Surgeon Performed Continuous Intraoperative Ultrasound Guided Oncoplastic Surgery after Neoadjuvant Chemotherapy

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Background

- Neoadjuvant chemotherapy (NAC) is the preferred option of treatment in locally advanced and selected cases of early stage breast cancer.
- One of the major aims is to downstage tumor size to allow conservative surgery with the most acceptable cosmetic and oncologic outcome, which is achievable with oncoplastic surgery (OPS).
- After NAC, excess degree of fibrosis leads to difficulties to accurately predict margin status intraoperatively. However, the prediction of negative margins is a must to avoid a secondary mastectomy in OPS with excess tissue rearrangements.
- The aim of the presented study is to determine the value of intraoperative sonography (US) guidance during OPS after NAC to localize the residual cancer, to achieve negative margins at index procedure and to decrease secondary interventions.

Patients and Methods

- A single-institution, retrospective review of a prospectively maintained database was analyzed.
- No patient had preoperative localization with wire or radiotacer.
- OPS procedures were decided according to patient and tumor characteristics and patient preferences.
- Tumor localization, breast/tumor volume ratio, glandular density and patient preferences were the major factors to make selection.
- All of the patients underwent level I or II OPS with regards to the abovementioned criterion.
- Intraoperative real-time sonographic localization, sonographic margin assessment during resection, macroscopic and sonographic examination of specimen, cavity sonography and shavings (CS) was done as the standard procedure.
- No frozen assessment was performed.
- The study included 253 patients treated with NAC followed OPS and axillary nodal surgery.
- 102 patients (40.3%) achieved pathologic complete response.
- US-guided OPS accomplished successful localization of the targeted lesions in all patients. Patients were on average 49 years old (range, 34-72).
- Tumor resection margins were obtained by means of ultrasound guided OPS in 90% of margins evaluated sonographically.
- The involved margins were identified by the surgeon via specimen US in 94.3% of the cases and confirmed by cavity shavings.
- Permanent sections of the resected specimen and cavity shavings revealed no need for further intervention due to margin positivity.
- US-guided-OPS with real-time specimen US were unable to predict involved margins in invasive lobular carcinoma and ductal carcinoma in situ (DCIS)
- No re-excision or mastectomy was required.
- For a secure US, the negative predictive value (NPV) of US guided OPS rate was 92%.
- Intraoperative US was found to over and underestimate tumor response to NAC both in 3% of patients.

Results

Conclusion

- Continuous US-guidance with specimen sonography and cavity scan seems to be a valuable modality to perform efficient OPS at index operation with no additional localization method after NAC.
- Especially, when CS is integrated as a standard to OPS, US-guidance seems to provide safe surgery for patients with no false negativity.
- The accuracy of sonographic guidance should be questioned in case of lobular histology and DCIS after NAC.

References