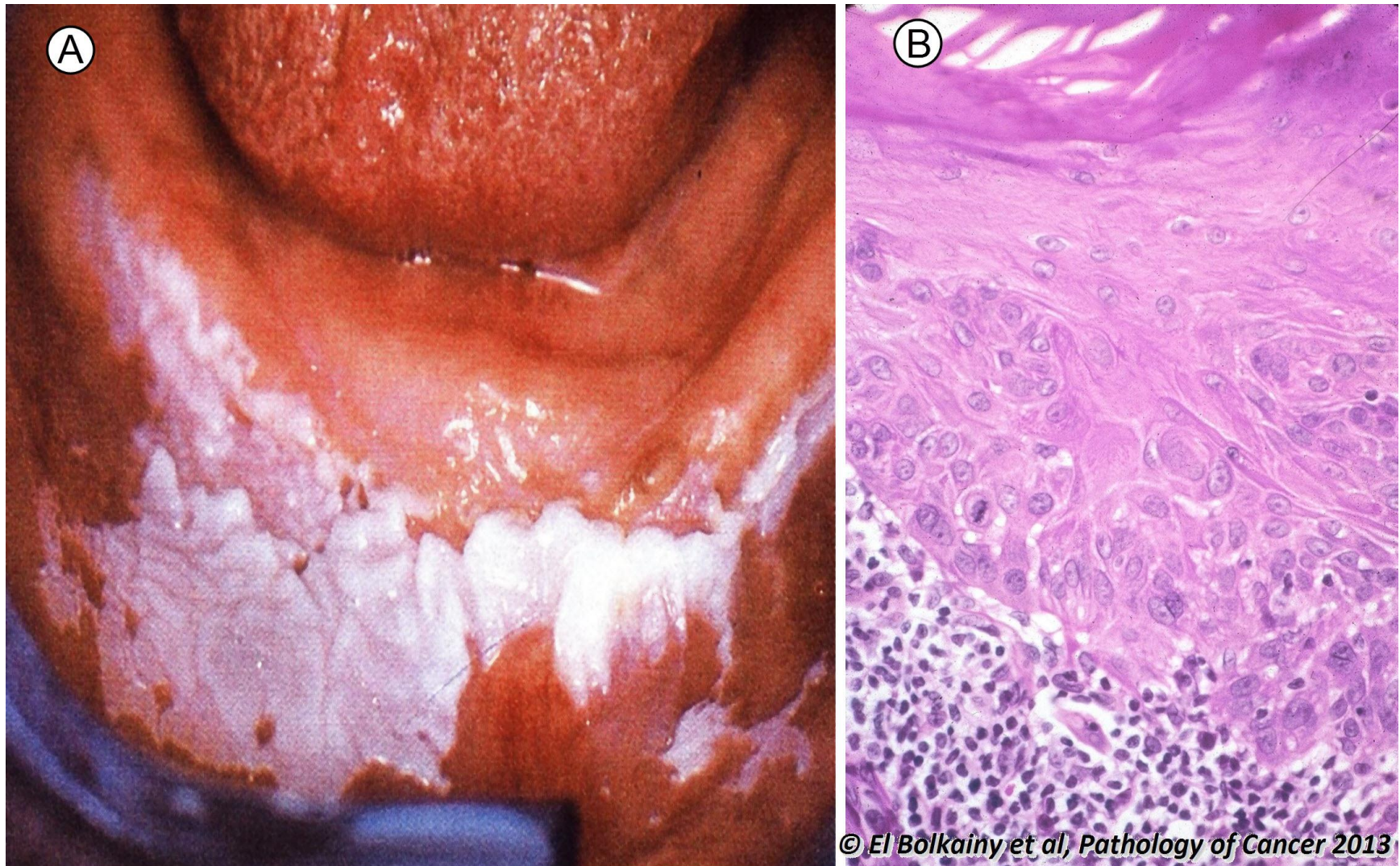


Chapter 12

Tumors of oral cavity

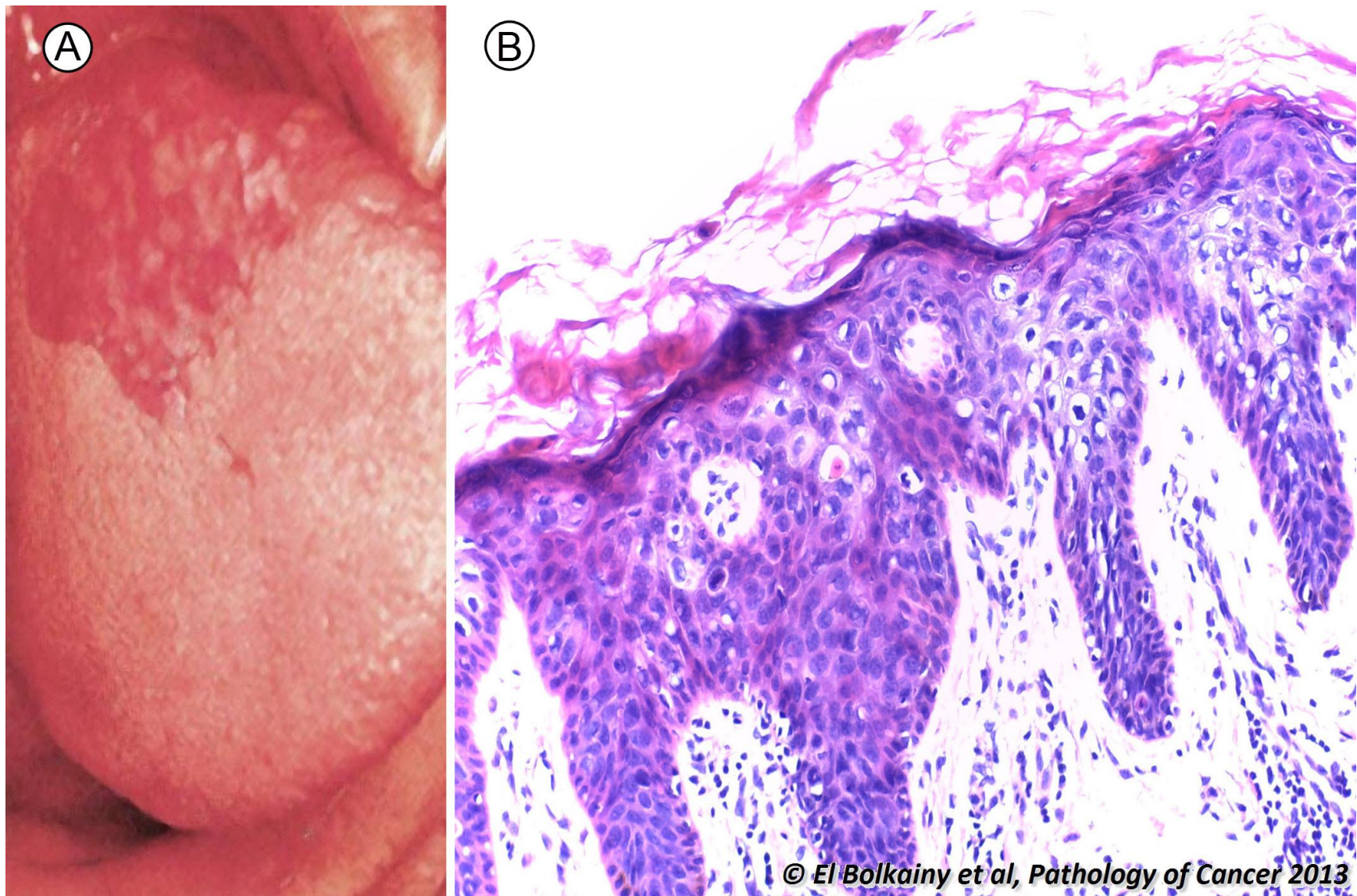
12.1 Leukoplakia.



Picture 12-1 **Leukoplakia.** **A** A white patch of mucosa, contrary to monilia infection, is not removed by scrapping. **B** Histologically, leukoplakia corresponds to dysplasia characterized by hyperkeratosis, atypia short of malignancy affecting lower layers of epithelium.

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12.2 Erythroplasia.



Picture 12-2 Erythroplasia. **A** A red patch of mucosa usually indicates an underlying carcinoma in situ (CIS). **B** Anaplastic malignant cells are evident invading the epithelium focally or diffusely, but the basement membrane is not infiltrated.

12.3 Lichen planus.



Picture 12-3 Lichen planus. **A** Grossly appear as white mucosal striae (annular or lacy pattern). **B** The histology is characterized by hyperkeratosis, loss of basal layer of epithelium with saw-tooth pattern formation and associated lymphocytic reaction.

12.4 Microinvasive carcinoma.

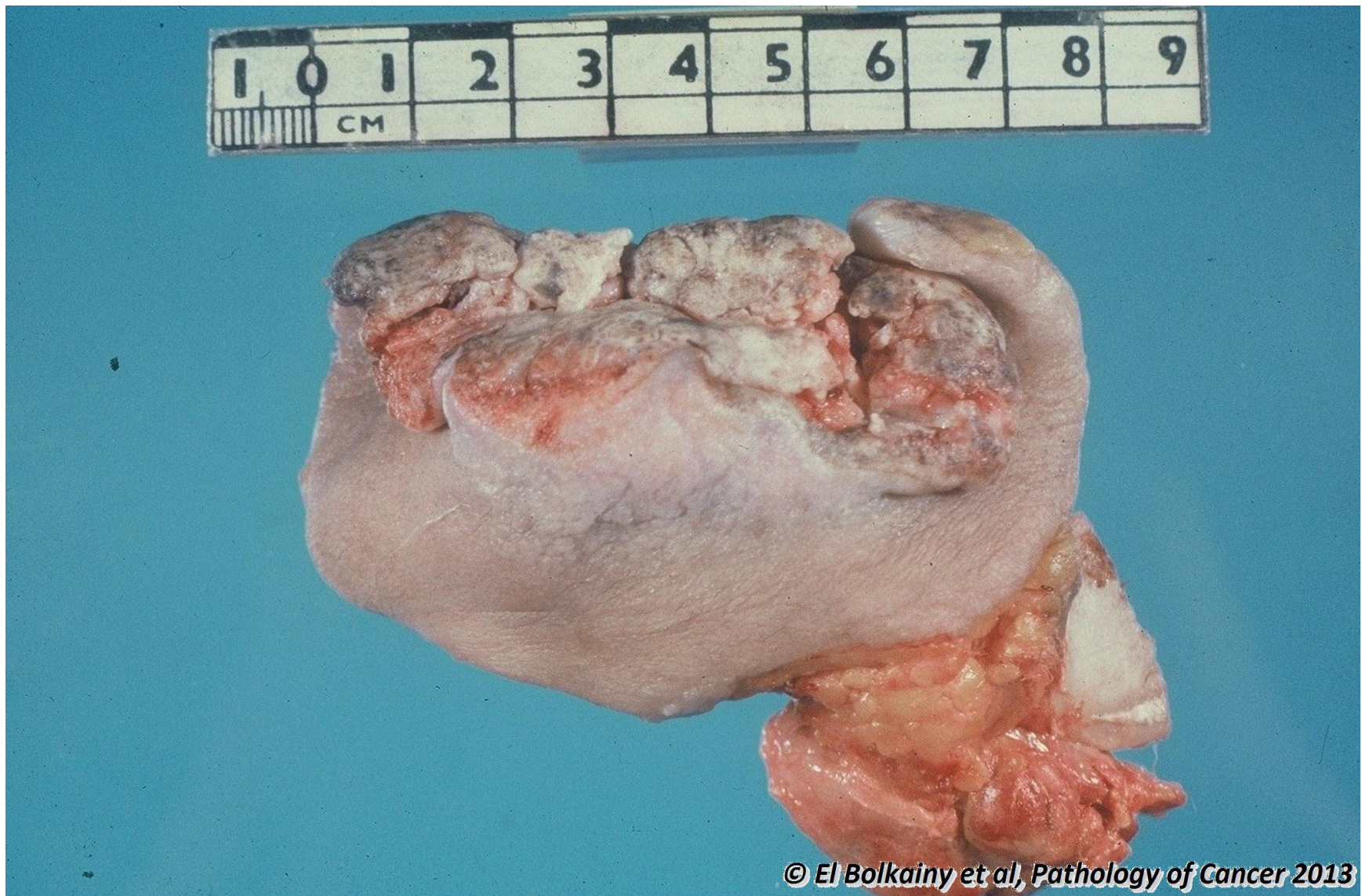


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**Picture
12-4**

Microinvasive carcinoma. In case of dysplasia and CIS, careful study of epithelial stromal interface may show microinvasion. Dysplasia and CIS are only 200 microns thick. Any irregular squamous proliferation of millimeter size is usually a microinvasive carcinoma, particularly if it contains cell nests.

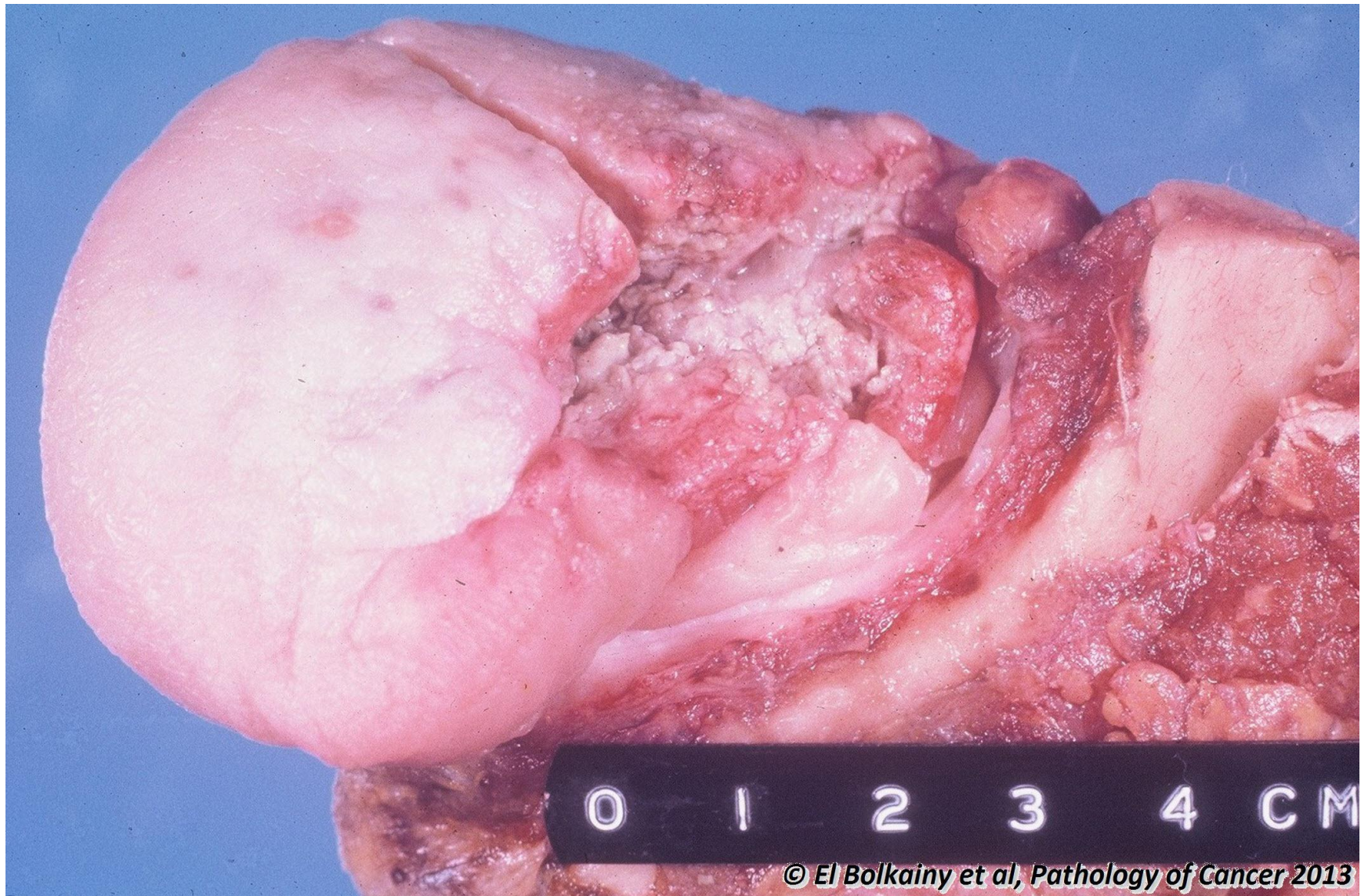
12.5 Squamous cell carcinoma of the lip.



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Picture 12-5 Squamous cell carcinoma of the lip. Grossly, a large ulcer with everted edge and necrotic floor. Radical en-block excision of tumor with clearance of surrounding normal tissue, as well as, regional lymph nodes.

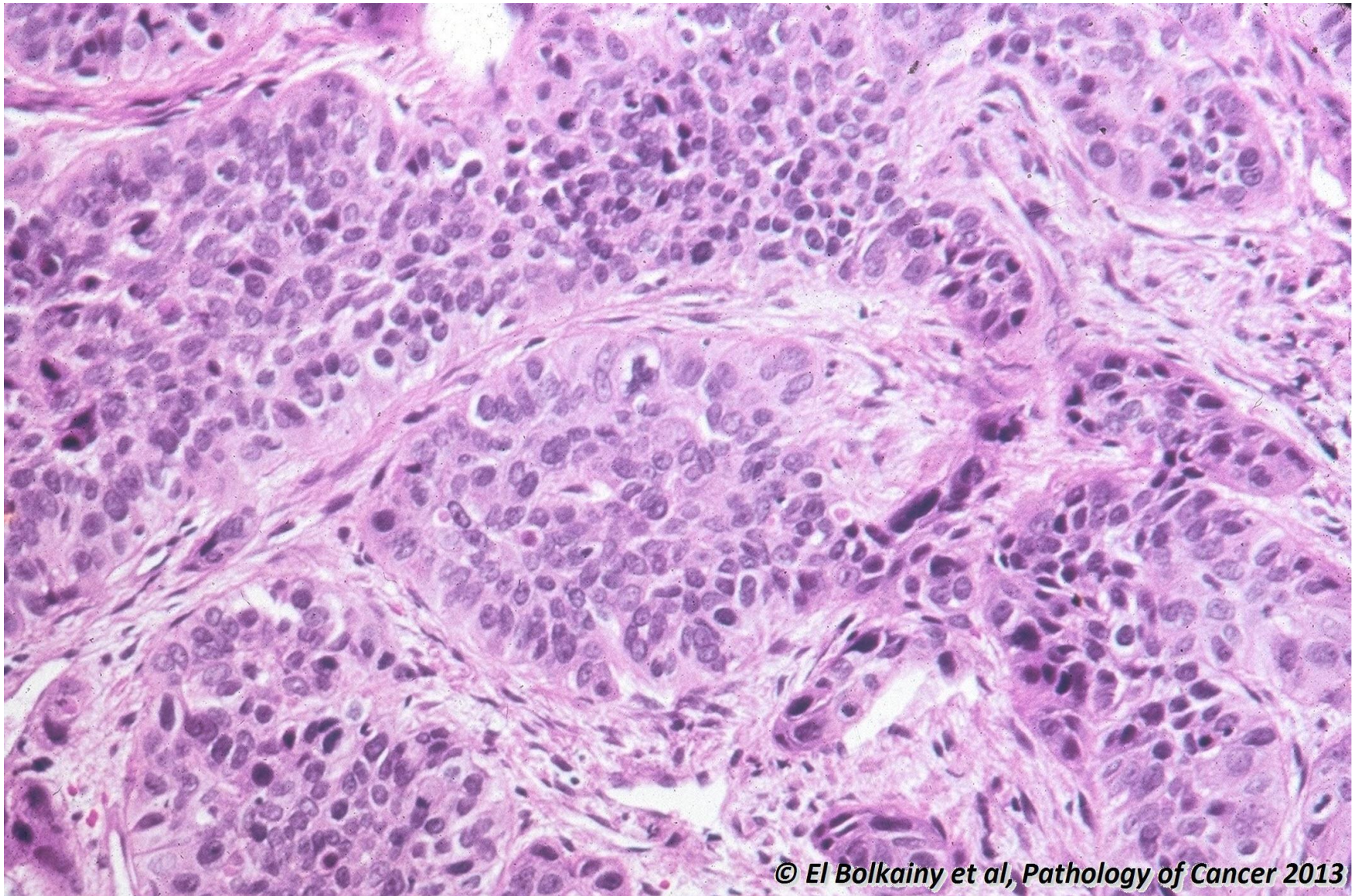
12.6 Squamous cell carcinoma of the tongue.



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Picture 12-6 Squamous cell carcinoma of the tongue. An Advanced ulcerative tumor adequately excised with a segment of mandible and regional lymph nodes.

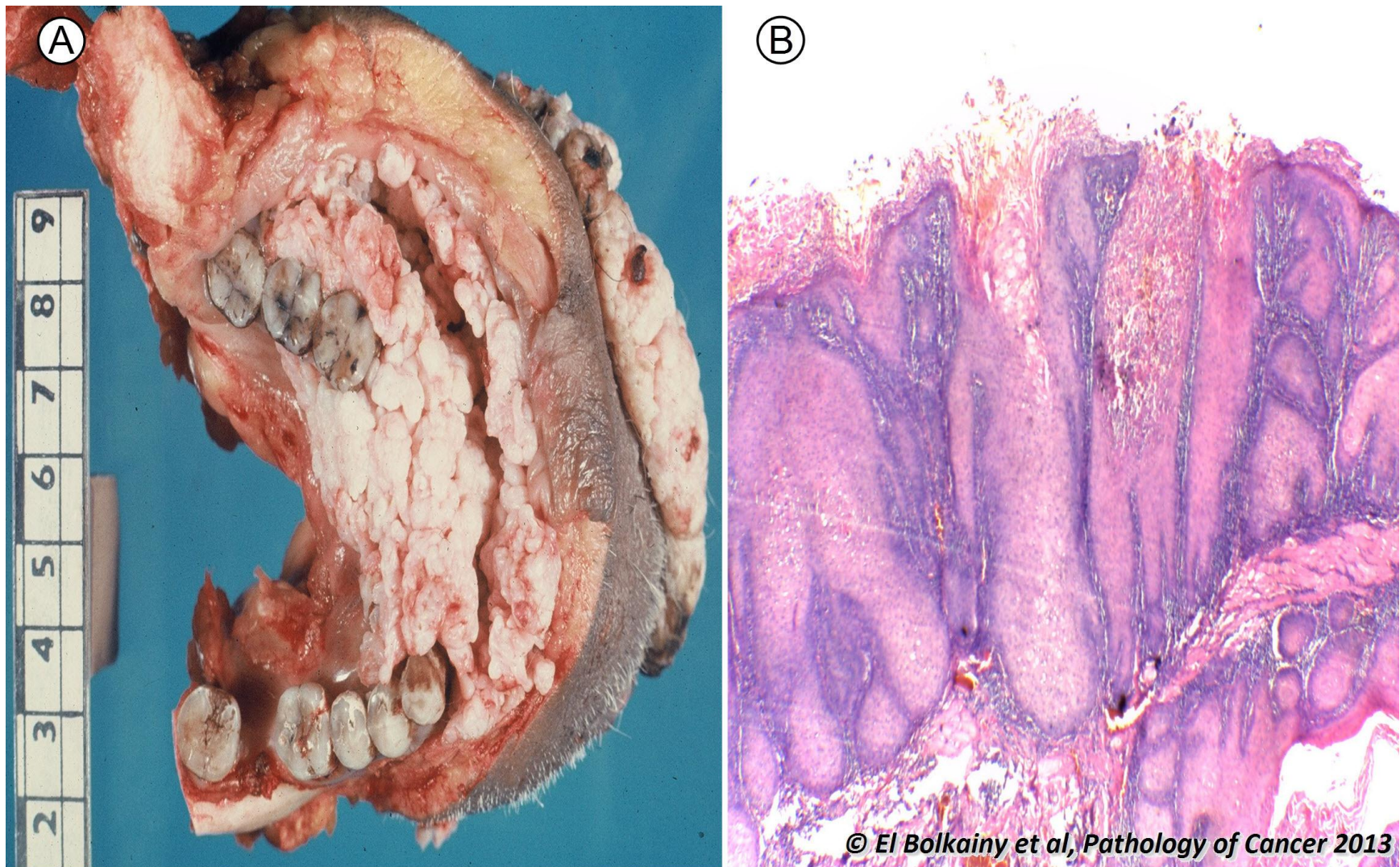
12.7 Invasive squamous cell carcinoma (grade 2).



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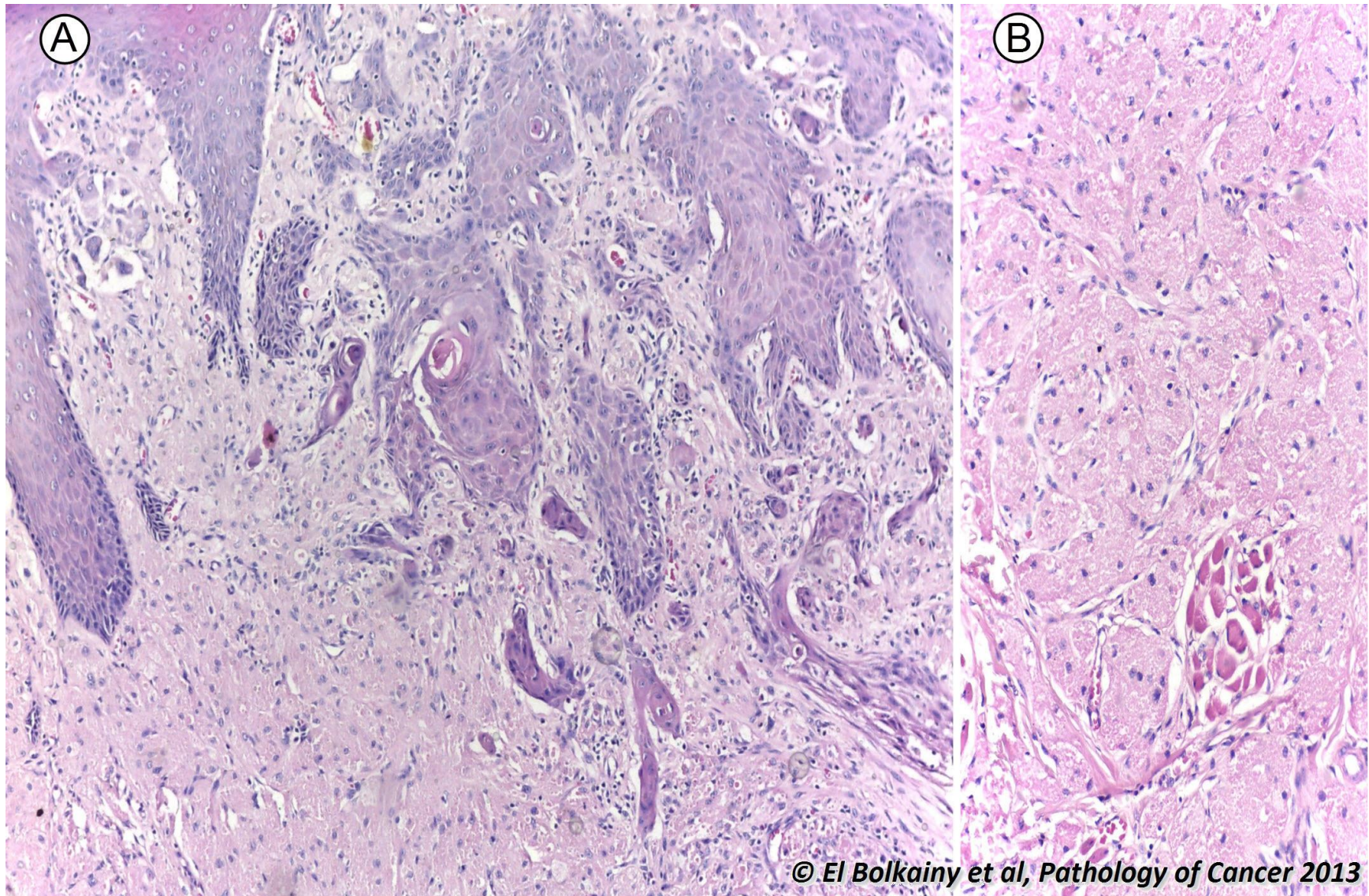
Picture 12-7 Invasive squamous cell carcinoma (grade 2). Note the solid cohesive pattern, pointed edges of the invasive groups and cytoplasmic eosinophilia due to keratinization.

12.8 Verrucous squamous cell carcinoma of oral cavity



Picture 12-8 Verrucous squamous cell carcinoma of oral cavity (lower anterior sulcus). **A** Note the filamentous whitish appearance. An adequate excision necessitates mandibular resection. **B** The histology shows filamentous peg-shaped pattern with hyperkeratosis. This tumor is only locally malignant (recurrent but non-metastasizing).

12.9 Granular cell tumor, histology.

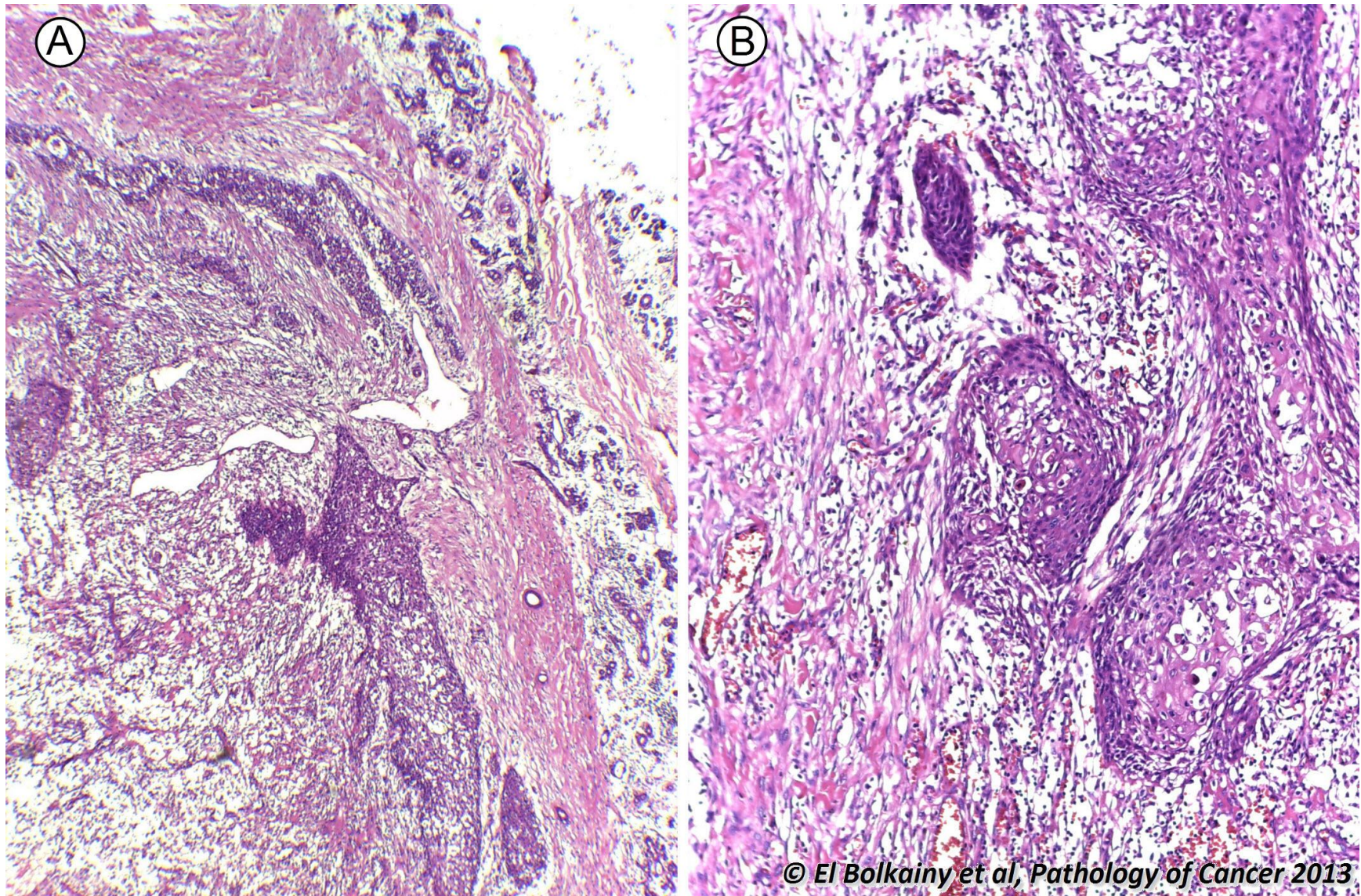


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**Picture
12-9**

Granular cell tumor, histology. A and B It is composed of rounded cells with abundant eosinophilic granular cytoplasm (S-100 +). Growth factors produced by the tumor cause pseudoepitheliomatous hyperplasia which may be misdiagnosed as squamous carcinoma.

12.10 Necrotizing sialometaplasia.

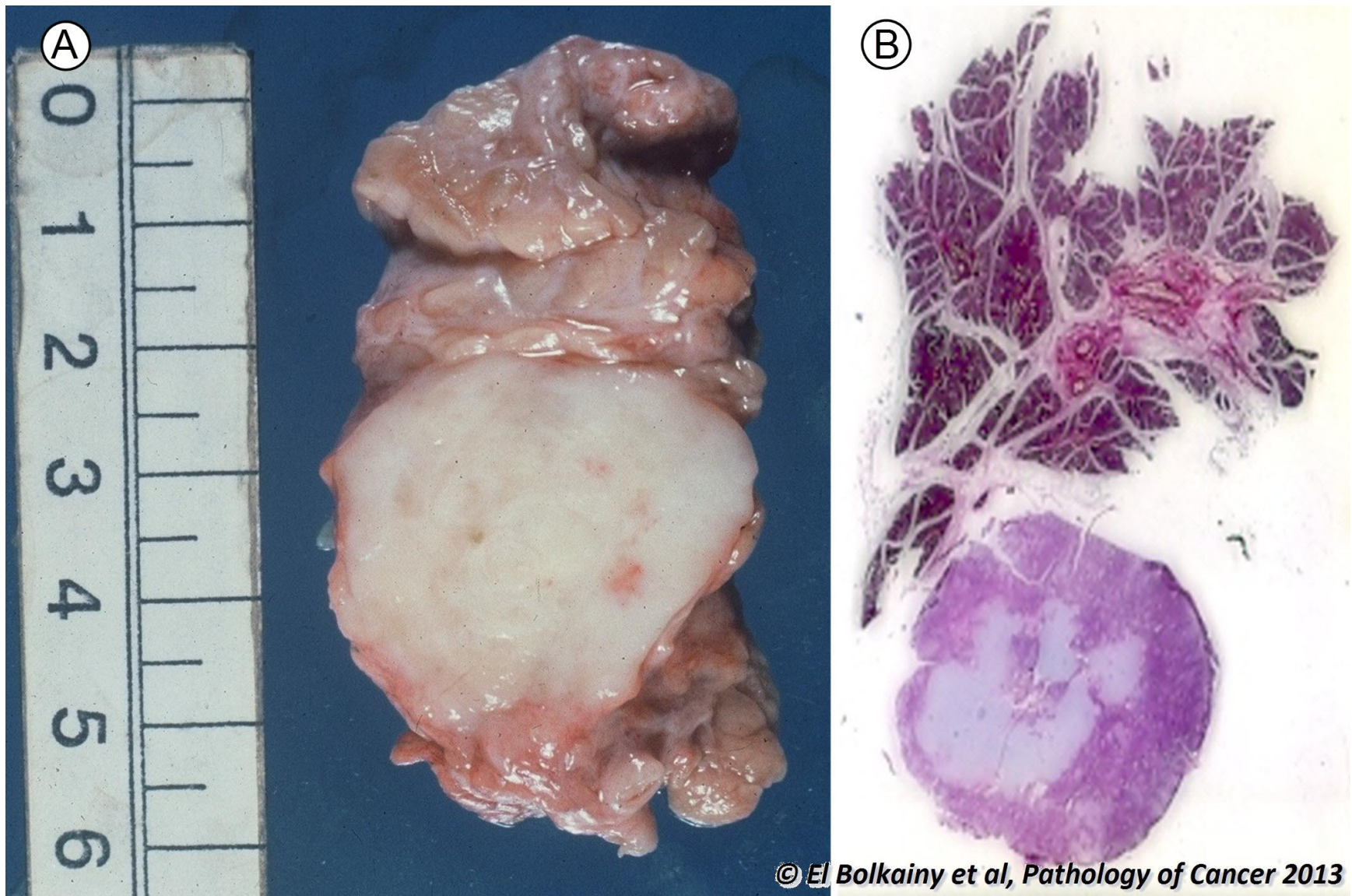


**Picture
12-10**

Necrotizing sialometaplasia. Minor salivary glands of hard palate are most commonly affected, the etiology is probably traumatic. There is focal necrosis, inflammatory reaction and squamous metaplasia of salivary ducts which may be confused with malignancy.

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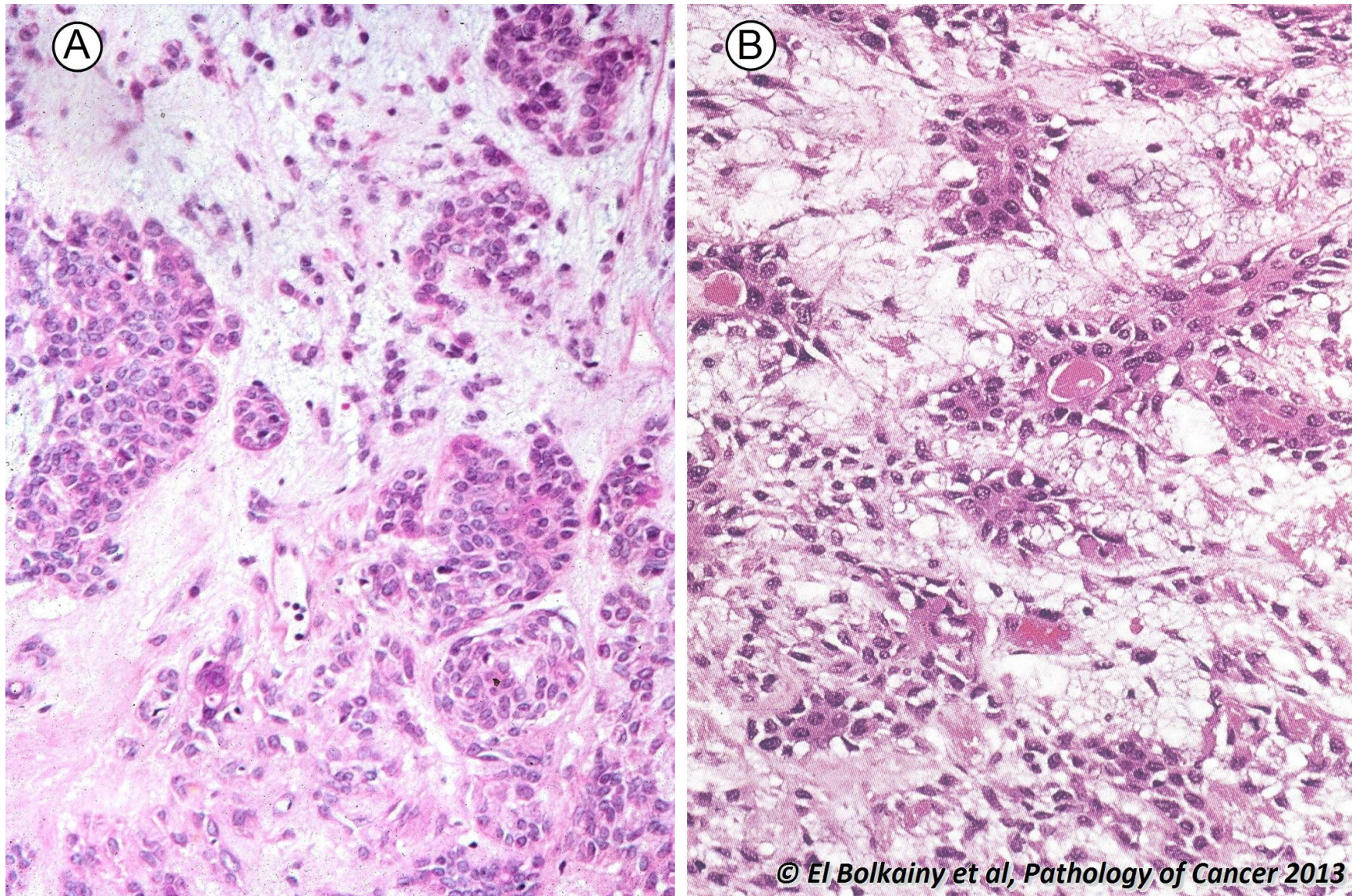
12.11 Pleomorphic adenoma of parotid gland.



Picture 12-11

Pleomorphic adenoma of parotid gland. A Grossly appear as an encapsulated tumor, glistening white cut section. B A computer scan of whole tissue section showing the tumor and normal gland.

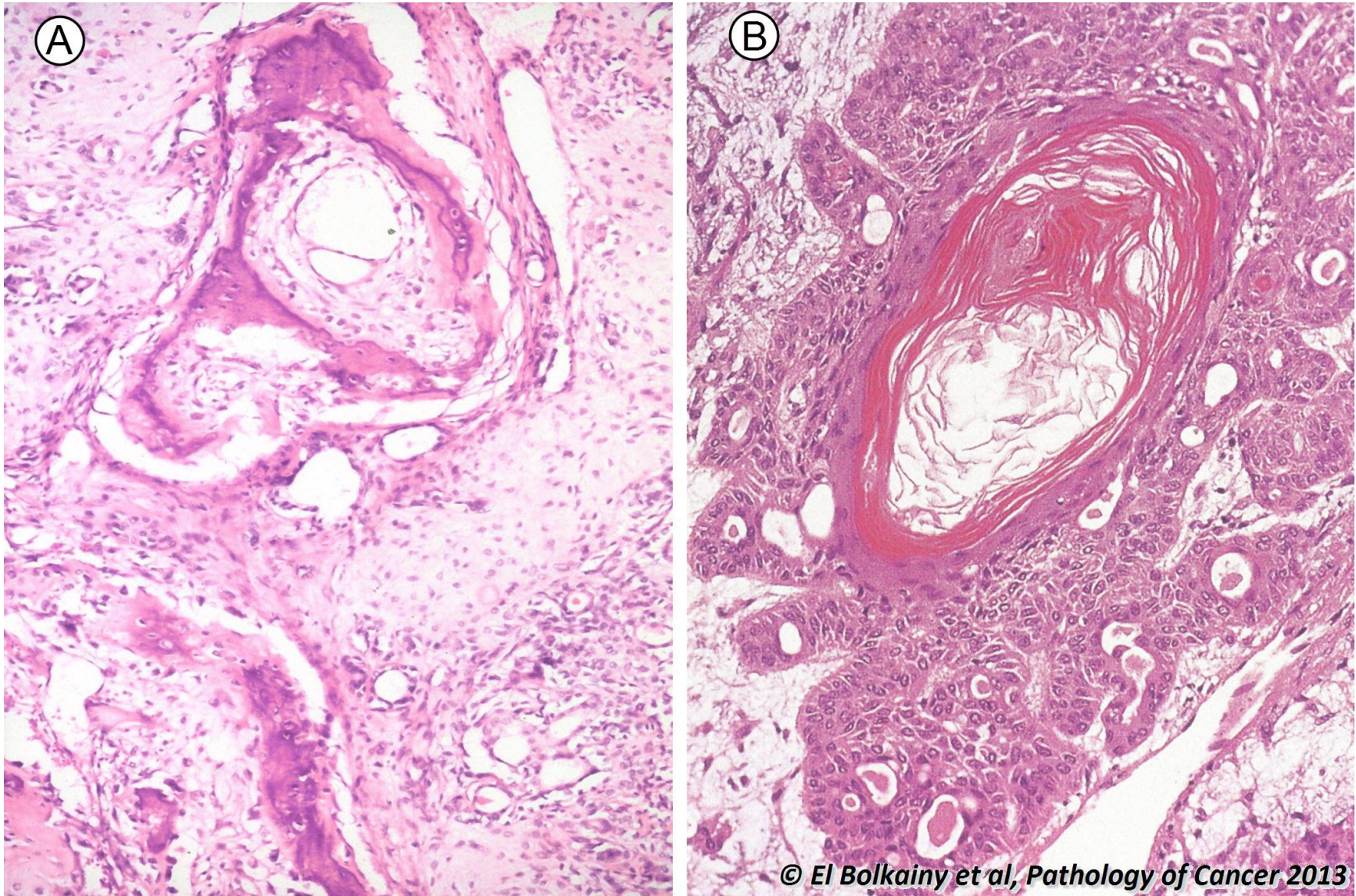
12.12 Pleomorphic adenoma, histology.



Picture 12-12 Pleomorphic adenoma, histology. **A** and **B** Mixed elements of ductal epithelium, myoepithelium and myxoid (pseudocartilagenous) stroma. The latter is a product of myoepithelium.

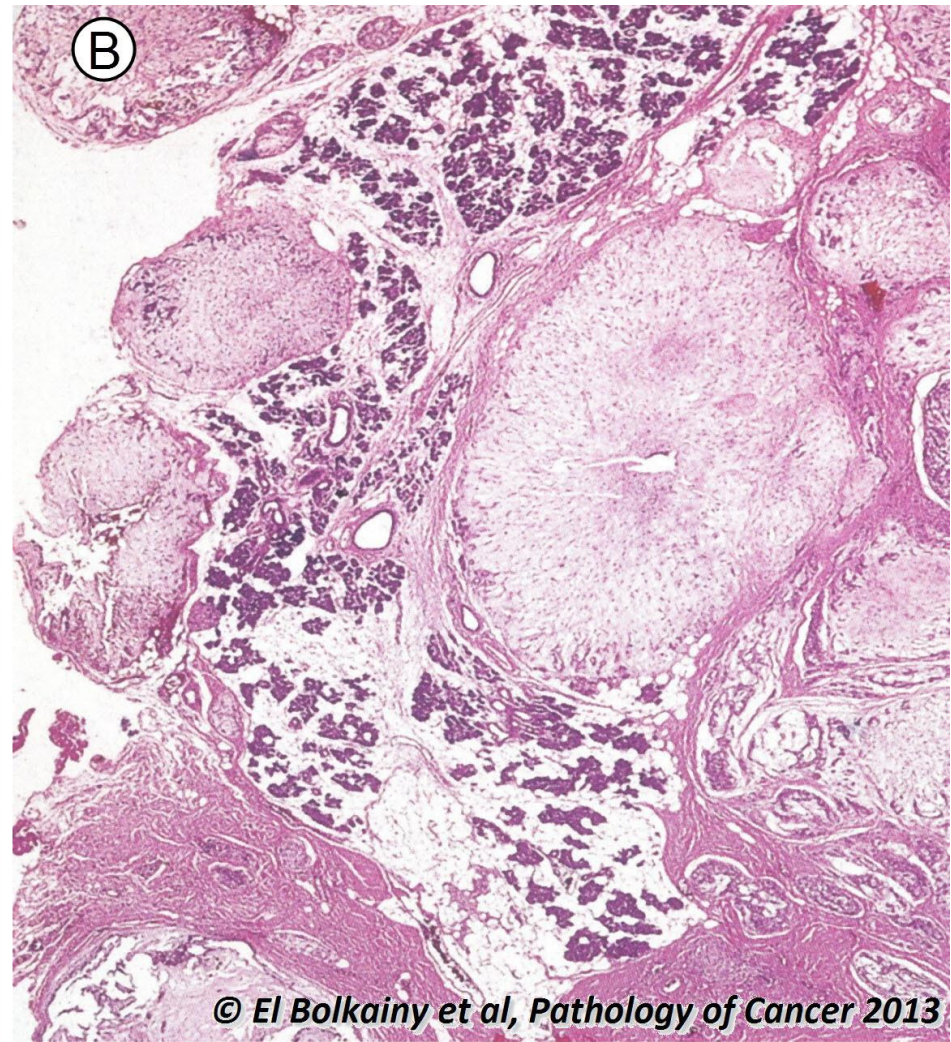
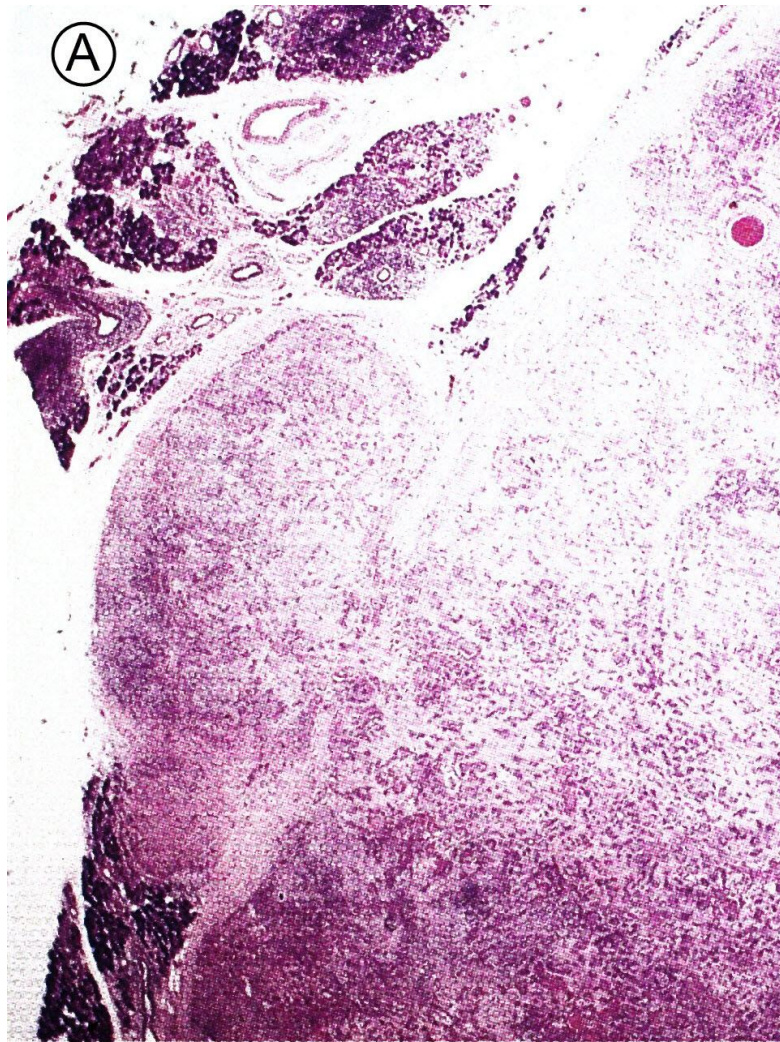
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12.13 Pleomorphic adenoma, metaplastic changes.



Picture 12-13 Pleomorphic adenoma, metaplastic changes. **A** and **B** The epithelial/myoepithelial stem salivary stem cell can rarely undergo several types of transdifferentiation (metaplasia) into squamous epithelium, bone, true cartilage and fat cells.

12.14 Pleomorphic adenoma, recurrent.

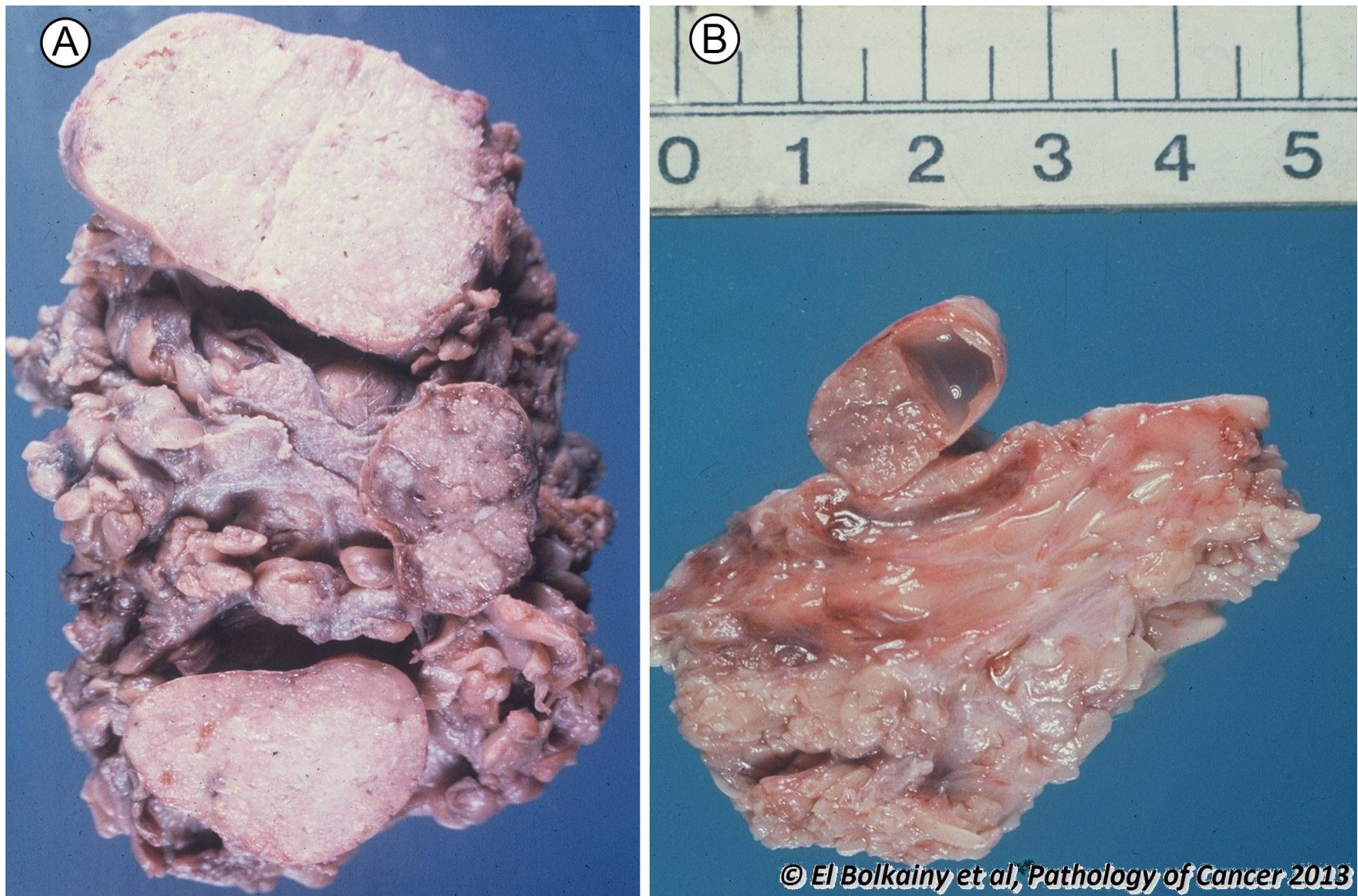


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Picture 12-14

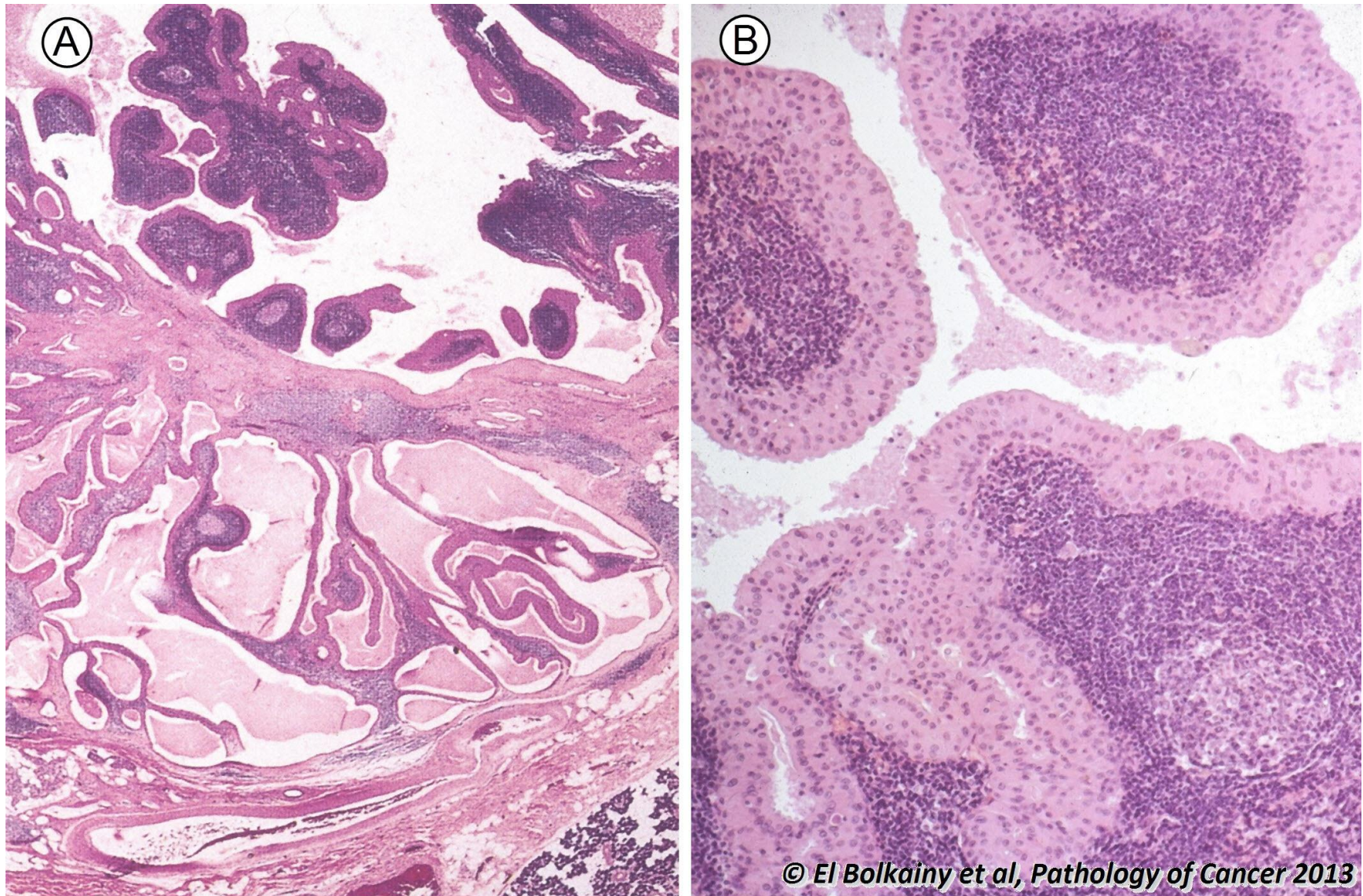
Pleomorphic adenoma, recurrent. **A** The tumor usually produce protrusions into the capsule, hence, any enucleation will lead to recurrence. **B** Rupture of the capsule during surgery will result in multiple recurrences in the surgical wound (seedling).

12.15 Warthin tumor, gross features.



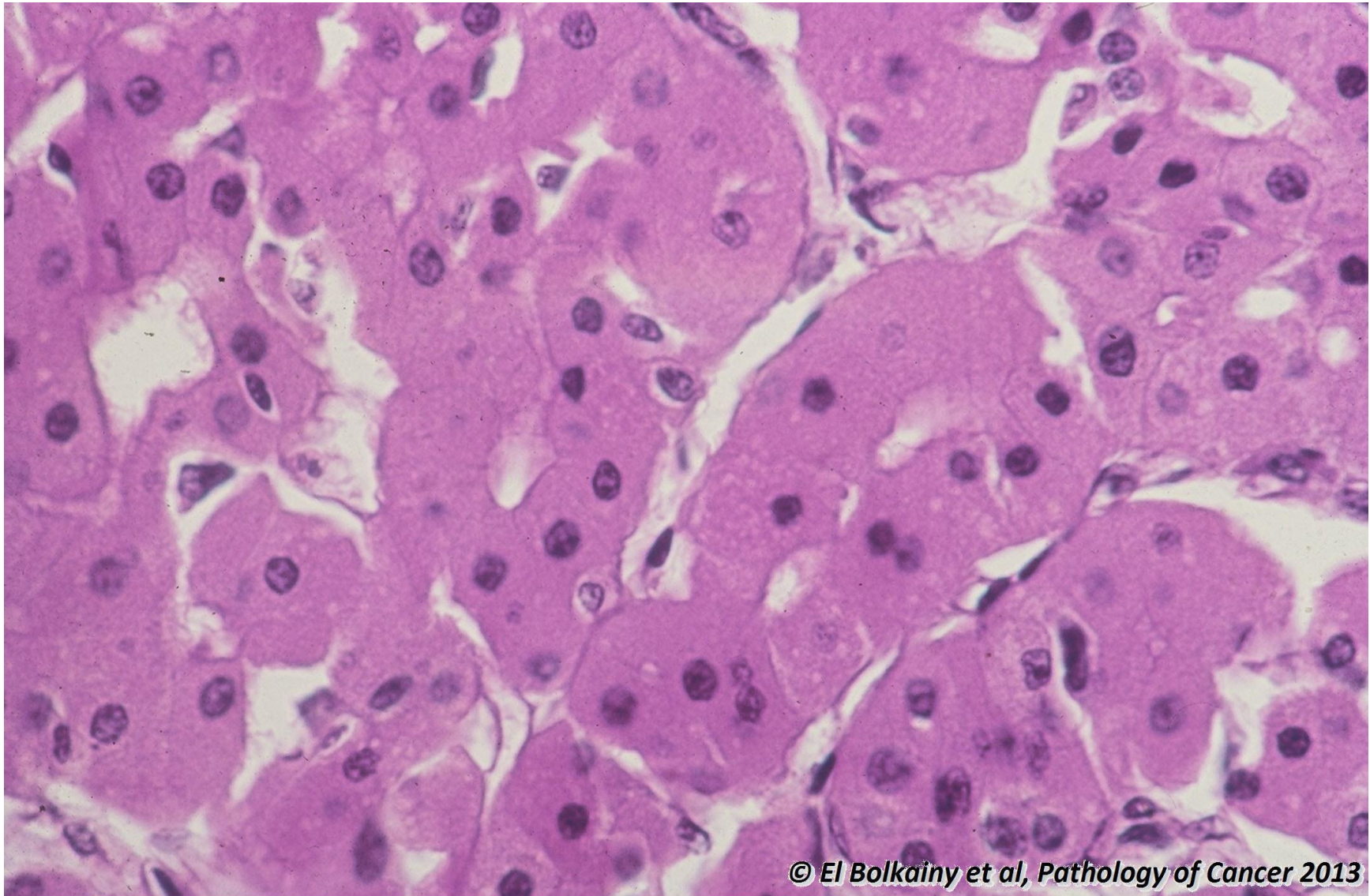
Picture 12-15 Warthin tumor, gross features. **A** Solid tumor, gray white in color. **B** Cystic tumor, a rather common appearance, associated with papillary tumor projections into the cyst.

12.16 Warthin tumor, histology.



Picture 12-16 Warthin tumor, histology. **A** Low power, cystic tumor with papillary intracystic pattern. **B** High power, the tumor is covered by a double layer of columnar cells with bland nuclei and stroma rich in lymphocytes.

12.17 Oncocytoma, histology.

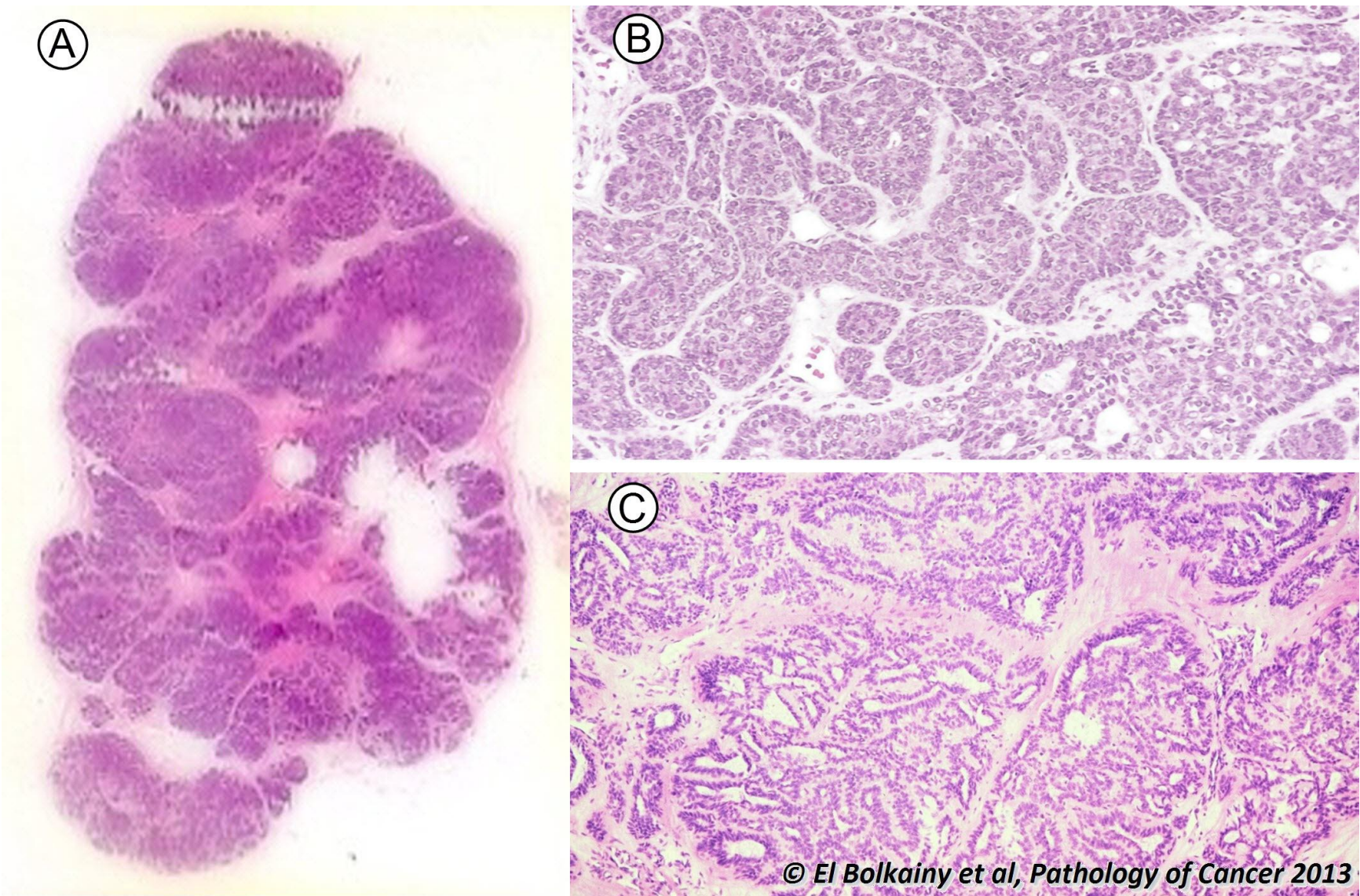


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**Picture
12-17**

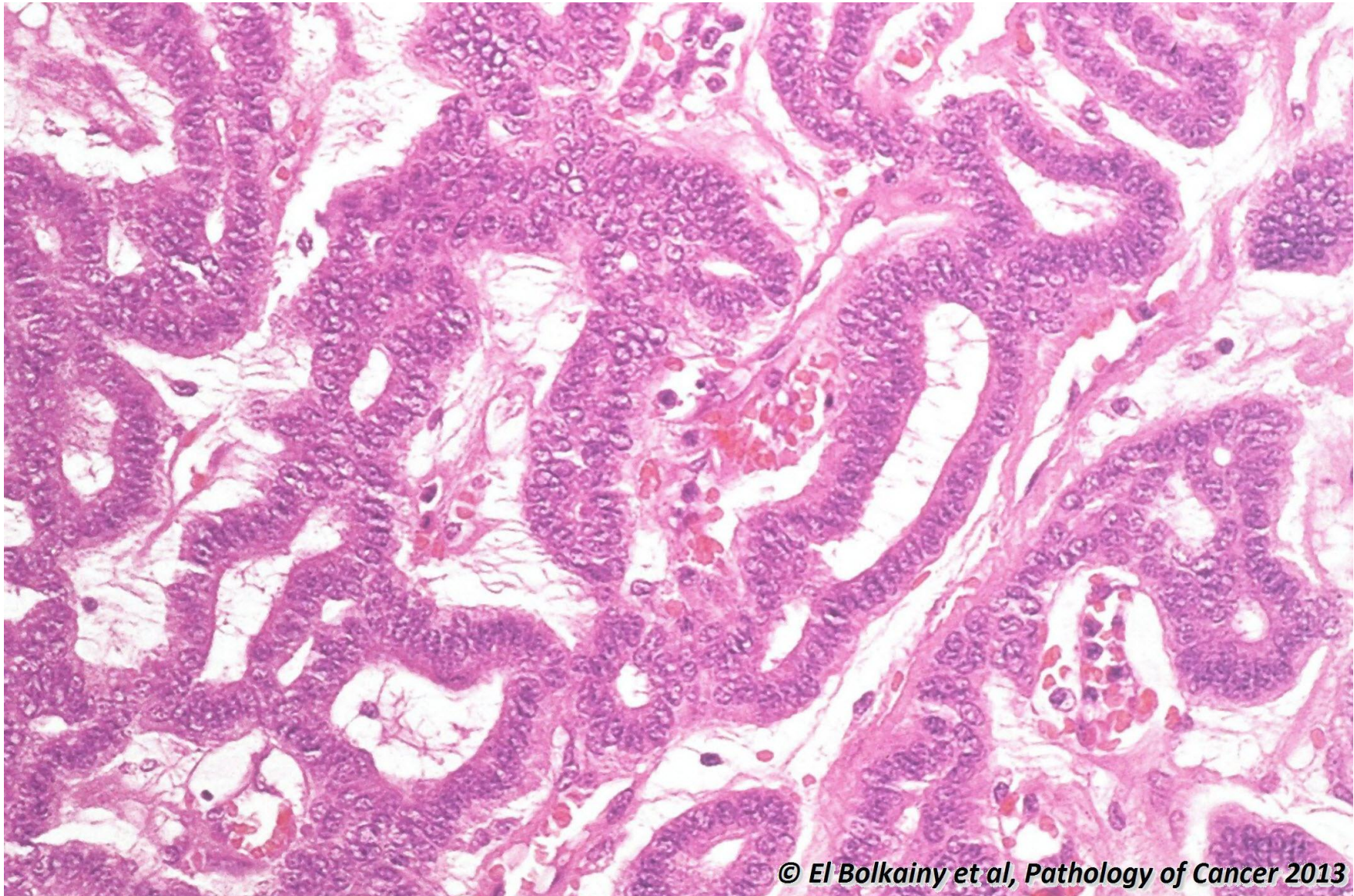
Oncocytoma, histology. Tumor cells have an abundant eosinophilic granular cytoplasm with small uniform central nuclei and trabecular pattern. No cytologic atypia.

12.18 Basal cell adenoma, histology.



Picture 12-18 Basal cell adenoma, histology. **A** Computer scan showing a multinodular basaloid tumor. **B** Solid type, showing solid sheets of thick trabeculae. **C** Tubular type with distinct tubular differentiation. In both, distinct tubular differentiation and eosinophilic hyaline basement membrane material may be present.

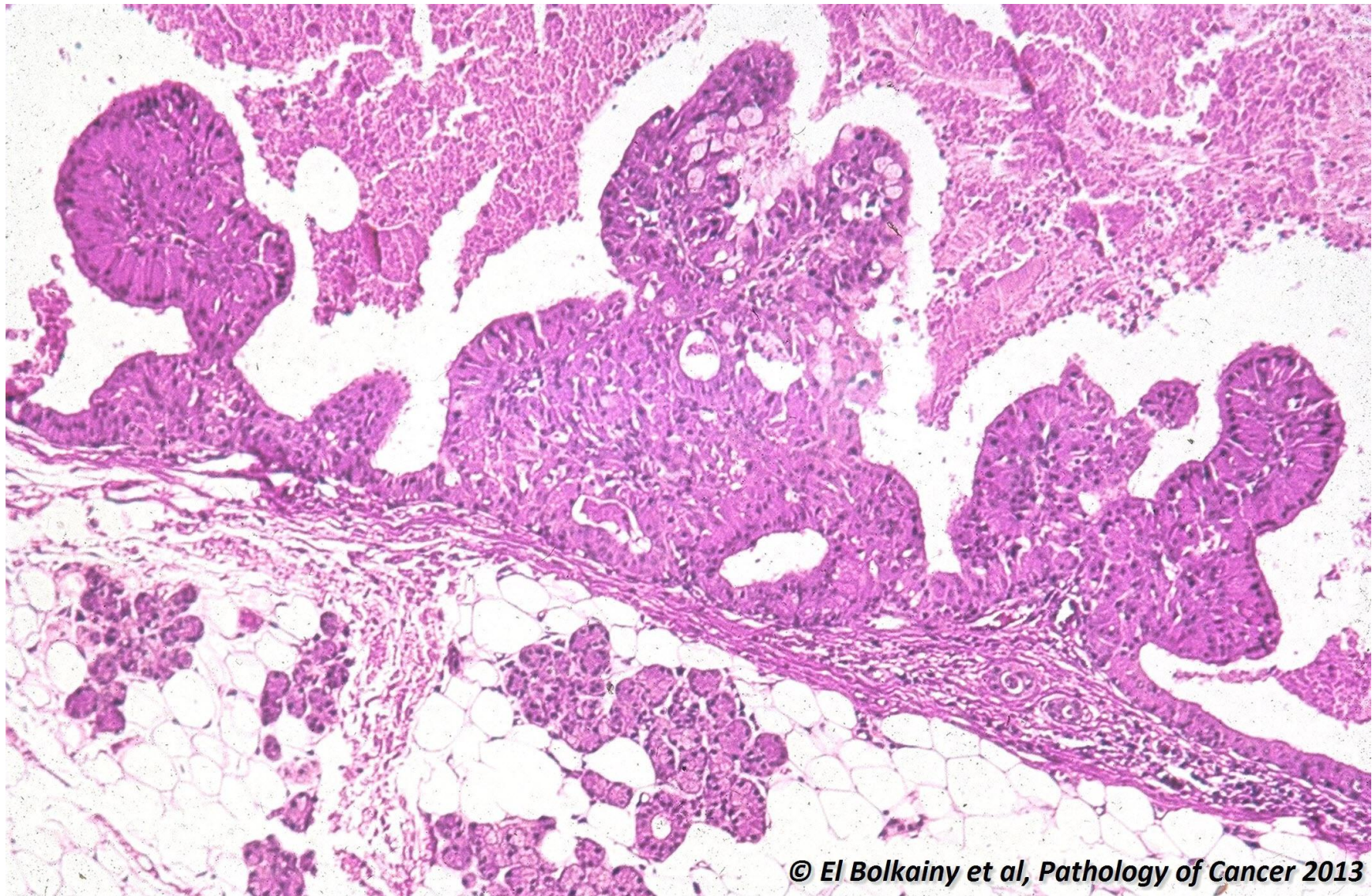
12.19 Canalicular adenoma, histology.



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Picture 12-19 Canalicular adenoma, histology. It is composed of parallel cords, with spaces and knots inbetween (not lumens but canal-like structures).

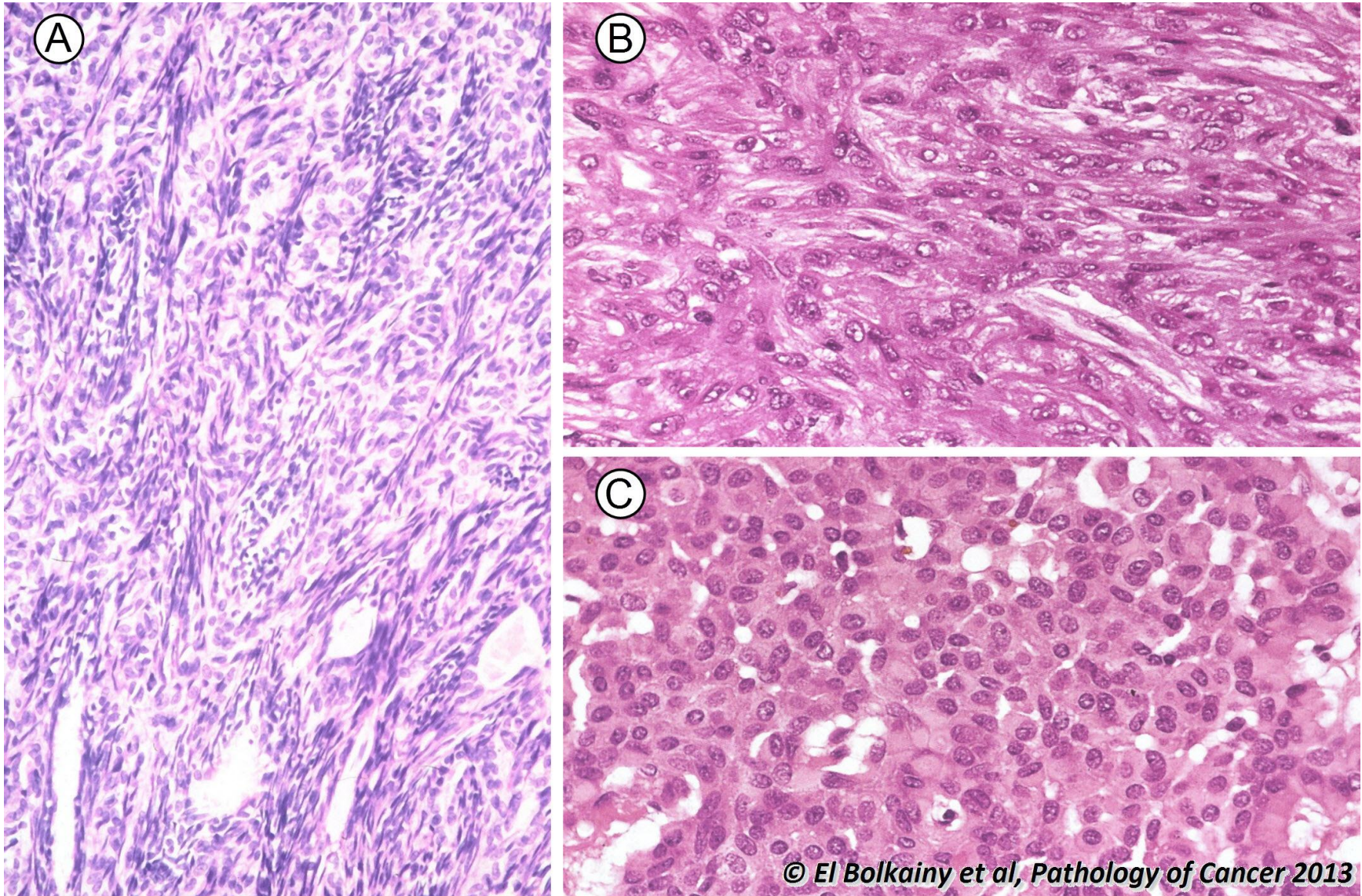
12.20 Papillary cystadenoma, histology.



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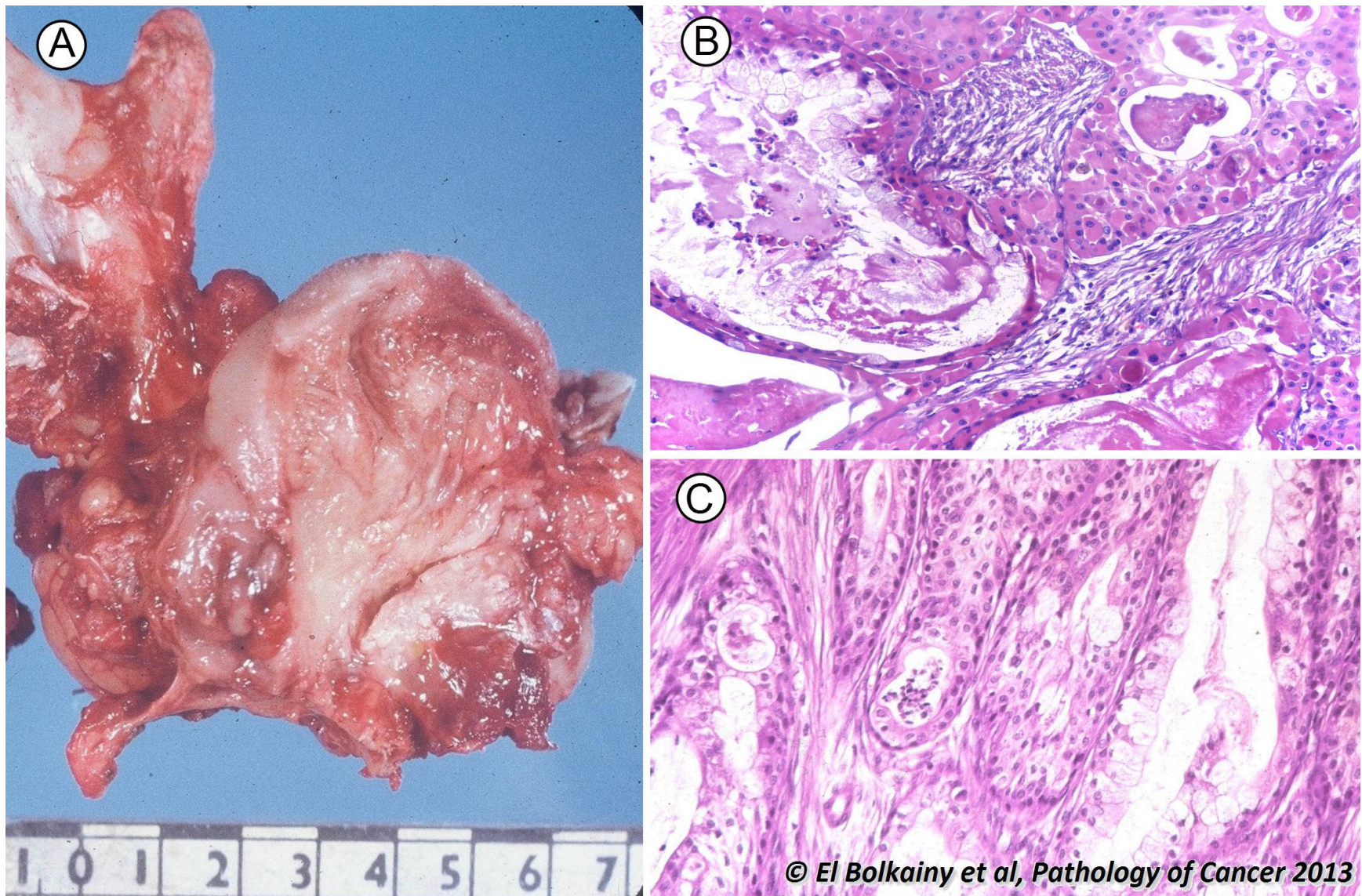
Picture 12-20 Papillary cystadenoma, histology. This monophasic tumor shows multiple intracystic papillary epithelial structures covered by uniform bland cells.

12.21 Benign myoepithelioma, histology.



Picture 12-21 Benign myoepithelioma, histology. A, B and C The tumor is composed of spindle or plasmacytoid cells with bland nuclei. The tumor is immunoreactive to S-100, actin, p63 and calponin.

12.22 Mucoepidermoid carcinoma, low grade.

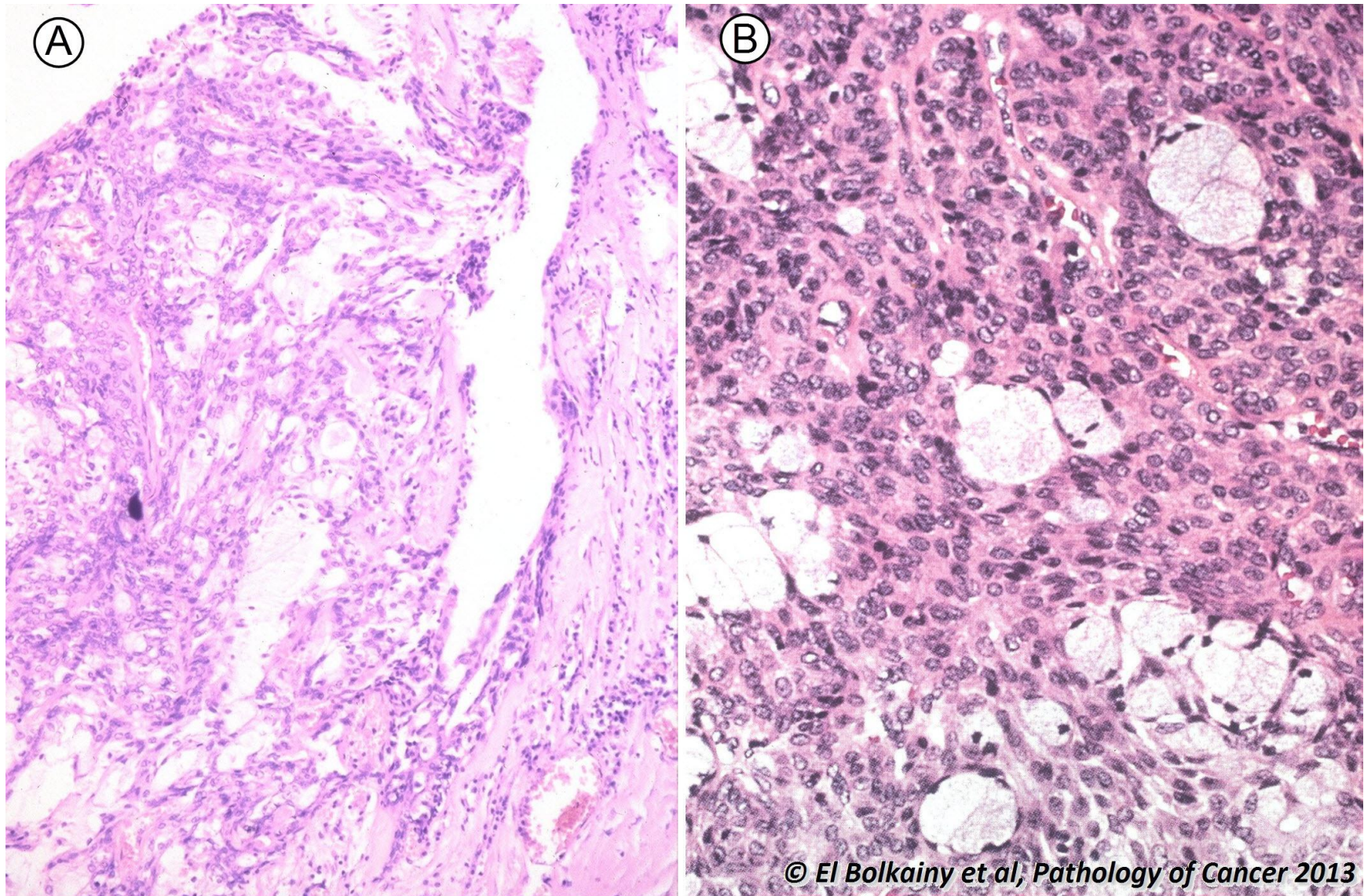


Picture 12-22

Mucoepidermoid carcinoma, low grade. A Gross appearance showing ill-defined tumor with mucoid and cystic change. B and C A biphasic tumor showing well differentiated columnar and squamous cells. Clear cells (mucinocytes) are evident.

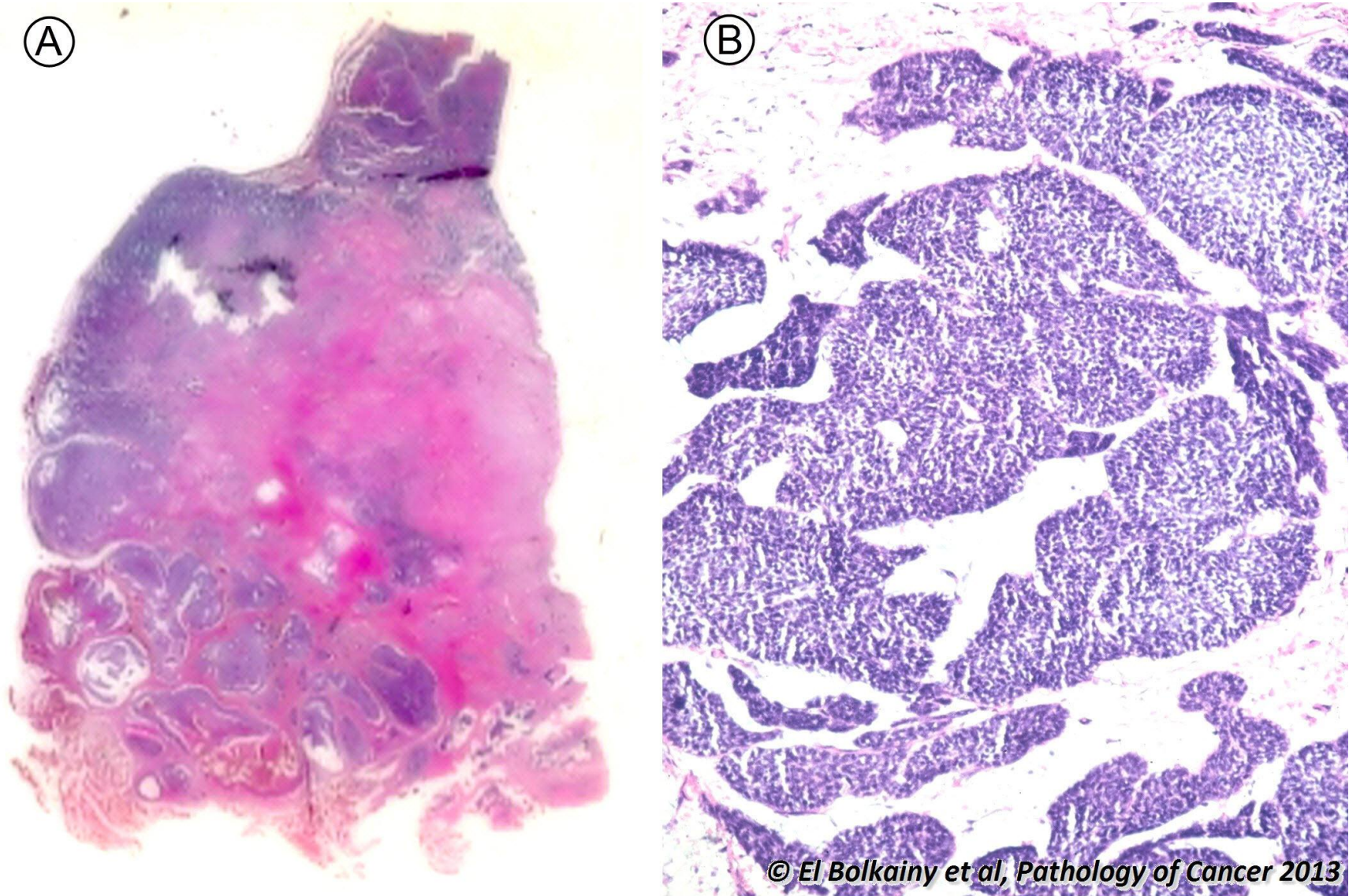
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12.23 Mucoepidermoid carcinoma, high grade.



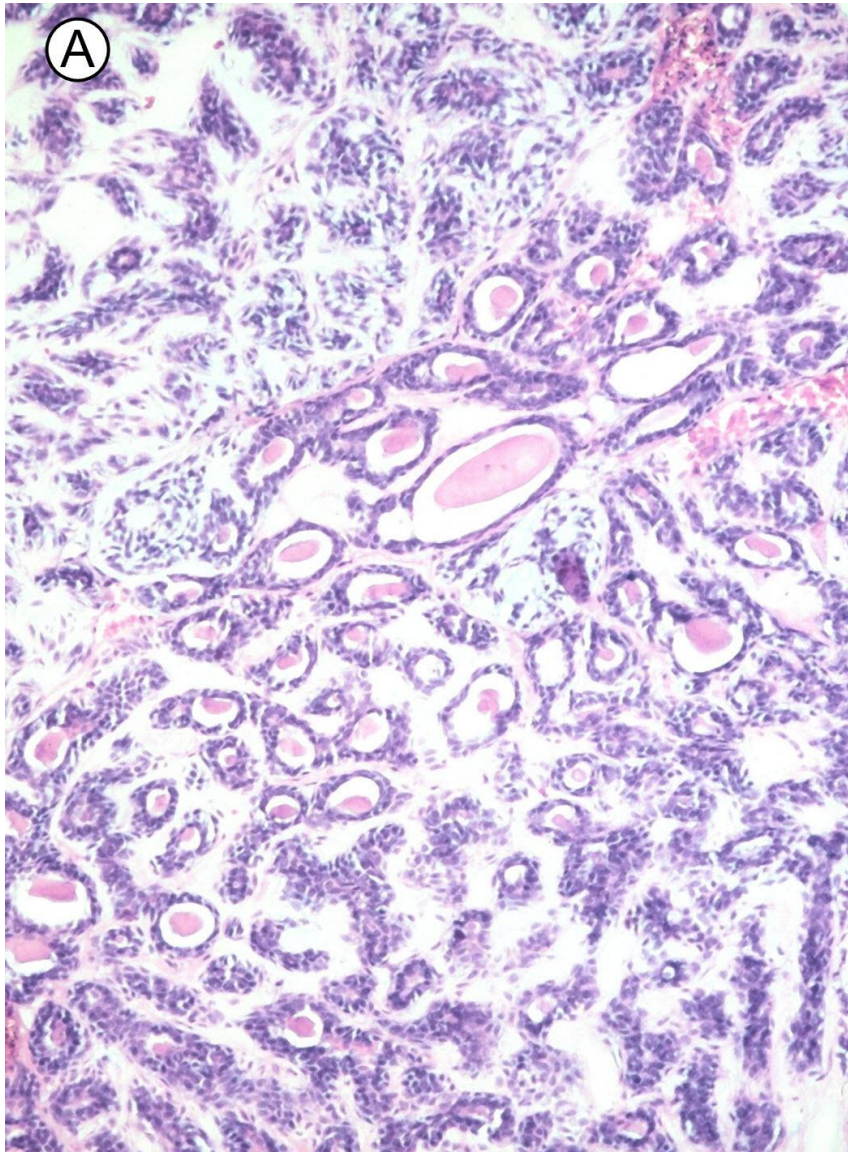
Picture 12-23 Mucoepidermoid carcinoma, high grade. **A** Low power. **B** High power. Tumor cells are either small or pleomorphic, mitosis >4/HPF and focal necrosis is evident.

12.24 Adenoid cystic carcinoma, histology of solid variant.



Picture 12-24 Adenoid cystic carcinoma, histology of solid variant. **A** A computer scan of whole tissue section showing widely invasive tumor of the gland infiltrating the surrounding soft tissue (lower part of picture). **B** This rare variant shows irregular solid groups (without luminal structures) invading the stroma.

12.25 Adenoid cystic carcinoma, histology.

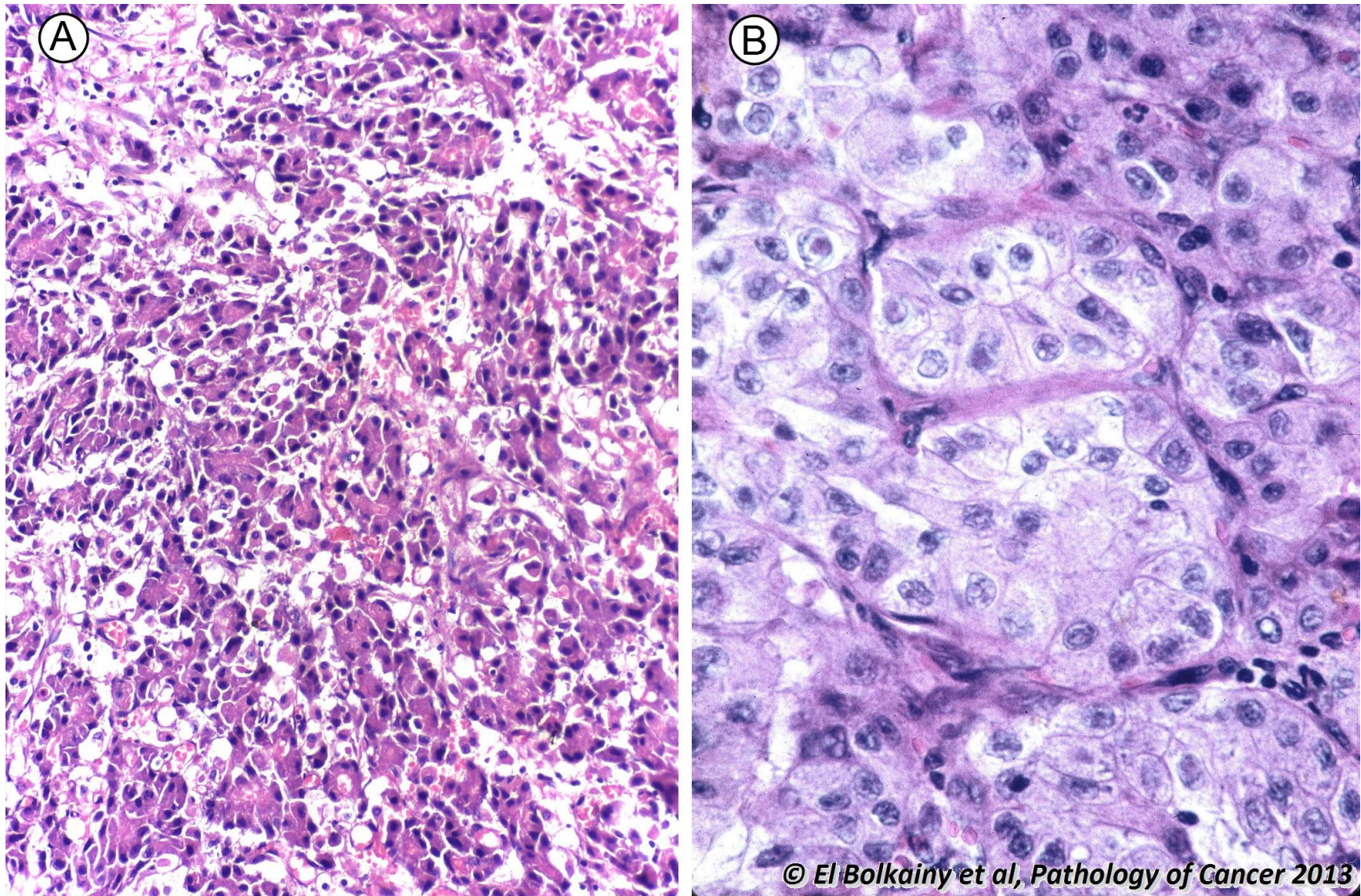


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**Picture
12-25**

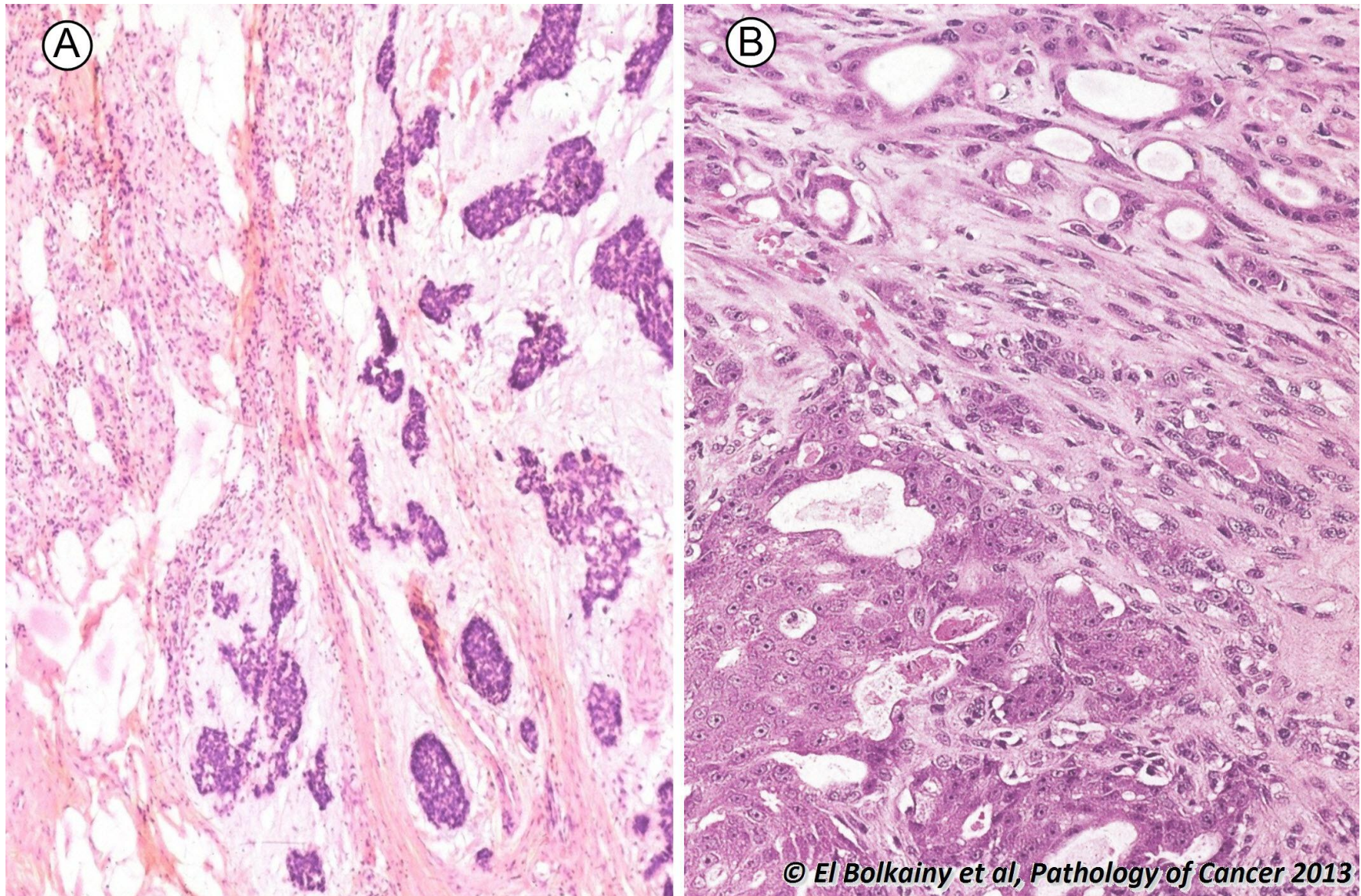
Adenoidcystic carcinoma, histology. **A** Tubular variant, luminal cells are reactive to cytokeratin, whereas, basal myoepithelial cells are reactive to p63. **B** Cylindromatous variant (the most common) with spaces filled with either mucoid or basement membrane material.

12.26 Acinic cell carcinoma, histology.



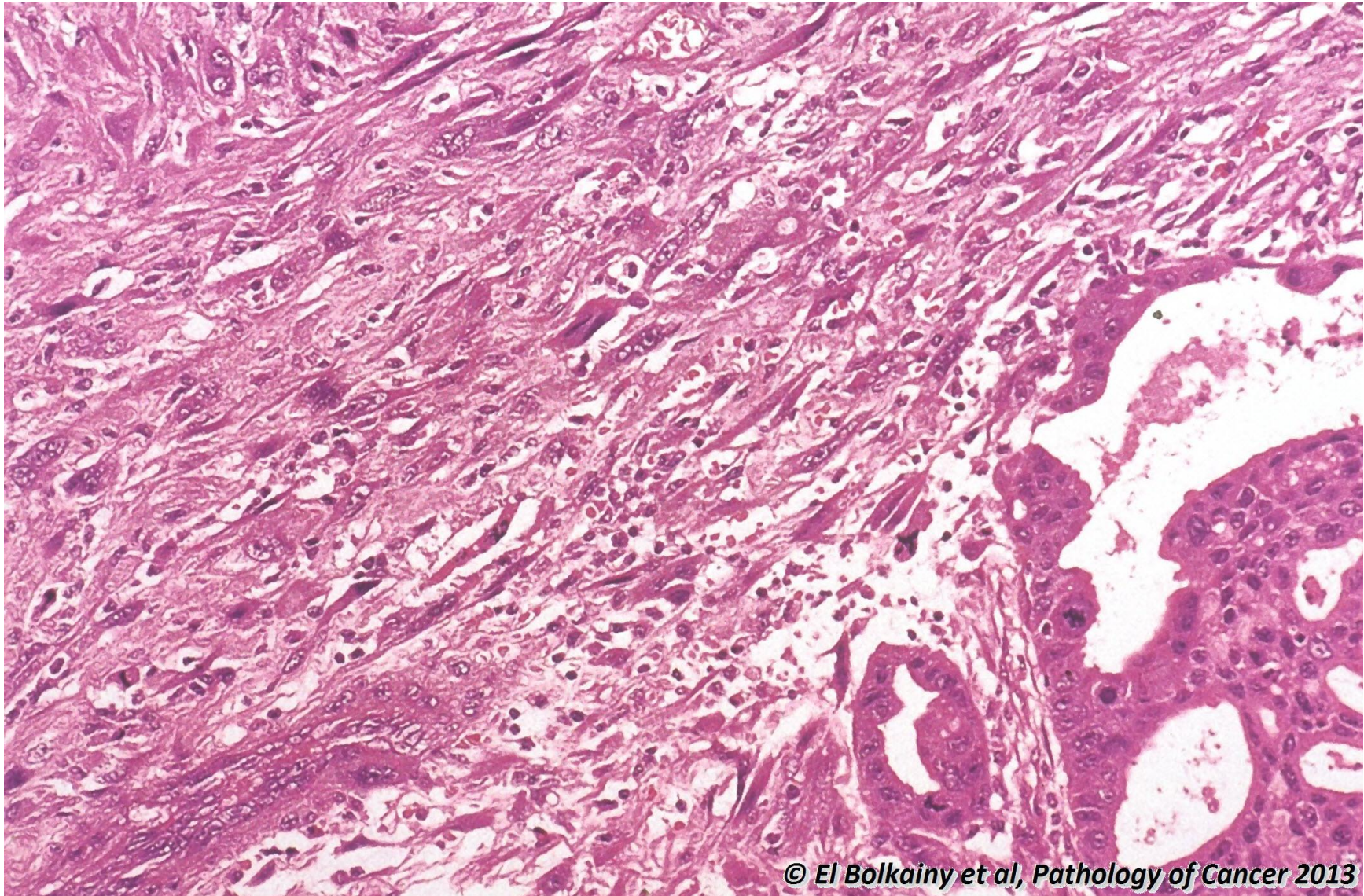
Picture 12-26 Acinic cell carcinoma, histology. **A** Low power shows acini without ducts. **B** High power, the cytoplasm may be granular (PAS positive diastase resistant zymogen granules) or clear. Anaplasia and mitotic activity are minimal.

12.27 Carcinoma ex pleomorphic adenoma.



Picture 12-27 Carcinoma ex pleomorphic adenoma. **A** An area of benign pleomorphic adenoma is evident in the tumor, associated with **B** malignant area of invasive carcinoma.

12.28 Carcinosarcoma, histology.

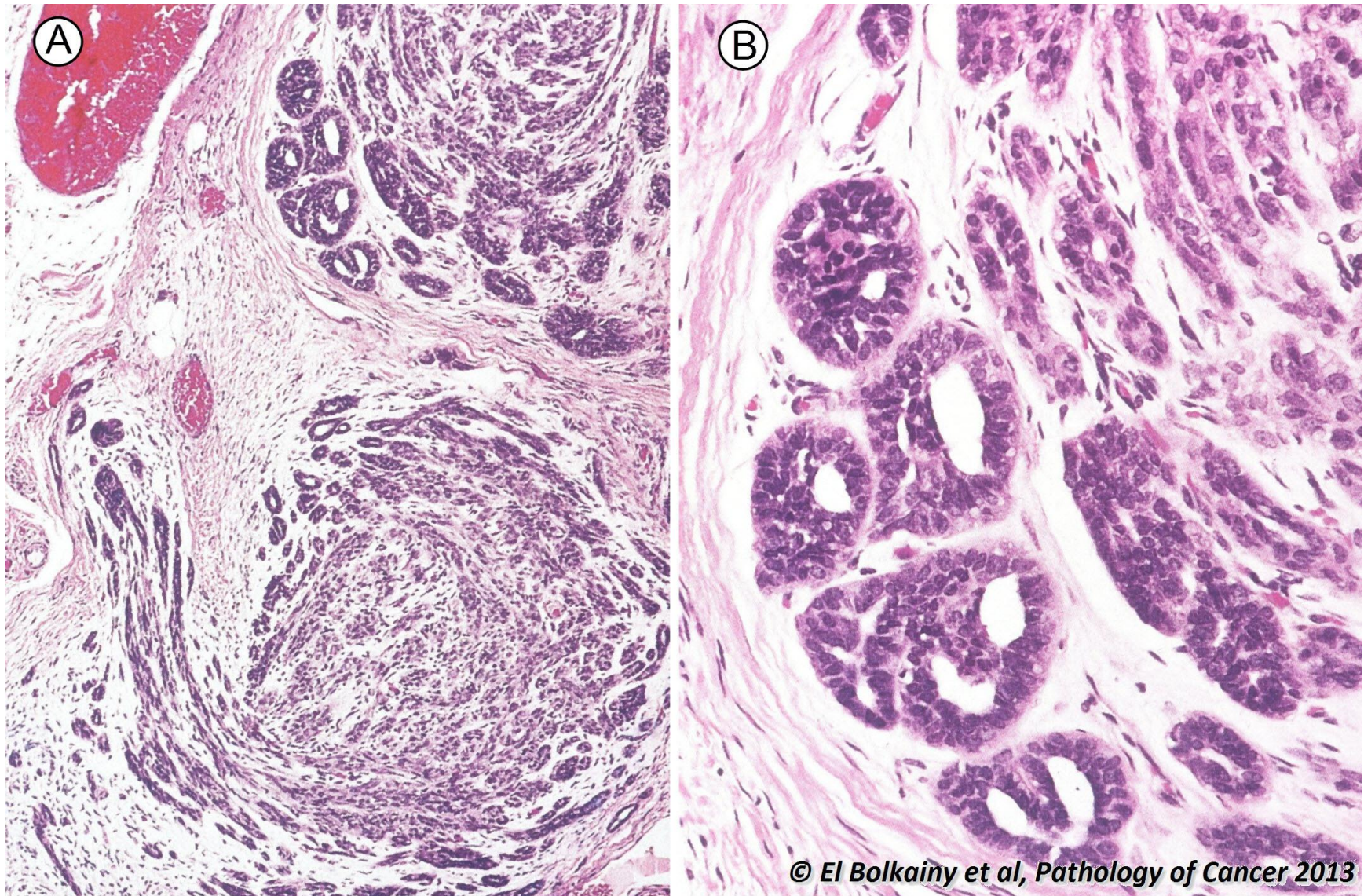


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**Picture
12-28**

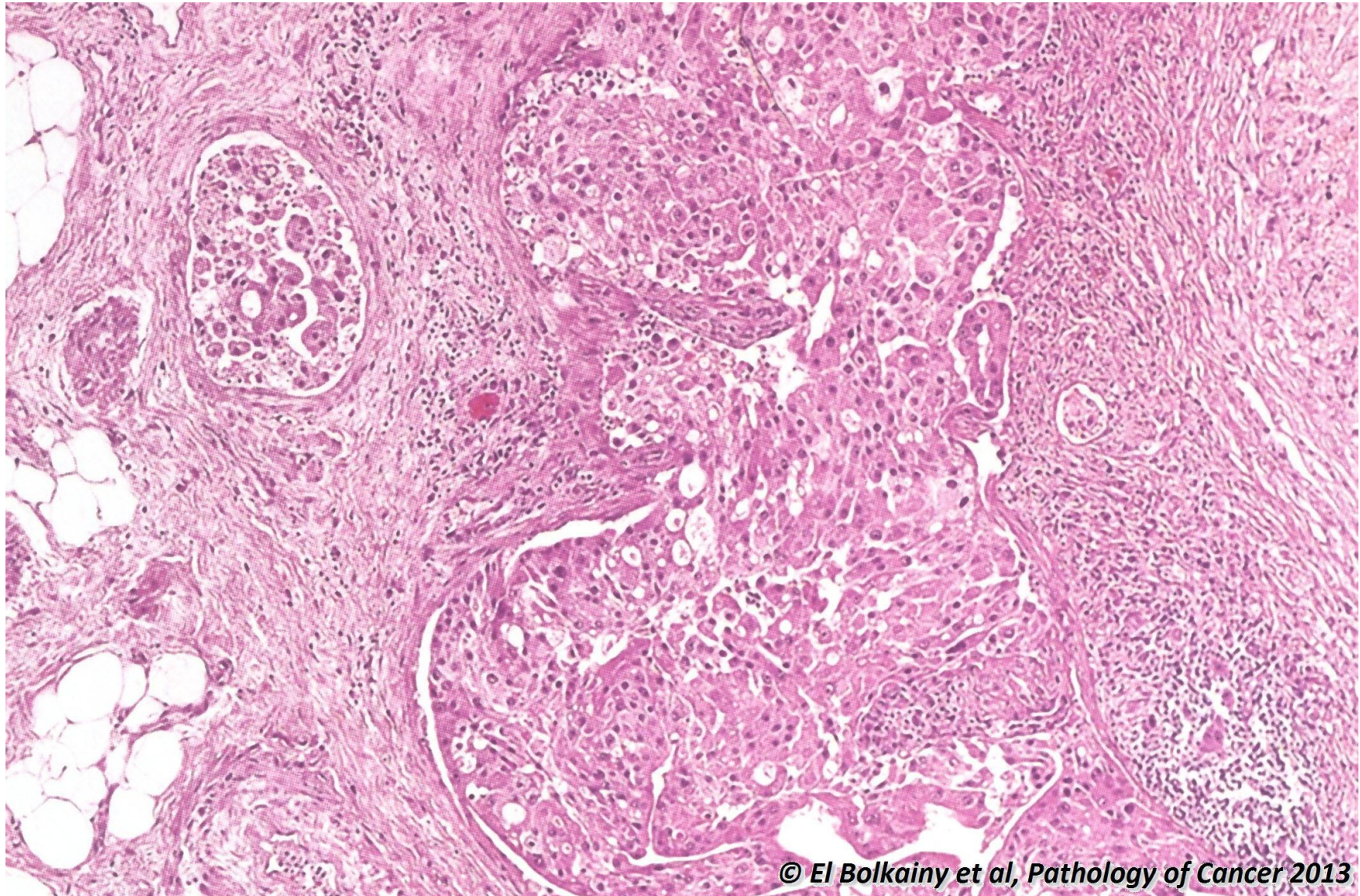
Carcinosarcoma, histology. Both components of the tumor are malignant (carcinoma and sarcoma) and distinct from each other. The biphenotypic nature is confirmed by markers (vimentin and cytokeratin) staining different areas of tumor.

12.29 Polymorphous low-grade adenocarcinoma, histology.



Picture 12-29 Polymorphous low-grade adenocarcinoma, histology. Although the cells are uniform, the pattern varies markedly in different areas of the same tumor including: trabecular, tubular, targetoid, cribriform (biexpression of cytokeratin and S-100) with fibromyoid stroma. **A** Low power and **B** High power.

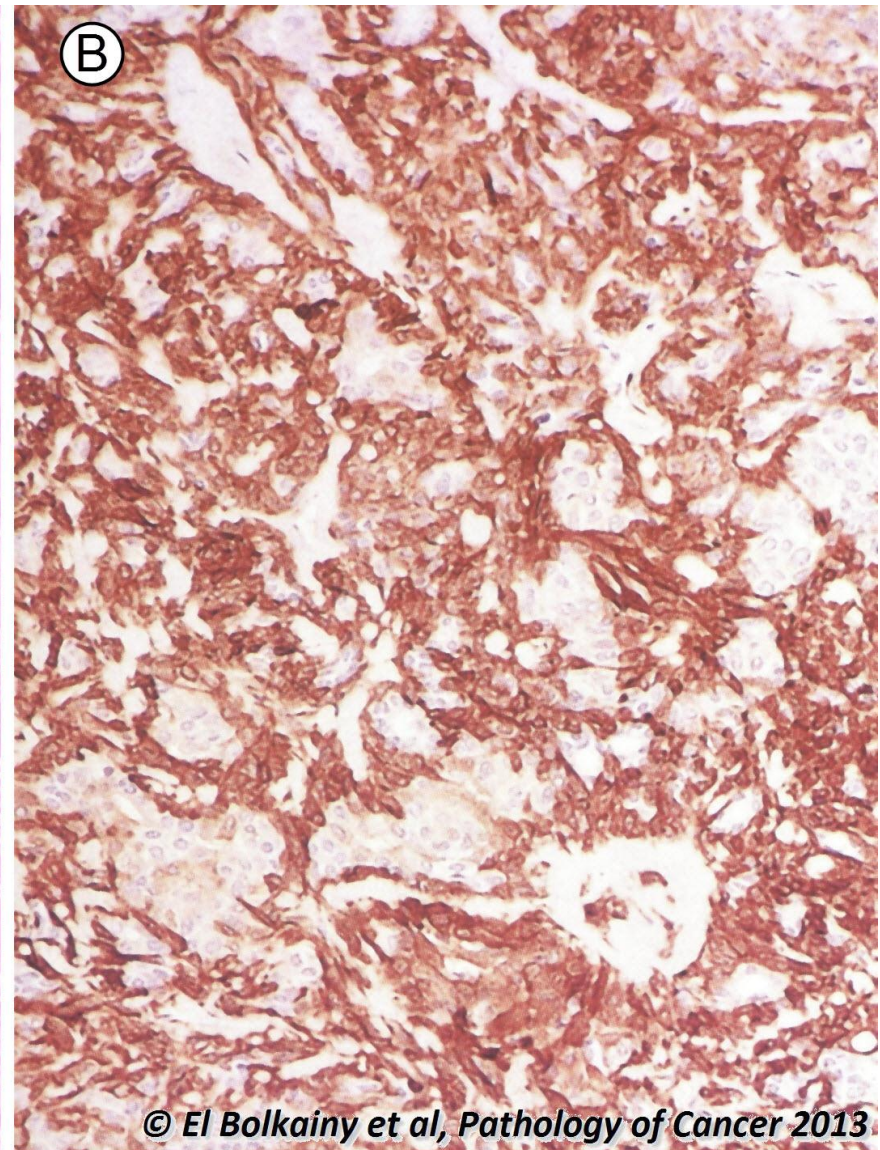
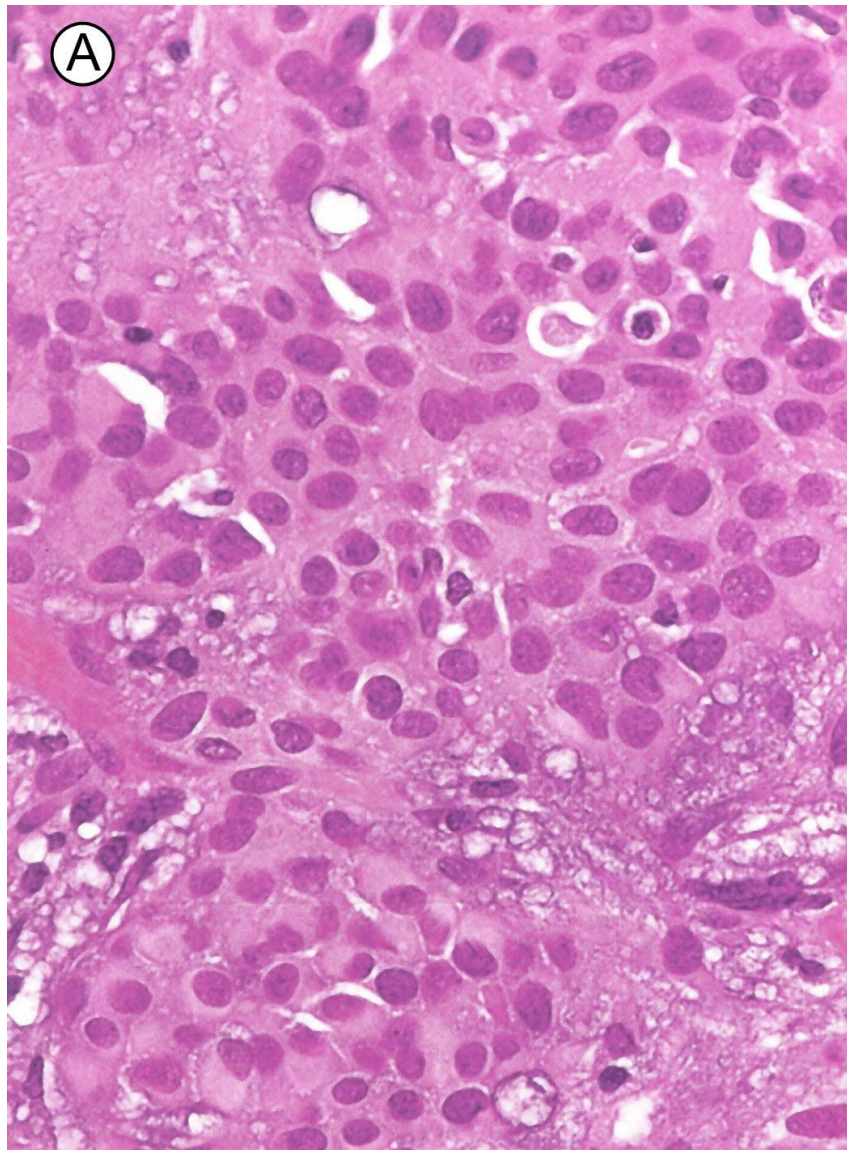
12.30 Malignant oncocytoma, histology.



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Picture 12-30 **Malignant oncocytoma, histology.** This rare type affects mainly the parotid gland and characterized by marked cytoplasmic eosinophilia and granularity. It differs from the benign type by: prominent nucleoli, active mitosis (Ki-67 > 4%), invasion of surrounding tissue and necrosis.

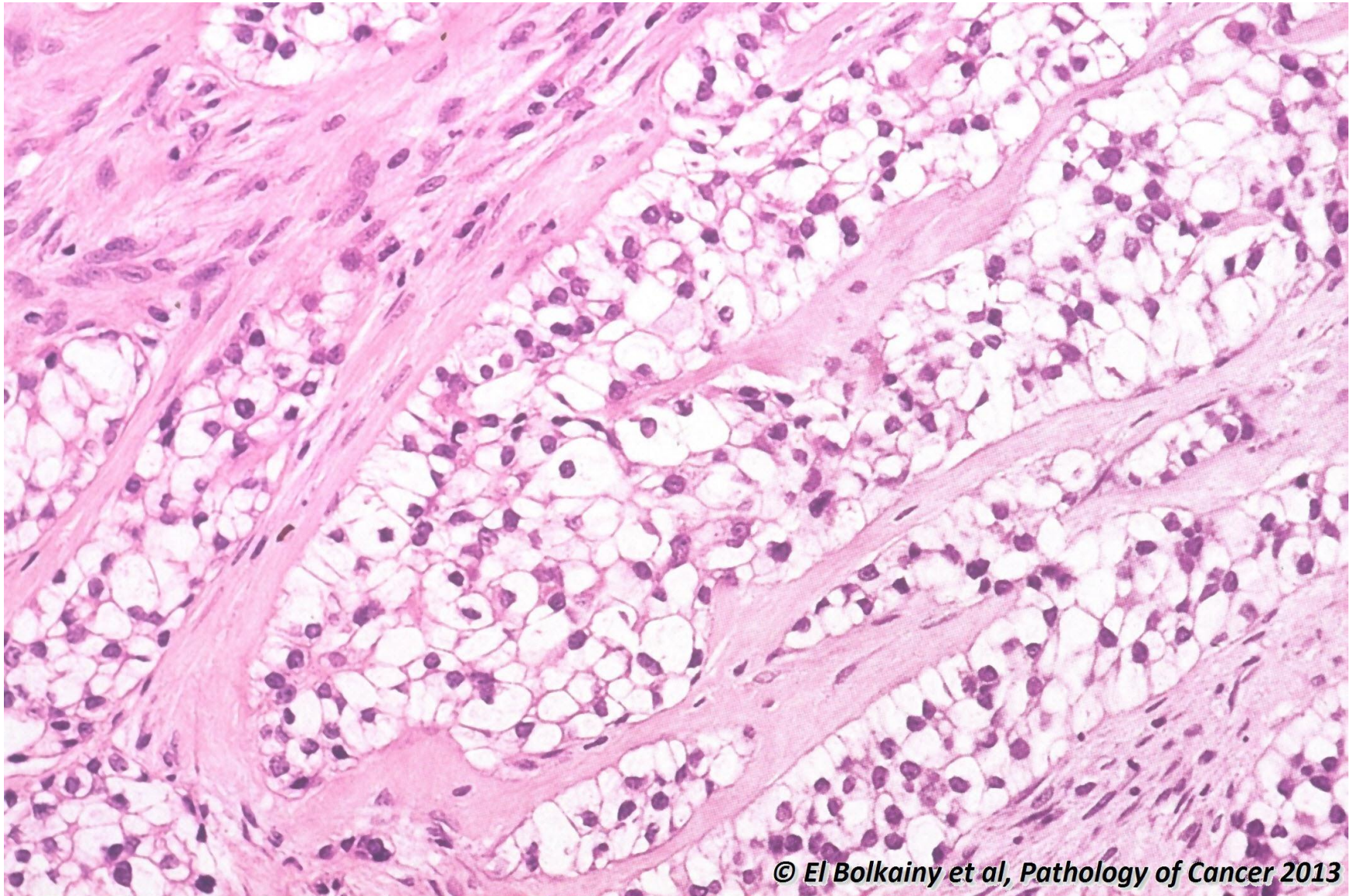
12.31 Malignant myoepithelioma, histology.



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Picture 12-31 Malignant myoepithelioma, histology. **A** Tumor cells are spindle or oval (epithelioid), but, contrary to benign type show mitotic activity, invasiveness and necrosis. **B** Tumor cells are positive for calponin.

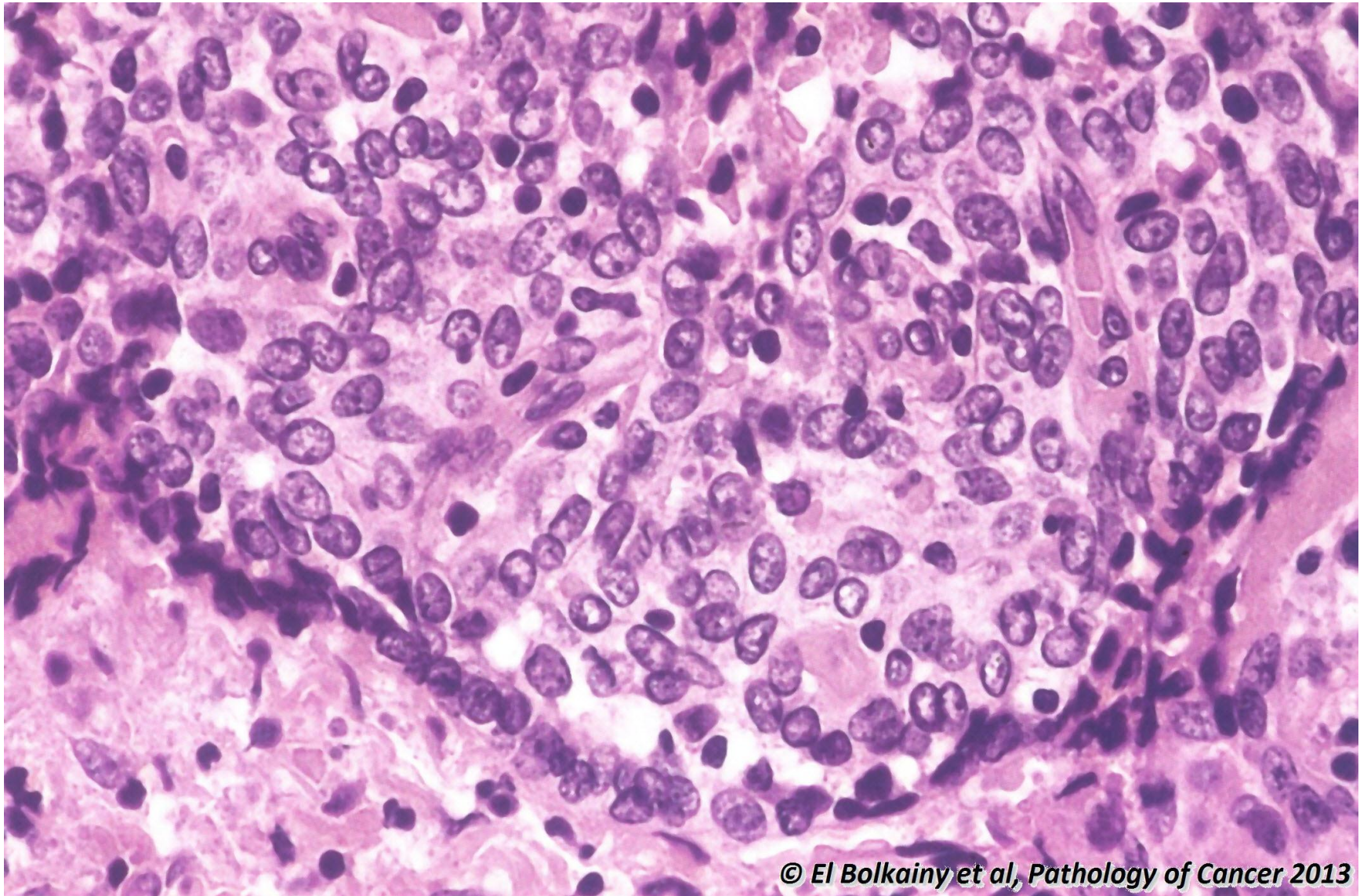
12.32 Clear cell carcinoma, histology.



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Picture 12-32 Clear cell carcinoma, histology. It usually arises from minor salivary glands. It is characterized by clear cytoplasm (glycogen not mucin) and invasion of normal surrounding tissue.

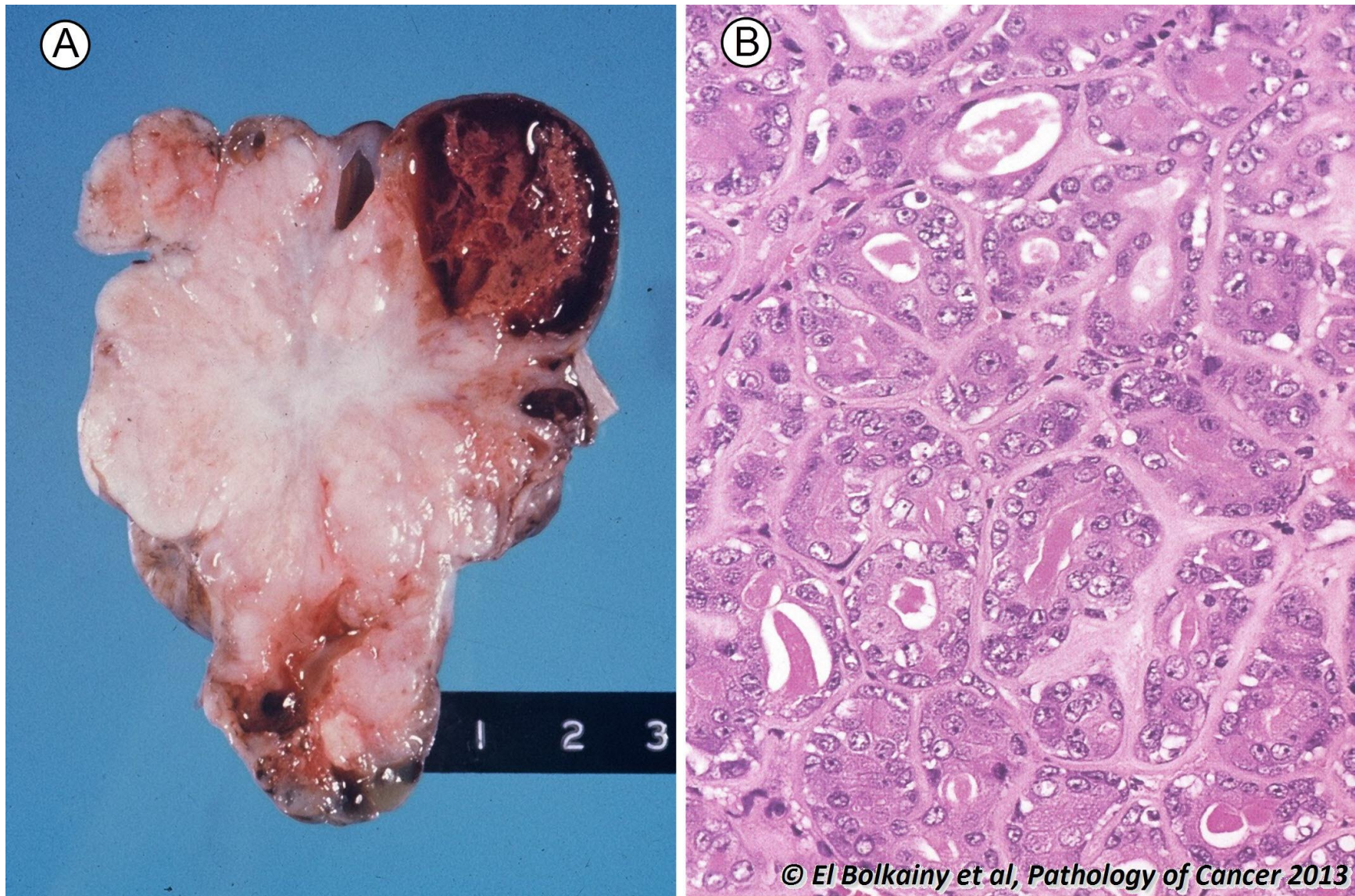
12.33 Basal cell adenocarcinoma, histology.



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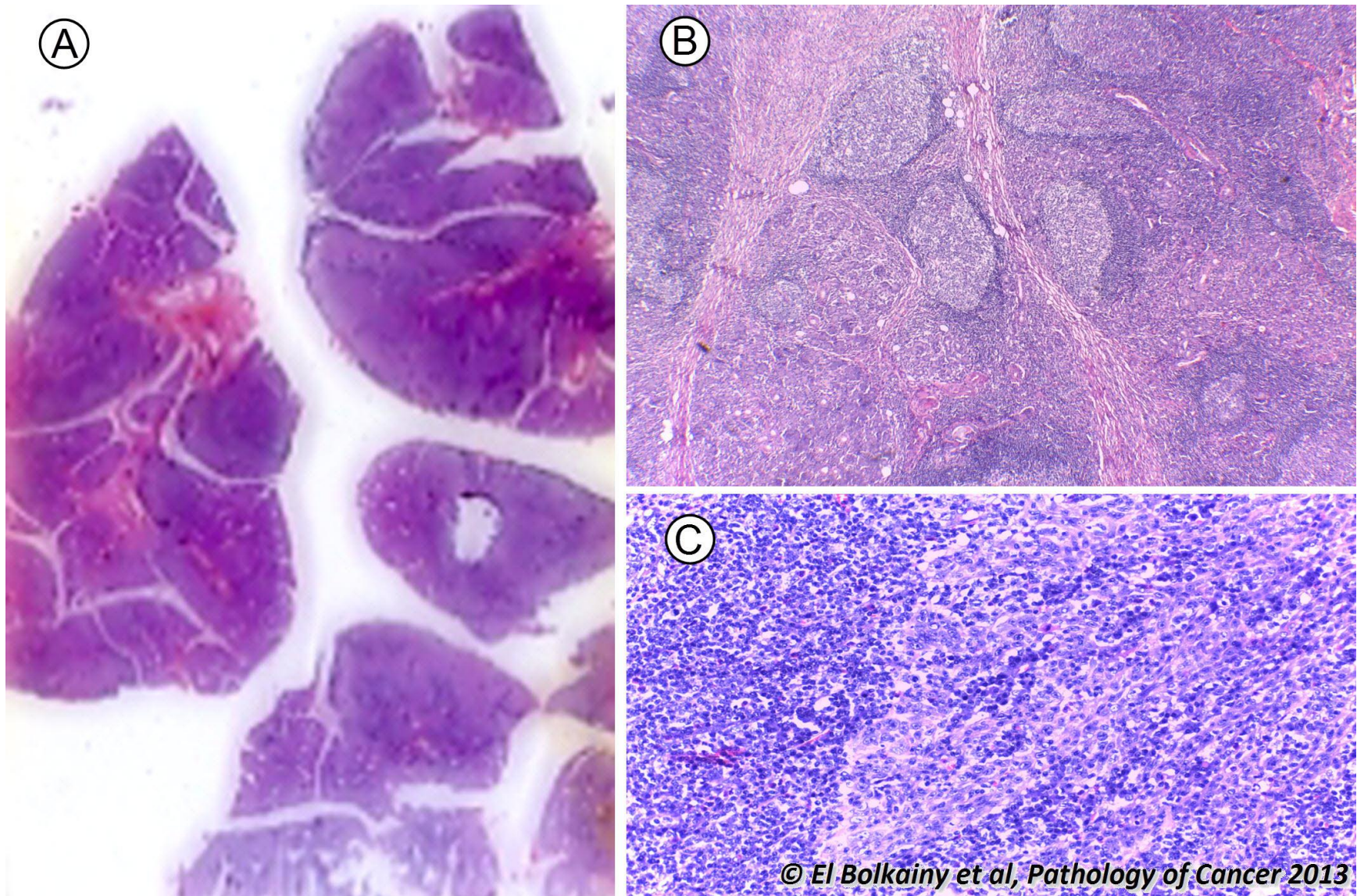
Picture 12-33 Basal cell adenocarcinoma, histology. It is observed in parotid gland composed of small cells (cytokeratin positive) with solid or trabecular pattern and invasion of normal tissues.

12.34 Adenocarcinoma, not otherwise specified (NOS).



Picture 12-34 Adenocarcinoma, not otherwise specified (NOS). **A** Gross features: ill defined invasive margin of a parotid tumor. **B** Histology shows malignant ductal structure lacking the specific features of other salivary tumor types.

12.35 Lymphoepithelial lesion of parotid (MALT or Mikulicz disease).

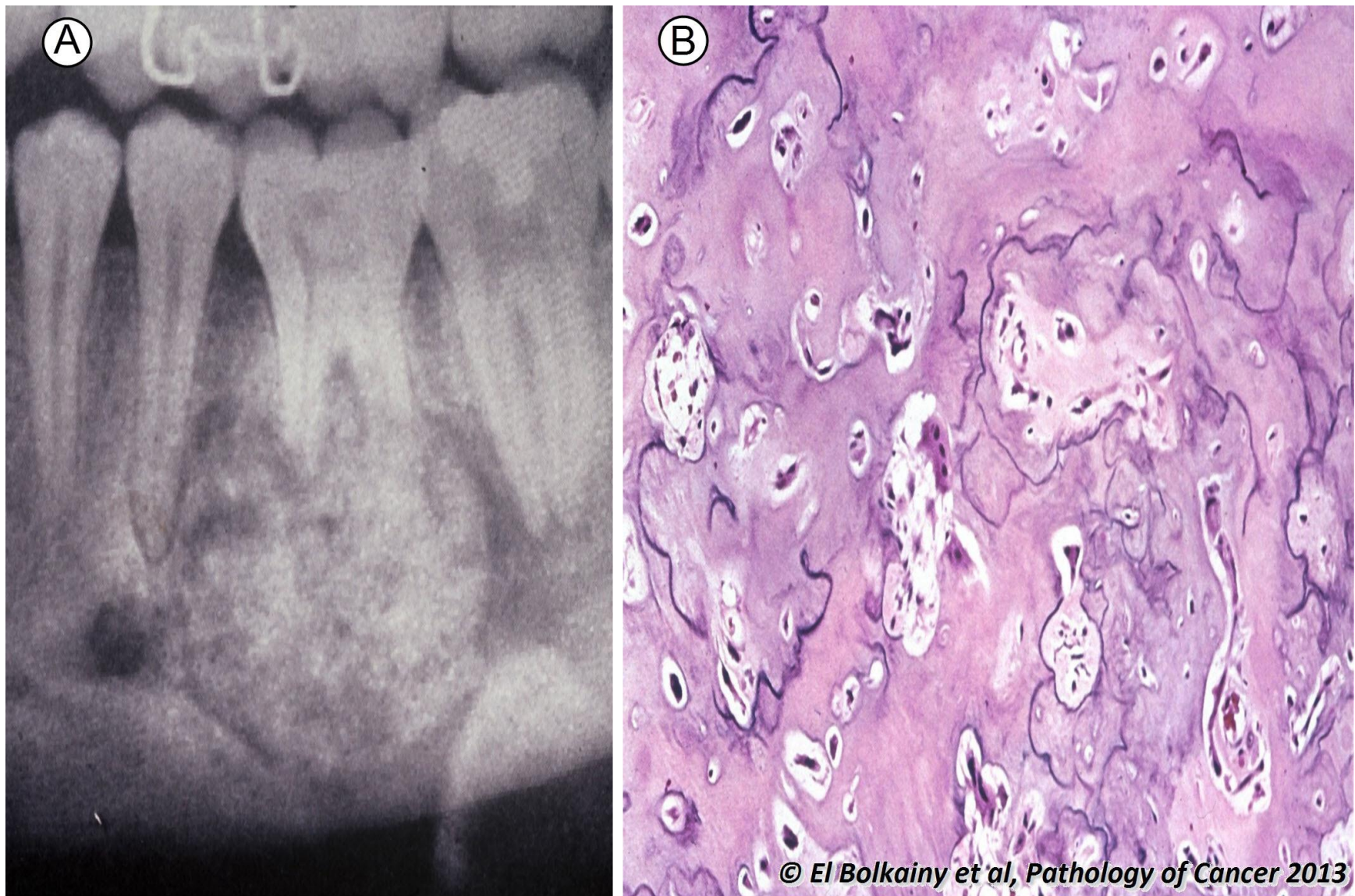


Picture 12-35

Lymphoepithelial lesion of parotid (MALT or Mickulicz disease). A Computer scan of tissue section showing preserved lobular pattern of the gland. B and C Infiltrate of mature lymphocytes (B-phenotype) around the ducts with germinal centers formation.

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12.36 Cementoblastoma, histology.



Picture 12-36 Cementoblastoma, histology. **A** Radiography, A well defined dense mass related to the tooth root. **B** Basophilic cementum with scanty fibrovascular stroma containing cementoblasts.

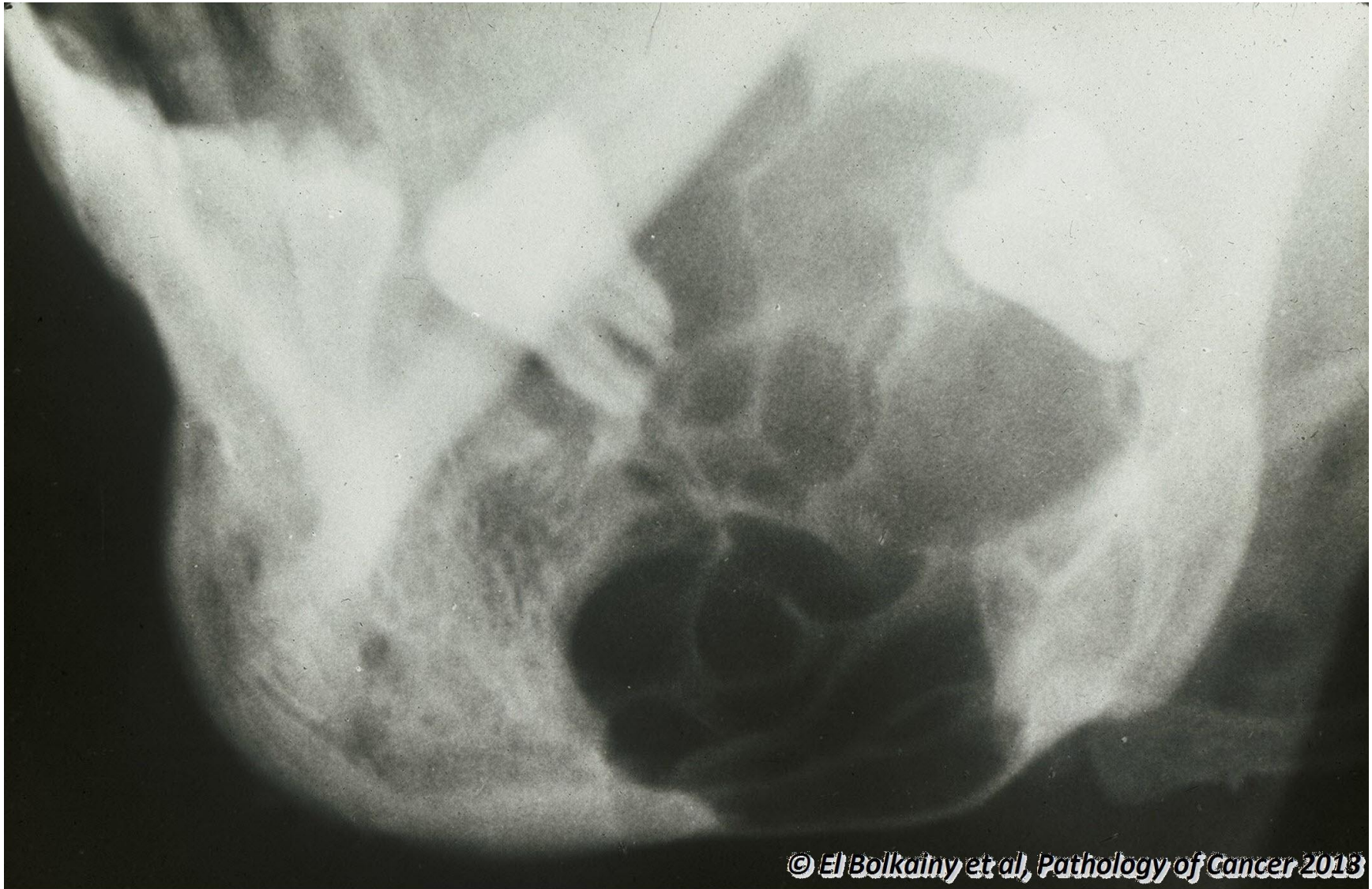
12.37 Ameloblastic sarcoma, histology.



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Picture 12-37 Ameloblastic sarcoma, histology. The mesenchymal stroma is hypercellular and malignant, whereas, the odontogenic epithelial component of the tumor is benign.

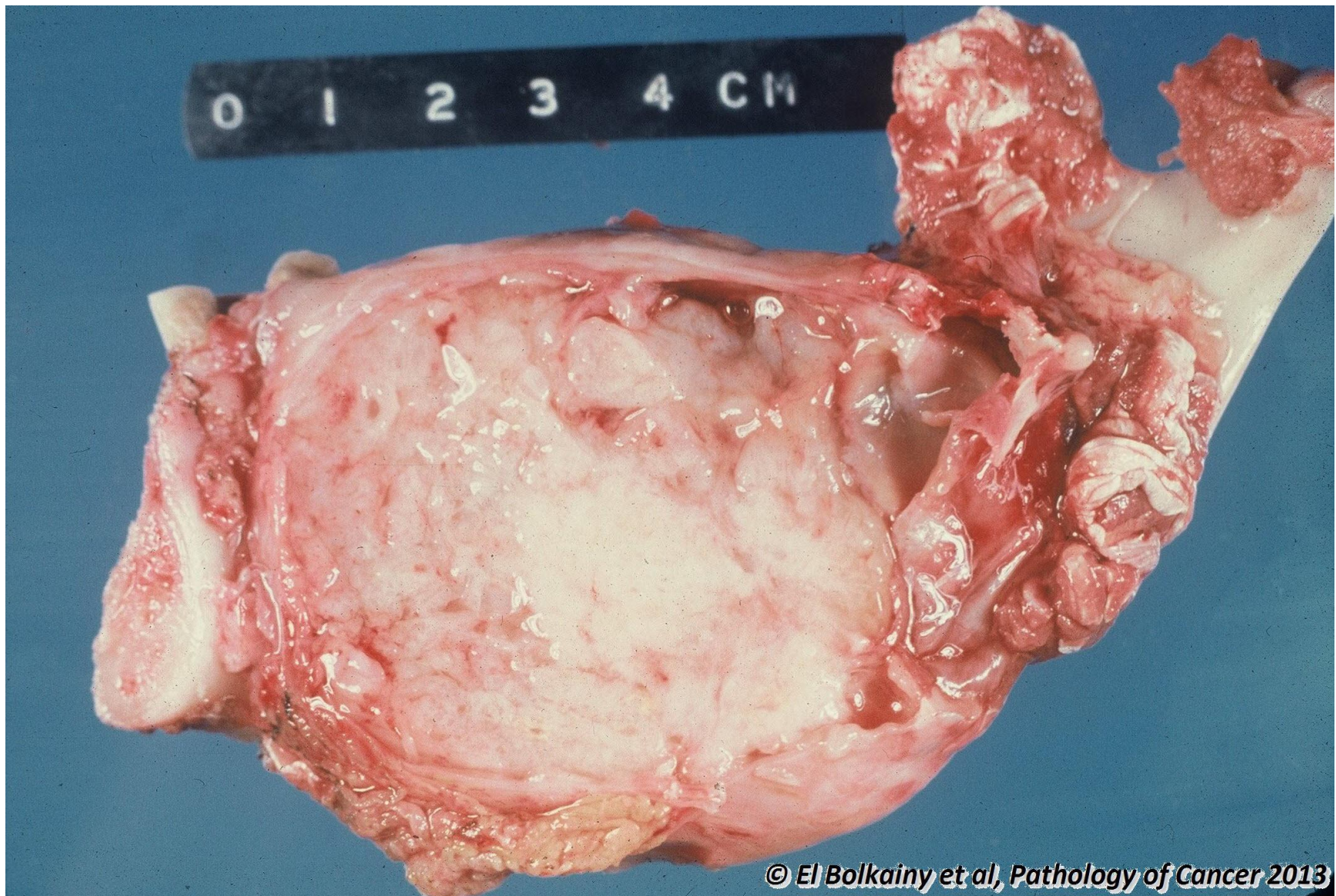
12.38 Ameloblastoma, radiographic picture.



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Picture 12-38 Ameloblastoma, radiographic picture. The mandible is involved by a multilocular cystic tumor with solid areas..

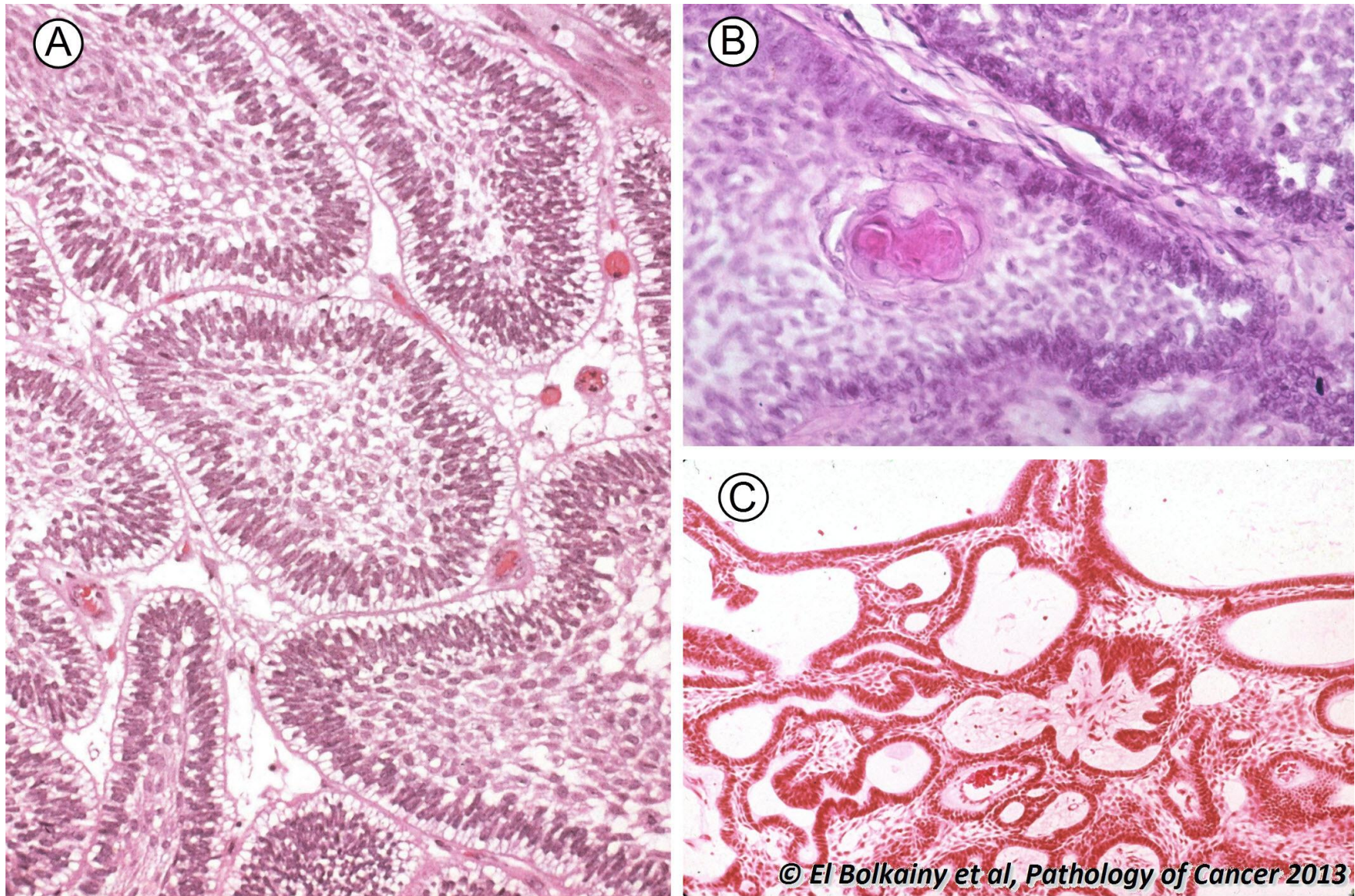
12.39 Ameloblastoma, gross features.



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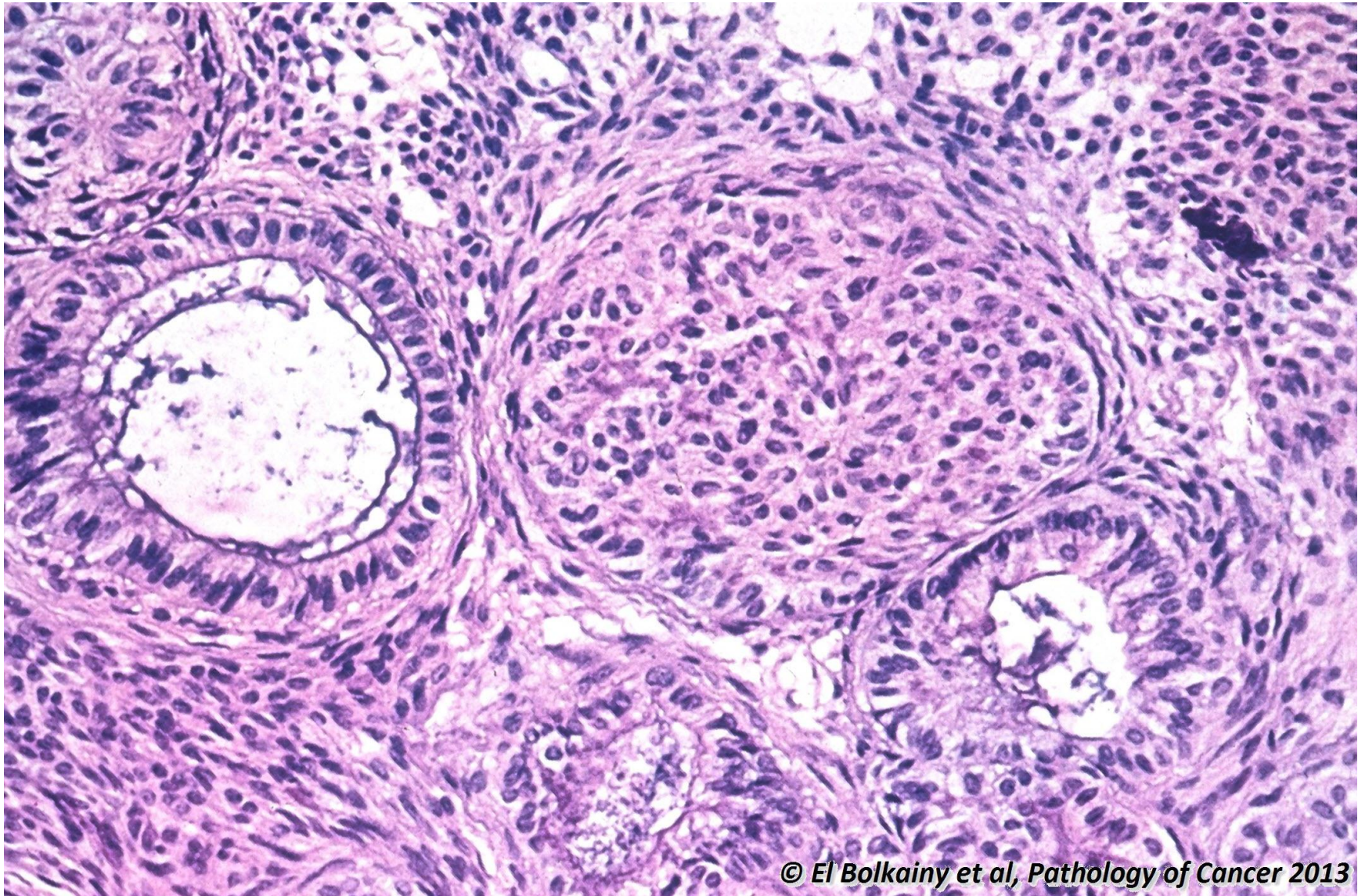
Picture 12-39 Ameloblastoma, gross features. The cut section of a mandibular tumor showing gray white solid and cystic areas (polycystic), rarely unicystic or peripheral in location arising in soft tissue.

12.40 Ameloblastoma, histology.



Picture 12-40 Ameloblastoma, histology. **A** Conventional type: the tumor cell islands show peripheral columnar cells with suprabasal palisading and central stellate cells. **B** Squamous metaplasia of tumor cells, and **C** plexiform pattern with cystic change.

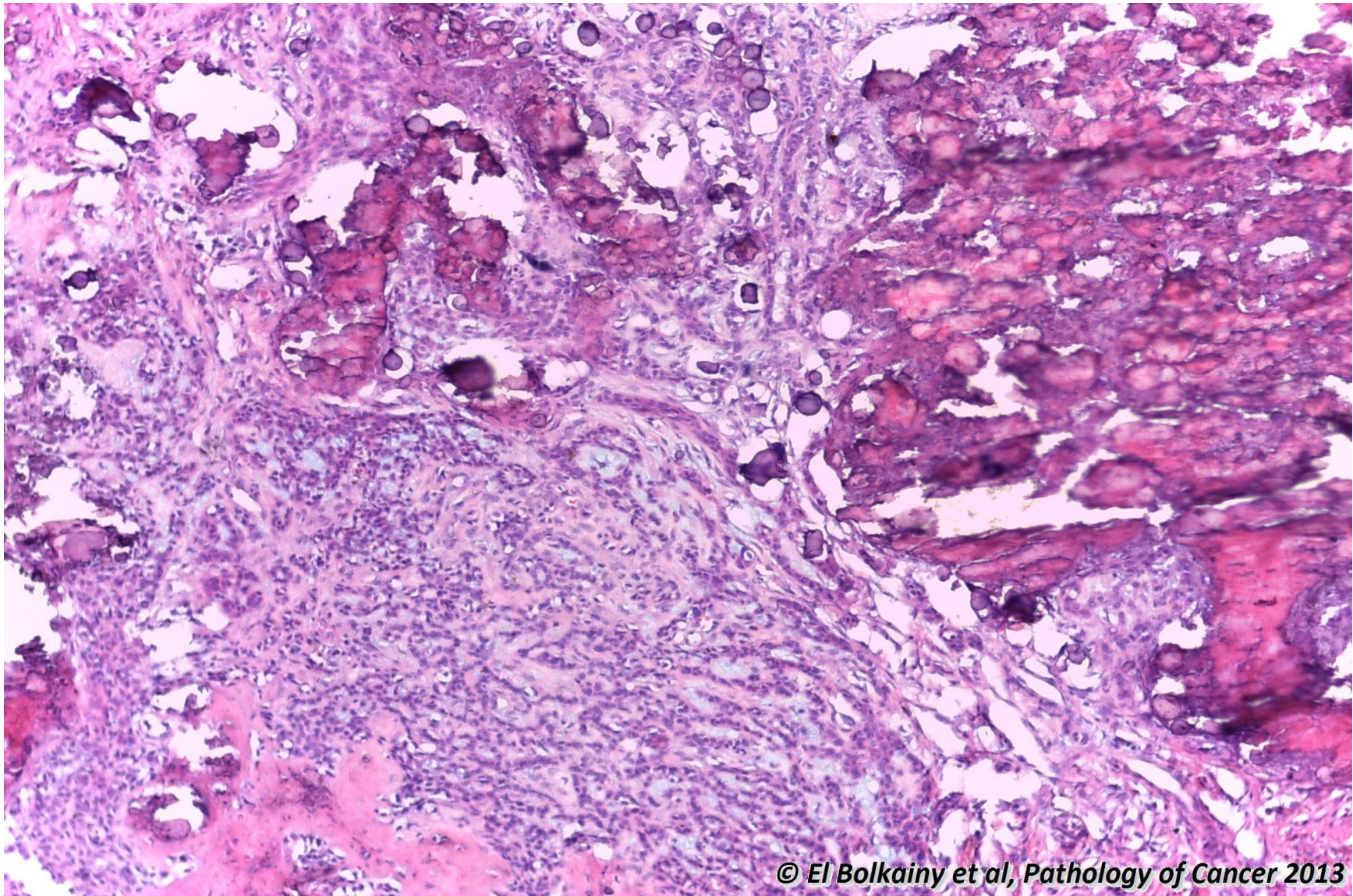
12.41 Adenomatoid odontogenic tumor, histology.



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Picture 12-41 Adenomatoid odontogenic tumor, histology. The odontogenic epithelium form duct-like structures lined by columnar epithelium embedded in a mature spindle cell stroma.

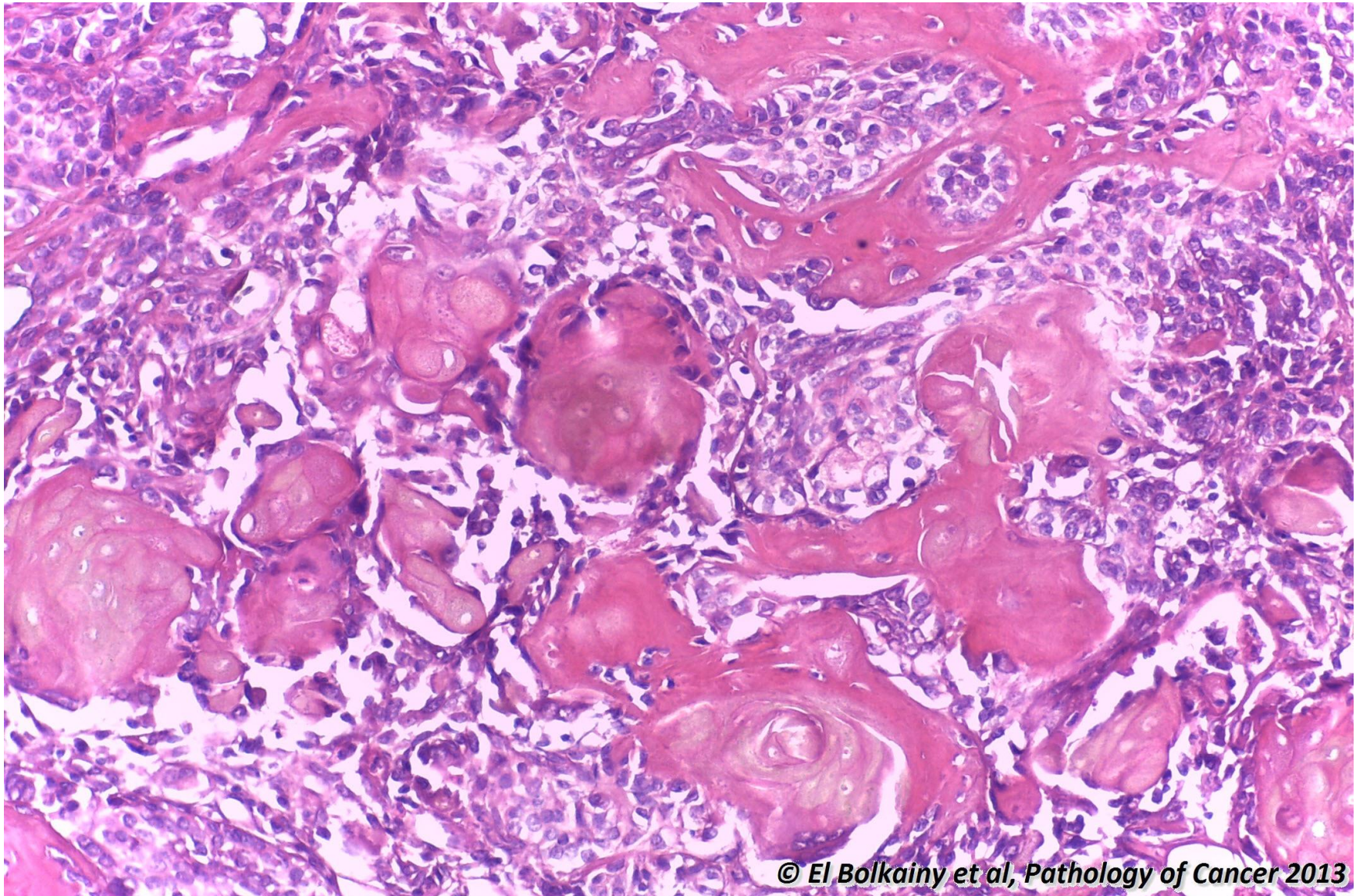
12.42 Calcifying epithelial odontogenic tumor (Pindborg tumor), histology.



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Picture 12-42 Calcifying epithelial odontogenic tumor (Pindborg tumor), histology. It is characterized by sheets of pleomorphic polyhedral epithelial cells, associated with focal areas of amyloid (congo red positive) and calcification.

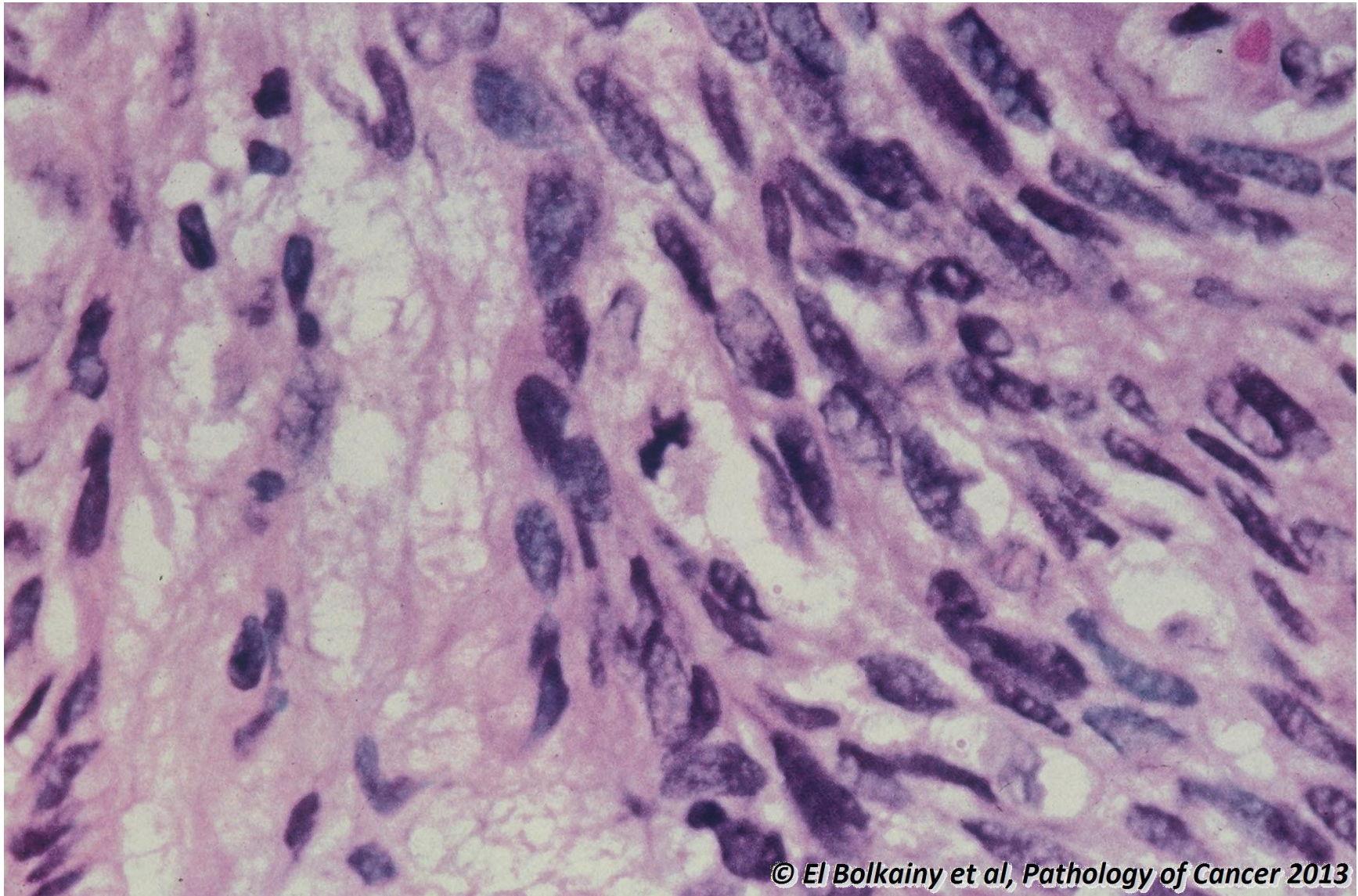
12.43 Dentinogenic ghost cell tumor, histology.



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Picture 12-43 Dentinogenic ghost cell tumor, histology. It shows ameloblastic-like islands associated with ghost eosinophilic cells (aberrant keratinization and dysplastic dentin).

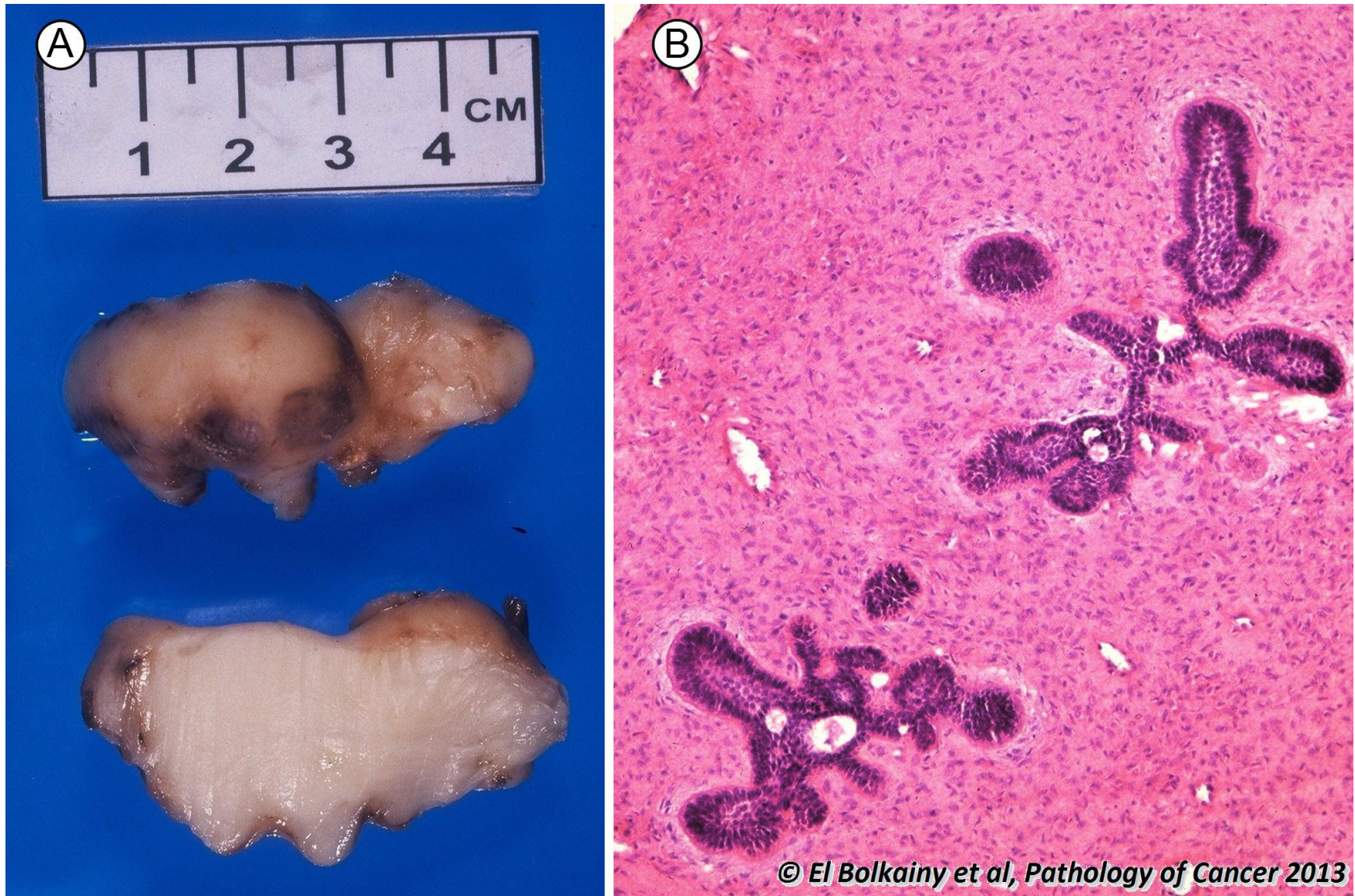
12.44 Ameloblastic carcinoma, histology.



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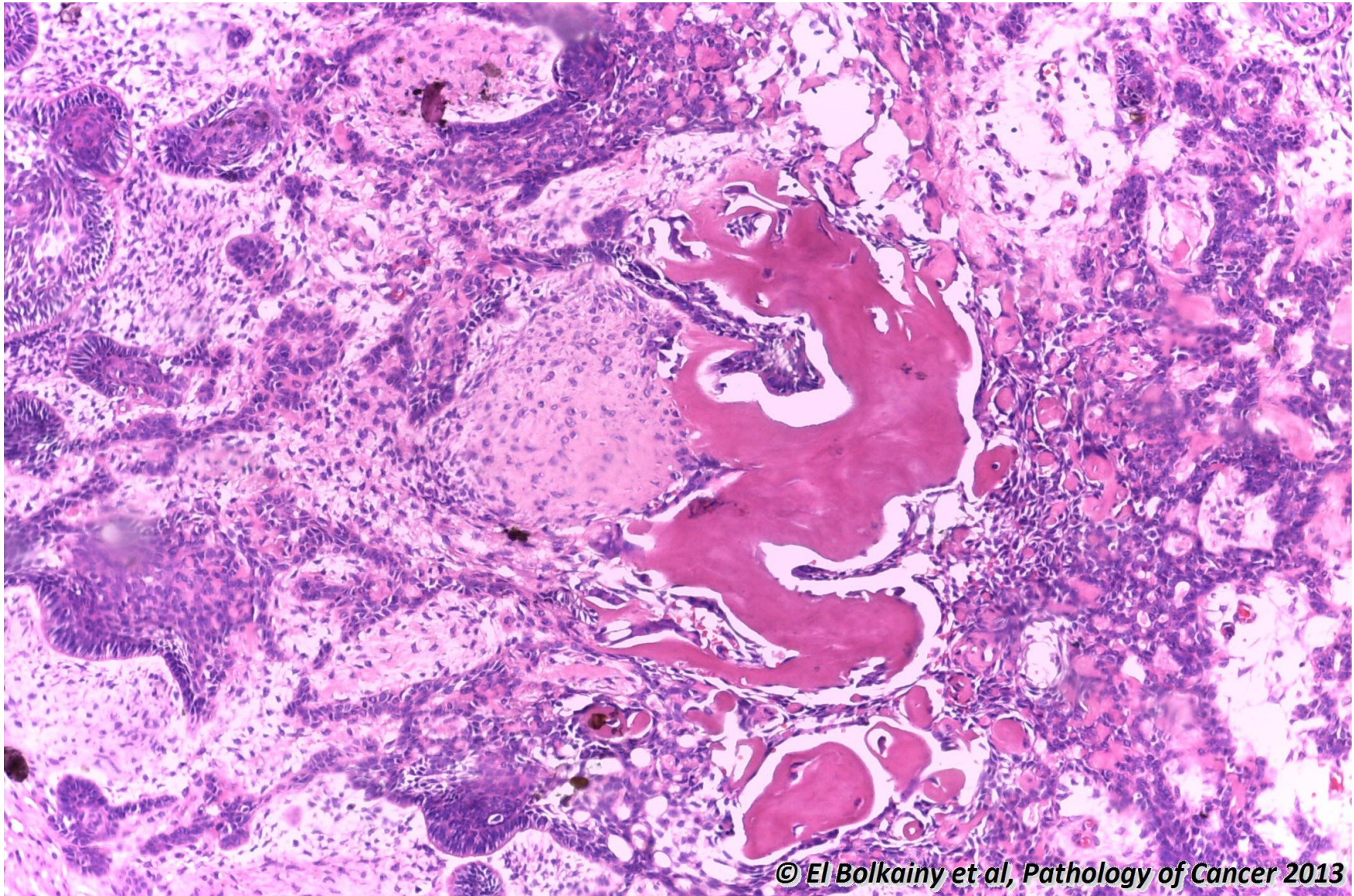
Picture 12-44 Ameloblastic carcinoma, histology. The odontogenic epithelium is malignant (pleomorphic, lack of peripheral columnar layer and shows active mitosis), whereas, the stroma is benign.

12.45 Ameloblastic fibroma.



Picture 12-45 Ameloblastic fibroma. **A** Gross features, it appears as a well-defined fibrotic whitish mass lesion. **B** The histology is characterized by a bland spindle stroma and thin strands of well-differentiated odontogenic epithelium.

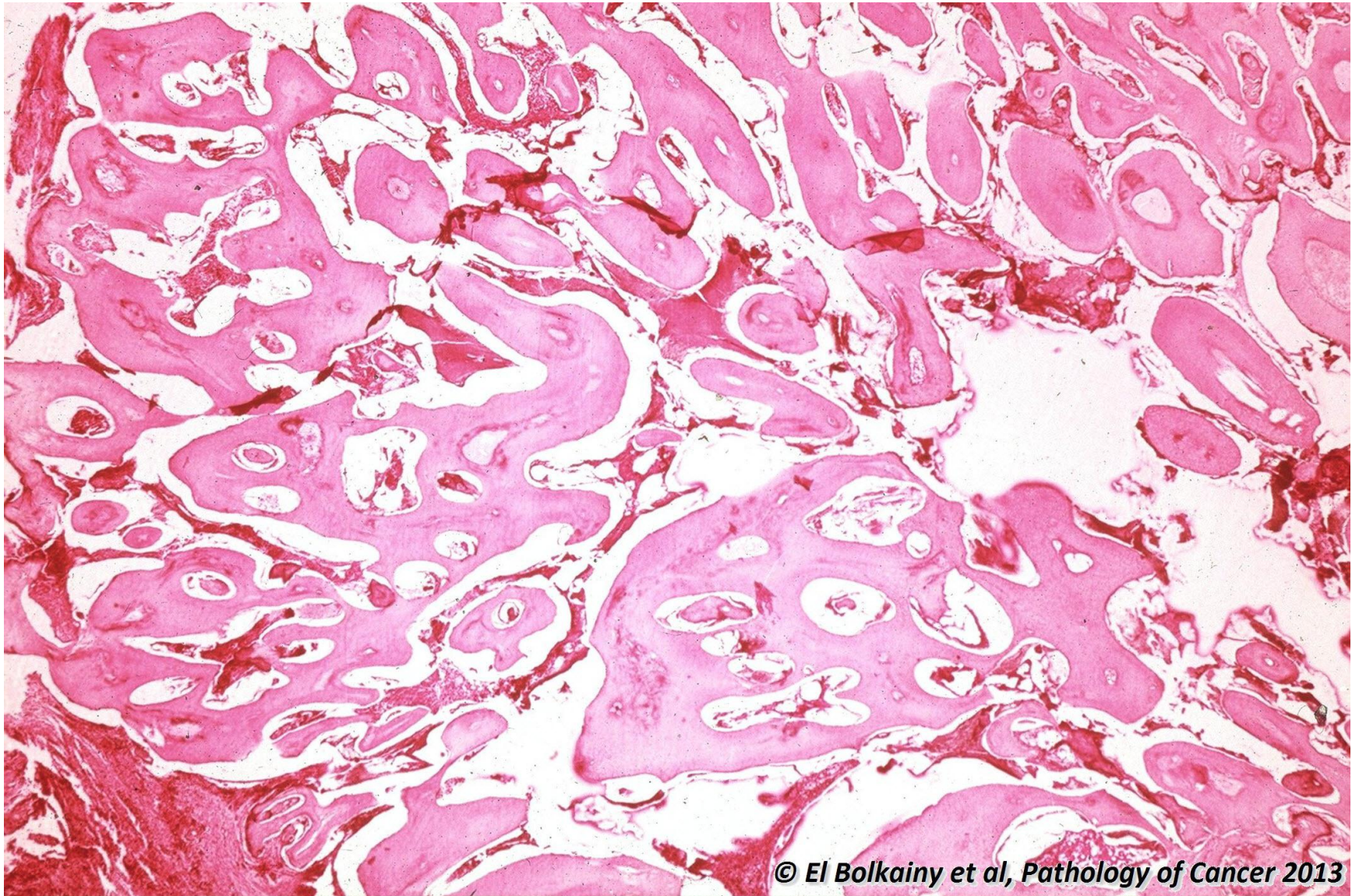
12.46 Ameloblastic fibro-odontoma.



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Picture 12-46 Ameloblastic fibro-odontoma. Note the dentin and enamel structures embedded within strands and islands of odontogenic epithelium.

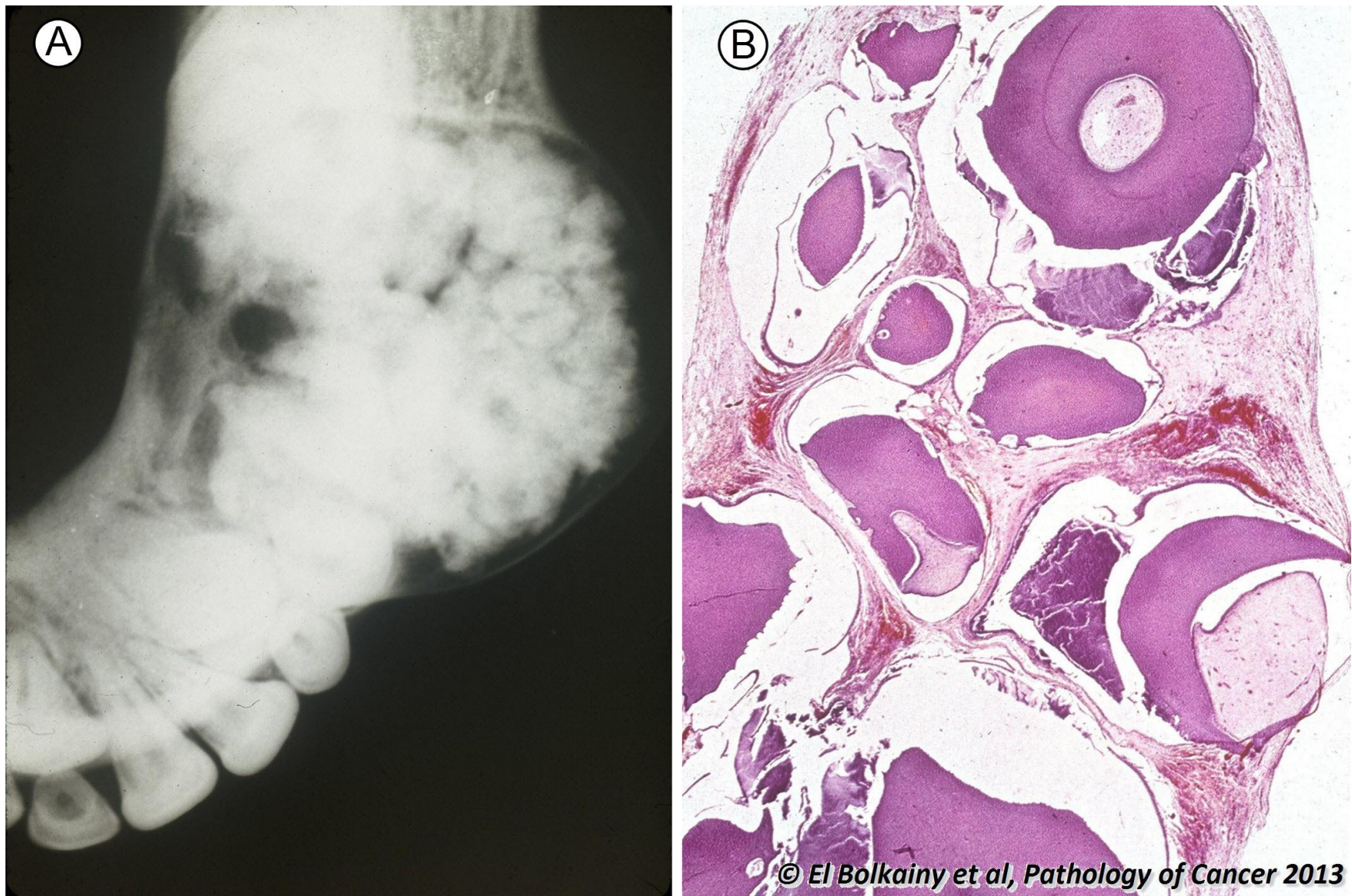
12.47 Complex odontoma, histology.



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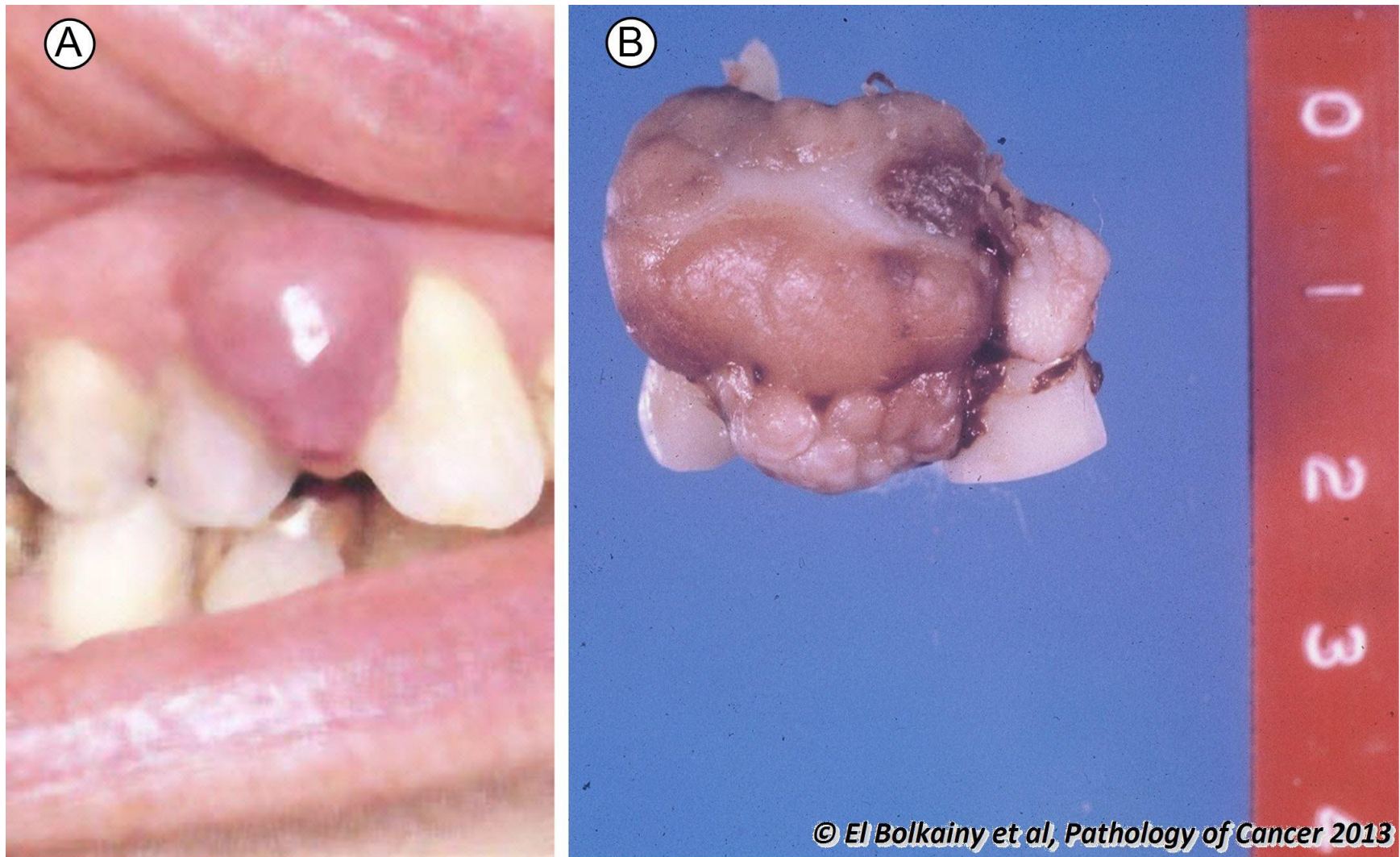
Picture 12-47 Complex odontoma, histology. It is composed of disorganized enamel, dentine, cementum and pulp tissue (no teeth structure).

12.48 Compound odontoma.



Picture 12-48 Compound odontoma. **A** Radiography shows multiple small teeth of variable shapes. **B** The histology is characterized by organized relation of tooth elements producing deformed teeth.

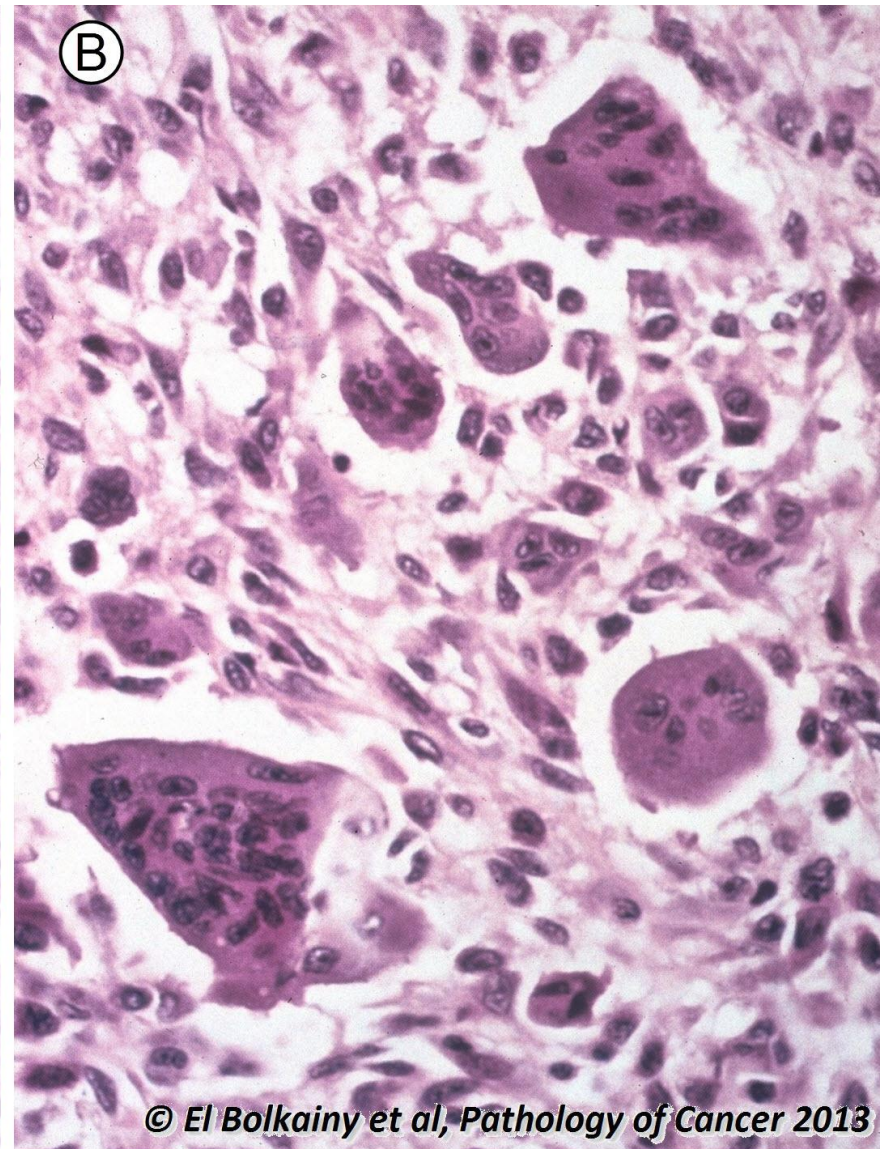
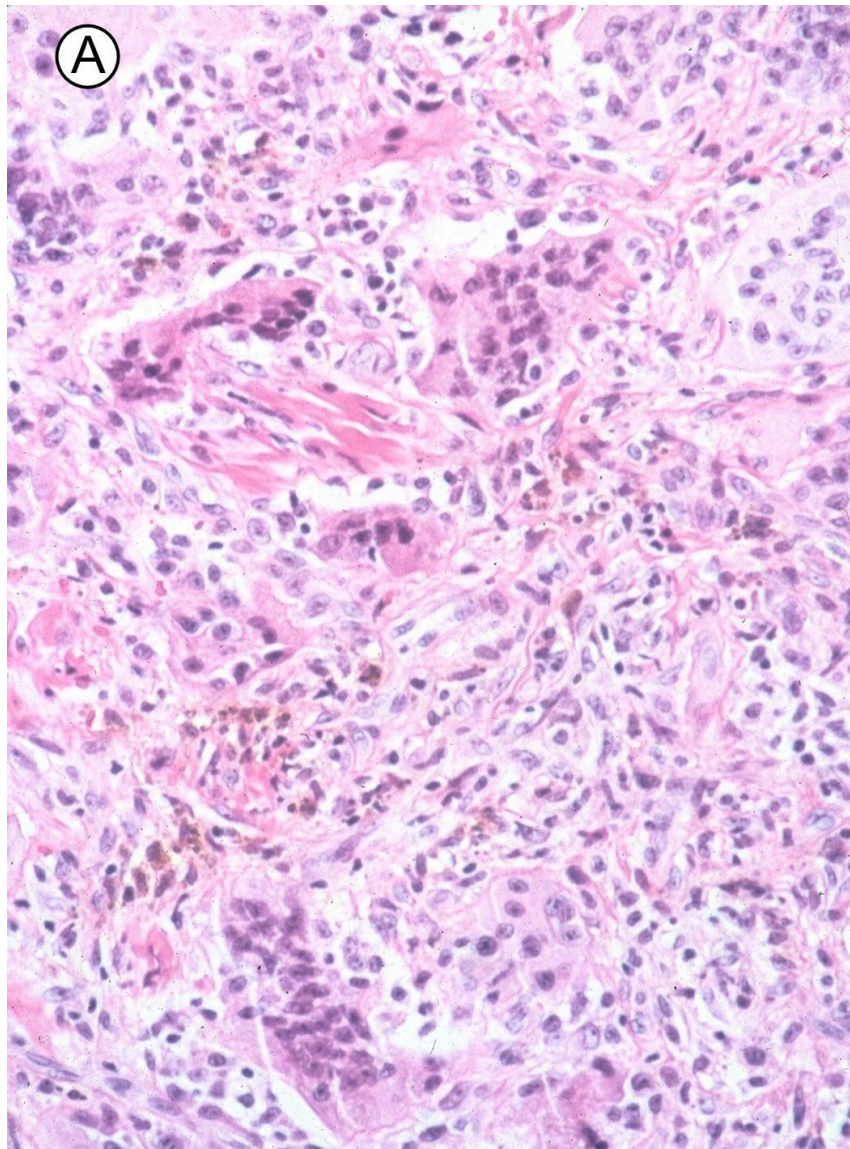
12.49 Giant cell lesion (formerly giant cell reparative granuloma).



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Picture 12-49 Giant cell lesion (formely giant cell reparative granuloma). A and B Gross features of peripheral lesion presenting in gum (epulis).

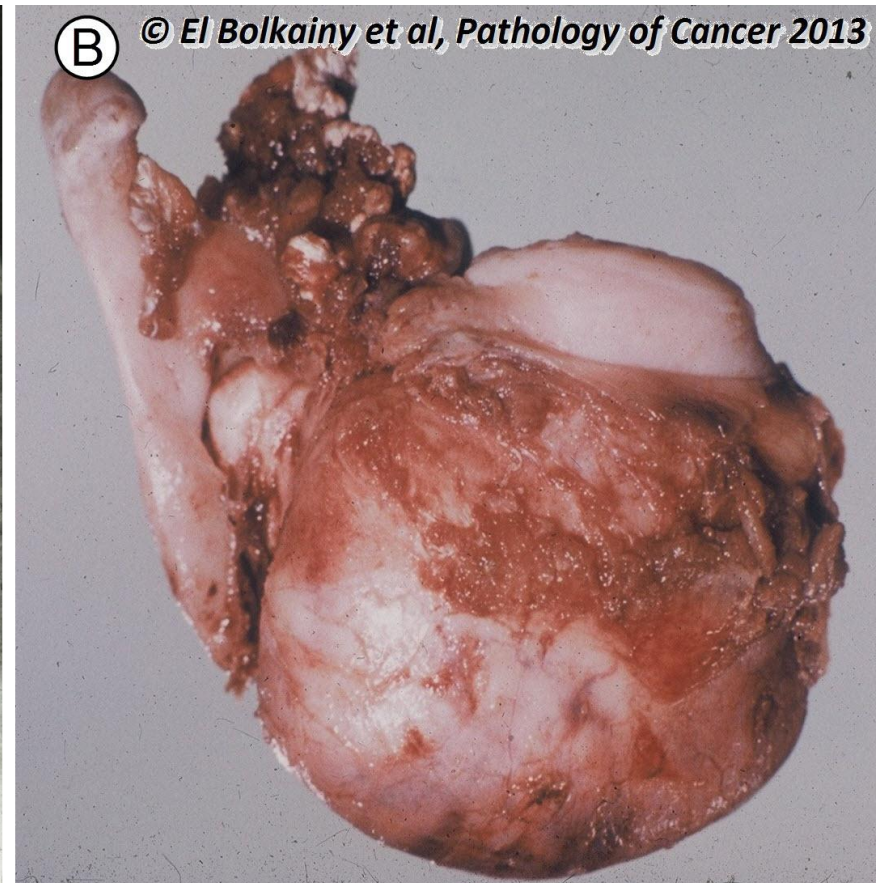
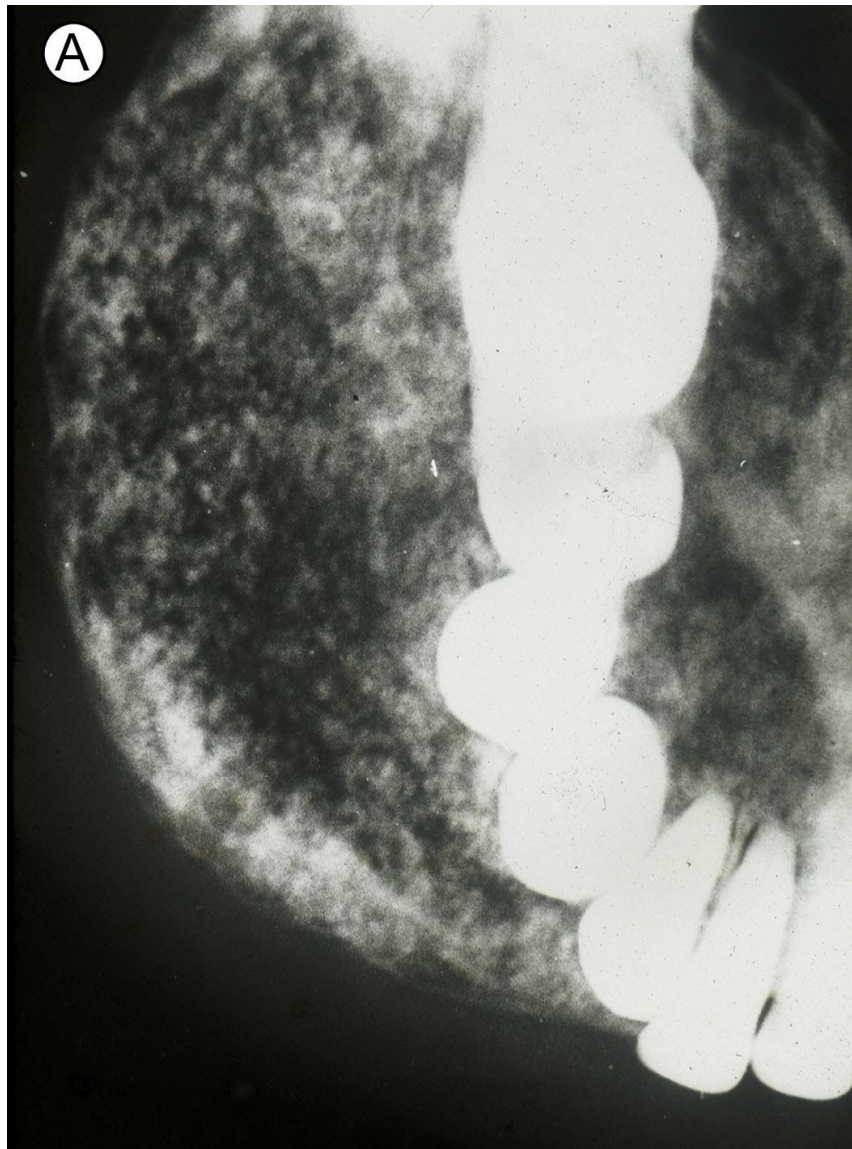
12.50 Giant cell lesion, histology.



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Picture 12-50 Giant cell lesion, histology. **A** Low power. **B** High power. A central lesion develops inside bone. The histology is characterized by spindle and ovoid cells, associated with multinucleated giant cells (osteoclastic-type).

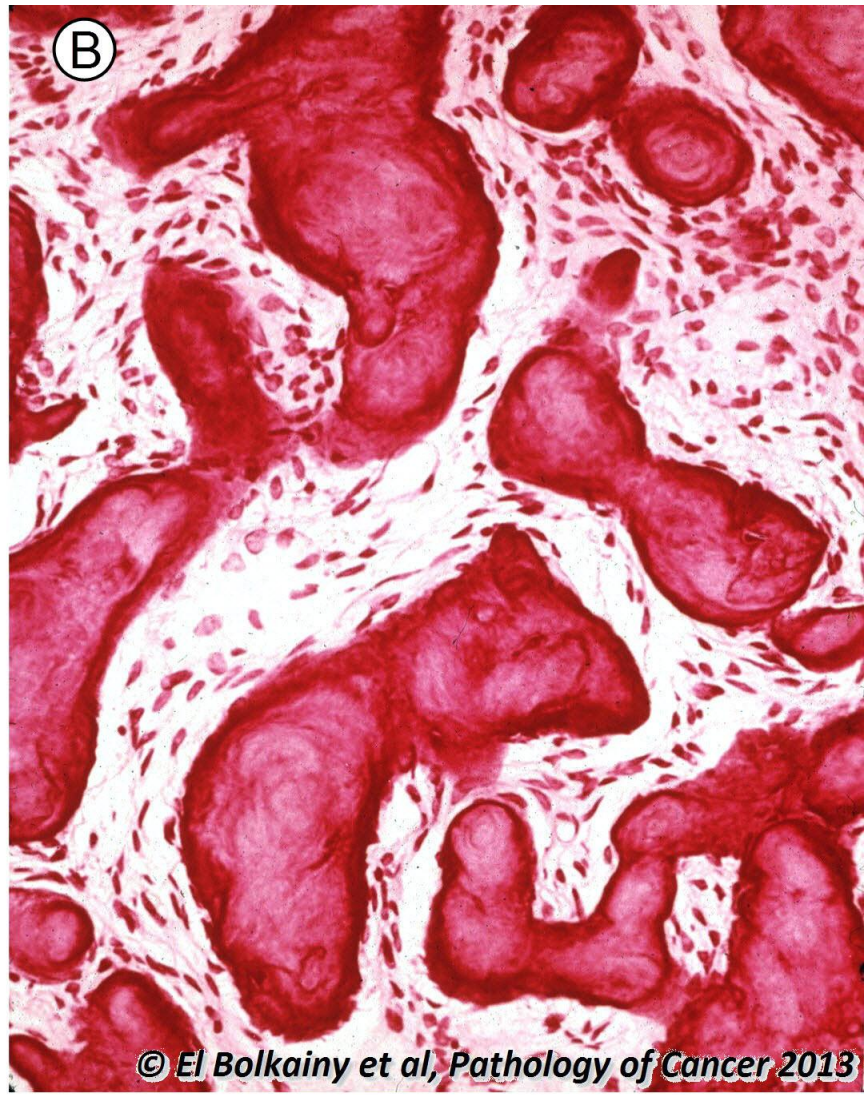
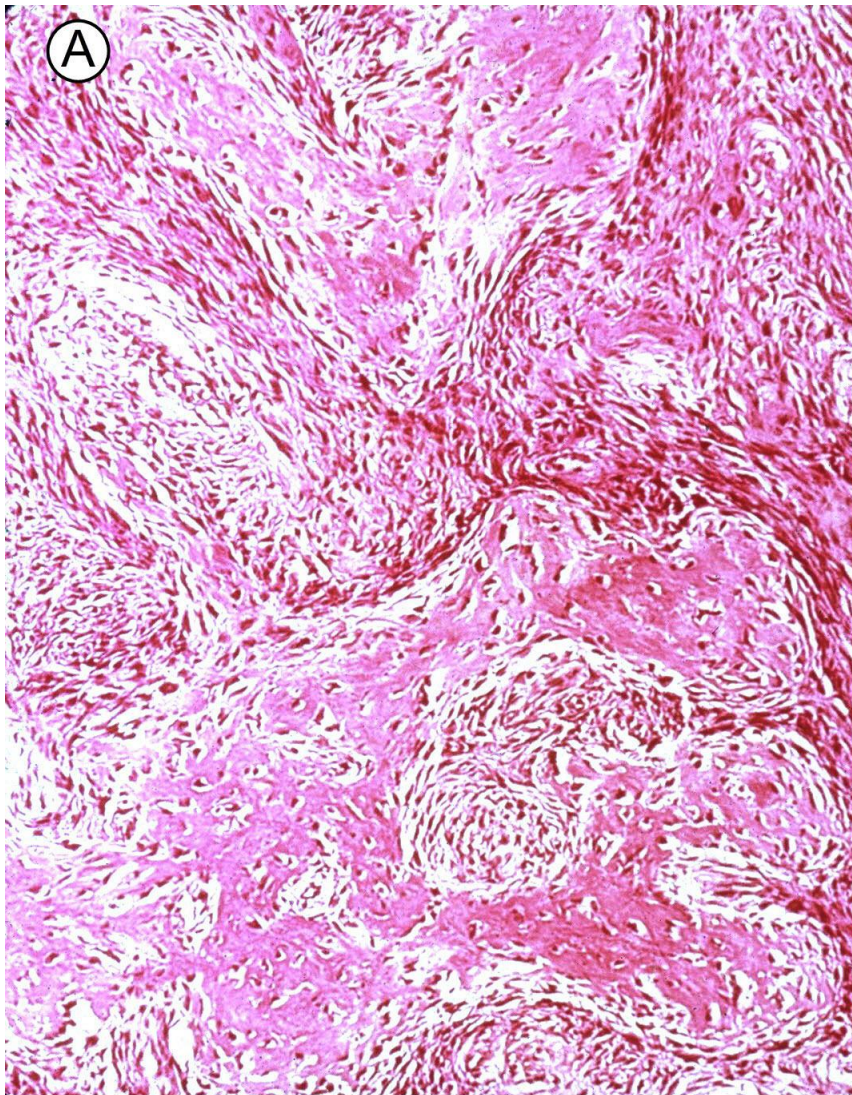
12.51 Ossifying fibroma of mandible.



Picture 12-51

Ossifying fibroma of mandible. **A** Radiography, a mass lesion with fine mottled opacities. **B** Hemimandibulectomy specimen. Note the bulky expansile tumor mass.

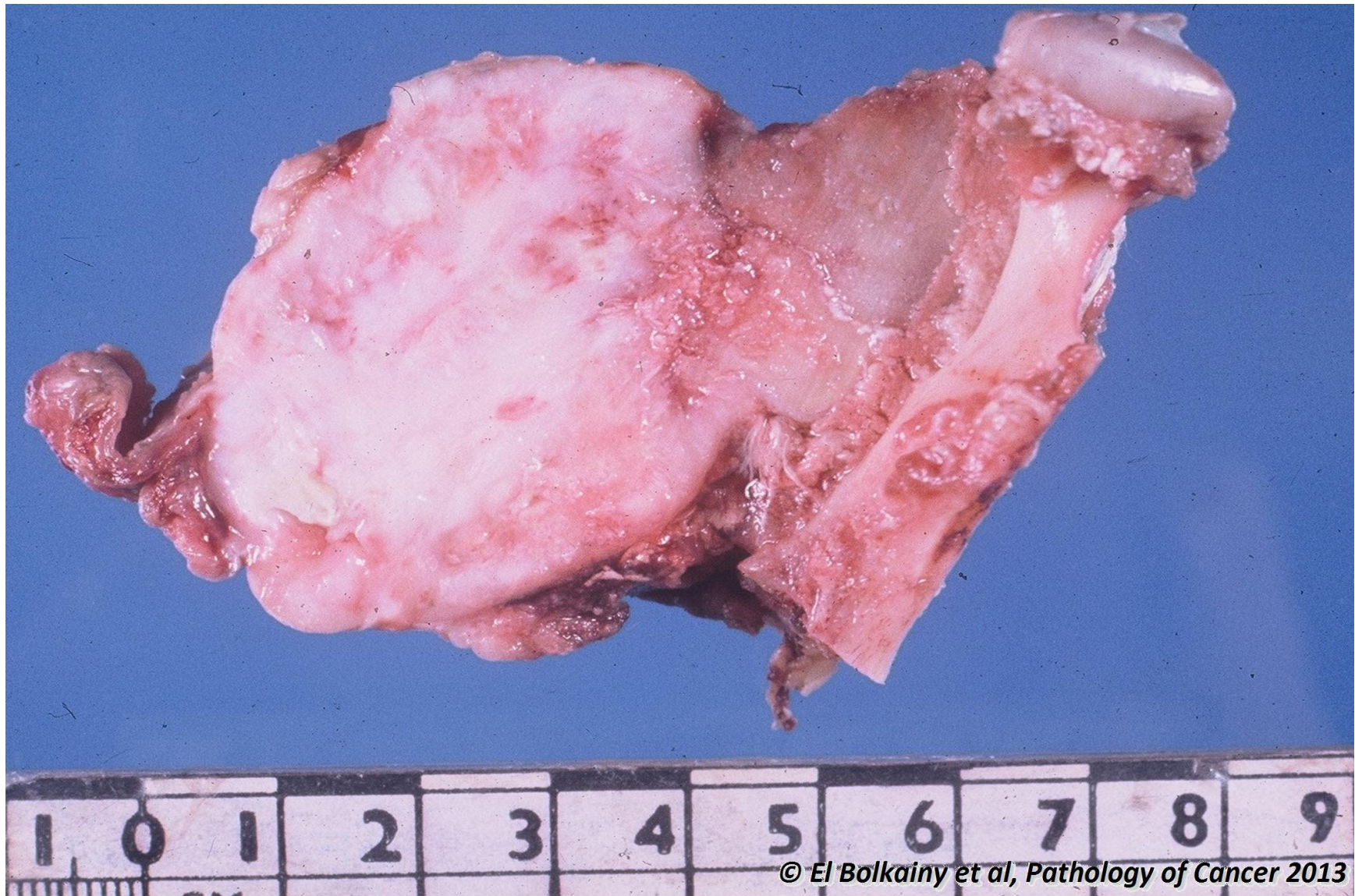
12.52 Ossifying fibroma, histology.



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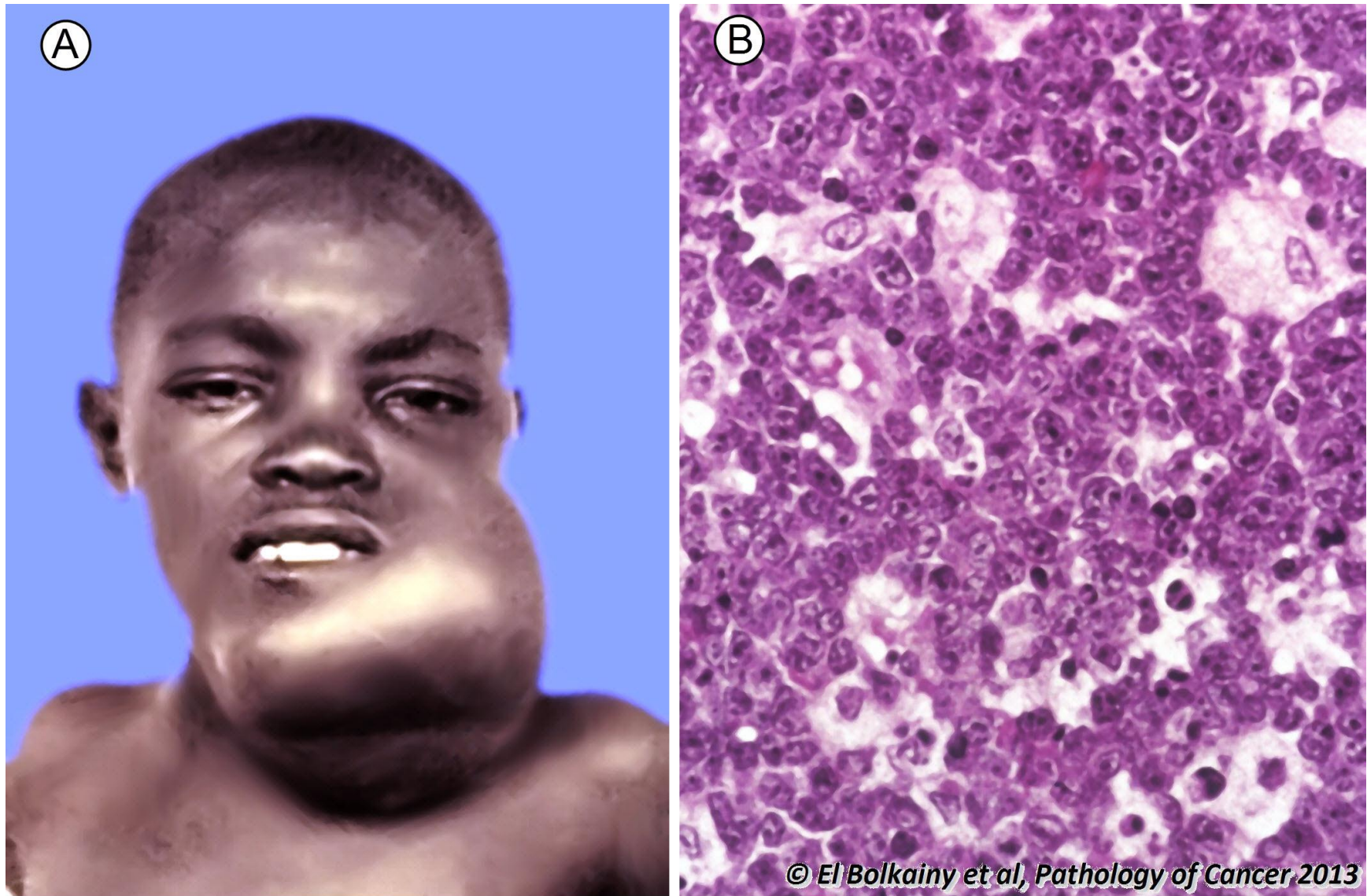
Picture 12-52 **Ossifying fibroma, histology.** **A** Ossifying fibroma (adult type). Cellular fibroblastic stroma contains osteoid tissue showing osteoblastic rimming. **B** Ossifying fibroma (juvenile type). It usually affects the maxilla in children and is more aggressive than the adult type. Histologically, in addition to osteoid, the tumor shows cementum-like psammomatous structures and multinucleated giant cells.

12.53 Osteosarcoma of mandible, gross features.



Picture 12-53 Osteosarcoma of mandible, gross features. Note the expansile nature of the mass which may arise centrally, or on the surface. It is observed only in adults.
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12.54 Burkitt's lymphoma.



Picture 12-54 Burkitt lymphoma. **A** The mandible is a common extranodal site. **B** Histology, it is characterized by lymphoid cells (B-phenotype) with very active mitosis, apoptosis associated with scattered histiocytosis (starry-sky appearance).