Example 2.13

A 36-year-old woman who recently felt a small hard lump in the upper-outer quadrant of her left breast. Clinical breast examination confirms a freely mobile, 1 cm hard tumor. There are no skin changes or discharge.

Ex. 2.13-1 to 3  Left breast, detail of the MLO projection (1) and microfocus magnification images (2 & 3) of the region with the palpable lesion. The microcalcifications in the 12 mm × 10 mm cluster vary considerably in size and density. These crushed stone–like, broken needle tip–like pleomorphic calcifications are of the mammographically malignant type.
Ex. 2.13-4 & 5 Breast ultrasound of the palpable lesion.

Ex. 2.13-6 & 7 Breast MRI: There is a contrast enhancement corresponding to the palpable and mammographic findings, suggesting malignancy.
Example 2.13 continued

Ex. 2.13-8 Ultrasound image of the tumor with calcifications.

Ex. 2.13-9 Ultrasound-guided 14-gauge core biopsy.

Ex. 2.13-10 & 11 Histology of the core biopsy specimen: areas of in situ carcinoma.
Ex. 2.13-12  Detail of the left MLO projection.

Ex. 2.13 to 15  Comparison of the mammogram (12), breast MRI (13), large thin-section histology (14) and subgross, large thick-section slide (15). The enhancement curve (13A) shows the pattern typical for a malignant tumor. The histological examination revealed Grade 2 & 3 in situ carcinoma over an area measuring 50 mm × 20 mm. In addition, three foci (5, 3, and 1 mm) of Grade 2 invasive carcinoma were found within the same region.
Example 2.13 continued

Ex. 2.13-16 Microfocus magnification of one of the surgical specimen slices that contain the calcifications.

Ex. 2.13-17 Detail of the large-section histology slide demonstrating the area corresponding to the calcifications seen in Ex. 2.13-16.

Ex. 2.13-18 & 19 Subgross, thick-section histological image pair of a TDUL distended and distorted by cancer cells. Cellular details are shown at increasing magnification in Ex. 2.13-20 to 25.
Medium-power histological images of cancer-filled acini and subsegmental ducts, many of which contain amorphous calcifications.

Higher-magnification histology images: high grade in situ carcinoma with solid cell proliferation and central necrosis.
Example 2.13 continued

Ex. 2.13-26 Anti-actin staining demonstrates the maintained myoepithelial cell layer of the in situ component.

Ex. 2.13-27 Tenascin C immunohistochemical staining.

Ex. 2.13-28 Radiograph of one of the specimen slices with the microcalcifications.
Ex. 2.13-29 to 31  Three histological slides showing focal Tenascin C overexpression, indicating neoductogenesis. No overexpression is seen in normal breast tissue (29, left side of the image; 31, right side of the image).
One or Two Clusters of Crushed Stone–like Calcifications on the Mammogram Produced by Malignancy

Example 2.13 continued

Low-power image of one of the large-section slices (32). The pathologist has marked the extent of the disease and the invasive foci (dotted lines). Medium-power histological images of one of the invasive foci (33).

Stereoscopic subgross, thick-section (3D) histological image pair of a small invasive carcinoma surrounded by in situ components.

Treatment and outcome: Mastectomy. This is a most recent case, therefore follow-up results cannot be reported yet.
Ex. 2.13-36 to 41  Subgross, thick-section (3D) histological image pairs of the additional in situ carcinoma foci, 10–15 mm from each other and from the main tumor focus, spread over an area measuring 50 mm × 20 mm.