



**Figure 23-17** Ductal carcinoma in situ (DCIS). **A and B**, Comedo type. **A**, The specimen radiogram reveals linear and branching calcifications within the ductal system. **B**, A high-grade proliferation associated with large central zones of necrosis and calcifications fills several ducts. **C and D**, Noncomedo types. **C**, Cribriform DCIS. Note the round, regular (“cookie cutter”) spaces containing calcifying secretory material. **D**, Micropapillary DCIS. The papillary projections lack fibrovascular cores.

The natural history of DCIS has been difficult to determine because, until recently, all women were treated with mastectomy, and the current practice of surgical excision, usually followed by radiation, is largely curative. If untreated, women with small, low-grade DCIS develop invasive cancer at a rate of about 1% per year. The majority of these invasive cancers occurs in the same quadrant and have a similar grade and expression pattern of ER and HER2 as the associated DCIS. Tumors with high-grade or extensive DCIS are believed to have a higher risk for progression to invasive carcinoma.

Remarkably, the overall death rate for women with DCIS is lower than that for women in the population as a whole, possibly because mammographic screening is a “marker” for better access to medical care or other socioeconomic factors that are associated with longevity. Death

from metastatic breast cancer after a diagnosis of DCIS occurs in 1% to 3% of women. The origin of metastatic disease may be a second invasive carcinoma in the ipsilateral or contralateral breast or occult foci of invasion that were not detected at the time of DCIS diagnosis.

Mastectomy is curative in greater than 95% of women. Breast conservation is appropriate for most women but has a slightly higher risk of recurrence—about half of which are DCIS and half invasive carcinoma. The major risk factors for recurrence are (1) high nuclear grade and necrosis, (2) extent of disease, and (3) positive surgical margins. Ensuring complete excision of DCIS is not straightforward, since its distribution in the breast is not reliably predicted by imaging and it is usually not grossly evident at surgery. Postoperative radiation therapy and tamoxifen also reduce the risk of recurrence.