

Avoiding breast and axillary surgery after neoadjuvant therapy

Joerg Heil

Professor,

Breast Unit

Sankt Elisabeth Hospital

Heidelberg, Germany

Breast and axillary surgery after neoadjuvant systemic treatment for women with breast cancer has undergone multiple paradigm changes within the past years. In this review, we provide a state-of-the-art overview of breast and axillary surgery after neoadjuvant systemic treatment from both, a clinical routine perspective and a clinical research perspective. For axillary disease, axillary lymph node dissection, sentinel lymph node biopsy, or targeted axillary dissection are nowadays recommended depending on the lymph node status before and after neoadjuvant systemic treatment. For the primary tumor in the breast, breast conserving surgery remains the standard of care. The clinical management of exceptional responders to neoadjuvant systemic treatment is a pressing knowledge gap due to the increasing number of patients who achieve a pathologic complete response to neoadjuvant systemic treatment and for whom surgery may have no therapeutic benefit. Current clinical research evaluates whether less invasive procedures can exclude residual cancer after neoadjuvant systemic treatment as reliably as surgery to possibly omit surgery for those patients in the future. Specifically, the concept of an intelligent vacuum-assisted biopsy has been recently developed: The intelligent VAB is an artificial intelligence algorithm that uses contextualizing imaging, patient, and tumor variables in addition to the results of a minimally invasive biopsy after neoadjuvant treatment. It showed great potential to exclude residual disease in the breast (ypT0) and has subsequently been evaluated to identify breast cancer patients with a pCR (ypT0 and ypN0) after neoadjuvant treatment. In the external validation set, the intelligent VAB showed a promising false-negative rate of 0% and a specificity of 40% to exclude residual disease in the breast or axilla. Given validation in confirmatory trials, the omission of breast and axillary surgery may be evaluated for these patients in future trials.