Seminario de Citología

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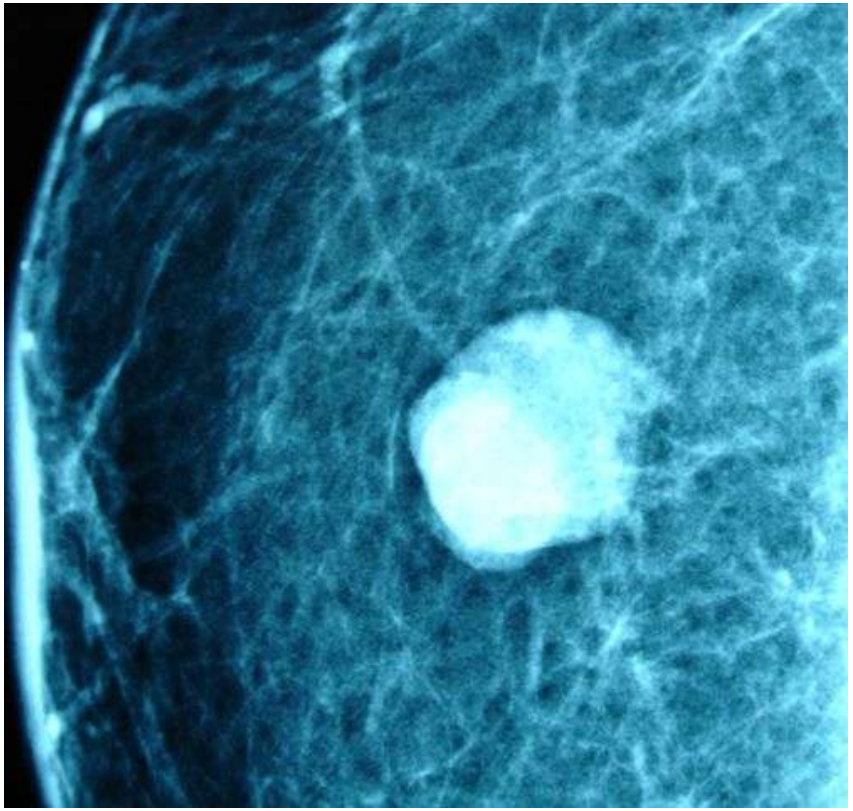
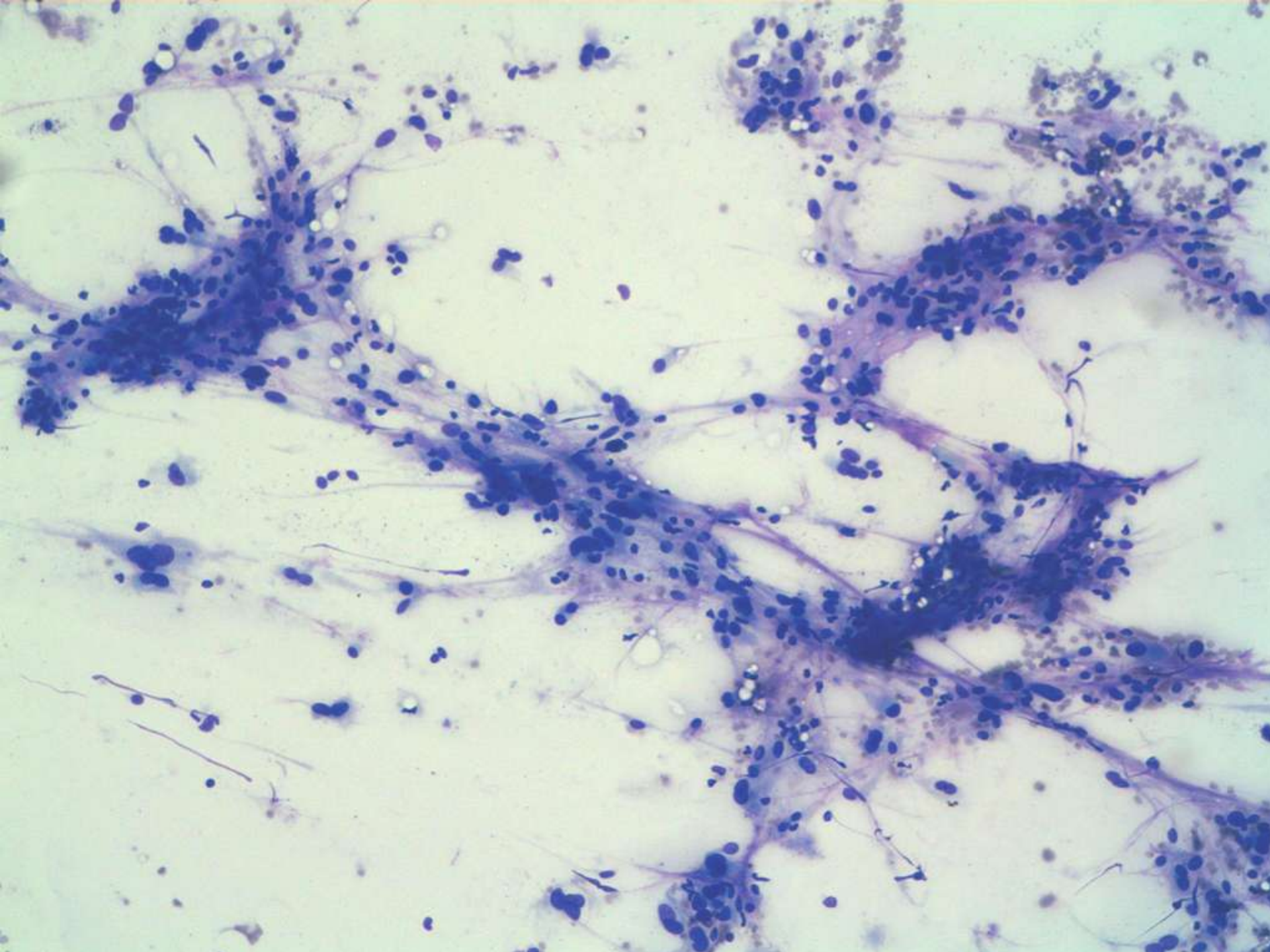
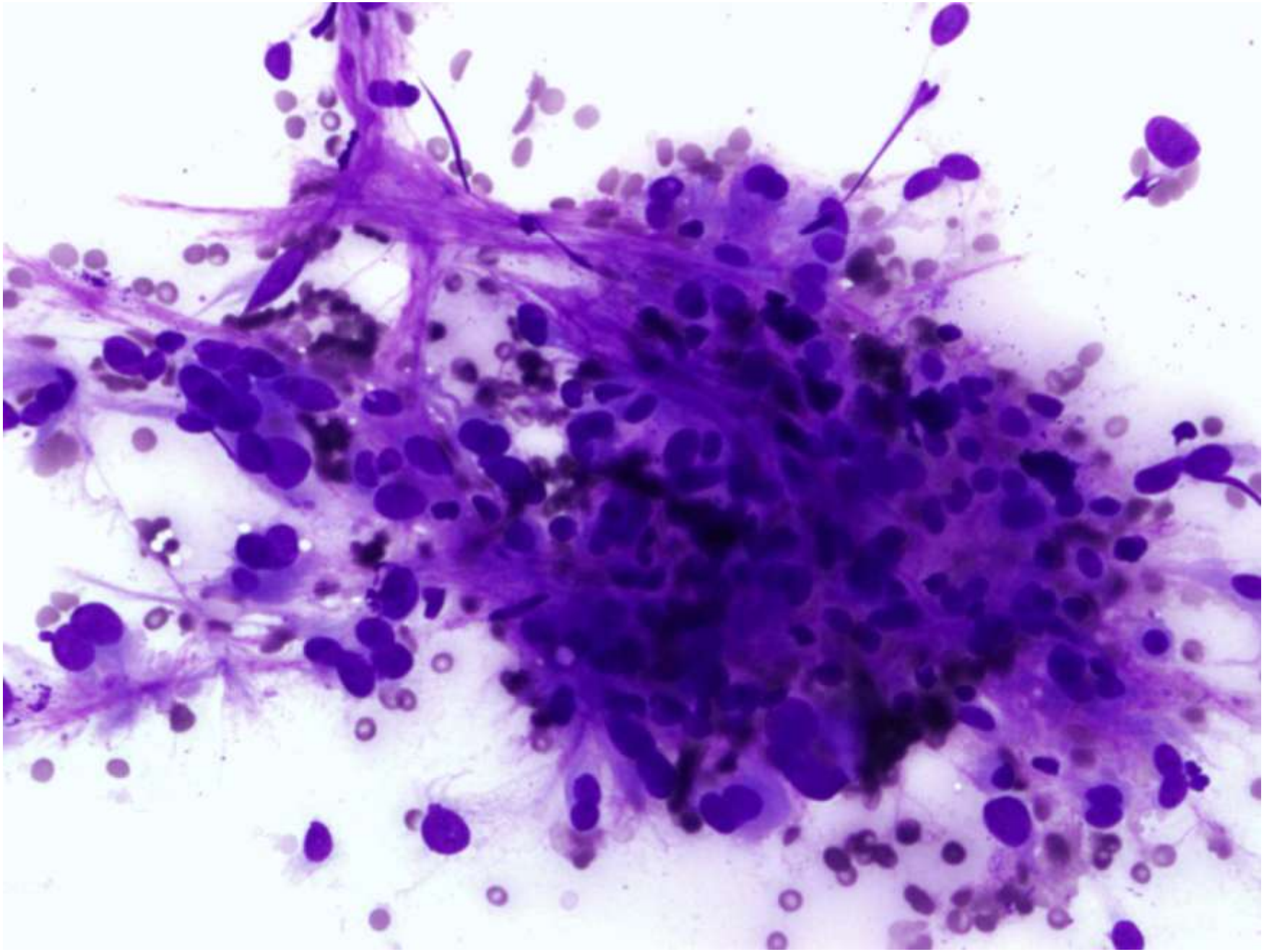
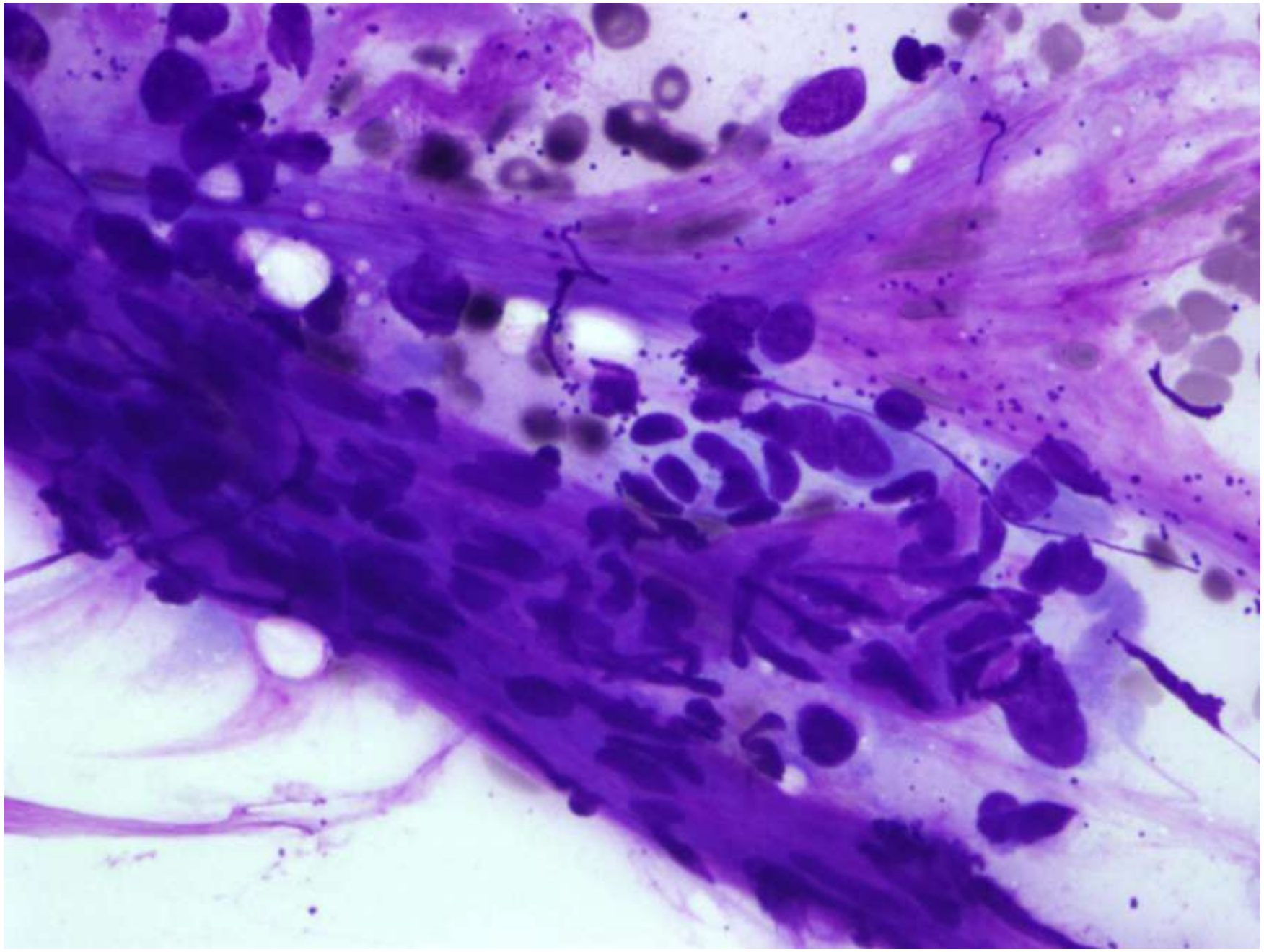
XXV Congreso de la Sociedad Española de Anatomía Patológica y División Española de la International Academy of Pathology, XX Congreso de la Sociedad Española de Citología y I Congreso de la Sociedad Española de Patología Forense

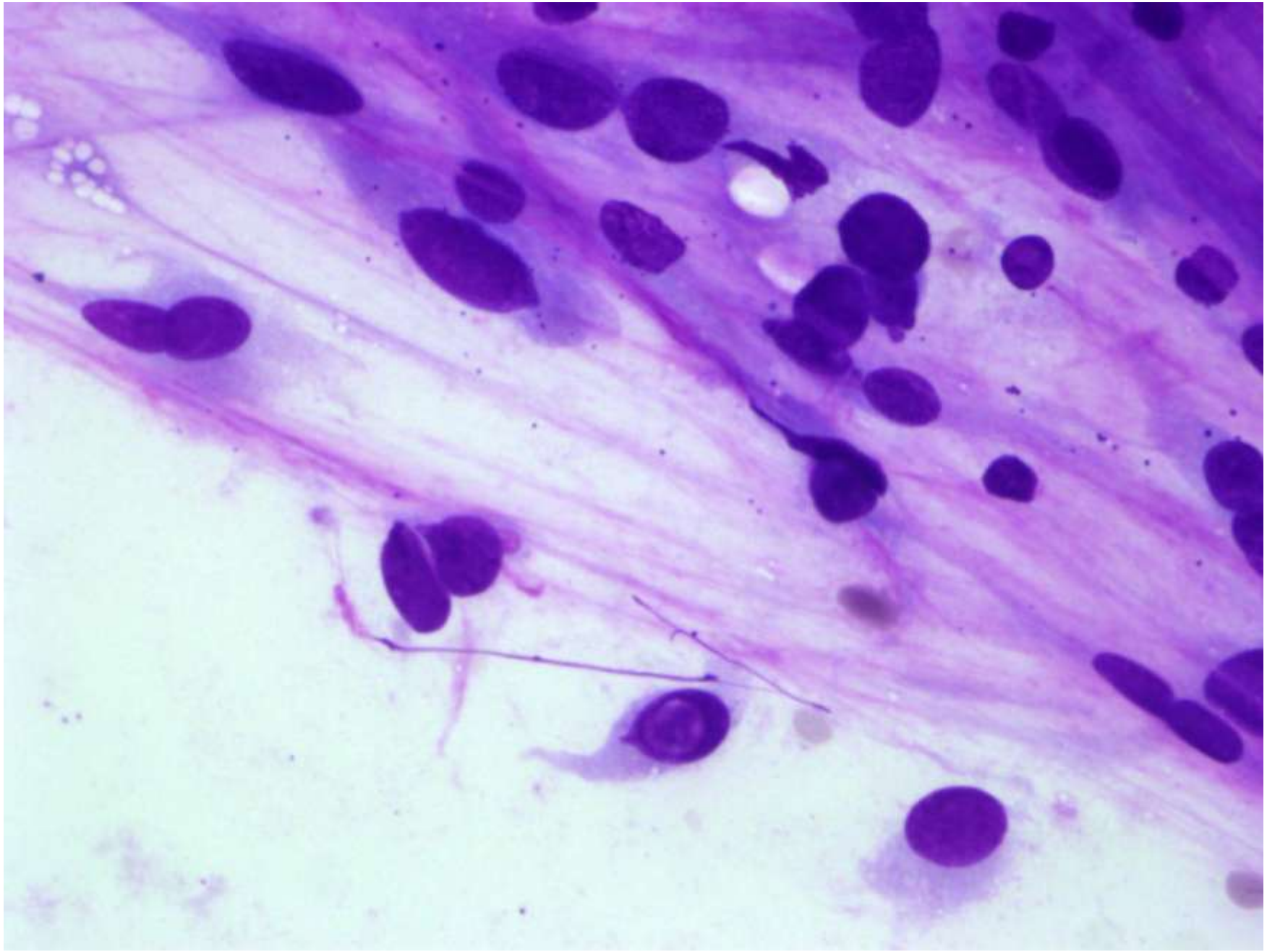
Mujer de 42 años con lesión nodular sólida de 2 cms en CSE de MI que ha crecido BIRADS-5. Se realiza PAAF.

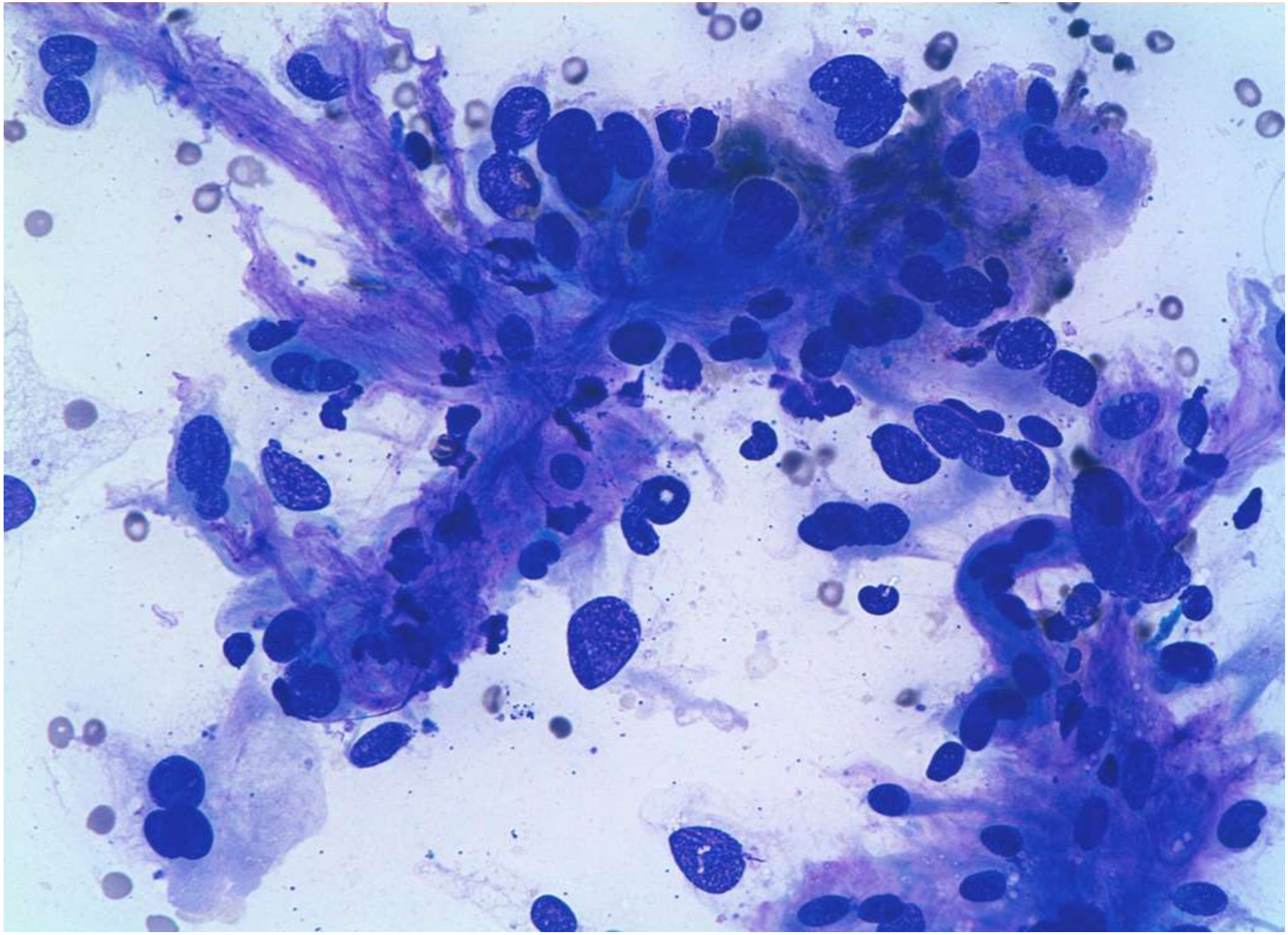


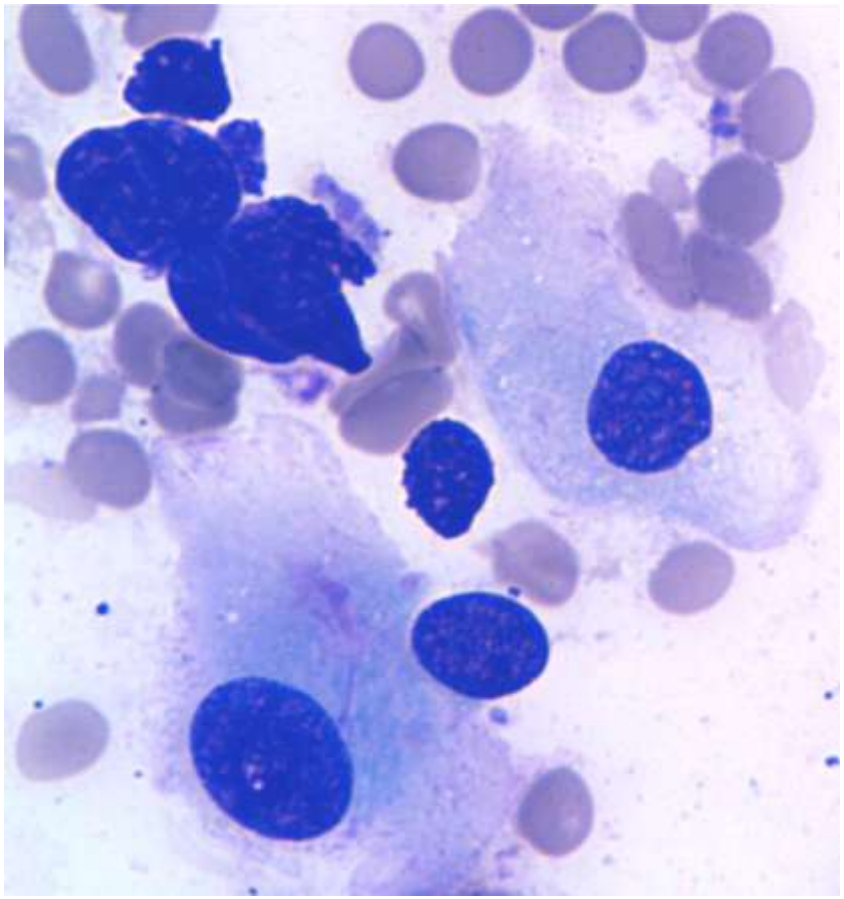


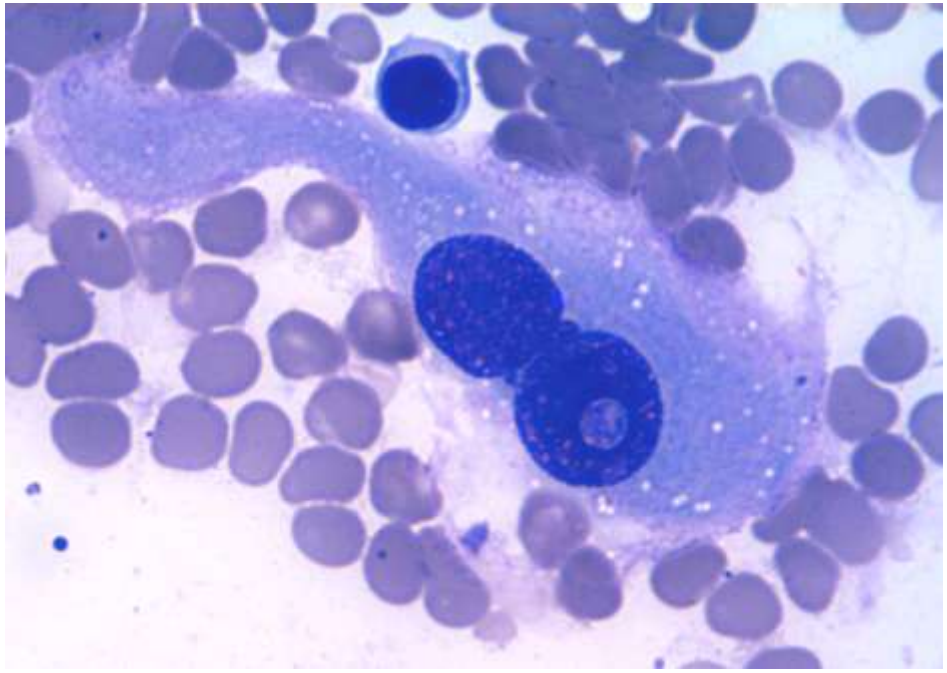


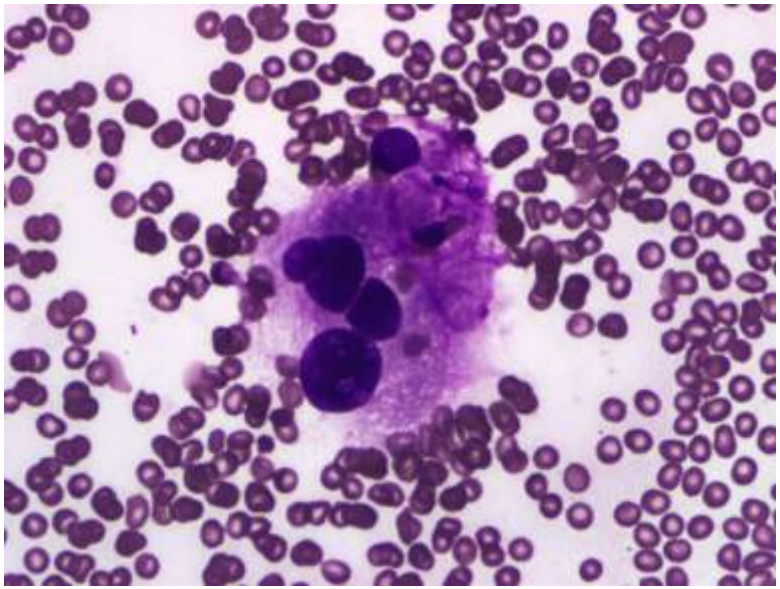


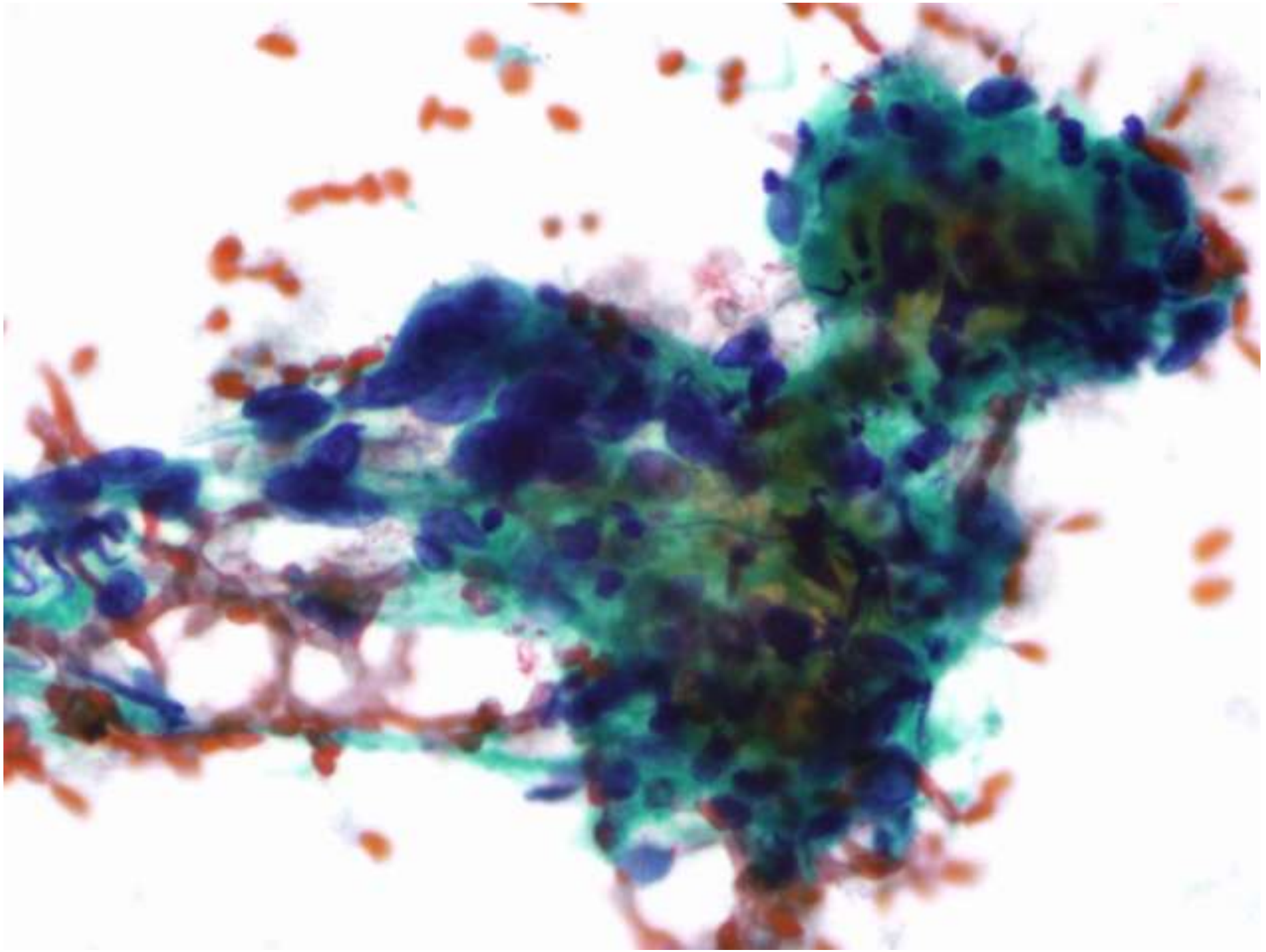


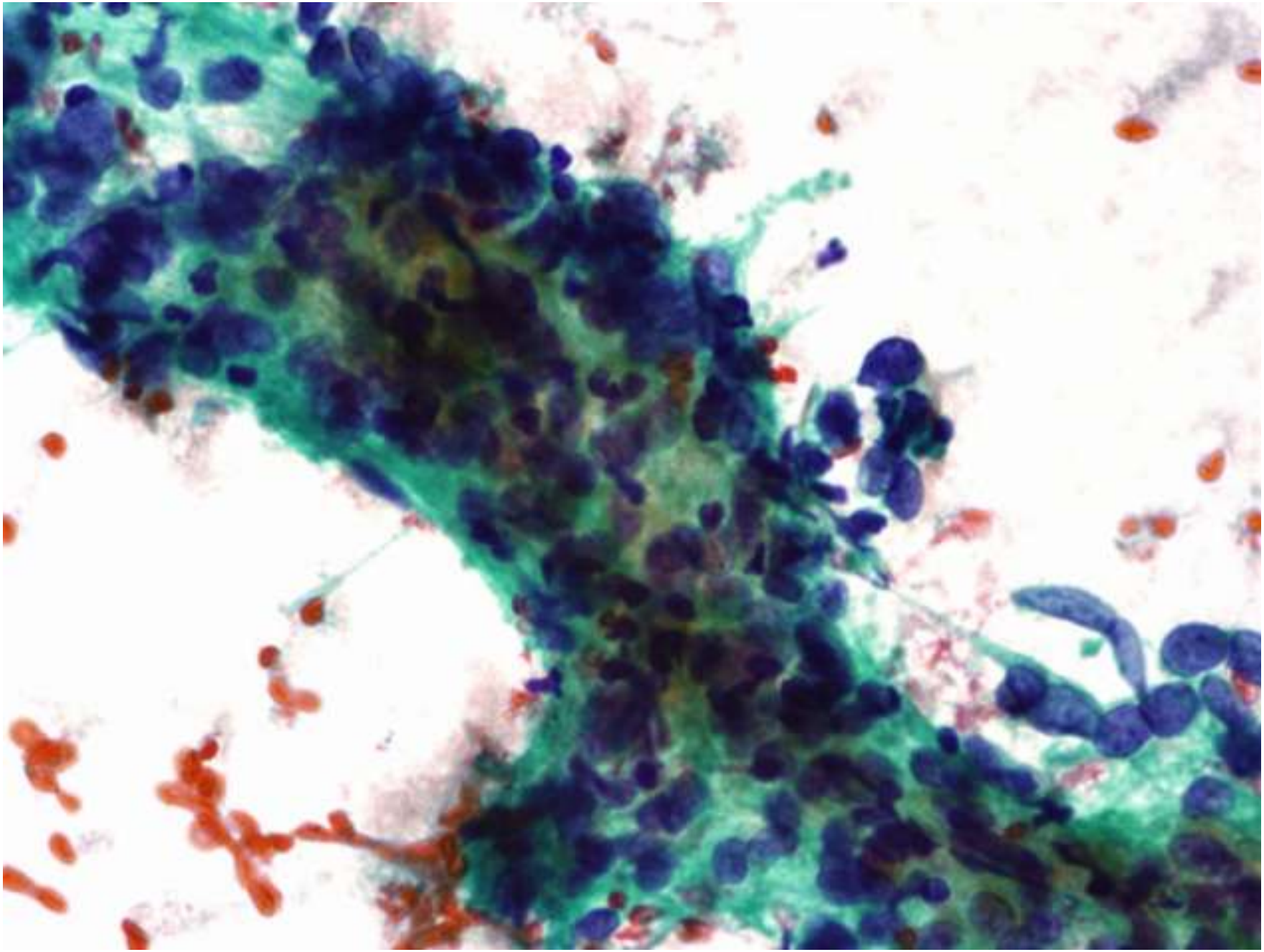


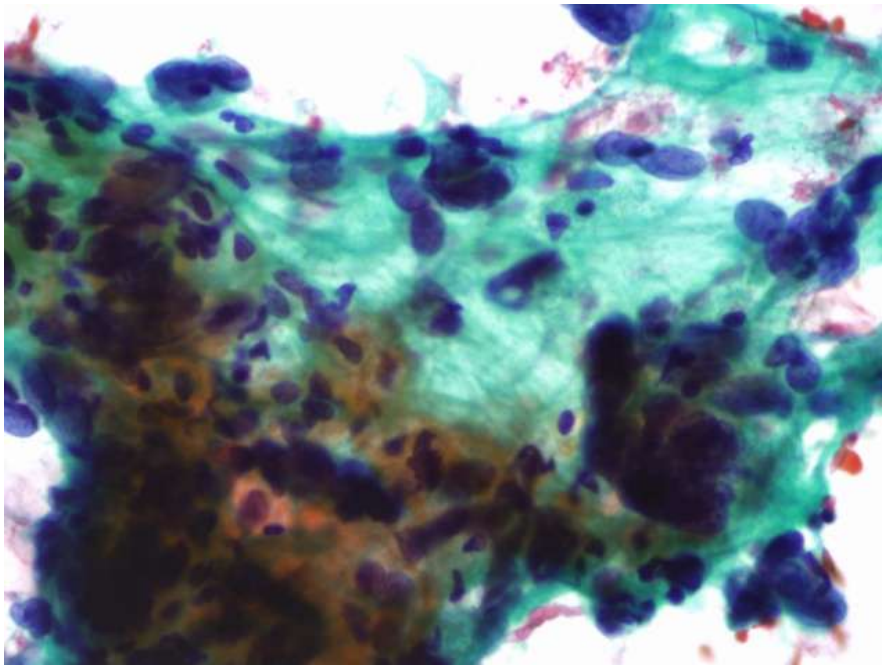


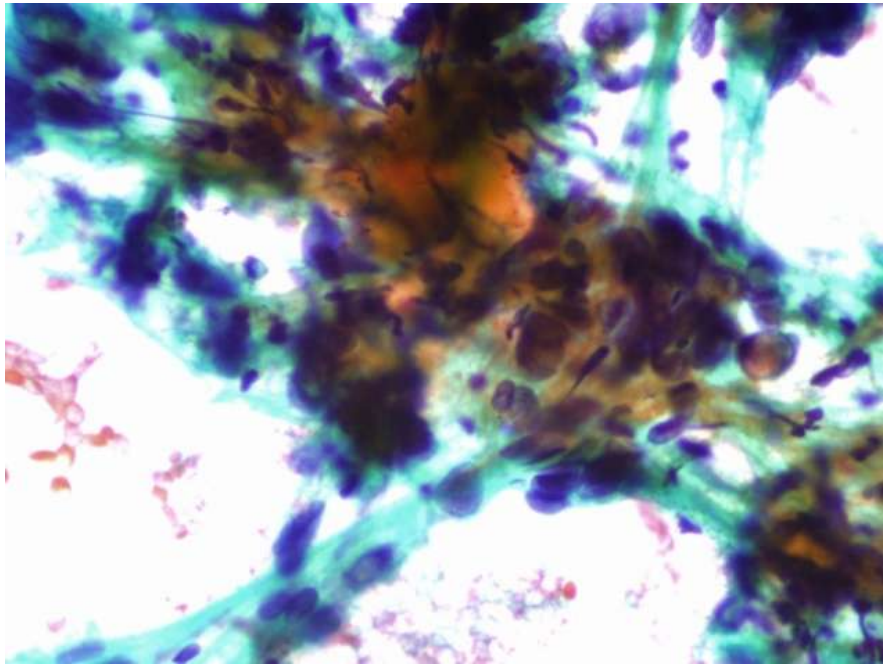










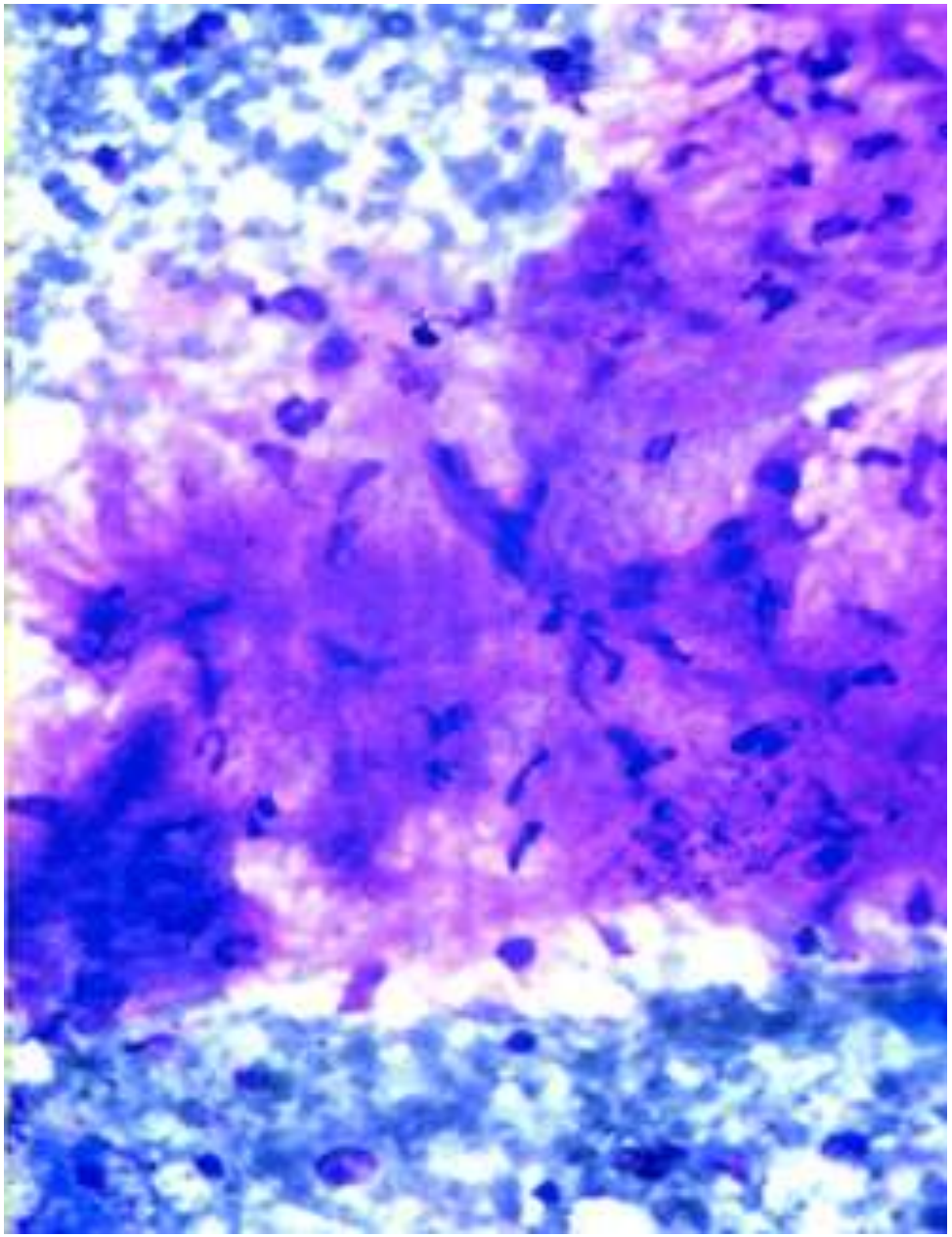


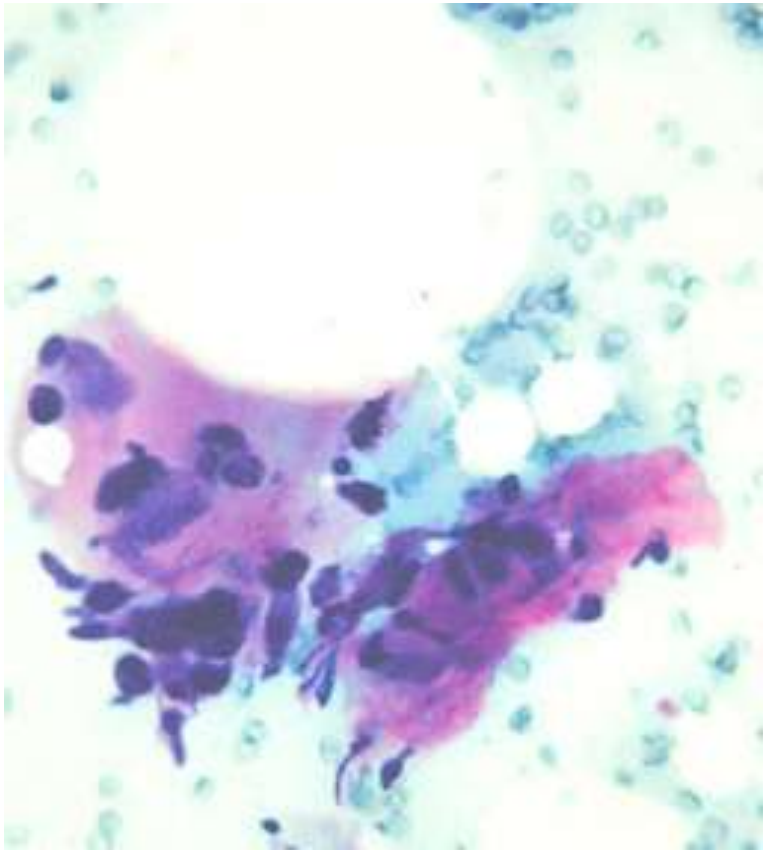
Hallazgos PAAF

- Moderada celularidad
- Agregados celulares irregulares y células sueltas dispersas
- Citoplasmas amplios, poco netos
- Pleomorfismo y atipia nuclear marcada
- Seudoinclusiones nucleares
- Fragmentos de estroma denso

Lesion proliferativa atípica, sospechosa de malignidad

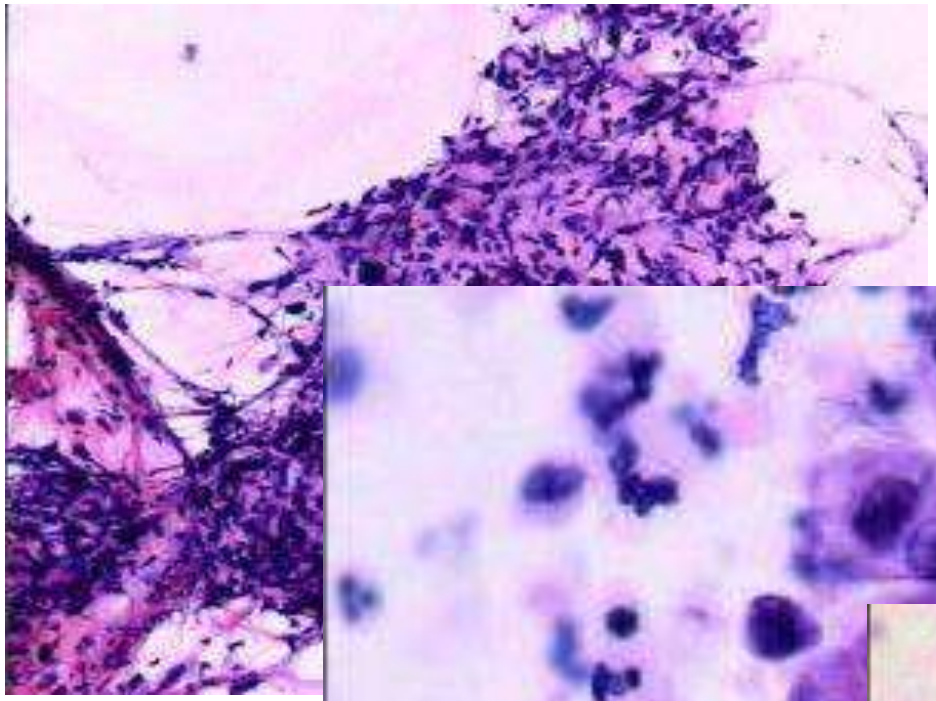
- Tumor filodes
- Carcinoma fusocelular :
  - metaplasico,
  - mioepitelial pred. fusocelular
- Adenomioepitelioma
- Tumor de difícil diagnóstico

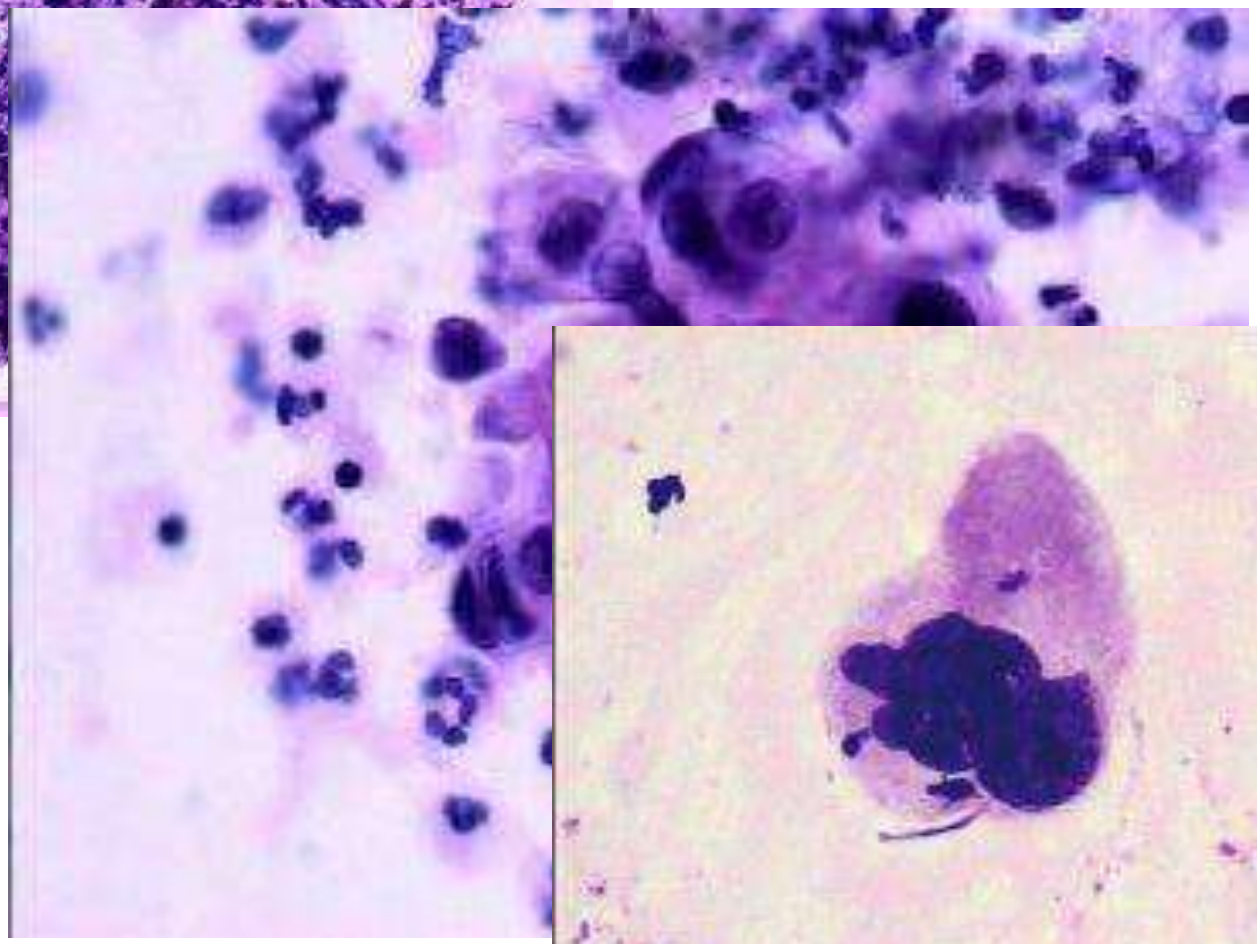




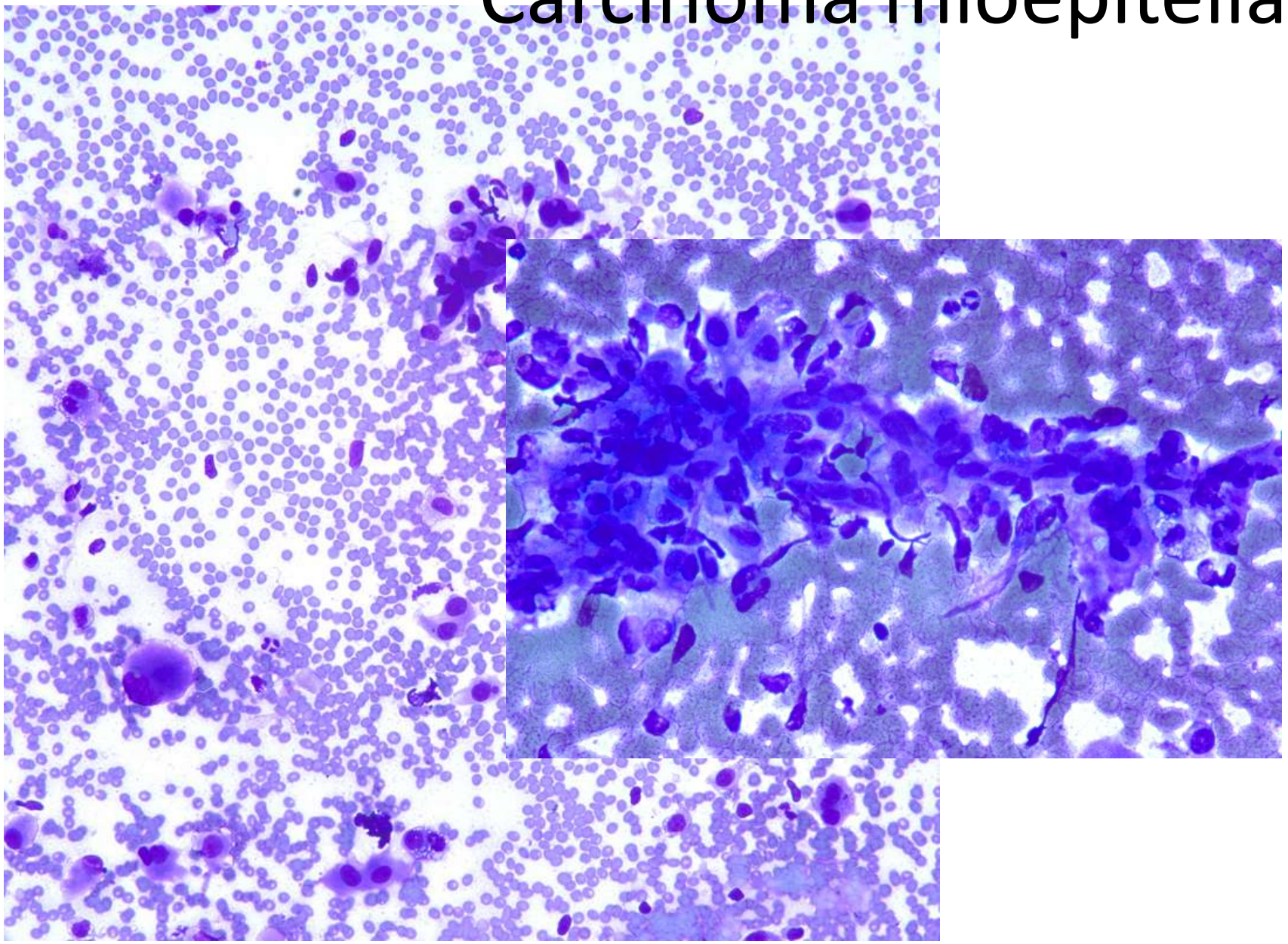
Tumor filodes

Carcinoma metaplásico

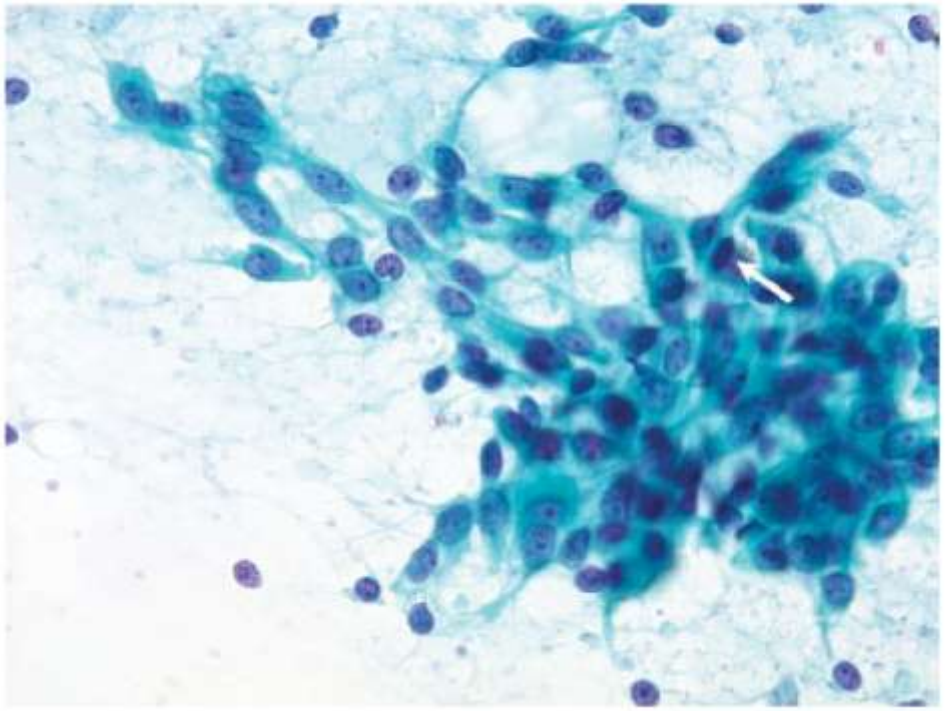


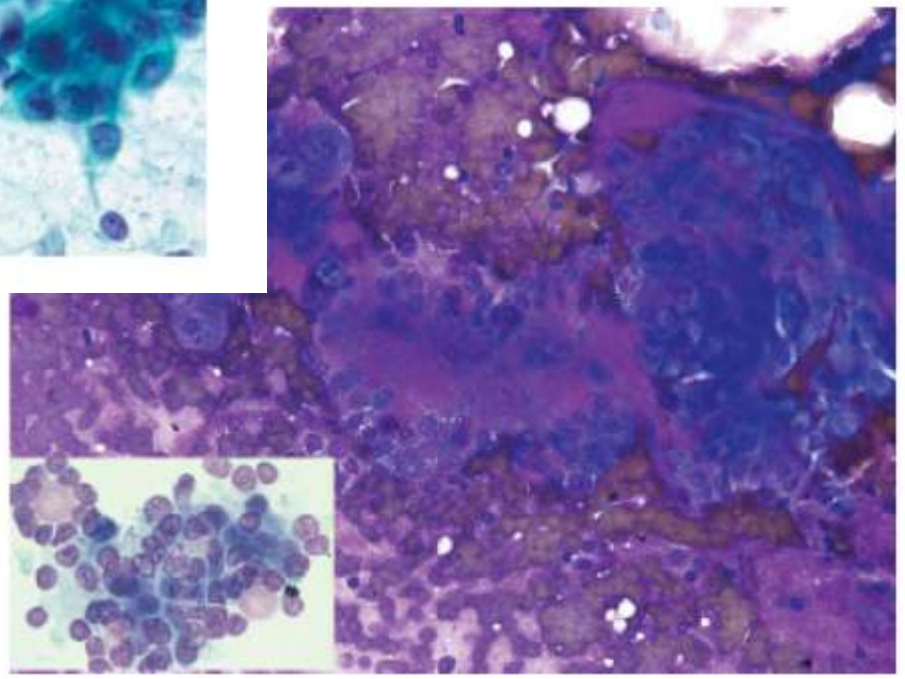


Carcinoma mioepitelial

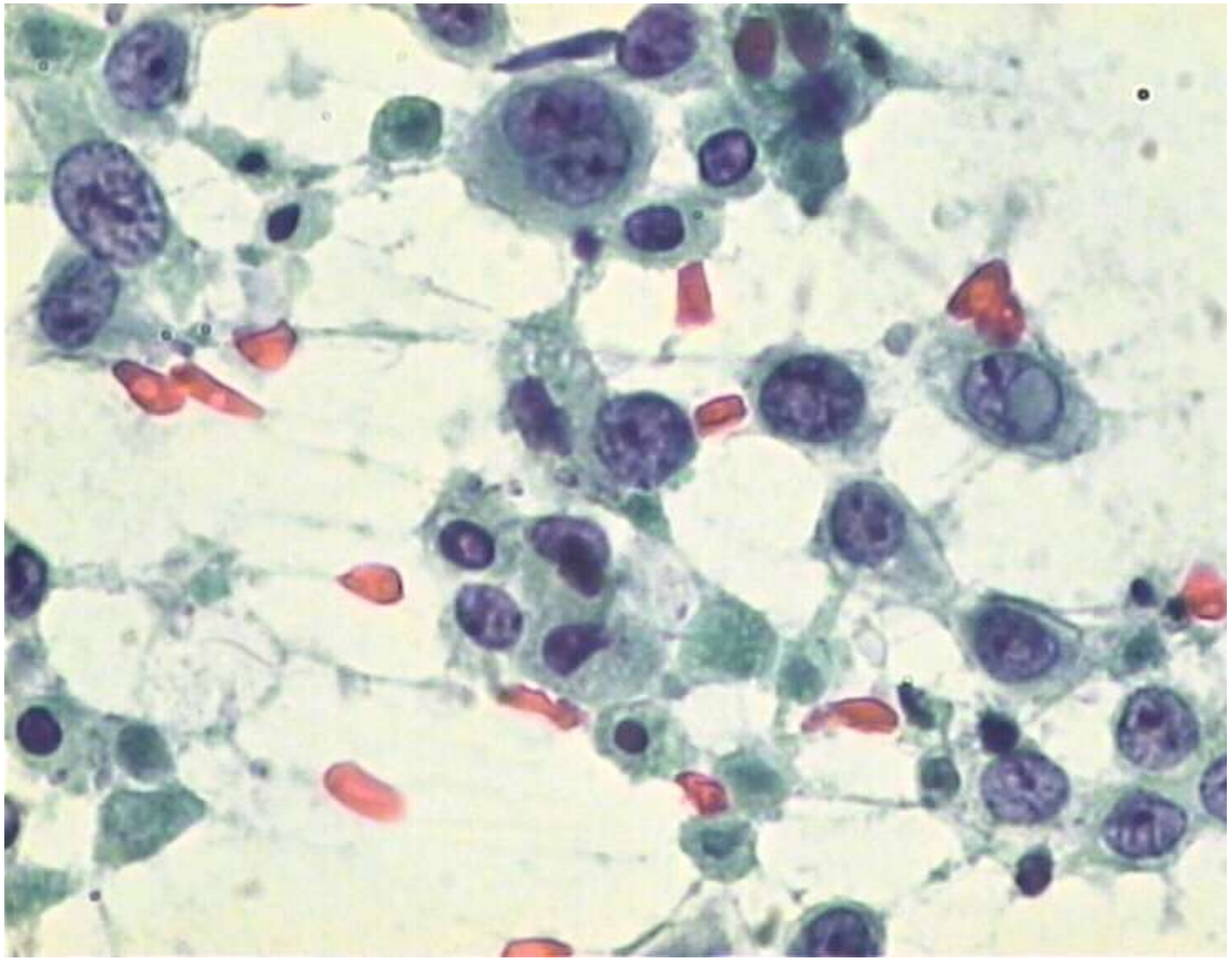


Adenomioepitelioma

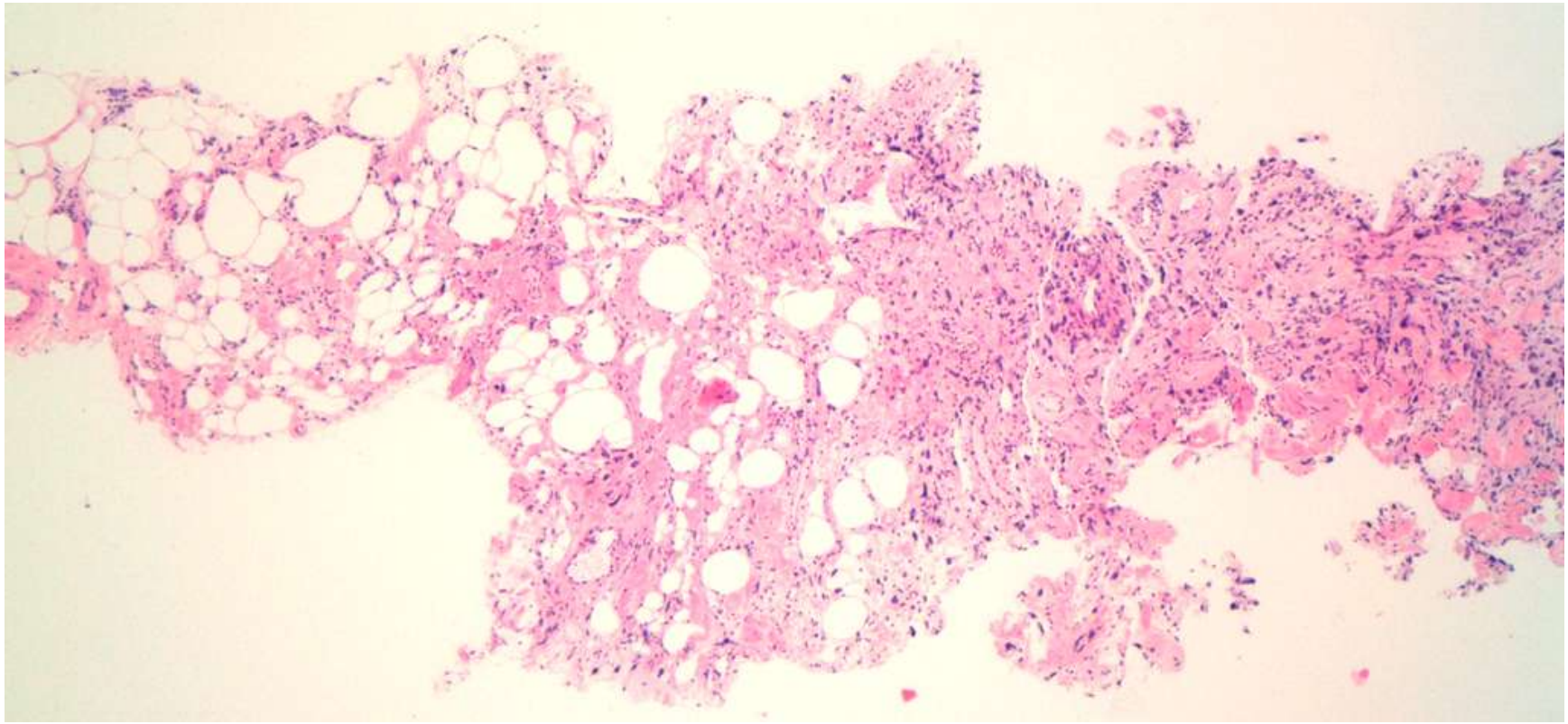


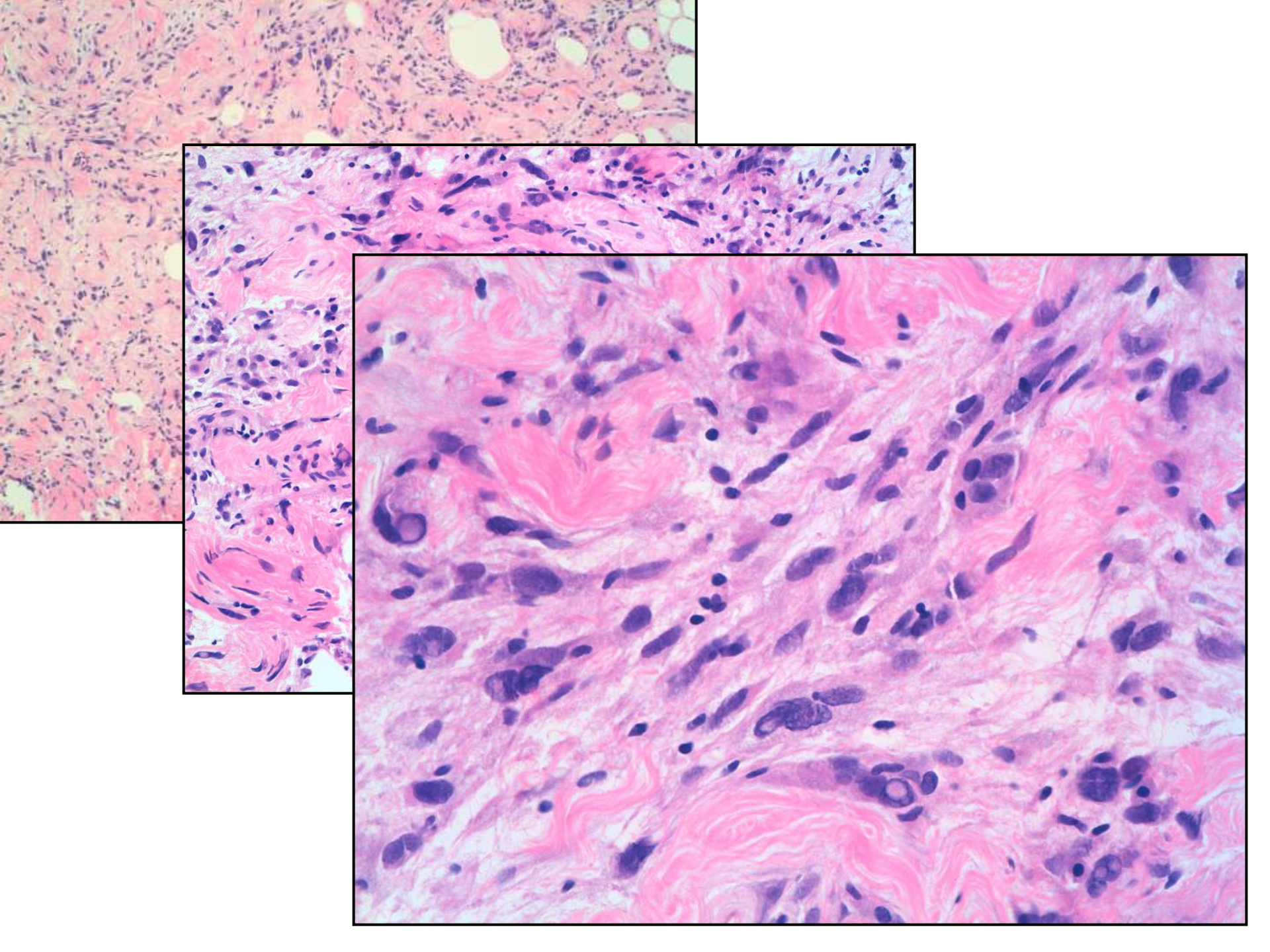


Melanoma

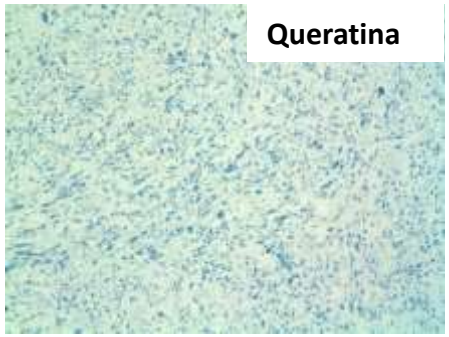


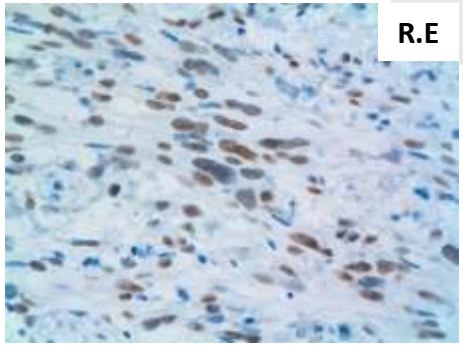
BIOPSIA CON AGUJA GRUESA

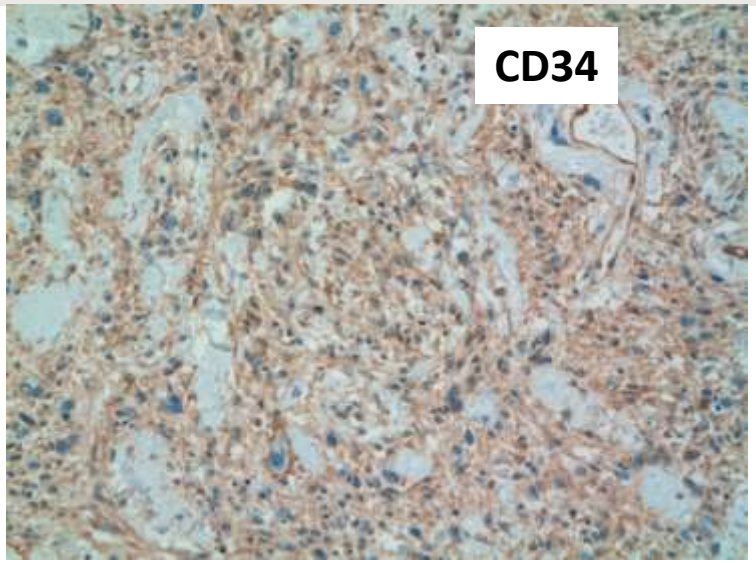


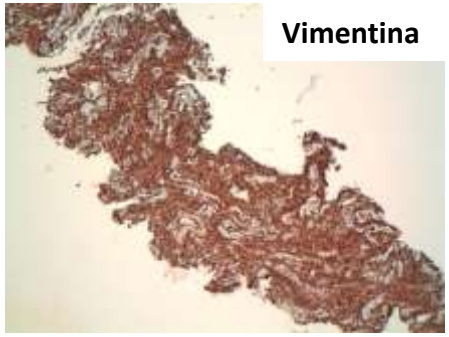


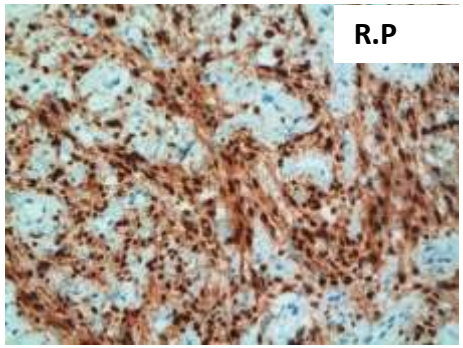
Inmunofenotipo

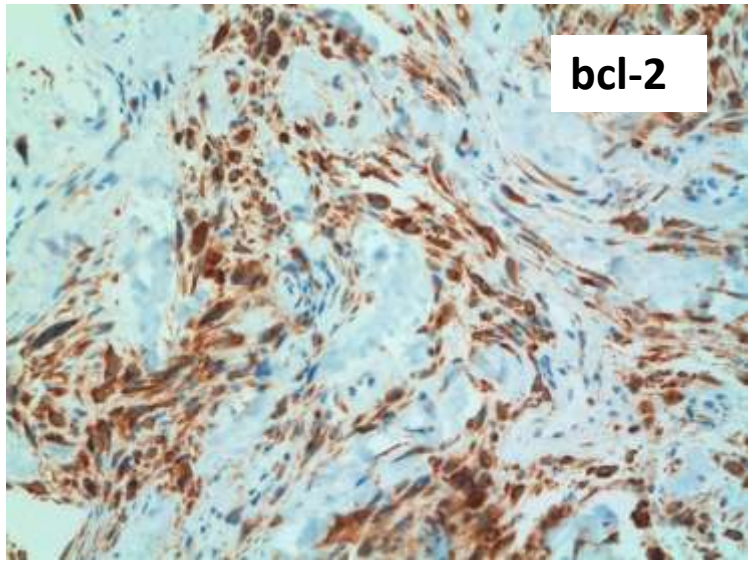


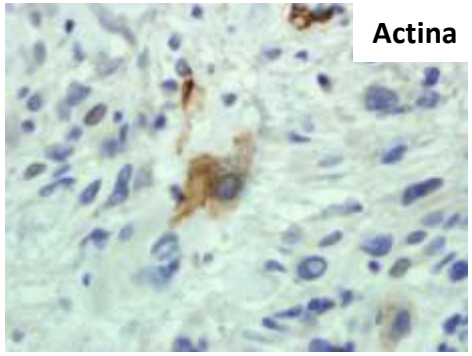


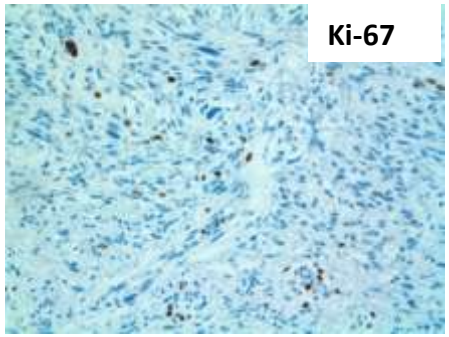








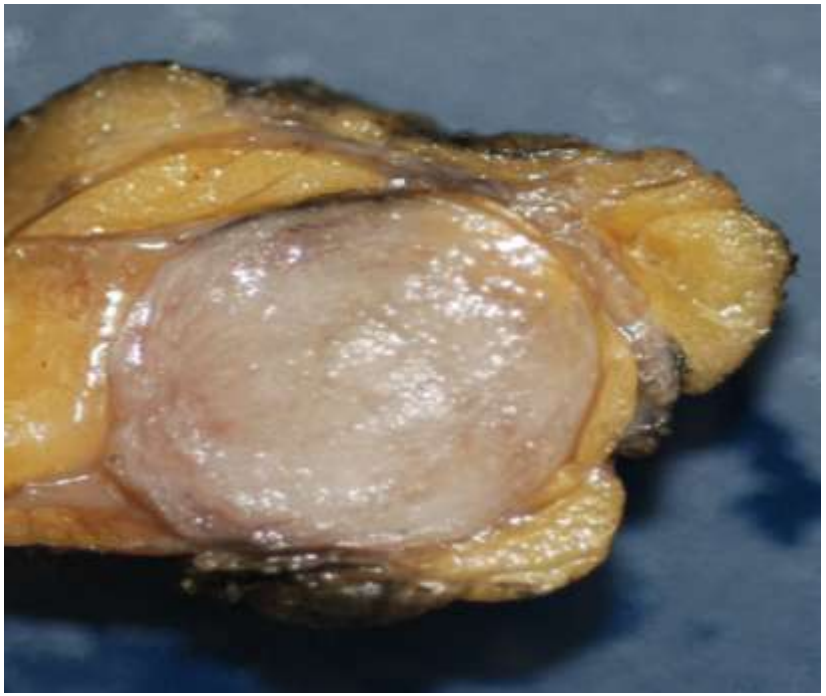


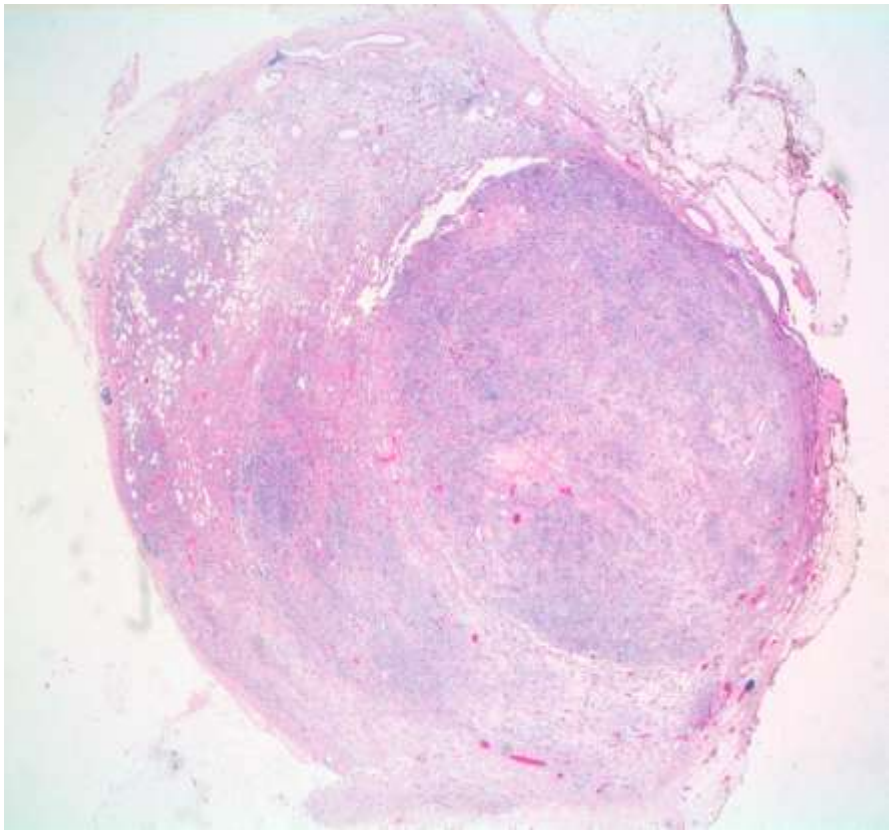


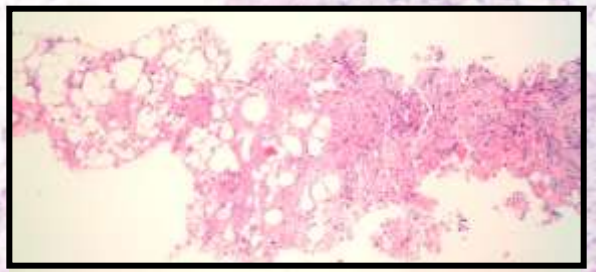
Tumor fusocelular benigno CD34+/ bcl-2+/actina +

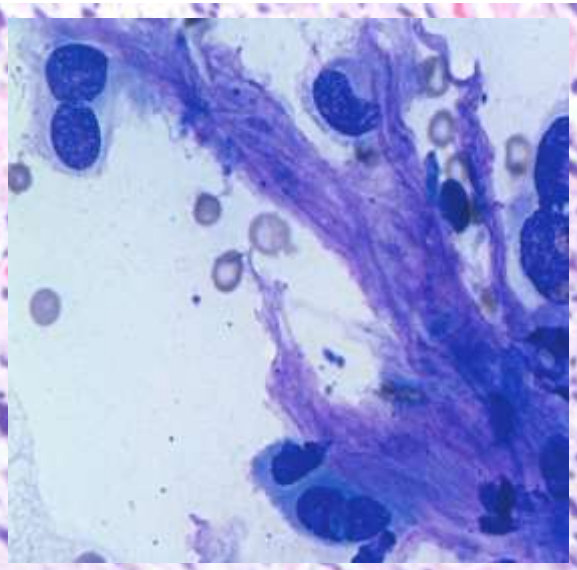
Miofibroblastoma/ tumor fibroso solitario

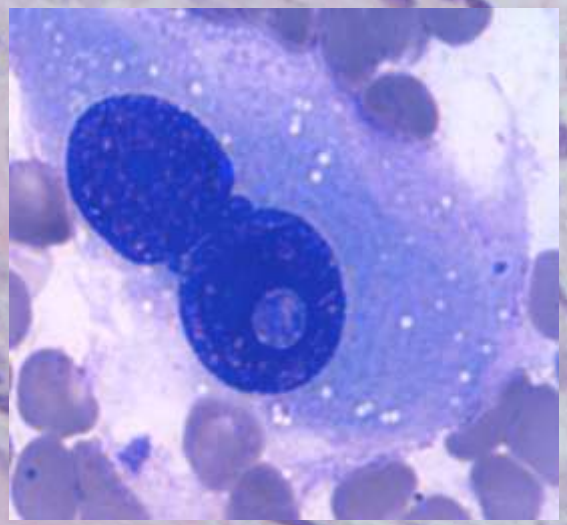
TUMORECTOMÍA MAMARIA











Miofibroblastoma mamamrio

- Tumor benigno de células fusiformes, derivan de fibroblastos-miofibroblastos del estroma mamario
- TFBEM:
  - Miofibroblastoma
  - Tumor fibroso solitario
  - Lipoma de células fusiformes
  - Tumor estromal miogénico
- Hombres mayores y mujeres postmenop.
- Casos extramamarios en lineas mamarias (McMenamin M, Fletcher CD 2001)
- Inmunofenotipo: CD34/ Bcl-2/ Actina/ desmina+
- Relacion TFS. Similares anomalías kariotípicas

Diagnostico diferencial MFB/TFS

Miofibroblastoma

- Menos componente graso
- Estroma mas prominente e hialianizado
- Celulas fusiformes : citoplasma mas abundante
- Patron fascicular
- Haces de colageno mas gruesos , hialinizados, zigzag
- CD34/bcl-2/Desmina+

Tumor fibroso solitario

- Lipomatoso
- Estroma menos hialinizado
- Celulas fusiformes mas finas, menos netos, palido.
- Patron: azar, espaciado
- Haces fibrosos de colágeno
- CD34/bcl-2+

(McMenamin M, Fletcher CD 2001)

Mammary Myofibroblastoma

A Tumor With a Wide Morphologic Spectrum

Gaetano Magro, MD, PhD

• *Context.*—Myofibroblastoma (MFB) of the breast is an unusual benign tumor that belongs to the family of the "benign spindle cell tumors of the mammary stroma." The name MFB reflects its cellular composition, comprising mainly stromal cells with fibromyofibroblastic and, less frequently, myoid differentiation. Since the original description, the morphologic spectrum of MFB has been expanded by the recognition of several unusual morphologic variants, such as the cellular, infiltrative, epithelioid, deciduoid-like, lipomatous, collagenized/fibrous, and myxoid variants.

Objective.—To review the literature on mammary MFB, discussing the main clinical, radiologic, and pathologic features helpful for diagnosis. Since MFB may show alarming morphologic features, which can lead to a misdiagnosis of malignancy, histologic figures of this tumor, including its more unusual variants, are provided to offer pathologists a practical approach to a correct diagnosis. Histogenesis and pathogenesis of this tumor are also proposed.

Data Sources.—Clinicopathologic data on MFB were extracted from all identified articles through PUB Medline–based research. Histologic figures have been taken from the personal archive of the author.

Conclusions.—The incidence of MFB diagnosis has increased in recent years, likely due to the mammographic screening. Accordingly, this unusual benign tumor may represent a potential diagnostic pitfall, especially when interpreting fine-needle aspiration and/or needle core biopsy. Pathologists should be aware of the wide morphologic spectrum exhibited by MFB to avoid a misdiagnosis of malignancy.

(*Arch Pathol Lab Med.* 2008;132:1813–1820)

Fine Needle Aspiration of Breast Myofibroblastoma

A Case Report

Fernando López-Ríos, M.D., M.I.A.C., **Fernando Burgos,** M.D., **Santiago Madero,** M.D., **Claudio Ballestín,** M.D., M.I.A.C., **Miguel Angel Martínez-González,** M.D., and **Pedro de Agustín,** M.D., F.I.A.C.

BACKGROUND: The use of fine needle aspiration cytology (FNAC) for the diagnosis of breast diseases in men has received little attention. We report the cytologic and histologic findings of myofibroblastoma of the breast in a 52-year-old man.

CASE: Smears disclosed irregular and cohesive sheets of cells, with ill-defined cytoplasm and oval nuclei containing single nucleoli. The nuclear membrane was frequently grooved, and occasional intranuclear cytoplasmic inclusions (pseudoinclusions) were also found. The background was clean and contained scarce collagenous stroma and fragments of myxoid material. To the best of our knowledge, there have been only seven previous reports of breast myofibroblastoma in which the cytologic features are well documented, and none of them mention the presence of pseudoinclusions.

CONCLUSION: FNAC could suggest the diagnosis of this distinctly uncommon tumor if evaluated together with the clinical and radiologic findings. (Acta Cytol 2001;45:381–384)

The characteristic cytologic features of myofibroblastoma...may allow a specific cytologic diagnosis, particularly in men.

Keywords: myofibroblastoma, breast neoplasms, aspiration biopsy.

Breast myofibroblastoma (BM) is a rare mesenchymal lesion that usually affects men.[1-5] Tavassoli[6] mentioned a recurrent BM in a 72-year-old woman. Local excision is the treatment of choice.[6] Therefore, fine needle aspiration cytology (FNAC) may play an important role in management. In this report we present the cytologic and histologic features of BM.

Case Report

A 52-year-old man presented with right gynecomastia of unknown duration. His past medical history was noncontributory. Imaging techniques (sonography and mammography) disclosed a well-

Table 1 *FNAC of BM: Summary of Reported Cases*

Author (yr)	Age (yr)/ sex	Diameter (cm)	Cytologic diagnosis	Cytologic features				Treatment
				Nuclear grooves	Nuclear inclusions	Collagenous stroma	Myxoid matrix	
Ordi et al (1992)[1,a]	40/M	2	NS	+	−	−	+	Mastectomy
	69/M	2	NS					TM
Amin et al (1993)[2]	64/M	3.8	Benign spindle cell proliferation	−	−	−	−	Excision
Bardales et al (1995)[3]	45/F	1.5	Well-differentiated spindle-cell neoplasm	−	−	+	−	Excision
Negri et al (1995)[4]	68/M	1.5	Benign mesenchymal lesion	+	−	−	−	TM
Schmitt et al (1998)[5]	68/M	3	NS	−	−	−	−	Excision
	61/M	NS	NS	+	−	−	−	NS
Present case	52/M	2.7	Benign lesion	+	+	+	+	Mastectomy

NS = not stated, TM = tumorectomy, + = present, − = absent or not mentioned.
[a]The cytologic features are not described separately for each case.

MIOFIBROBLASTOMA MAMARIO: PAAF

- Frotis escasa a moderada celularidad
- Grupos cohesivos irregulares y células sueltas
- Células fusocelulares a poligonales
- Citoplasma mal definido, fino, roto.
- Nucleos ovales con membrana nuclear irregular
- Matriz extracelular colagenoso. Fragmentos de estroma con grupos celulares
- Moderado pleomorfismo
- Pseudoinclusiones nucleares
- Ausencia de necrosis

Problemas diagnósticos

- Tumor mesenquimal en mama
- Atipia degenerativa en tumores mesenquimales benignos

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Miofibroblastoma mamario

- Hallazgos microscópicos
  - Fascículos
  - Bandas gruesas de colágeno hialinizado
  - **Pseudoinclusiones (Fletcher)**
  - Raro: Atipia celular y Células gigantes
  - Mastocitos
  - No mitosis ni necrosis

- Variantes
  - Celular
  - Infiltrante
  - Fibrosa
  - Epitelioide
  - Lipomatosa
  - Decidual-like
  - Mixoide
  - Hemangiopericitoma - like

Table 1. Morphologic Features Helpful for Diagnosis of Myofibroblastoma

Essential diagnostic criteria
- Purely mesenchymal tumor with no epimyoepithelial components
- Interspersed thick, hyalinized collagen bundles
- Low mitotic count (0–2 mitoses per 10 high-power fields)
- No atypical mitoses
- No necrosis

Intratumoral or intertumoral variations
- Cell types: spindle-shaped and oval- to epithelioid-shaped cells; more rarely, deciduoid-like cells
- Cytologic atypia: absent; mild; more rarely, moderate to focally severe
- Growth patterns: fascicular, nesting, solid; rarely, alveolar, trabecular, or single-file patterns
- Tumor stroma: myxoid to hyalinized fibrous stroma
- Tumor borders: pushing borders; rarely, infiltrative borders
- Additional tumor components: adipose tissues; more rarely, cartilaginous, smooth muscle, osseous tissues

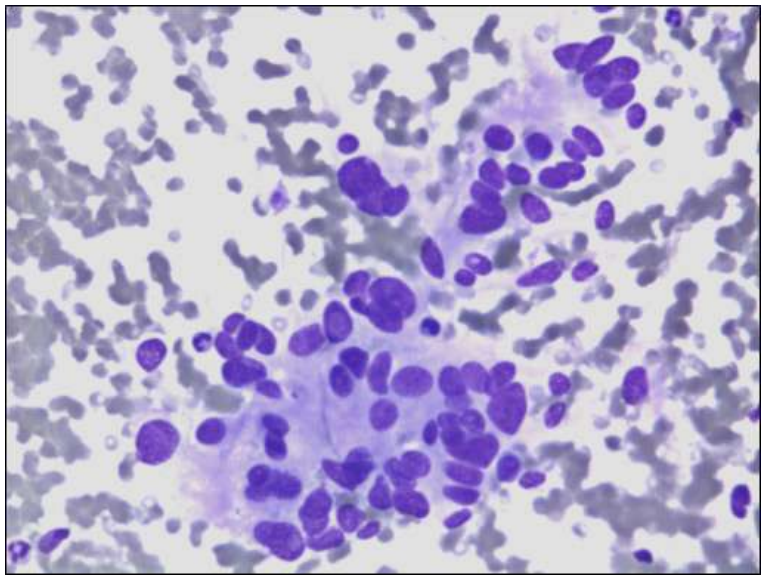
Table 2. List of the Differential Diagnoses

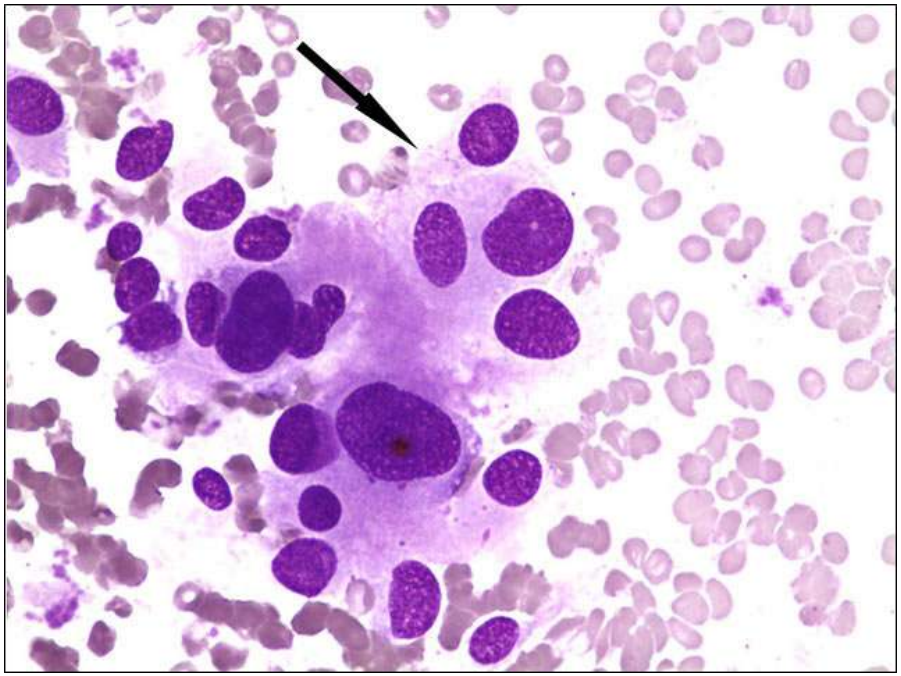
- Nodular pseudoangiomatous stromal hyperplasia[74,77,78]
- Nodular fasciitis[79,80]
- Post–fine-needle aspiration cytology reactive spindle cell nodule[81]
- Leiomyoma[82,83]
- Spindle cell lipoma[84]
- Benign peripheral nerve sheath tumor[82,85,86]
- Angiomyolipoma[87]
- Benign fibrohistiocytoma[88]
- Solitary fibrous tumor[22,89]
- Desmoid-type fibromatosis[90–92]
- Inflammatory myofibroblastic tumor[93]
- Low-grade myofibroblastic sarcoma[94]
- Dermatofibrosarcoma protuberans[95]
- Low-grade fibromatosis-like carcinoma[96,97]
- Malignant myoepithelioma[98]
- Low-grade fibrosarcoma[99,100]
- Leiomyosarcoma[82,101]
- Low-grade malignant peripheral nerve sheath tumors[102]
- Spindle cell liposarcoma[103]
- Follicular dendritic cell tumor[104]

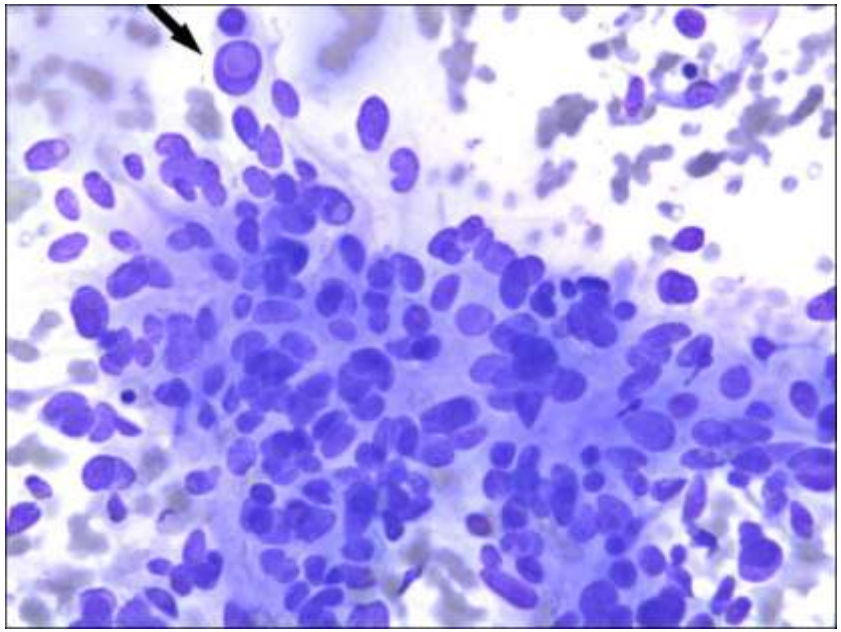
Variante morfologica:
Atipia celular

Gaetano Magro, MD, PhD (***Arch Pathol Lab Med.*** **2008;132:1813–1820**)

Paraganglioma







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Review

Benign Spindle Cell Tumors of the Mammary Stroma: Diagnostic Criteria, Classification, and Histogenesis

Gaetano Magro[1], Michal Michal[2], and Michele Bisceglia[3]

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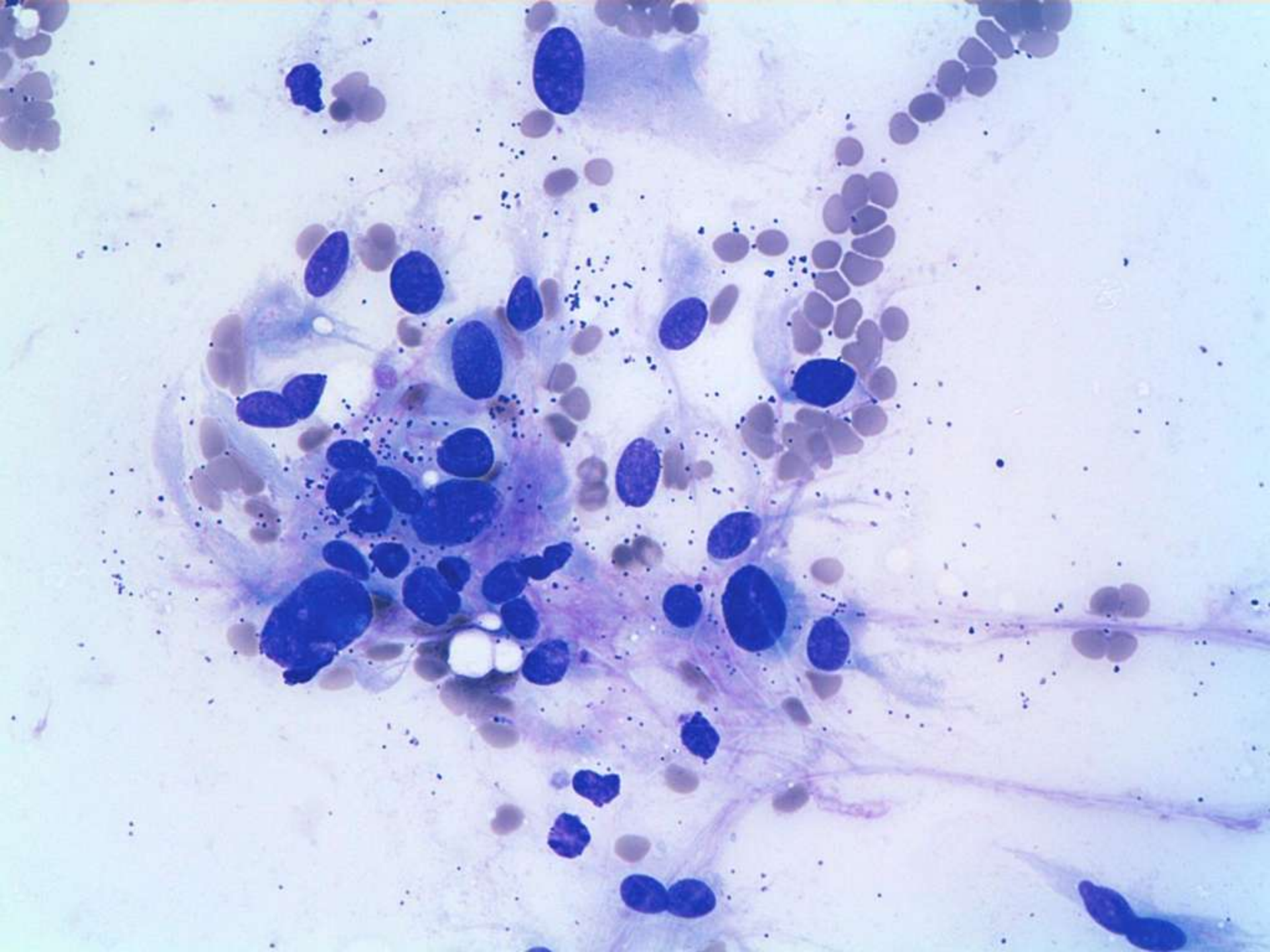
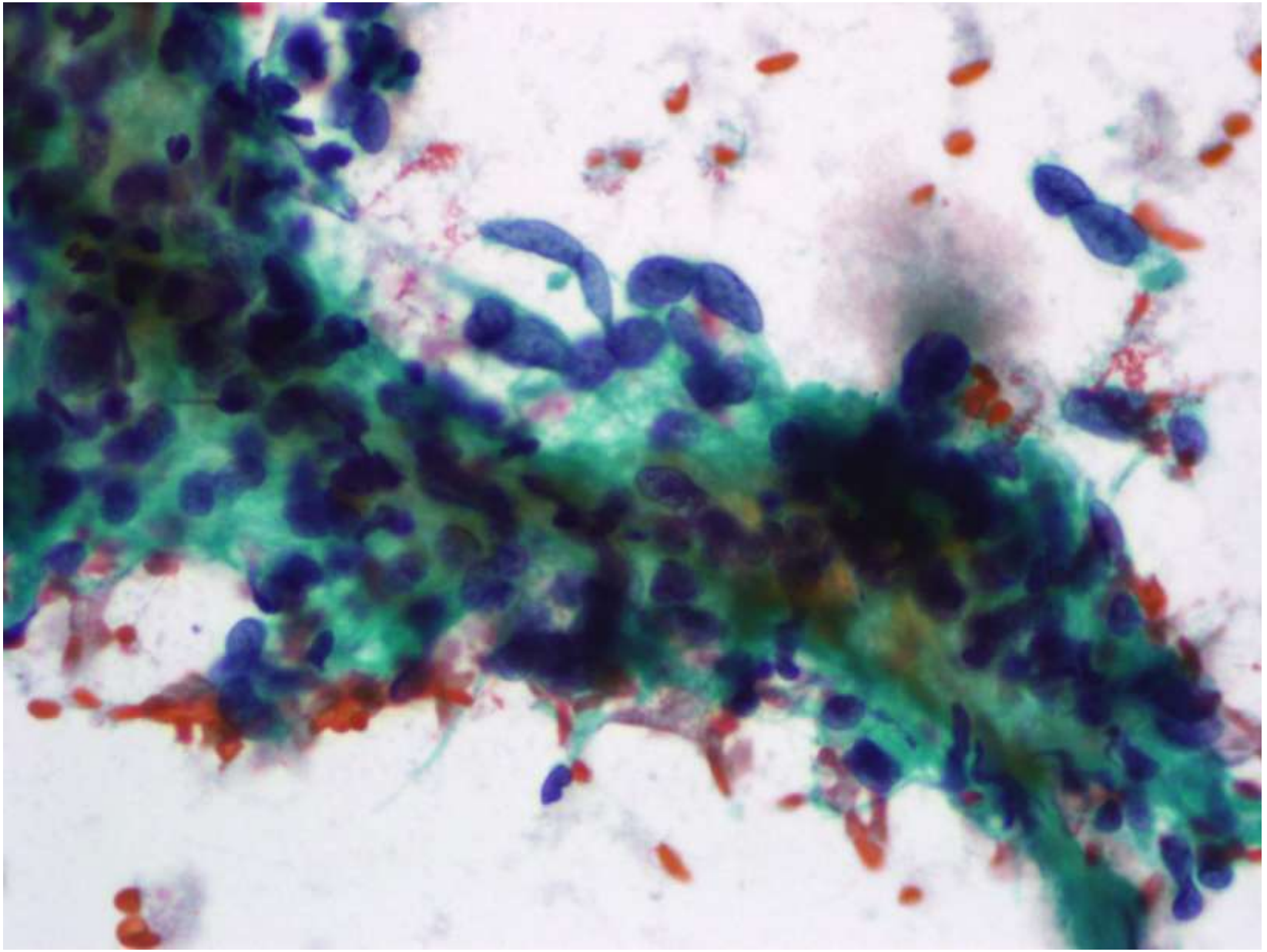
Tumores benignos fusocelulares del estroma mamario (TFBEM):

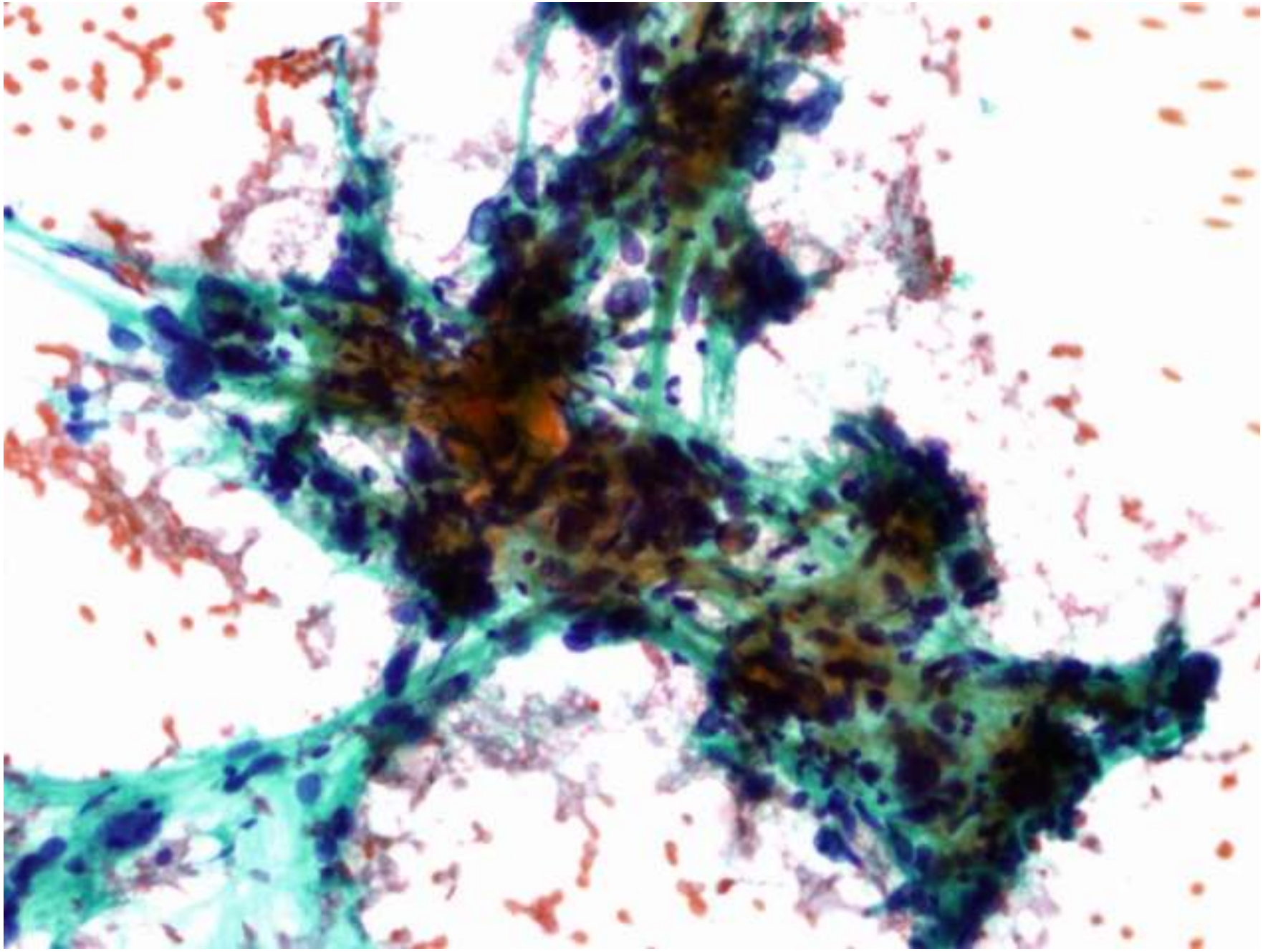
- Miofibroblastoma
- Tumor fibroso solitario
- Lipoma de celulas fusiformes
- Tumor estromal miogénico

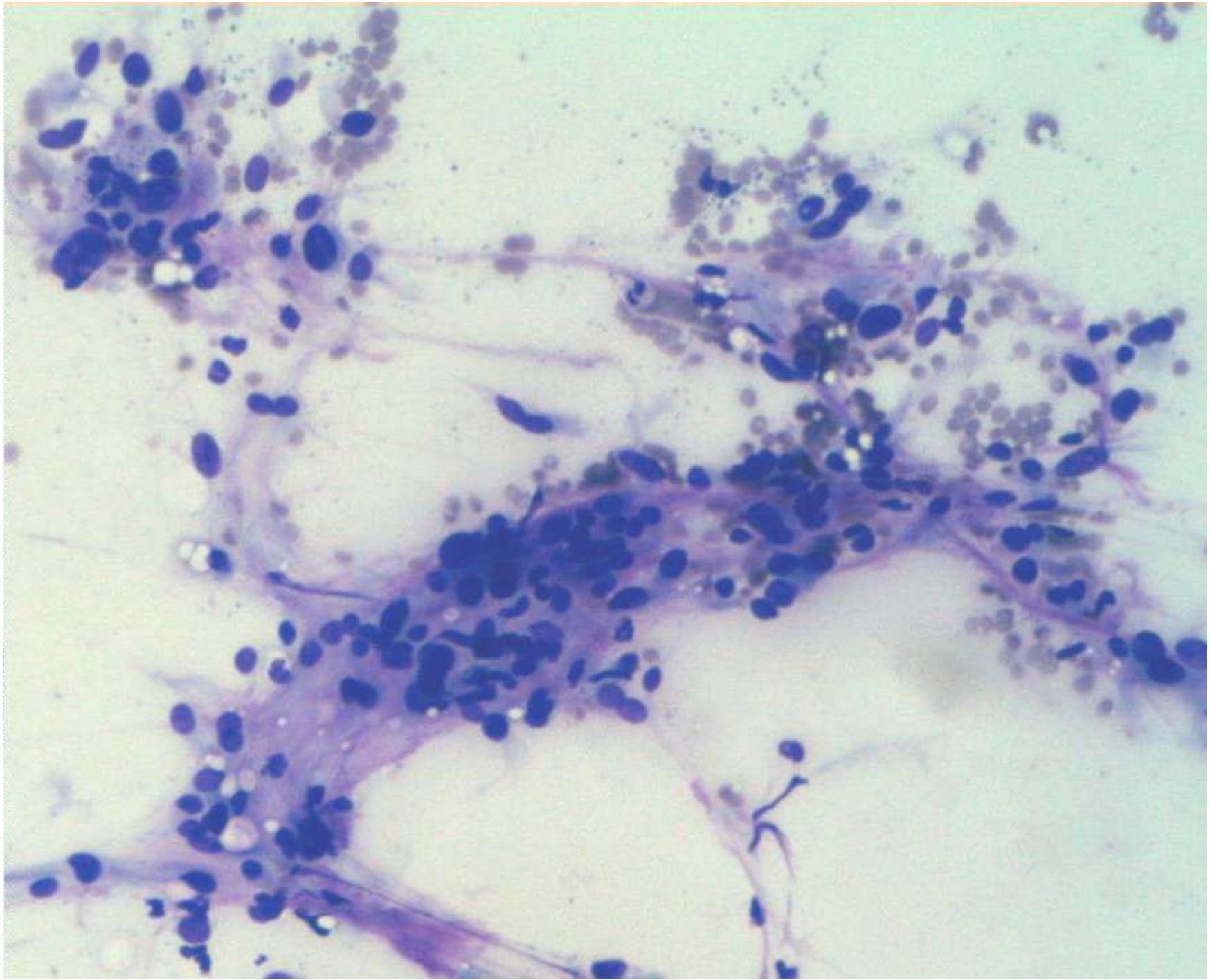
Tumores benignos fusocelulares del estroma mamario (TFBEM):

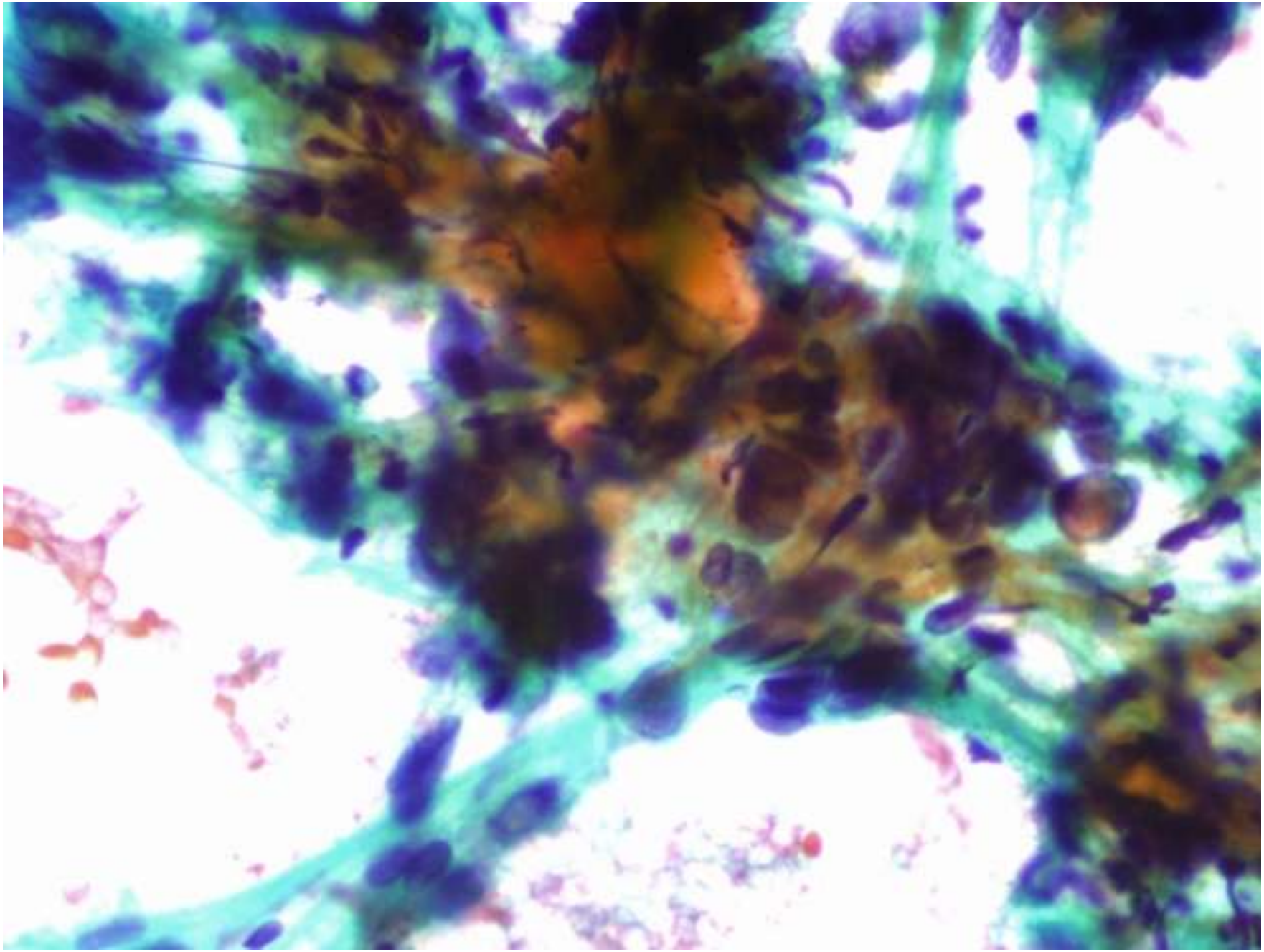
- Tumor fibroblastico
- Tumor miofibroblastico
- Tumor fibrohistiocitico
- Formas mixtas





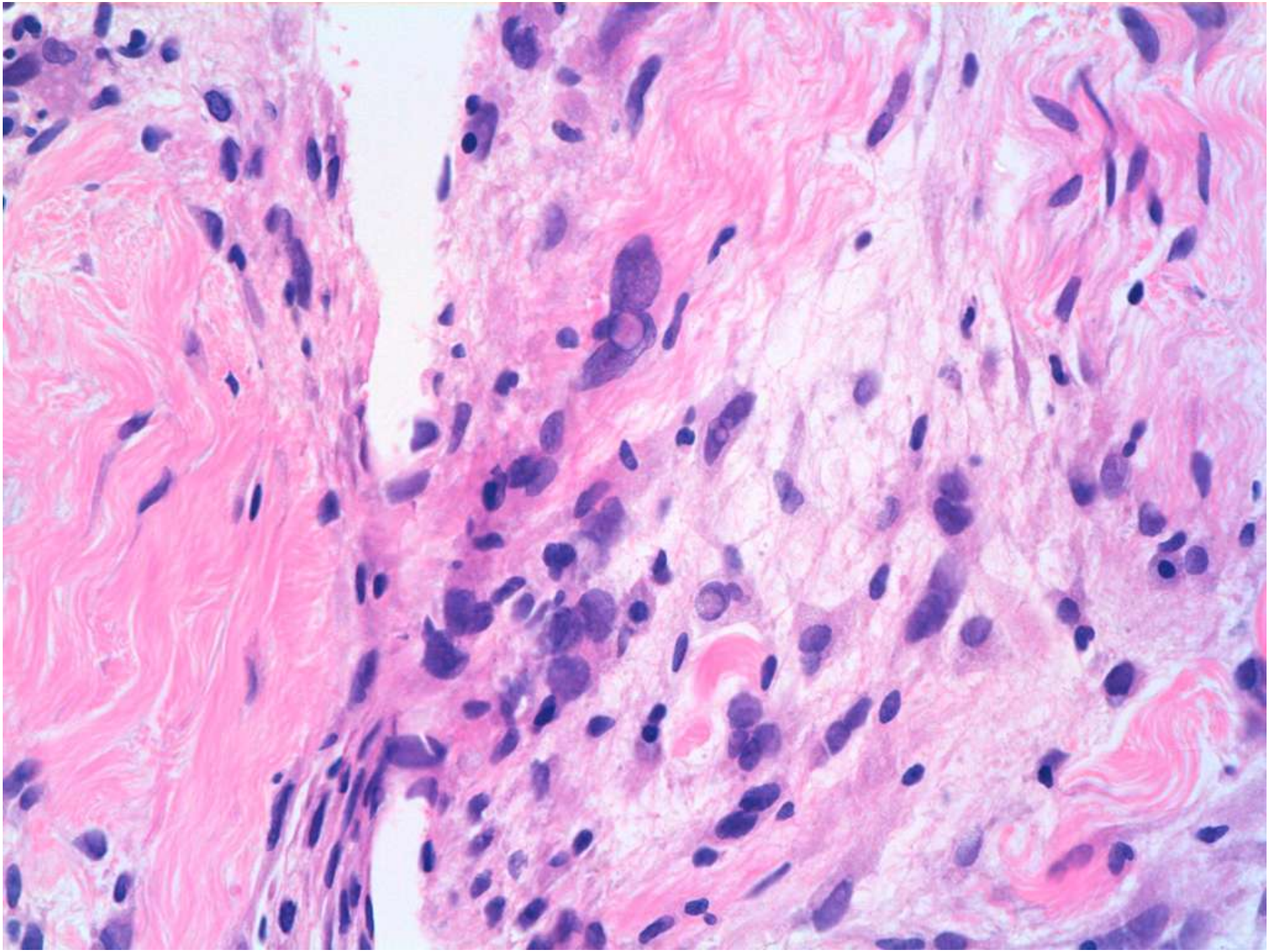


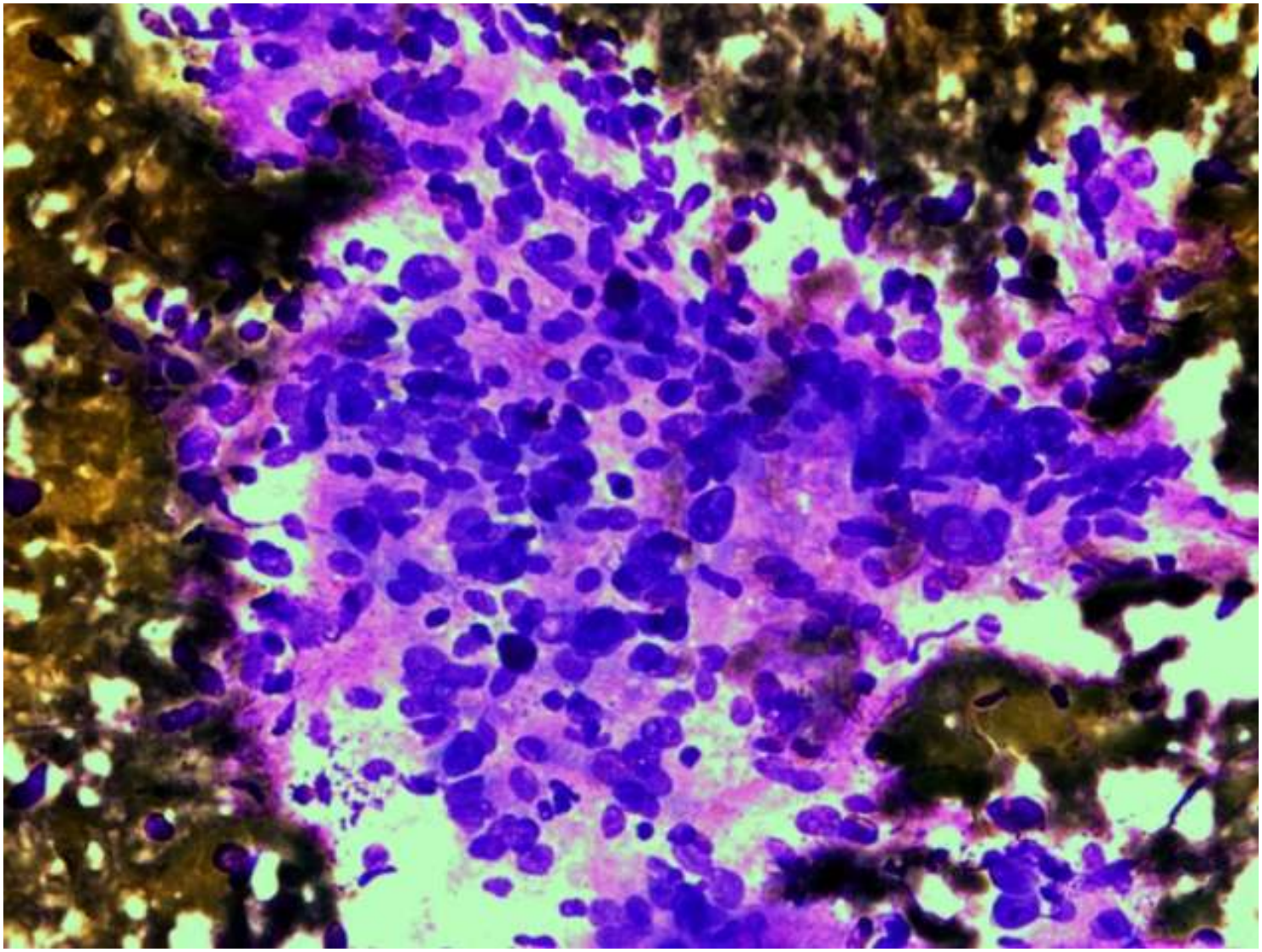


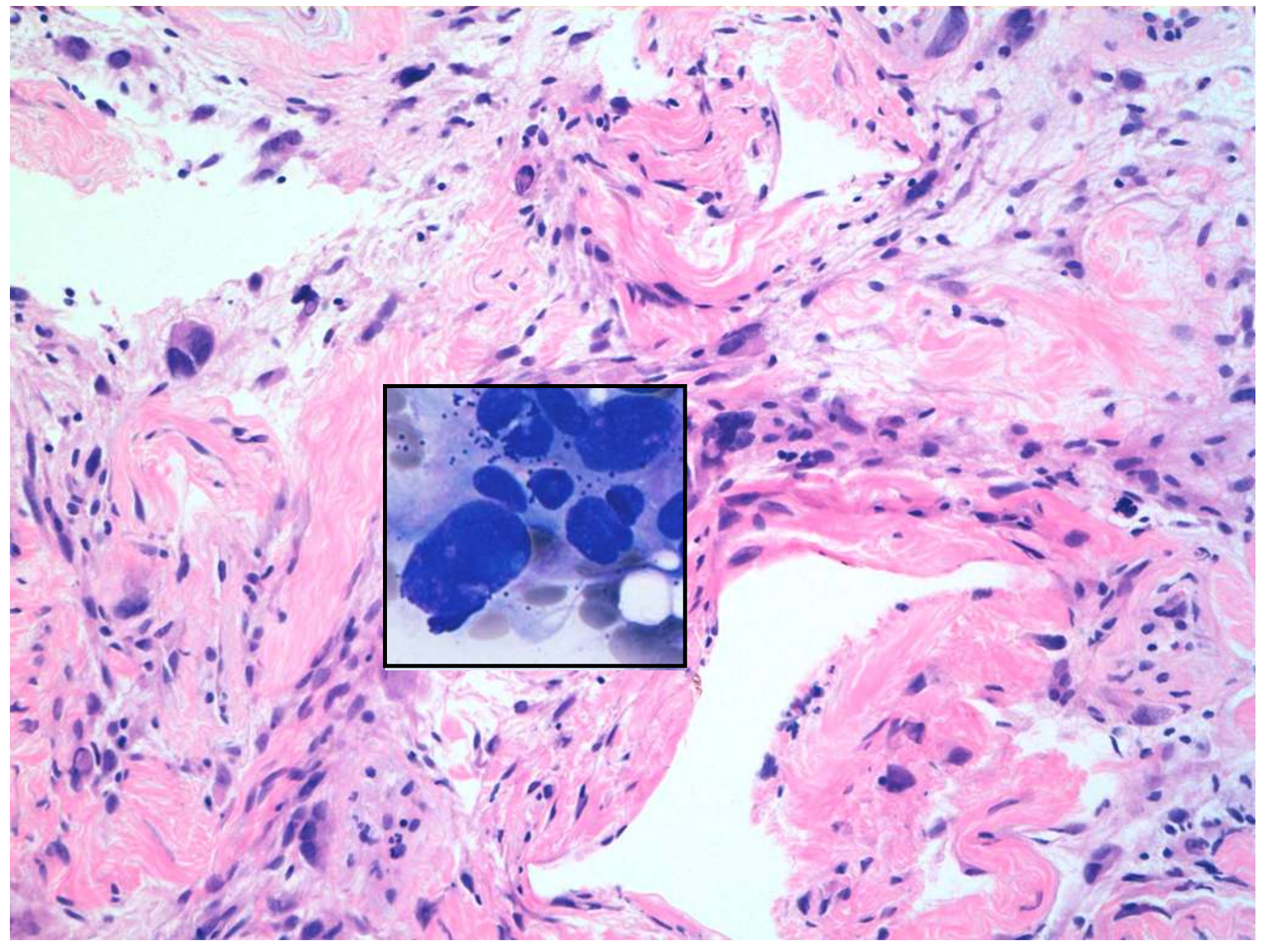


Diagnostico diferencial de lesiones fusocelulares benignas de la mama

	CD34	DESMINA	ACTINA	VIMENTINA	Bcl-2
TUMOR FIBROSO SOLITARIO	+	-	+/-	+	+
HIPERPLASIA PSEUDOANGIO-MATOSA ESTROMAL	+	+	+	+/-	+
MIOFIBROBLASTOMA	+	+	+/-	+	+
LIPOMA CÉLULAS FUSIFORMES	+	-	-	+	+







Leiomiosarcoma

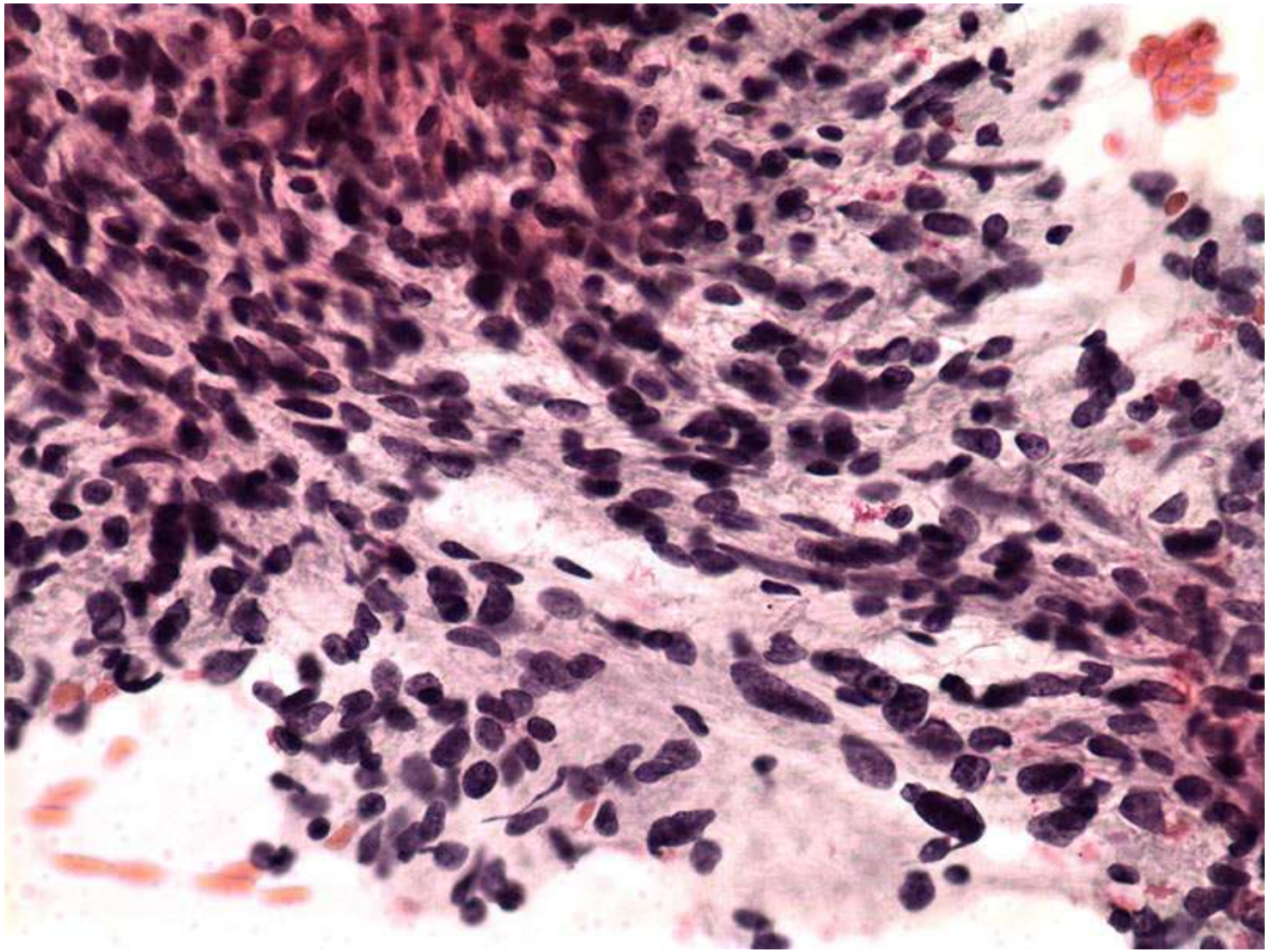


Table 2. Classification of BSCT of the mammary stroma

Fibroblastic tumors
- Benign spindle cell tumor N.O.S.
- Benign spindle cell tumor with adipocytic component (spindle cell lipoma-like tumor)
- Solitary fibrous tumor

Myofibroblastic tumors
- Myofibroblastoma
- Leiomyoma?

Fibrohistiocytic tumors
- Benign fibrous histiocytoma

Mixed tumors
- Benign spindle cell tumor + Solitary fibrous tumor
- Myofibroblastoma + Solitary fibrous tumor
- Myofibroblastoma + Spindle cell lipoma-like tumor
- Myofibroblastoma + Leiomyoma

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[2]Sikl's Department of Pathology, Lab. Spec. Diagnost., Medical Faculty Hospital, Pilsen, Czech Republic; [3]Servizio di Anatomia Patologica, IRCCS-Ospedale "Casa Sollievo della Sofferenza", San Giovanni Rotondo (FG), Italy

Summary

Purely benign mesenchymal spindle cell neoplasms of the breast are currently labeled under various terms in the literature (benign spindle cell tumor, fibroma, spindle cell lipoma, myofibroblastoma, solitary fibrous tumor, myogenic stromal tumor). The lack of strict diagnostic criteria to clearly indicate such mesenchymal neoplasms is the main reason which generated the risk of terming the same lesion under different names or, conversely, of collecting different types under the same term. Although such neoplasms exhibit morphological and immunophenotypical heterogeneity, they actually represent variations of the same tumor entity, likely arising from the uncommitted vimentin$^+$/CD34$^+$ fibroblasts of the mammary stroma, capable of multidirectional mesenchymal differentiation.

To cover the entire spectrum of such lesions, the term "benign spindle cell tumors (BSCTs) of the mammary stroma" is advocated. BSCTs can be subtyped into four main groups by light microscopy (LM) and immunocytochemistry (ICC): fibroblastic, myofibroblastic, fibrohistiocytic, and mixed forms. A simple and practical approach to a nosologically correct diagnosis and a list of differential diagnoses are presented. The awareness of the diversity of morphological and immunophenotypical features of BSCTs of the mammary stroma, including uncommon variants, is helpful to avoid confusion with other monomorphic bland-looking benign and malignant spindle cell tumors and tumor-like lesions of the breast.

CANCER
CYTOPATHOLOGY

Fine-Needle Aspiration Cytology of Mammary Adenomyoepithelioma

A Study of 12 Patients

BACKGROUND. Adenomyoepithelioma (AME) of the breast is a rare neoplasm that is characterized by a biphasic proliferation of epithelial and myoepithelial cells. Incomplete excision of this lesion is associated with a greater risk of recurrence. Although the histology of AME is well characterized, its cytomorphology has not been assessed in a large series.

METHODS. The authors conducted a retrospective evaluation of cytologic findings in fine-needle aspiration biopsy (FNAB) material from 12 patients with histologically proven benign AMEs of the breast.

RESULTS. All aspirates were moderately to highly cellular with large clusters composed of epithelium and myoepithelium. The myoepithelium was admixed with the ductal cells or was present as naked bipolar nuclei in 75% of samples. Small clusters or dispersed myoepithelial cells with epithelioid morphology were also present and showed intranuclear and intracytoplasmic vacuoles in one-third of samples. Mild-to-moderate nuclear atypia was noted in some samples, but no necrosis or mitoses were seen. None of the patients were diagnosed originally with AME: Two tumors were classified as benign and consistent with fibroadenoma, 6 tumors were atypical, 2 tumors were suspicious for carcinoma, and 2 tumors were positive for malignant cells.

CONCLUSIONS. Because of the varied histology of AME, cytologic diagnosis of this neoplasm can be very challenging. Accurate identification of the myoepithelium is crucial to avoid misinterpretation as carcinoma. Conservative diagnosis and further histologic evaluation is recommended for these patients. ***Cancer (Cancer Cytopathol)* 2006;108:250–6.** © *2006 American Cancer Society.*

Solitary Fibrous Tumor:
A Study of Cytologic Features of Six Cases Diagnosed by Fine-Needle Aspiration

Amy C. Clayton, M.D.,* Diva R. Salomão, M.D., Gary L. Keeney, M.D., and Antonio G. Nascimento, M.D.

Solitary fibrous tumor (SFT) is a spindle-cell neoplasm most often presenting as a pleural-based tumor but increasingly recognized in other locations. Few reports have described the cytologic features of SFTs. Six cases of SFT diagnosed by fine-needle aspiration (3 pleura, 2 retroperitoneum, and 1 orbit) were identified in the Mayo Clinic files. The smears (Papanicolaou-stained) and corresponding histologic specimens were reviewed. Immunohistochemical staining for CD34 was performed in all cases. The cytologic findings were similar in all cases. The tumor cells were oval to polygonal, with cellularity ranging from scant to moderate. The background contained irregular ropy fragments of collagen and a few inflammatory cells. Most cells were dispersed singly, but all cases contained irregular, loose aggregates of cells enmeshed in a collagenous matrix. The nuclei were uniformly bland, with evenly distributed, finely granular chromatin. All cases were immunoreactive for CD34. SFT has distinctive cytologic features that allow diagnosis in cytologic specimens with the help of appropriate immunocytochemical stains on accompanying tissue biopsy specimens. Distinctive cytologic findings predictive of clinical behavior were not identified. Diagn. Cytopathol. 2001;25:172–176.

Key Words: cytology; diagnosis; fine-needle aspiration; immunohistochemistry; solitary fibrous tumor

(FNA).[7–13] The descriptions include a variably cellular aspirate composed of spindled cells with bland nuclear features. One report emphasized the importance of a cell block and immunohistochemical studies for confirming a cytologic impression, suggesting that the cytologic features are not specific for SFT.[7] Because many SFTs have benign clinical behavior,[3] it would be helpful to predict on the basis of cytologic features alone which neoplasms could be followed conservatively. One report indicated that 2 clinically malignant SFTs, compared with 4 clinically benign SFTs, had aspirates that were more cellular, with an increase in the number of single cells.[9]

To characterize further the cytologic features of SFT and to determine whether any features predictive of clinical behavior could be identified, we reviewed 6 additional cases.

Materials and Methods

Six patients with a primary or recurrent SFT initially assessed by FNA were identified in the Mayo Clinic cytology

Estudio citológico

Los extendidos muestran densa celularidad a expensas de elementos fusiformes de escaso citoplasma y núcleos ovoides o redondeados con marcada anisocariosis, frecuente moldeamiento, nucleolo ausente y cromatina gruesa regularmente distribuida, lo que les confiere un aspecto hipercromático. Las mitosis son frecuentes. No se observan células multinucleadas ni pleomórficas, hendiduras ni pseudoinclusiones nucleares. En otras extensiones resulta aparente una trama vascular a expensas de capilares finos ramificados. En relación con estos, y también distribuidas de forma irregular entre las células descritas, se identifican numerosas células de aspecto dendrítico con prolongaciones finas, largas y múltiples que emergen de un citoplasma anfófilo o eosinófilo. El núcleo es central, vesicular, de borde liso, y la cromatina es fina y regularmente distribuida. Asimismo hemos observado escasas células fusiformes de tipo bipolar (figs. 3 a 8).

Carcinoma mioepitelial: Hipercelularidad con celulas sueltas y grandes fragmentos de tejido. Tridimendional con considerable superposicion nuclear y apelotonamiento. Fragmentos metacromaticos estromales ocasionalmente entremezclados con celulas neoplasicas.

Celulas neoplasicas pred. fusocelualres con cantidades variables de citoplasma palido wispy con bordes citoplasmicos rotos. Cels sueltas epitelioides o plasmocitoides . Los nucleos van de ovales a elongadas y fusiformes. Y de tamaño variable.

La cromatina es gruesa granular y nucleolo evidente. Cels binucleadas y multinucleadas y algunas mitosis.

Discussion: Myoepithelial carcinomas (or malignant myoepitheliomas) are rare malignant salivary gland neoplasms in which the tumor cells show myoepithelial differentiation. The entity was first described by Stromeyer et al. in 1975. The tumor was included in the WHO classification of salivary gland neoplasms as a distinct clinicopathologic entity in 1991. About 60% to 70% of myoepithelial carcinomas develop in a benign mixed tumor (carcinoma ex pleomorphic adenoma), and the remainder arise de novo. Histologically, malignant myoepitheliomas are composed of one or several cell types: spindle, plasmacytoid, epithelioid, and clear cells. Frequently, one of the cell types predominates. The neoplastic cells grow either as multiple nodules or as large solid sheets separated by variable amounts of intervening hyaline or myxoid stroma. By far, the multinodular growth pattern is more prevalent. The cytologic features generally reflect the histology. The cytologic smear can show spindle, epithelioid or plasmacytoid cells. Scant fragments of metachromatic stroma intermixed with the neoplastic cells might be observed in the cytologic specimens of malignant myoepithelioma, regardless of the composition of the cell types.

sue fragments appear