Use of Intraoperative Frozen Section Analysis in Ductal Carcinoma In Situ for Detecting Upstaging to Invasive Disease

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Background

- For DCIS, routine sentinel lymph node (SLN) surgery is NOT recommended. SLN surgery should be limited to cases with high risk of upstage to invasive disease.
- The use of intraoperative frozen section (FS) pathologic analysis of the primary tumor to guide the use of SLN surgery may allow for more selective surgical nodal staging within one procedure.

Objectives

- We sought to evaluate risk factors for upstaging to invasive cancer for patients with DCIS and to define the reliability of intraoperative FS analysis in this setting.

Methods

- After IRB approval, a total of 828 patients with DCIS on core needle biopsy (CNB) who underwent 835 operations at our institution between 1/2004-10/2014 were identified.
- FS pathologic analysis is a standard part of intraoperative evaluation at our institution.
- We evaluated method of detection and tumor characteristics on CNB, with both univariable and multivariable analysis, to determine the rate of upstage from DCIS to invasive cancer on both intraoperative FS and final pathology.

Frozen Section Results

- Upstaged to invasive disease: 11%
- Sensitivity: 74.6%
- Specificity: 99.3%
- Positive predictive value: 96.4%
- Positive predictive value: 96%

Treatment Variables

- Variable: Upstaged (%)
- Value: 99.3%

Risk of Upstage Based on Dimension

- Variable: Size on mammogram
- Value: 99.3%

Sentinel Lymph Node Surgery

- SLN surgery was performed in 484 cases
- Lumpectomy: 178 (35%)
- Mastectomy: 306 (62%)
- SLN status:
  - Positive: 15 (2%)
  - 1 Lymphectomy patient
  - 1 Mastectomy patients
- SLN positive patients
  - 10 of 12 were upstaged to invasive disease
  - 77 DCIS lesions
- Patients who underwent SLN surgery were more likely to have the lesion found on palpation, larger lesions, high or intermediate grade on biopsy, mastectomy.

Variables Associated with Upstage

- Mass detected by palpation
- Size on mammogram
- BI-RADS 5 lesion
- Breast density
- Mass lesion on ultrasound
- Multifocal disease
- Small gauge (14-20) biopsy needle
- High grade DCIS on CNB
- Comedo type histology on CNB

Conclusions

- Of patients with a CNB of DCIS intraoperative FS analysis had a sensitivity of 74.6% and a specificity of 99.3% for detecting invasive disease.
- FS analysis of the primary tumor may be utilized to selectively perform SLN surgery based on intraoperative findings.
- FS to guide use of SLN surgery can help avoid an unnecessary SLN procedure while decreasing the need for second operations.
- Patients at highest risk of upstage include:
  - Palpable mass
  - High grade lesion
  - Large radiographic size
  - Multifocal disease
  - Undergoing mastectomy