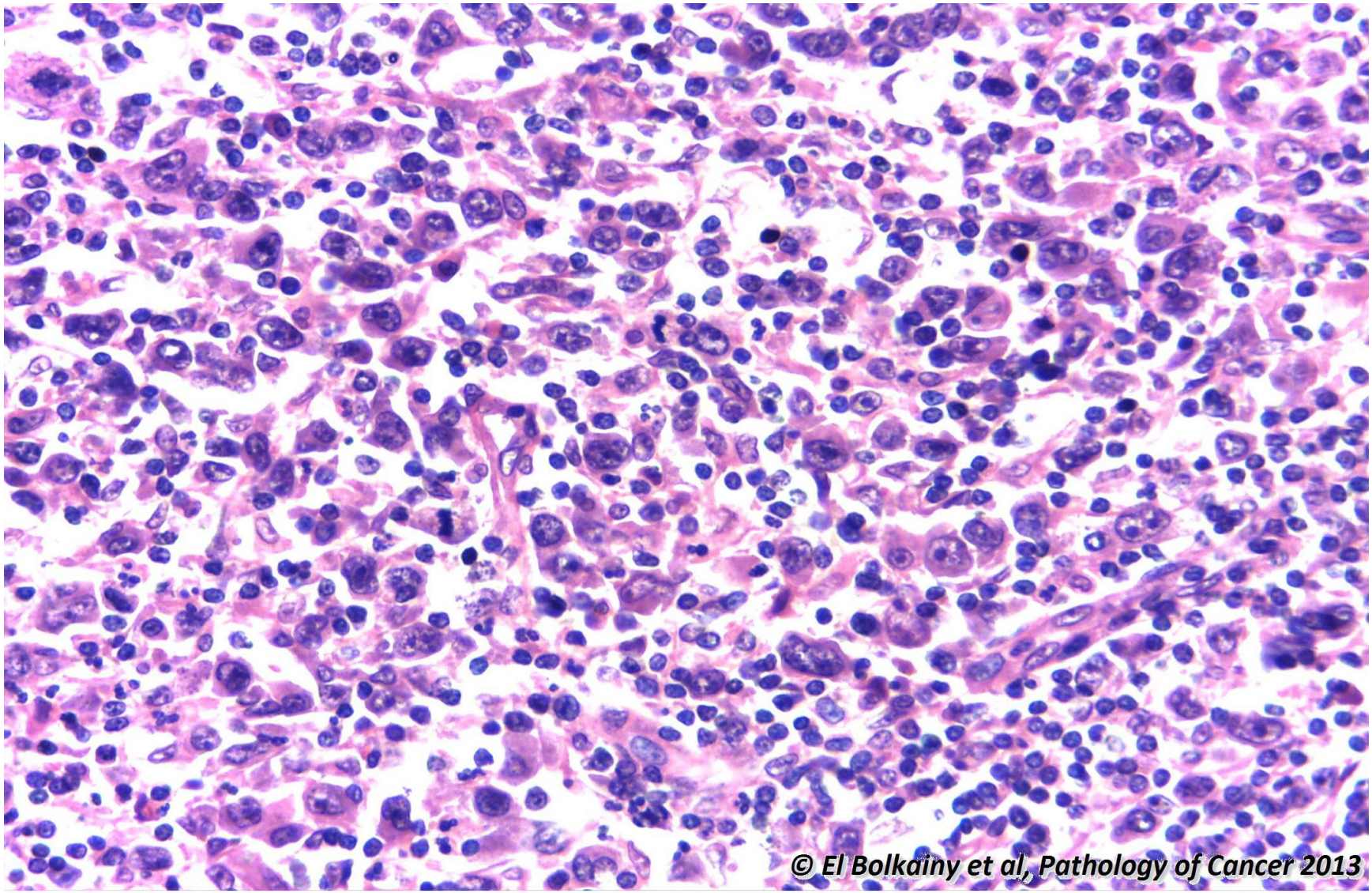
Part I

General Pathology of Cancer

Chapter 5

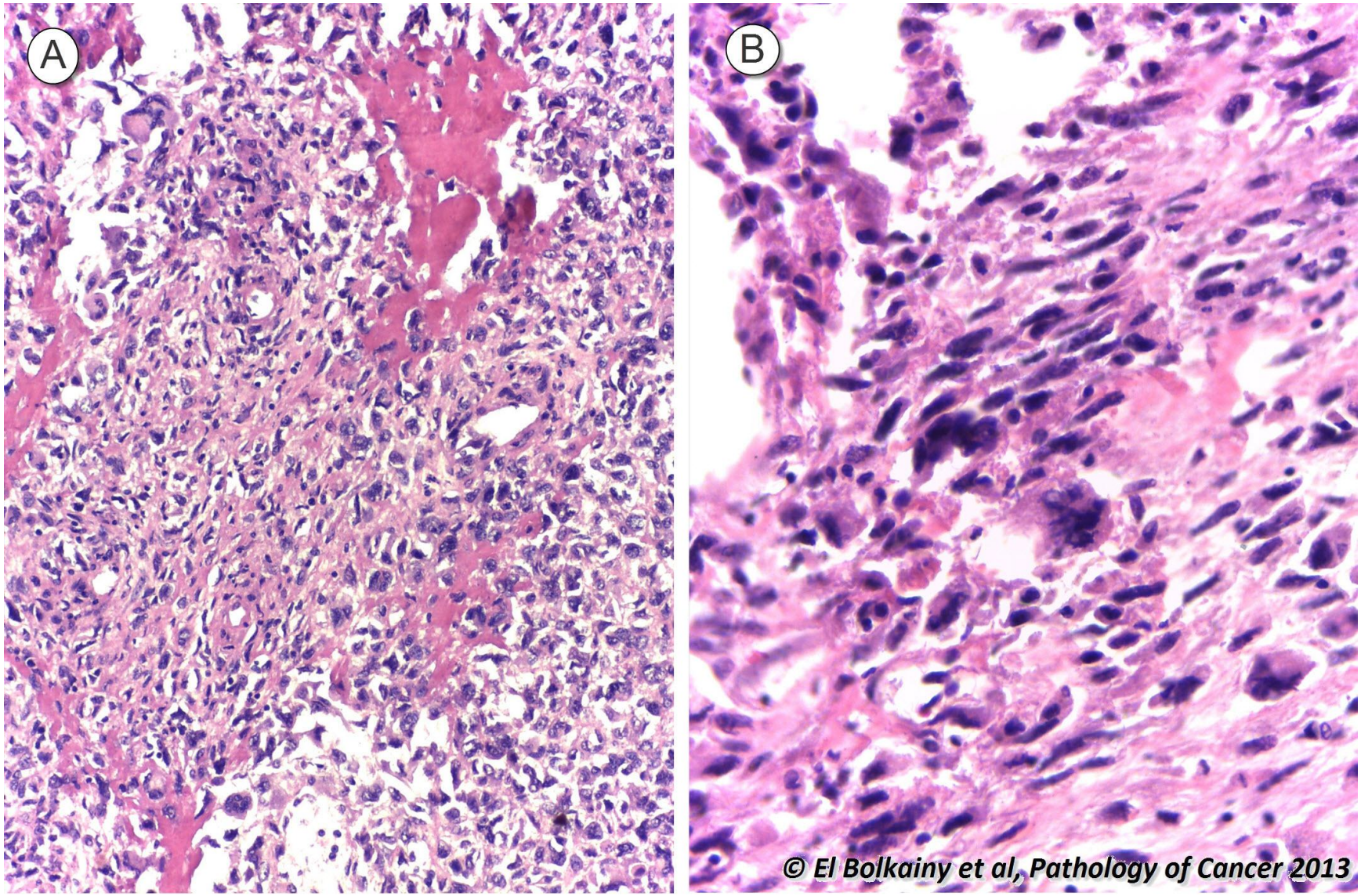
Criteria of malignancy and diagnostic pitfalls

5.1 Large cell lymphoma after chemotherapy, no therapy effect.



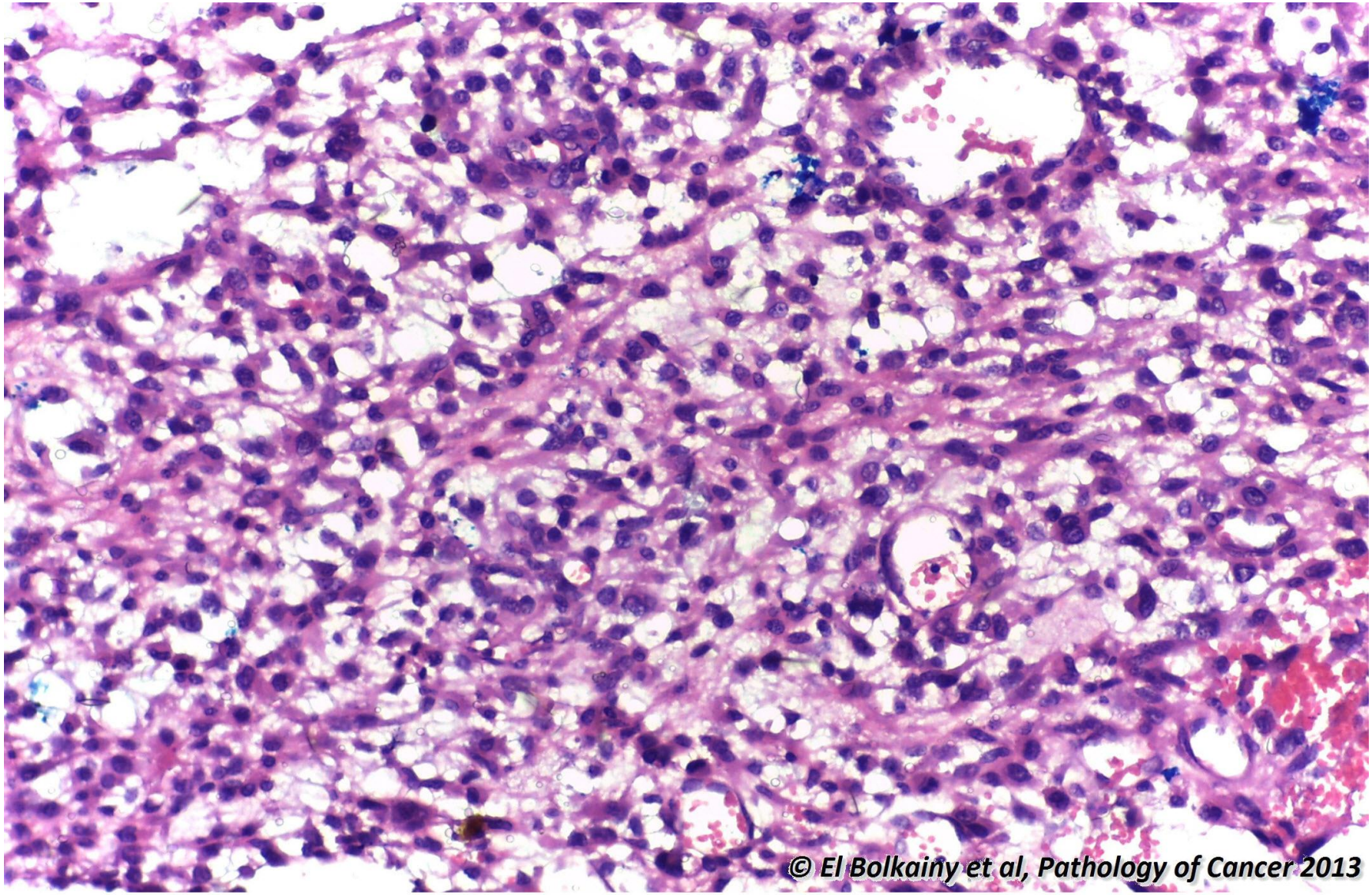
Picture 5-1 **Large cell lymphoma after chemotherapy, no therapy effect.** Note the morphologically intact cells without degeneration or cell population depletion. A picture closely similar to the original biopsy prior to therapy.

5.2 Osteosarcoma after chemotherapy.



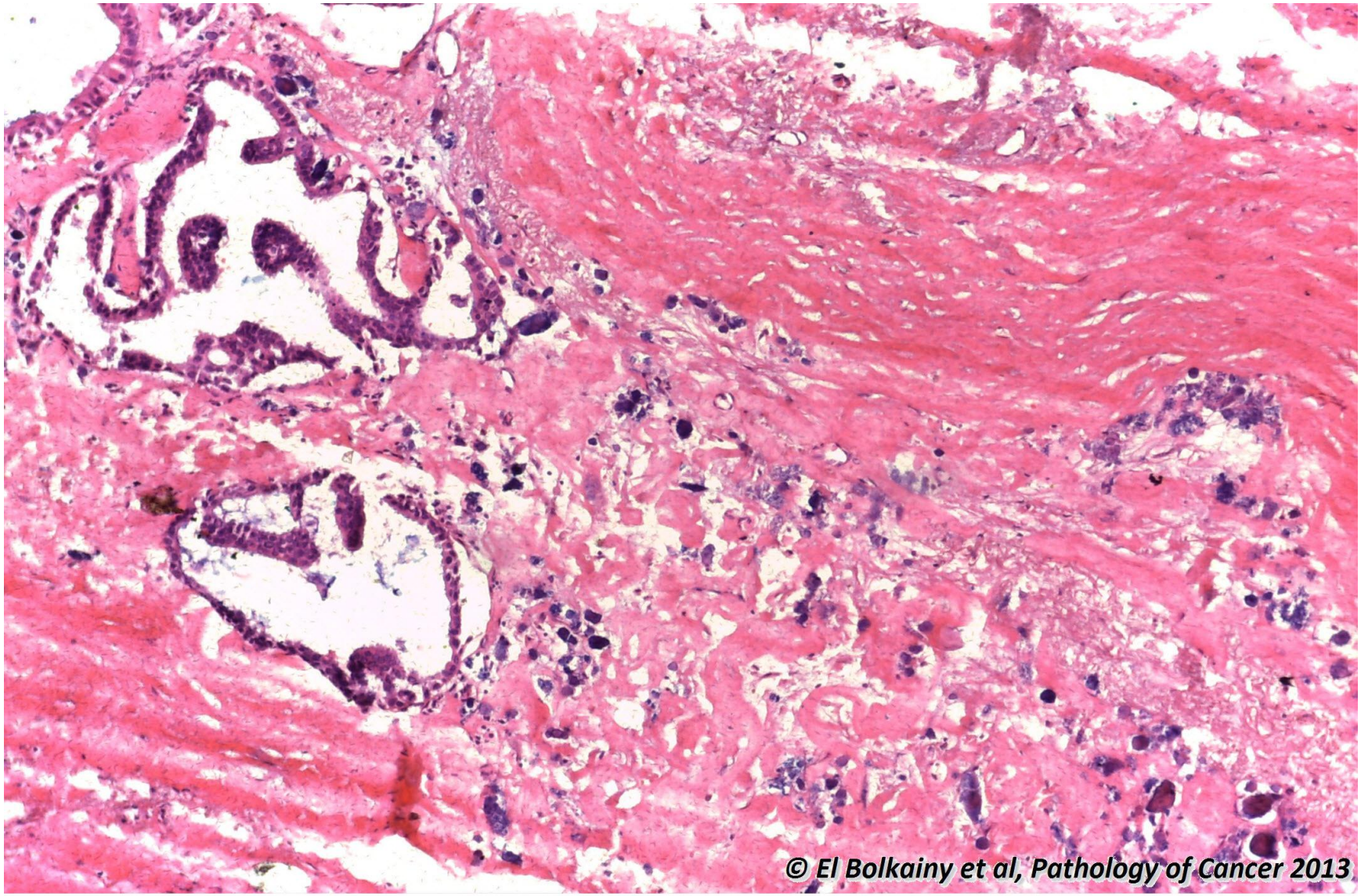
Picture 5-2 **Osteosarcoma after chemotherapy. A** No therapy effect is observed since all cells show preserved cytologic features with lack of degeneration and necrosis. **B** High power.

5.3 Gastrointestinal stromal tumor(GIST) after Gleevec therapy,



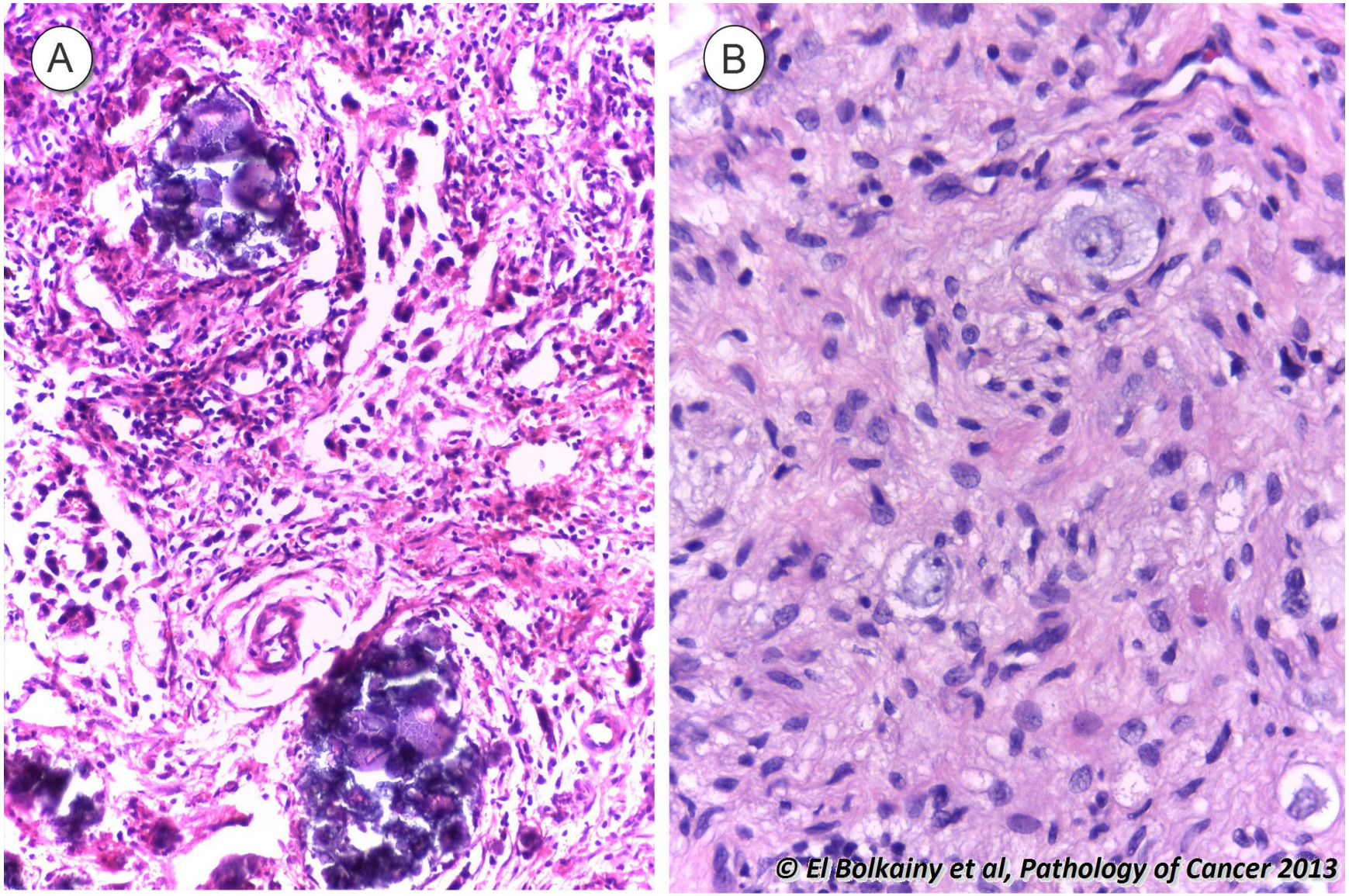
Picture 5-3 **Gastrintestinal stromal tumor (GIST) after Gleevac therapy,** showing only cytoplasmic vacuolation but no necrosis or fibrosis.

5.4 Breast carcinoma in situ after radiochemotherapy.



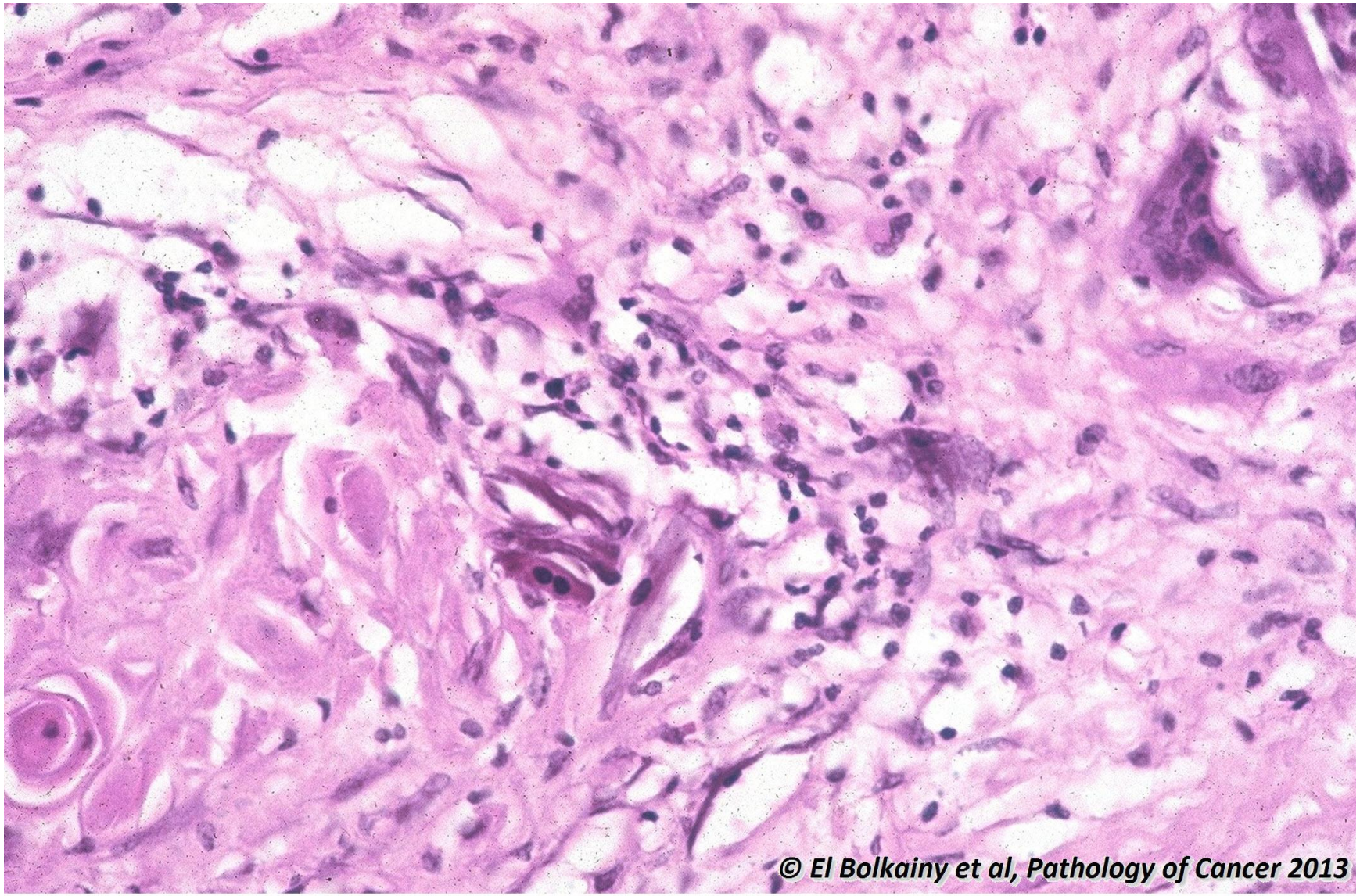
Picture 5-4 **Breast carcinoma in situ after radiochemotherapy.** No therapy effect in malignant ductal epithelium despite the marked dystrophic calcification in the stroma.

5.5 Neuroblastoma after chemotherapy.



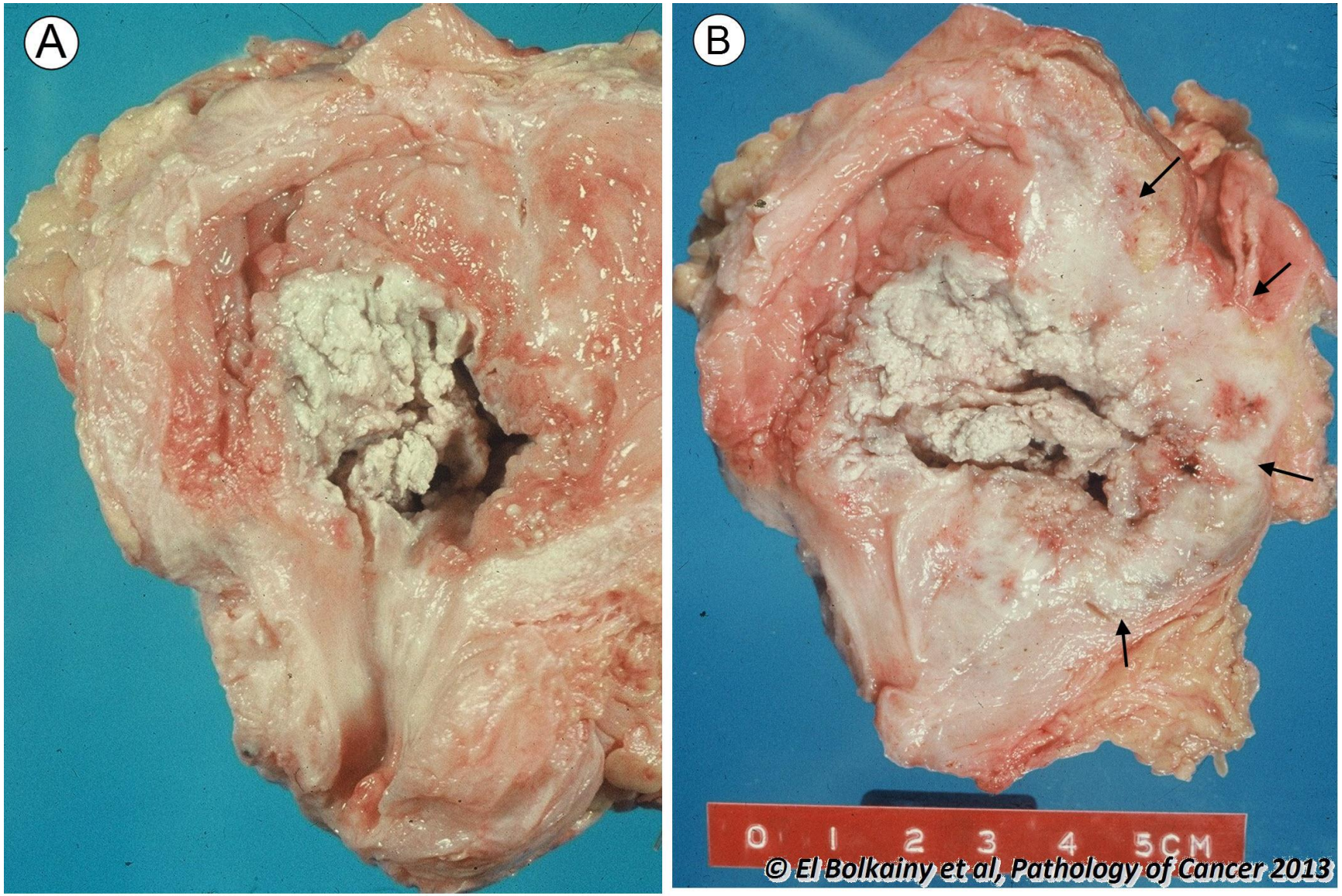
Picture 5-5 **Neuroblastoma after chemotherapy. A** Marked focal dystrophic calcification as well as focal tumor degeneration. **B** Induced ganglionic differentiation with complete depletion of immature neuroblasts and abundant stromal cells.

5.6 Post-radiation squamous cell carcinoma, grade 3.



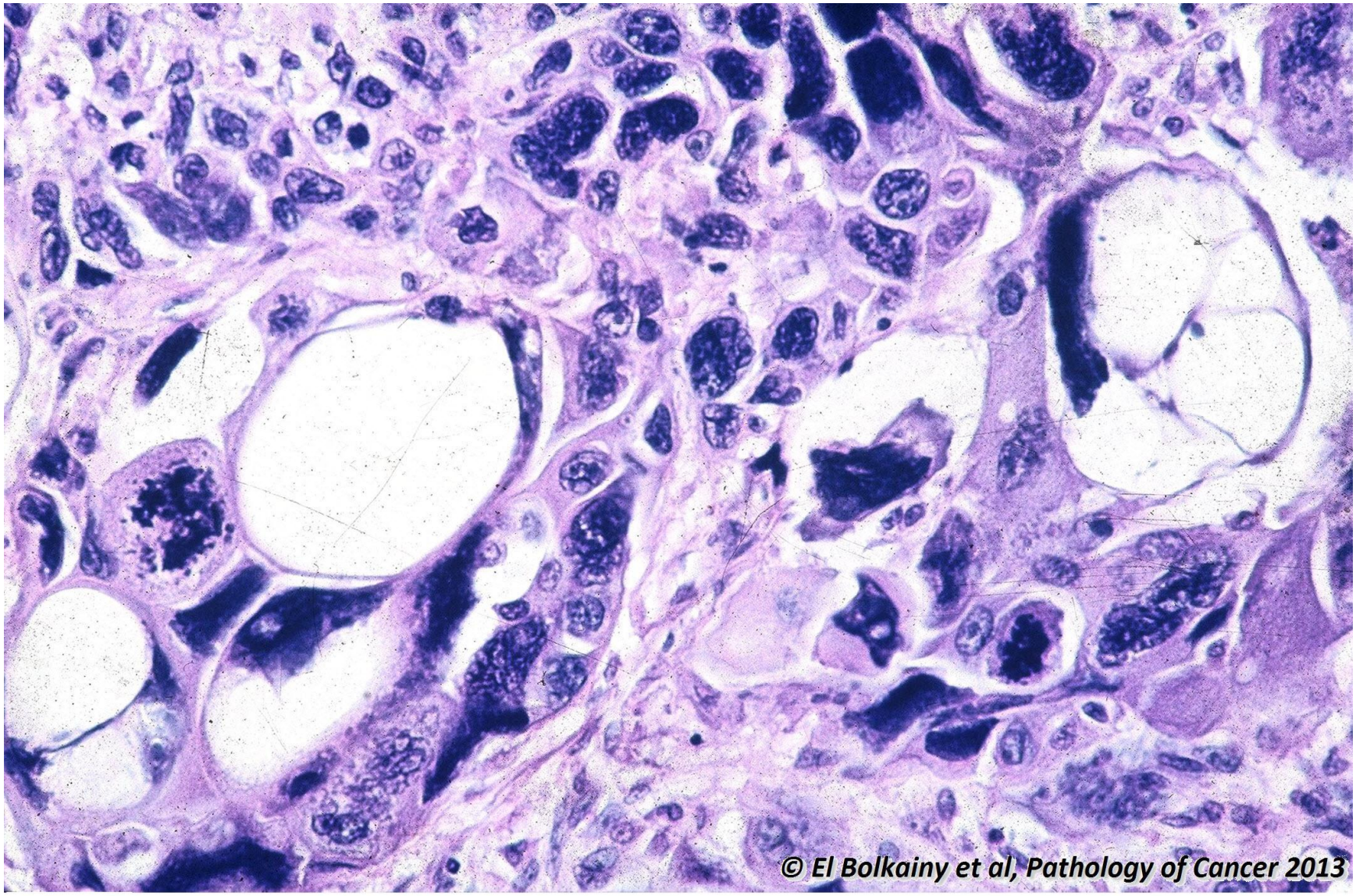
Picture 5-6 **Post-radiation squamous cell carcinoma, grade 3.** There is induced differentiation of the tumor with down grading (grade 1) in the form of prominent keratinization and giant cell reaction. This is due to selective elimination of high grade tumor cells by therapy.

5.7 Post-radiation squamous cell carcinoma, grade 3, cystectomy specimen.



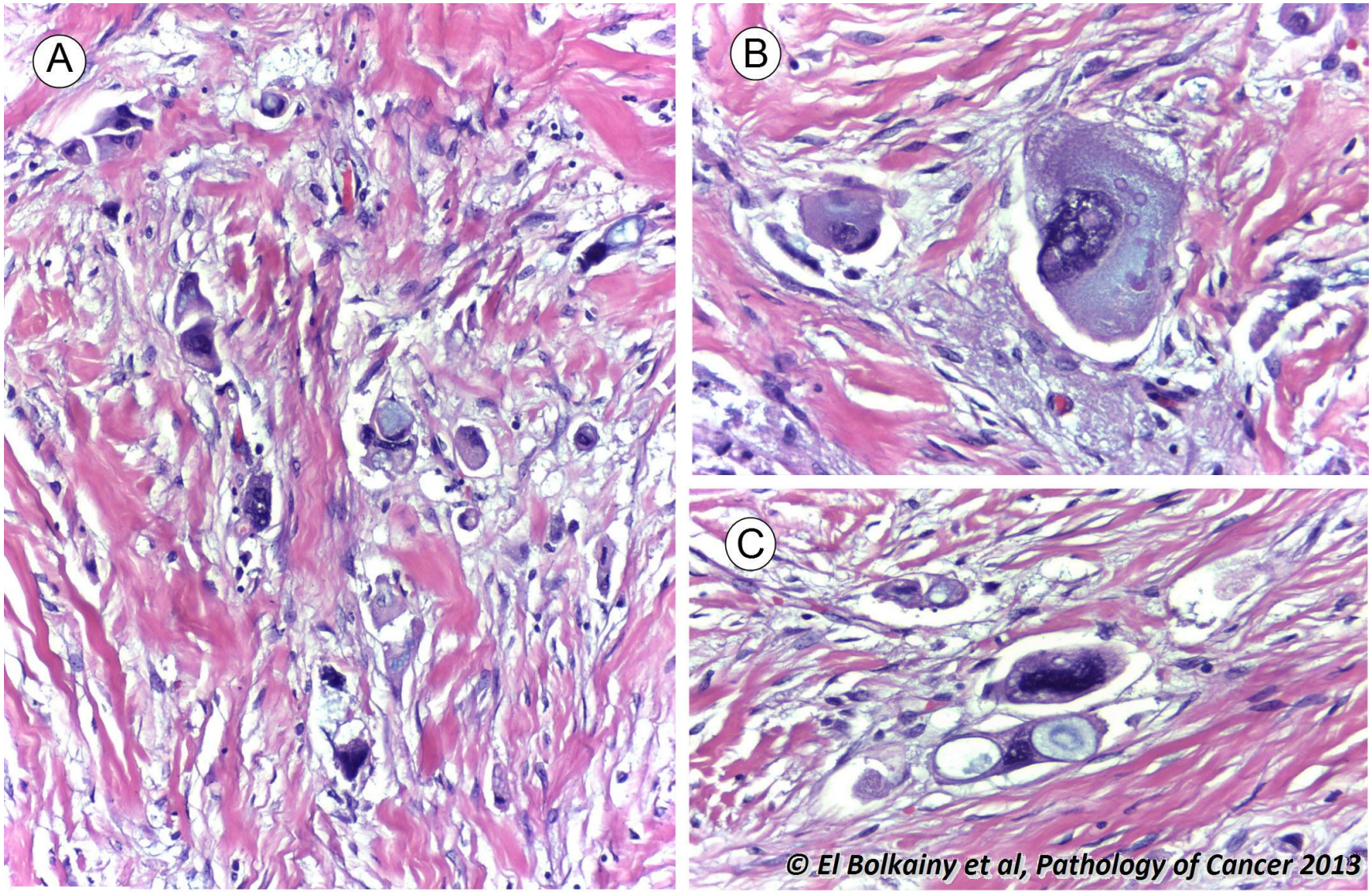
Picture 5-7 **Post-radiation squamous cell carcinoma, grade 3, cystectomy specimen. A** Surface view showing marked central necrosis and ulceration. **B** Cut section showing a peripheral zone (arrows) which often contains viable tumor cells that must be sampled for study.

5.8 Squamous cell carcinoma, post irradiation.



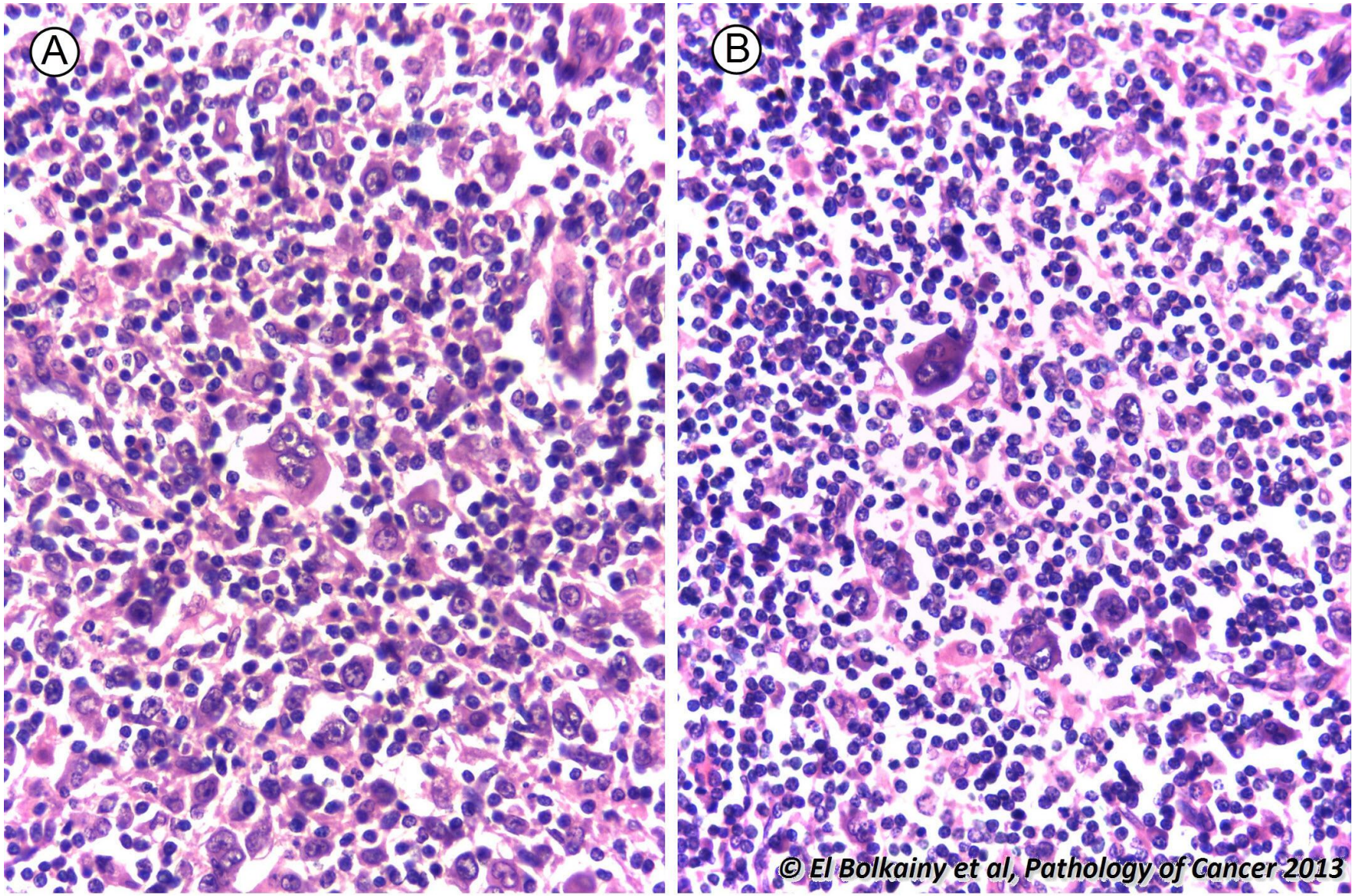
Picture 5-8 **Squamous cell carcinoma, post irradiation.** There is marked degenerative radiation changes in the form of cytomegaly, cytoplasmic vacuolation, and multinucleation.

5.9 Breast cancer after neoadjuvant chemotherapy.



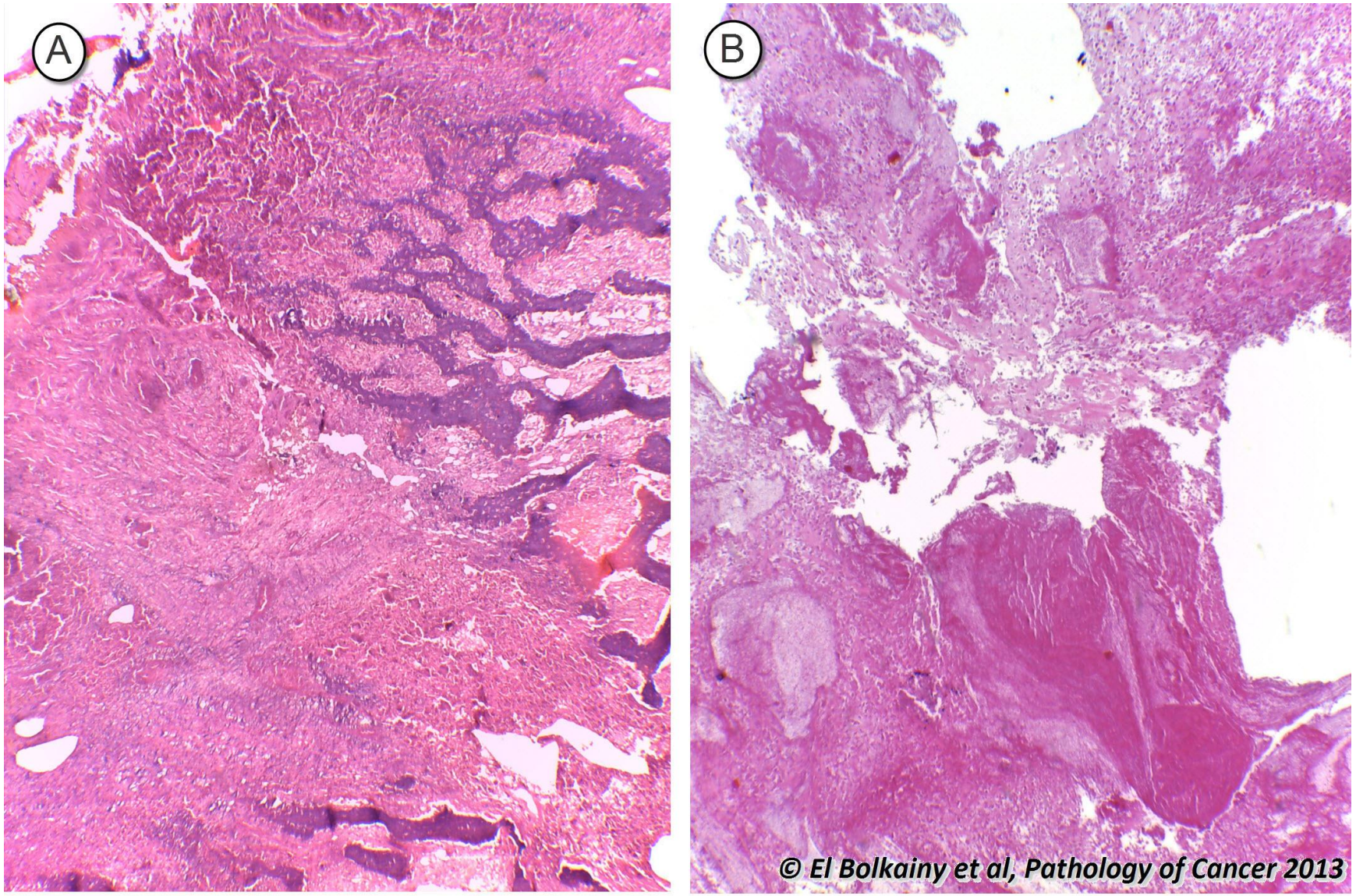
Picture 5-9 **Breast cancer after neoadjuvant chemotherapy. A** Low power showing degenerative changes in tumor cells as well as fibrosis. **B** Cytomegaly and nuclear vacuolation. **C** Cytoplasmic vacuolation.

5.10 Large cell NHL after chemotherapy.



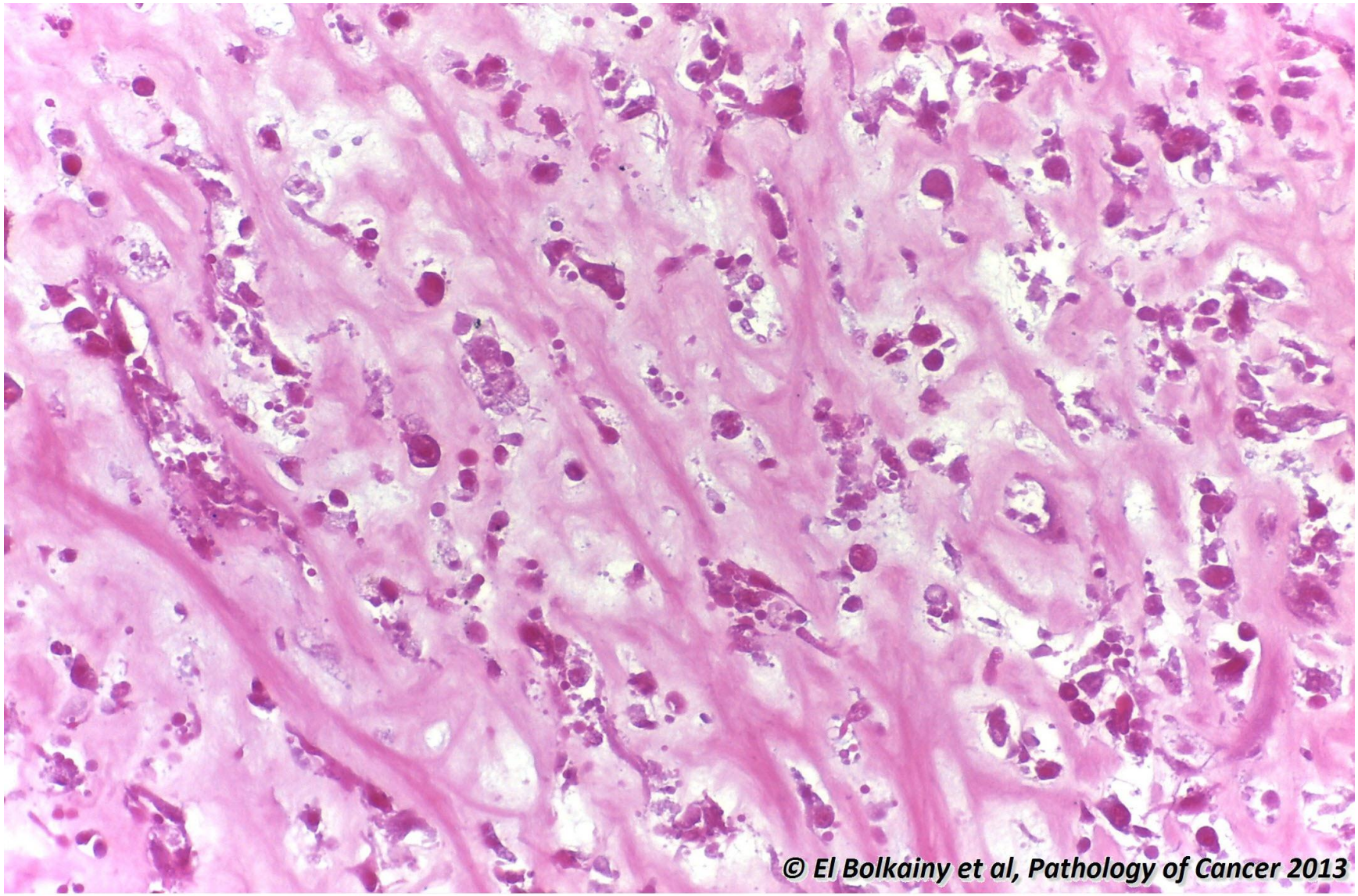
Picture 5-10 **Large cell NHL after chemotherapy.** **A** and **B** The therapy has induced many multinucleated cells with prominent nucleoli simulating RS cells hence tumors cannot be correctly typed after therapy.

5.11 Osteosarcoma after chemotherapy.



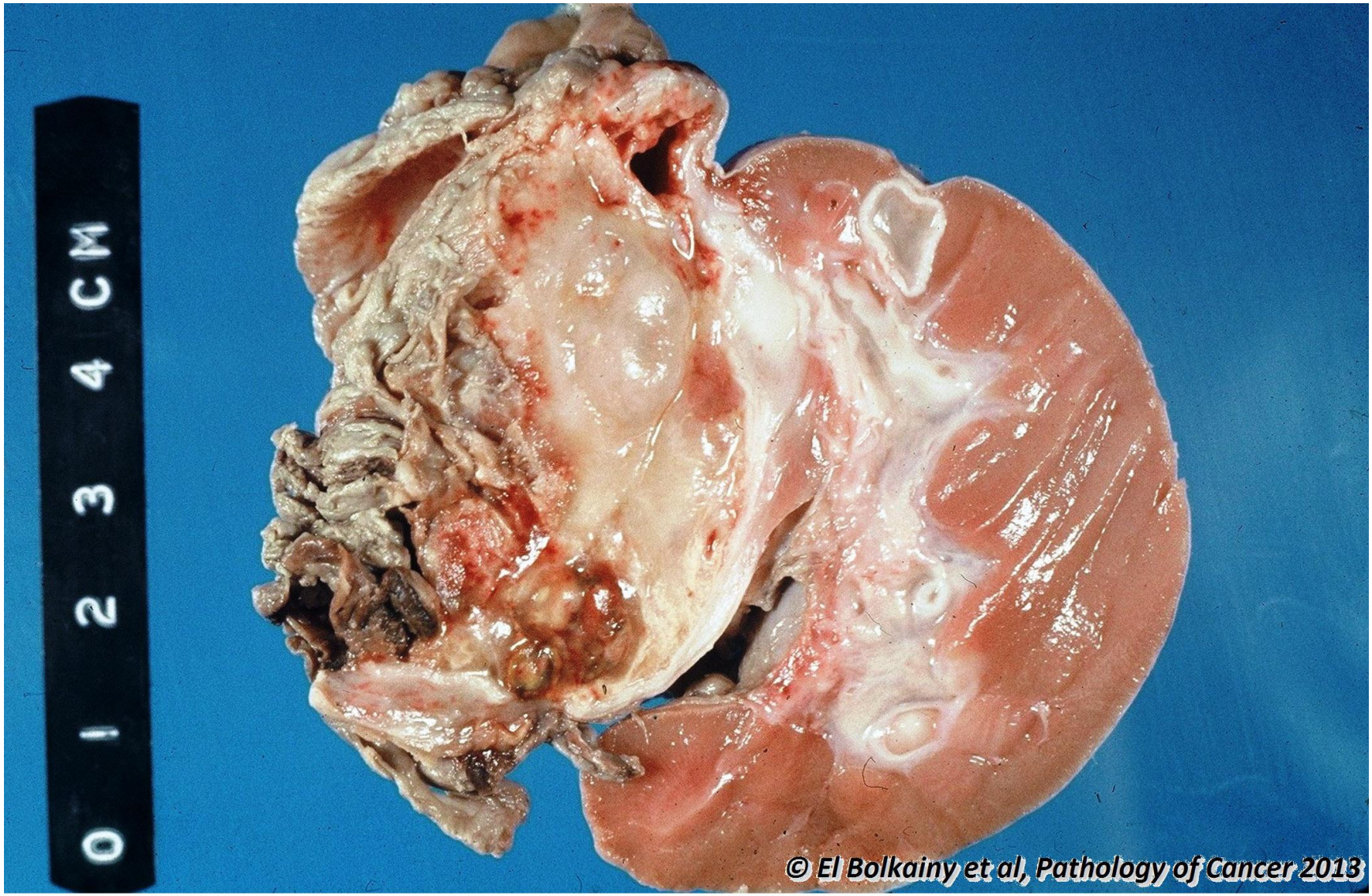
Picture 5-11 **Osteosarcoma after chemotherapy. A** There is marked chemotherapy effect in the form of massive necrosis and fibrosis. **B** Details of the necrotic area showing absence of intact tumor cells.

5.12 Osteosarcoma after chemotherapy.



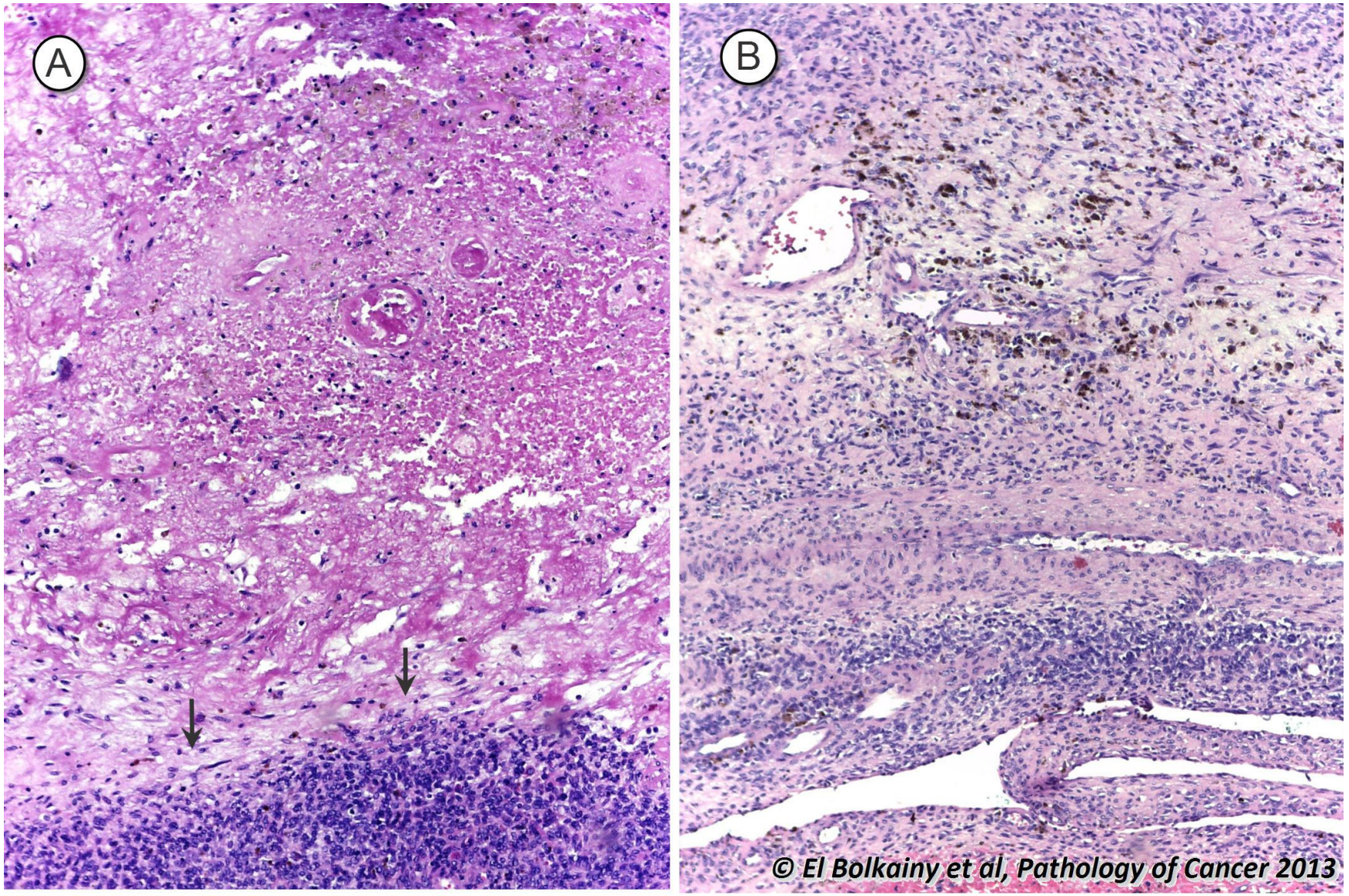
Picture 5-12 **Osteosarcoma after chemotherapy.** Marked therapy effect showing necrosis and fragmentation of nuclei.

5.13 Wilms tumor nephrectomy specimen after radiochemotherapy.



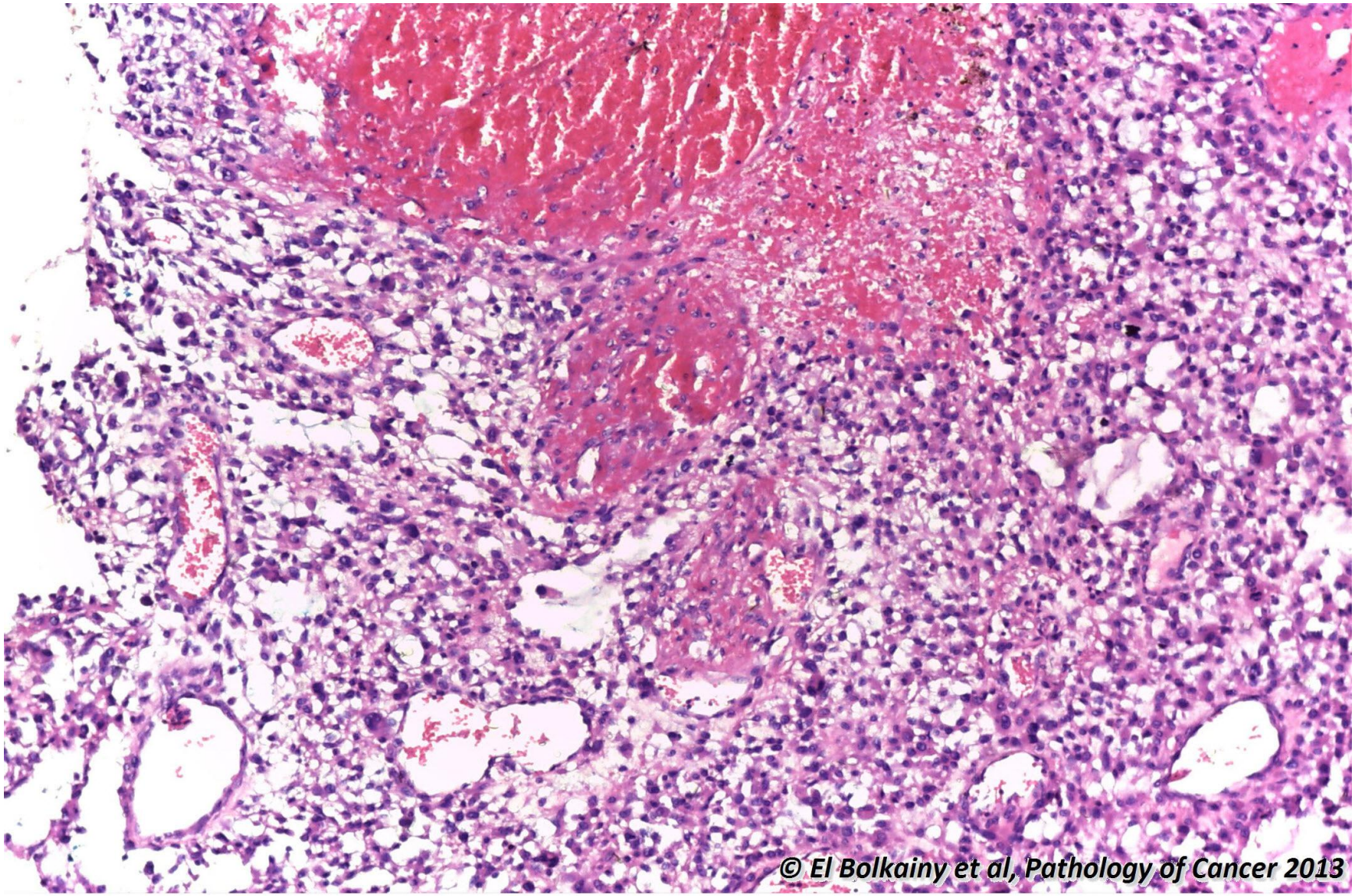
Picture 5-13 **Wilms tumor nephrectomy specimen after radiochemotherapy** showing marked necrosis and cystic changes in the tumor.

5.14 PNET after radiochemotherapy.



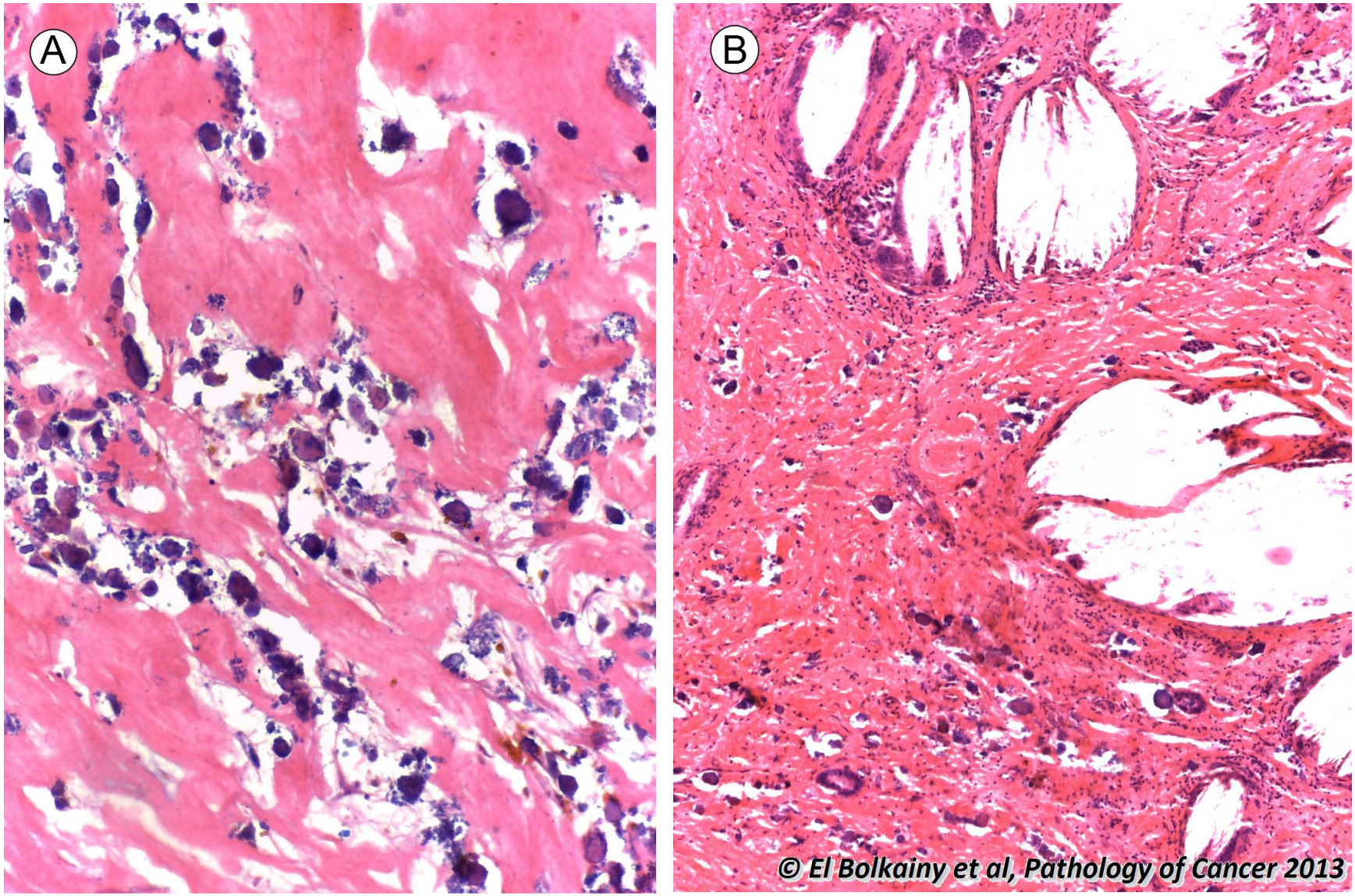
Picture 5-14 **PNET after radiochemotherapy.** In spite of moderate therapy effect, **A** Most of the tumor has undergone necrosis but unaffected cells are evident (arrow). **B** Peripheral intact cells with marked degenerative changes, hemosiderin pigment (In the upper part of picture).

5.15 GIST after therapy,



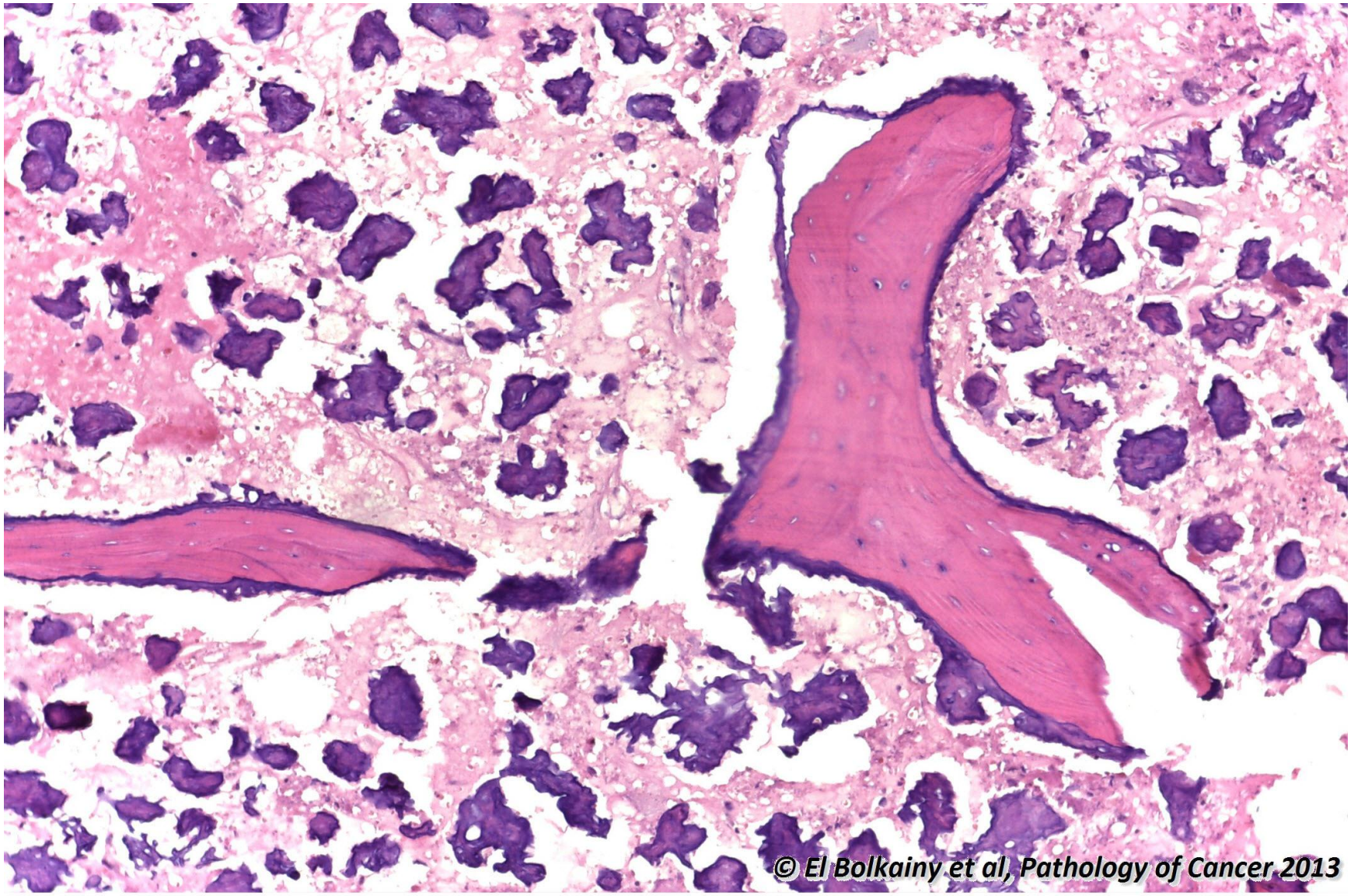
Picture 5-15 **GIST after therapy,** showing an upper necrotic hemorrhagic area (reddish area) indicating mild therapy effect.

5.16 Breast after chemotherapy



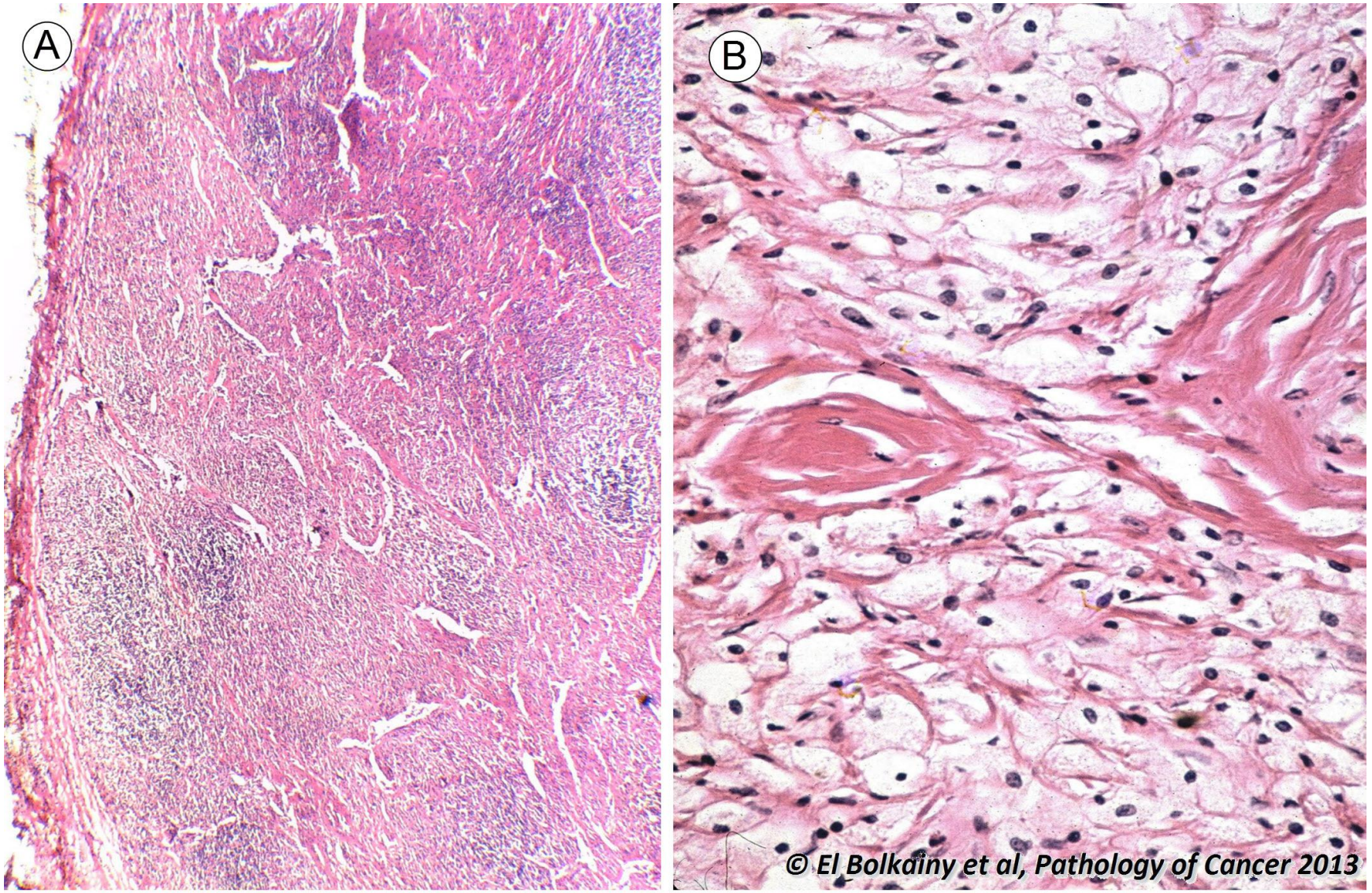
Picture 5-16 **Breast after chemotherapy** showing marked therapy effect with disappearance of the tumor. **A** Marked dystrophic calcification and fibrosis. **B** Cholestrol clefts.

5.17 Osteosarcoma, marked chemotherapy effect.



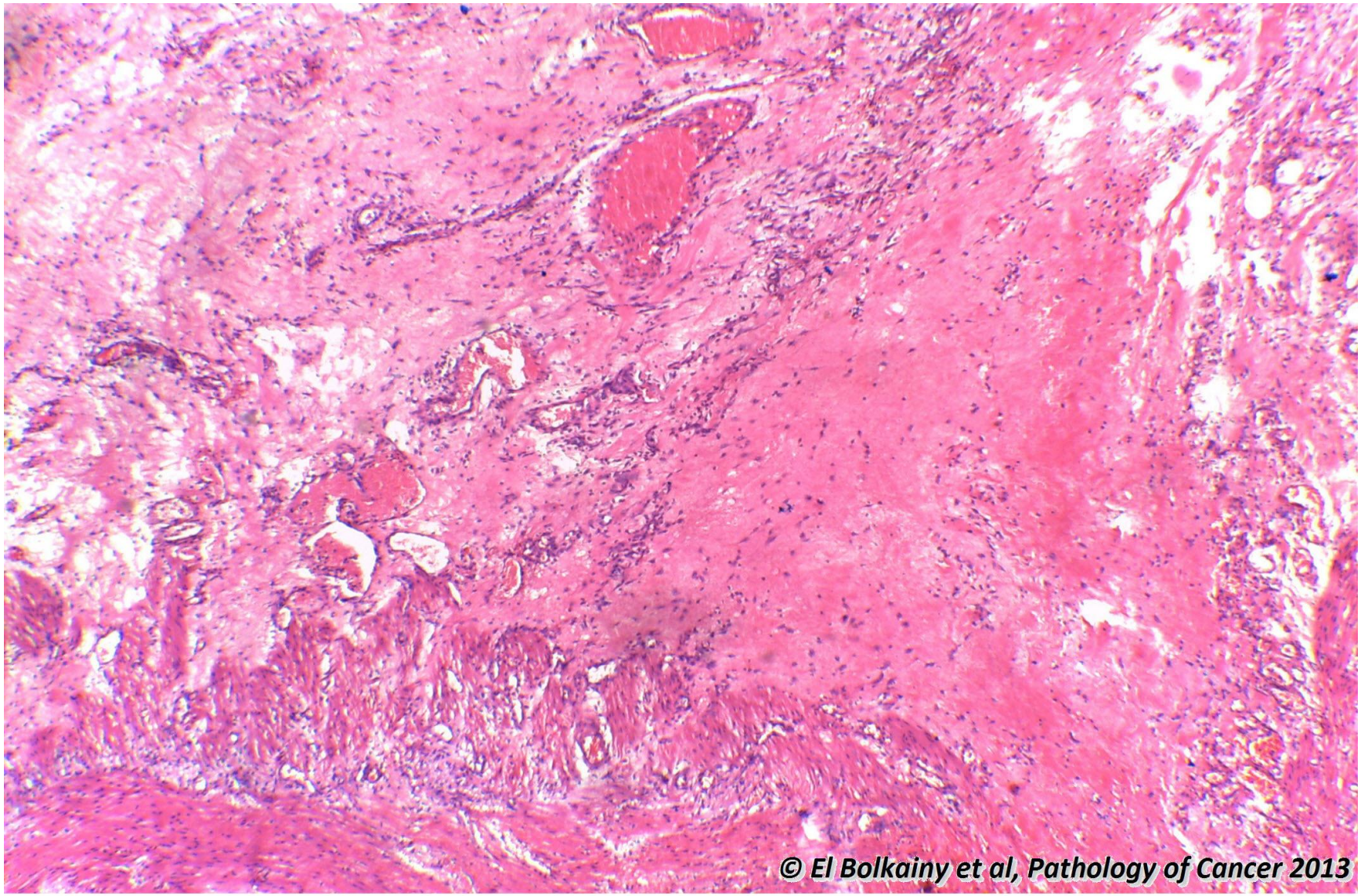
Picture 5-17 **Osteosarcoma, marked chemotherapy effect.** There is complete disappearance of tumor cells. Only remaining mature bone trabeculae (large red structures) and neoplastic osteoid (small blue structures)

5.18 Lymphoma, marked therapy effect.



Picture 5-18 **Lymphoma, marked therapy effect. A** NHL, depletion of lymphoid cells with vascularization of the stroma. **B** Hodgkin lymphoma, marked histiocytic and fibrotic reaction with disappearance of RS cells and lymphocytes.

5.19 GIST after prolonged Gleevec therapy, marked therapy effect.

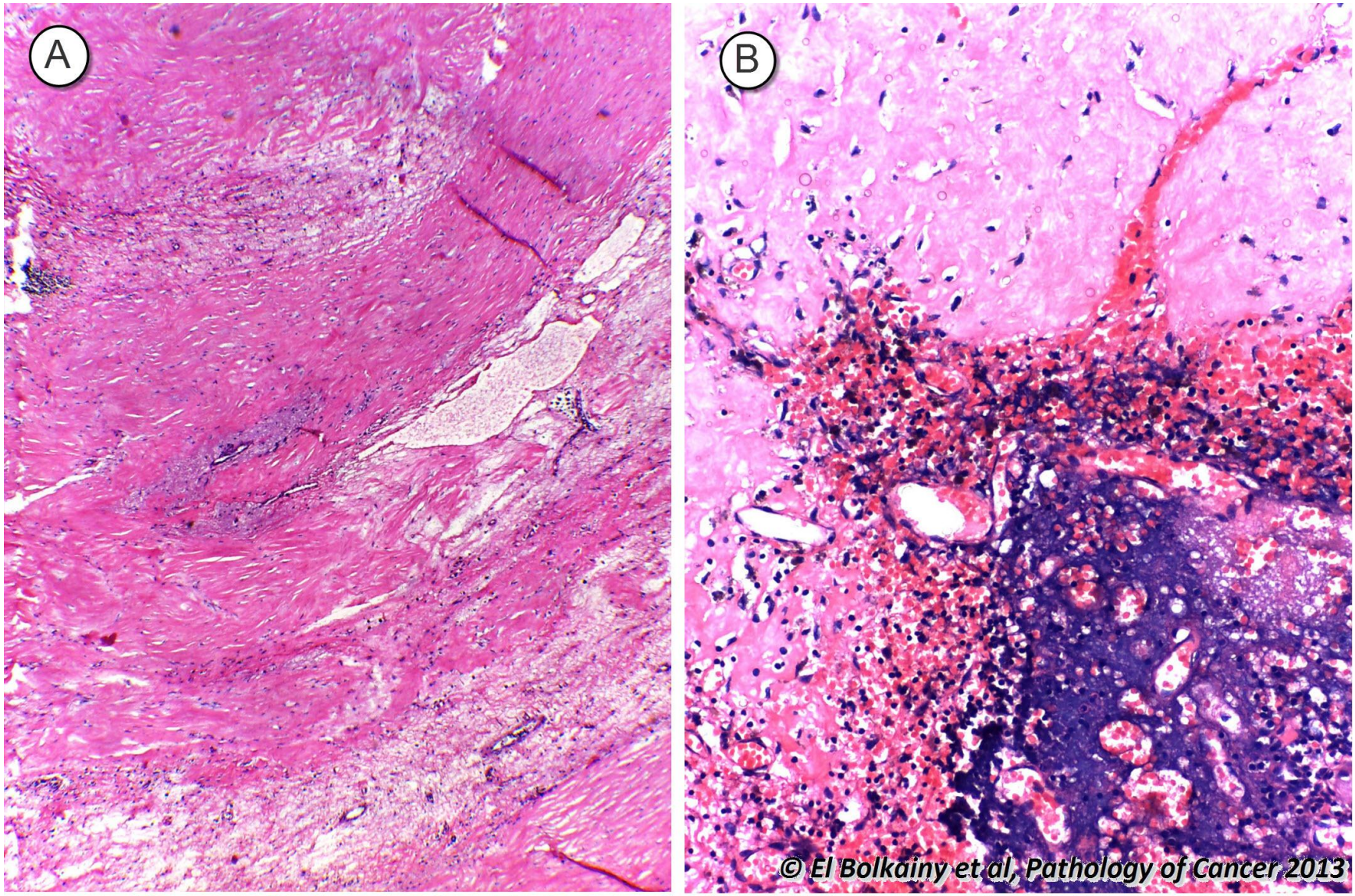


Picture 5-19 **GIST after prolonged Gleevac therapy, marked therapy effect.** There is disappearance of tumor cells and its replacement by fibrosis.

5.20 Metastatic breast carcinoma in lymph node after therapy,

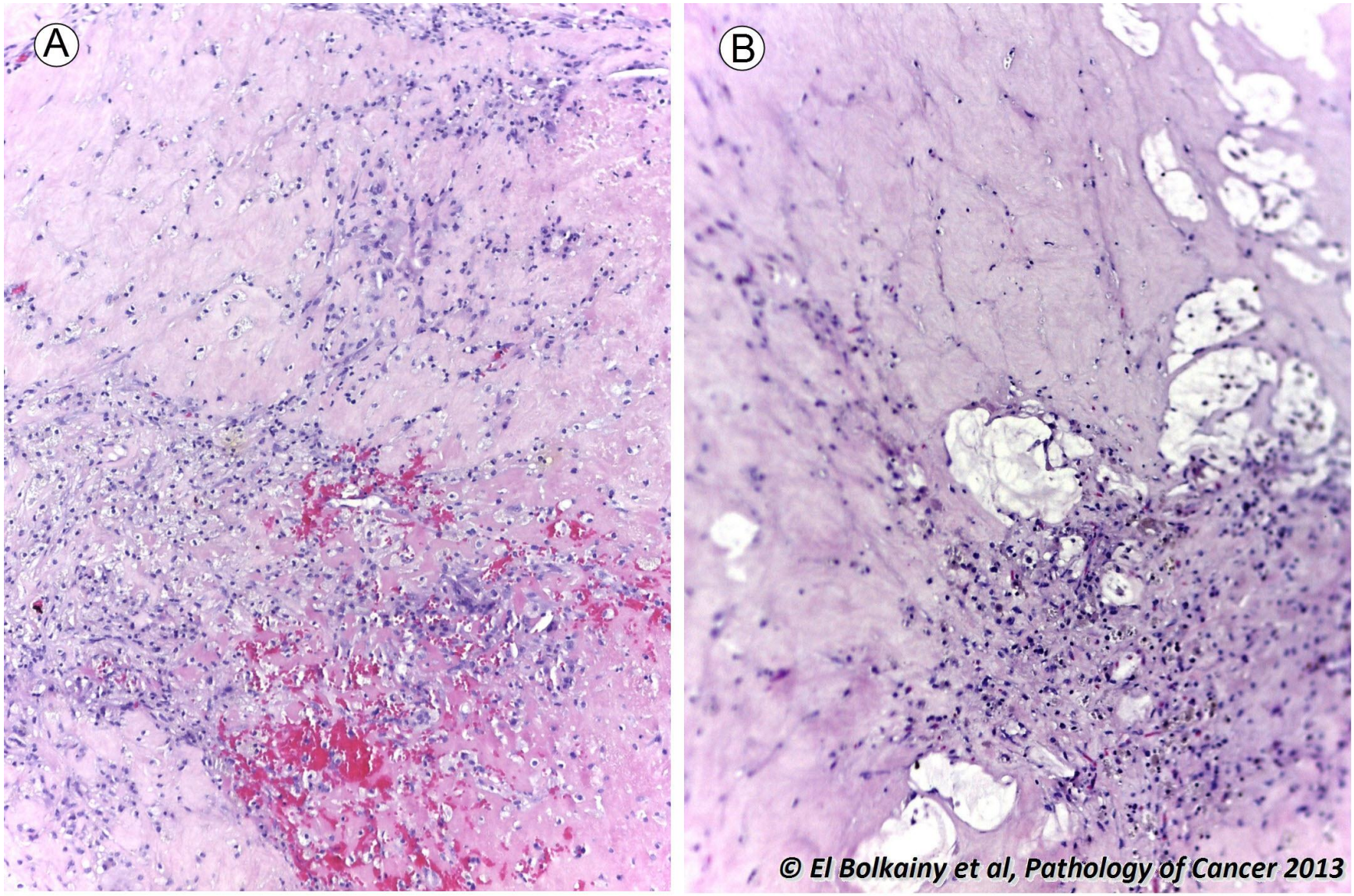
Picture 5-20 **Metastatic breast carcinoma in lymph node after therapy,** showing dystrophic calcification and fibrosis.

5.21 Thymoma after therapy.



Picture 5-21 **Thymoma after therapy. A** Complete disappearance of neoplastic lobules and replacement by myxomatous cystic areas. Only the remaining is the stroma. **B** Marked degeneration in the form of chromatin smudging with expulsion of nuclear chromatin (lower Rt. part of the picture: basophilic structue)

5.22 Marked therapy effect of germ cell tumor.



Picture 5-22 **Marked therapy effect of germ cell tumor.** There is complete disappearance of the tumor cells and replacement by **A** fibrosis, inflammatory reaction, and **B** cystic fat necrosis.