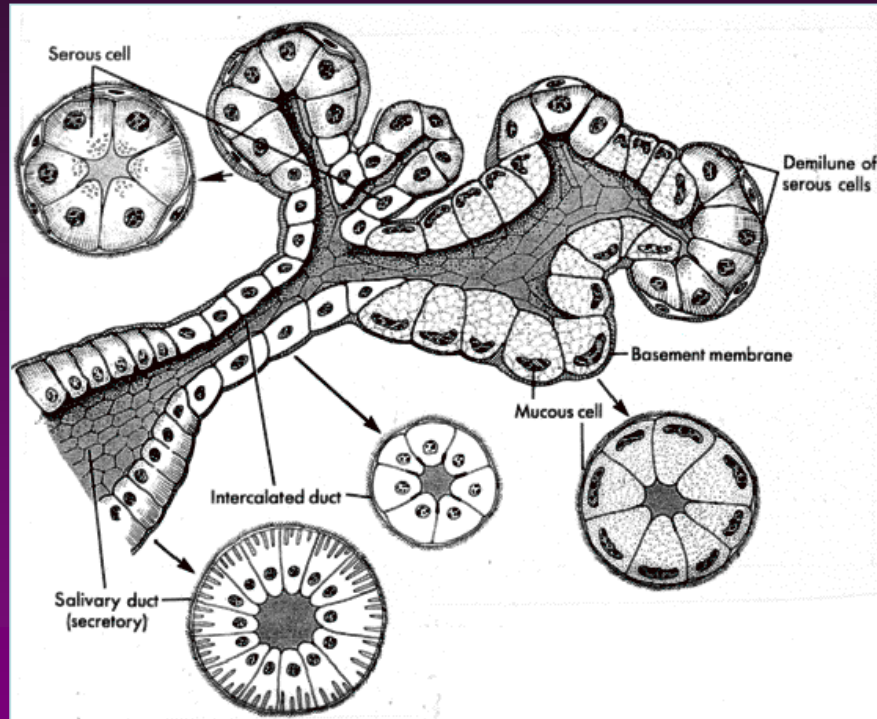


NEOPLASIAS MALIGNAS DE GLANDULAS SALIVALES



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Especialista en Patología Oral

Principales patologías de las Glándulas Salivales

Malformaciones	Aplasia Distopia y ectopías
Trastornos de secreción	Hiposalias Hipersalivación
Trastornos reactivos	Mucoceles Litiasis
Sialoadenosis	Hormonales Nutricionales Farmacológicas
Sialoadenitis	Virales Bacterianas Inmunológicas
Tumores	Benignos Malignos

Tumores de glándulas salivales

1. Neoplasias del parénquima o epiteliales

Benignas (Adenomas)

Malignas (Adenocarcinomas)

2. Neoplasias del estroma o mesenquimáticas

Benignas

Malignas

3. Tejido Linfático

Linfomas

4. Metástasis de otras neoplasias (tumores secundarios)

Tumores de glándulas salivales

EPIDEMIOLOGÍA

La glándula parótida es el sitio más frecuentemente comprometido con tumores de glándulas y corresponde al 64-80% de todos los casos, 7-11% glándula submaxilar, 1% sublingual y 9-23% salivales menores (WHO, 2005).

El sitio más frecuentemente afectado en parótida es el lóbulo superficial (lateral).

WHO Histological Classification of Tumours of Salivary Glands 2017

Tumores malignos

Carcinoma mucoepidermoide	8430/3
Carcinoma adenoide quístico	8200/3
Carcinoma de células acínicas	8550/3
Adenocarcinoma polimorfo	8525/3
Carcinoma de células claras	8310/3
Adenocarcinoma de células basales	8147/3
Carcinoma intraductal	8500/2
Adenocarcinoma, NOS	8140/3
Carcinoma de ducto salival	8500/3
Carcinoma mioepitelial	8982/3
Carcinoma epitelial-mioepitelial	8562/3
Carcinoma ex adenoma pleomorfo	8941/3
Carcinoma secretorio	8502/3*
Adenocarcinoma sebáceo	8410/3
Carcinosarcoma	8980/3
Carcinoma pobremente diferenciado	
Carcinoma indiferenciado	8020/3
Carcinoma neuroendocrino de células grandes	8013/3
Carcinoma neuroendocrino de células pequeñas	8041/3
Carcinoma linfoepitelial	8082/3
Carcinoma de células escamosas	8070/3
Carcinoma oncocítico	8290/3
<i>Potencial maligno incierto</i>	
Sialoblastoma	8974/1

WHO Histological Classification of Tumours of Salivary Glands 2022

Salivary gland tumours: Introduction

Non-neoplastic epithelial lesions

Nodular oncocytic hyperplasia

Lymphoepithelial sialadenitis

Benign epithelial tumours

Pleomorphic adenoma

Basal cell adenoma

Warthin tumour

Oncocytoma

Salivary gland myoepithelioma

Canalicular adenoma

Cystadenoma of the salivary glands

Ductal papillomas

Sialadenoma papilliferum

Lymphadenoma

Sebaceous adenoma

Intercalated duct adenoma and hyperplasia

Striated duct adenoma

Sclerosing polycystic adenoma

Keratocystoma

Malignant epithelial tumours

Mucoepidermoid carcinoma

Adenoid cystic carcinoma

Acinic cell carcinoma

Secretory carcinoma

Microsecretory adenocarcinoma

Polymorphous adenocarcinoma

Hyalinizing clear cell carcinoma

Basal cell adenocarcinoma

Intraductal carcinoma

Salivary duct carcinoma

Myoepithelial carcinoma

Epithelial-myoepithelial carcinoma

Mucinous adenocarcinoma

Sclerosing microcystic adenocarcinoma

Carcinoma ex pleomorphic adenoma

Carcinosarcoma of the salivary glands

Sebaceous adenocarcinoma

Lymphoepithelial carcinoma

Squamous cell carcinoma

Sialoblastoma

Salivary carcinoma NOS and emerging entities

Mesenchymal tumours specific to the salivary glands

Sialolipoma

WHO Histological Classification of Tumours of Salivary Glands 2022

Tumores malignos

Carcinoma mucoepidermoide
Carcinoma adenoide quístico
Carcinoma de células acínicas
Adenocarcinoma polimorfo
Carcinoma de células claras
Adenocarcinoma de células basales
Carcinoma intraductal
Adenocarcinoma, NOS
Carcinoma de ducto salival
Carcinoma mioepitelial
Carcinoma epitelial-mioepitelial
Carcinoma ex adenoma pleomorfo
Carcinoma secretorio
Adenocarcinoma sebáceo
Carcinosarcoma
Carcinoma pobremente diferenciado
 Carcinoma indiferenciado
 Carcinoma neuroendocrino de células grandes
 Carcinoma neuroendocrino de células pequeñas
Carcinoma linfoepitelial
Carcinoma de células escamosas
Carcinoma oncocítico
Potencial maligno incierto
Sialoblastoma

Malignant epithelial tumours

Mucoepidermoid carcinoma
Adenoid cystic carcinoma
Acinic cell carcinoma
Secretory carcinoma
Microsecretory adenocarcinoma
Polymorphous adenocarcinoma
Hyalinizing clear cell carcinoma
Basal cell adenocarcinoma
Intraductal carcinoma
Salivary duct carcinoma
Myoepithelial carcinoma
Epithelial-myoepithelial carcinoma
Mucinous adenocarcinoma
Sclerosing microcystic adenocarcinoma
Carcinoma ex pleomorphic adenoma
Carcinosarcoma of the salivary glands
Sebaceous adenocarcinoma
Lymphoepithelial carcinoma
Squamous cell carcinoma
Sialoblastoma
Salivary carcinoma NOS and emerging entities

Mesenchymal tumours specific to the salivary glands

Sialolipoma

Table 1 Selected genetic alterations in salivary tumors (Adapted from Andreassen, et al., ref. No. [53])

Tumor type	Chromosomal region	Gene and mechanism	Prevalence
Pleomorphic adenoma	8q12	<i>PLAG1</i> fusions/amplification	> 50%
	12q13-15	<i>HMGA2</i> fusions/amplification	10–20%
Basal cell adenoma	3p22.1	<i>CTNNB1</i> mutations	37–80%
	16q12.1	<i>CYLD</i> mutations	36%
	16p13.3	<i>AXIN1</i> mutations	9%
	5q22.2	<i>APC</i> mutations	3%
Myoepithelioma, oncocytic subtype	8q12	<i>PLAG1</i> fusions	40%
Sialadenoma papilliferum	7q34	<i>BRAF</i> V600E mutations	50%-100%
Sclerosing polycystic adenoma	3q26.32	<i>PIK3CA</i> mutation high	
Mucoepidermoid carcinoma	t(11;19) (q21;p13)	<i>CRTC1-MAML2</i>	40–90%
	t(11;15) (q21;q26)	<i>CRTC3-MAML2</i>	6%
	9p21.3	<i>CDKN2A</i> deletion	25%
Adenoid cystic carcinoma	6q22-23	<i>MYB</i> fusion/activation/amplification	~ 80%
	8q13	<i>MYBL1</i> fusion/activation/amplification	~ 10%
	9q34.3	<i>NOTCH</i> mutations	14%
Acinic cell carcinoma	9q31	<i>NR4A3</i> fusion/activation	86%

Hay AJ, y col. Minor salivary gland tumors of the head and neck-Memorial Sloan Kettering experience: Incidence and outcomes by site and histological type. Cancer. 2019;125(19):3354-3366.

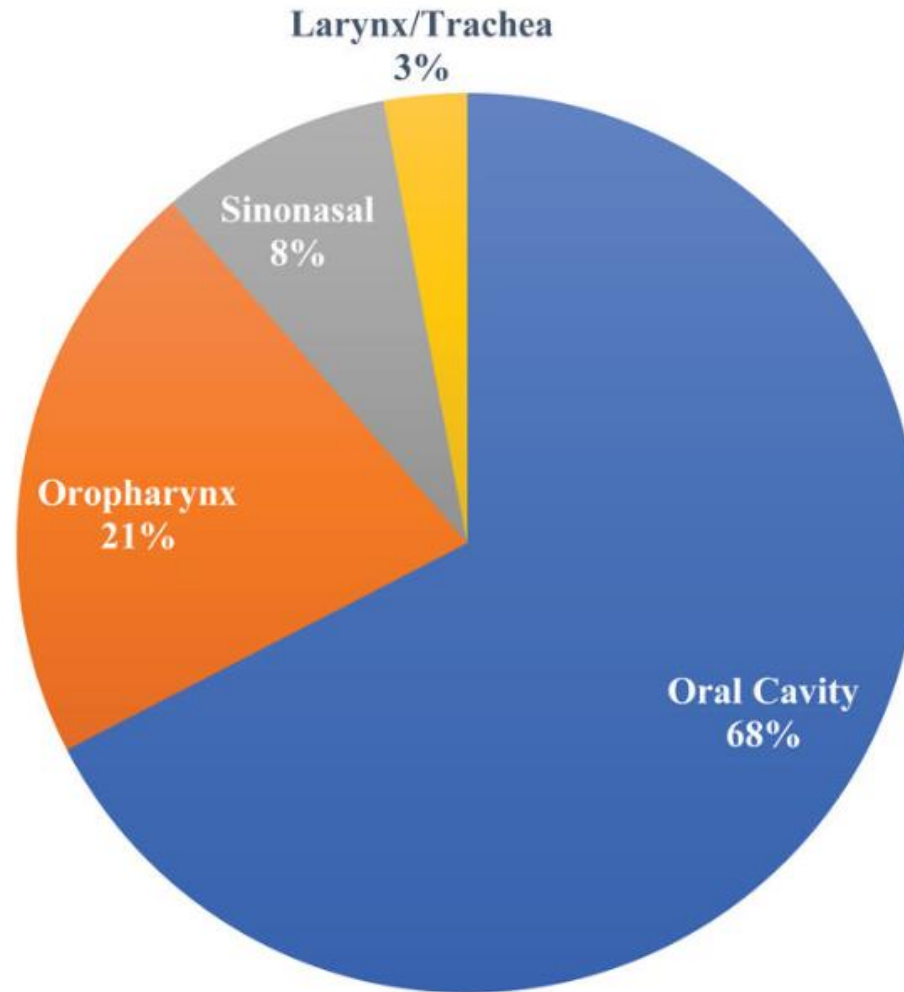


Figure 1A.
Proportion of minor salivary glands at different subsites

Hay AJ, y col. Minor salivary gland tumors of the head and neck-Memorial Sloan Kettering experience: Incidence and outcomes by site and histological type. Cancer. 2019;125(19):3354-3366.

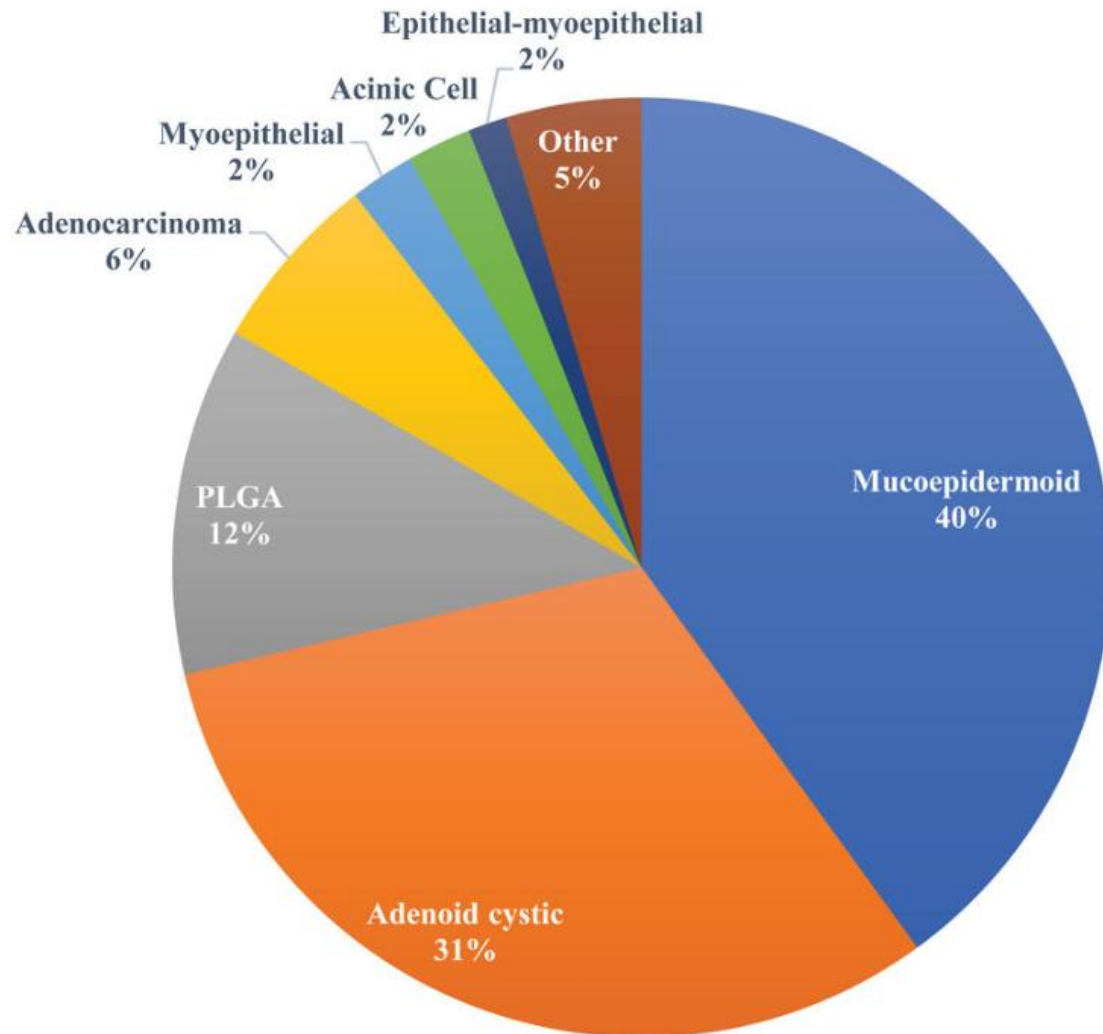
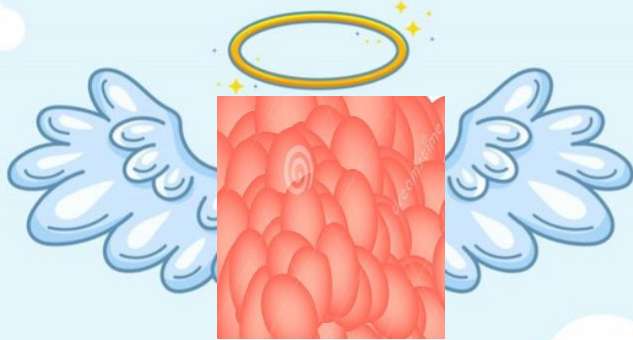


Figure 1B.
Histological types of different minor salivary carcinoma

¿Tumor de glándula salival benigno o maligno?



¿Tumor de glándula saliva benigna o maligna?

¿El tumor es invasivo? ¿Infiltra?

¿El tumor presenta citomorfología definitivamente maligna?

¿El tumor es maligno por definición? ¿A qué tipo específico de tumor corresponde?

Modificado de Hernandez-Prera y col. Histopathology 2021, 79, 279–290.

CARCINOMA MUCOEPIDERMIOIDE

Carcinoma mucoepidermoide

ICD-O coding 8430/3

Definición

Neoplasia maligna de glándula salival caracterizada por células mucosas, intermedias y epidermoides (escamosas) que forman patrones quísticos y sólidos, usualmente asociados a reordenamientos de *MAML2*.

Epidemiología

Incidencia anual 0,2 – 0,4 casos/100.000 habitantes.

Afecta niños y adultos, promedio de edad 45 años. Más frecuente en mujeres (1.1-1.5:1).

Etiología

Secundario a radiación o quimioterapia en niños.

Patogénesis

Translocaciones *MECT1/MAML2* son altamente específicas para CME, generalmente se observa en CME de grado bajo e intermedios y generalmente se asocia a mejor pronóstico.

Carcinoma mucoepidermoide

D. Gnepp, J Henley, R. Simpson y J. Eveson. "Salivary and lagrimal glands" en [Diagnostic Surgical Pathology of the Head and Neck E-Book-](#)

- Aproximadamente 50% ocurren en glándulas salivales mayores.
- 86% en la parótida. Muy infrecuentemente a partir de conducto de Stensen.
- Glándulas salivales menores: paladar, zona retromolar, piso de boca, labios y lengua.
- Infrecuentemente en mandíbula o maxilar.
- Ocasionalmente: glándula salival intralinfática heterotópica, laringe, glándula lagrimal, nariz, senos paranasales, pulmón, mama y tráquea.
- Puede desarrollarse en tumor de Warthin o ser componente maligno de Carcinoma-Ex Adenoma pleomorfo.
- Crecimiento lento (se ha reportado hasta 40 años).

Carcinoma mucoepidermoide

Clínica

- Más común en parótida.
- Comienzan como lesión asintomática, de color azul o rojo que puede confundirse con mucocele.
- Puede demorar meses a un año en desarrollarse, eventualmente más.
- Puede haber dolor o compromiso neural en los carcinomas de alto grado.
- Pueden generar fístula cutánea.

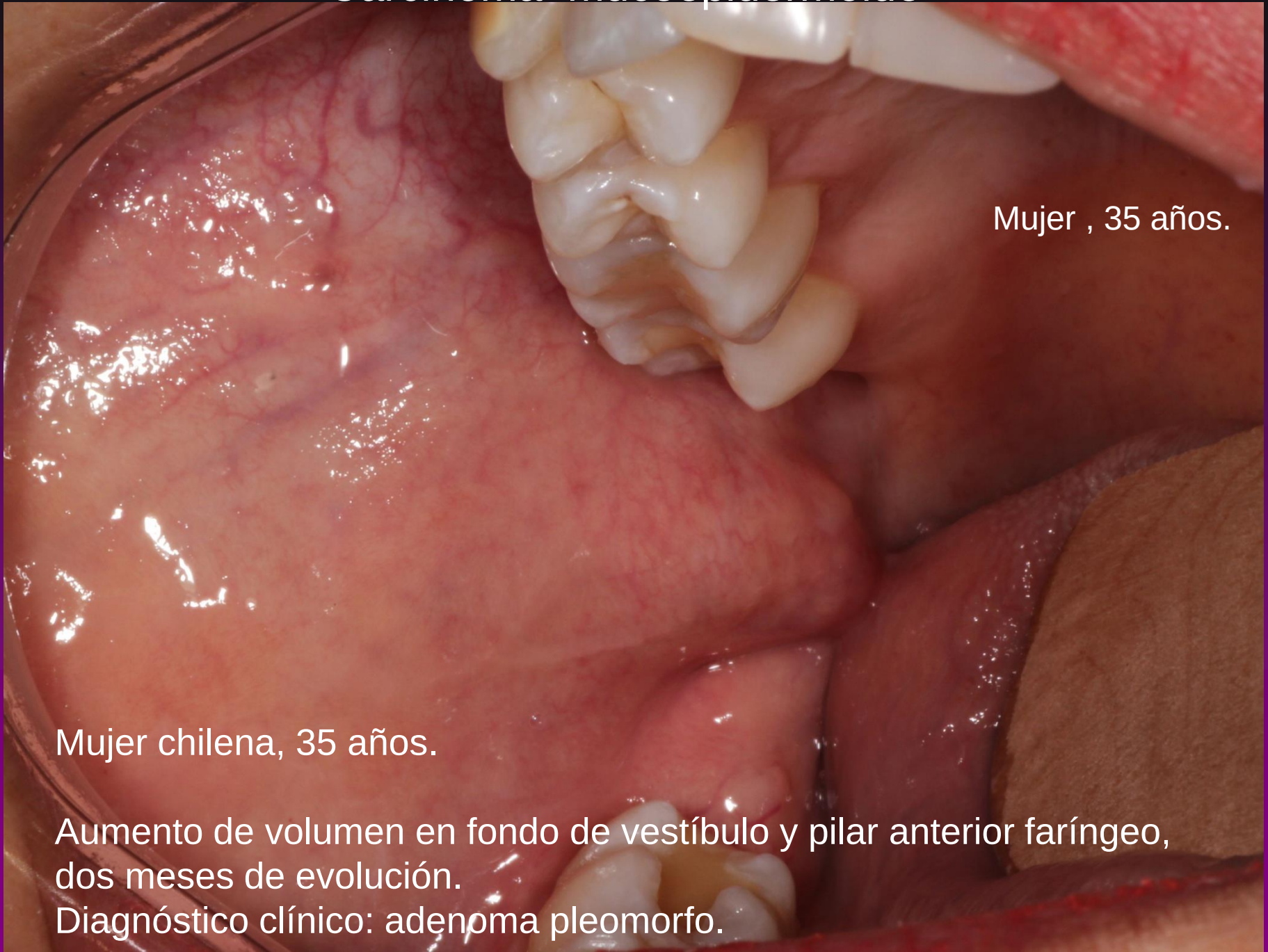
Carcinoma mucoepidermoide

Mujer , 35 años.

Mujer chilena, 35 años.

Aumento de volumen en fondo de vestíbulo y pilar anterior faríngeo,
dos meses de evolución.

Diagnóstico clínico: adenoma pleomorfo.



Ranganath MK, Matmari V, Narayanaswamy UD, Bavle RM. **Mucoepidermoid carcinoma presenting as a retromolar mucocele.** Ann Maxillofac Surg. 2011;1(1):66-9.

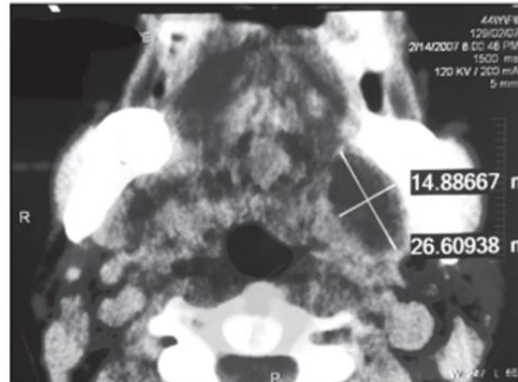
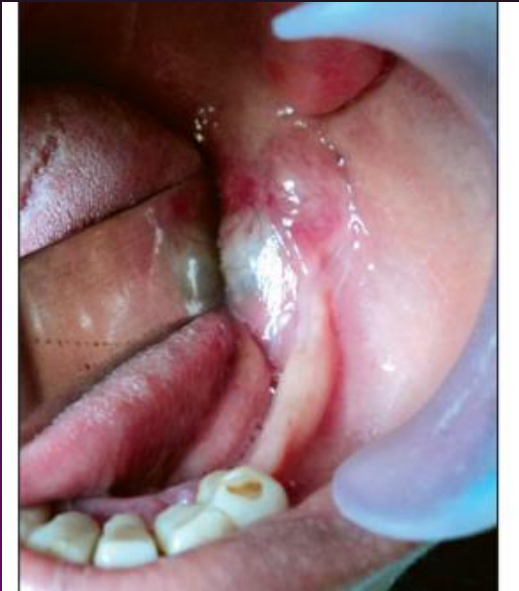


Figure 3: Contrast CT scan showing cystic lesion medial to the angle of the mandible measuring 1.5 cm × 2.6 cm.

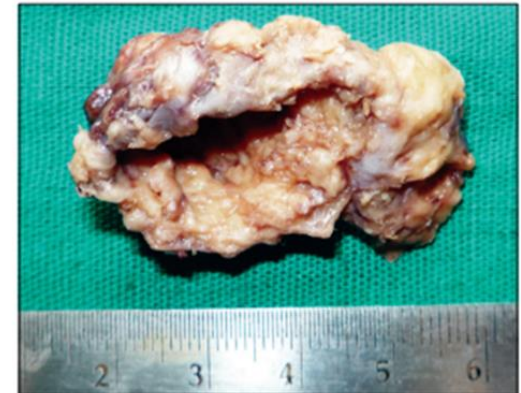


Figure 4: Gross examination showing a cystic lesion, roughly oval in shape, creamish brown in color, and nodular surface.

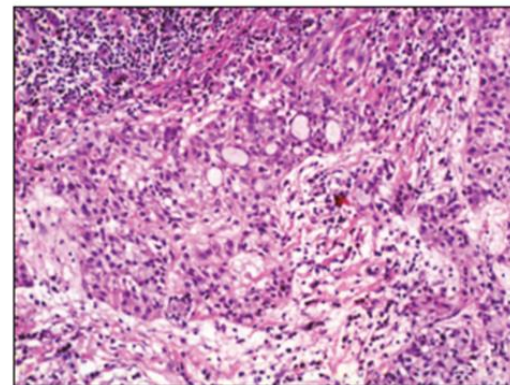
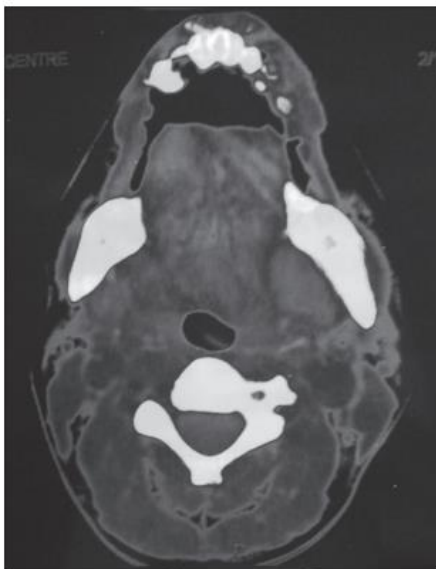


Figure 5: Photomicrograph showing malignant epidermoid cells, intermediate cells and mucous cells forming microcystic areas. Chronic inflammatory cell infiltrate is seen (H and E, 10x).

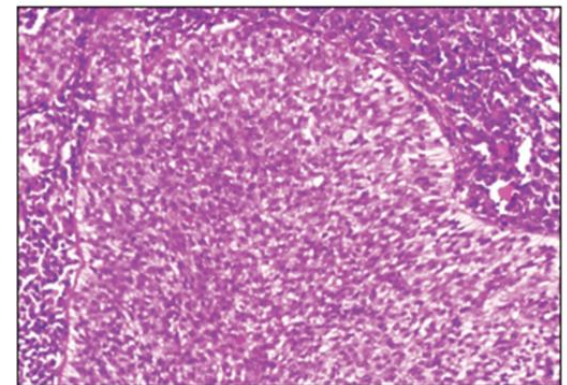
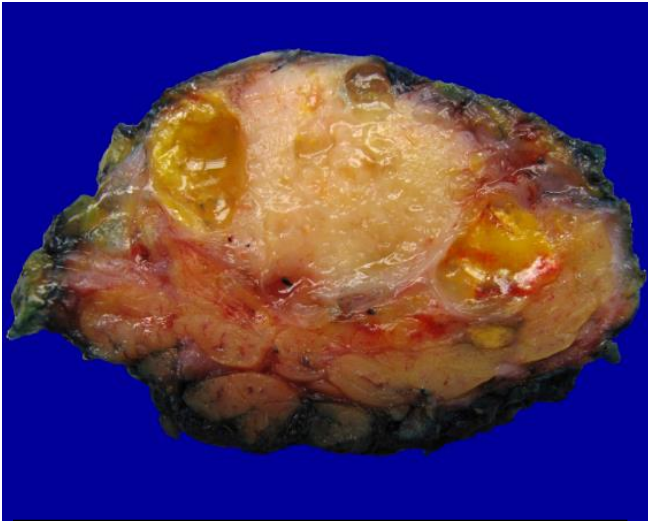


Figure 6: Photomicrograph showing syncytial arrangement of intermediate cells, and presence of columnar, mucous, and epidermoid cells (H and E, 10x).

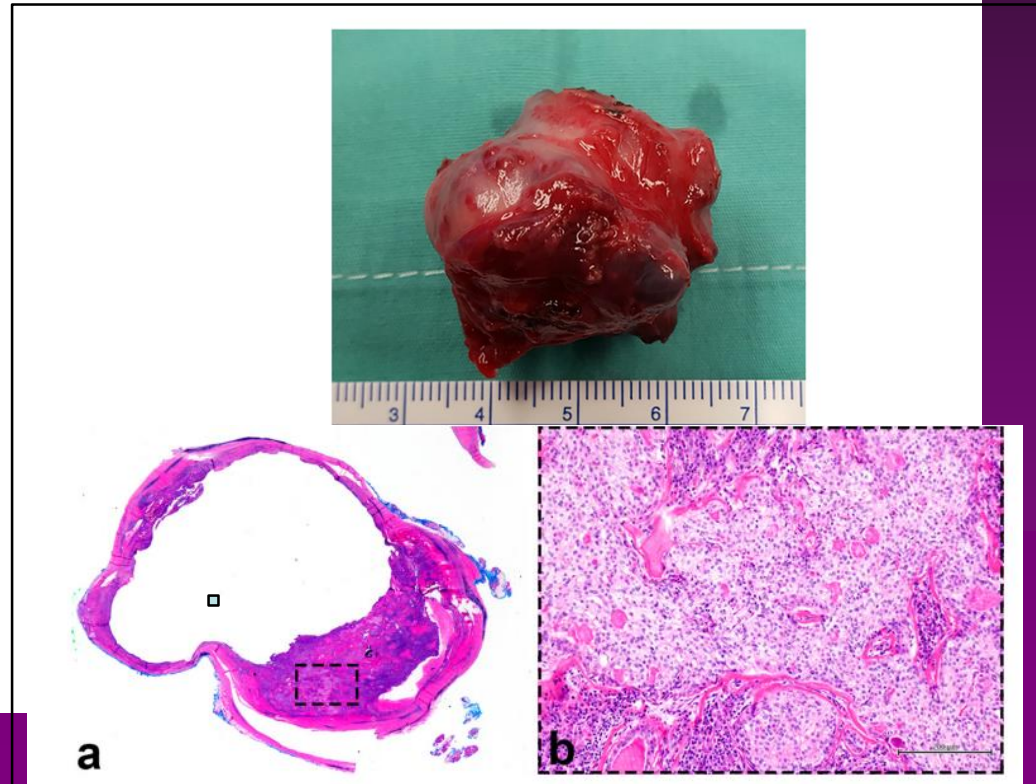
Carcinoma mucoepidermoide

Apariencia macroscópica

Firme o blanda, puede presentar áreas quísticas o masas sólidas con bordes circunscritos o infiltrativos, ocasionalmente puede presentar grandes quistes.



Lester Thompson, libro OMS 2022



Sousa Melo SL, y col. Dentomaxillofac Radiol. 2018;47(4):20170331.

Carcinoma mucoepidermoide

Histopatología 1

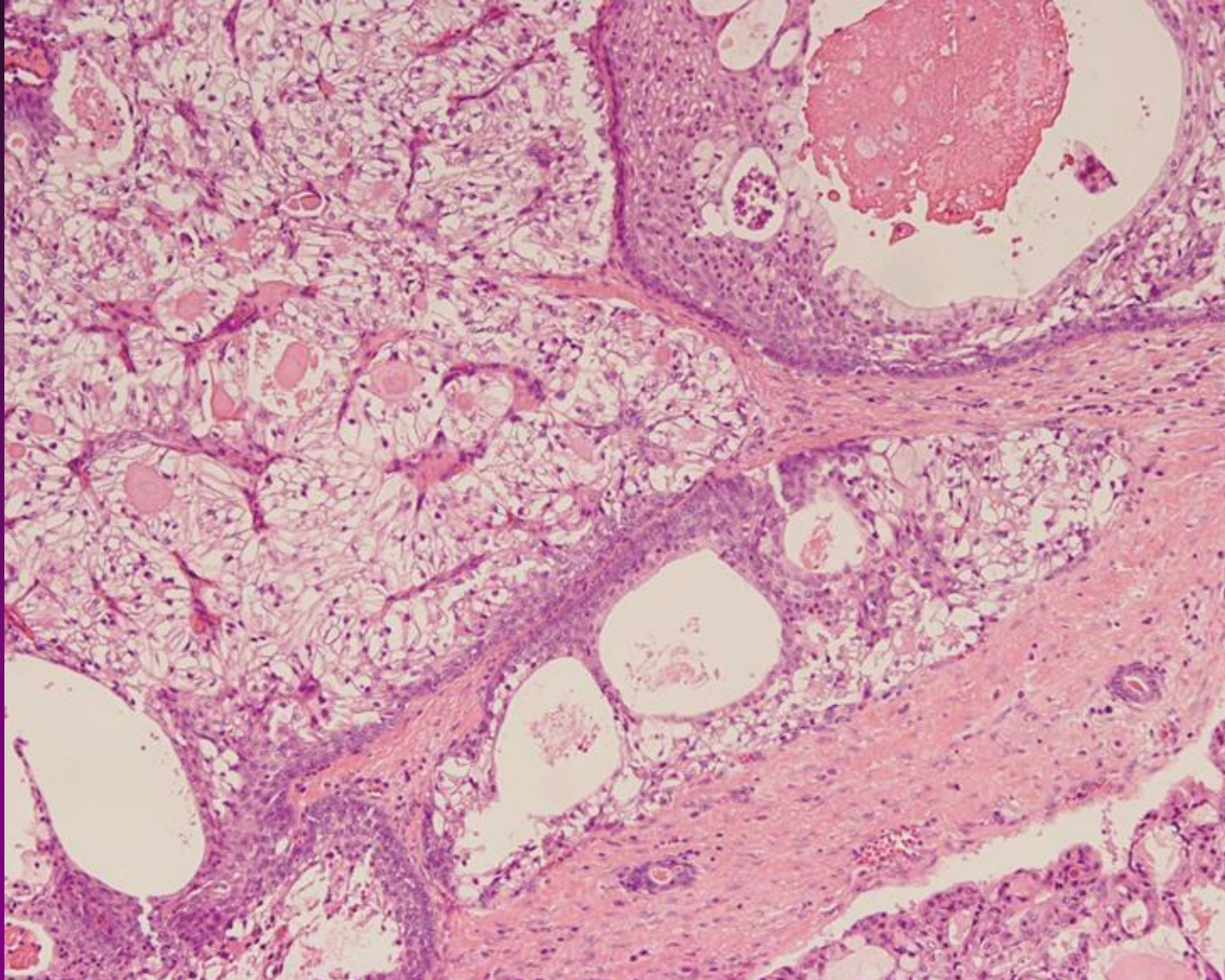
- Células escamosas (epidermoides). Pueden tener puentes intercelulares, pero la queratinización definitiva es muy infrecuente.
- Células productoras de mucus (PAS y mucicarcín (+) intracitoplasmático). Al romperse quistes con mucina pueden generar una respuesta inflamatoria.
- Células intermedias.
- La proporción de los tipos celulares y su arquitectura incluyendo la formación de quistes es variable.

Carcinoma mucoepidermoide



Carcinoma mucoepidermoide

Identifique áreas quísticas y células claras



Carcinoma mucoepidermoide

Histopatología 2

Las células neoplásicas se organizan en láminas, islas, estructuras tubulares y quistes de diferentes tamaños.

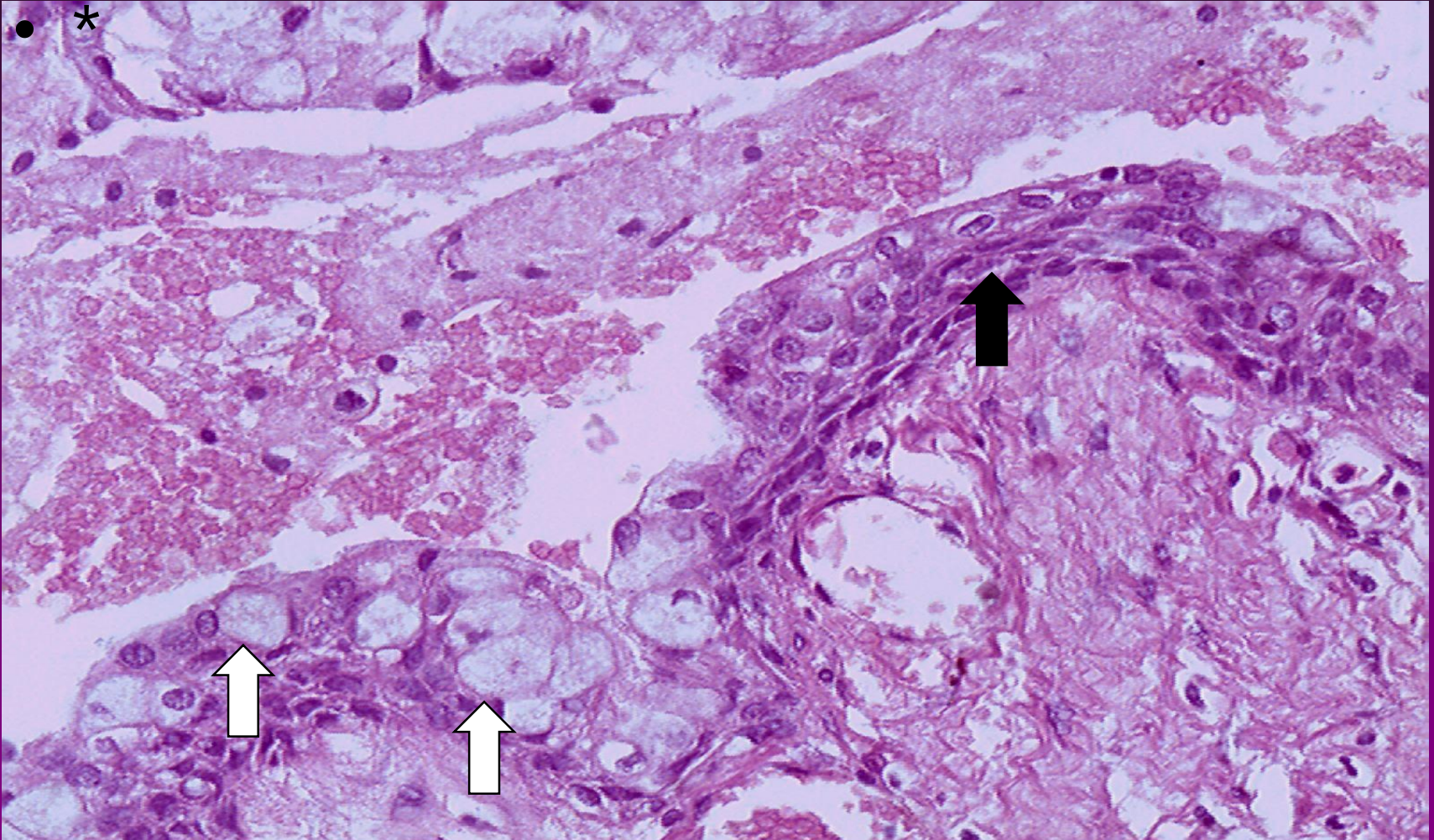
Los quistes pueden estar revestidos por células intermedias, mucosas o epidermoides y presentan contenido mucinoso.

Los quistes más grandes pueden romperse difundiendo células neoplásicas e induciendo una respuesta inflamatoria con hemorragia, depósito de hemosiderina, agujas de colesterol y fibrosis.

John Eveson , Lester Thompson, Patología Cabeza y Cuello 2° ed. 2013.

Carcinoma mucoepidermoide

Área quística revestida por células mucinosas (flechas blancas) y epidermoides (flechas negras)



Carcinoma mucoepidermoide

Graduación Histopatológica OMS 2017

Bajo grado: quístico, rico en células mucosas, y bien circunscrito.

Grado intermedio: más sólido y menos circunscrito, diversidad de apariencias, incluyendo extravasación de mucina.

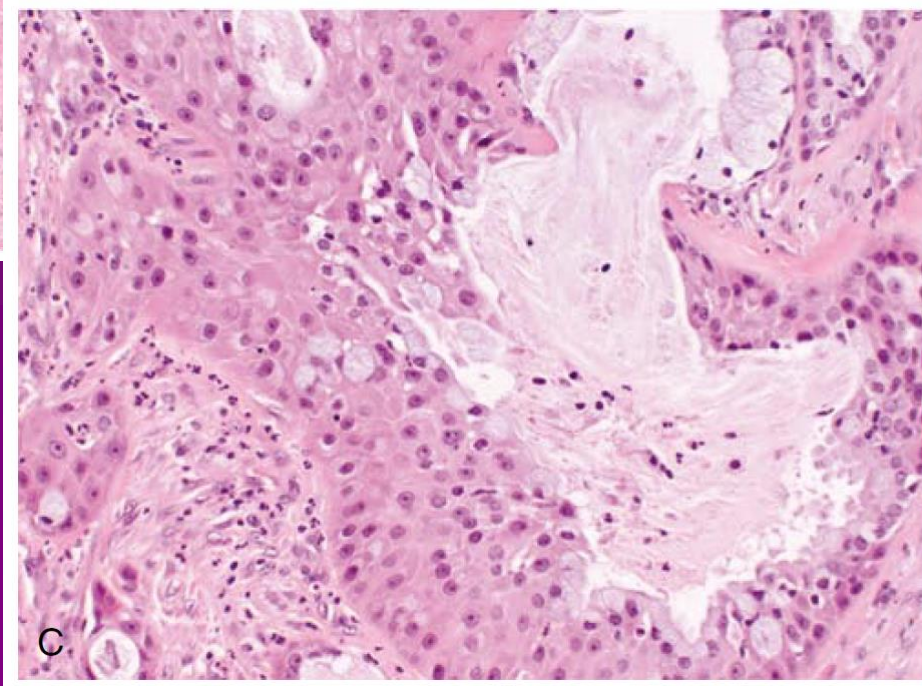
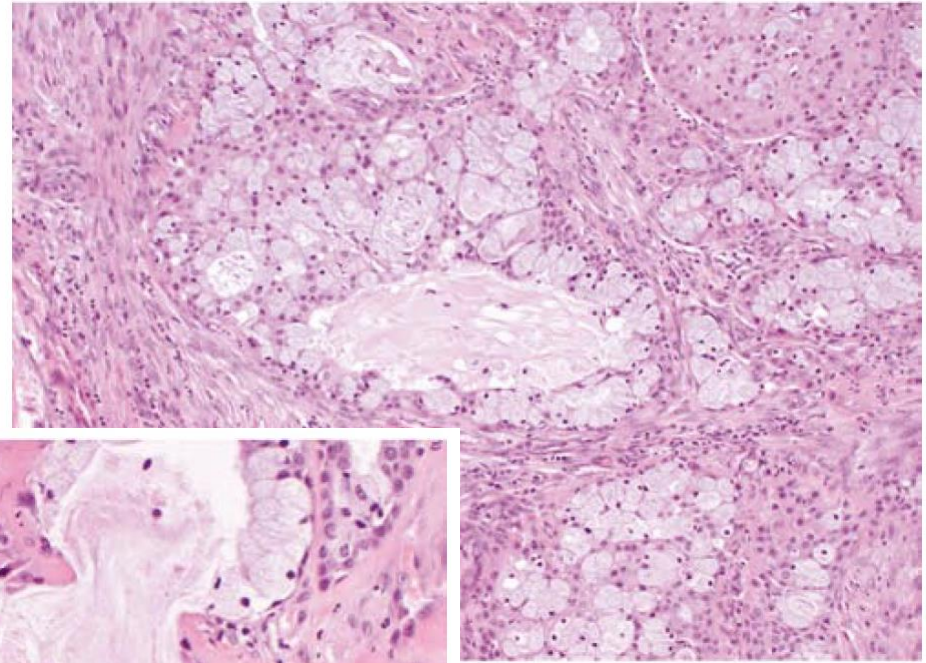
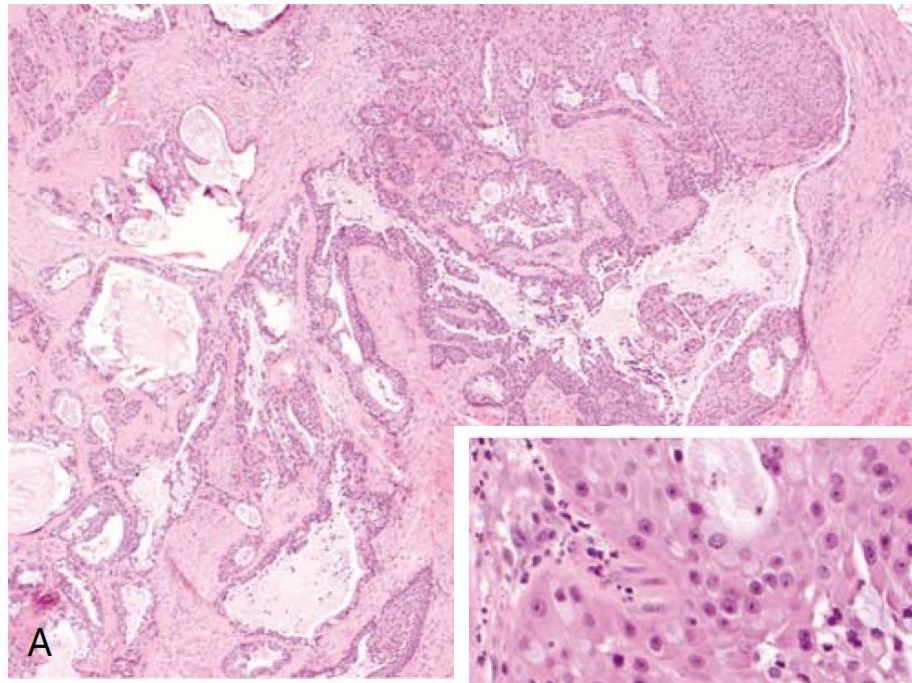
Alto grado: una o más de las siguientes características: núcleos anaplásicos, necrosis, aumento de mitosis, invasión perineural, linfovascular u ósea.

Graduación Histopatológica OMS 2005

Histopathologic feature	Point value
Cystic component < 20%	2
Neural invasion	2
Necrosis	3
4 or more mitoses / 10 hpf	3
Anaplasia	4
Tumour Grade	Point Score
Low	0 - 4
Intermediate	5 - 6
High	7 or more

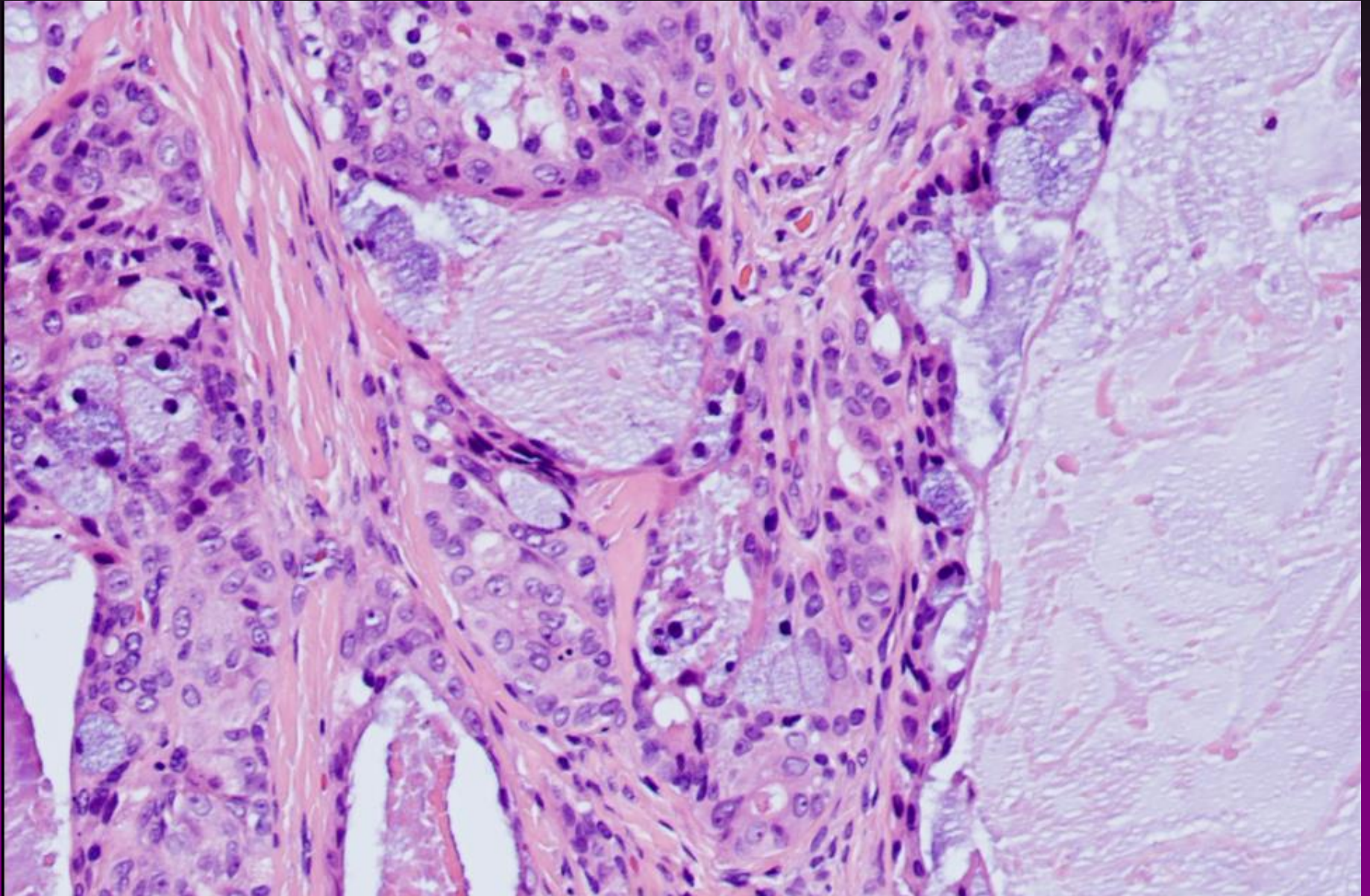
Carcinoma mucoepidermoide de bajo grado

D. Gnepp, J Henley, R. Simpson y J. Eveson. "Salivary and lagrimal glands" en [Diagnostic Surgical Pathology of the Head and Neck E-Book-](#)



Abundantes áreas
quísticas y células
mucosas.

Carcinoma mucoepidermoide de bajo grado



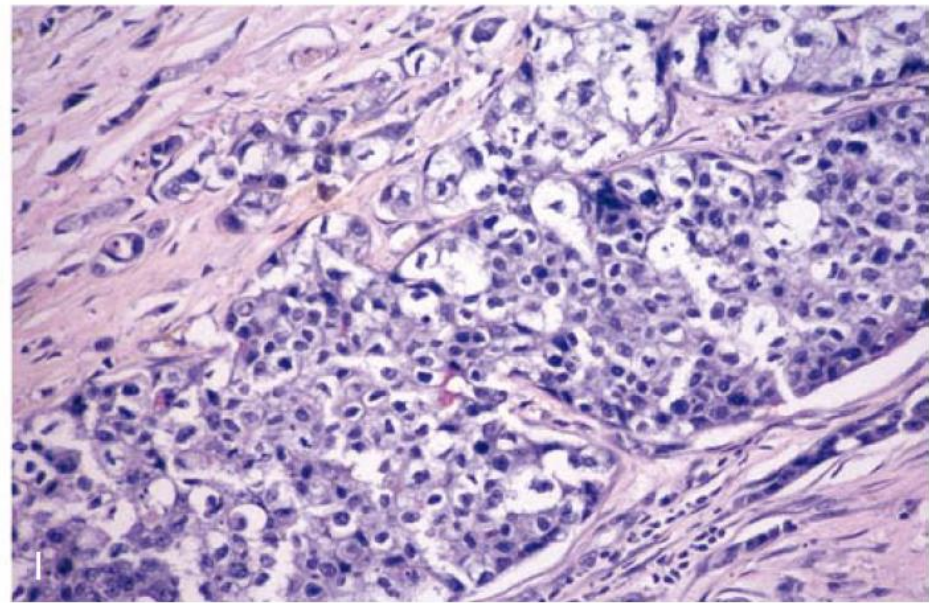
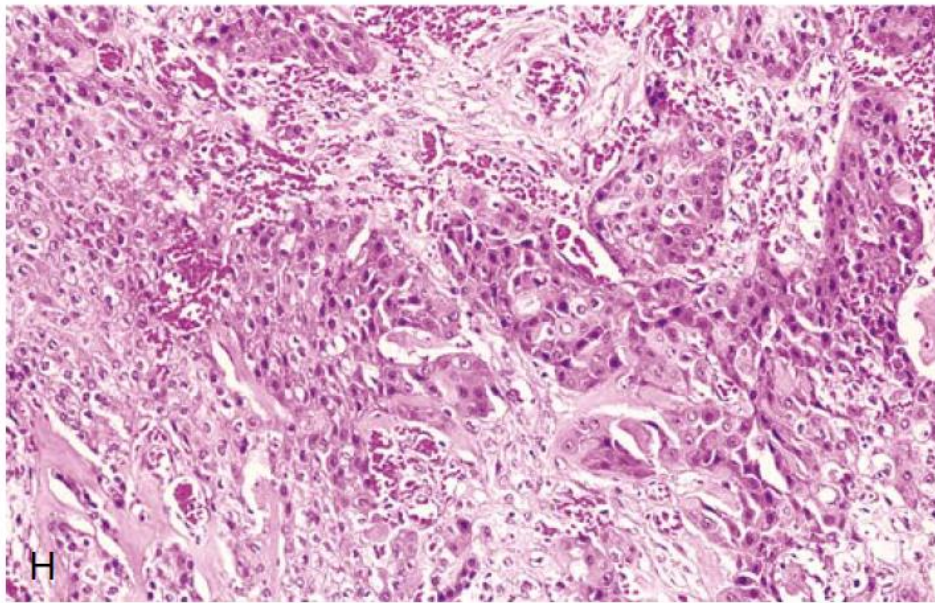
Legend: Cystic spaces are partly lined by mucous cells. Other cell types include intermediate, squamoid and partly clear cells.

Source: Ilmo Leivo.

Libro OMS 2022

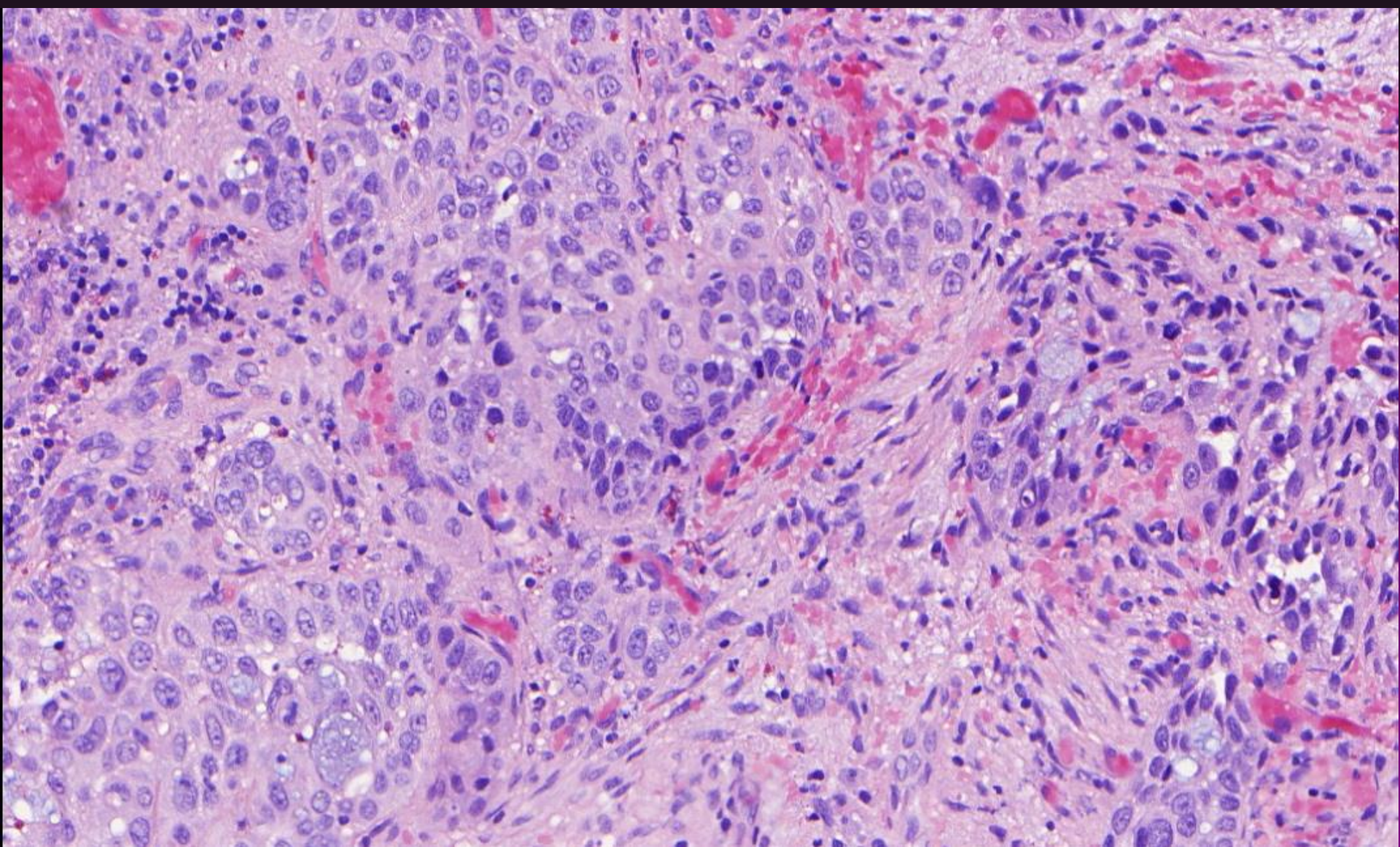
Carcinoma mucoepidermoide de alto grado

D. Gnepp, J Henley, R. Simpson y J. Eveson. "Salivary and lagrimal glands" en [Diagnostic Surgical Pathology of the Head and Neck E-Book-](#)



H, I) Formado por células tumorales poco diferenciadas, en nidos irregulares infiltrantes. **I)** Con tinción mucicarmin se observa escasas células mucosas.

Carcinoma mucoepidermoide de alto grado

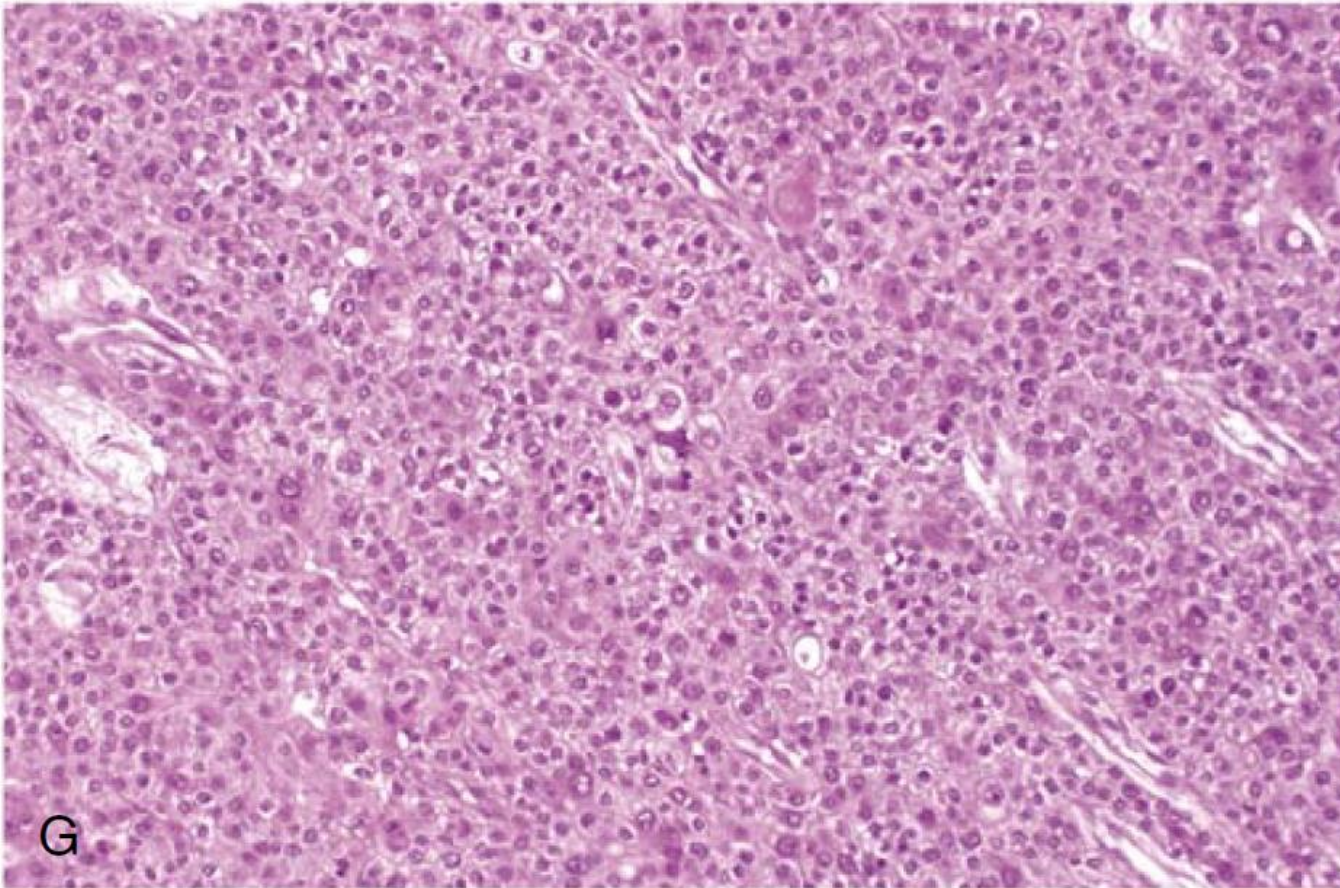


Legend: Poorly differentiated high grade carcinoma with minor amounts of mucinous cells.

Source: Alena Skalova

Carcinoma mucoepidermoide

D. Gnepp, J Henley, R. Simpson y J. Eveson. "Salivary and lagrimal glands" en [Diagnostic Surgical Pathology of the Head and Neck E-Book-](#)



Área con abundantes células intermedias

Carcinoma mucoepidermoide

Histopatología 3

Se han descrito variantes:

- **Oncocíticas:** células polígonas /columnares con escasos mucocitos y células escamoides casi ausentes .
- **De células claras:**
- **Esclerosante:** densa fibrosis con hialinización.

OMS 2017

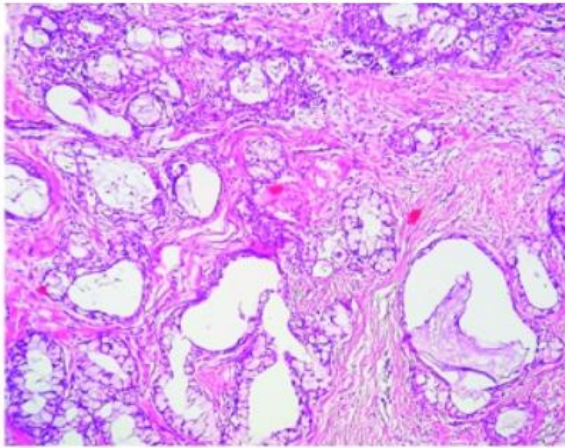
Los CME pueden tener calcificaciones, hasta 20%.

Gonzalez-Arriagada WA y col. Oral Surg Oral Med Oral Pathol Oral Radiol
Endod. 2011;111(4):482-5.

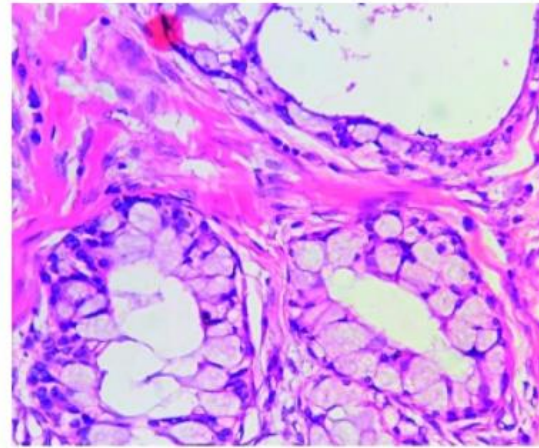
Oncocytes in Mucoepidermoid Carcinoma of the Palate: Diagnostic Challenges.

[Kumar R](#), [Natarajan S](#), [Sneha](#). [Case Rep Dent](#). 2017;5741821.

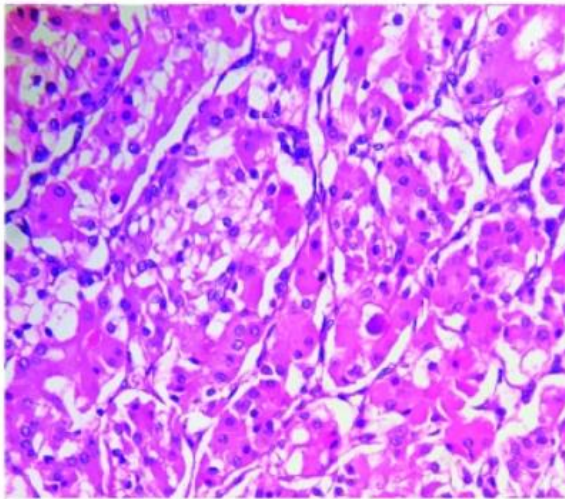
doi: 10.1155/2017/5741821.



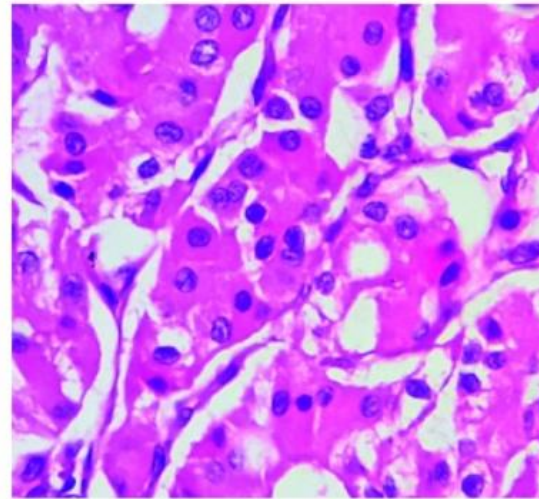
(b)



(c)



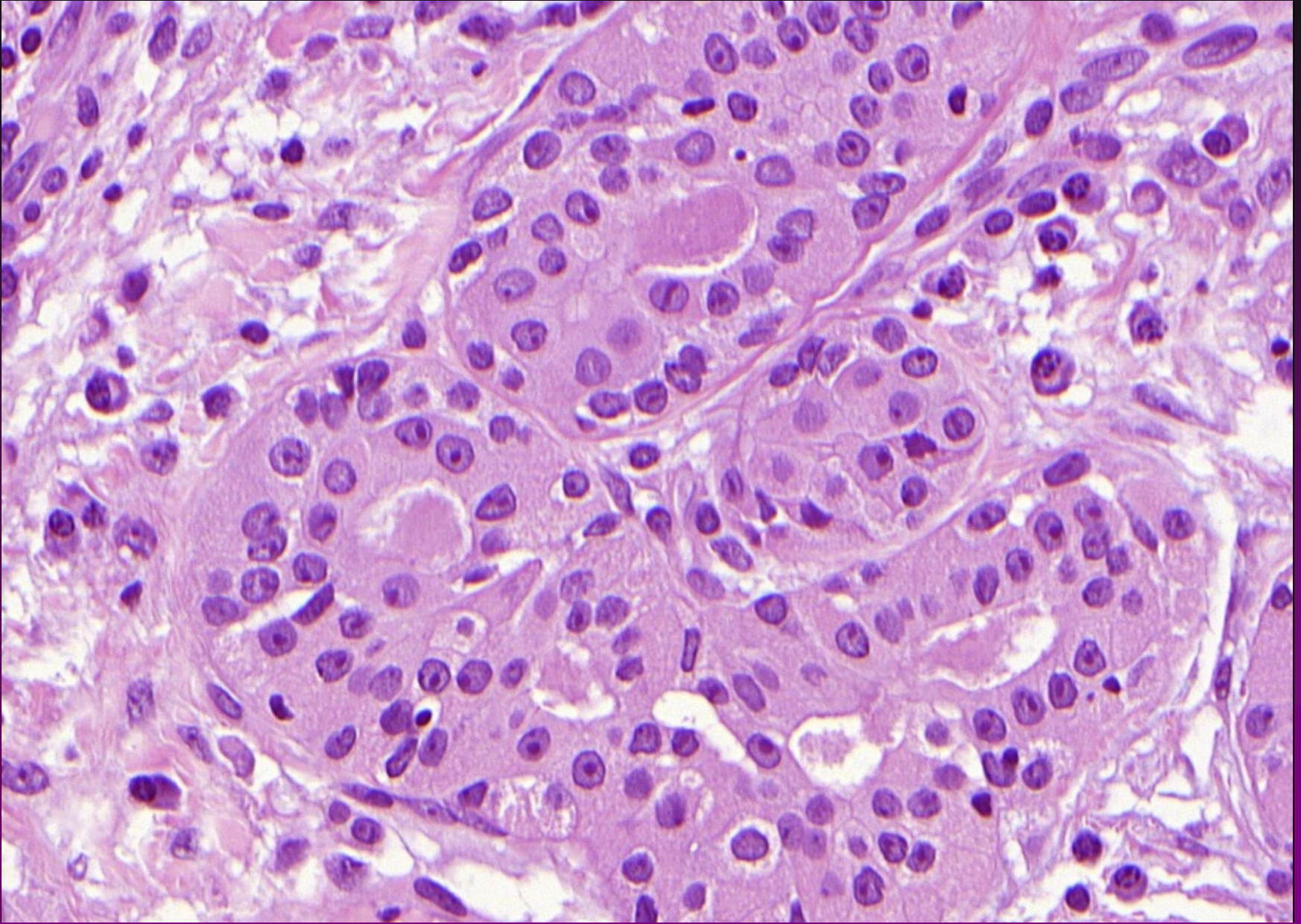
(d)



(e)

(b) Tumour mass showing multiple large cystic spaces (magnification 10x). (c) Cystic spaces lined by mucous cells (magnification 40x). (d) Oncocytic metaplasia evidenced by the presence of oncocytes (magnification 10x). (e) Cells with granular eosinophilic cytoplasm arranged in an organoid/alveolar pattern and supported by thin fibrous connective tissue septa (magnification 40x).

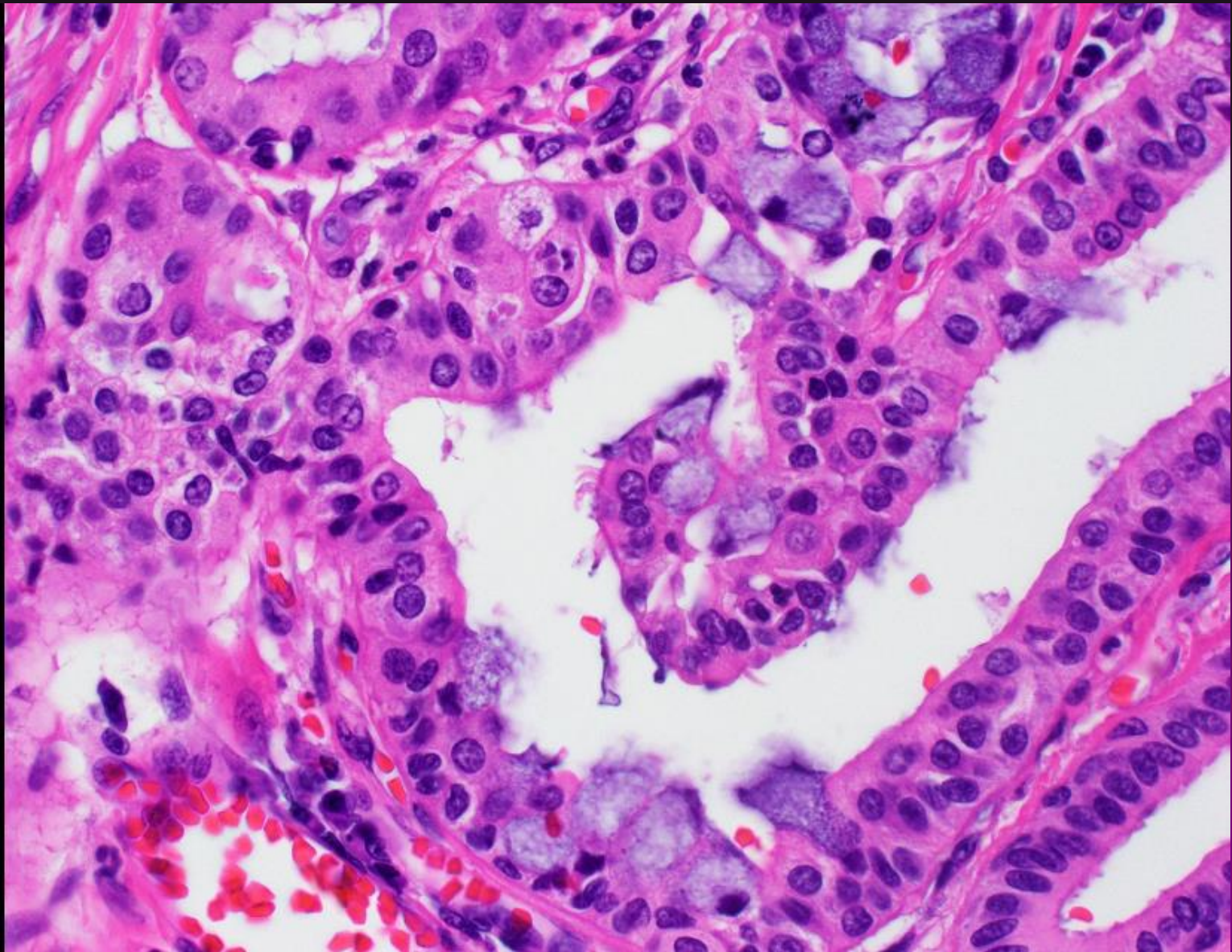
Carcinoma mucoepidermoide, variante oncocítica



Legend: Prominent oncocytoid features and very few hardly visible mucous cells, CRTC1::MAML2 fusion was detected.

Source: Alena Skalova

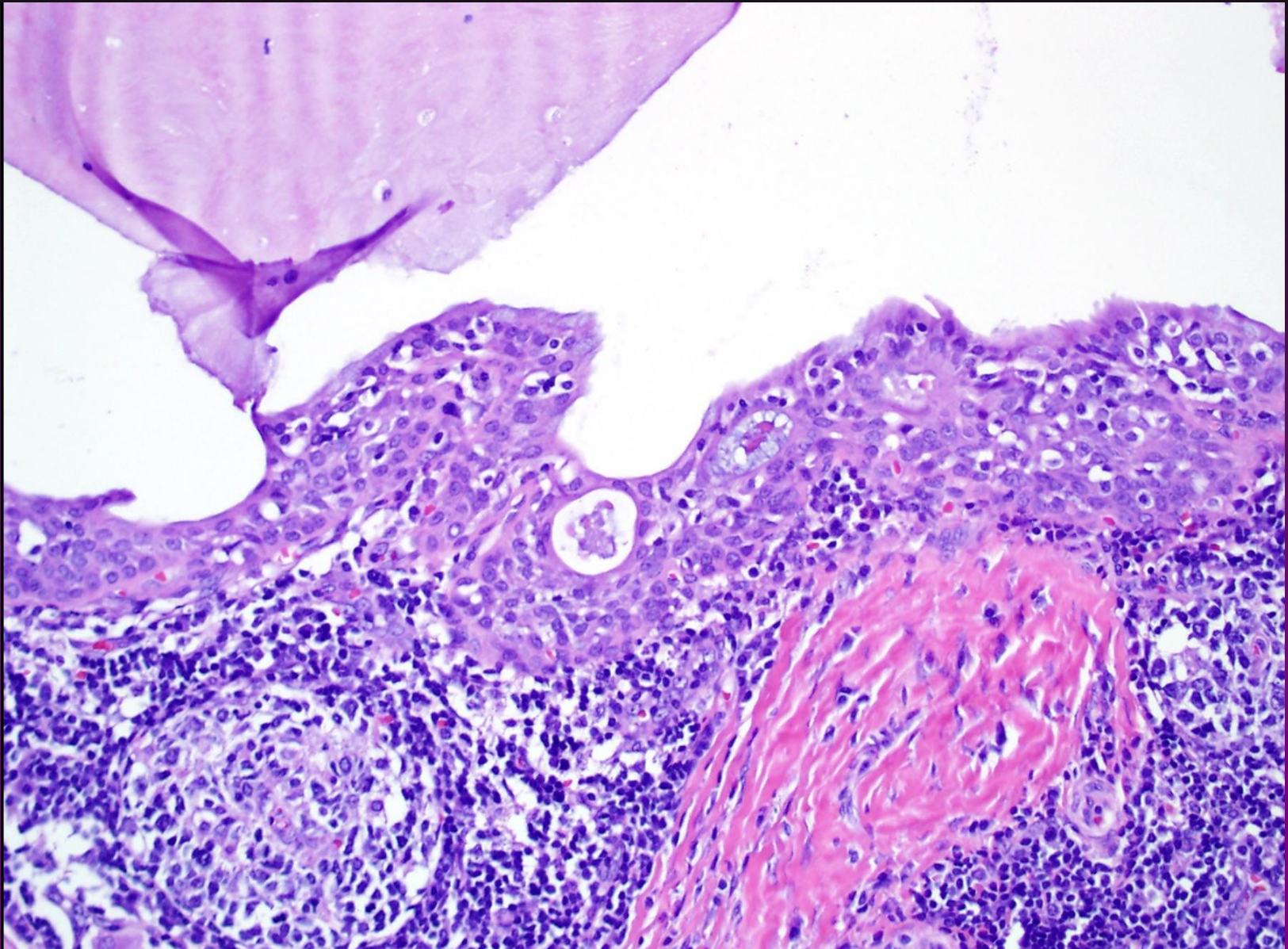
Carcinoma mucoepidermoide, patrón ciliado



Legend: Tumor cells lining cystic spaces display luminal ciliae.

Source: Justin A. Bishop

Carcinoma mucoepidermoide, patrón tipo Warthin



Legend: Tumour cells have oncocytoid and mucous features, and form cystic spaces. Tumour areas are surrounded by lymphatic tissue reminiscent of the architecture of Warthin tumour.

Source: Justin A. Bishop

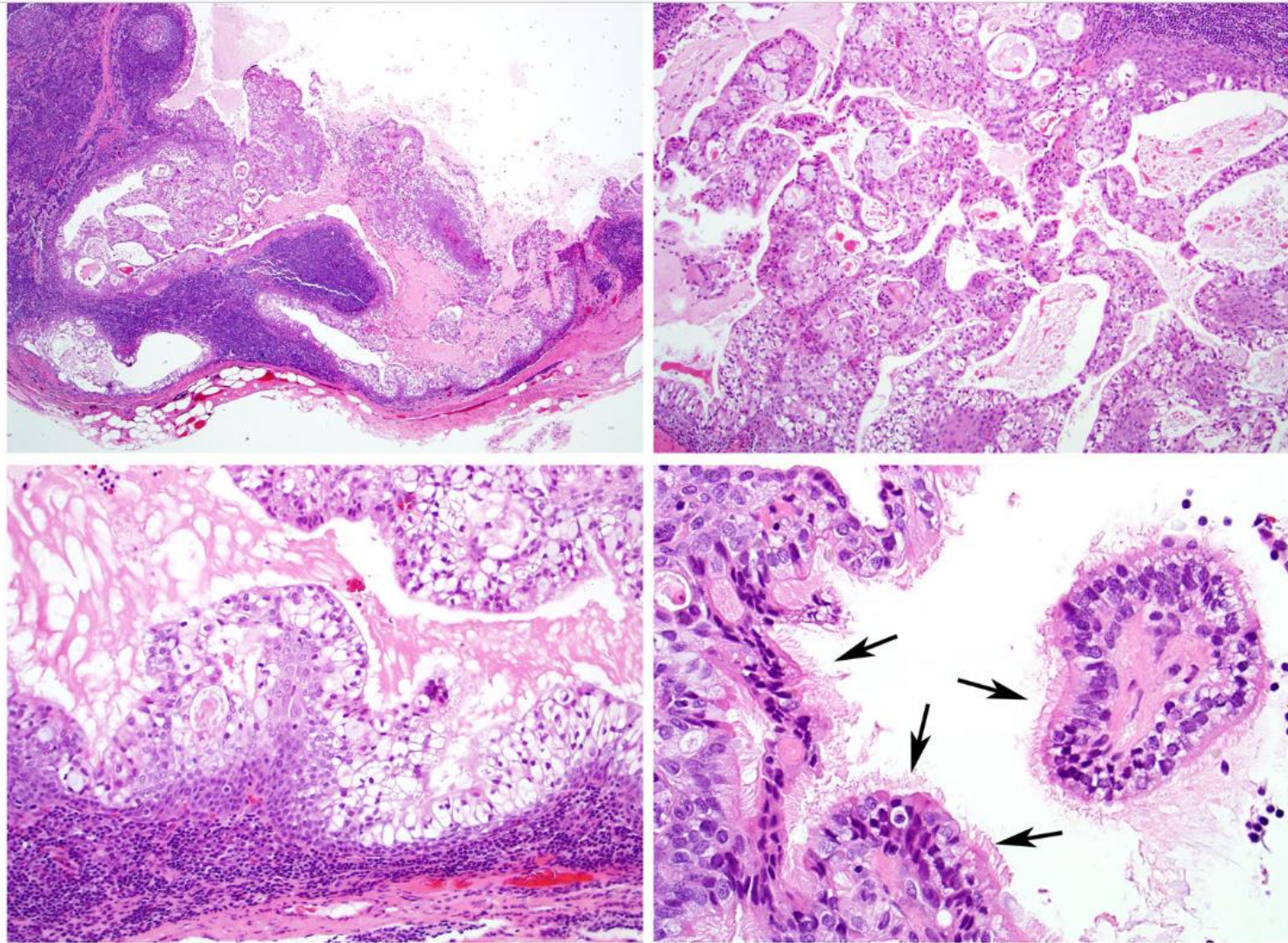


Figure 1.

This ciliated mucoepidermoid carcinoma presented as a cystic metastasis to a lateral cervical lymph node (A). The cystic lining was comprised of variably proliferative papillae and glandular spaces (B). The tumor cells were predominantly intermediate cells with clear cytoplasm, admixed with squamoid and mucinous cells. The nuclei were very bland (C). Many of the tumor cells exhibited cilia (arrows) (D).

Intraosseous mucoepidermoid carcinoma: report of two cases.

Atarbashi Moghadam S, Atarbashi Moghadam F. J Dent (Shiraz).
2014;15(2):86-90.

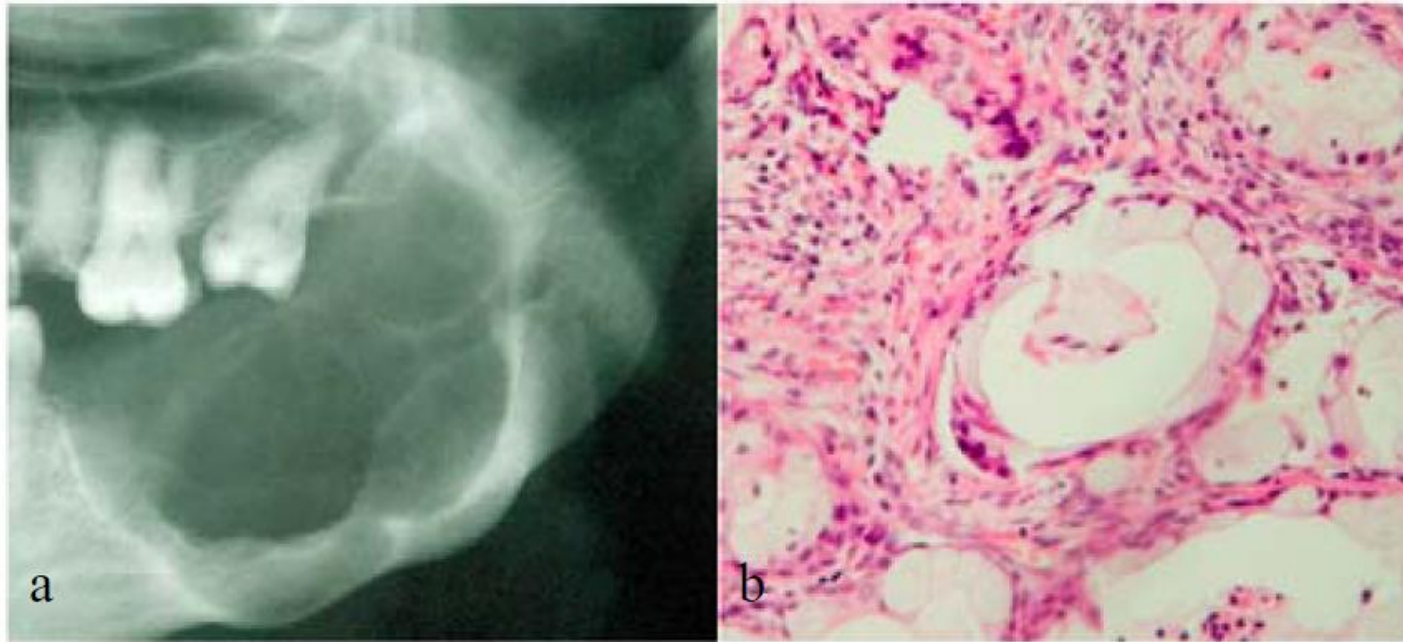
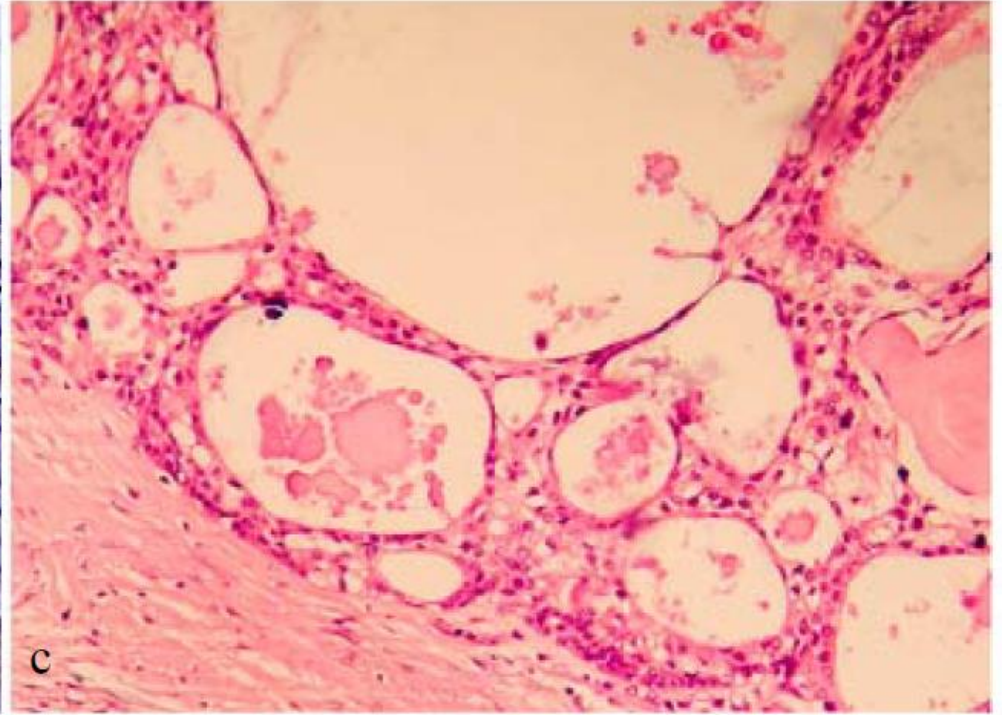
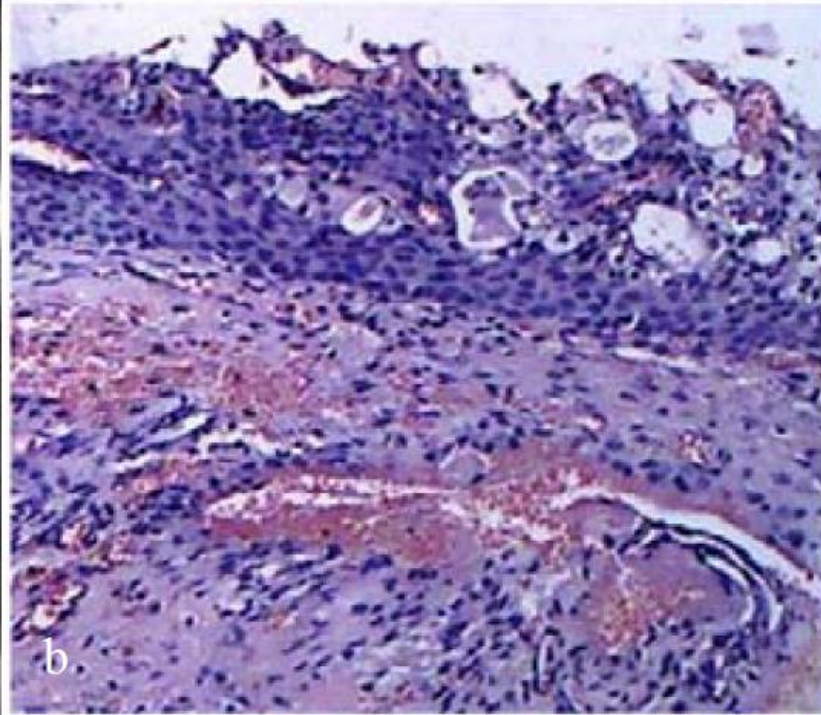


Figure 1a Radiographic image revealed a large, well-defined, multilocular radiolucent lesion with scalloped borders extending from the first molar area into the ascending ramus with cortex perforation. **b** Histopathological exam showed islands of epidermoid and mucous cells, with cystic areas in a fibrous stroma (X400).

Intraosseous mucoepidermoid carcinoma: report of two cases.

Atarbashi Moghadam S, Atarbashi Moghadam F. J Dent (Shiraz).
2014;15(2):86-90.



Calcifications in clear cell mucoepidermoid carcinomas.

Yang S, Chen X. Oral Surg Oral Med Oral Pathol Oral Radiol Endod.
2010;109(2):274-5.

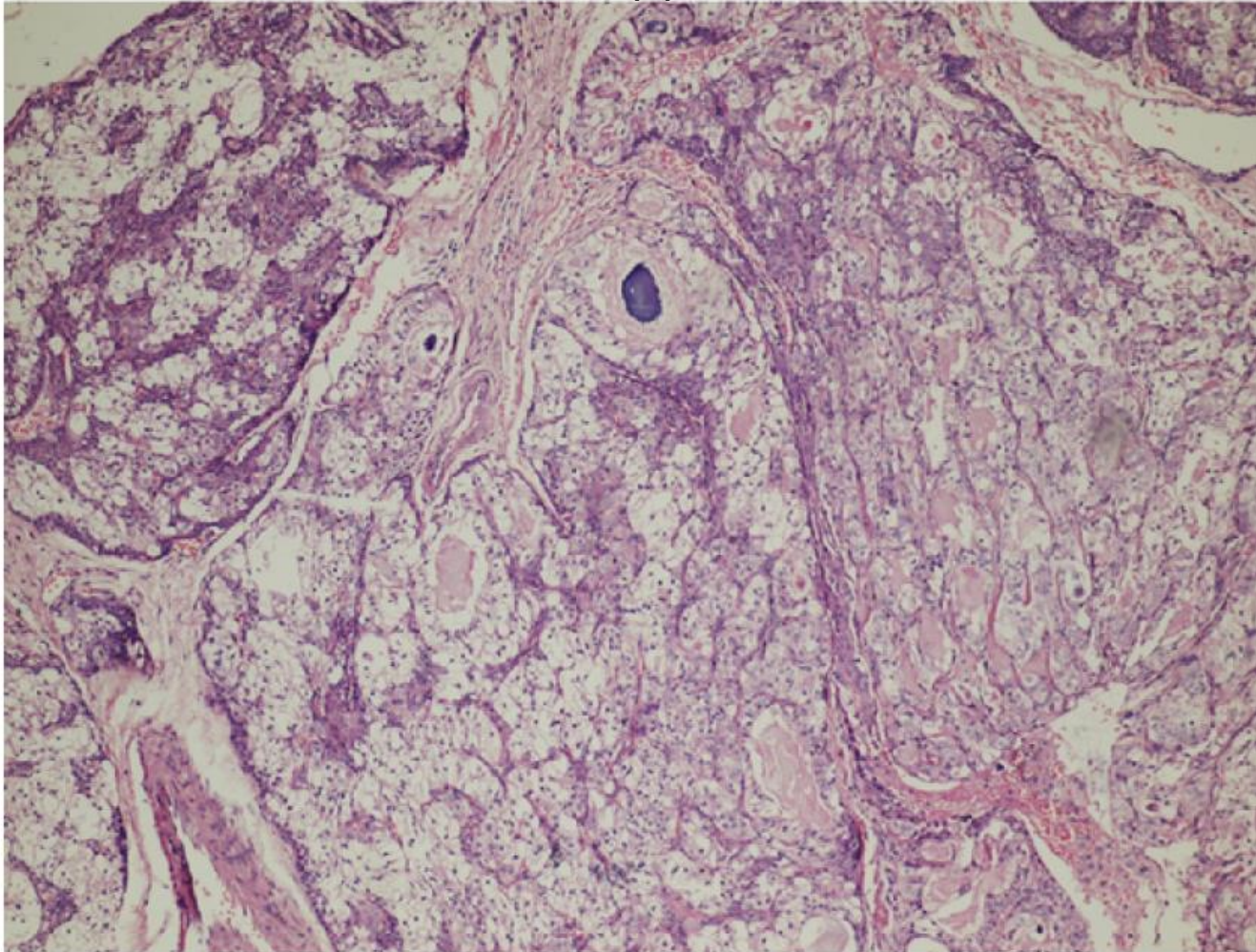


Fig. 1. Microscopic features of clear cell mucoepidermoid carcinoma (case 7; hematoxylin and eosin, original magnification $\times 100$).

Calcifications in clear cell mucoepidermoid carcinomas.

Yang S, Chen X. Oral Surg Oral Med Oral Pathol Oral Radiol Endod.
2010;109(2):274-5.

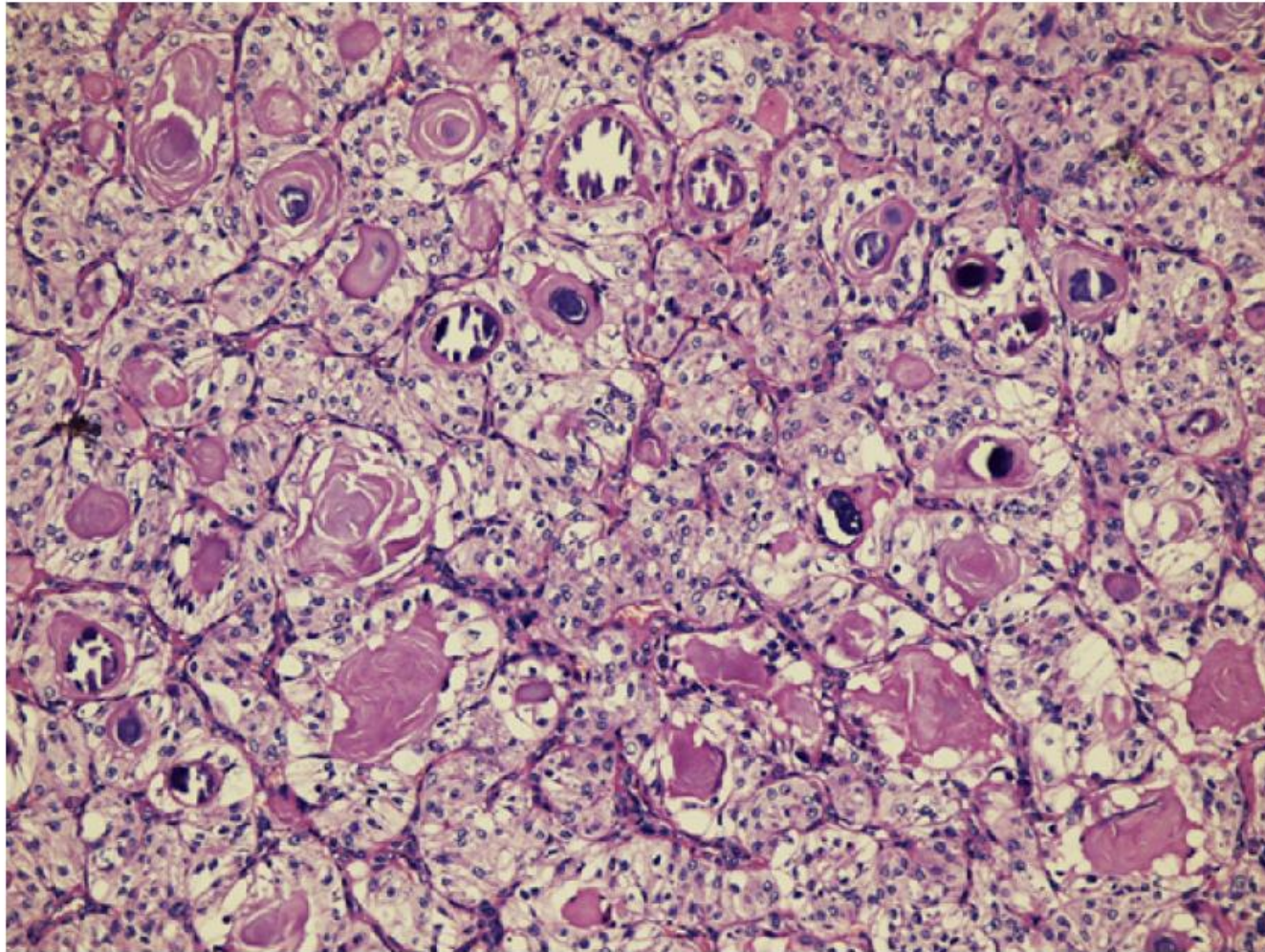
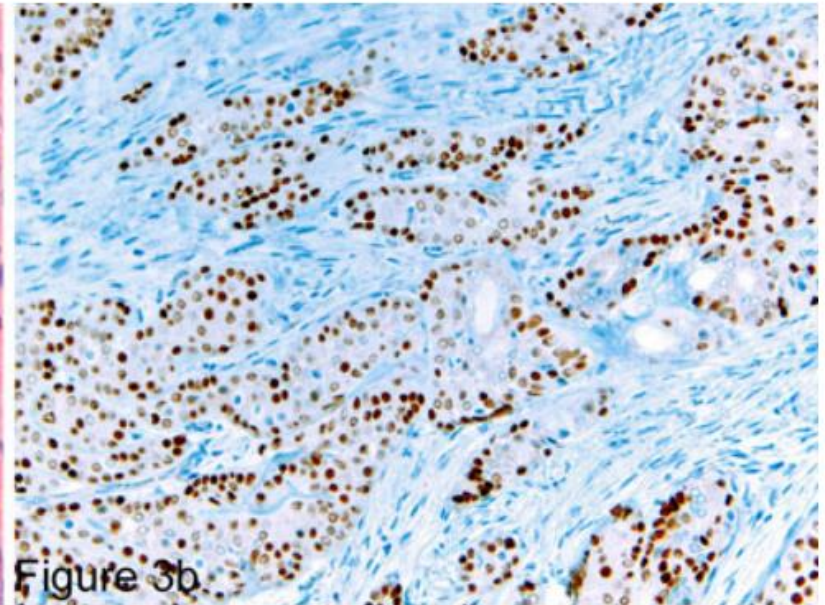
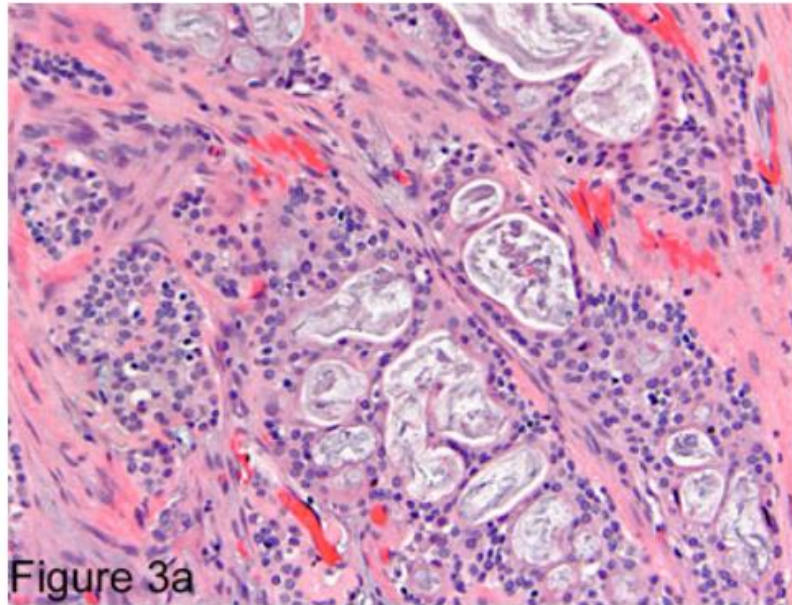


Fig. 2. Foci of intraluminal calcifications within the eosinophilic amorphous material (case 4; hematoxylin and eosin, original magnification $\times 200$).

Carcinoma mucoepidermoide

Inmunohistoquímica:

La inmunexpresión de p63 o p40 en ausencia de S100/SOX10 puede ayudar a diferenciar CME de otros tumores salivales.



Mucoepidermoid carcinoma stained with H&E (a) and p63 (b). $\times 20$

Sams RN, Gnepp DR. P63 expression can be used in differential diagnosis of salivary gland acinic cell and mucoepidermoid carcinomas. Head Neck Pathol. 2013;7(1):64-8.

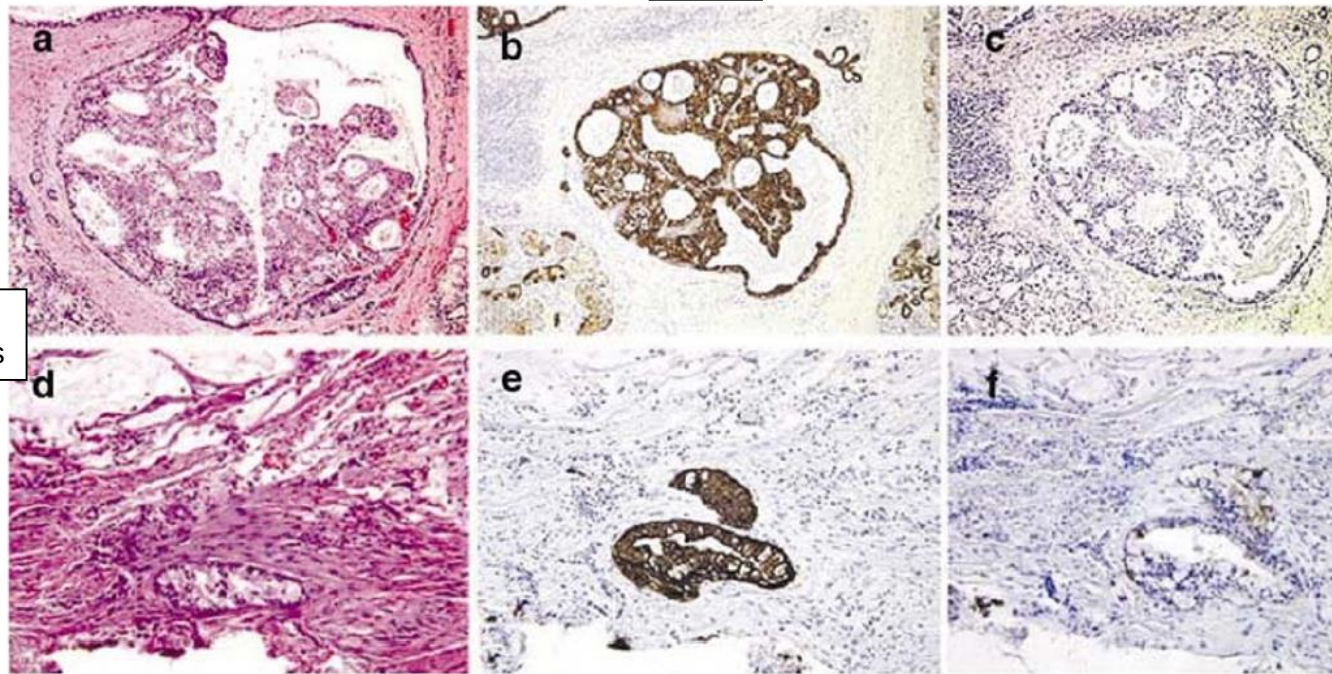
Immunohistochemical expression of cytokeratins 7 and 20 in malignant salivary gland tumors

Nikolaos G Nikitakis¹, Konstantinos I Tosios², Vasileios S Papanikolaou³, Helen Rivera⁴, Stavros I Papanicolaou⁵ and Olga B Ioffe⁶

Cytokeratins 7/20 in salivary gland tumors
NG Nikitakis *et al*

CK 7

CK 20



Carcinomas
mucoepidermoides

Figure 1 Hematoxylin and eosin appearance (a), (d), and immunohistochemical analysis for CK7 (b), (e) and CK20 (c), (f) in two cases of mucoepidermoid carcinoma. The first case (upper panel) showed diffuse and strong positivity for CK7, while it was negative for CK20. The second case (lower panel) was diffusely and strongly positive for CK7, also demonstrating weak and focal expression of CK20. Magnification for (a–c) is $\times 100$, while magnification for (d–f) is $\times 200$.

Immunohistochemical expression of cytokeratins 7 and 20 in malignant salivary gland tumors

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Cytokeratins 7/20 in salivary gland tumors
NG Nikitakis *et al*

CK 7

CK 20

Carcinomas
escamosos

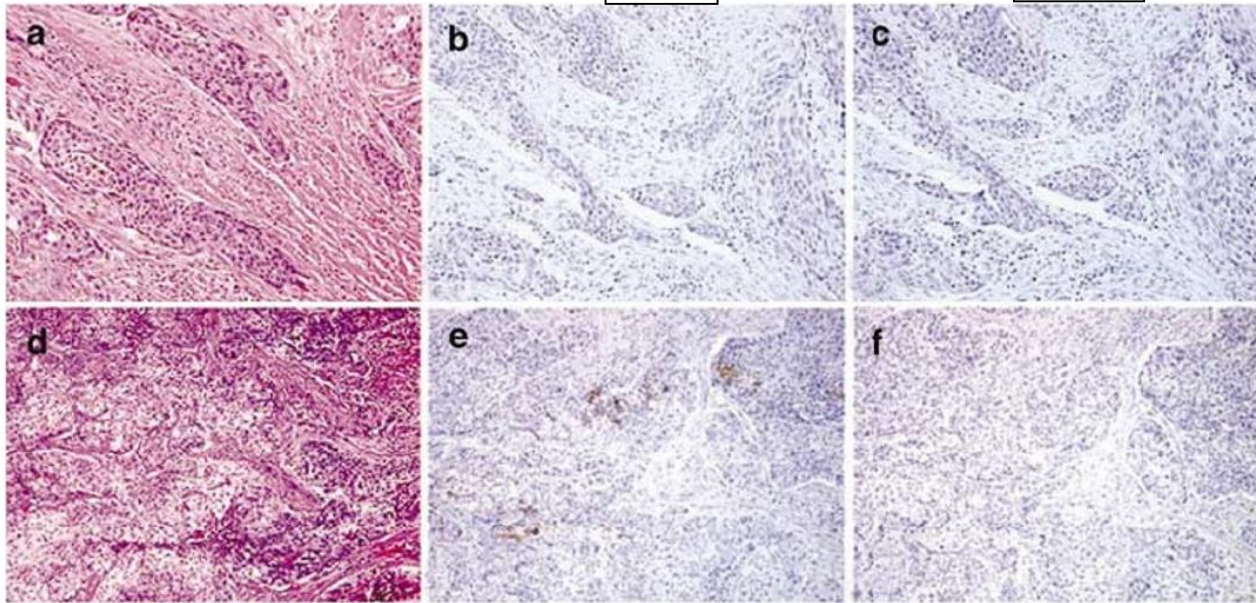


Figure 5 Hematoxylin and eosin appearance (a), (d), and immunohistochemical analysis for CK7 (b), (e) and CK20 (c), (f) in two cases of squamous cell carcinoma. The first case (upper panel) is negative for both markers. The second case (lower panel) is focally and weakly positive for CK7 in the absence of CK20 expression. Magnification for (a–c) is $\times 200$, while magnification for (d–f) is $\times 100$.

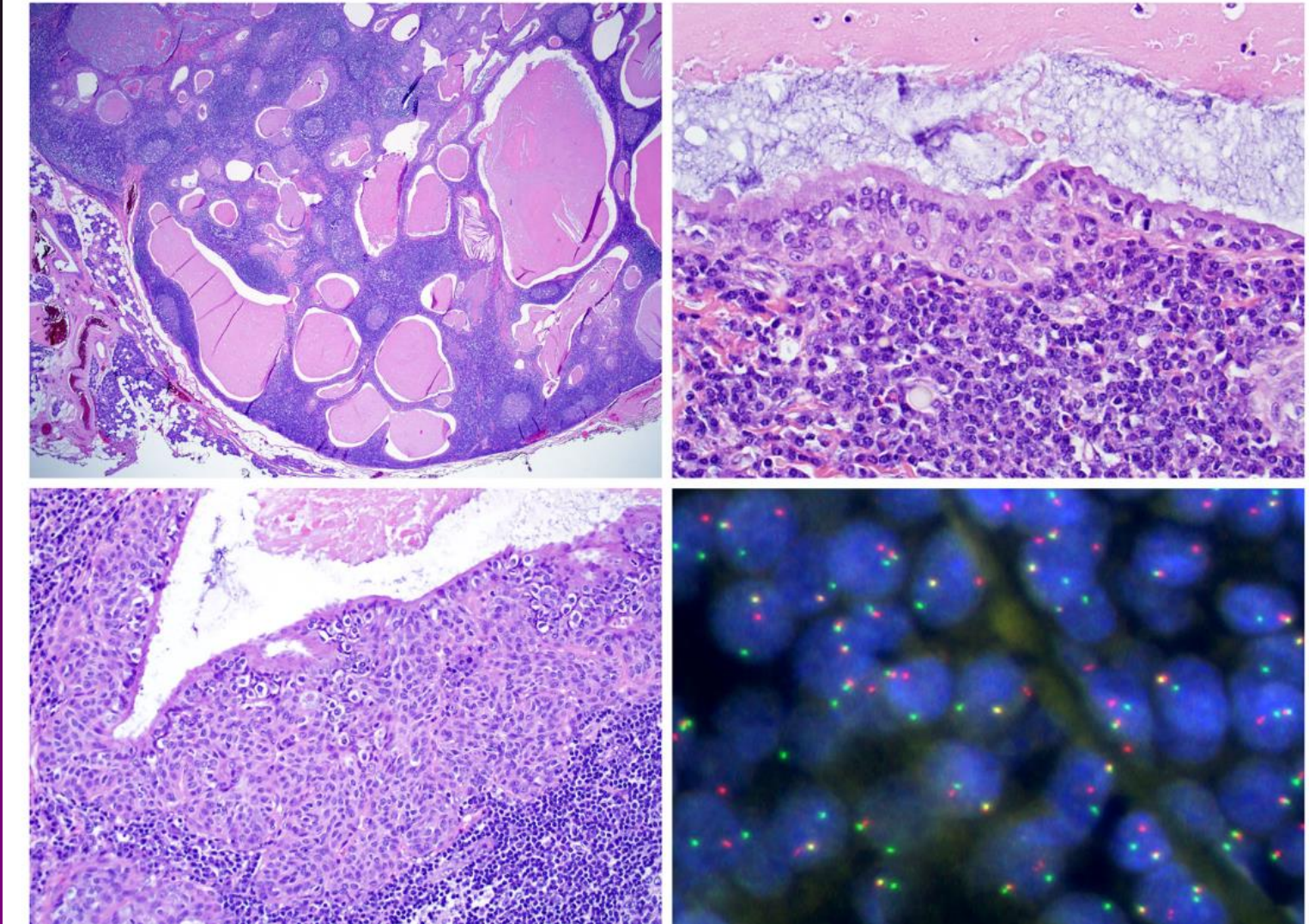


Figure 1.

This ciliated mucoepidermoid carcinoma presented as a cystic metastasis to a lateral cervical lymph node (A). The cystic lining was comprised of variably proliferative papillae and glandular spaces (B). The tumor cells were predominantly intermediate cells with clear cytoplasm, admixed with squamoid and mucinous cells. The nuclei were very bland (C). Many of the tumor cells exhibited cilia (arrows) (D).

Recent advances in the diagnostic pathology of salivary carcinomas. Simpson RH et al. Virchows Arch. (2014)

Table 1 Salivary carcinomas and molecular abnormalities

	Tumour	Translocation	Genes involved	Approx %
Well-established abnormalities in relatively common carcinomas	MASC	t(12;15) (p13;q25)	<i>ETV6-NTRK3</i>	Translocation 80 % ETV6 break 99 %
	MEC	t(11;19) (q21; p13)	<i>CRTC1-MAML2</i>	60-80 %
		t(11;15)(q21;q26)	<i>CRTC3-MAML2</i>	6 % or less
	AdCC	t(6;9)(q22-23;p23-24)	<i>MYB-NFIB</i>	80-90 %
	HCCC	t(12;22)(q13;q12)	<i>EWSR1- ATF1</i>	80 %
Rare salivary malignancies	DSRCT	t(11;22)(p13;q12)	<i>EWS-WT1</i>	Up to 97 %
	NUT carcinoma	t(15;19)(q14, p13.1)	<i>BRD4-NUT</i>	approx. 67 % } remaining third of cases
		t(9;15)(q34.2;q14)	<i>BRD3-NUT</i>	
		t(15;?)(q14;unknown)	<i>NUT-variant</i>	
Few studies, so not yet well-established	CATS	t(1;14)(p36.11;q12)	<i>ARID1A-PRKD1</i>	} possibly as many as 80 %.
		t(X;14)(p11.4;q12)	<i>DDX3X-PRKD1</i>	
			Other abnormalities of <i>PRKD2</i> and <i>PRKD3</i>	
	EMC	No translocations, but a mutation	<i>HRAS</i> exon 3, codon 61	27 % in one small series

Recent advances in the diagnostic pathology
of salivary carcinomas. Simpson RH et al. Virchows Arch. (2014)

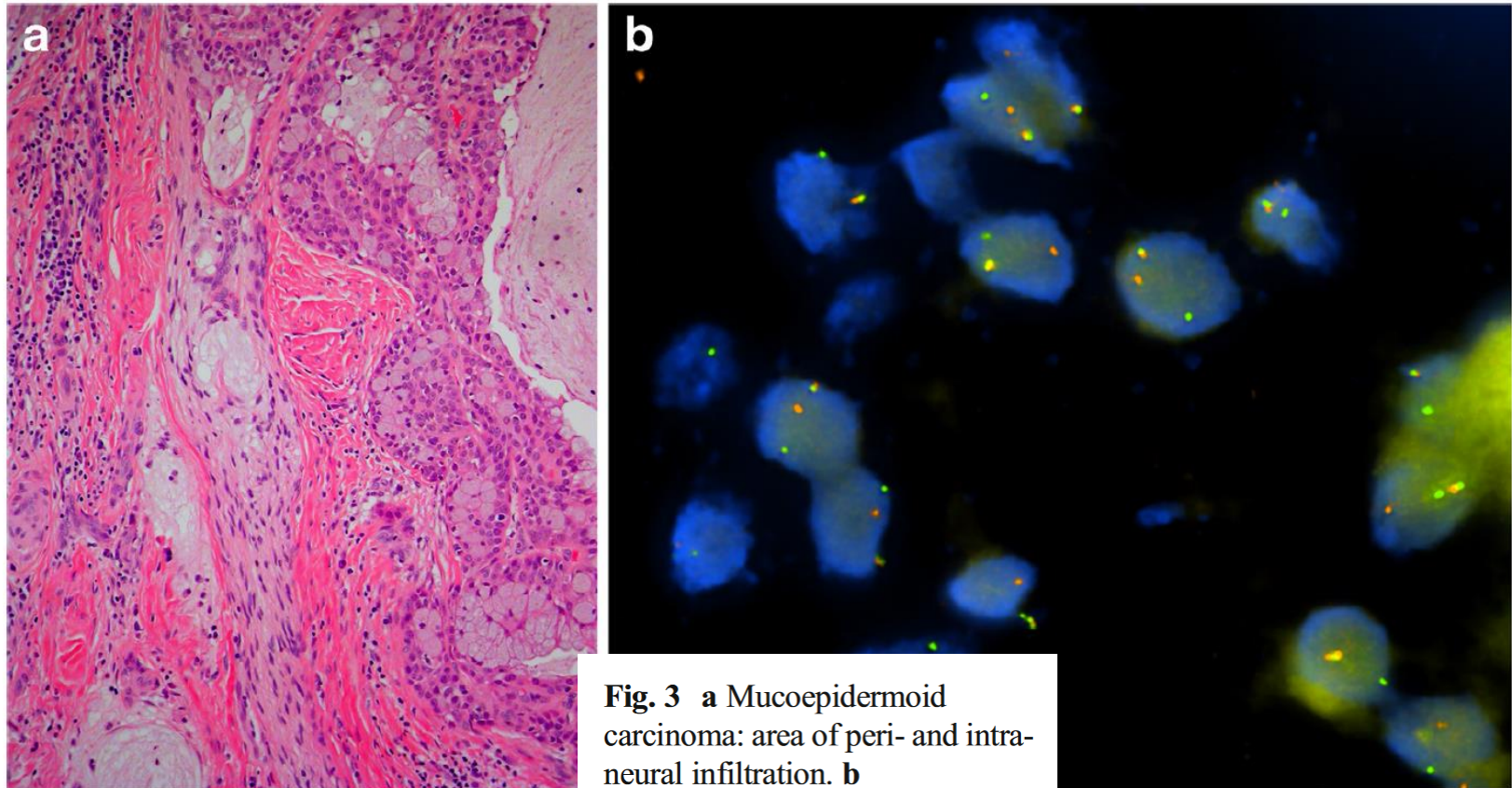


Fig. 3 **a** Mucoepidermoid carcinoma: area of peri- and intra-neural infiltration. **b** Mucoepidermoid carcinoma: FISH analysis using break apart rearrangement probe—Vysis ZytoLight SPEC MAML2 Dual Color Break Apart Probe (11q21) nuclei with one fusion (yellow), one orange and one green (split) signal pattern indicative of a rearrangement of one copy of the *MAML2* gene region

Carcinoma mucoepidermoide

Pronóstico y factores predictivos.

Los carcinomas mucoepidermoides de grado bajo e intermedio son menos agresivos y generalmente se curan con escisión quirúrgica completa

Las tasas de supervivencia a 10 años para grados:

Bajo: 90%

Intermedio: 70%

Alto: 25%

OMS 2017

CARCINOMA ADENOIDE QUÍSTICO

Carcinoma adenoide quístico (CAC)

Definición

Es un carcinoma invasivo compuesto por células neoplásicas epiteliales y mioepiteliales dispuestas en patrones tubular, cribiforme y sólido, asociado con una matriz basofílica y una membrana basal reduplicada, generalmente se detecta reordenamientos con MYB, MYBL1 o NFIB.

Carcinoma adenoide quístico

Clínica

- Aumento de volumen de crecimiento lento, dolor en etapas tempranas por invasión perineural.
- Puede ocurrir parestesia o parálisis del nervio facial o debilidad de la lengua.
- Compromiso de linfonodos es infrecuente, salvo transformación a alto grado.
- 60% en glándulas salivales mayores y 30% en menores.

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Carcinoma adenoide quístico (AdCC)

Etiología

Las mutaciones germinales de BRCA1/2 y de genes de reparación de doble cadena de DNA pueden aumentar el riesgo de carcinoma adenoide quístico.

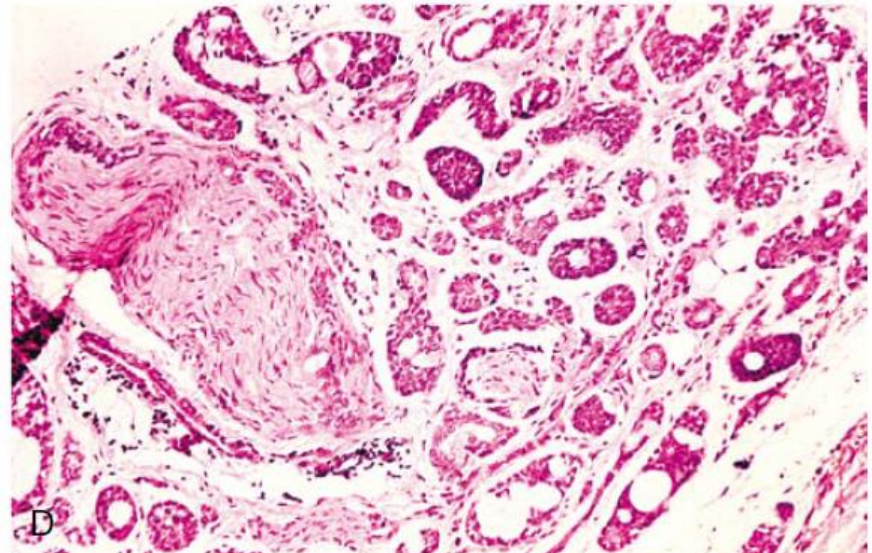
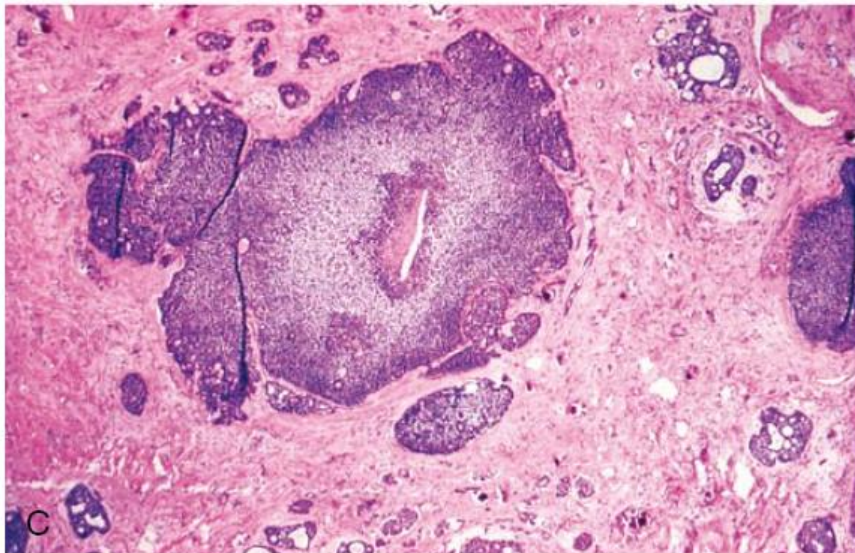
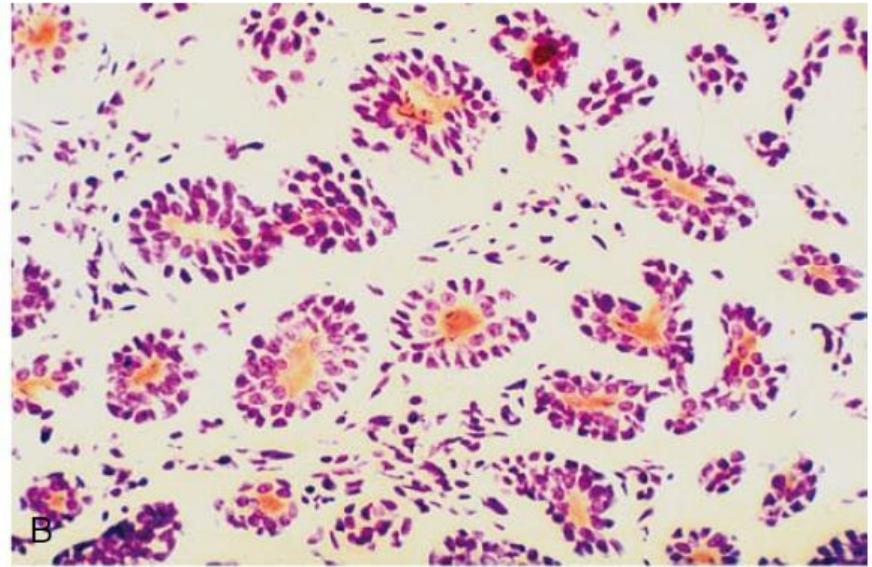
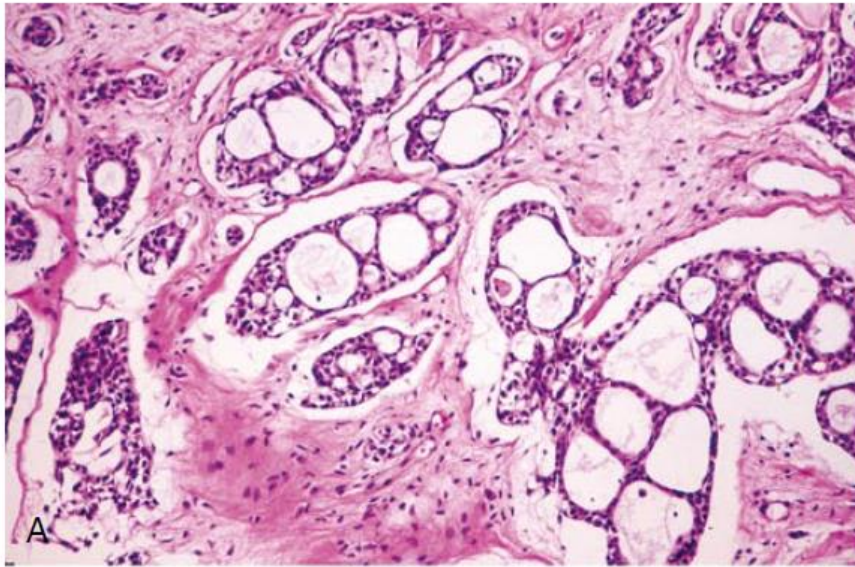
Patogénesis

El sello genómico del AdCC son translocaciones t(6;9) o t(8;9), que resultan en fusiones MYB::NFIB y MYBL1::NFIB

Carcinoma adenoide quístico

Histopatología 1

- Células ductales y mioepiteliales modificadas.
- Núcleos hipercromáticos angulares y generalmente citoplasma escaso y claro.
- Invasión perineural frecuente.
- Tres patrones: tubular, cribiforme y sólido.



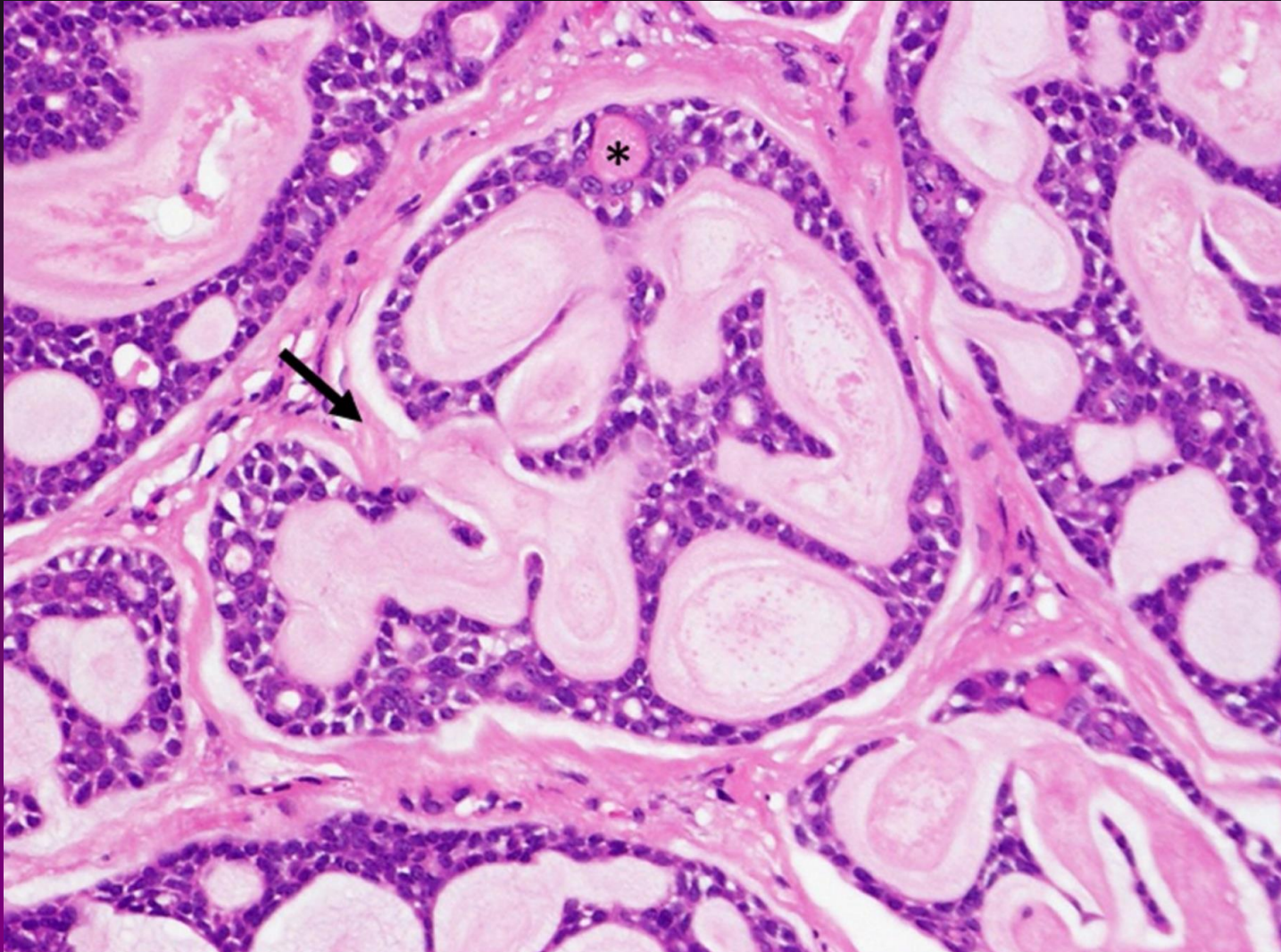
Carcinoma adenoide quístico. A) Patrón cribiforme. B) Patrón tubular. C) Patrón sólido. D) Patrón cribiforme con invasión perineural.

Carcinoma adenoide quístico

Histopatología 2

- Citológicamente, está compuesto de población de células uniformes, de núcleos hipercromáticos ovalados basofílicos, con cromatina homogénea, con escaso citoplasma (basaloides). Los núcleos pueden ser angulados.
- Ocasionalmente cromatina en grumos y nucleólos prominentes, los que son más frecuentes en tumores sólidos de alto grado.

Carcinoma adenoide quístico, patrón cribiforme



Diagnosis: Adenoid cystic carcinoma, cribriform pattern (MYB::NFIB-positive case)

Legend: Myoepithelial tumour cells with clear cytoplasm and angular nuclei surround multiple cyst-like areas (pseudocysts) that are contiguous with the stroma of the neoplasm (arrow). Small lumen surrounded by eosinophilic, cuboidal cells (asterisk) indicates a focus of true ductal differentiation.

Source: Hiroshi Inagaki

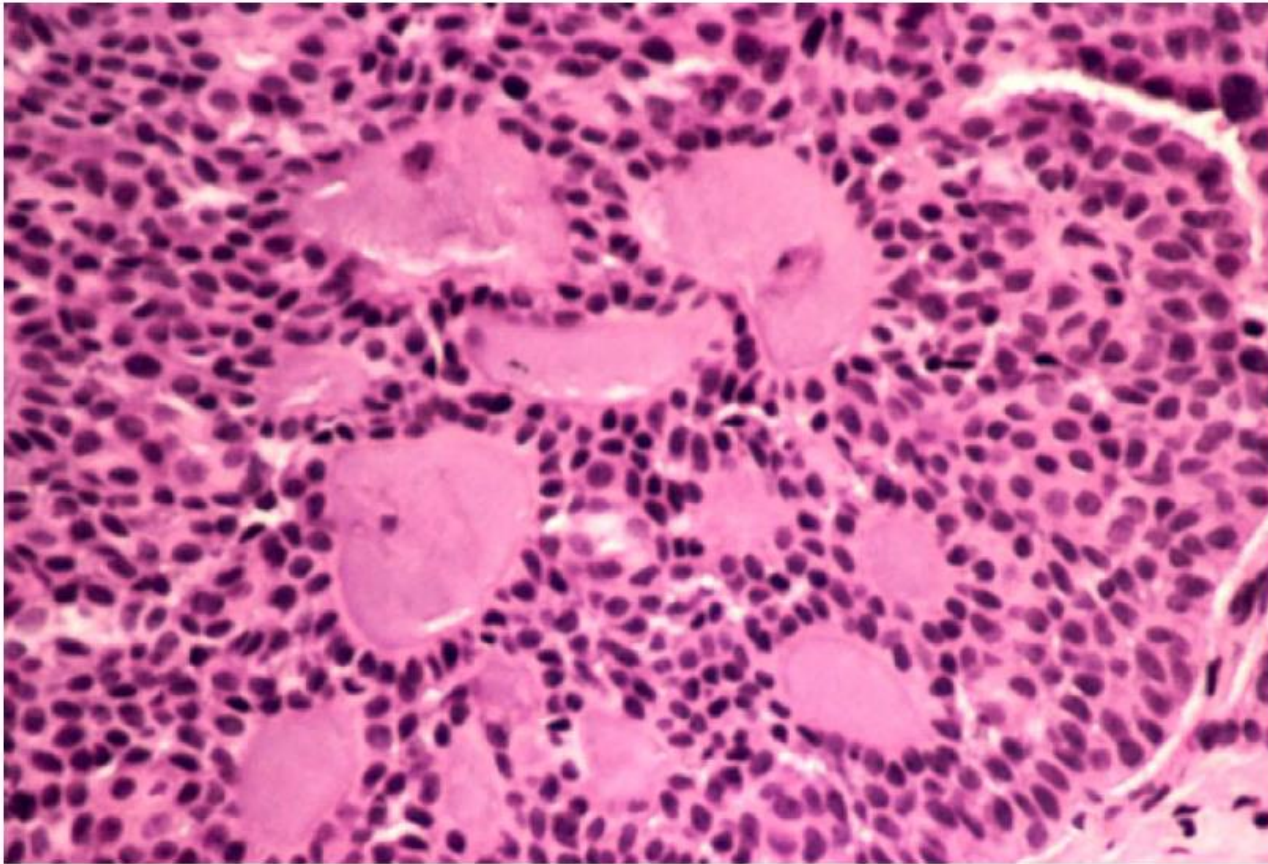


Figure 5 A high power photomicrograph illustrating cuboidal cells with hyperchromatic nuclei and visible accumulation of an eosinophilic hyalinized material within pseudocystic spaces (H&E $\times 400$).

Carcinoma adenoide quístico

Histopatología 3

- La invasión perineural se observa en varias zonas.
- Infrecuentemente puede haber transformación a alto-grado o ***desdiferenciación***, para este diagnóstico se requiere de áreas de CAC convencionales.
- Inmunohistoquímica para KIT se observa en células epiteliales internas y p63 y SMA en células mioepiteliales periféricas.

"Dedifferentiation" and high-grade transformation in salivary gland carcinomas.

Nagao T. Head Neck Pathol. 2013;7 Suppl 1:S37-47.

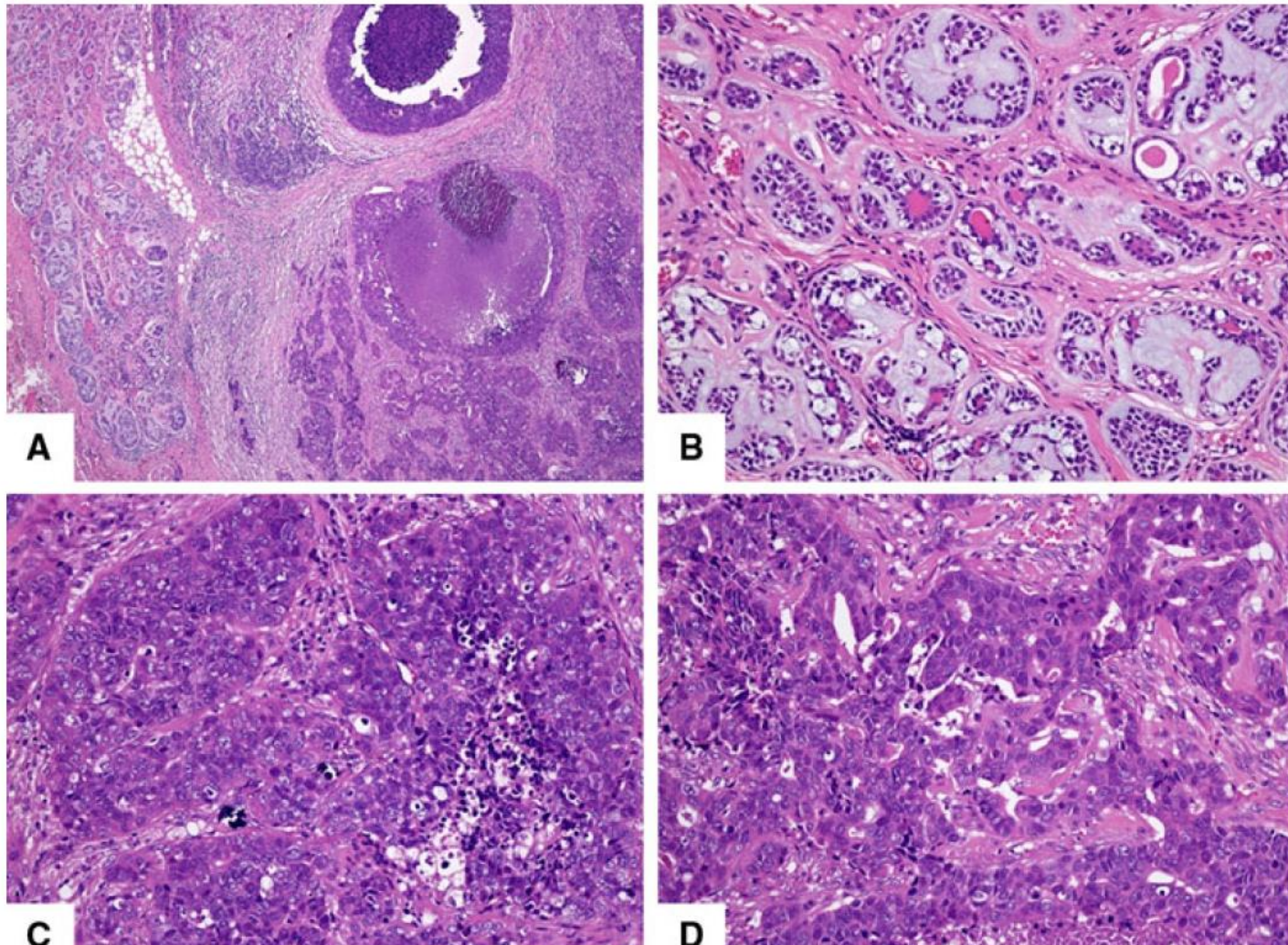


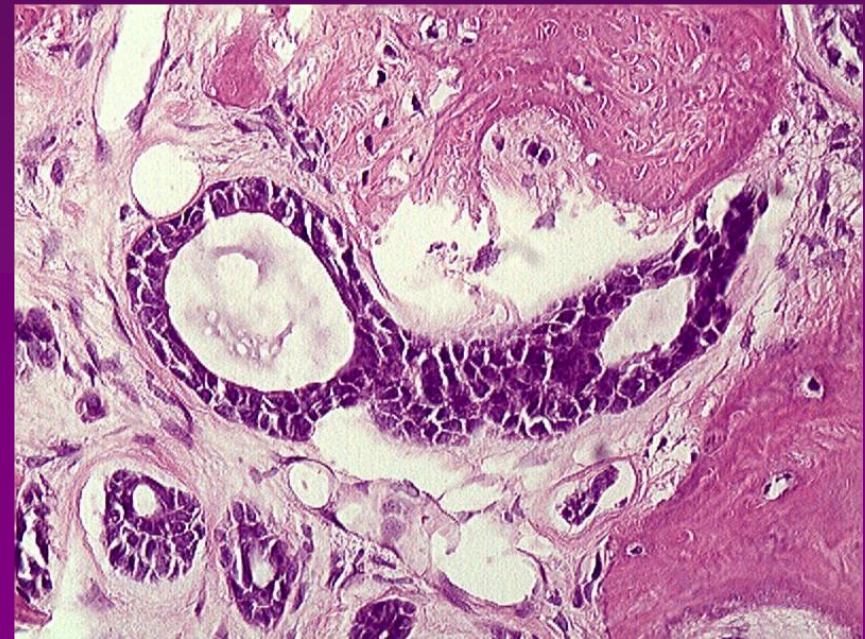
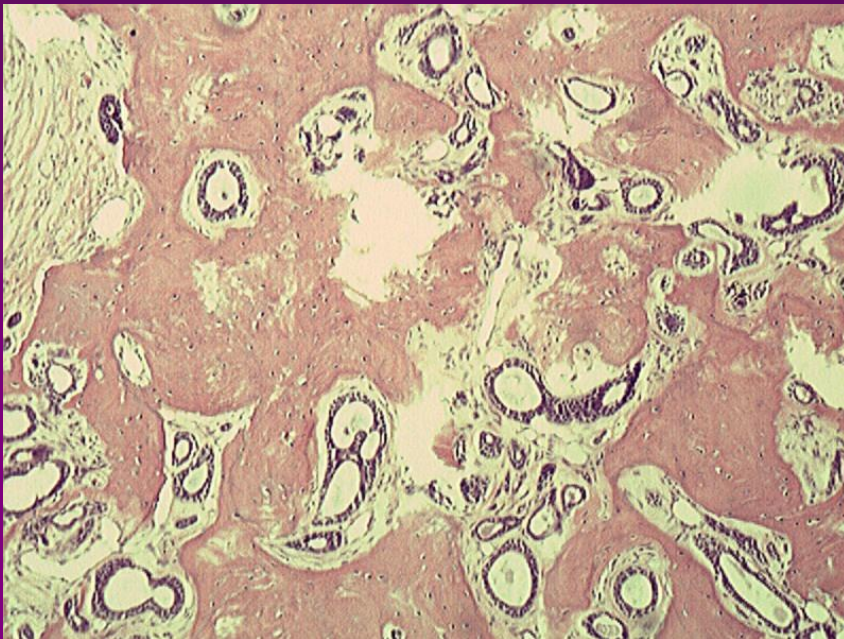
Fig. 2 High-grade transformation of adenoid cystic carcinoma. a Low-power view showing two distinct carcinomatous components: conventional adenoid cystic carcinoma (left portion) and high-grade carcinoma with a predominantly solid growth pattern, forming irregular and confluent tumor nests (right portion). Comedo-like necrosis is evident in the high-grade component. **b** Conventional adenoid cystic carcinoma exhibiting cribriform pattern with excessive extracellular basal lamina material and two cell-layered tubular structures. The tumor cell nuclei have a bland, uniform appearance. **c** and **d** High-grade carcinoma component. Solid (**c**) and micropapillary (**d**) growth patterns of carcinoma cells exhibiting large pleomorphic nuclei with a moderate amount of cytoplasm. Note prominent necrosis.

Carcinoma adenoide quístico

Patrón tubular (Grado I)

Ductos y túbulos con lumen central, células epiteliales internas generalmente cúbicas, células externas abluminales mioepiteliales, en entorno hialinizado.

Menor agresividad.



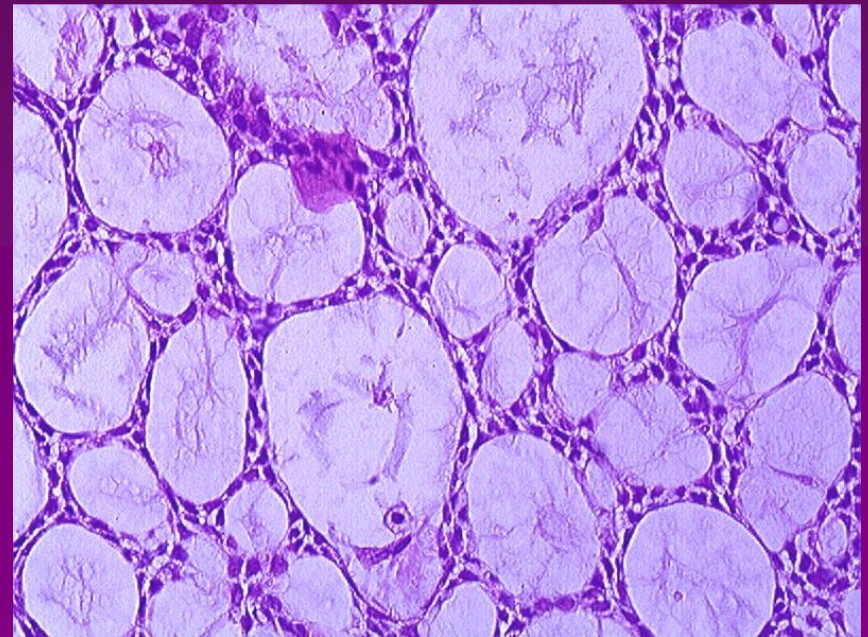
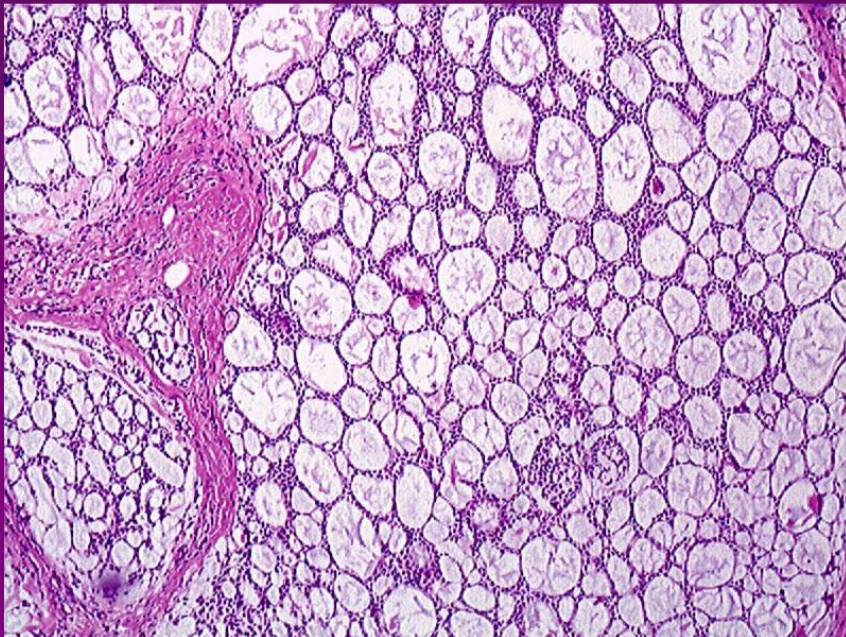
Carcinoma adenoide quístico

Patrón Cribiforme (grado II)

El más frecuente, nidos de células con espacios microquísticos cilindromatosos, pseudolumen con material de membrana basal rosado o mucopolisacáridos azules.

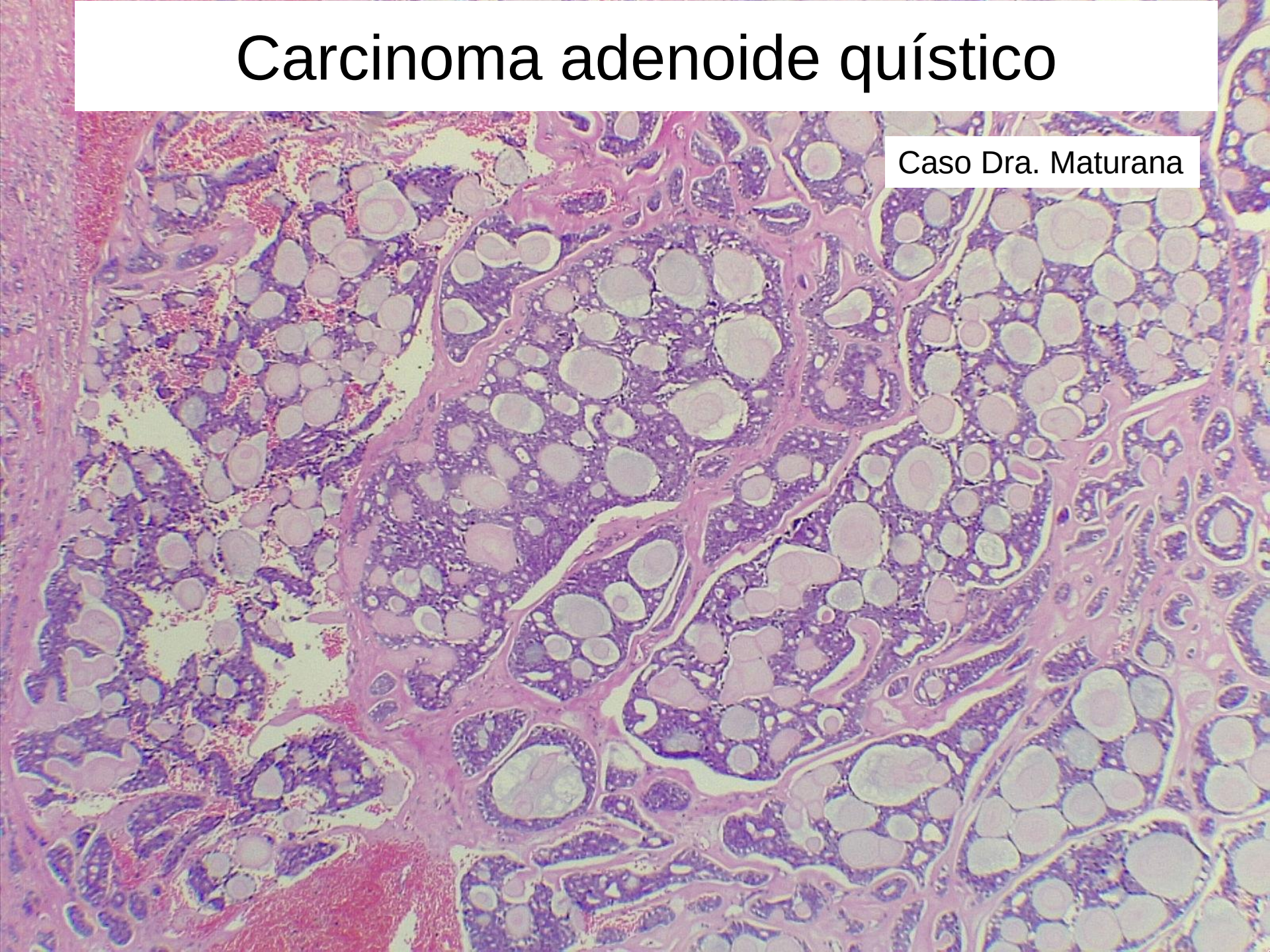
Mitosis y apoptosis ocasionales.

Agresividad intermedia.



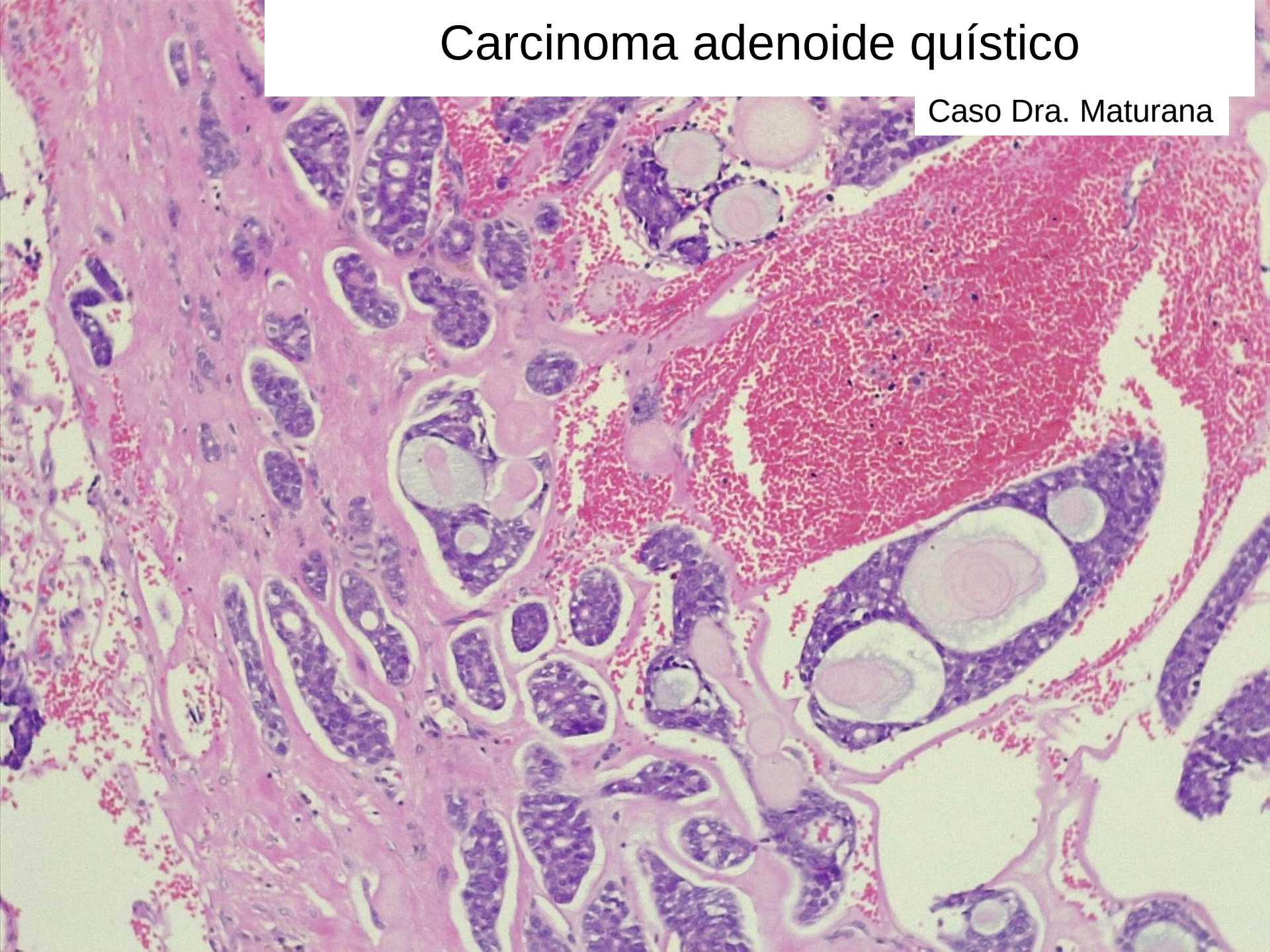
Carcinoma adenoide quístico

Caso Dra. Maturana

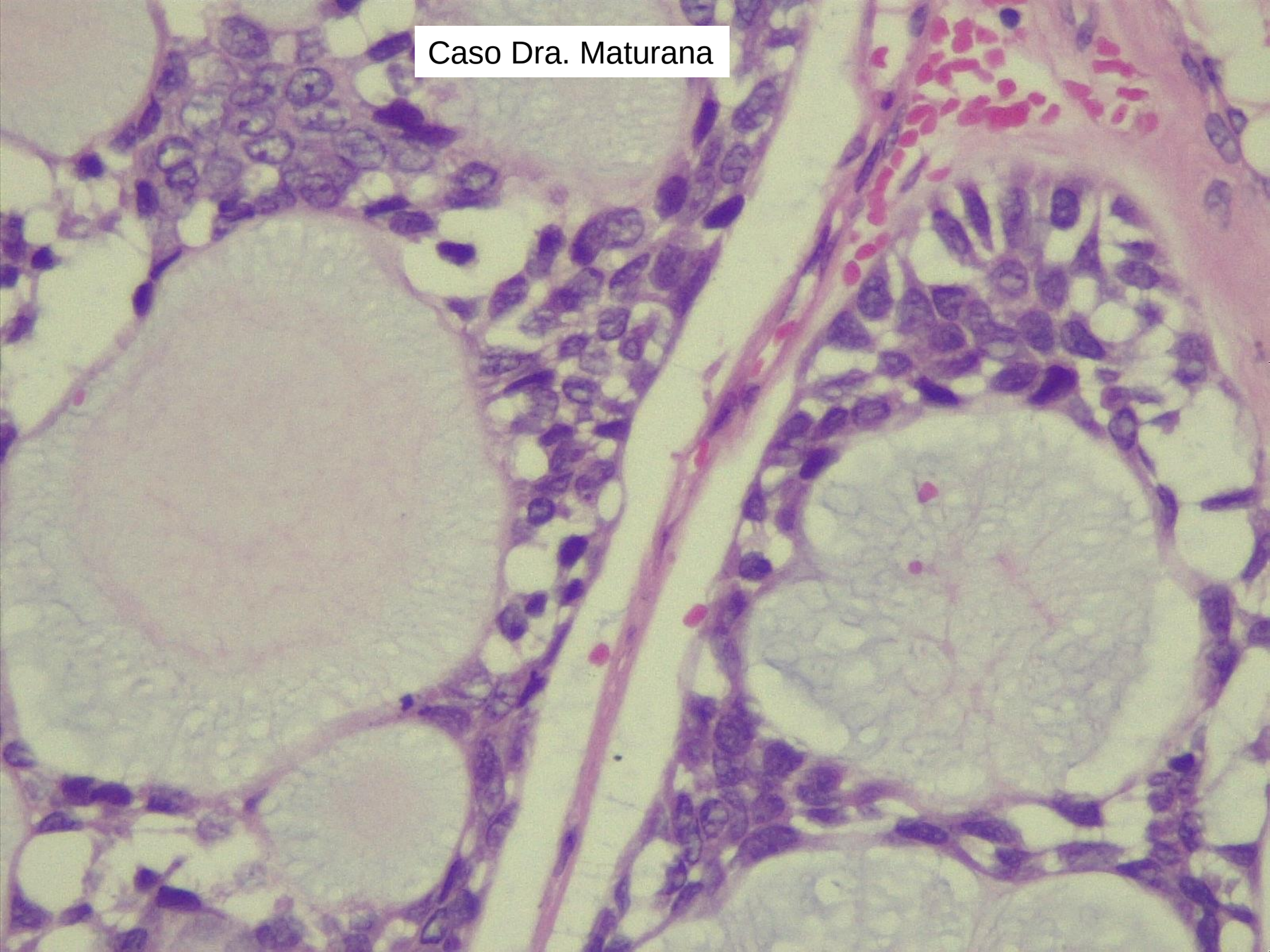


Carcinoma adenoide quístico

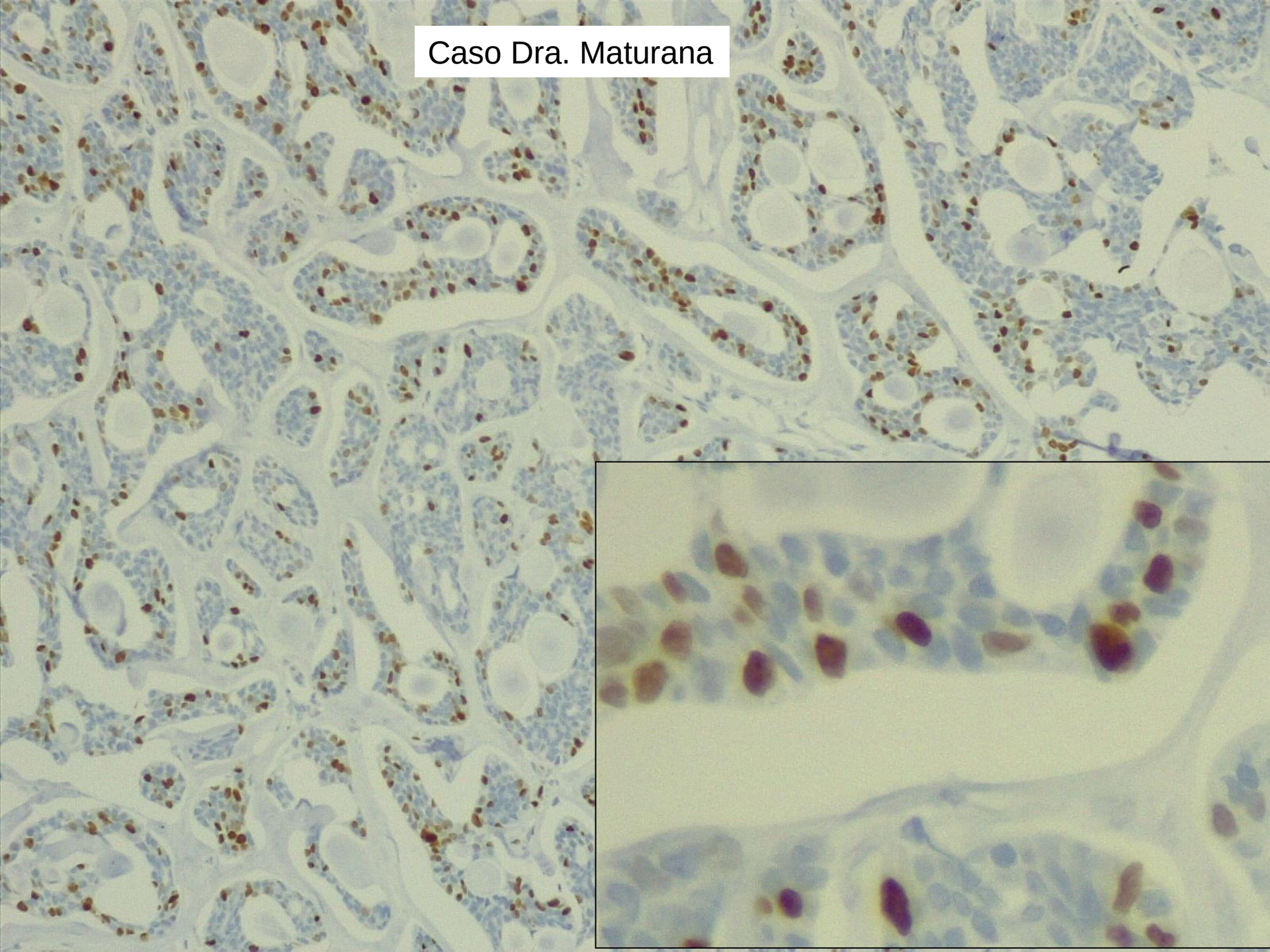
Caso Dra. Maturana



Caso Dra. Maturana



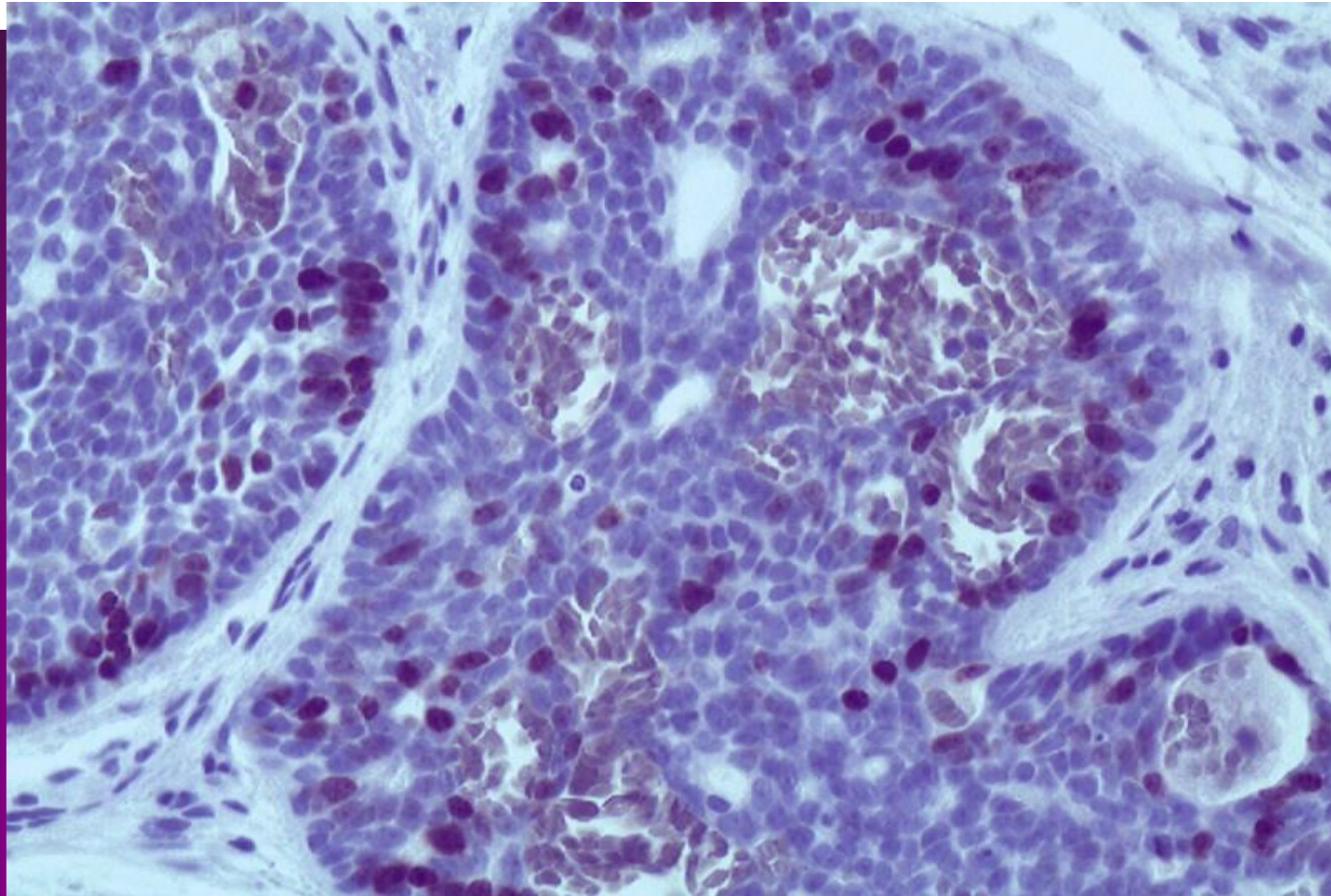
Caso Dra. Maturana



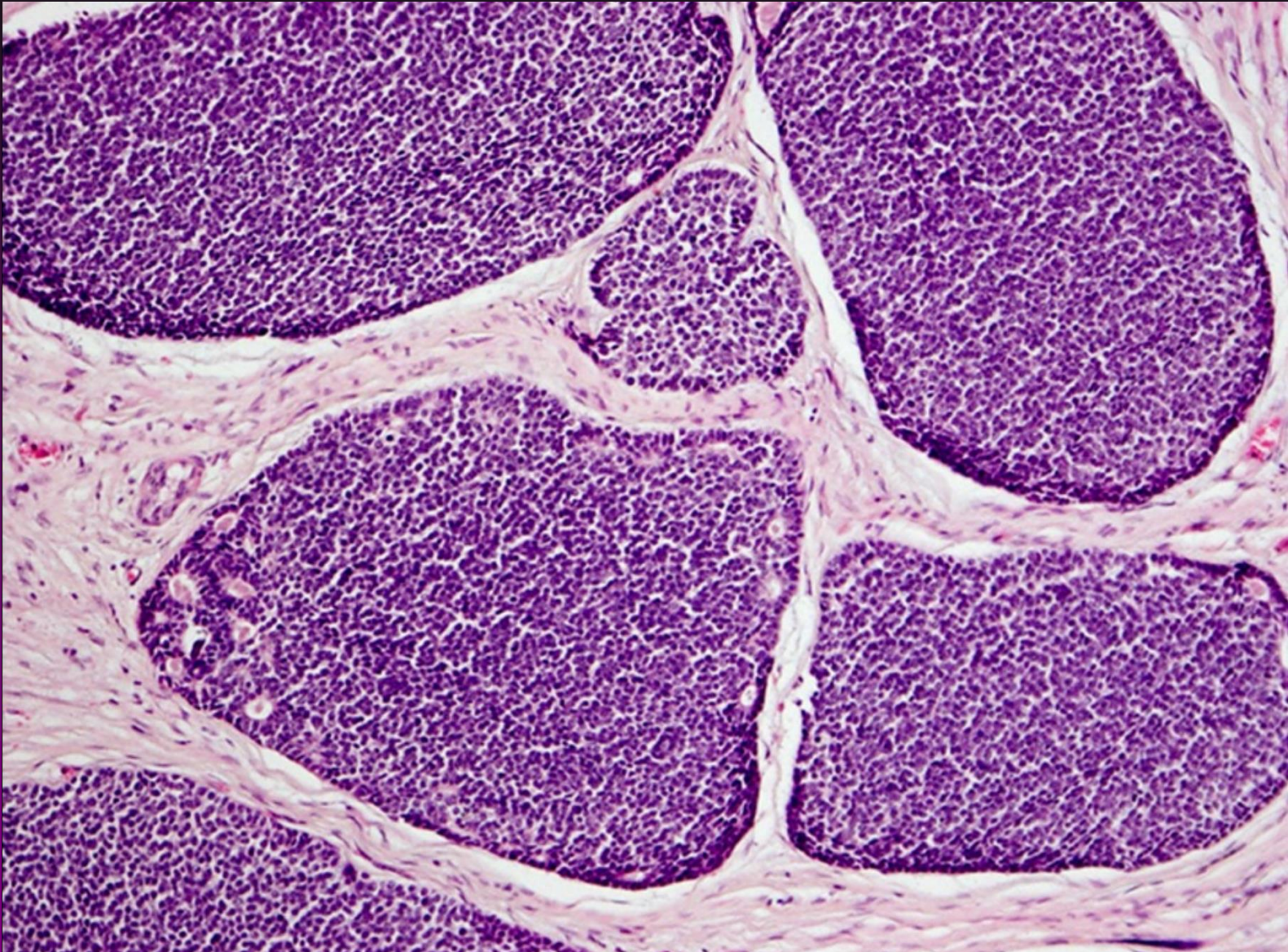
Carcinoma adenoide quístico, patrón sólido

Grandes islas de células basaloides la mayoría mioepiteliales, con infrecuentes lúmenes formados por células epiteliales. Mitosis y apoptosis frecuentes. Puede haber necrosis con apariencia de comedonecrosis.

Mayor agresividad.



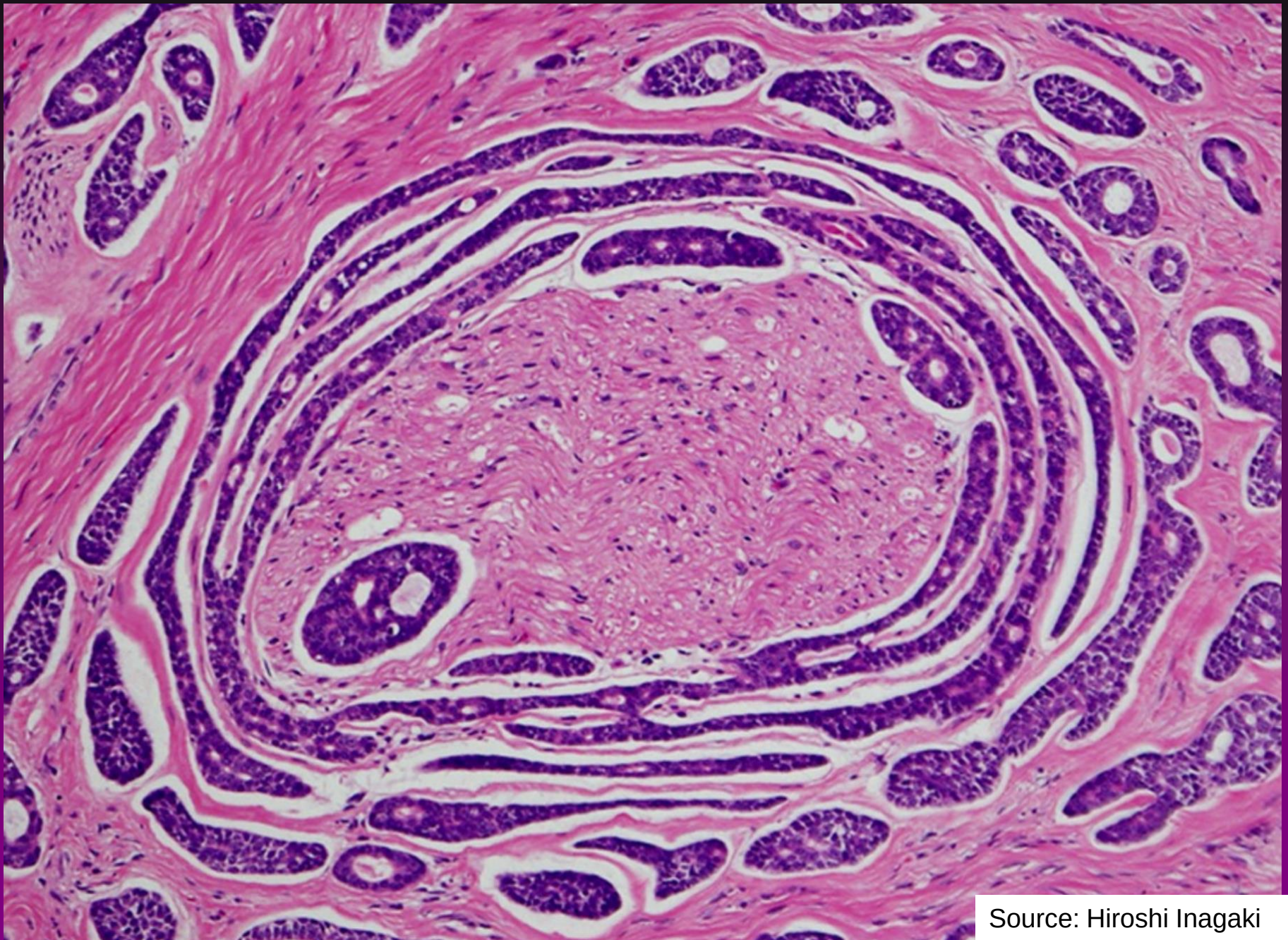
Carcinoma adenoide quístico, patrón sólido, (*MYB::NF1B*-positivo)



Legend: The solid pattern is characterized by dense cellular tumour nests lacking the pseudocystic spaces observed in the cribriform and tubular patterns.

Source: Hiroshi Inagaki

Carcinoma adenoide quístico, invasión peri e intraneural (*MYB::NFIB*-positivo)



Carcinoma adenoide quístico, Inmunohistoquímica

Pan-citoqueratina presenta marcación intensa en células ductales y levemente en células mioepiteliales.

CK7 y KIT (CD117) positivas en células ductales.

P63, p40, calponina y α -actina musculo liso son positivas en células mioepiteliales.

La sobre expresión de MYB no tiene valor diagnóstico por su baja especificidad.

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Immunohistochemical expression of cytokeratins 7 and 20 in malignant salivary gland tumors

Nikolaos G Nikitakis¹, Konstantinos I Tosios², Vasileios S Papanikolaou³, Helen Rivera⁴, Stavros I Papanicolaou⁵ and Olga B Ioffe⁶

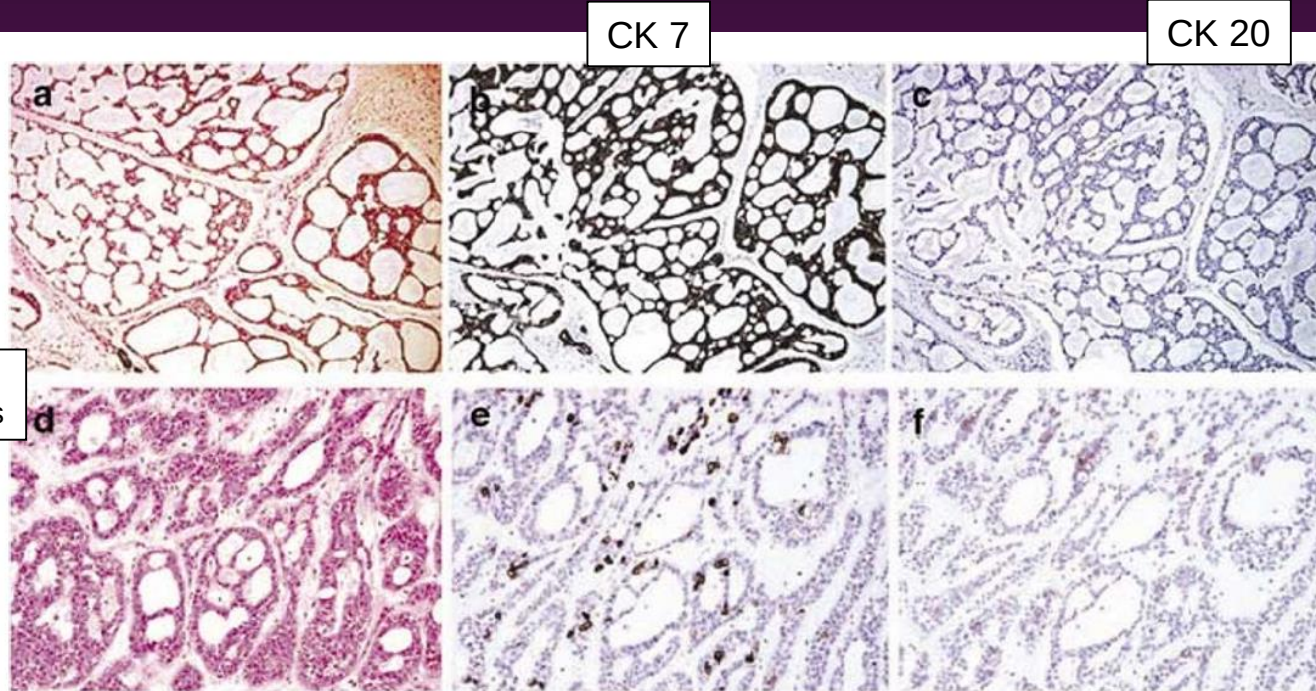


Figure 2 Hematoxylin and eosin appearance (a), (d), and immunohistochemical analysis for CK7 (b), (e) and CK20 (c), (f) in two cases of adenoid cystic carcinoma. The first case (upper panel) displayed diffuse and strong positivity for CK7 (b), being negative for CK20 (c). The second case (lower panel) showed focal and strong CK7 expression (e), and focal and weak CK20 expression (f). Magnification for (a–c) is $\times 100$, while magnification for (d–f) is $\times 200$.

Emanuel P, y col. **p63 Immunohistochemistry in the distinction of adenoid cystic carcinoma from basaloid squamous cell carcinoma.**

Mod Pathol. 2005;18(5):645-50.

P63: isoforma DNp63a parece ser un regulador de diferenciación escamosa.
p63 se expresa en tejidos normales como: epitelio escamoso, urotelio, epitelio bronquial, y células mioepiteliales de mama, prostate y glándulas submucosas.

Carcinoma de células escamosas basaloide

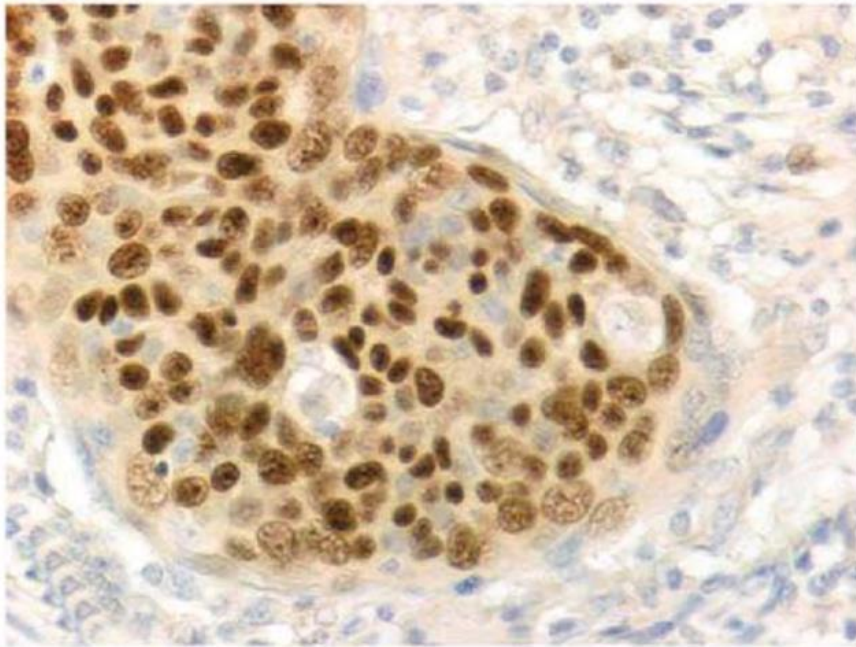


Figure 2 Basaloid squamous cell carcinoma. p63 immunohistochemical staining demonstrating diffuse nuclear staining.

Carcinoma adenoide quístico

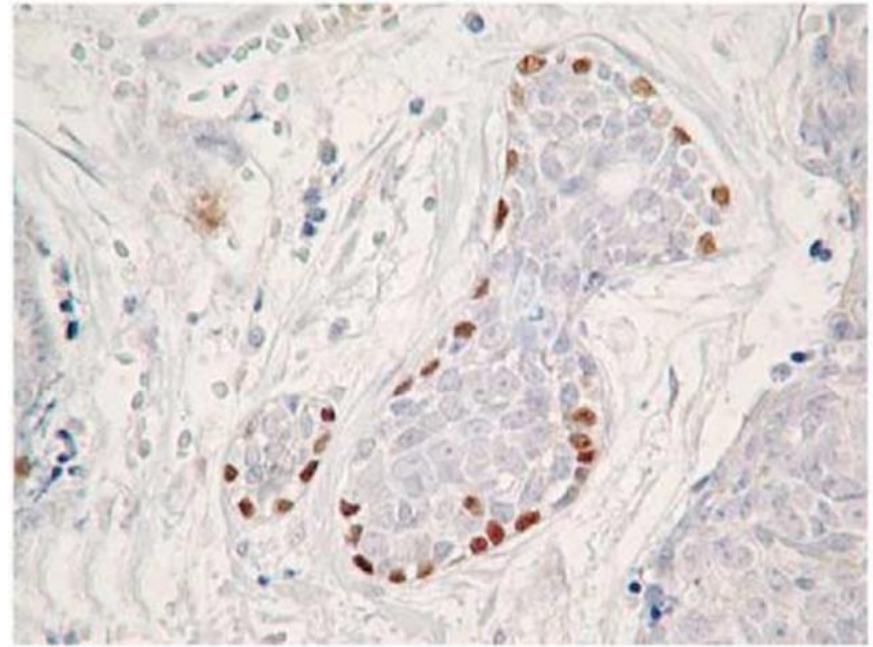


Figure 5 Adenoid cystic carcinoma. p63 immunohistochemistry demonstrating the peripheral pattern of p63 positivity. Diffuse peripheral positivity is seen.

Emanuel P, y col. **p63 Immunohistochemistry in the distinction of adenoid cystic carcinoma from basaloid squamous cell carcinoma.**

Mod Pathol. 2005;18(5):645-50.

Expresión de p63 en Carcinoma adenoide quístico

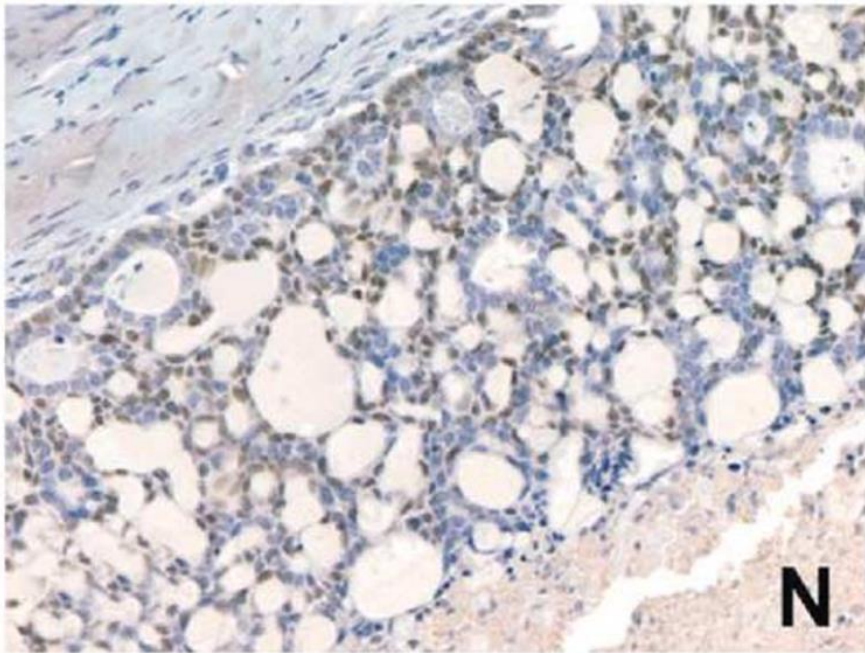


Figure 7 Adenoid cystic carcinoma with a cribriform pattern and comedo-like central necrosis (N). The peripheral/internalized p63 staining pattern is present, with a high proportion of p63-positive tumor cells.

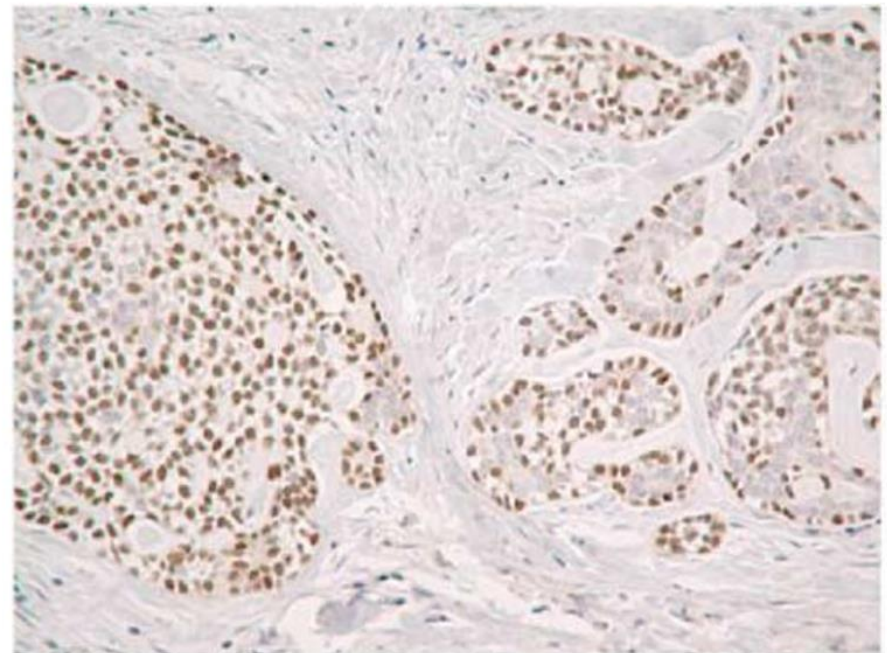
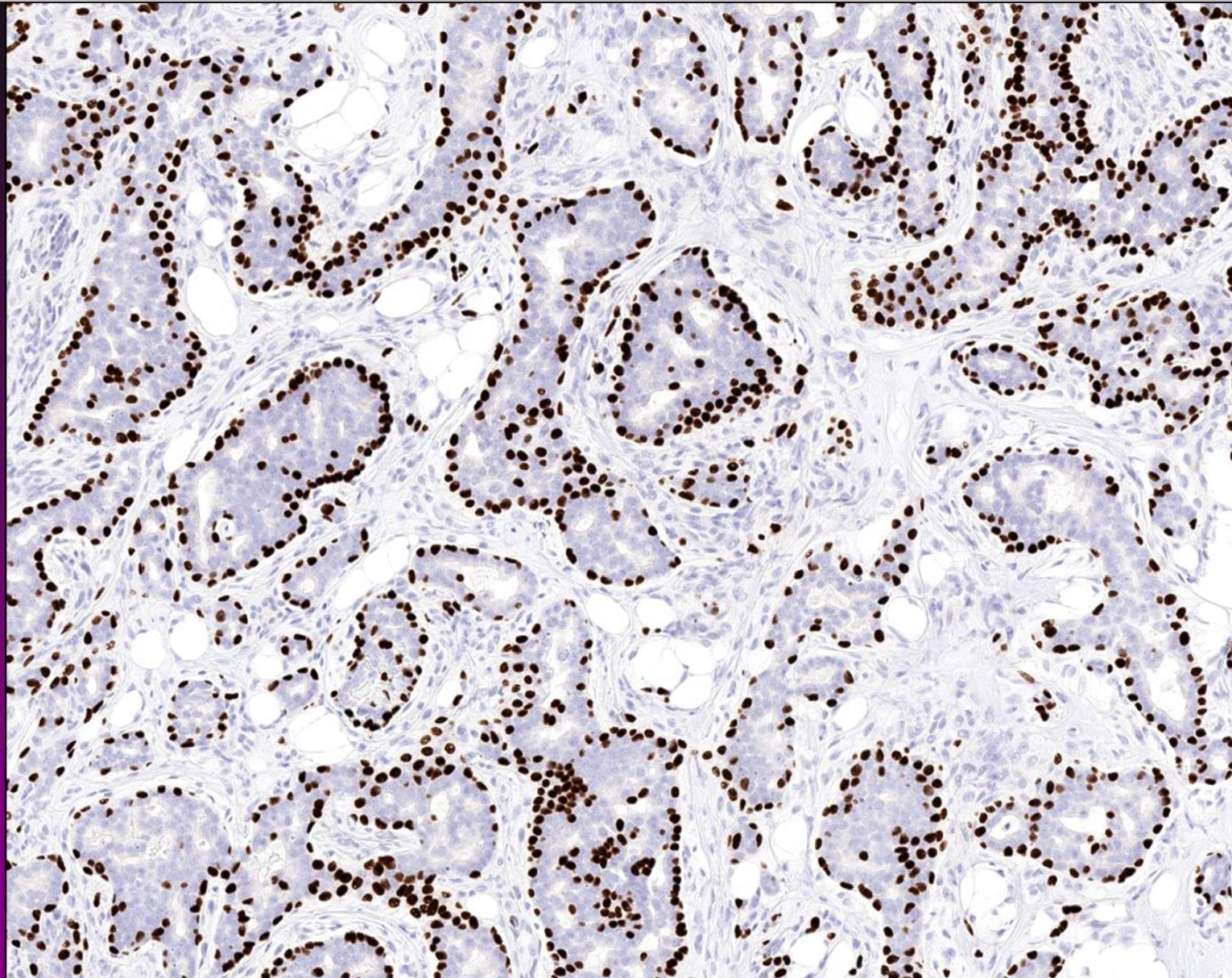


Figure 9 Adenoid cystic carcinoma showing solid nest with diffuse distribution of small p63 positive cells (left). The adjacent areas (seen on the right of this image) showed clear compartmentalized staining, consistent with adenoid cystic carcinoma.

Carcinoma adenoide quístico. p40



Legend: Immunostaining for the p40 decorates basal cell layer
Source: Lester D.R. Thompson

Carcinoma adenoide quístico

Histopatología 4

Diagnóstico diferencial

- Adenoma pleomorfo.
- Adenocarcinoma polimorfo.
- Carcinoma epitelial-mioepitelial.
- Adenocarcinoma de células basales.

Carcinoma adenoide quístico

Tratamiento y pronóstico

Excisión quirúrgica y radioterapia.

Generalmente no se indica resección de linfonódulos regionales.

Metástasis a distancia en más del 50% de los casos, principalmente pulmones.

Sobrevida a:

5 años: 70%.

10 años: 50%

20 años: 25%.

CARCINOMA DE CÉLULAS ACÍNICAS (ACC)

CARCINOMA DE CÉLULAS ACÍNICAS

Definición

Es un carcinoma de glándulas salivales que presenta acinos serosos sin diferenciación mucinosa.

Epidemiología

Promedio de edad: 50 años.

Es la 2° neoplasia maligna de glándulas salivales más común en niños.

Localización

90-95% casos en parótida. Escaso en glándulas salivales menores, en glándula submandibular y muy infrecuente en tracto sinonasal.

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Histopatología 1

- En el macroscópico generalmente se observa una masa intraparenquimal, circunscrita grisácea oscura.
- Los tumores recurrentes generalmente son multinodulares y fibróticos.
- Los ACC *desdiferenciados*, una variante infrecuente de alto grado, presentan bordes indefinidos e infiltran tejidos blandos y hueso.

D. Gnepp, J Henley, R. Simpson y J. Eveson. “Salivary and lagrimal glands” en [Diagnostic Surgical Pathology of the Head and Neck E-Book-](#)

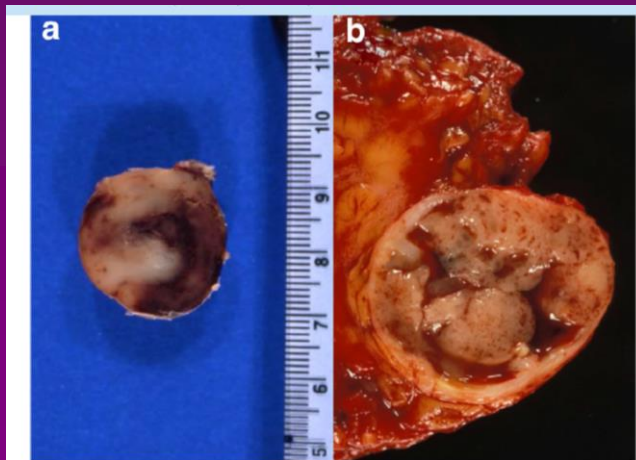


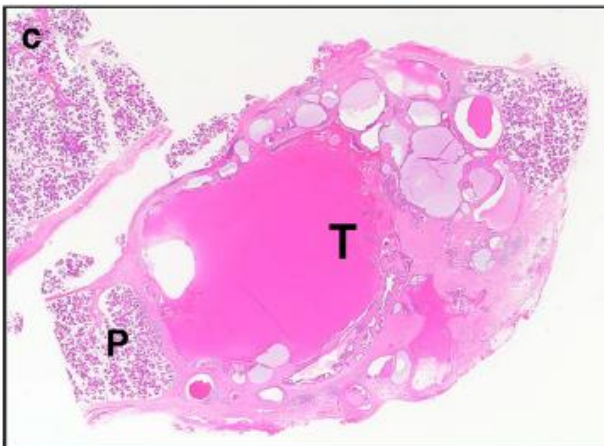
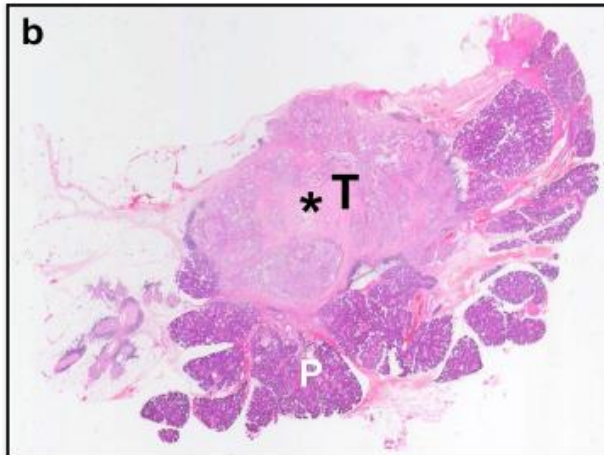
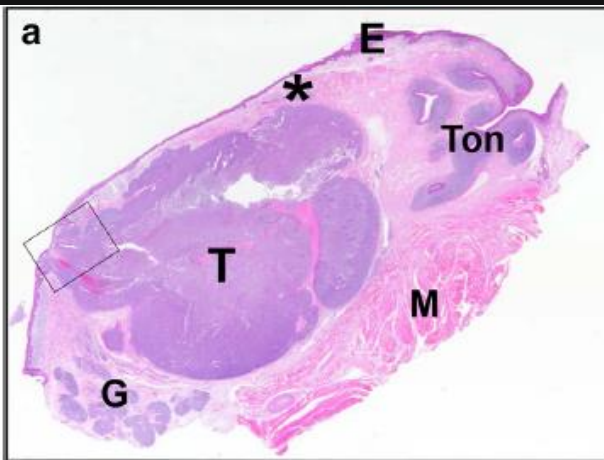
Fig. 4 The cut surface of a nodular ACC shows variegated appearance of hemorrhagic patches and tan or gray, solid areas (a). Another nodular ACC showing variously cystic cut surface (b)

Eur Arch Otorhinolaryngol (2016) 273:3511–3531
DOI 10.1007/s00405-015-3855-7

REVIEW ARTICLE

Salivary acinic cell carcinoma: reappraisal and update

V. Vander Poorten^{1,2} · A. Triantafyllou^{3,4} · L. D. R. Thompson⁵ · J. Bishop⁶ · E. Hauben⁷ · J. Hunt⁸ · A. Skalova⁹ · G. Stenman^{2,11} · R. P. Takes¹³ · D. R. Gnepp¹⁴ · H. Hellquist¹⁵ · B. Wenig¹⁶ · D. Bell¹⁷ · A. Rinaldo¹⁸ · A. Ferlito¹⁹



Salivary acinic cell carcinoma: reappraisal and update

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D. R. Gnepp¹⁴ · H. Hellquist¹⁵ · B. Wenig¹⁶ · D. Bell¹⁷ · A. Rinaldo¹⁸ ·
A. Ferlito¹⁹

Fig. 5 Scanned histological section of AcCC (T) of the palate; the asymmetrical, lobulated, largely solid and hematoxyphilic (*purplish*) tumor appears stemming from a main duct opening onto surface epithelium (E) (*rectangled area*); and expands the space between lamina propria (*asterisk*), skeletal muscle (M), palatine glands (G) and tonsil (Ton), but does not extend therein (a). Asymmetrical, lobulated AcCC (T) partly centred on superficial parotid (P); though largely solid, the tumor appears less hematoxyphilic than that in (a) because of increased, eosinophilic (*pink*) fibrous stroma (*asterisk*) (b). Largely cystic AcCC (T) of the parotid (P), which appears less defined than that in (b); the variably sized cysts contain variously inspissated, eosinophilic or amphophilic, secretory material

CARCINOMA DE CÉLULAS ACÍNICAS

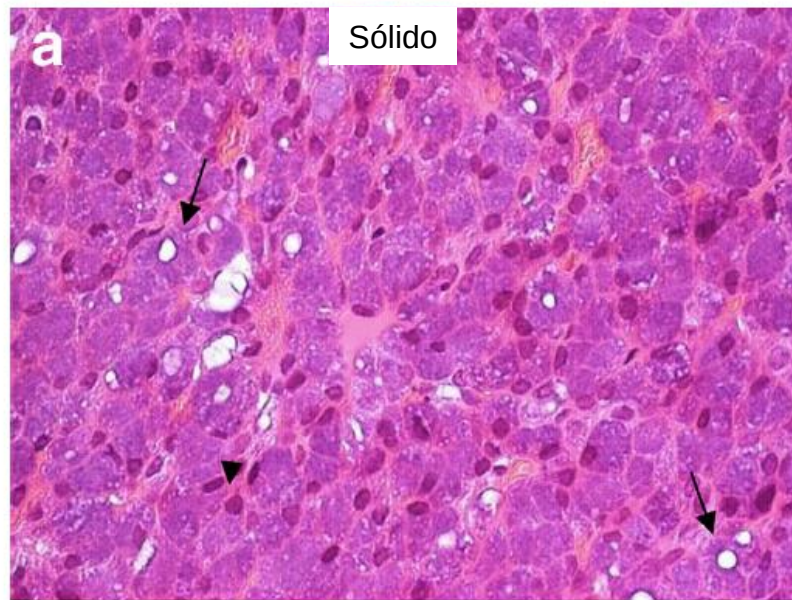
Histopatología 2

- Células acinares o ductales con características variables: vacuoladas, claras, oncocíticas y en clavo que pueden presentar patrones sólidos, microquísticos y foliculares.
- Puede haber componente quístico papilar, el que presenta espacios macroquísticos con proliferación papilar.
- Puede haber infiltrado linfoide.

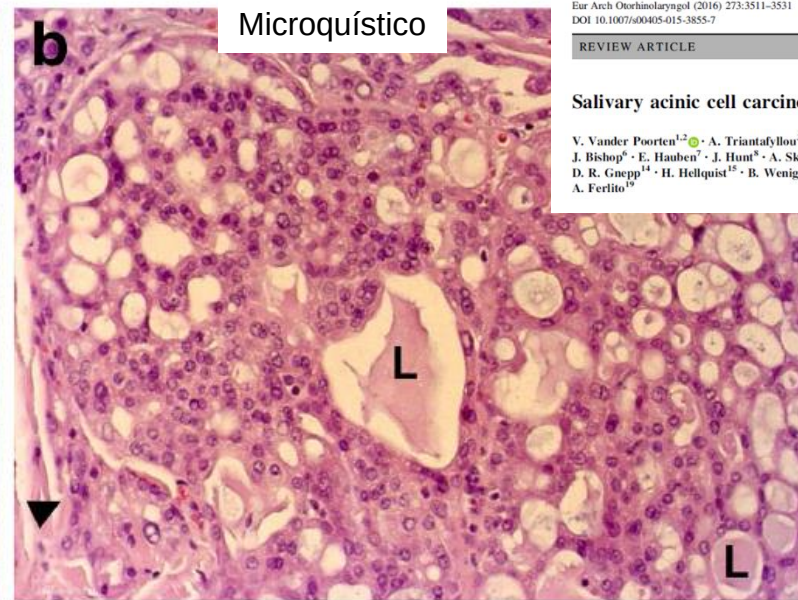
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Salivary acinic cell carcinoma: reappraisal and update

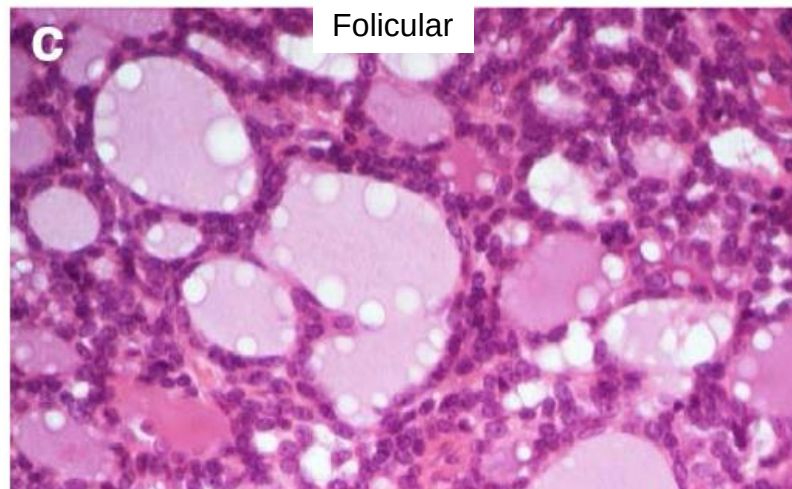
V. Vander Poorten^{1,2} · A. Triantafyllou^{1,4} · L. D. R. Thompson⁵ · J. Bishop⁶ · E. Hauben⁷ · J. Hunt⁸ · A. Skalova⁹ · G. Stenman^{1,11} · R. P. Takes^{1,3} · D. R. Gnepp¹⁴ · H. Hellquist¹⁵ · B. Wenig¹⁶ · D. Bell¹⁷ · A. Rinaldo¹⁸ · A. Ferlito¹⁹



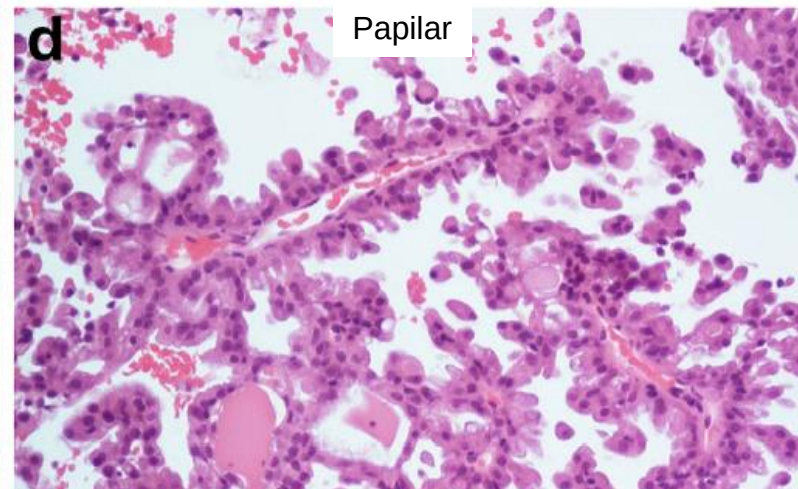
Sólido



Microquístico



Folicular



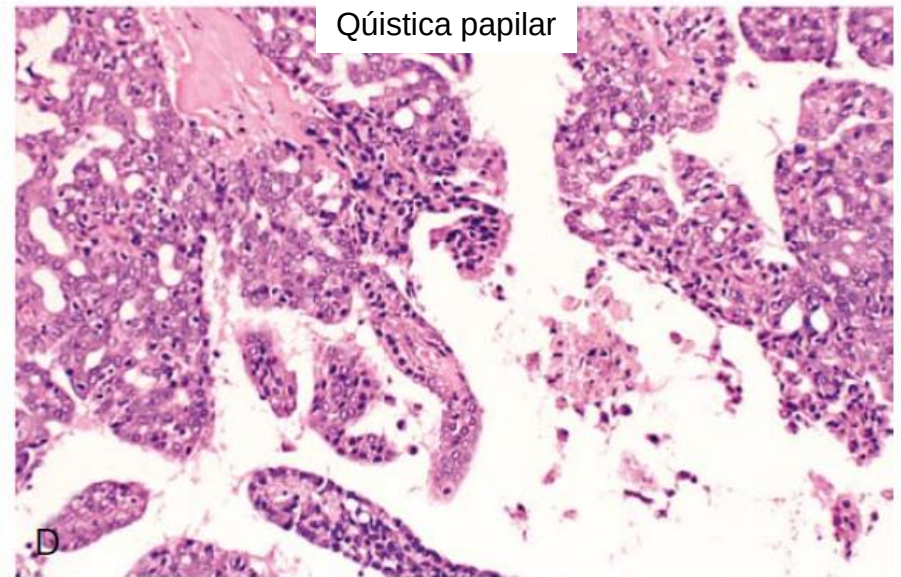
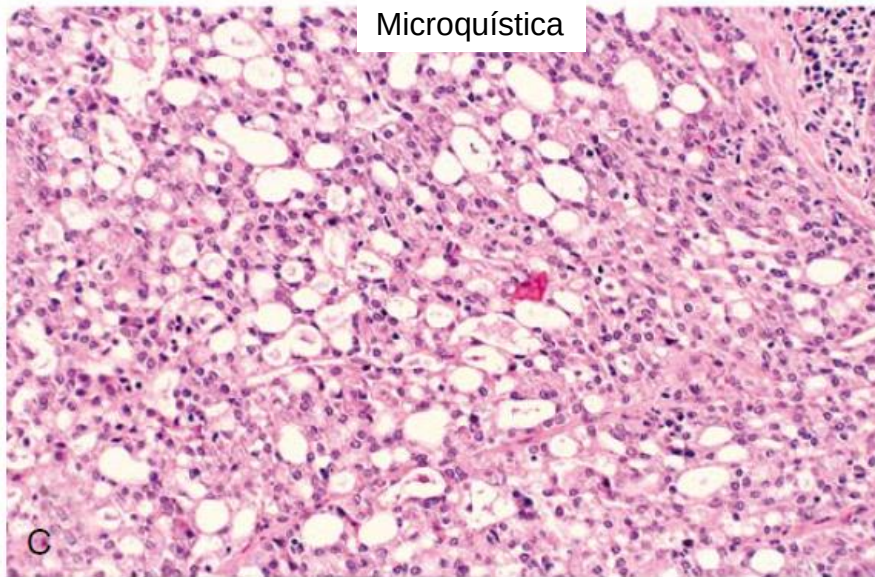
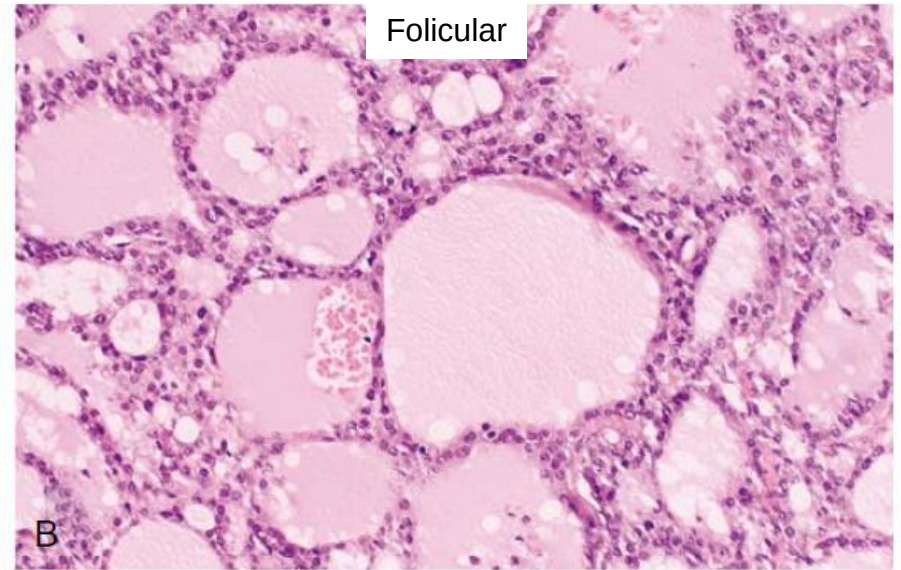
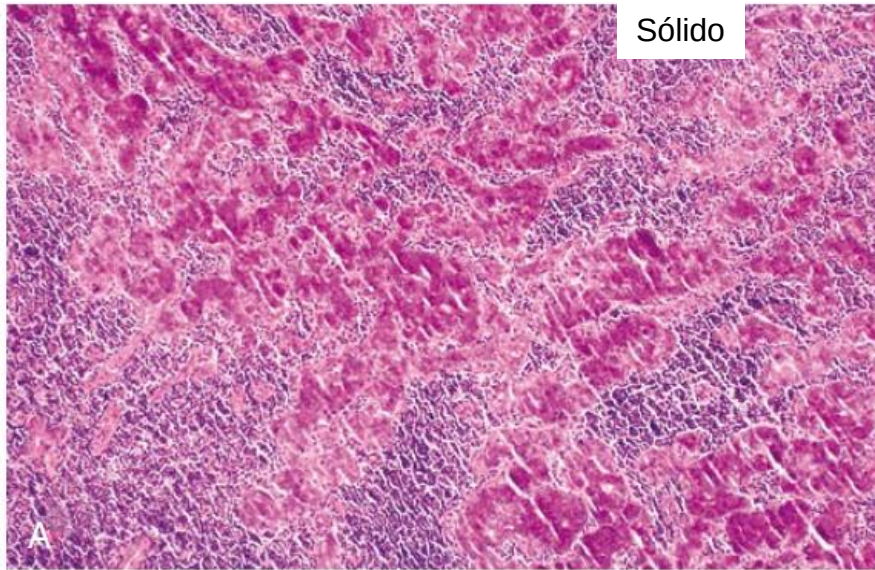
Papilar

Fig. 6 Solid growth pattern of serous-like, tumor cells in acinous arrangements; note the subplasmalemmal, dense nuclei (*arrowhead*) and hematoxyphilic cytoplasm with vacuoles (*arrows*); interstitial stroma is minimal (**a**). Microcystic growth pattern; the *arrowheads* outline a large aggregate of non-serous tumor cells surrounding multiple, small, variably rigid lumina containing eosinophilic secretion (L); comparison with (**a**) allows appreciation of differences in

size, cytoplasmic hue and nuclear position/chromatin pattern between serous and non-serous tumor cells (**b**). Follicular growth pattern; small luminal structures, often rigid and lined by non-serous cells, contain amphophilic, secretory material with peripheral bubbling as in thyroid follicles (**c**). Papillary growth pattern; papillations/tufts of non-serous cells are supported by hyperaemic cores (**d**)

CARCINOMA DE CÉLULAS ACÍNICAS

D. Gnepp, J Henley, R. Simpson y J. Eveson. "Salivary and lagrimal glands" en [Diagnostic Surgical Pathology of the Head and Neck E-Book-](#)



A) Patrón sólido con infiltrado linfocitario. B) variante folicular. C) variante microquística. D) variante quística papilar.

Salivary acinic cell carcinoma: reappraisal and update

V. Vander Poorten^{1,2}  · A. Triantafyllou^{3,4} · L. D. R. Thompson⁵ · J. Bishop⁶ · E. Hauben⁷ · J. Hunt⁸ · A. Skalova⁹ · G. Stenman^{2,11} · R. P. Takes¹³ · D. R. Gnepp¹⁴ · H. Hellquist¹⁵ · B. Wenig¹⁶ · D. Bell¹⁷ · A. Rinaldo¹⁸ · A. Ferlito¹⁹

Table 2 Morphological differences between solid, serous AcCC and normal parotid tissue

Feature	AcCC	Parotid
Serous cell phenotype	+	+
Hematoxyphilia of secretory granules	Varying	Uniform
PAS, amylase reactivities of secretory granules	–	+
Arrangement of serous cells	Acini, trabeculae, sheets	Acini
Cytoplasmic lumina	+	–
Striated ducts	–	+
Fat	–	+
Stroma	▼	▲

CARCINOMA DE CÉLULAS ACÍNICAS

Histopatología 3

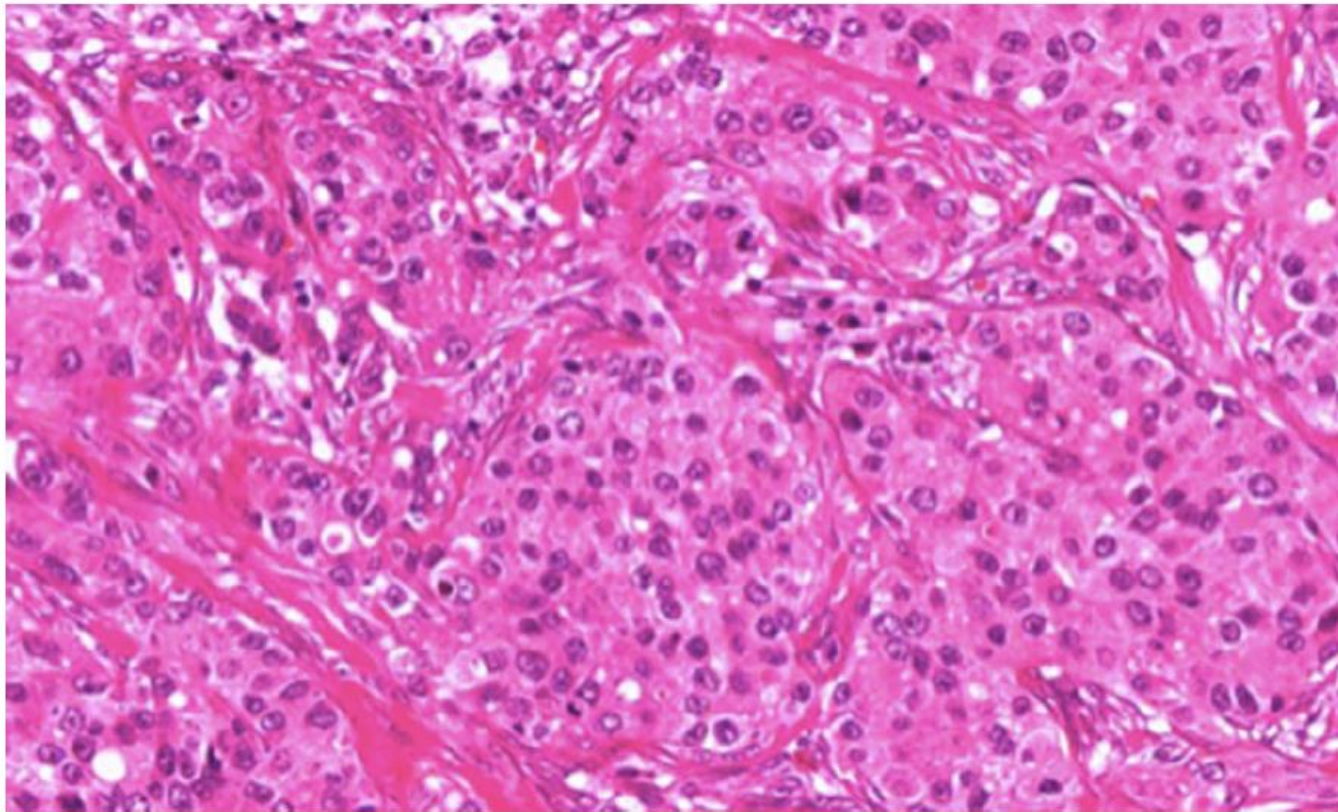
- Las células acinares son grandes y poligonales, con citoplasma granular basófilo y núcleo redondeado excéntrico.
- Células acinares con gránulos que dan una reacción PAS resistente a diastasa que puede ser focal.

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Acinic cell carcinoma of the parotid gland: from pathogenesis to management: a literature review

M. Cavaliere¹ · P. De Luca² · A. Scarpa² · L. Savignano¹ · C. Cassandro³ · E. Cassandro² · M. Iemma¹

Received: 25 February 2020 / Accepted: 18 April 2020
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Células acinares grandes y poligonales, con citoplasma granular basófilo y núcleo redondeado excéntrico.

Fig. 1 Acinic cell carcinoma of the parotid gland

CARCINOMA DE CÉLULAS ACÍNICAS VARIANTE DE CÉLULAS CLARAS

Imagen de D. Gnepp, J Henley, R. Simpson y J. Eveson. "Salivary and lagrimal glands" en

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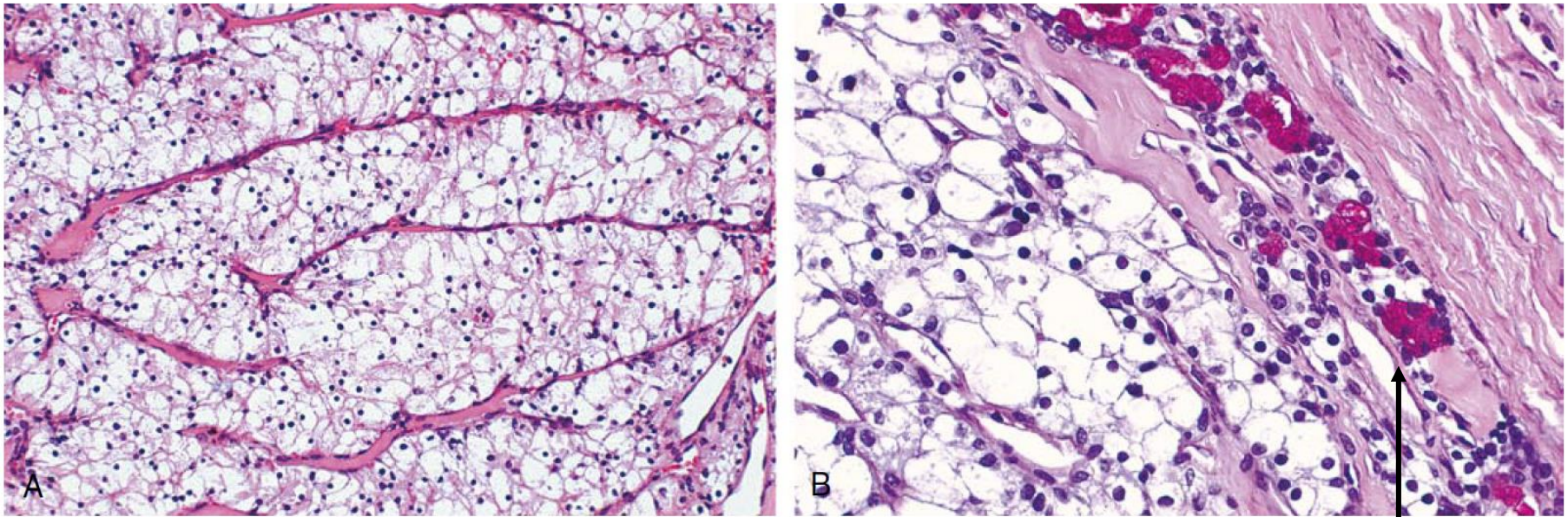


Figure 6-31. Acinic cell carcinoma, clear cell variant. **A**, The majority of this tumor (>98%) was composed of sheets of clear cells with slightly pleomorphic, eccentrically located nuclei and abundant clear cytoplasm. **B**, Periodic acid-Schiff (PAS) stain. Note the detail of clear cells (*left*). Very focally within the sheets of clear cells and at the periphery of a few of the sheets are cells with abundant, slightly purplish granular cytoplasm that stained positive with a diastase-treated PAS stain, confirming the diagnosis of acinic cell carcinoma.

Células acinares con gránulos que dan una reacción PAS resistente a diastasa que puede ser focal.

CARCINOMA DE CÉLULAS ACÍNICAS VARIANTE ONCOCÍTICA

D. Gnepp, J Henley, R. Simpson y J. Eveson.
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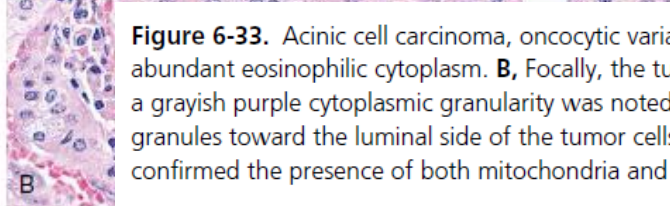
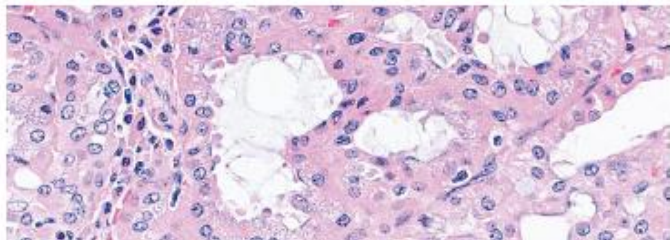
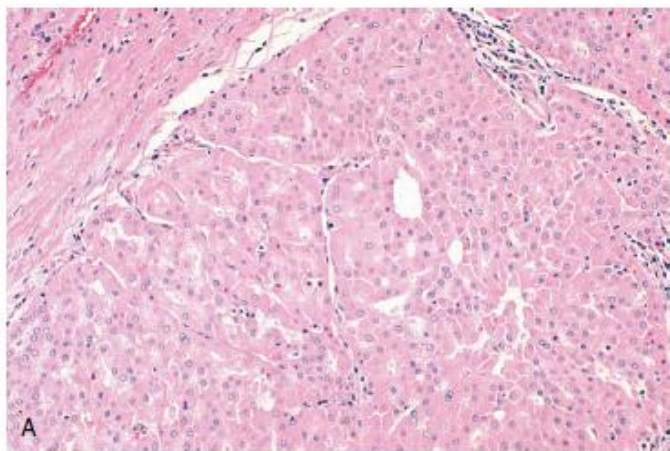
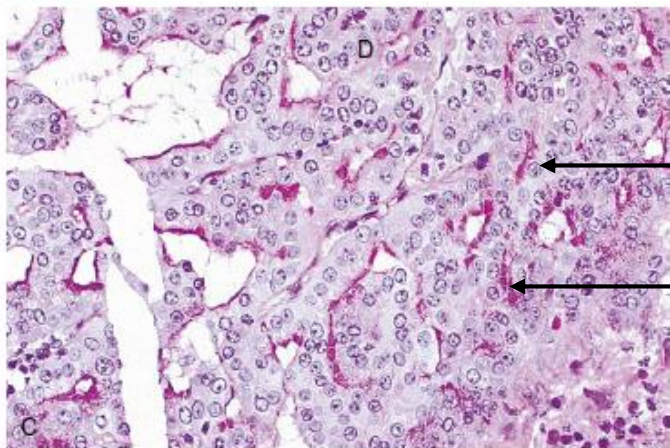


Figure 6-33. Acinic cell carcinoma, oncocytic variant. **A**, The majority of this tumor was composed of sheets of typical oncocytic cells with bland nuclei and abundant eosinophilic cytoplasm. **B**, Focally, the tumor had slightly more pleomorphic nuclei, cystic change, and, in addition to areas of eosinophilic cytoplasm, a grayish purple cytoplasmic granularity was noted. **C**, A diastase-treated periodic acid–Schiff (PAS) stain demonstrated numerous fine PAS-positive cytoplasmic granules toward the luminal side of the tumor cells, supporting the diagnosis of the oncocytic variant of acinic cell carcinoma. Electron microscopy (not shown) confirmed the presence of both mitochondria and zymogen granules.



Células acinares con gránulos que dan
una reacción PAS resistente a diastasa
que puede ser focal.

Salivary acinic cell carcinoma: reappraisal and update

V. Vander Poorten^{1,2} · A. Triantafyllou^{3,4} · L. D. R. Thompson⁵ ·
J. Bishop⁶ · E. Hauben⁷ · J. Hunt⁸ · A. Skalova⁹ · G. Stenman^{2,11} · R. P. Takes¹³ ·
D. R. Gnepp¹⁴ · H. Hellquist¹⁵ · B. Wenig¹⁶ · D. Bell¹⁷ · A. Rinaldo¹⁸ ·
A. Ferlito¹⁹

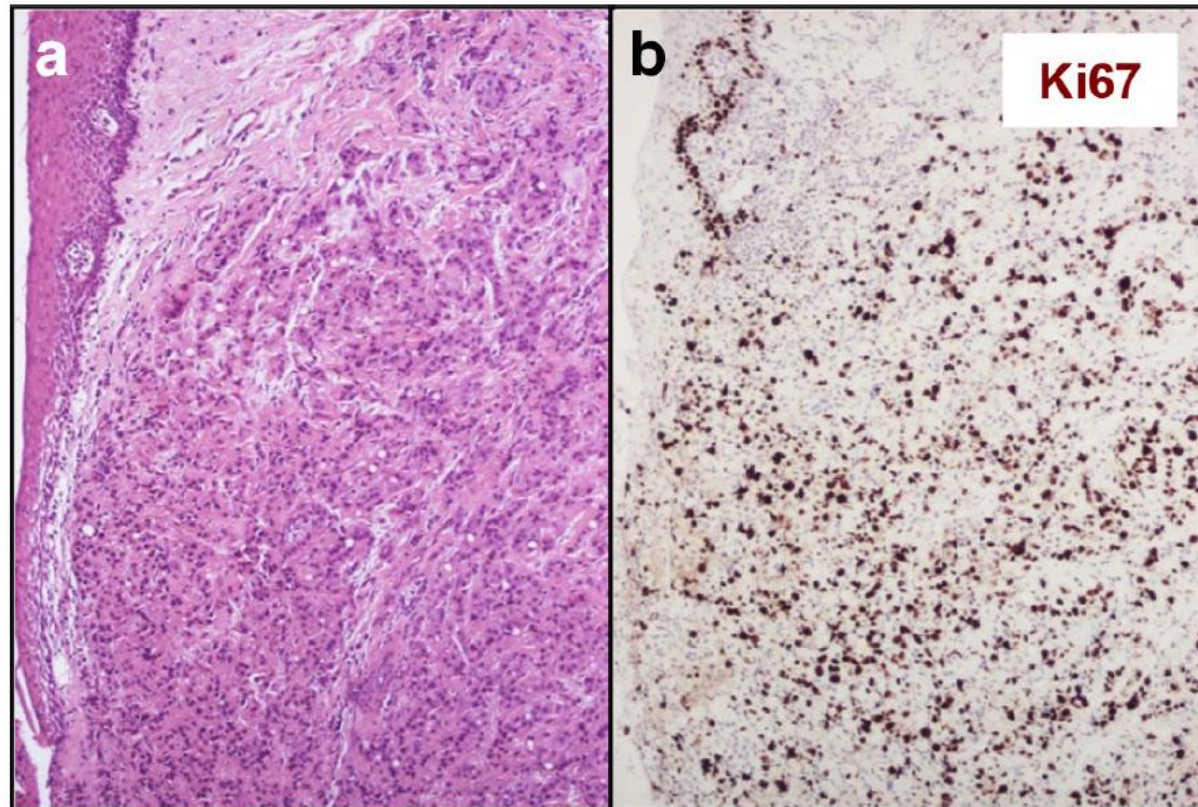


Fig. 12 Peripheral part of an AcCC of the palate (**a**); adjacent section immunostained for Ki67 reveals the high proliferative activity of the tumor cells (**b**)

CARCINOMA DE CÉLULAS ACÍNICAS

Histopatología 4

- Inmunopositivo para DOG1 y SOX10, pero no es específico.
- Inmunonegativo para mamaglobina, lo que permite distinguirlo del carcinoma secretor.

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ADENOCARCINOMA POLIMORFO

Adenocarcinoma polimorfo

Convencional: Es un tumor epitelial maligno caracterizado por uniformidad citológica, diversidad morfológica y patrón de crecimiento infiltrativo. Usualmente asociado a alteraciones de la familia de genes PRKD.

Cribiforme: se caracteriza por patrón de crecimiento principalmente papilar y glomeruloide, núcleos claros y fusiones PRKD1, PRKD2 o PRKD3.

Sobrevida a 10 años: 94-99%

OMS 2022

OMS 2005 le asignaba bajo potencial metastásico,
OMS 2017 no lo hace.

Adenocarcinoma polimorfo

Clínica

- La mayoría en glándulas salivales menores.
- 50% a 60% en paladar.
- Tipo cribiforme: base de lengua y paladar blando.
- En varias series, 2° después de Carcinoma mucoepidermoide.

D. Gnepp, J Henley, R. Simpson y J. Eveson. "Salivary and lagrimal glands" en [Diagnostic Surgical Pathology of the Head and Neck E-Book-](#)

Adenocarcinoma polimorfo

Histopatología 1

- De localización típicamente submucosa y no encapsulado, con focos de crecimiento infiltrativo.
- Amplia variación en la configuración morfológica dentro y entre tumores.
- Mitosis infrecuentes, necrosis sólo si hay transformación a alto-grado.
- Estroma tumoral puede ser mucinoso o hialinizado, o escaso.
- El compromiso perineural es frecuente.

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ADENOCARCINOMA POLIMORFO

D. Gnepp, J Henley, R. Simpson y J. Eveson.
“Salivary and lagrimal glands” en
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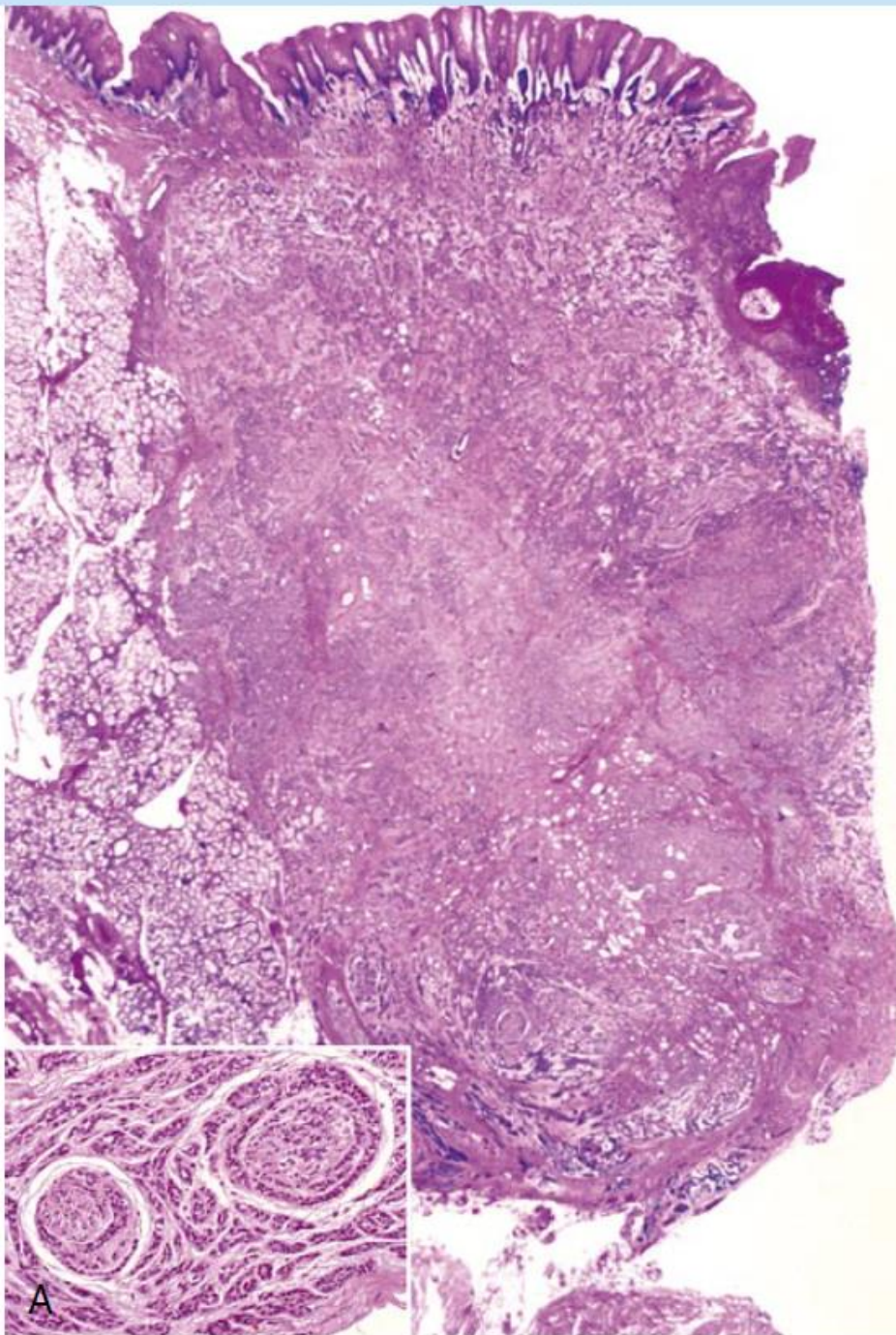


Figure 6-35. Polymorphous low-grade adenocarcinoma. **A,** This palatal tumor is well circumscribed with slightly irregular edges. Area with perineural invasion is shown (*inset*).

Adenocarcinoma polimorfo

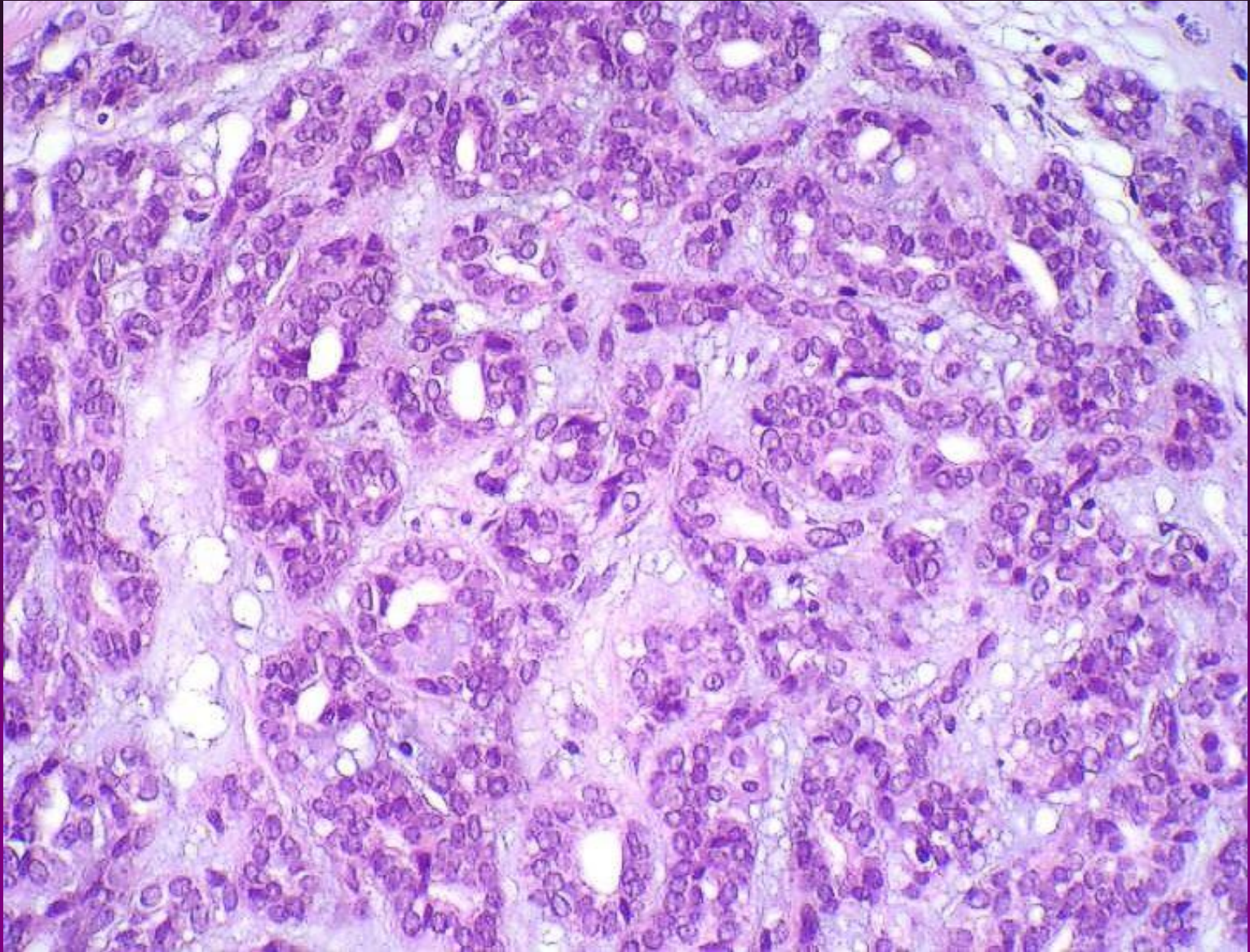
Histopatología 2

Células generalmente pequeñas y uniformes, con núcleos sin atipías, mínimamente hipercromáticos, nucléolos escasamente aumentados de tamaño, escaso a moderado citoplasma claro eosinófilo.

Se pueden encontrar focos de células oncocíticas, células claras, escamosas o metaplasia mucinosa.

D. Gnepp, J Henley, R. Simpson y J. Eveson. "Salivary and lagrimal glands" en [Diagnostic Surgical Pathology of the Head and Neck E-Book-](#)

Adenocarcinoma polimorfo



Adenocarcinoma polimorfo

Histopatología 3

El epitelio que cubre la lesión generalmente está intacto, pero puede presentar ulceración.

Las células se pueden organizar en varios patrones:

láminas, cordones interconectados, pequeños túbulos, islas sólidas, ductos, quístico, papilar, en remolino y cribiforme.

Inmunohistoquímica:

CK7 (+) CK20 (-)

D. Gnepp, J Henley, R. Simpson y J. Eveson. "Salivary and lagrimal glands" en [Diagnostic Surgical Pathology of the Head and Neck E-Book-](#)

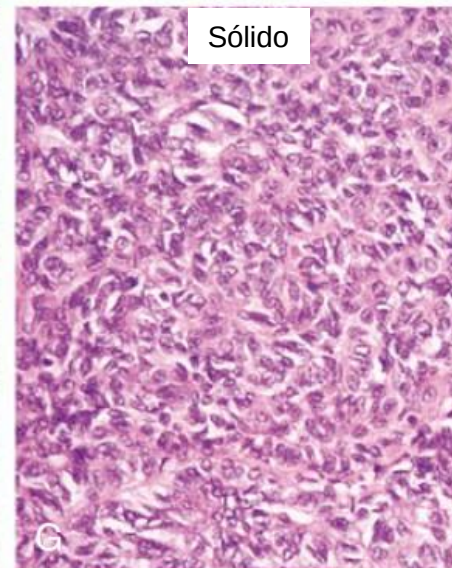
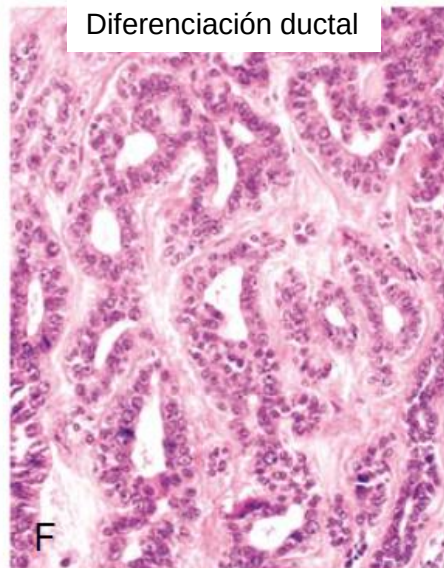
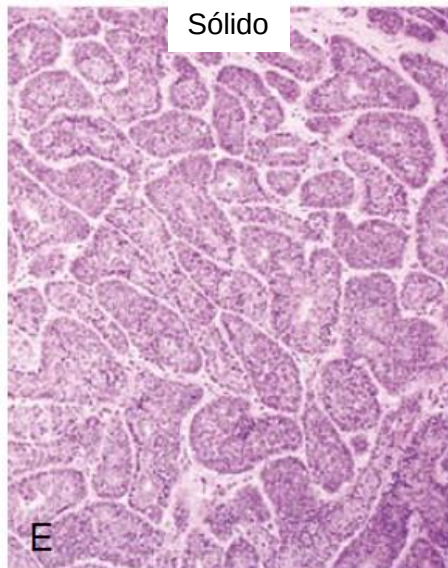
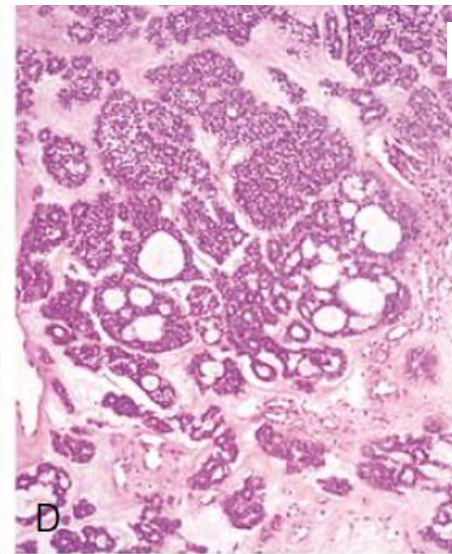
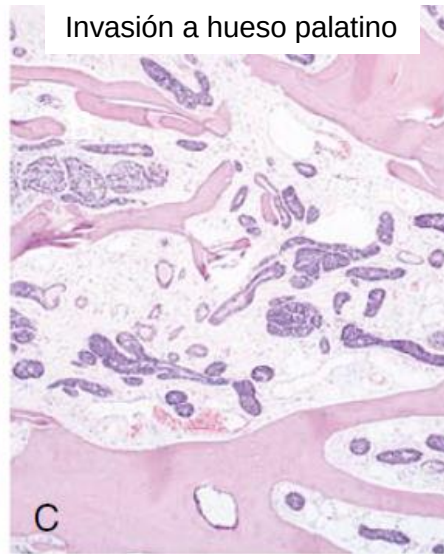
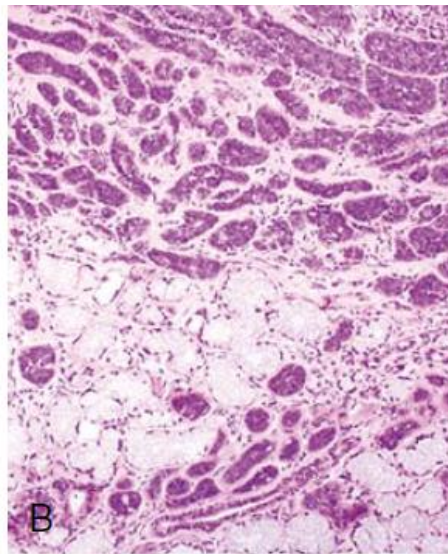
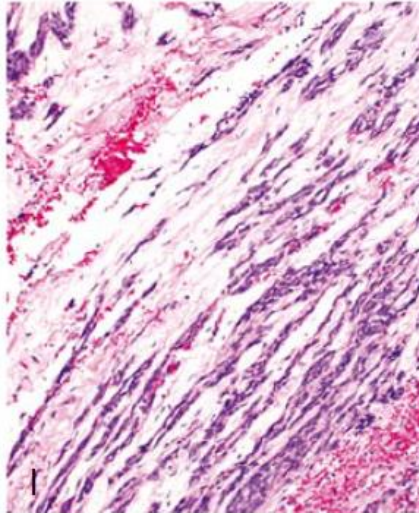
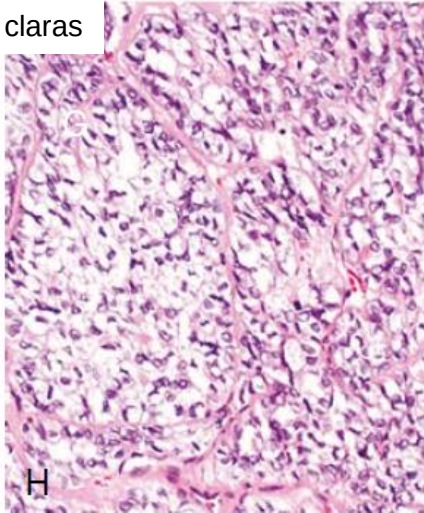


Figure 6-35 Adenocarcinoma polimorfo —Cont. **B**, Peripheral, destructive, invasive overgrowth of adjacent mucinous acini is shown; rarely tumors may be large enough to invade palatal bone. **C**, Tumors frequently have solid (**D**, **E**, and **G**) and/or cribriform (**D**) areas, ductal differentiation (**F**).

D. Gnepp, J Henley, R. Simpson y J. Eveson. "Salivary and lagrimal glands" en [Diagnostic Surgical Pathology of the Head and Neck E-Book-](#)

Células claras



Área micropapilar

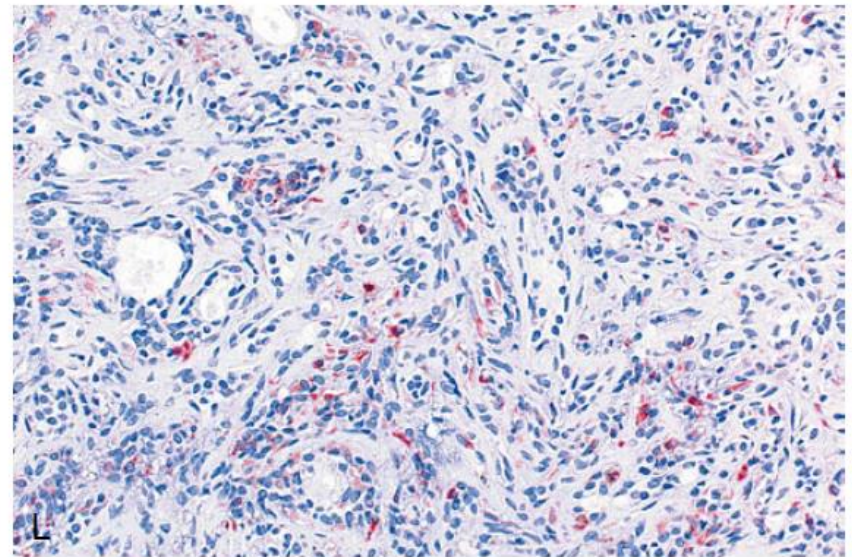
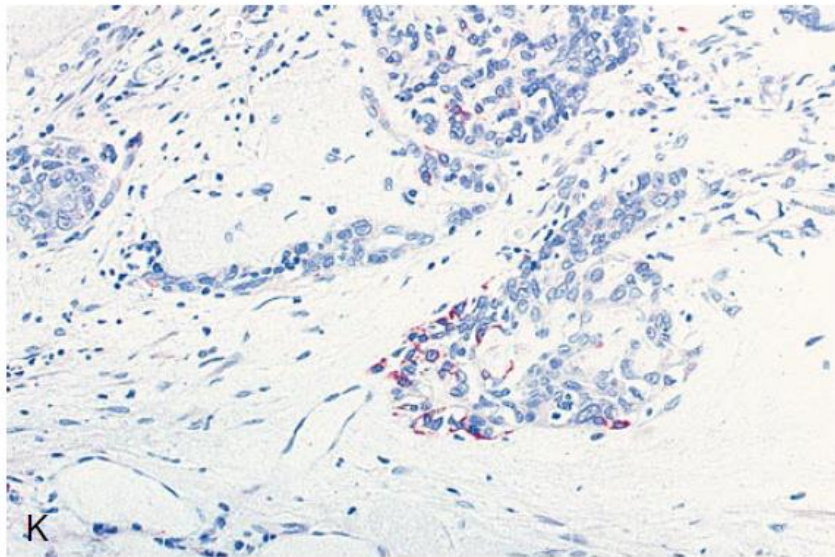
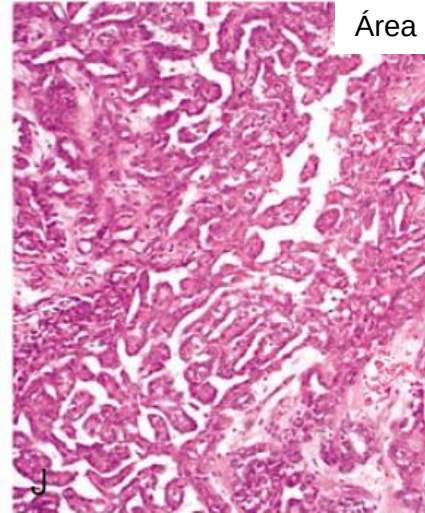
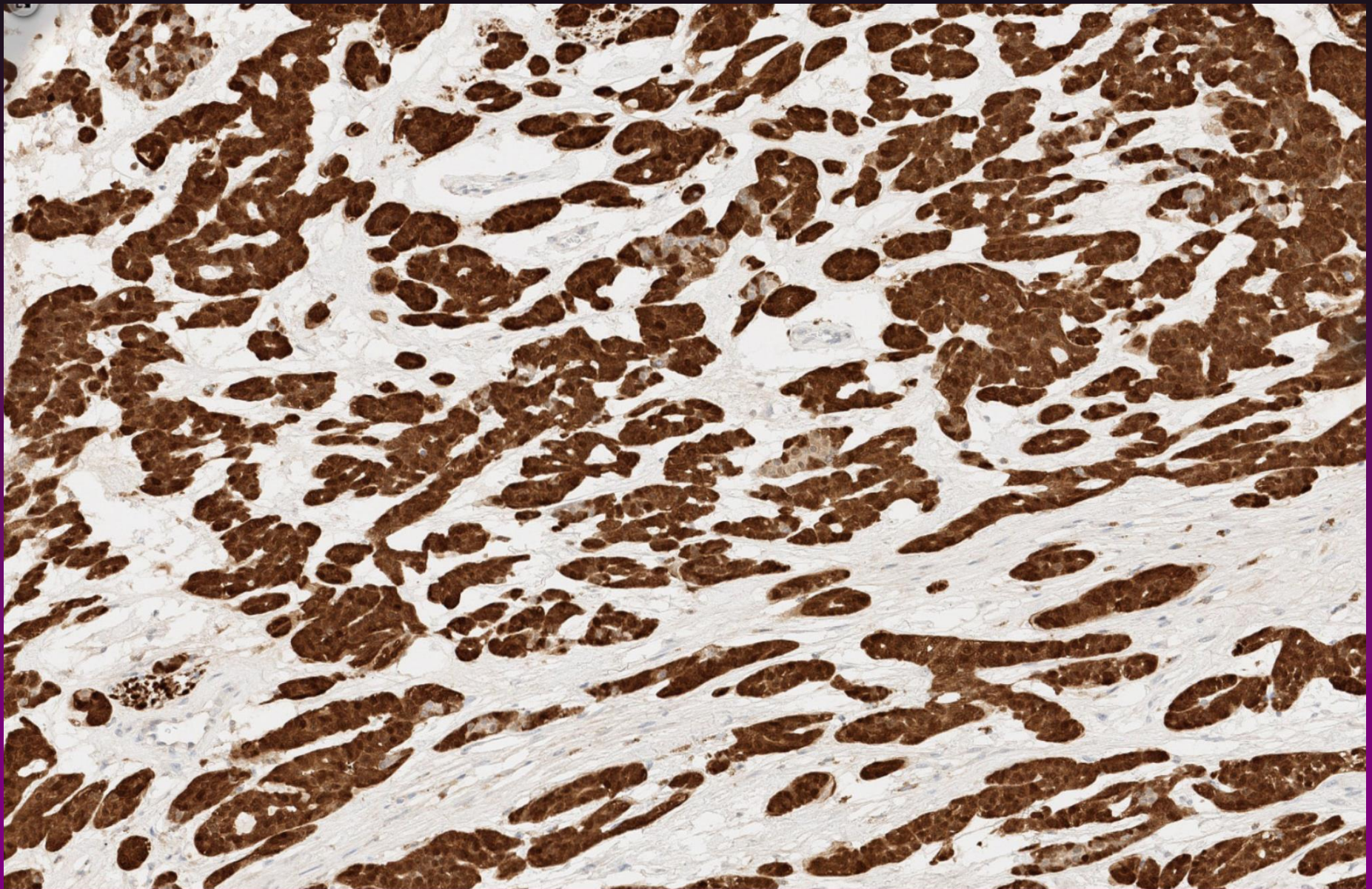


Figure 6-35 Adenocarcinoma polimorfo —Cont. B, clear cell changes (H), single-cell linear filing (I), and micropapillary areas (J). **K and L,** Glial fibrillary acidic protein immunohistochemical stain. Polymorphous low-grade adenocarcinoma (K). There was only focal epithelial staining; no staining was seen in the stroma. Cellular mixed tumor (L). There was staining in the myoepithelial stromal cells as well as focal ductal staining. The stromal staining confirms the diagnosis of mixed tumor.

Adenocarcinoma polimorfo



Legend: S100 is diffusely positive in PAC, regardless of morphologic subtype. (Please make a composite of 1a-d)

Source: Bin Xu

Adenocarcinoma polimorfo

Tratamiento y pronóstico

Excisión quirúrgica amplia.

Metastasis a distancia son infrecuentes.

Pronóstico relativamente bueno.

Recurrencias: 9-17% pacientes, controlables con re-excisión.

ADENOCARCINOMA POLIMORFO SUBTIPO CRIBIFORME

ADENOCARCINOMA CRIBIFORME DE GLÁNDULAS SALIVALES

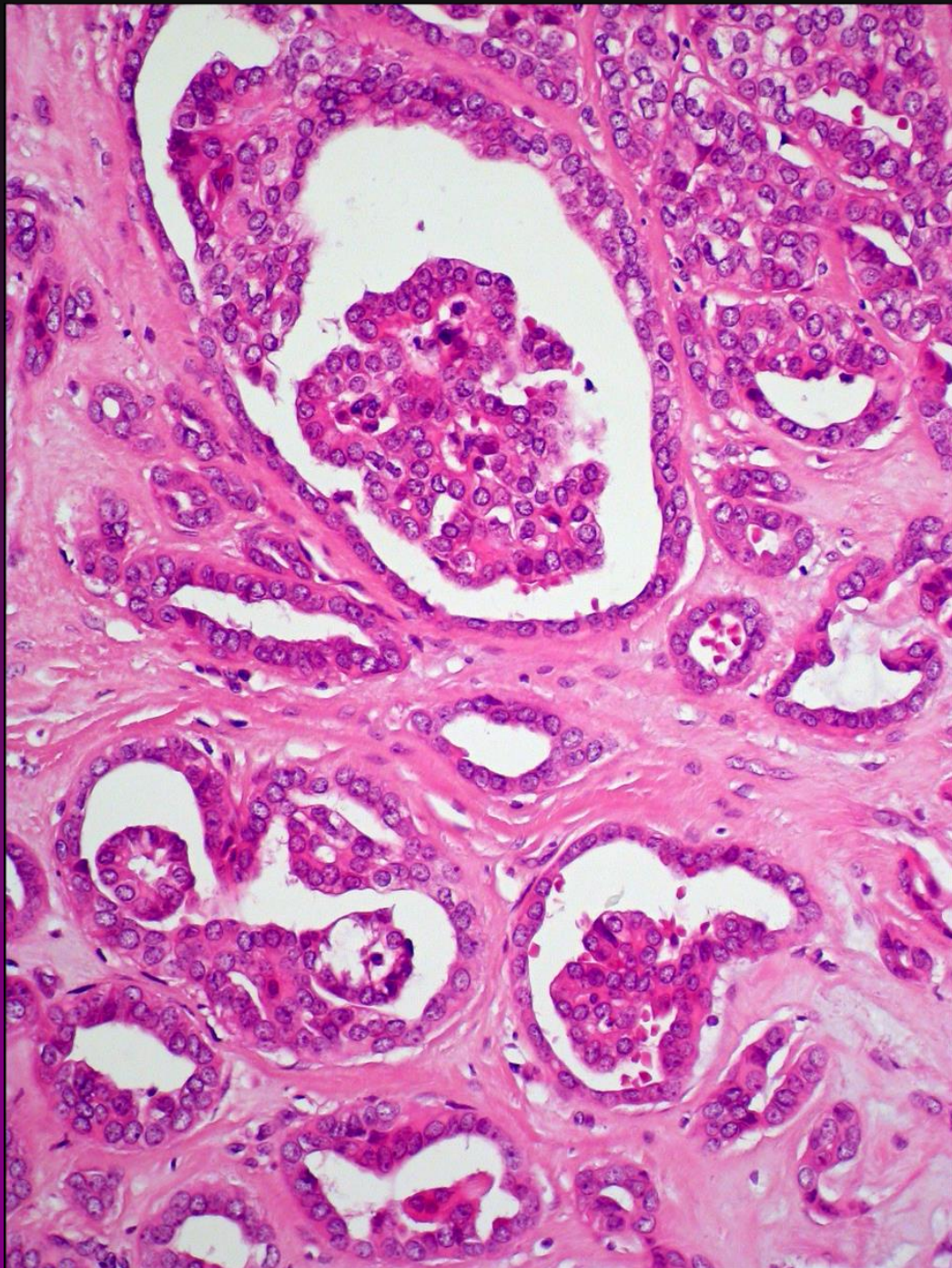
Inicialmente se reportó en la base de la lengua y posteriormente en otras glándulas salivales menores.

Se caracteriza por crecimiento multinodular separado por tabiques fibrosos con arquitectura relativamente uniforme ya sea sólida, cribiforme y microquística con nucleos claros.

Se pueden observar estructuras glomeruloides y papilares, empalizada periférica y fisuras.

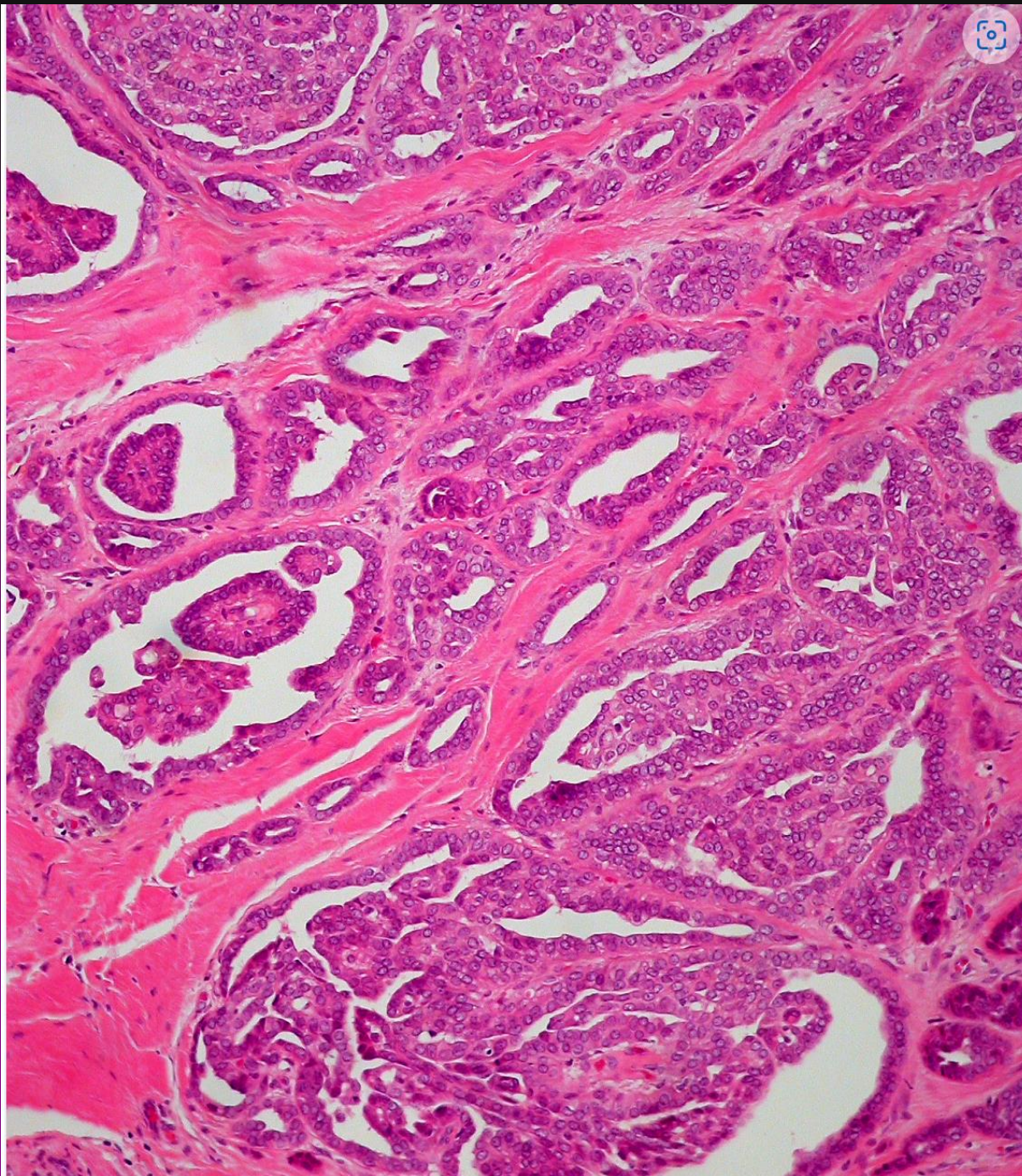
Comparado con el adenocarcinoma polimorfo clásico, este se asocia a localización en base de lengua y mayor riesgo de metastasis a linfonódulos.

Skálová A, Hyrcza MD, Leivo I. Update from the 5th Edition of the World Health Organization Classification of Head and Neck Tumors: Salivary Glands. Head Neck Pathol. 2022;16(1):40-53



Adenocarcinoma polimorfo,
subtipo cribiforme

Legend: Glomeruloid structures.
Source: Roderick Howard Wallace Simpson



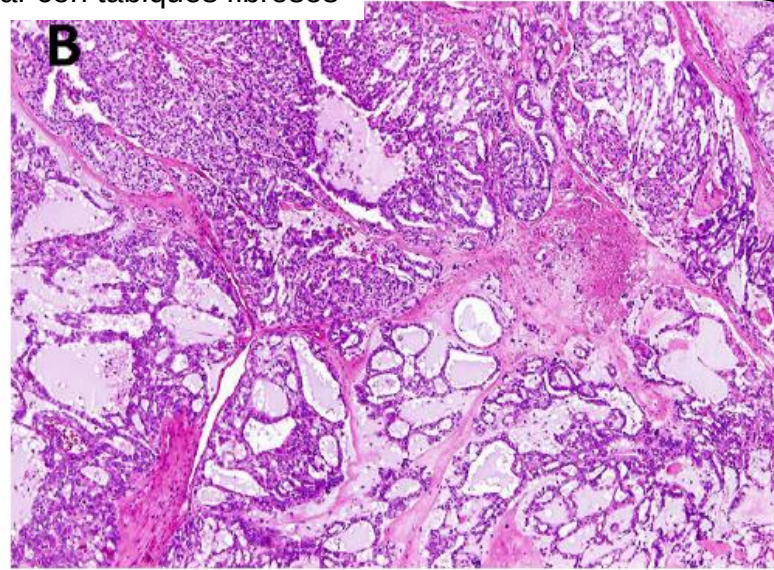
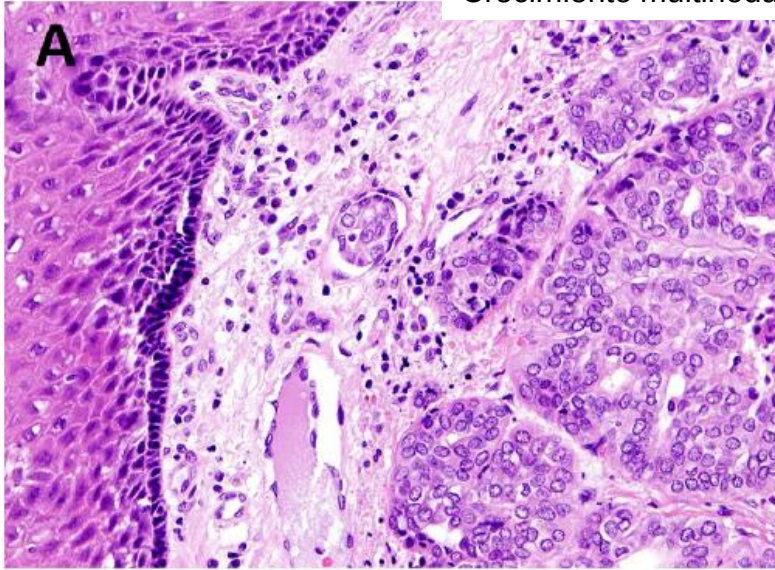
Adenocarcinoma polimorfo,
subtipo cribiforme

Legend: Glomeruloid structures.
Source: Roderick Howard Wallace
Simpson

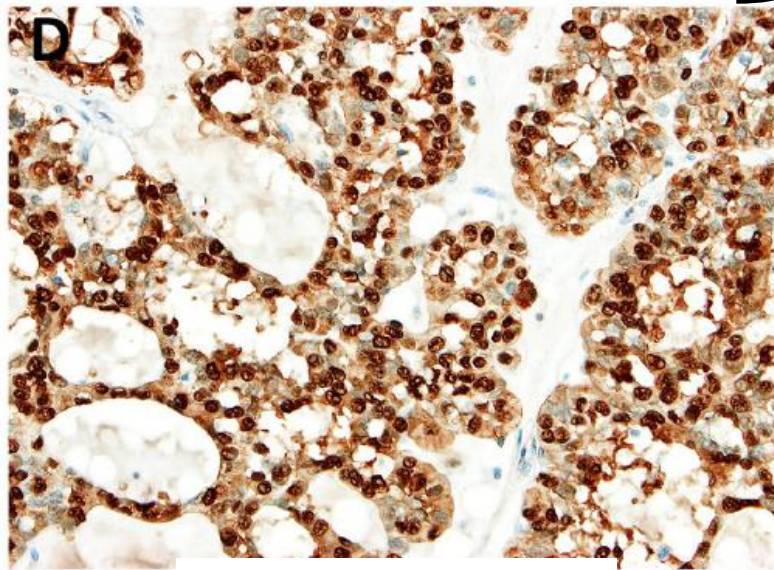
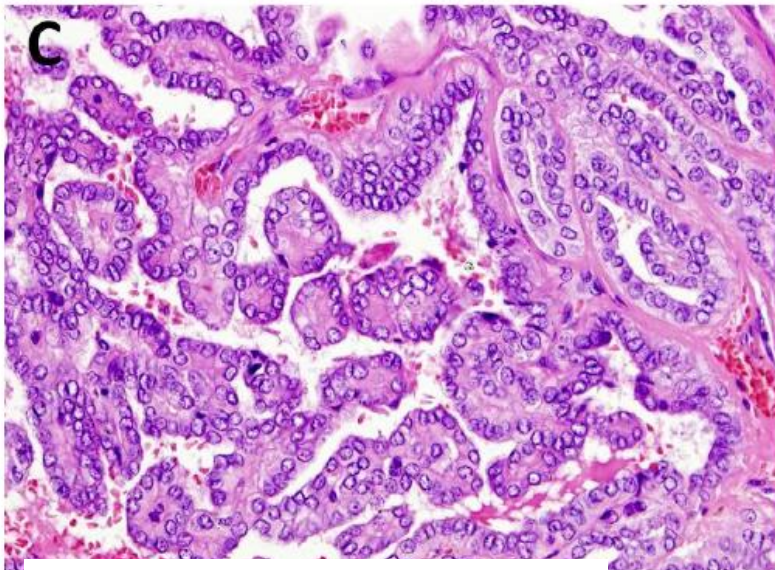
ADENOCARCINOMA POLIMORFO SUBTIPO CRIBIFORME

ADENOCARCINOMA CRIBIFORME DE GLÁNDULAS SALIVALES

Crecimiento multinodular con tabiques fibrosos



Arquitectura
glomeruloide,
cribriforme y
microquística



Núcleos claros y estructuras papilares

Células tumorales S-100 (+)

CARCINOMA MIOEPITELIAL

CARCINOMA MIOEPITELIAL

Definición

Es una neoplasia maligna compuesta completamente por células neoplásicas mioepiteliales con crecimiento infiltrativo.

Epidemiología

Son muy infrecuentes y se pueden presentar a cualquier edad y en cualquier sexo.

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CARCINOMA MIOEPITELIAL

Macroscópico

Masa no encapsulada de consistencia blanda a firme. Al corte gris a blanquecina. Puede tener hemorragia, degeneración quística y necrosis.

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CARCINOMA MIOEPITELIAL

Histopatología

- Nódulos desorganizados de células mioepiteliales malignas con bordes compresores a infiltrativos.
- Patrones sólido, trabecular y reticular.
- Estroma mixoide o hialino.
- Puede presentar necrosis central y formación de pseudoquistes.
- Las células tumorales pueden ser fusadas, plasmacitoides, epitelioides y claras.

CARCINOMA MIOEPITELIAL

Histopatología

- Expresión de marcadores mioepiteliales: actina de músculo liso y p63.
- Además: S-100 y citoqueratinas.

OMS 2017

Kane SV, Bagwan IN. Myoepithelial Carcinoma of the Salivary Glands: A Clinicopathologic Study of 51 Cases in a Tertiary Cancer Center. *Arch Otolaryngol Head Neck Surg.* 2010;136(7):702–712. doi:10.1001/archoto.2010.104

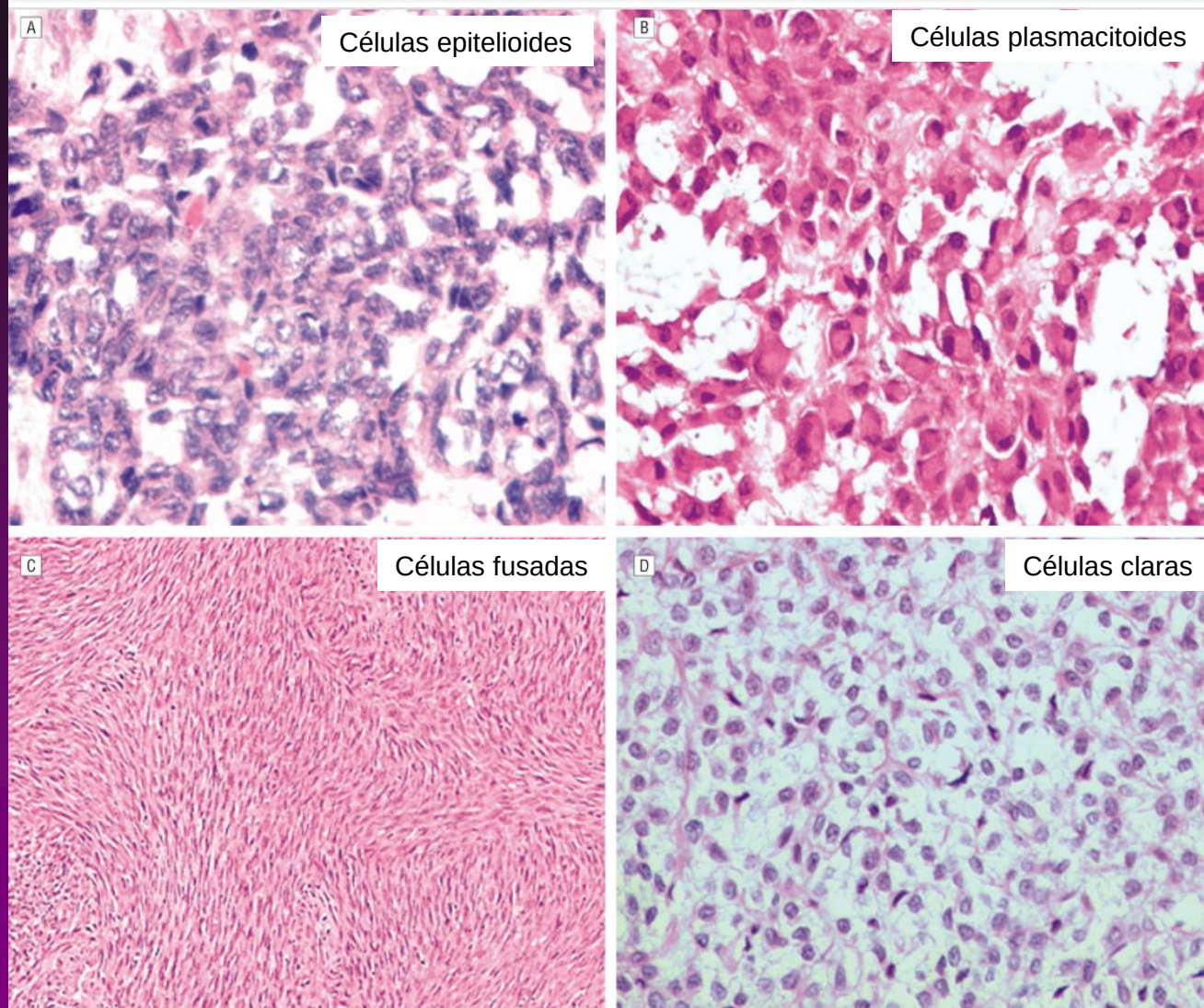


Figure 1. Various architectural and cytologic patterns of myoepithelial carcinomas of the salivary glands (hematoxylin-eosin for all panels). A, Epithelioid-cell type (original magnification $\times 200$). B, Plasmacytoid-cell type with myxoid stroma (original magnification $\times 400$). C, Spindle-cell type (original magnification $\times 100$). D, Clear-cell type (original magnification $\times 400$). E, Stellate-cell type (original magnification $\times 200$). F, Note the distinct eosinophilic hyaline stroma amidst tumor cells (original magnification $\times 200$).

Kane SV, Bagwan IN. Myoepithelial Carcinoma of the Salivary Glands: A Clinicopathologic Study of 51 Cases in a Tertiary Cancer Center. *Arch Otolaryngol Head Neck Surg.* 2010;136(7):702–712. doi:10.1001/archoto.2010.104

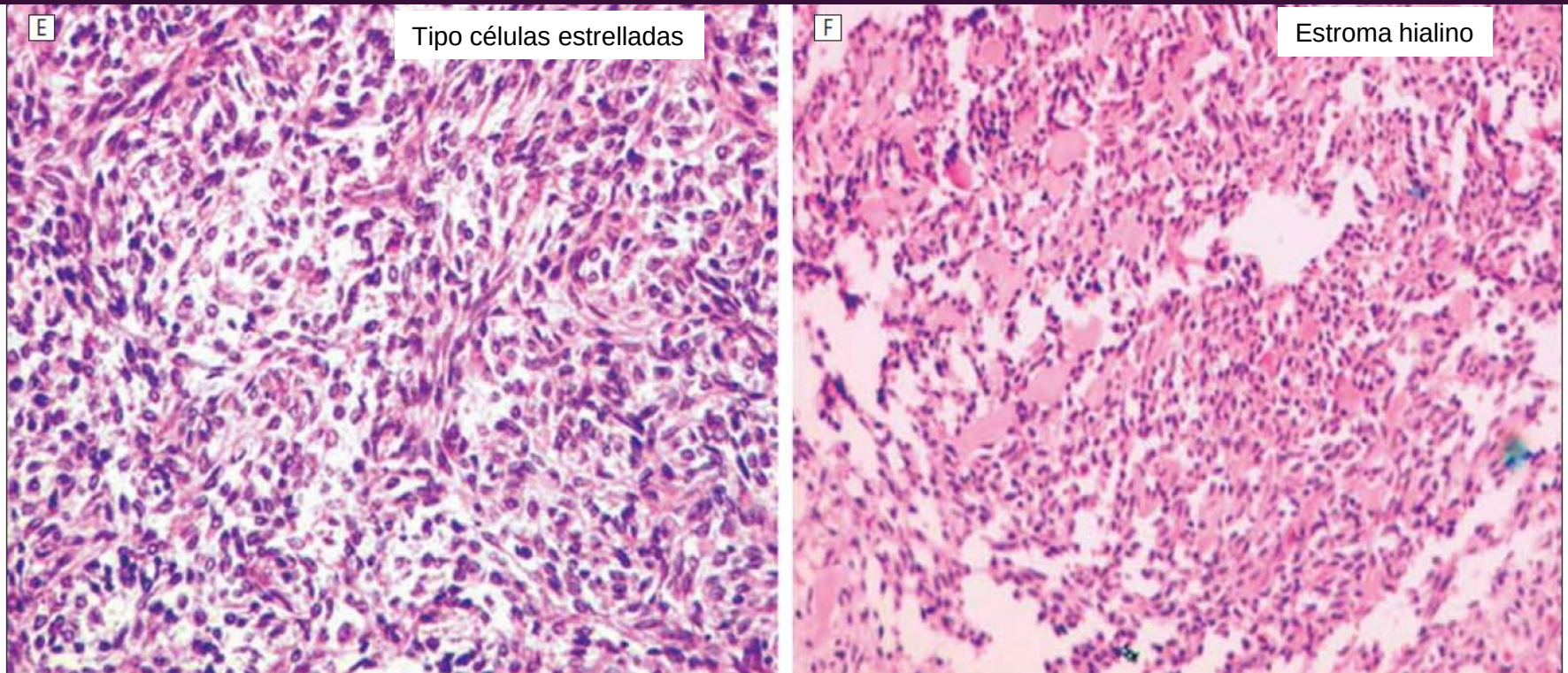


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Kane SV, Bagwan IN. Myoepithelial Carcinoma of the Salivary Glands: A Clinicopathologic Study of 51 Cases in a Tertiary Cancer Center. *Arch Otolaryngol Head Neck Surg*. 2010;136(7):702–712. doi:10.1001/archoto.2010.104

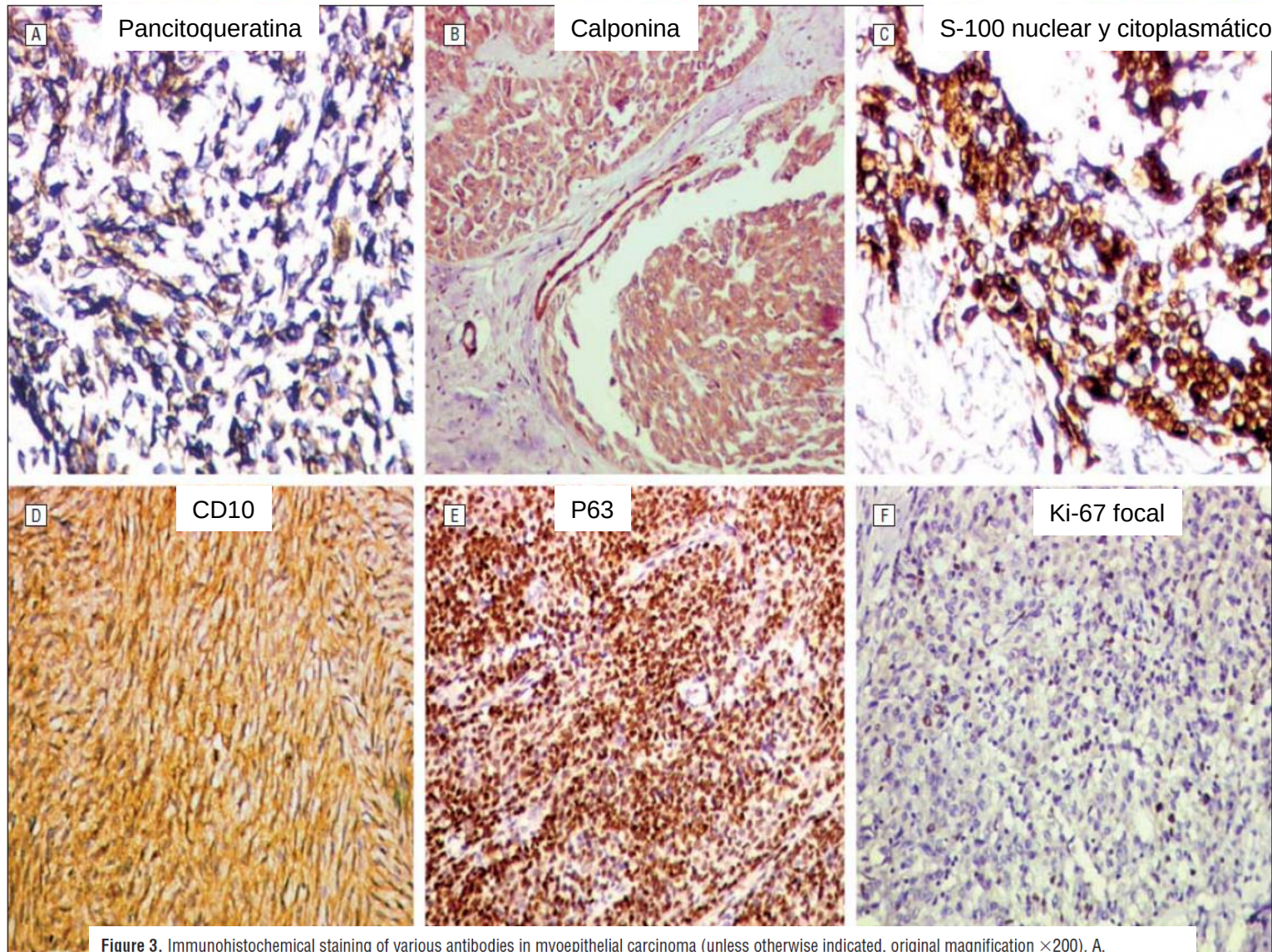


Figure 3. Immunohistochemical staining of various antibodies in myoepithelial carcinoma (unless otherwise indicated, original magnification $\times 200$). A, Pan-cytokeratin (MNF116) staining in epithelioid-cell type (original magnification $\times 400$). B, Note the cytoplasmic staining of calponin. C, S-100 protein showing nuclear and cytoplasmic staining in epithelioid cells (original magnification $\times 400$). D, CD10 staining in spindle-cell type. E, Note the diffuse p63 nuclear staining in stellate-cell type. F, Focal Ki-67 nuclear expression is observed in the myoepithelial cells.

TUMORES DE GLÁNDULAS SALIVALES Y CÉLULAS CLARAS

- No hay células claras en glándulas salivales normales, pero en tumores pueden aparecer en células acinares, ductales, epiteliales y mioepiteliales.
- La apariencia clara se puede deber a:
 - 1- pérdida de organelos normales.
 - 2 - acumulación de sustancias como glicógeno, mucina, lípidos y agua.
 - 3 – artefactos de fijación.

TUMORES DE GLÁNDULAS SALIVALES Y CÉLULAS CLARAS

D. Gnepp, J Henley, R. Simpson y J. Eveson. "Salivary and lagrimal glands" en [Diagnostic Surgical Pathology of the Head and Neck E-Book-](#)

Table 6-9. Classification of Clear Cell Tumors of the Salivary Glands

Benign

Pleomorphic adenoma, myoepithelioma, sebaceous adenoma, oncocytoma, and multifocal nodular oncocytic hyperplasia

Malignant, primary

1. Carcinomas not usually characterized by clear cells, but with rare clear cell variants, e.g., mucoepidermoid, acinic cell, and myoepithelial carcinomas
2. Carcinomas usually characterized by clear cells
 - a. Dimorphic epithelial-myoepithelial carcinoma
 - b. Monomorphic clear cell carcinoma, not otherwise specified
 - c. Sebaceous carcinoma

Malignant, metastatic

Carcinomas, especially kidney and thyroid, also melanoma

Adapted from Simpson RHW: Clear cell tumors. Rev Esp Patol 1999;32:432–433.

CARCINOMA

EPITELIAL-MIOEPITELIAL

Carcinoma Epitelial-Mioepitelial

Definición

Es un tumor maligno de glándulas salivales con un patrón bifásico organizado en una capa de células internas ductales y una capa externa de células mioepiteliales.

Epidemiología

- Infrecuente (menos del 5% de Neoplasias malignas de Gl. Salivales).
- Principalmente en 6° y 7° década de vida.
- Leve predilección por mujeres.

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Carcinoma Epitelial-Mioepitelial

Histopatología

- Patrón multinodular con estructura bifásica.
- Células ductales: cuboidales, con citoplasma eosinófilo reminiscentes de ducto intercalar.
- Células mioepiteliales: externas abluminales, poligonales con citoplasma claro.
- Puede presentar crecimiento sólido y necrosis.
- Invasión perineural frecuente.
- Fenotipos celulares: oncocíticas, fusadas, claras, sebáceas.

CARCINOMA EPITELIAL-MIOEPITELIAL

Recent advances in the diagnostic pathology of salivary carcinomas. Simpson RH et al. Virchows Arch. (2014)

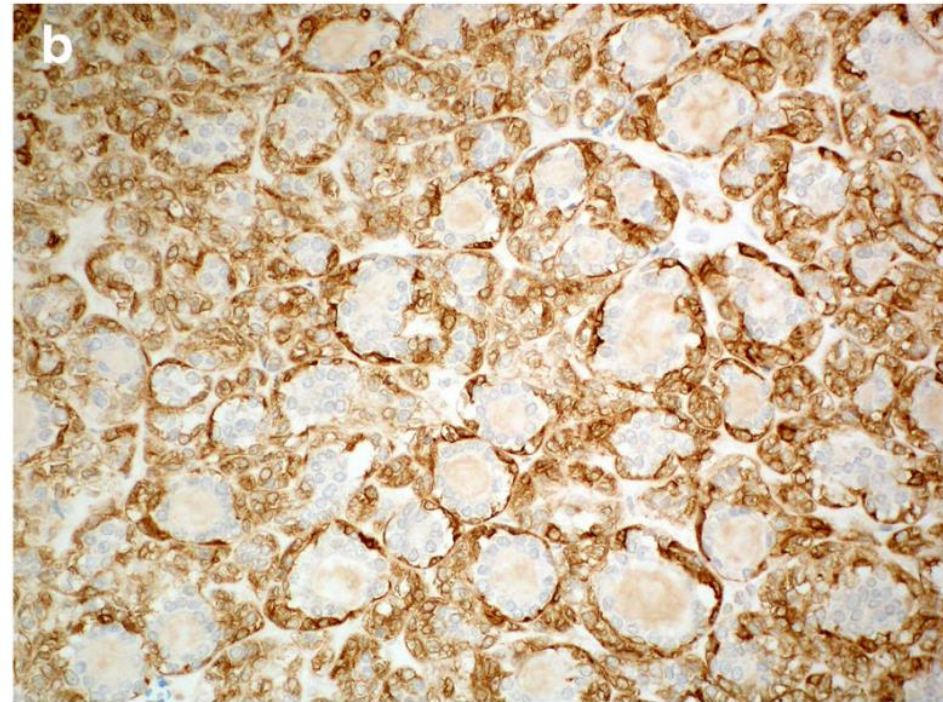
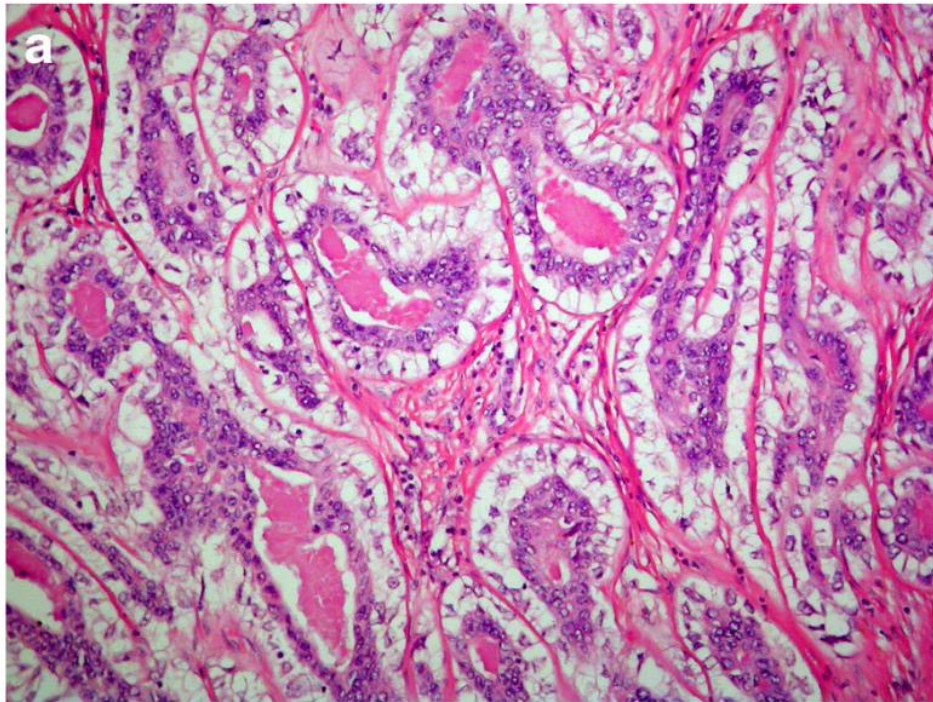
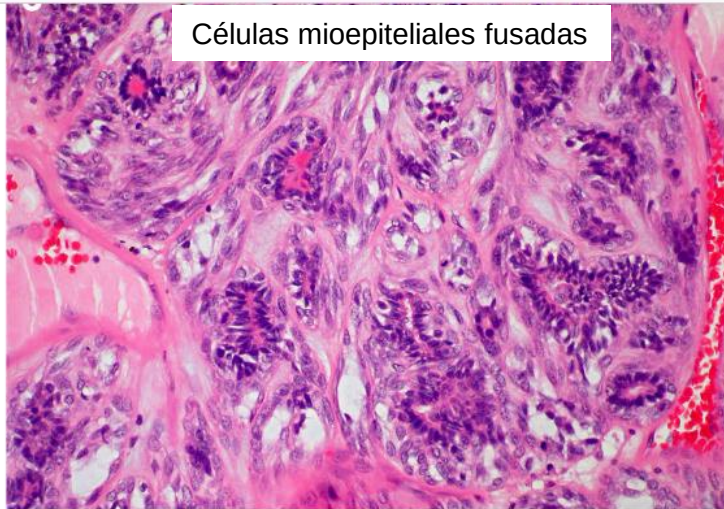


Fig. 4 **a** EMC: characteristic biphasic pattern of lumina lined by inner epithelial cells surrounded by clear myoepithelial cells and a delicate rim of basement membrane material. **b** EMC: outer layer of myoepithelial cells highlighted with calponin. **c** EMC: spindle-shaped myoepithelial cells. **d** EMC: inner cells showing oncocytic change. **e** EMC: inner cells

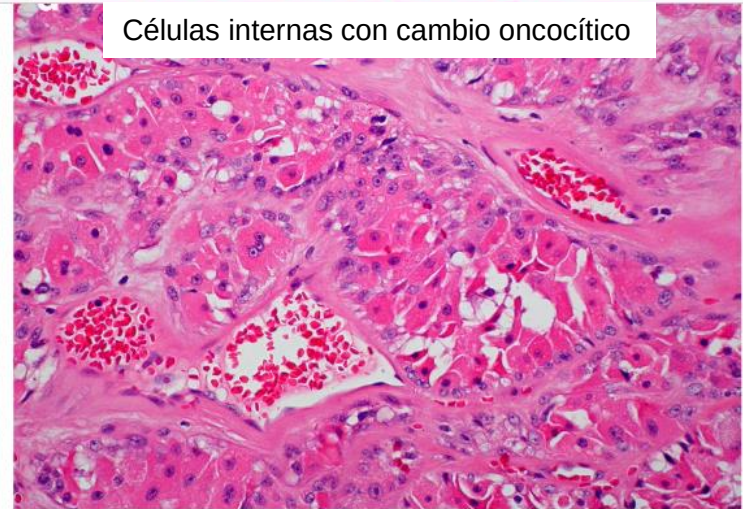
showing sebaceous features of large and multiple small cytoplasmic vacuoles; *inset*: the biphasic nature is illustrated by the myoepithelial cells highlighted with SMMHC. **f** EMC: excessive basement membrane material surrounding isolated bi-layered ducts (*PASD*)

CARCINOMA EPITELIAL-MIOEPITELIAL

Recent advances in the diagnostic pathology of salivary carcinomas. Simpson RH et al. Virchows Arch. (2014)



Células mioepiteliales fusadas



Células internas con cambio oncótico



e Células internas con características sebáceas



Aumento de mat. de membrana basal en torno a ductos EM



Caso

Dra Olga Salinas

Dra Ana Ortega

Facultad de Odontología

Universidad de Chile

Carcinoma Epitelial Mioepitelial



- Mujer de 47 años de edad.
- Depresión en el límite de paladar duro y blando.
- La paciente reporta evolución de un año.

Carcinoma Epitelial Mioepitelial





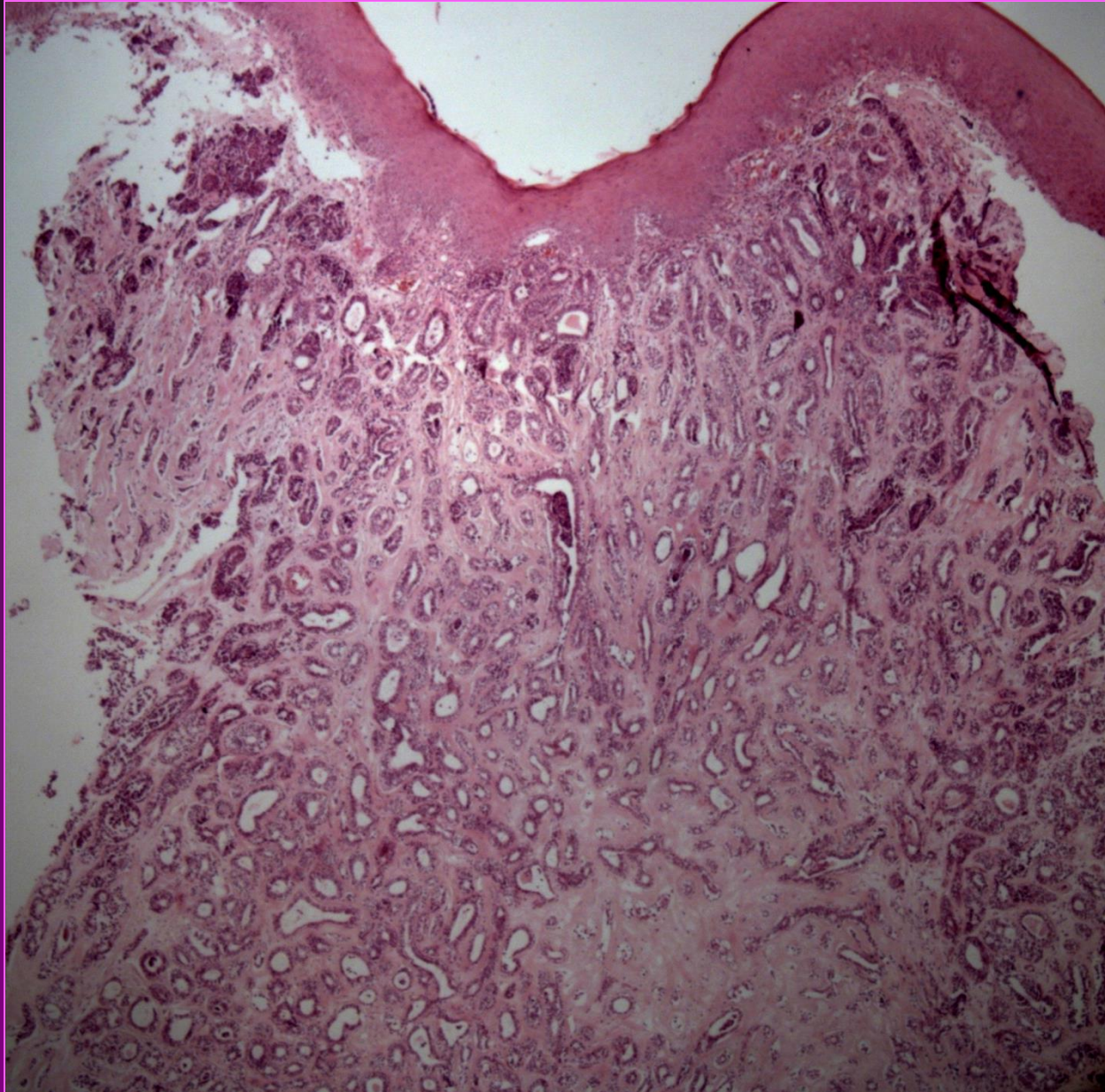
**Carcinoma
Epithelial
Mioepitelial**



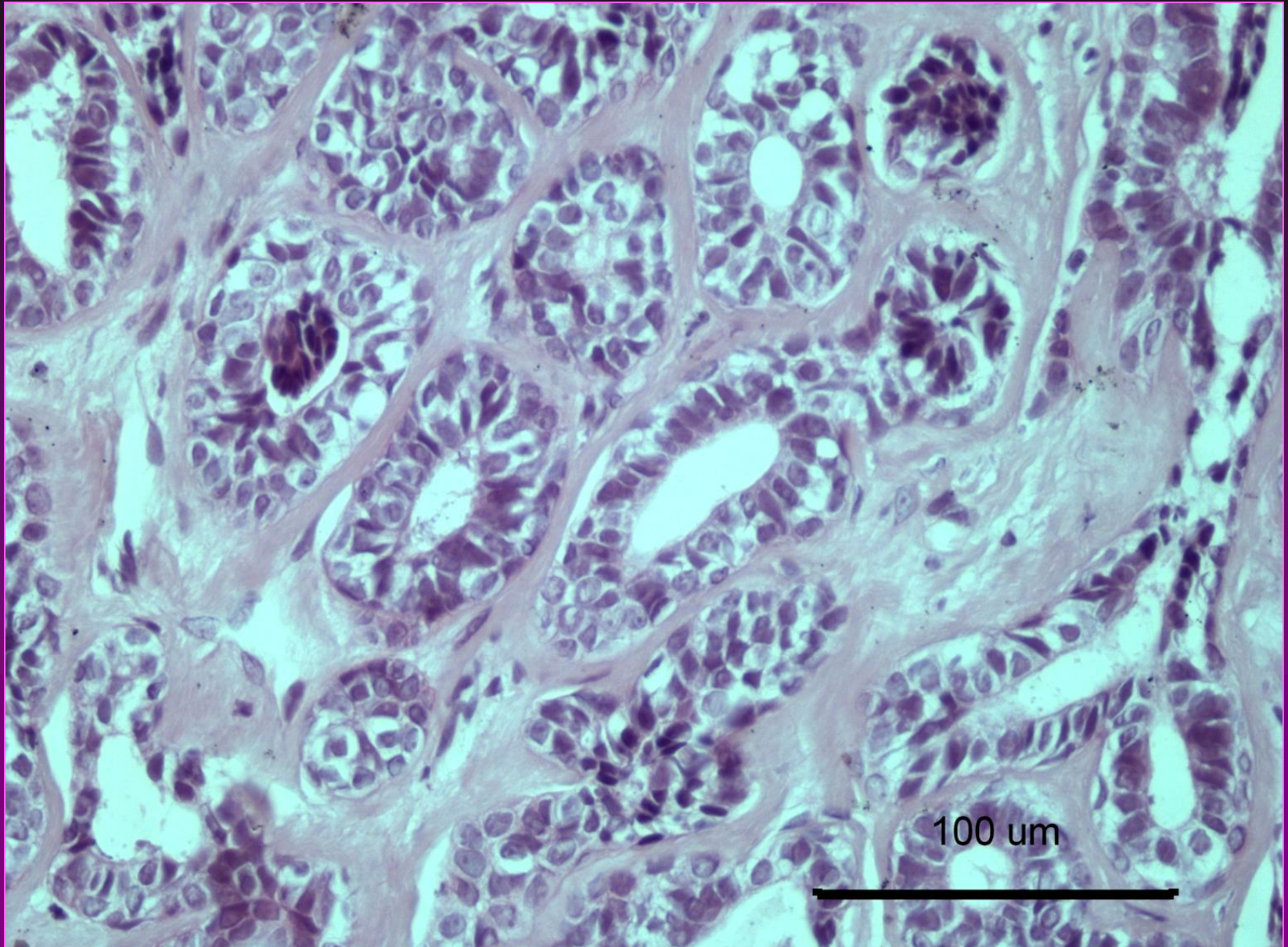
- Se tomó biopsia con punch.
- Se envió a estudio histopatológico.



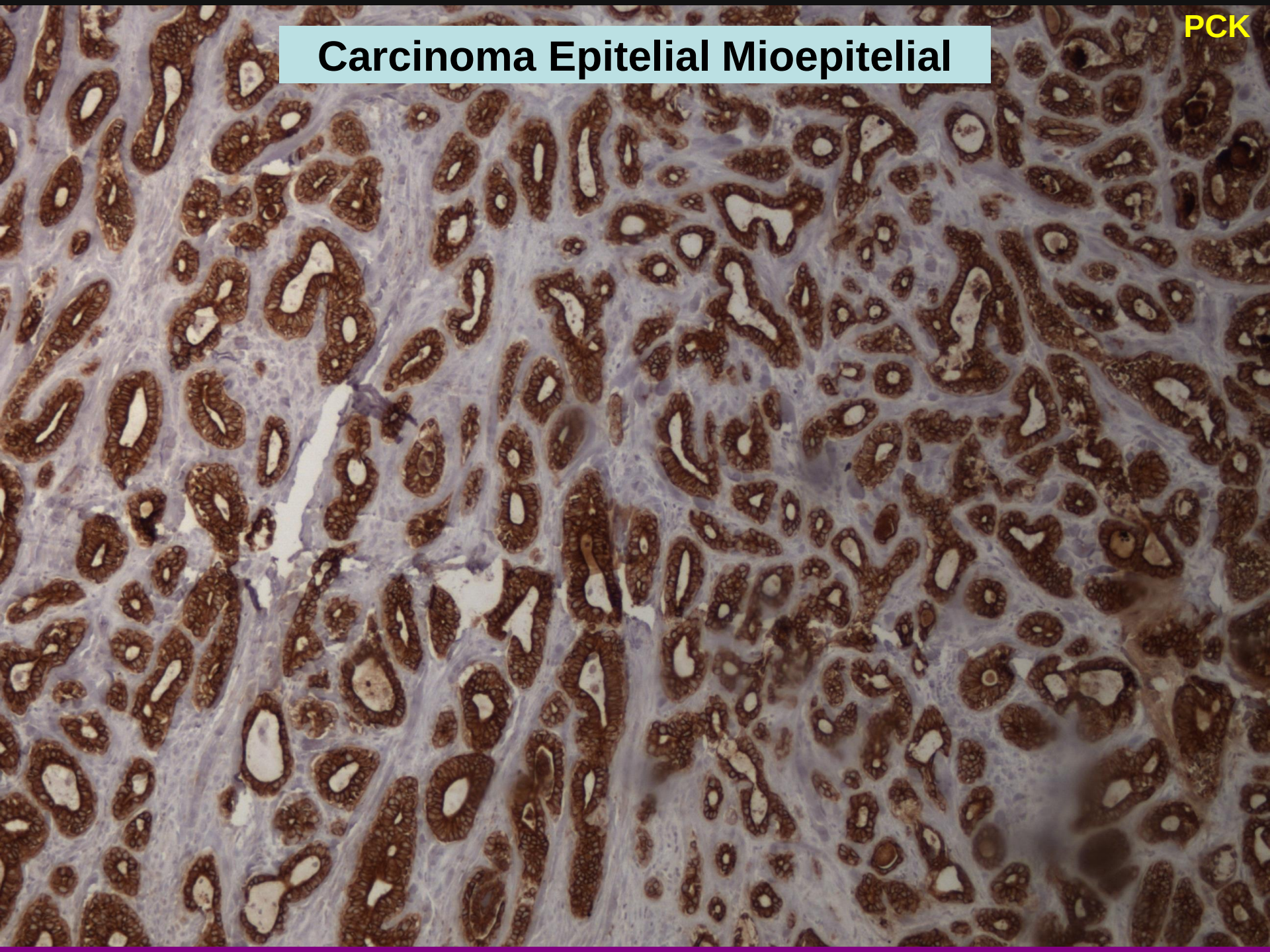
Carcinoma Epithelial Mioepithelial



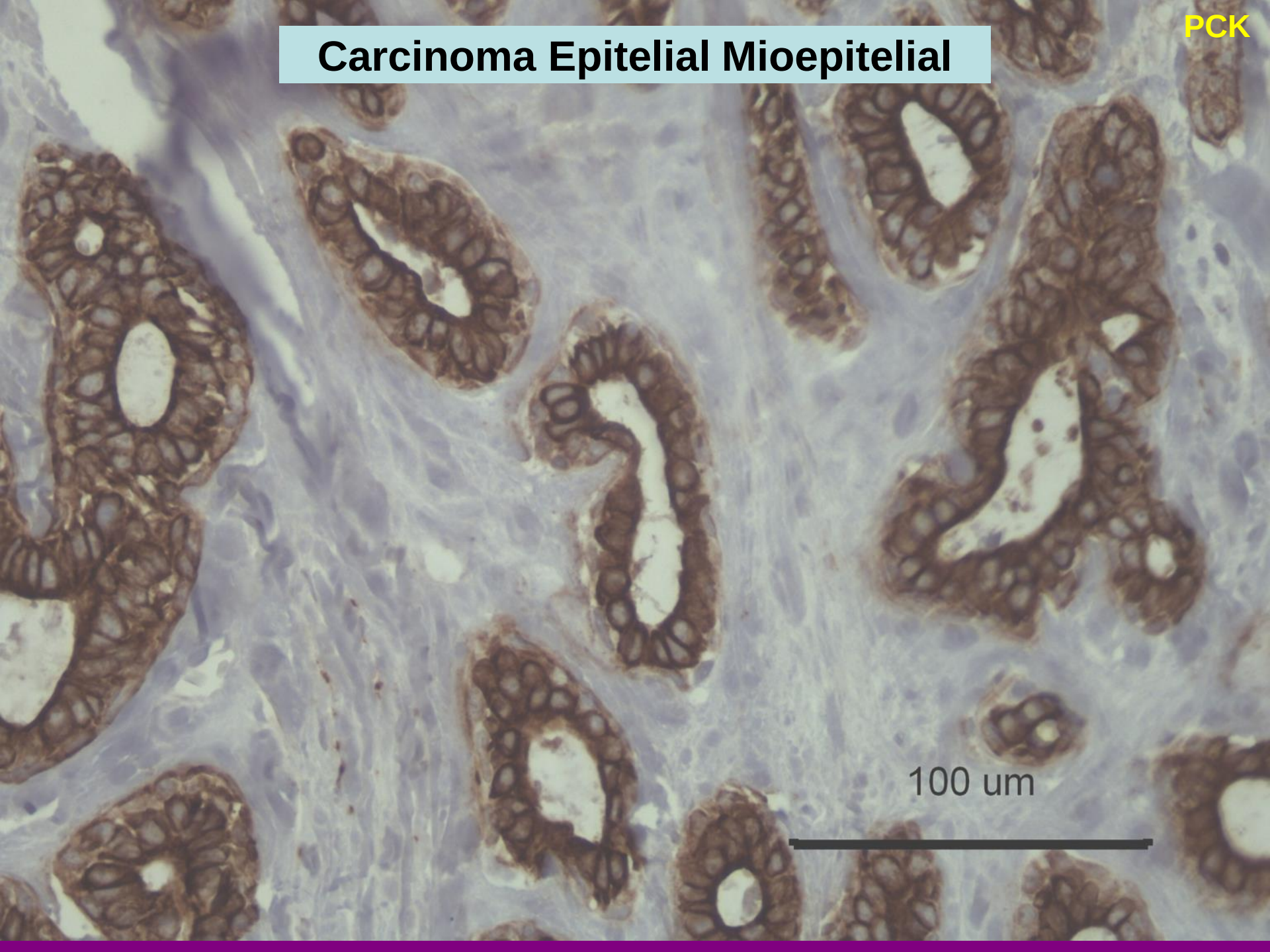
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Carcinoma Epitelial Mioepitelial



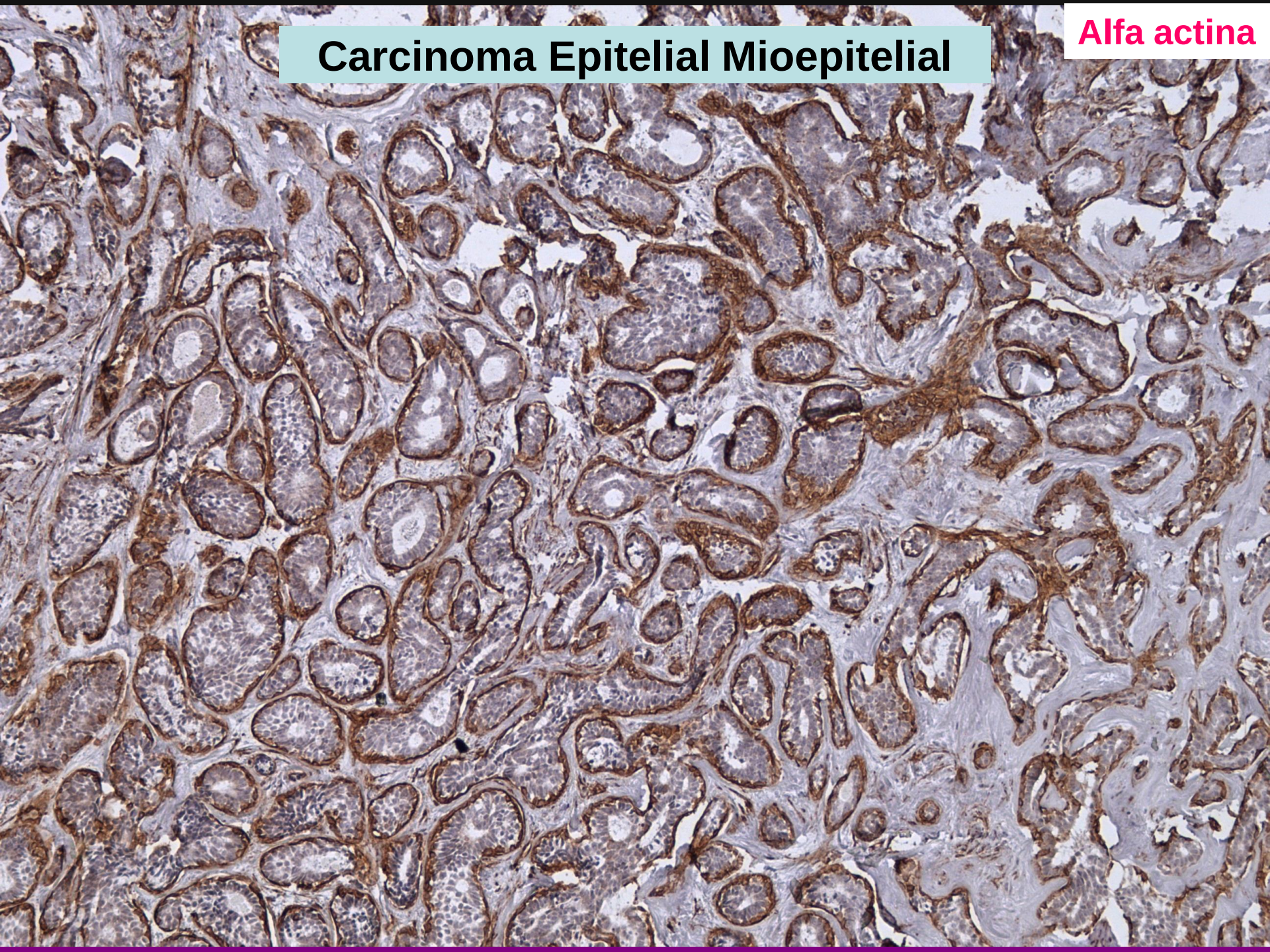
Carcinoma Epitelial Mioepitelial



100 um

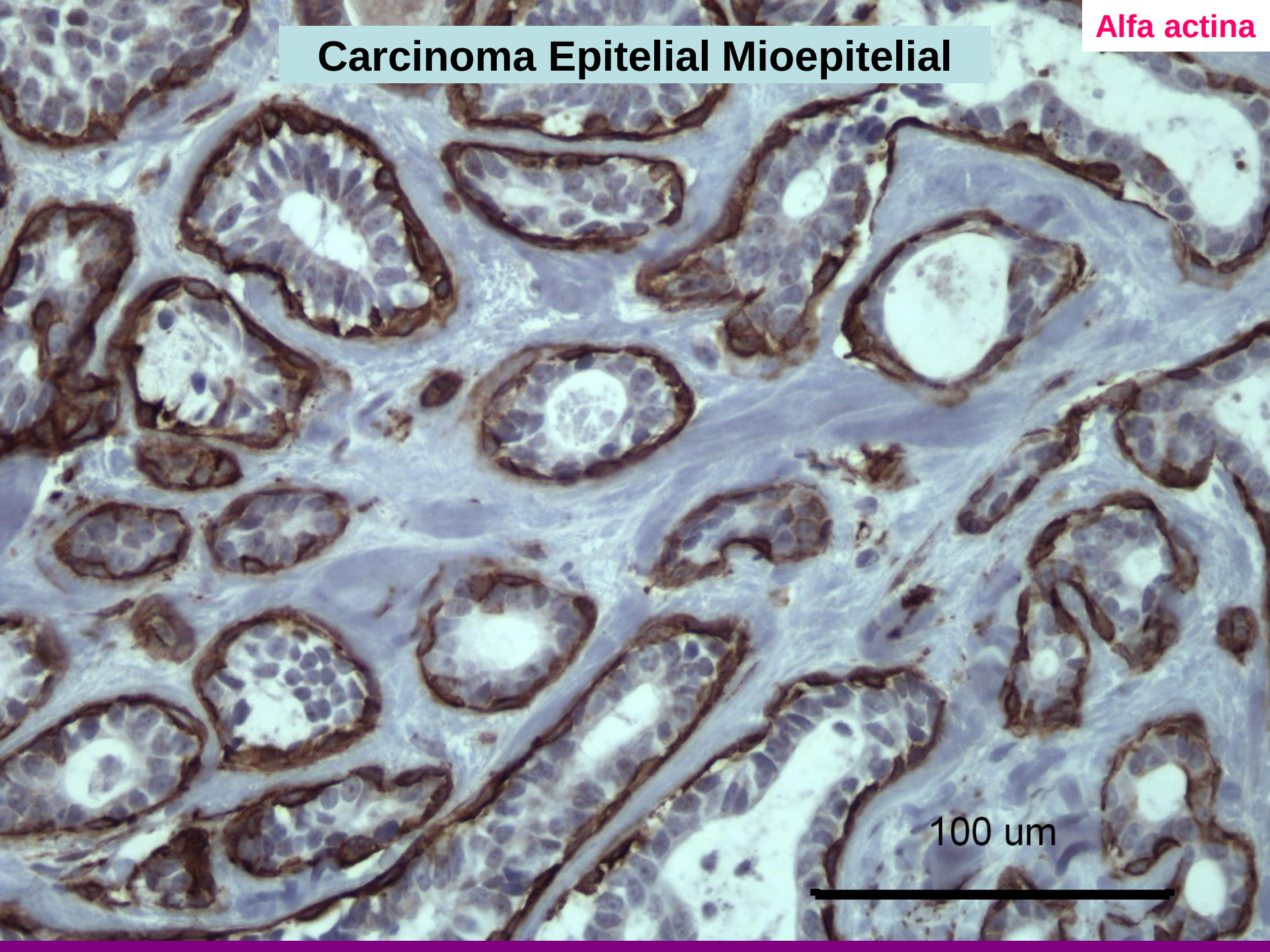
Carcinoma Epitelial Mioepitelial

Alfa actina



Carcinoma Epitelial Mioepitelial

Alfa actina

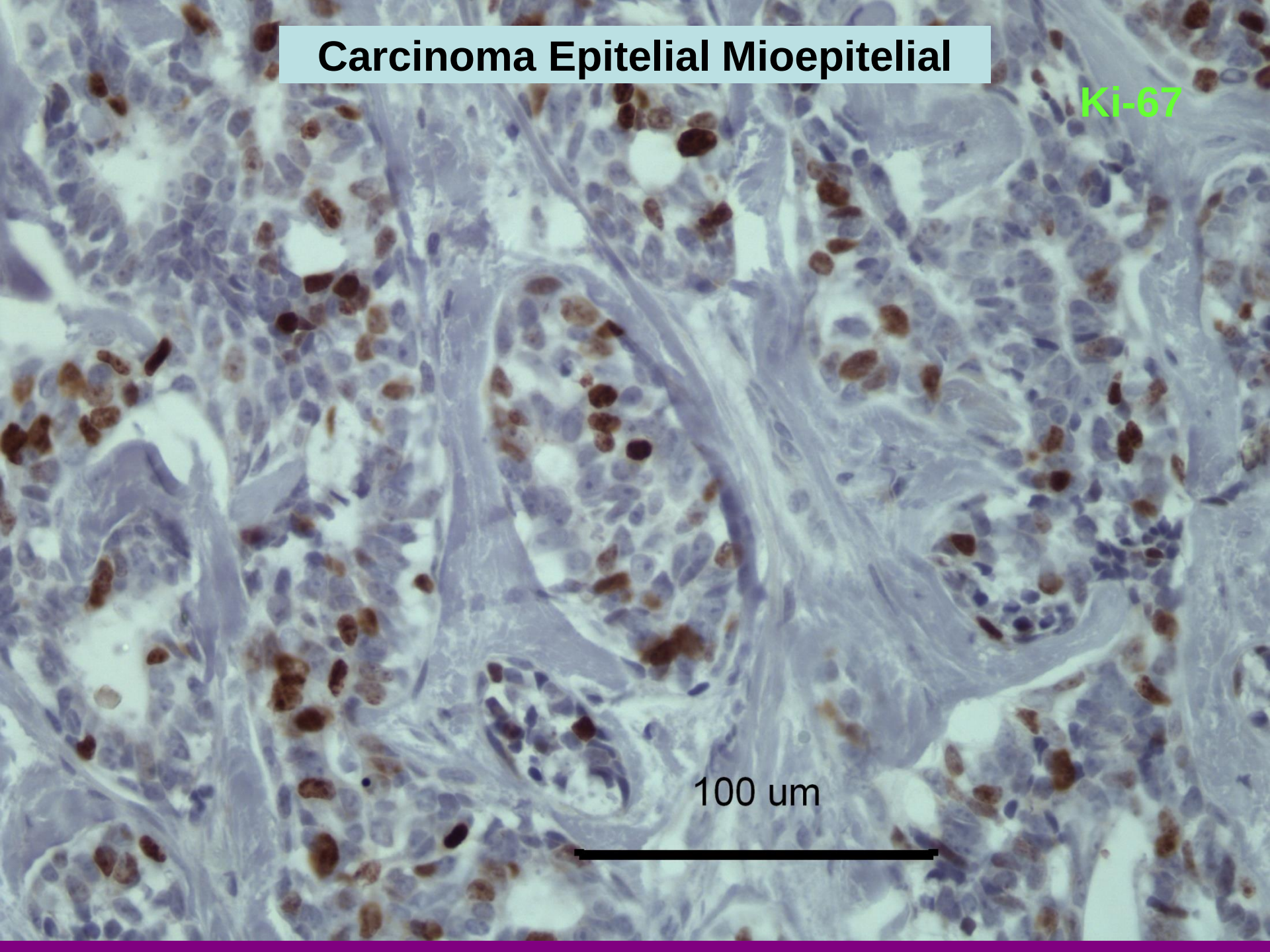


100 μm

Carcinoma Epitelial Mioepitelial

Ki-67

100 um



CARCINOMA EX-ADENOMA PLEOMORFO

CARCINOMA EX-ADENOMA PLEOMORFO

Definición

Neoplasia maligna epitelial y/o mioepitelial desarrollada a partir de adenoma pleomorfo primaria o recurrente. El componente de carcinoma puede ser de presentación ya sea puramente epitelial o mioepitelial con infiltración a la glándula que lo rodea o tejido extraglandular.

Epidemiología

- 3,6% de tumores de Gl. salivales y 12% de T. malignos de Gl. Salivales.
- Levemente más frecuente en mujeres.
- 6° a 7° década de vida.
- La mayoría en parótida.

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CARCINOMA EX-ADENOMA PLEOMORFO

Macroscópico

- Aspecto variable.
- 64% son infiltrativos.
- Generalmente el componente de adenoma pleomorfo es visible como un nódulo esclerótico calcificado.

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CARCINOMA EX-ADENOMA PLEOMORFO

Histopatología 1

- Generalmente de consistencia firme y al corte color blanco a gris.
- Los adenomas pleomorfos **grandes**, con **extensas áreas hialinas** y áreas de **necrosis** deben ser estudiados con múltiples secciones para descartar Carcinoma ex - adenoma pleomorfo.
- Generalmente infiltrativos, pero pueden estar delimitados o incluso encapsulados.
- En hasta 41% de tumores de parótida se ve compromiso del nervio facial.

D. Gnepp, J Henley, R. Simpson y J. Eveson. "Salivary and lagrimal glands" en [Diagnostic Surgical Pathology of the Head and Neck E-Book-](#)

Carcinoma Ex Pleomorphic Adenoma, with Particular Emphasis on Early Lesions

Silvana Di Palma

Carcinoma ex adenoma pleomorfo

Adenoma pleomorfo

Carcinoma mioepitelial

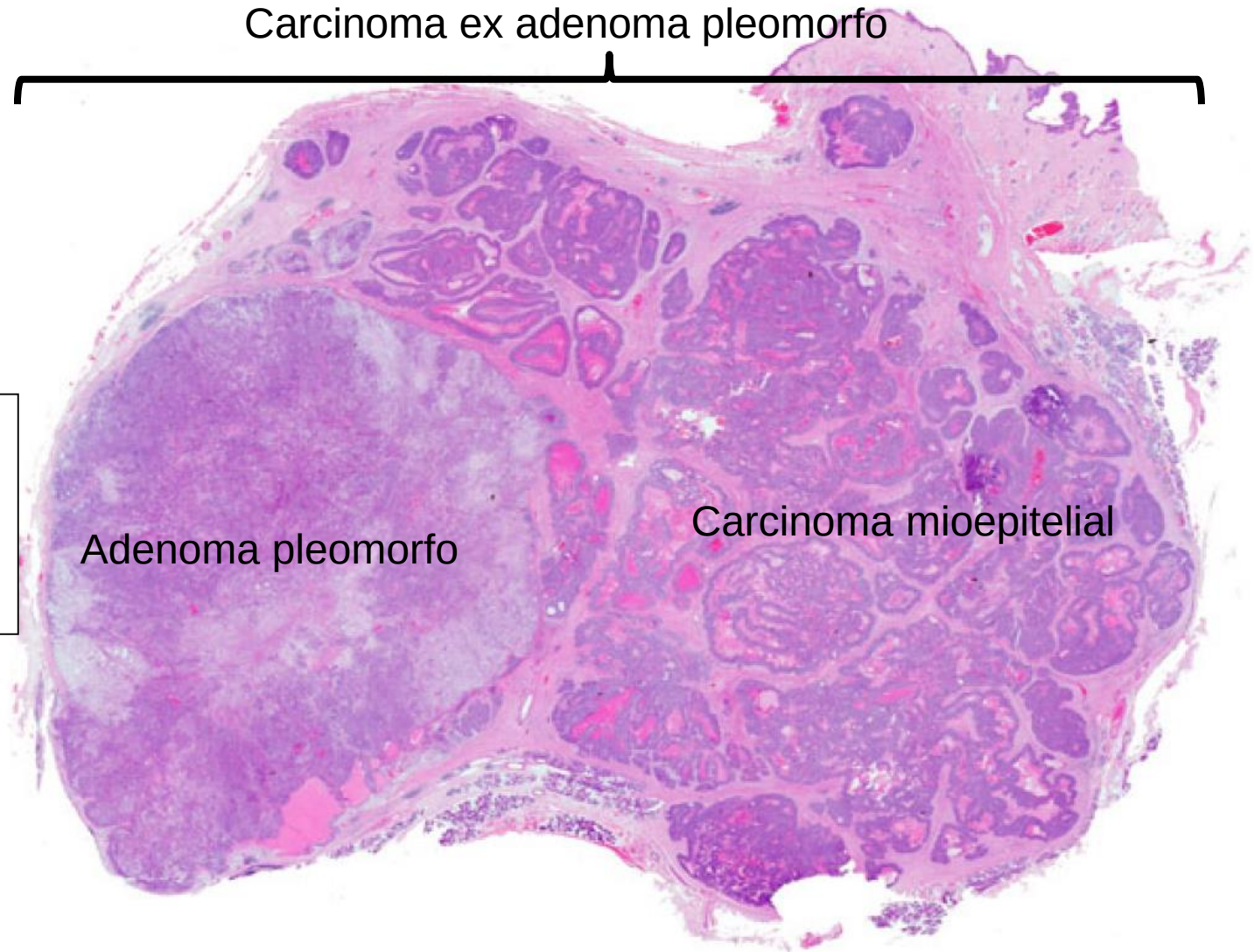


Fig. 2 Whole mounted section of myoepithelial carcinoma (*right*) arising in Pleomorphic Adenoma (*left*) of parotid. Note the multinodular growth pattern with infiltration of the dermis

¿Qué signos en adenoma pleomorfo son sospechosos de malignidad?

Edad avanzada, gran tamaño y localización submandibular.

Marcada hialinización y elevada actividad mitótica (más de 10 x campo).

Carcinoma Ex Pleomorphic Adenoma, with Particular Emphasis on Early Lesions

Silvana Di Palma

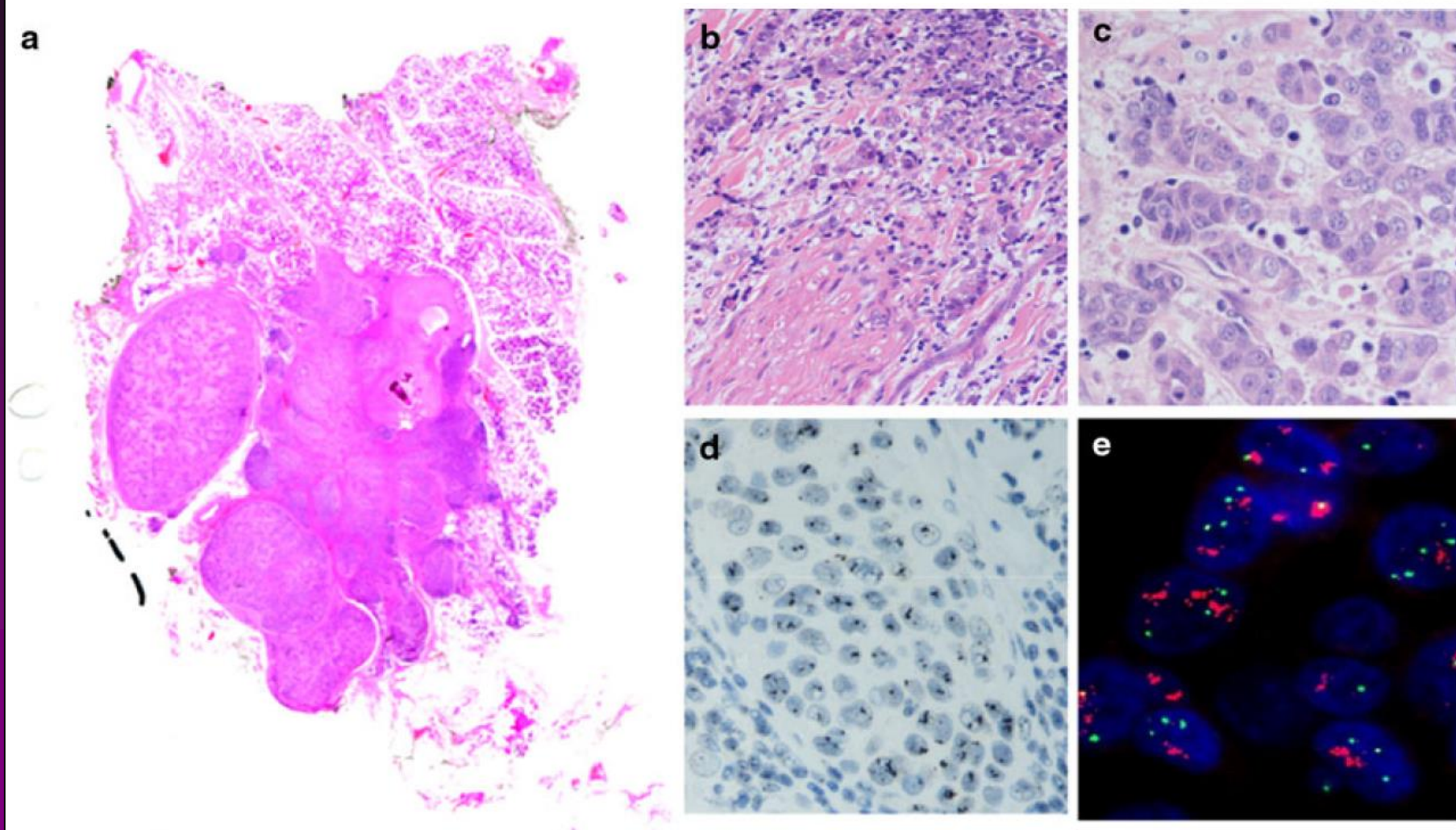


Fig. 1 Whole mounted section of carcinoma ex Pleomorphic adenoma of parotid gland with perineural infiltration (**b**) and highly pleomorphic cells with numerous mitoses (**c**). The maternal PA shows

sclerosis and calcifications. HER-2/neu gene amplification detected by Silver (**d**) and fluorescent (**e**) in situ hybridization

CARCINOMA EX-ADENOMA PLEOMORFO

Histopatología 2

- El tipo y extensión del componente de carcinoma es variable e impacta en el manejo del paciente.
- En el diagnóstico debe registrarse el tipo histológico.
- La mayoría son adenocarcinomas de alto-grado tipo carcinoma de ducto salival.
- Otros son tipo carcinoma mioepitelial, generalmente de bajo grado.
- Los carcinomas intracapsulares corresponden a carcinomas dentro de un adenoma pleomorfo. Generalmente son ductales y de alto grado.

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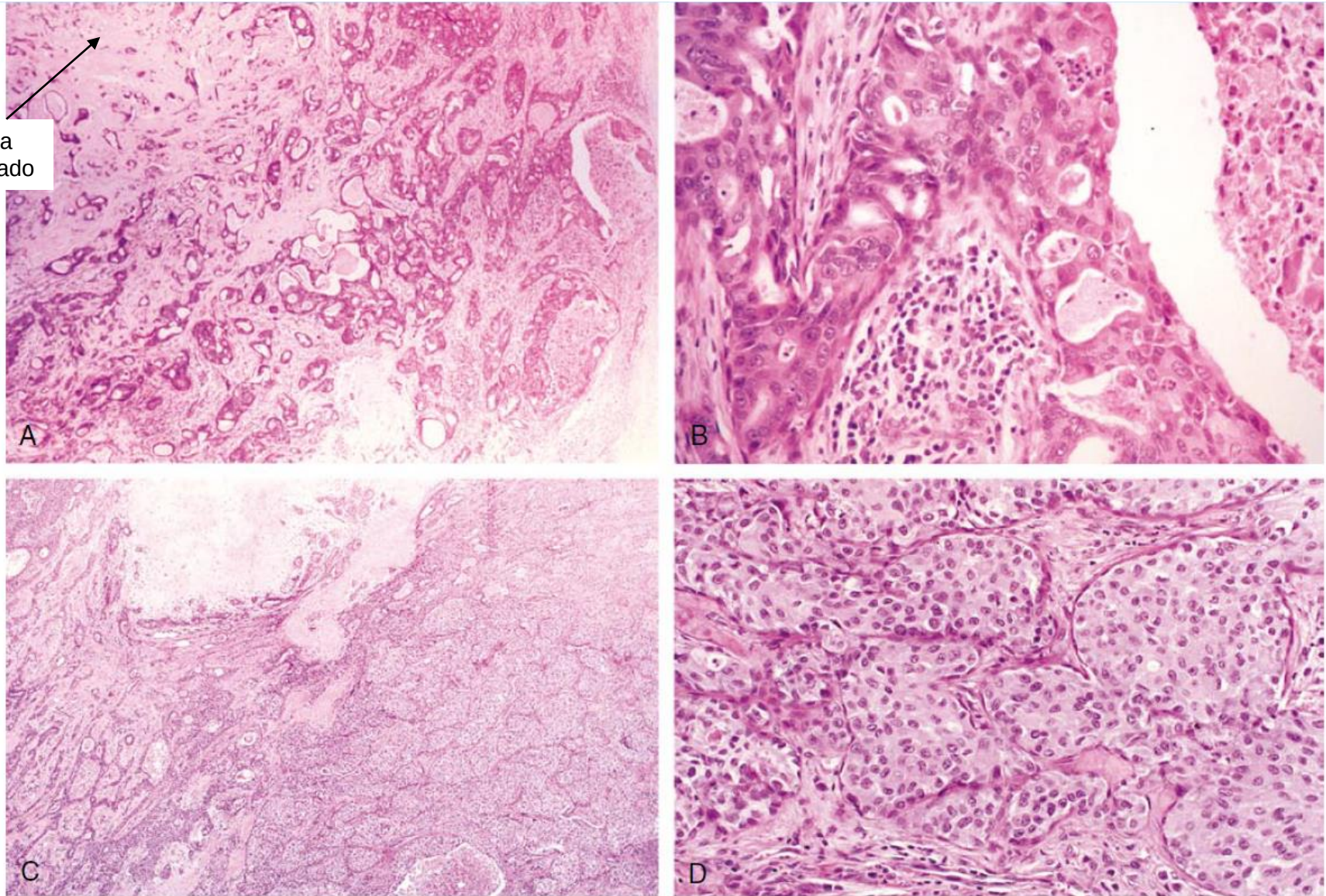


Figure 6-14. Carcinoma ex pleomorphic adenoma, invasive type. **A**, Note the benign component with numerous small irregular ducts in a hyalinized stroma (*upper left*) and a focus of adenocarcinoma with associated necrosis (*lower right*). **B**, Detail of adenocarcinoma with back-to-back gland formation and necrosis. **C–E**, Invasive carcinoma ex mixed tumor. The typical mixed tumor portions are seen in the upper left area (**C**). The mucoepidermoid carcinoma portion is seen in the right half of **C** and in **D**. It is composed of multiple nests of a mildly pleomorphic population of cells that have replaced the normal ductal

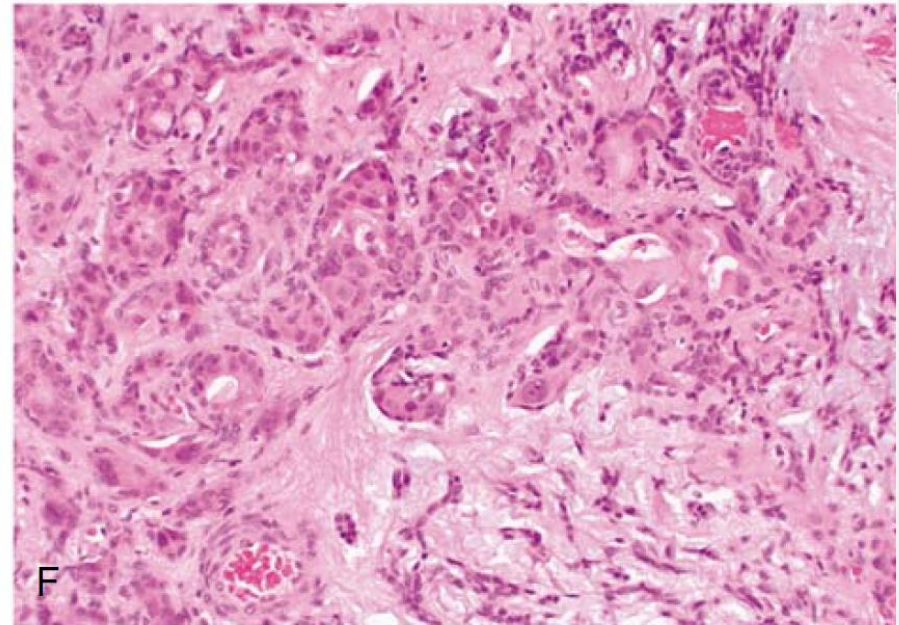
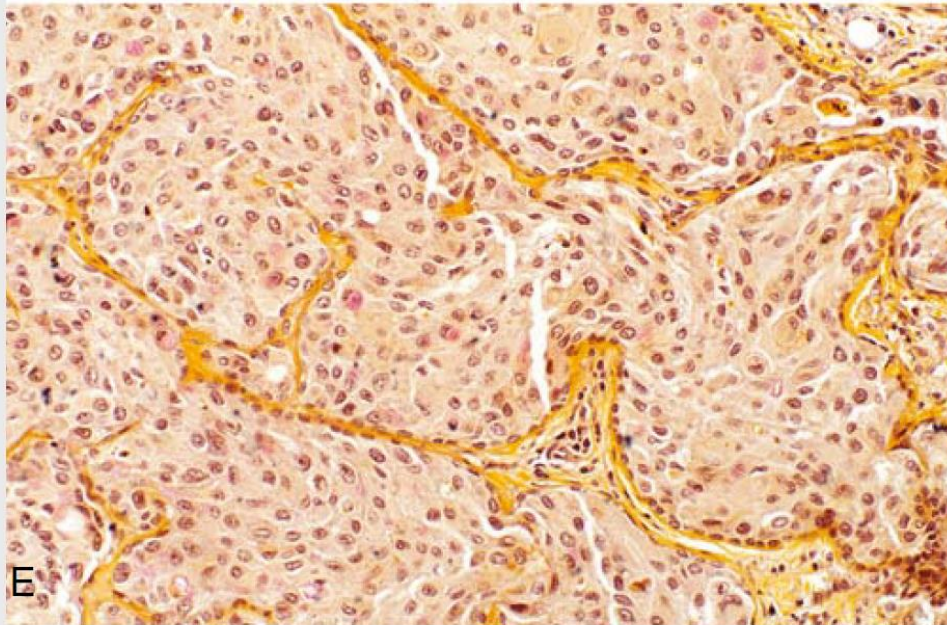


Figure 6-14. **E,** A mucicarmine stain demonstrates scattered cells with intracellular mucin. **F,** Earliest change in a noninvasive carcinoma ex mixed tumor. Scattered ducts have their inner layer partially replaced by large cells with prominent nucleoli and abundant cytoplasm. Other foci in the tumor had areas with back-to-back glands confirming the diagnosis of a noninvasive carcinoma ex mixed tumor.

CARCINOMA EX-ADENOMA PLEOMORFO

Histopatología 3

- Patrón de crecimiento infiltrativo destructivo es un criterio diagnóstico.
- Hiperchromatismo y pleomorfismo nuclear son frecuentes, aunque algunos tumores muestran mínima atipía.
- Necrosis y atipías generalmente frecuentes.

D. Gnepp, J Henley, R. Simpson y J. Eveson. "Salivary and lagrimal glands" en [Diagnostic Surgical Pathology of the Head and Neck E-Book-](#)

CARCINOMA EX-ADENOMA PLEOMORFO

Categorías Clínicas

OMS 2005

No invasivos

- In situ
- Intracapsular

Mínimamente invasivos

$\leq 1,5$ mm

Invasivos

$> 1,5$ mm

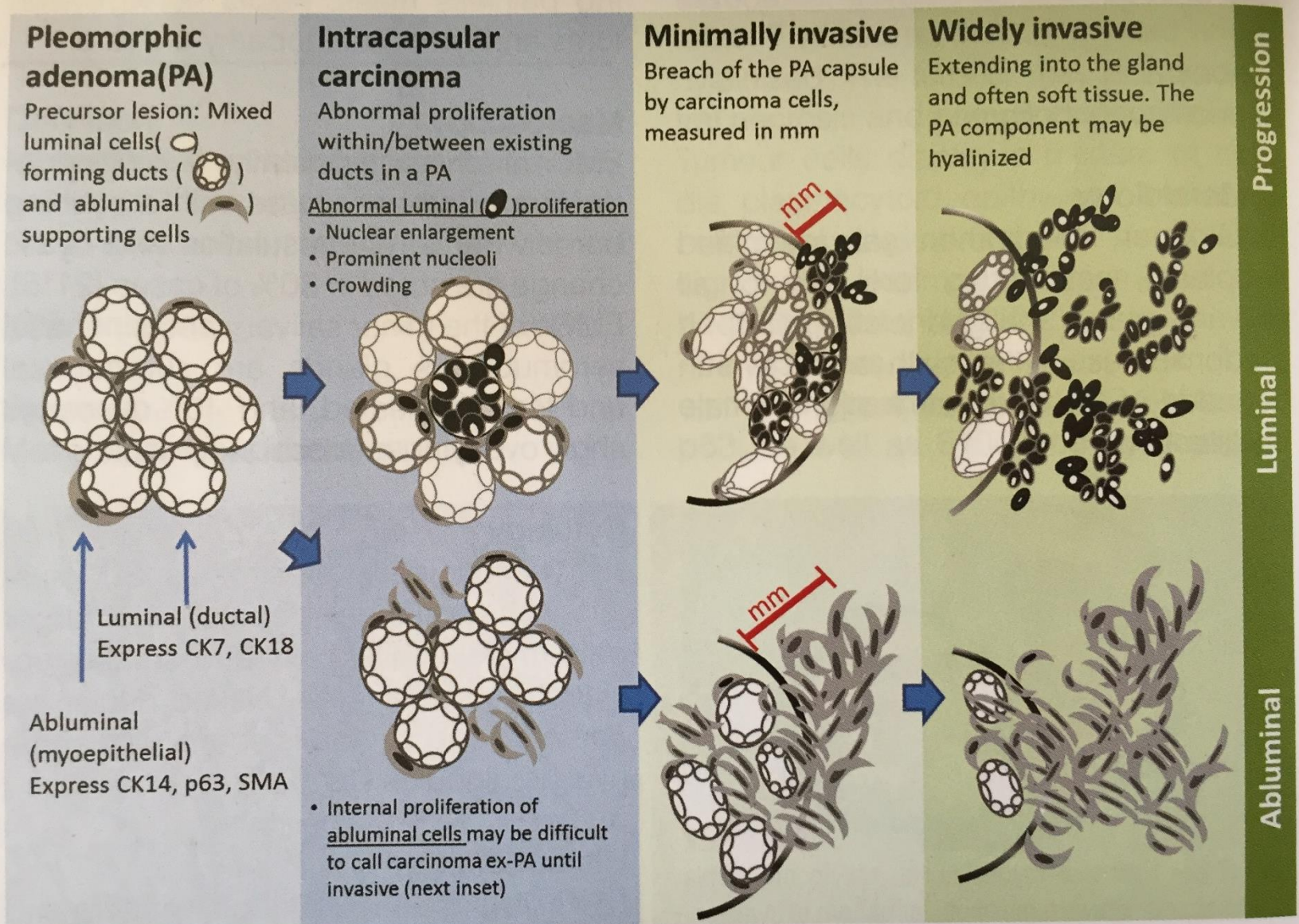


Fig. 7.26 Schematic illustration of the development of carcinoma ex pleomorphic adenoma as a multistep progression from pleomorphic adenoma.

CARCINOMA EX-ADENOMA PLEOMORFO

Categorías Clínicas

Di Palma 2013

Tempranos

- No invasivo
- In situ
- Intraductal
- Intratubular
- Intracapsular
- Extra capsular hasta 6mm

No agresivos, comportamiento similar a Adenoma pleomorfo.

Expresión de **HER-2** y **TP53** permite identificar zonas malignas.

Ampliamente invasivos

> 6 mm

Es el más común e involucra componente epitelial.

- Tipos histológicos:
Adenocarcinoma NOS,
- Carcinoma de ducto salival,
- Ca. Mucoepidermoide,
- Adenocarcinoma polimorfo,
- Etc.

Carcinoma Ex Pleomorphic Adenoma, with Particular Emphasis on Early Lesions

Silvana Di Palma

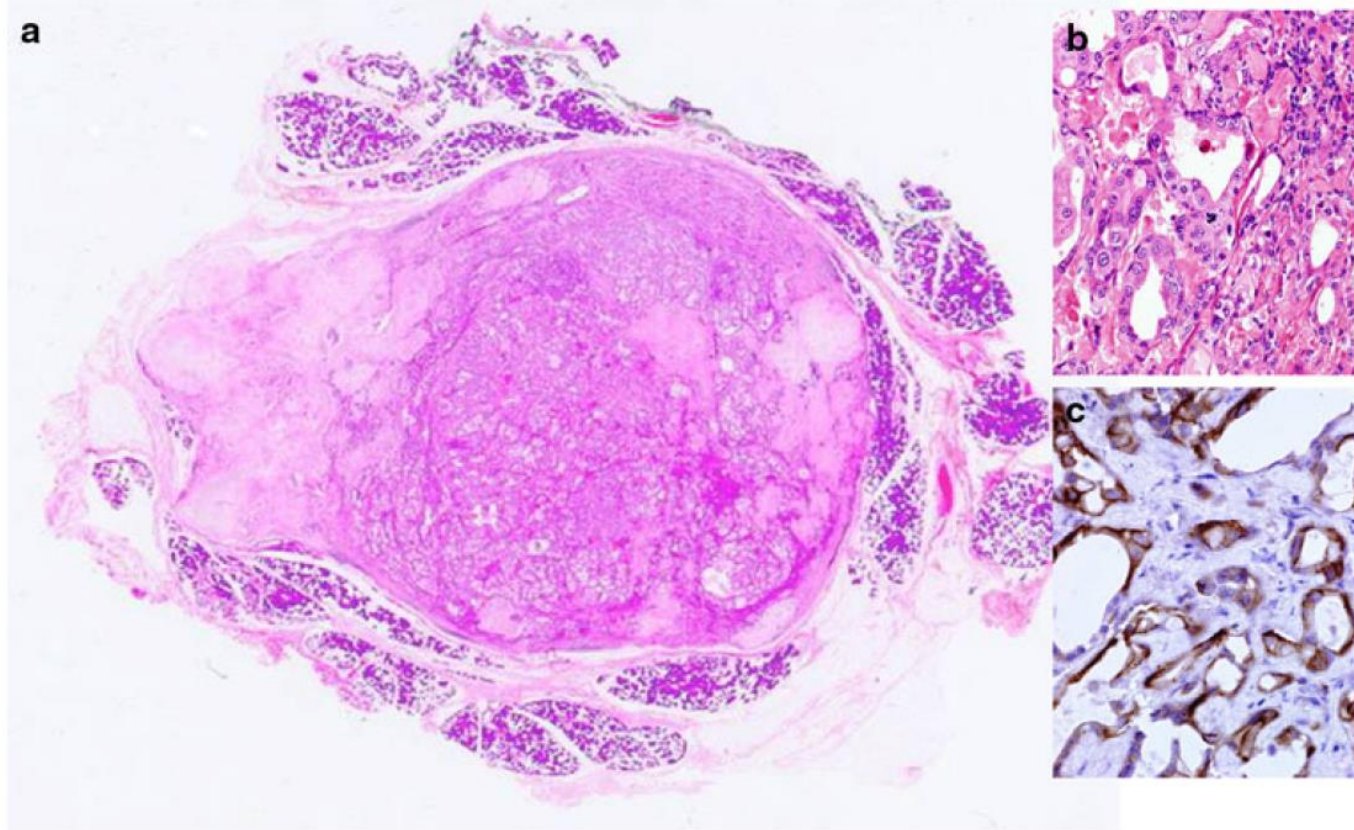


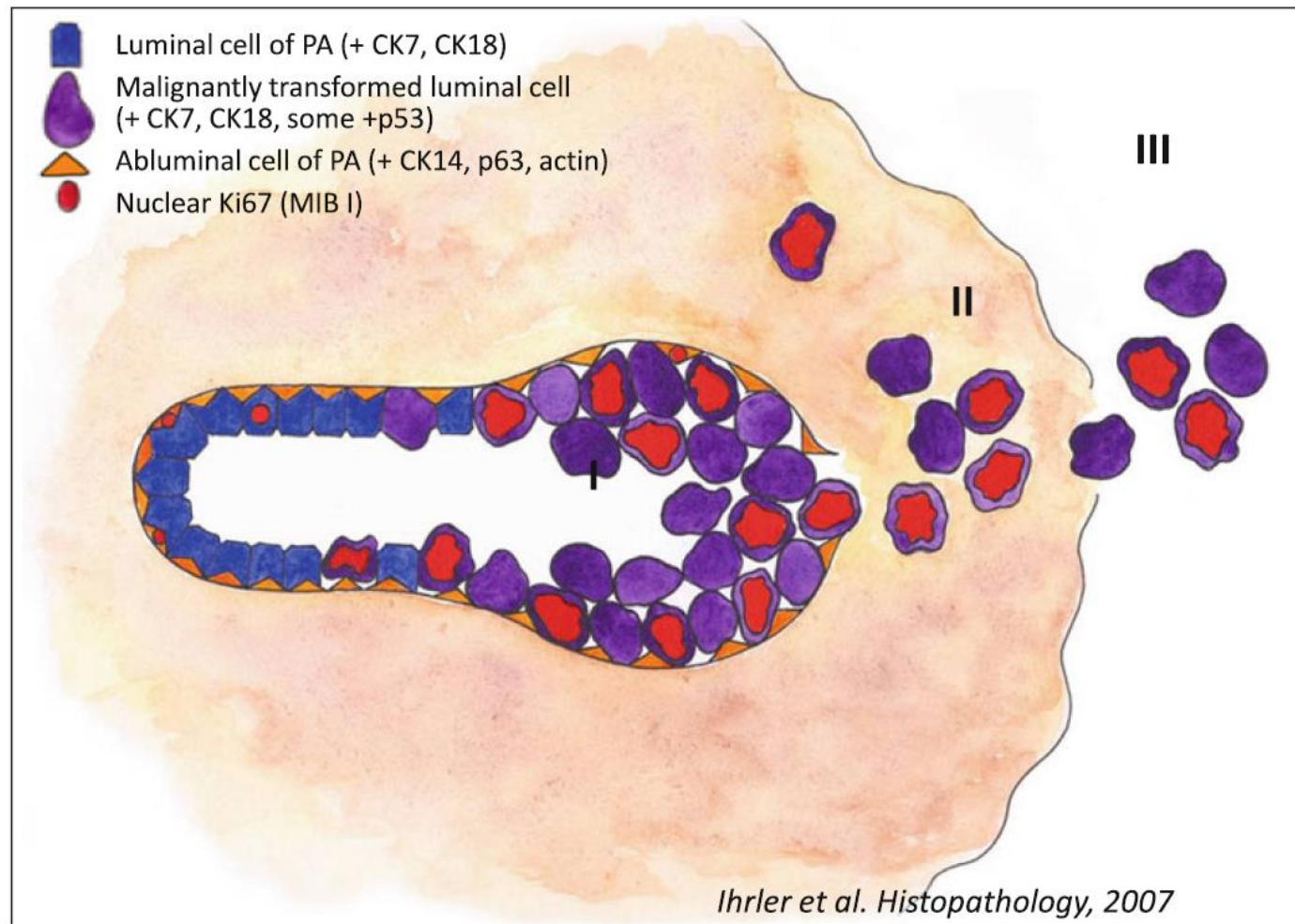
Fig. 6 ECXPA. Whole mounted section **a**. Atypical epithelial proliferation replacing ducts of PA **b**. Moderate membrane staining for HER-2/neu (score 2+) in atypical cells of carcinoma ex

pleomorphic adenoma. Note absence of staining in benign component. **c** (immunohistochemical staining, original magnification $\times 80$)

Carcinoma Ex Pleomorphic Adenoma, with Particular Emphasis on Early Lesions

Silvana Di Palma

Fig. 3 Diagram showing progression of carcinoma ex pleomorphic adenoma. *I* Pre-existing tubules of Pleomorphic Adenoma partly replaced by malignant epithelial cells. *II* Rupture of basal membrane with extratubular extension but still confined within the capsule of PA. *III* Extracapsular spread with infiltration of surrounding tissues. Courtesy by Dr. S. Ihrler



CARCINOMA SECRETOR

CARCINOMA SECRETOR

Definición

Generalmente es un carcinoma de glándula salival de bajo grado que muestra semejanza morfológica con el carcinoma secretor mamario y la fusión de genes ETV6-NTRK3.

Sinónimo: carcinoma análogo secretor mamario.

En el año 2008, se describió el carcinoma secretor como un tumor diferente del carcinoma de células acínicas en mama. En el año 2010, se describió por primera vez en glándulas salivales (Skalova y col).

CARCINOMA SECRETOR

Histopatología 1

- Generalmente infiltrativo, aunque puede ser circunscrito.
- Invasión perineural ocasional.
- Crecimiento en patrón lobular con finos tabiques con estructuras microquística/sólida, tubular, folicular y papilar quística con secreción luminal característica.
- Células tumorales con citoplasma eosinófilo granular o vacuolado con núcleos uniformes pequeños.
- A diferencia del carcinoma de células acínicas, el carcinoma secretor no presenta gránulos de zimógeno en el citoplasma.

CARCINOMA SECRETOR

Majewska H, Skalova A, y col. Mammary analogue secretory carcinoma of salivary glands: a new entity associated with ETV6 gen rearrangement. Virchows Arch 2015;466:245-54.

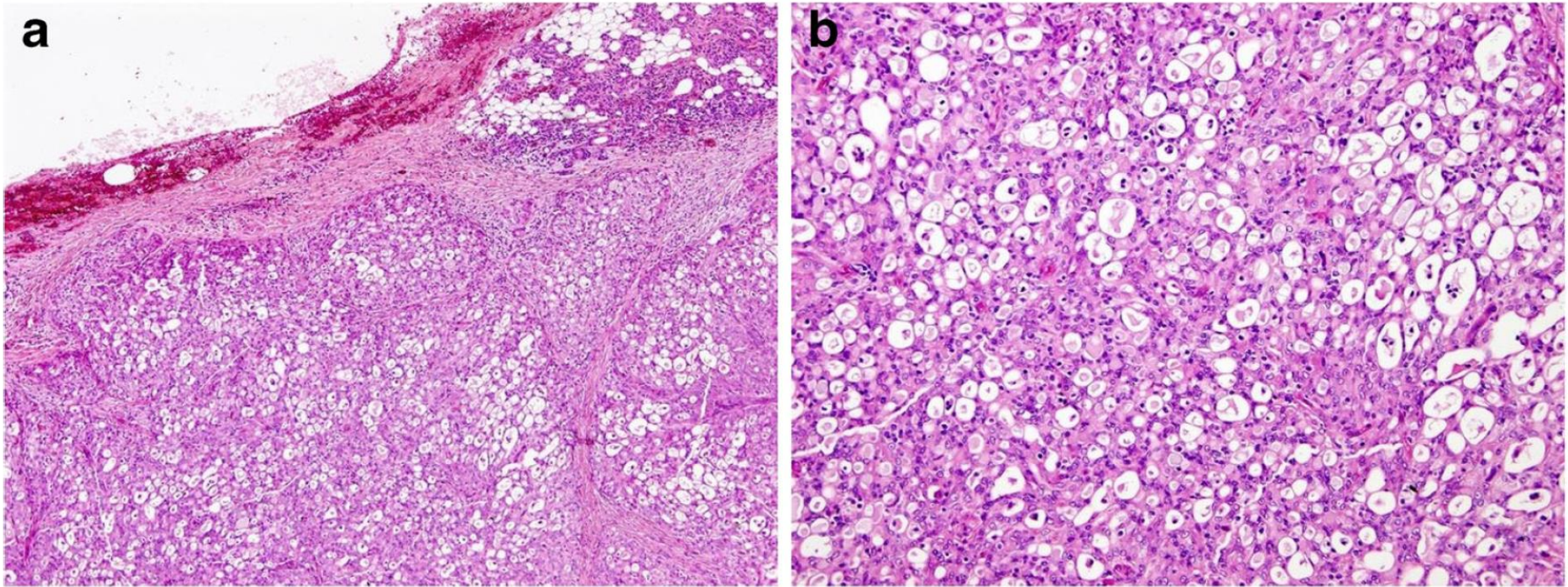


Fig. 1 Histopathological features of MASCC: **a** the tumour is well circumscribed and surrounded by a thick, not interrupted fibrous capsule (H&E; ×40); **b** microcystic and slightly dilated glandular spaces filled with an eosinophilic homogenous secretory material (H&E; ×100); **c**

CARCINOMA SECRETOR

Majewska H, Skalova A, y col. Mammary analogue secretory carcinoma of salivary glands: a new entity associated with ETV6 gen rearrangement. Virchows Arch 2015;466:245-54.

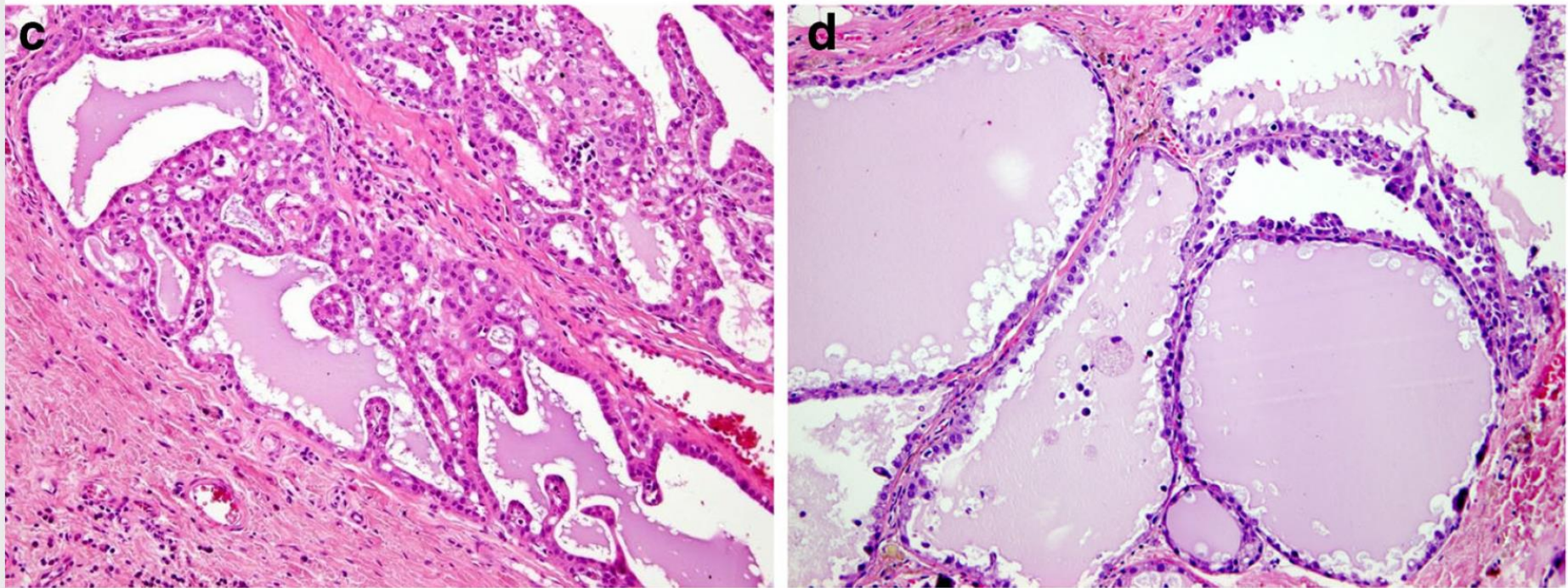


Fig. 1 Histopathological features of MASC:

c: minor component is represented by papillary structures (H&E; ×100);
d: a macrocystic growth pattern (H&E; ×100);

CARCINOMA SECRETOR

Majewska H, Skalova A, y col. Mammary analogue secretory carcinoma of salivary glands: a new entity associated with ETV6 gen rearrangement. Virchows Arch 2015;466:245-54.

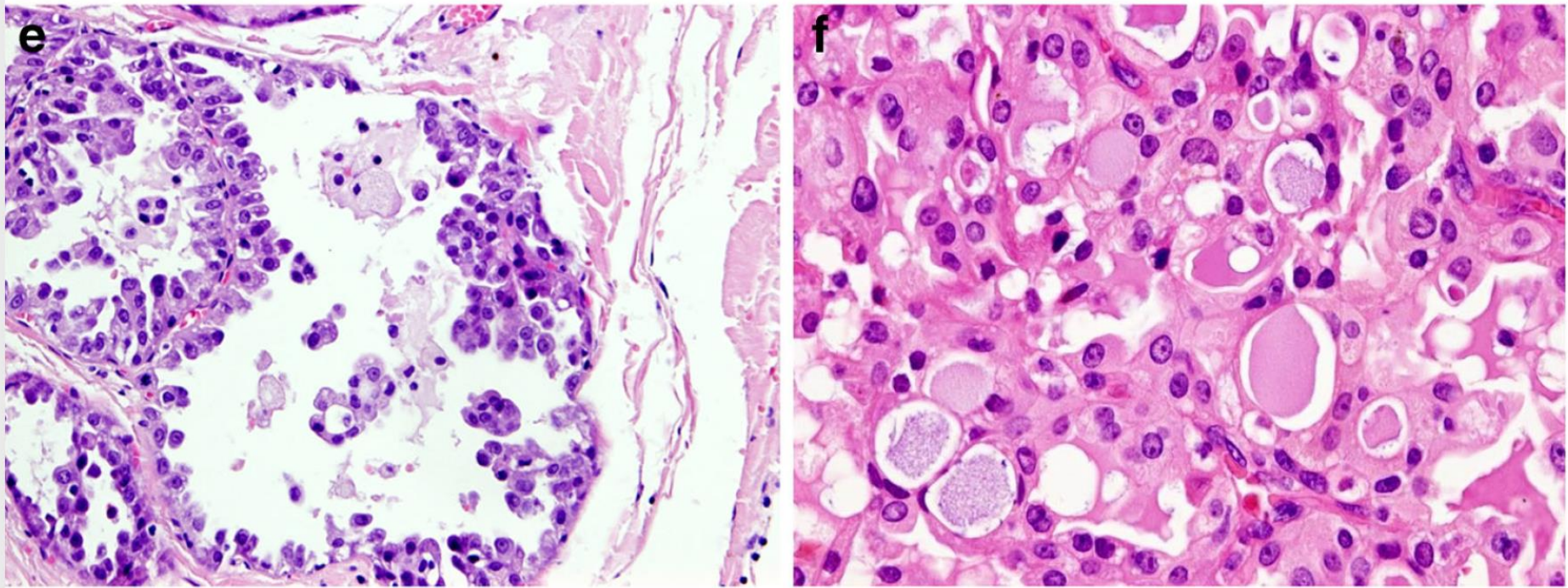


Fig. 1 Histopathological features of MASC:

e: cystic structures lined mostly by a single and, focally, a double layer of cells with focal apocrine differentiation (H&E; ×200);

f: cells with abundant pale pink vacuolated and foamy cytoplasm and vesicular, bland looking nuclei with prominent nucleoli (H&E; ×200);

CARCINOMA SECRETOR

Histopatología 2

Secreción intracelular o intraluminal es PAS(+) y resistente a diastasa.

Inmunohistoquímica: S-100 (+) mamaglobina (+).

Translocación cromosómica característica: t(12;15)(q13;q25) ETV6-NTRK3, se demuestra por FISH o PCR.

Sethi y col. Laryngoscope 2014;124(1):188-95.

CARCINOMA SECRETOR

Majewska H, Skalova A, et al. Mammary analogue secretory carcinoma of salivary glands: a new entity associated with ETV6 gen rearrangement. Virchows Arch 2015;466:245-54.

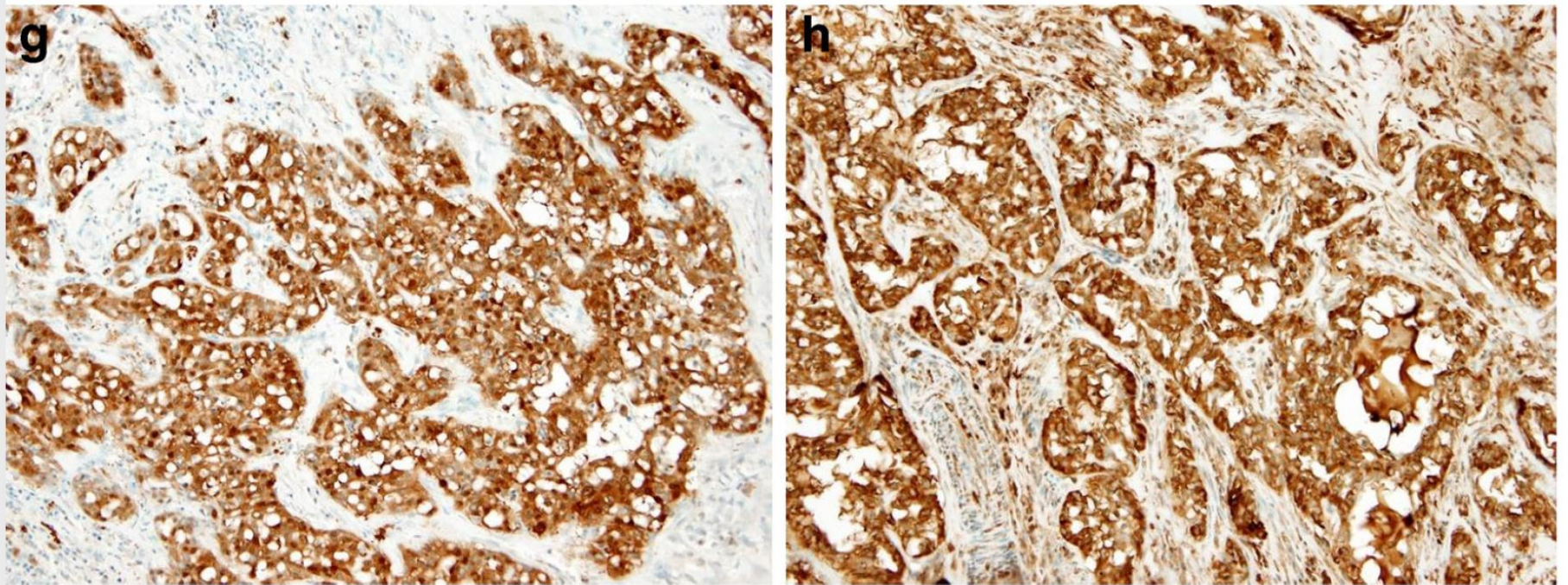


Fig. 1 Histopathological features of MASC:
g: a diffuse and strong staining for S100 and **h:** mammaglobin (×100)

CARCINOMA SECRETOR

Majewska H, Skalova A, y col. Mammary analogue secretory carcinoma of salivary glands: a new entity associated with ETV6 gen rearrangement. Virchows Arch 2015;466:245-54.

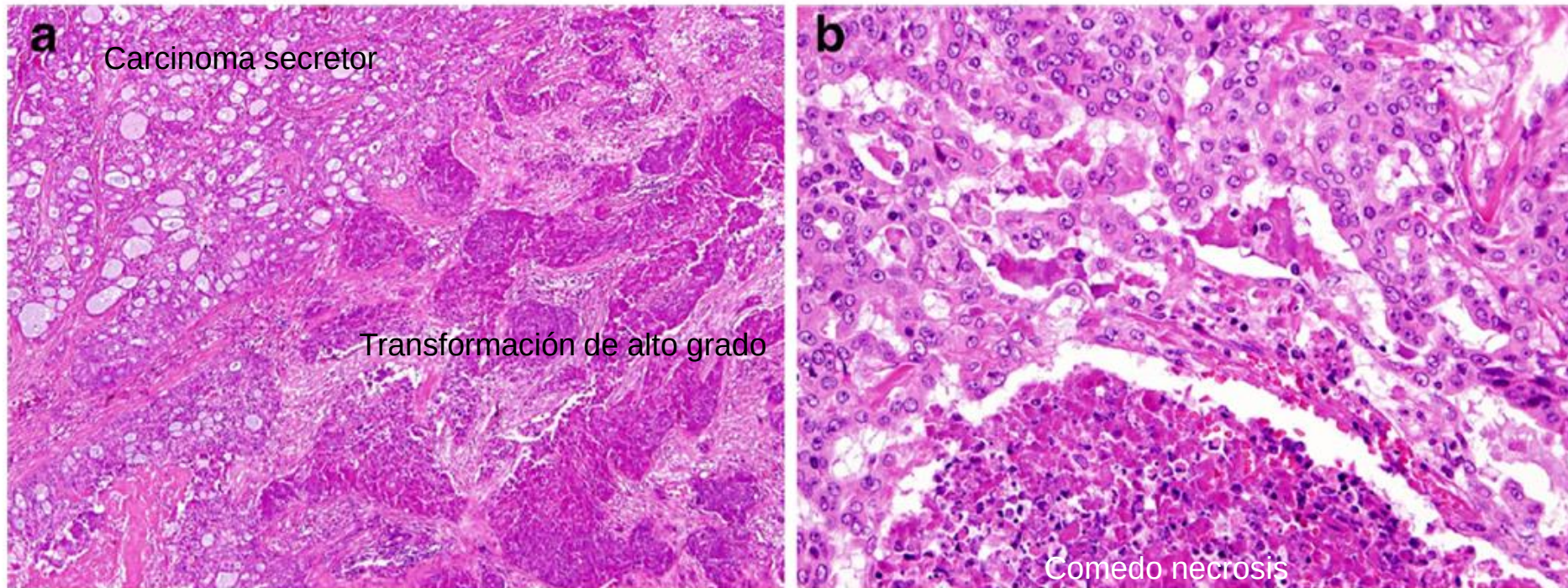


Fig. 2 MASC with high-grade (HG) transformation: **a** The tumour contains two distinct carcinomatous components. One represents conventional MASC composed of uniform neoplastic cells arranged in solid, tubular and microcystic growth structures divided by fibrous septa that were partly hyalinized. The tumour cells show typical low-grade morphology: vesicular round to oval nuclei with finely granular

chromatin and distinct centrally located nucleoli (*left*). The HG component is composed of anaplastic cells with abundant cytoplasm and large pleomorphic nuclei (*right*) (H&E; ×40); **b** solid tumour islands of MASC high-grade component with areas of large geographical comedo-like necrosis (H&E; ×200)

CARCINOMA INTRADUCTAL

CARCINOMA INTRADUCTAL

Definición

Se caracteriza por proliferación de células epiteliales neoplásicas intraquística/intraductal.

Sinónimos

Cistaadenocarcinoma cribiforme de bajo grado, carcinoma intraductal de bajo grado, carcinoma de ducto salival.

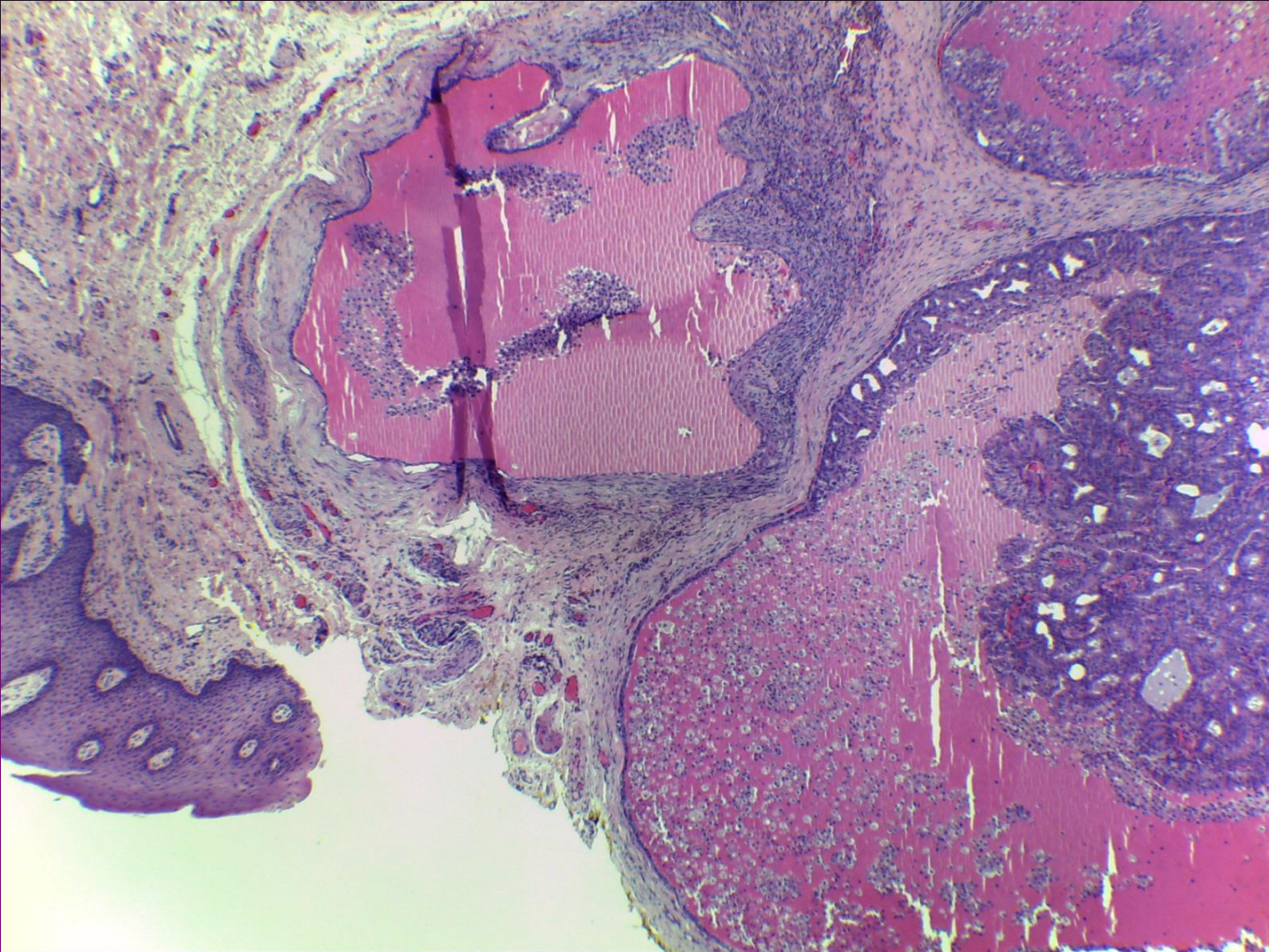
CARCINOMA INTRADUCTAL

Características clínicas

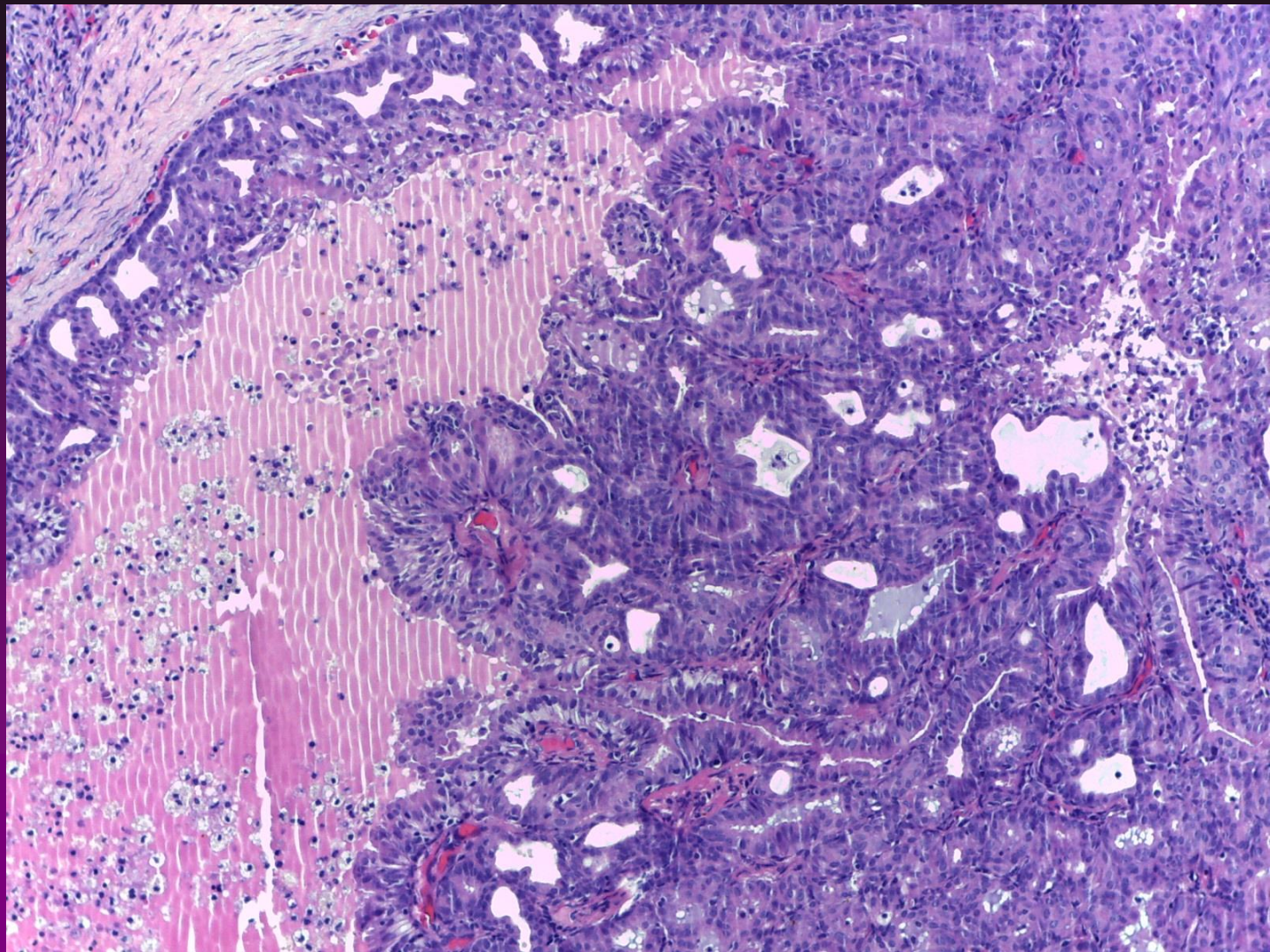
Infrecuente, escasos datos epidemiológicos.

Localización más frecuente: parótida.

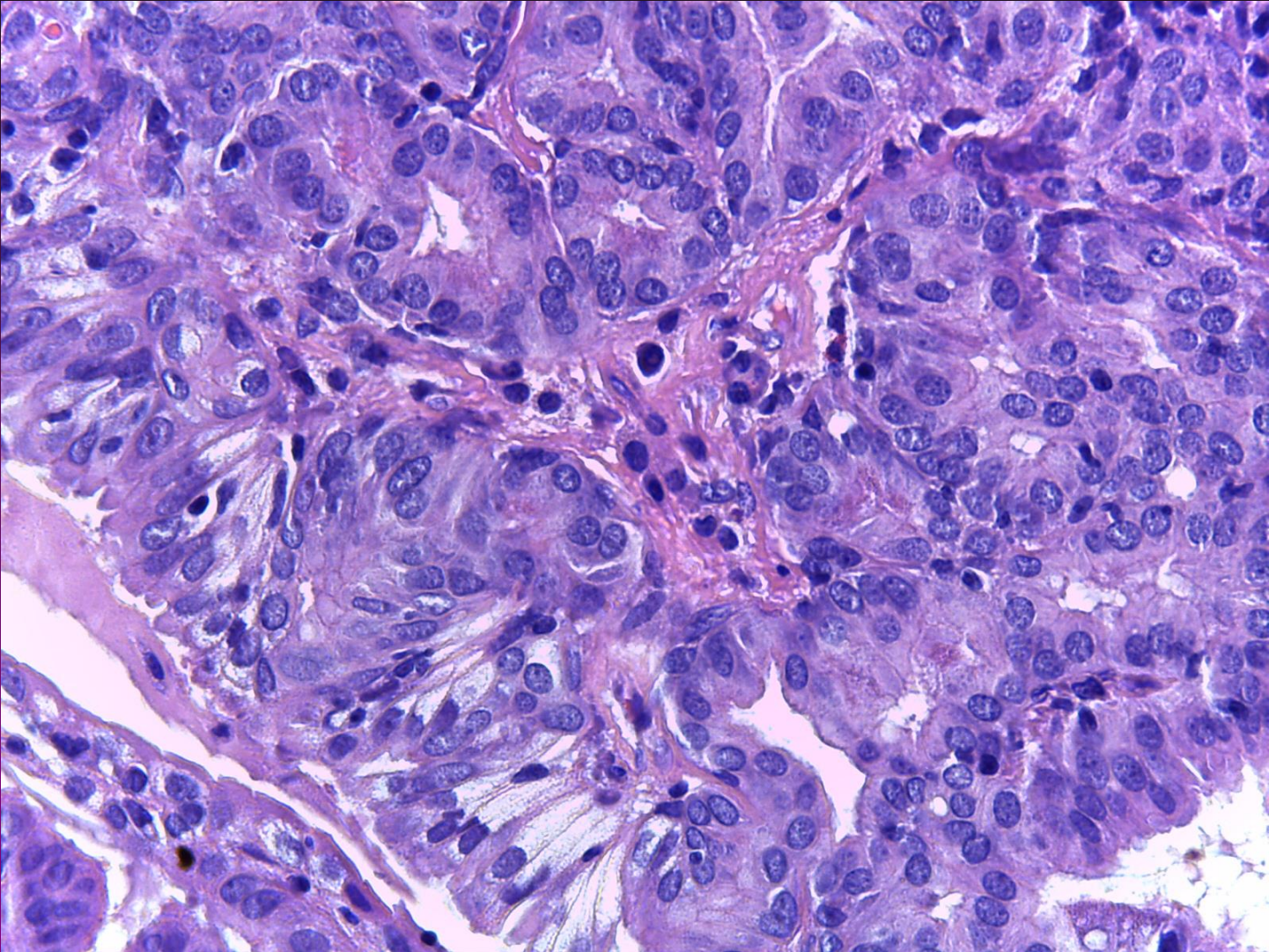
Aumento de volumen generalmente asintomático.



H-
E



H-E



H-E

CARCINOMA DE DUCTO SALIVAL

CARCINOMA DE DUCTO SALIVAL

Definición:

Es una neoplasia epitelial maligna agresiva que semeja el carcinoma ductal mamario de alto grado. Puede ocurrir de novo o como componente maligno del carcinoma ex adenoma pleomorfo.

Sinónimo:

Carcinoma ductal de alto grado

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CARCINOMA DE DUCTO SALIVAL

Epidemiología

10% aprox. las neoplasias malignas de glándulas salivales.

Más frecuente en hombres 4:1.

Mayor incidencia en la 6ta y 7ma décadas de vida.

Localización

La mayoría 88% en parótida.

Casos reportados en Gl. Submandibulares, sublinguales, glándulas salivales menores orales, sinonasales y faríngeas.

OMS 2017

Gnepp

Histología de Carcinoma ductal in situ de alto grado de mama

Breast Cancer. Veronesi U, Goldhirsh A y col. Ed. Springer 2017

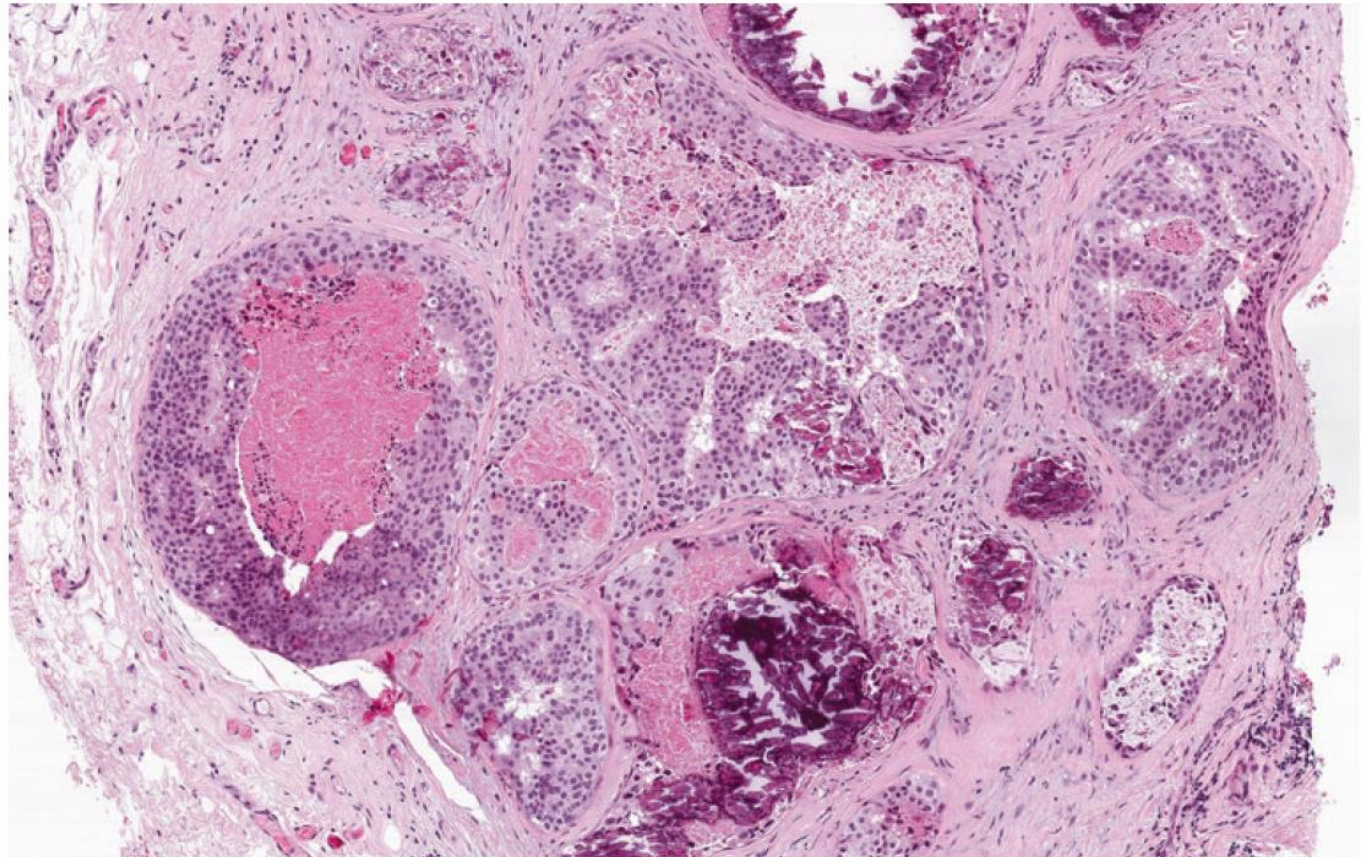


Fig. 11.4 Histological features of high-grade ductal carcinoma in situ (DCIS) from a core needle biopsy. In this intraductal carcinoma of the breast, comedo necrosis can be observed in the central luminal area, as well as peripheral calcifications (hematoxylin and eosin, original magnification 50×)

CARCINOMA DE DUCTO SALIVAL

eBook Gnepp

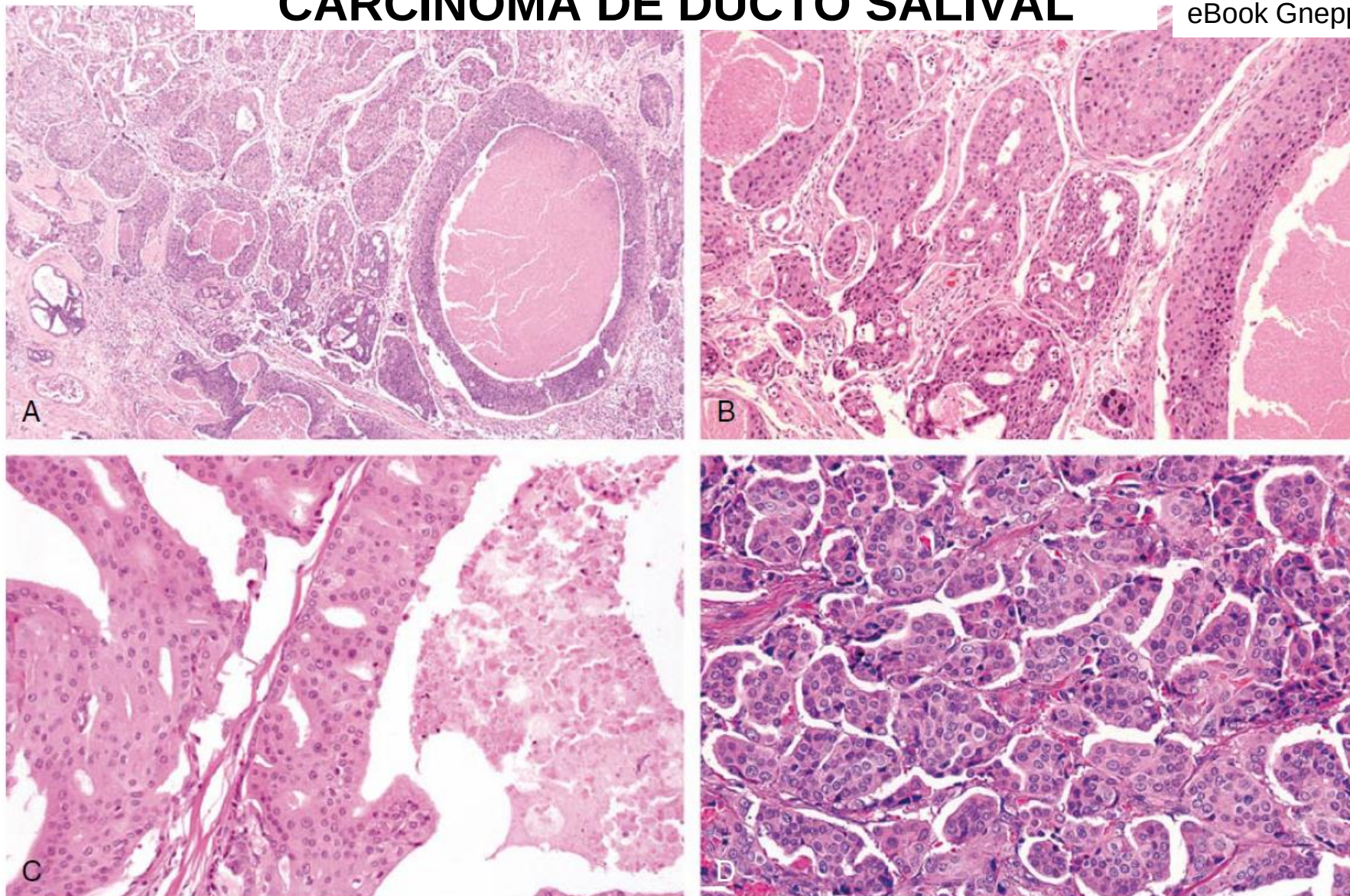


Figure 6-39. A–C, Salivary duct carcinoma, high-grade type. This tumor is composed of numerous irregular nests of infiltrating tumor in a desmoplastic background. The tumor cells demonstrate moderate atypia with areas of solid and cribriform growth and comedo-type necrosis similar to ductal carcinoma of the breast. D, Micropapillary pattern composed of multiple closely packed irregular tumor nests without fibrovascular cores surrounded by a clear space.

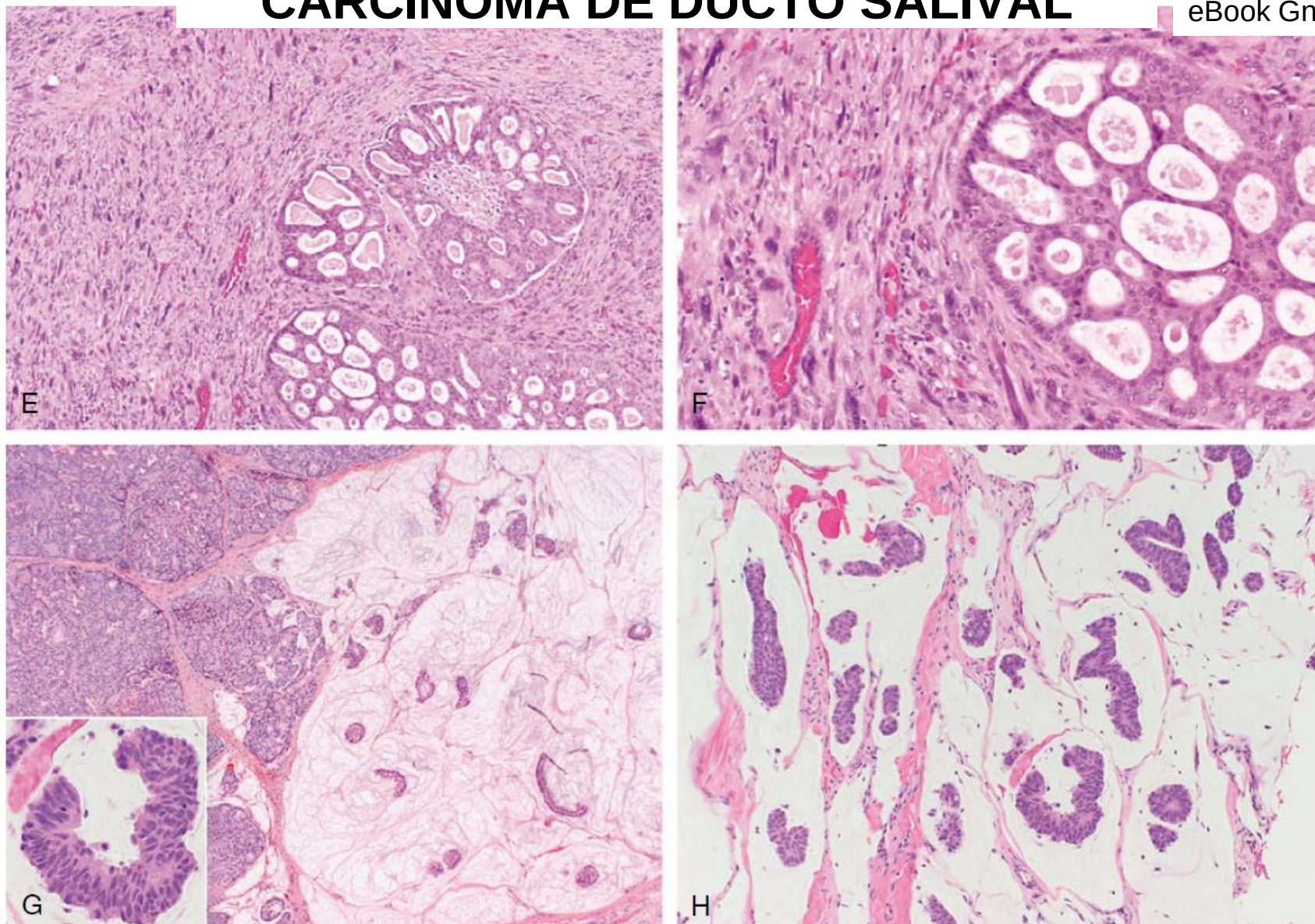
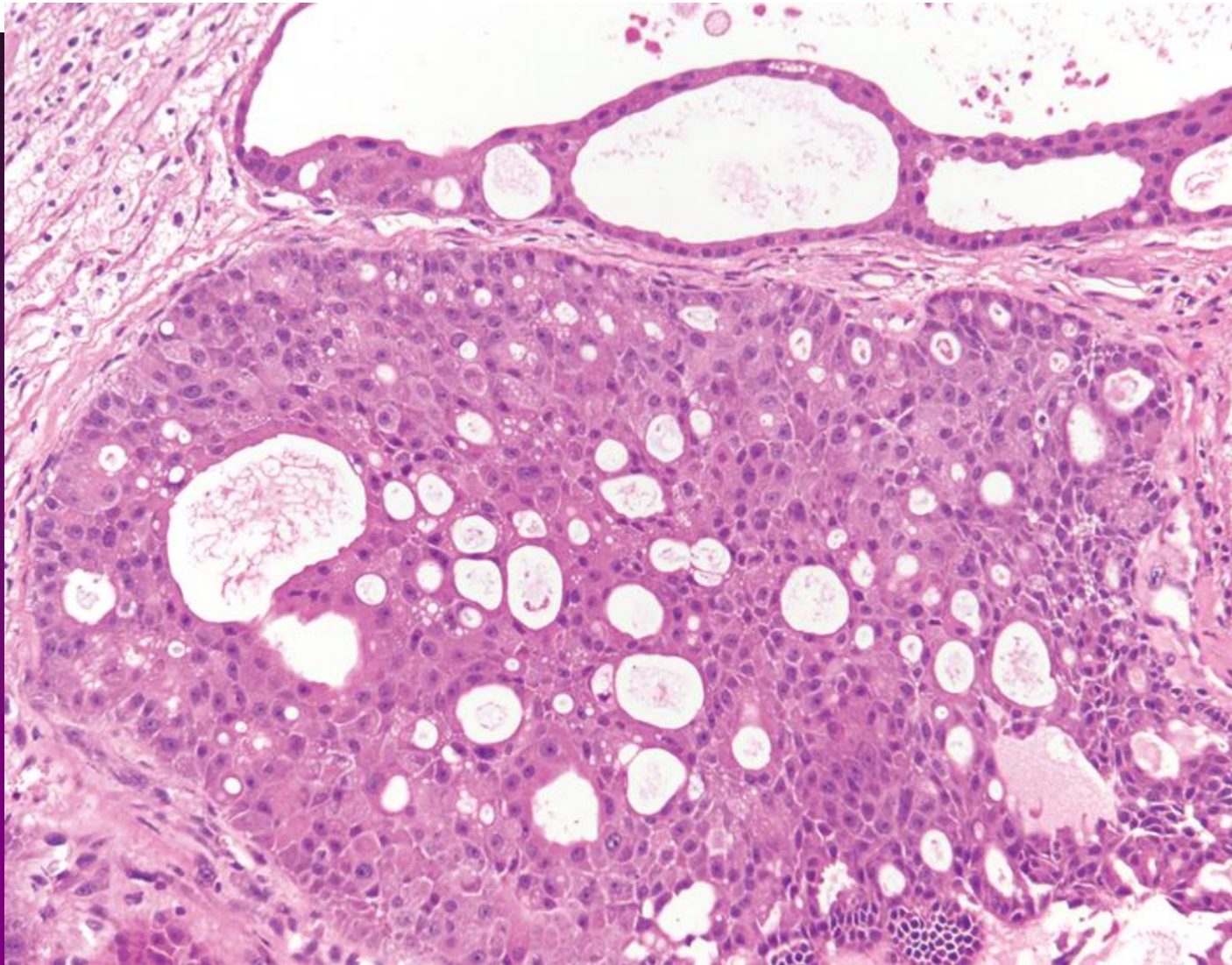


Figure 6-39—Cont. **E** and **F**, Sarcomatoid salivary duct carcinoma. There are several nests of typical salivary duct carcinoma with a prominent cribriform pattern surrounded by a markedly pleomorphic, atypical spindle cell population of tumor cells. **G** and **H**, High grade salivary duct carcinoma, mucinous variant. There are areas with a solid growth pattern (**G**, left) and prominent pools of mucin surrounding small collections of carcinoma cells (**G**, right, **H**). Detail of one tumor nest with pseudostratified, hyperchromatic nuclei and minimal to moderate amounts of cytoplasm (**G**, inset). (**D**, Courtesy of Dr. Toshitaka Nagao.)

Head and Neck Tumours (5th ed.) // Chapter 4: Salivary gland tumours
// Malignant epithelial tumours // Salivary duct carcinoma



Legend: Complex architecture with cribriforming glands and a Roman-bridge pattern. **Source:** Simon Chiosea

CARCINOMA DE DUCTO SALIVAL

Pronóstico y factores predictivos

Es uno de los tumores malignos de glándula salival más agresivos con recurrencias frecuentes y metástasis a linfonodos regionales y a distancia.

55-65% pacientes con SDC han muerto a los 5 años.

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“TRANSFORMACIÓN A ALTO GRADO”

o “DESDIFERENCIACIÓN”

DE TUMORES DE GLÁNDULAS

SALIVALES

“Dedifferentiation” and High-Grade Transformation in Salivary Gland Carcinomas

Toshitaka Nagao

La “Transformación a alto grado (TAG)” o “Desdiferenciación” ha sido descrita en varios tipos de carcinomas de glándulas salivales incluyendo: carcinoma de células acínicas, carcinoma epithelial mioepitelial, adenocarcinoma polimorfo, carcinoma mioepitelial, carcinoma mucoepidermoide de bajo grado carcinoma de células claras hialinizante, aunque es un fenómeno infrecuente.

Algunos autores prefieren el término “Transformación de alto grado” en lugar de “Desdiferenciación”.

Los tumors con “TAG” están compuestos por carcinomas convencionales juxtapuestos con áreas de morfología de alto grado, usualmente adenocarcinoma pobremente diferenciado, en las que la línea inicial de diferenciación no se reconoce.

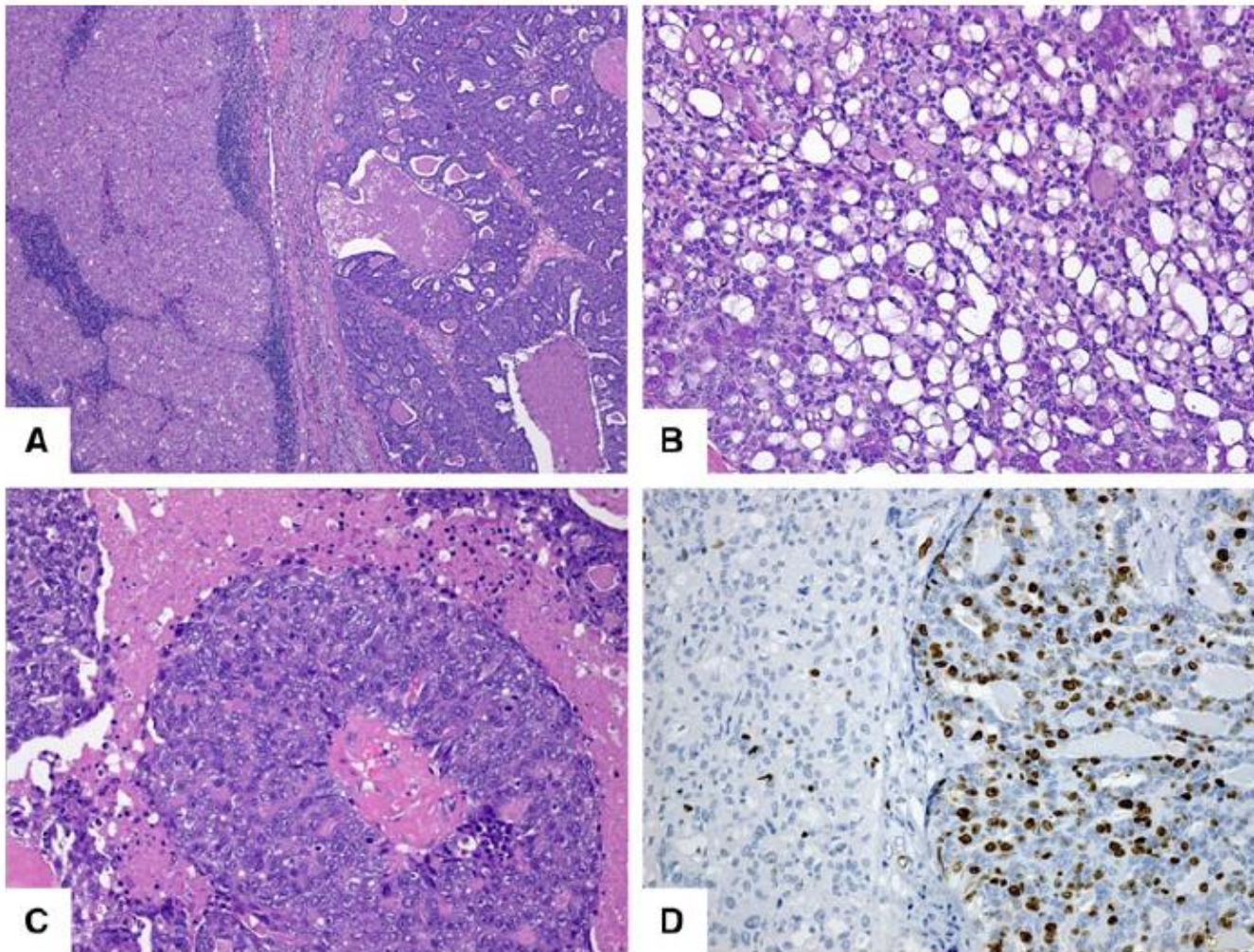


Fig. 1 High-grade transformation of acinic cell carcinoma. **a** Low-power view of the biphasic histology of the tumor comprising a high-grade carcinoma with solid and cribriform patterns of growth and comedonecrosis (*right portion*), and a conventional acinic cell carcinoma with a lymphoid stroma (*left portion*). The two components are sharply separated from each other. **b** Conventional acinic cell carcinoma showing microcystic and focal solid growth of tumor

cells of a unifying nuclear feature. Mixture of basophilic acinar-type cells is evident. **c** High-grade carcinoma exhibiting solid patterns of growth with extensive necrosis. Carcinoma cells contain large vesicular pleomorphic nuclei and prominent nucleoli. Several mitoses are also observed. **d** High-grade carcinoma displays a high Ki67 labeling index (*right portion*), in contrast to a low index in conventional acinic cell carcinoma (*left portion*)

Gracias por
su atención