

Necrosis (Core)

Although there is significant inter-observer variation, two broad types of necrosis have been identified: 1) Central (comedo) necrosis, most often associated with high nuclear grade and worse breast cancer specific survival¹ but only inconsistently with recurrence; and 2) Focal (punctate) necrosis, the clinical significance of which is unclear. Therefore, a pragmatic approach for classification of necrosis is proposed: central (comedo), focal (punctate) and 'not identified' as follows:

- **Central (“comedo”)**: The central portion of an involved ductal space is replaced by an area of expansive necrosis that is easily detected at low magnification. Ghost cells and karyorrhectic debris are generally present. Although central (comedo) necrosis is generally associated with high grade nuclei, it can also occur with ductal carcinoma in situ (DCIS) of intermediate (or occasionally low) nuclear grade and in pleomorphic lobular carcinoma in situ (LCIS) and florid LCIS.
- **Focal (“punctate”)**: Small foci, or single cell necrosis ($\leq 10\%$) that are indistinct at low magnification, which are not considered central (comedo).
- **Necrosis not identified.**

Although there is inconsistency in the thresholds and criteria used to assign presence or absence of central (comedo) necrosis, a cut off of at least 10% of duct diameter which captures most central (comedo) necrosis² is to be used, with focal (punctate) necrosis as $<10\%$.

The presence of necrosis is associated with mammographic calcifications, with central (comedo) necrosis often correlating with a linear and/or branching pattern on radiology. There is also frequent calcification in patients with recurrent DCIS that originally presented with mammographic calcifications.^{3,4}

References

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- 2 Harrison BT, Hwang ES, Partridge AH, Thompson AM and Schnitt SJ (2019). Variability in diagnostic threshold for comedo necrosis among breast pathologists: implications for patient eligibility for active surveillance trials of ductal carcinoma in situ. *Mod Pathol* 32(9):1257-1262.
- 3 Wang SY, Shamlivan T, Virnig BA and Kane R (2011). Tumor characteristics as predictors of local recurrence after treatment of ductal carcinoma in situ: a meta-analysis. *Breast Cancer Res Treat* 127(1):1-14.
- 4 Zhang X, Dai H, Liu B, Song F and Chen K (2016). Predictors for local invasive recurrence of ductal carcinoma in situ of the breast: a meta-analysis. *Eur J Cancer Prev* 25(1):19-28.