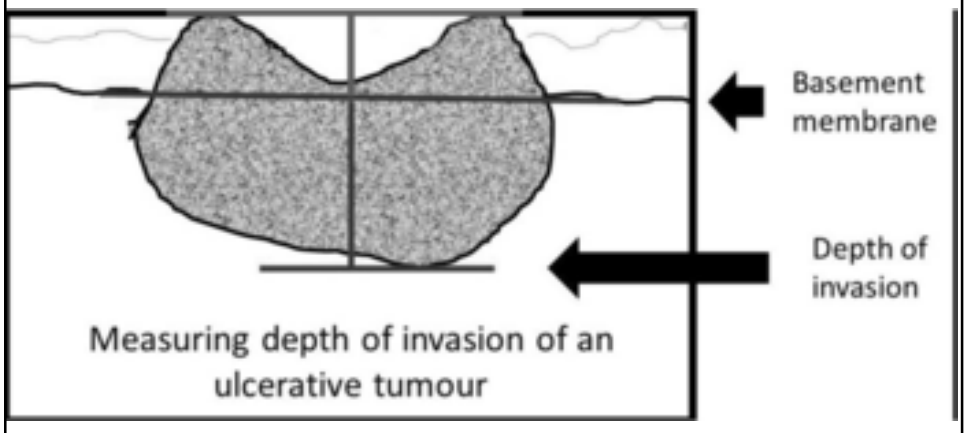
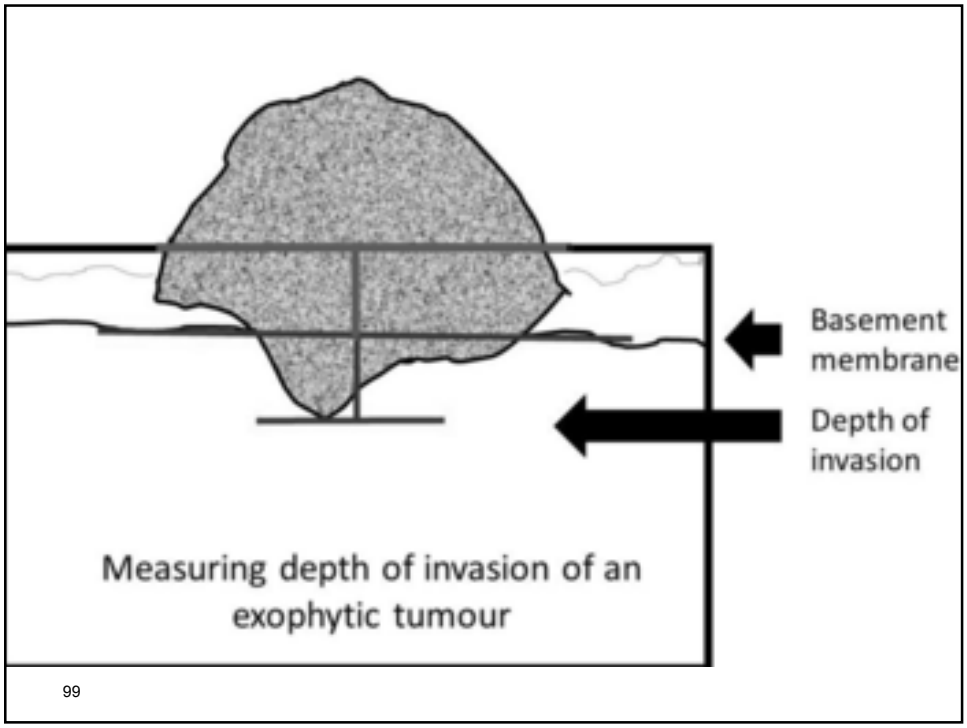


Measuring depth of invasion of an ulcerative tumour

98



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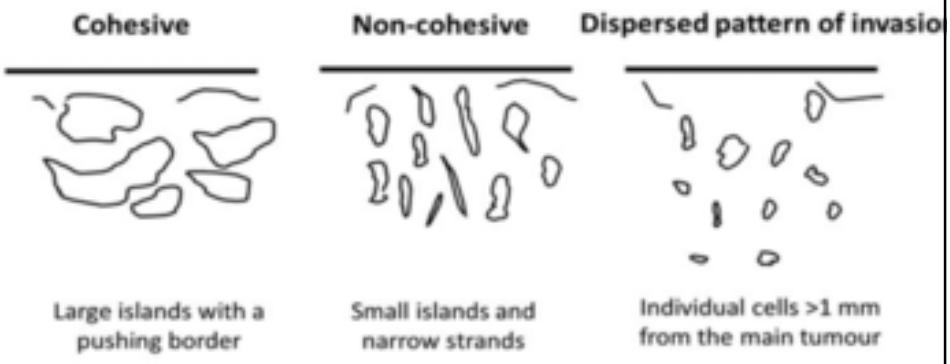
Patterns of invasion



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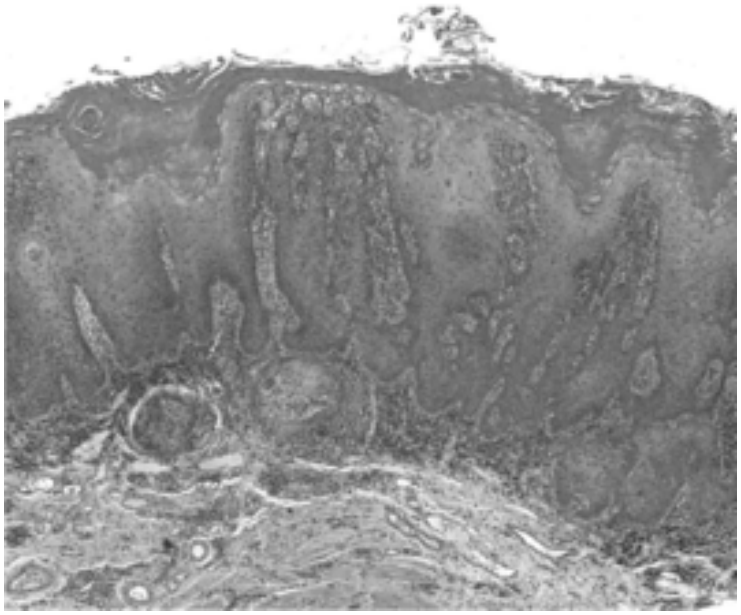
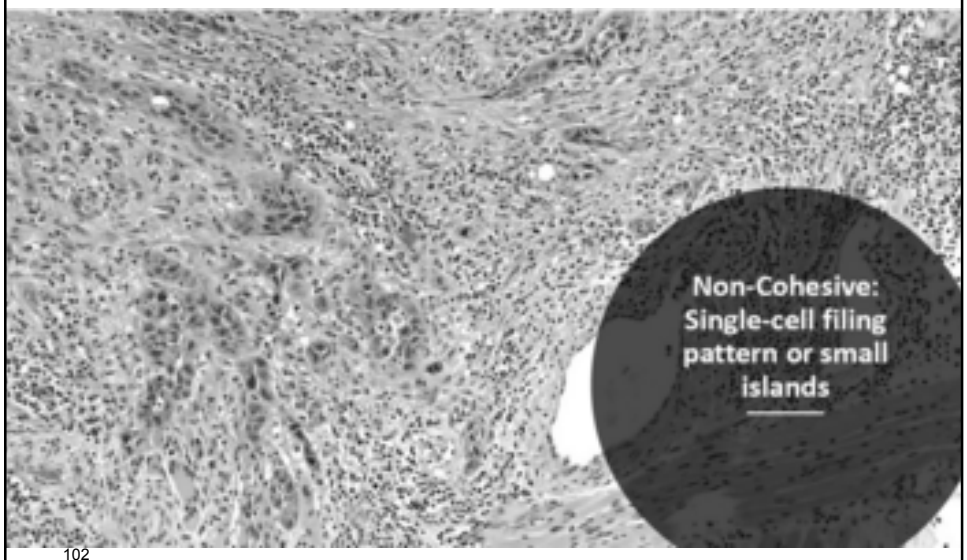


101 Cohesive broad pushing front



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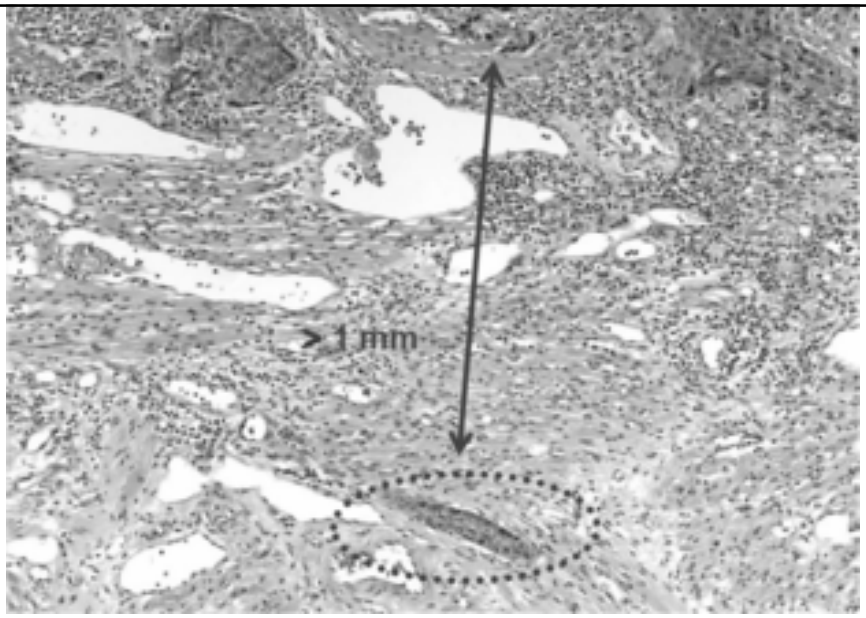

Widely dispersed pattern

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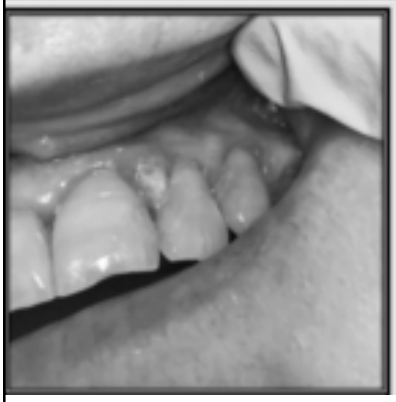
Cortical Bone Erosion



- Important to recognize cortical bone erosion vs medullary bone invasion
- A 2 cm tumor with bone erosion is a **T1**
- A 2 cm tumor with medullary bone invasion is a **T4!!**

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Types of SCC

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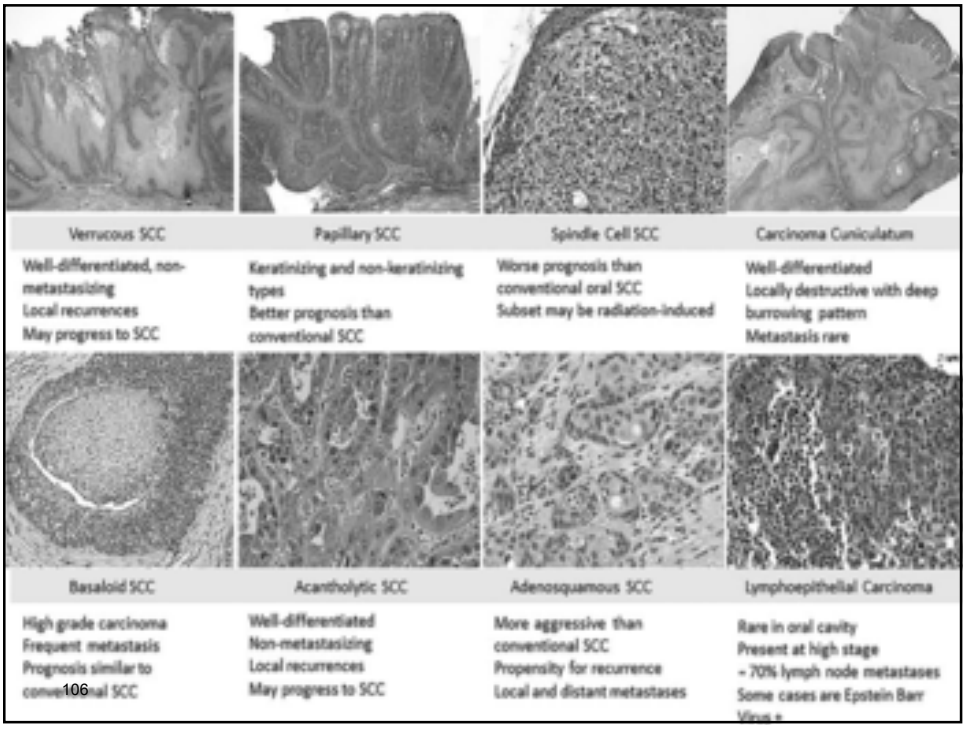

Verrucous SCC	Papillary SCC	Spindle Cell SCC	Carcinoma Cuniculatum
Well-differentiated, non-metastasizing Local recurrences May progress to SCC	Keratinizing and non-keratinizing types Better prognosis than conventional SCC	Worse prognosis than conventional oral SCC Subset may be radiation-induced	Well-differentiated Locally destructive with deep burrowing pattern Metastasis rare

Basaloid SCC	Acantholytic SCC	Adenosquamous SCC	Lymphoepithelial Carcinoma
High grade carcinoma Frequent metastasis Prognosis similar to conventional SCC	Well-differentiated Non-metastasizing Local recurrences May progress to SCC	More aggressive than conventional SCC Propensity for recurrence Local and distant metastases	Rare in oral cavity Present at high stage ~ 70% lymph node metastases Some cases are Epstein Barr Virus +

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Most common types of SCC:

1. Papillary SCC
2. Verrucous SCC
3. Carcinoma cuniculatum

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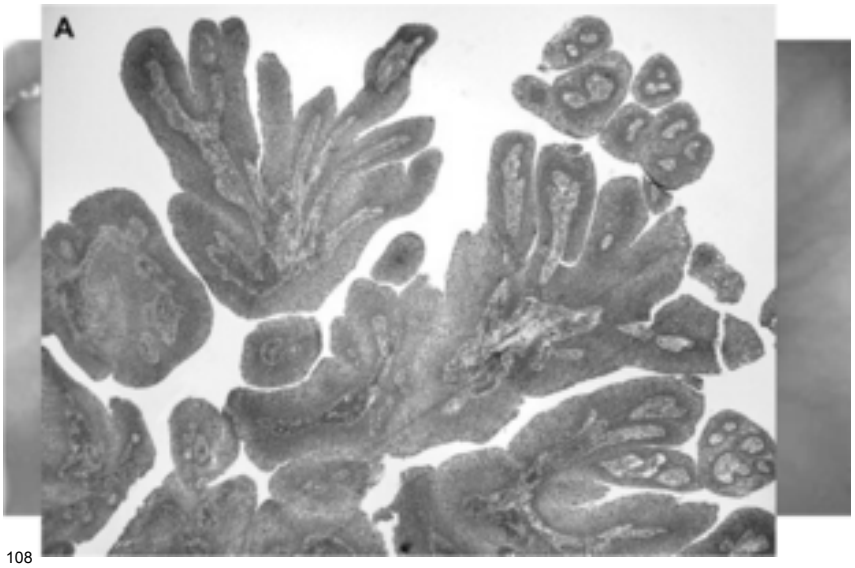
1. Papillary SCC



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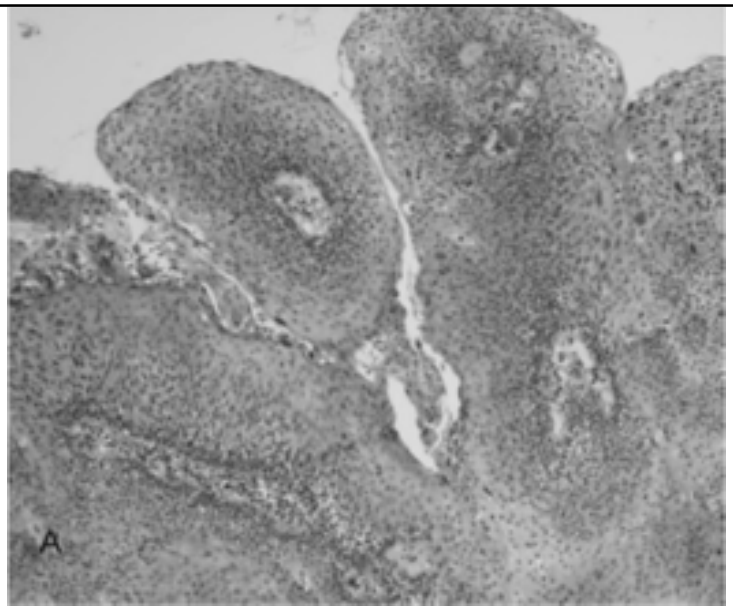
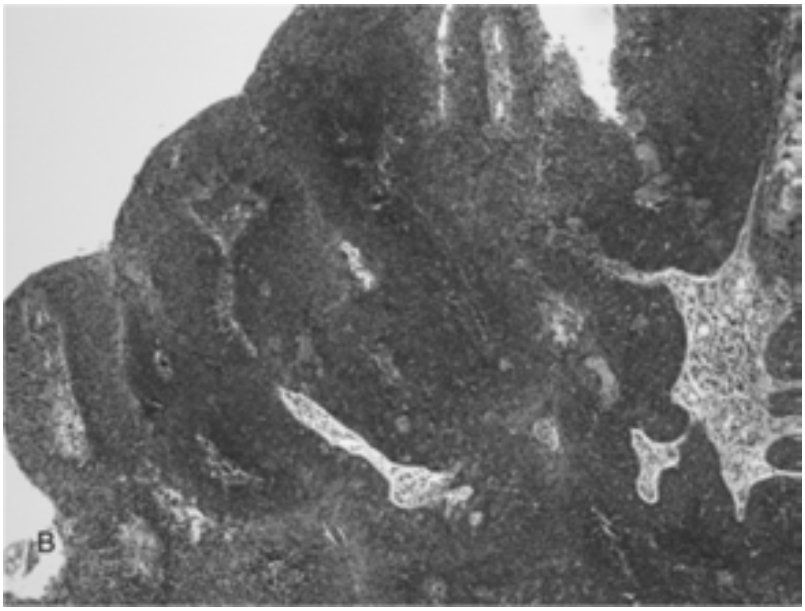
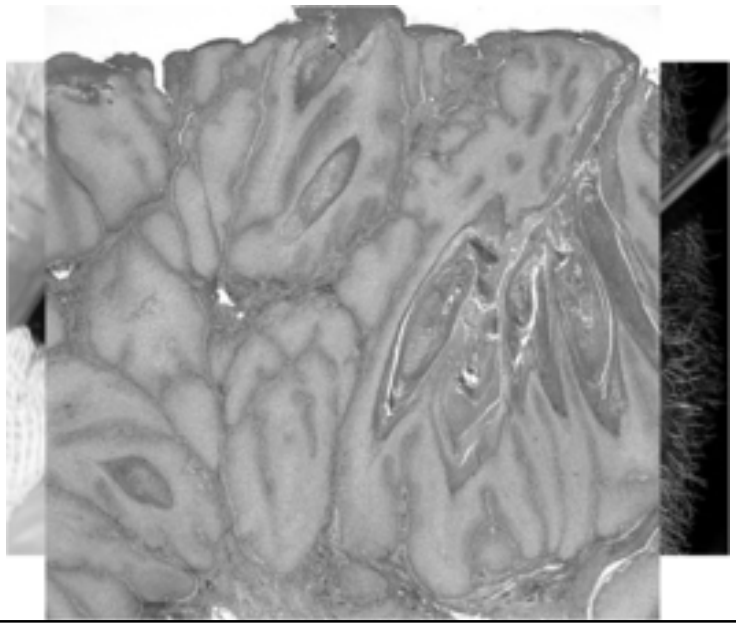


Papillary squamous cell carcinoma. **A)** Keratinizing type, the dysplastic cells show maturation with minimal parakeratin formation.
109



Nonkeratinizing type with immature basaloid cells.
110

2. Verrucous SCC



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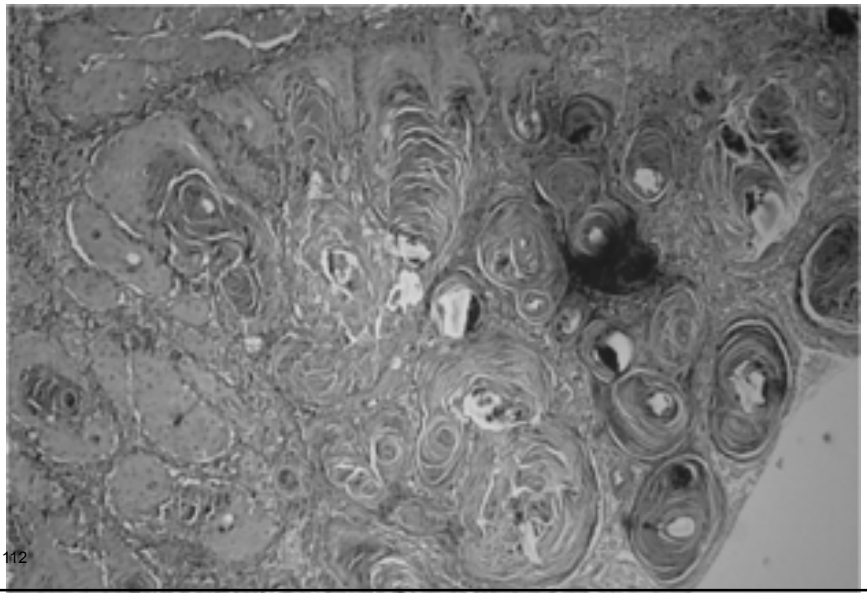
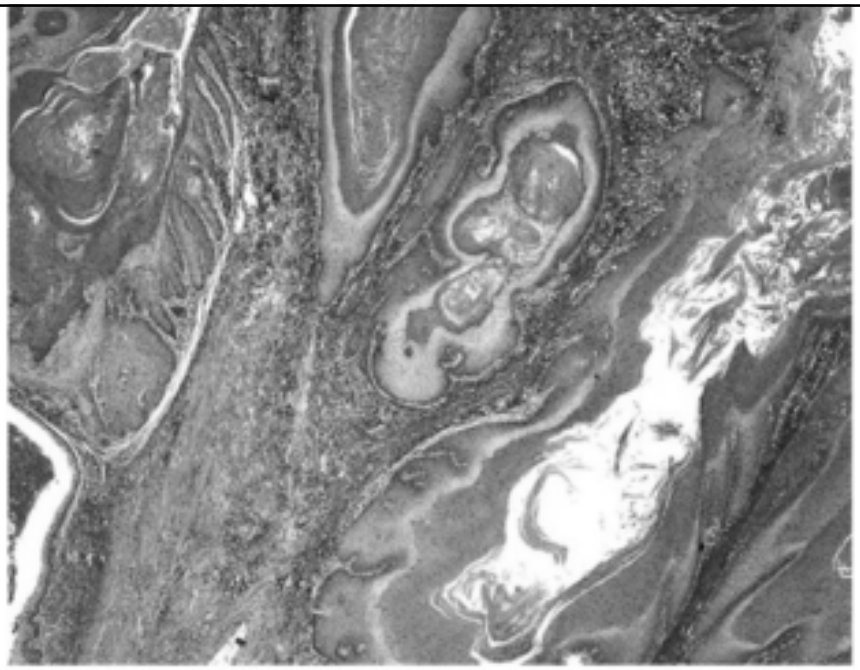
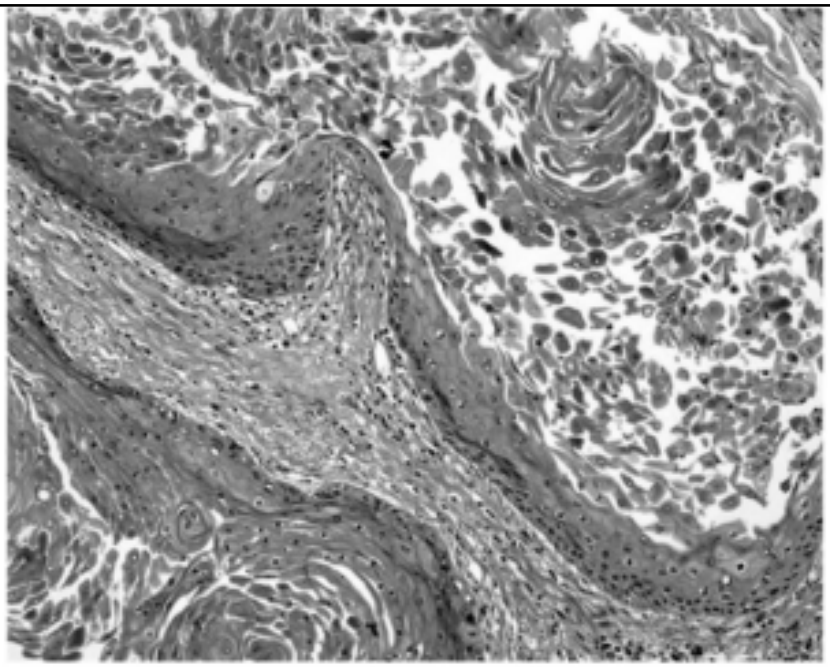
3. Carcinoma cuniculatum



112



113 Low power view of a carcinoma cuniculatum showing well-differentiated neoplastic nests forming cyst-like sinuses and tracts; note the intense stromal reaction



114 High power view of a cyst-like structure in a carcinoma cuniculatum showing well-differentiated neoplastia with progressive squamous maturation and extensive acantholysis

	PapSCC	VC	CC
Age	6^{TH} -7^{TH} decade	6^{TH} -7^{TH} decade	6^{TH} -7^{TH} decade
Site	Larynx>oropharynx>sinonasal>others	Oral>larynx>others	Oral>others
Key morphologic features	Exophytic projection lined by carcinoma cells with infiltration at the base (>70% of exophytic projection is required)	Exophytic spire like projections, keratosis with parakeratosis between spires (crypts), bulbous pushing rete, lymphoplasmacytic background.	Exophytic with more prominent endophytic arborizing furrowing pattern of cycts and sinuses. Corrugated pattern of keratinization with superinfection of cyst common
Level of atypia acceptable	Keratinizing or non-keratinization: atypia ranging from mild to sever	No atypia in pure VC (10% in laryngeal VC and 25% of oral VC conventional SCC)	Moderate atypia
Nodal disease	Up to 30%	0%(except hybrid VC conventional SCC	<5%

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