


The conundrum of breast chondrolipoma: Heterotopic, metaplastic, or neoplastic lesion?

Giovanna Sabella MD^{1,2} | Gianluca Lopez MD^{1,2} | Letterio Runza MD² |
Elena Rognoni MD³ | Maria Silvia Sfondrini MD³ | Nicola Fusco MD^{2,4} 

¹School of Pathology, University of Milan, Milan, Italy

²Division of Pathology, Fondazione IRCCS Ca' Granda – Ospedale Maggiore Policlinico, Milan, Italy

³Division of Radiology, Fondazione IRCCS Ca' Granda – Ospedale Maggiore Policlinico, Milan, Italy

⁴Department of Biomedical, Surgical, and Dental Sciences, University of Milan, Milan, Italy

Correspondence

Nicola Fusco, Division of Pathology, Fondazione IRCCS Ca' Granda – Ospedale Maggiore Policlinico, via Francesco Sforza, 35, 20122, Milan, Italy.

Email: nicola.fusco@unimi.it

Chondrolipoma of the breast is a vanishingly rare mesenchymal lesion with unknown histogenesis and an indolent clinical behavior. This tumor is morphologically characterized by the presence of mature hyaline cartilage islands within a well-delimited proliferation of adipose tissue showing no cytological atypia, mitoses, or necrosis. Differentiation of chondrolipomas from other more aggressive breast tumors composed of heterologous elements is clinically relevant. However, due to their uncommonness, breast chondrolipomas may pose diagnostic challenges, particularly on small bioptic samples.

Here, we illustrate a primary breast chondrolipoma in a 55-year-old woman with a lump in the outer quadrants of the right breast. No other relevant clinical conditions were present. The lesion measured 1,1 cm in greatest dimensions and displayed regular borders

at mammography, with no microcalcifications. Ultrasounds showed an inhomogeneously hypoechoic texture that was avascular at the Doppler analysis. The imaging features of the lump are shown in Figure 1. Microscopic examination of a vacuum-assisted biopsy revealed the abnormal presence of sharply defined chondroid islands within a vaguely nodular proliferation of fibro-lipomatous tissue (Figure 2). The lesion was surrounded by benign fibrocystic changes, including columnar cell lesion, and usual ductal hyperplasia. The latter was arranged in rigid bridges of epithelial cells with small nuclei and more basophilic cytoplasm. At immunohistochemistry, both the chondroid elements and the hyperplastic ductal epithelium but not the columnar cell changes displayed strong and diffuse S100 protein expression. Since the alterations did not show any sign of progression after 2 years of follow-up, no surgical excision was performed.

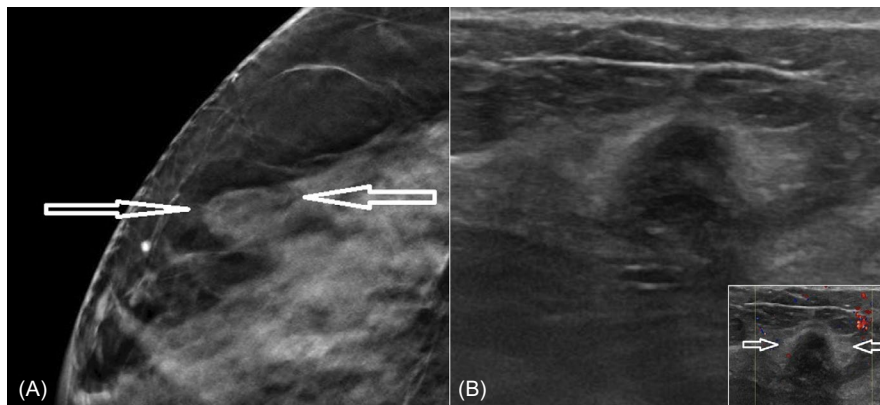


FIGURE 1 Imaging features of breast chondrolipoma. (A) Cranio-caudal tomosynthesis of the outer quadrants of the right breast showed an oval-shaped nodularity (arrows) with sharp margins that was devoid of calcifications (B). Ultrasounds revealed the inhomogeneous echostructure of the nodule which was avascular at echo-doppler analysis (inset) and was surrounded by a hyperechoic peripheral halo [Color figure can be viewed at wileyonlinelibrary.com]

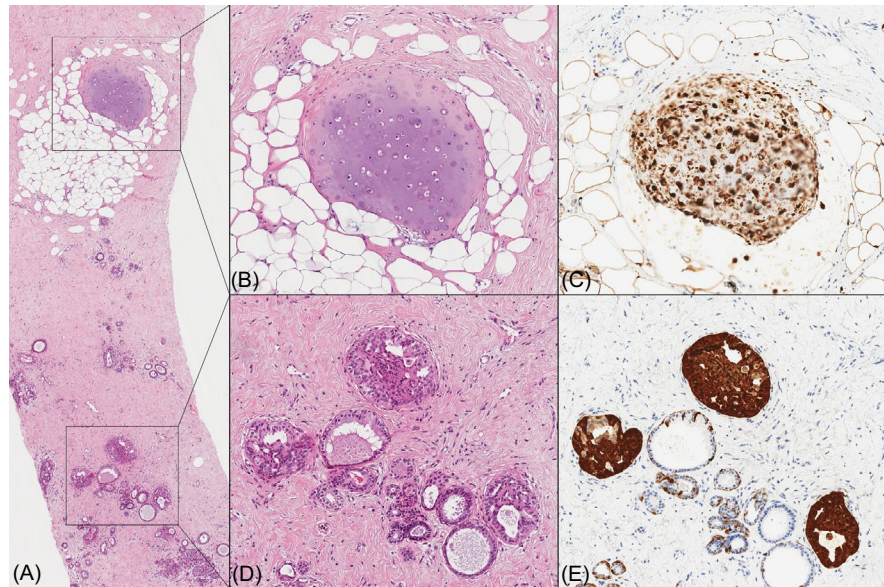


FIGURE 2 Chondrolipoma of the breast and associated lesions. Representative micrographs of the lesion composed of a mature hyaline cartilage island surrounded by a lipoma-like adipose tissue in the context of fibrocystic changes with associated usual ductal hyperplasia (A, hematoxylin and eosin, original magnification $\times 100$). At higher magnification, no signs of atypia, necrosis or mitotic figures were observed in the chondrolipoma (B, hematoxylin and eosin, original magnification $\times 200$), while both the chondrocytes and the adipocytes were confirmed to be S100-positive (C). At the periphery of the lesion, the non-neoplastic terminal duct-lobular units were affected by columnar cell changes and usual ductal hyperplasia showing rigid bridges of basophilic epithelial cells with small nuclei, in the absence of microcalcifications (D, hematoxylin and eosin, original magnification $\times 200$). The hyperplastic ducts showed S100 strong and diffuse immunorexpression in both the luminal and basal cells, while only the basal layer of the columnar cell lesion was S100-positive (E) [Color figure can be viewed at wileyonlinelibrary.com]

To date, approximately 20 mammary chondrolipomas have been described in the literature. Despite several hypotheses have been put forward to explain their histogenesis, whether breast chondrolipomas have a heterotopic, metaplastic, or clonal origin remains controversial. In our case, the strong S100 protein immunorexpression observed both in the chondroid islands and in the hyperplastic ductal epithelial (luminal) cells in their proximity, coupled with their basophilic morphology, provides credence to the notion that at least a proportion of mammary chondrolipomas may originate from foci of ductal hyperplasia through chondroid metaplastic phenomena. Further clinical studies coupled with molecular analyses will be

required to define the molecular events that underpin these uncommon findings.

CONFLICT OF INTEREST

The authors declare no competing financial interests.

ORCID

Nicola Fusco  <https://orcid.org/0000-0002-9101-9131>