Introduction

Breast-conserving therapy (BCT) has gained wide acceptance as providing long-term survival equal to that seen with mastectomy for early-stage breast cancers, and accordingly the number of lumpectomy procedures has increased dramatically. The goal of BCT should be to remove the smallest amount of tissue possible but still remove the tumor with adequate negative margins.

The first operation provides the best opportunity to achieve an acceptable cosmetic outcome over subsequent operations to clear positive margins, thereby establishing the need to accurately assess the margin status intraoperatively. Frozen section analysis (FSA) has been the traditional method of microscopic analysis of margins and is widely used at many institutions for oncologic procedures.

Intraoperative touch preparation cytology (IOTPC) or “imprint cytology” is a promising alternative to FSA. Several studies have concluded that IOTPC is inexpensive, accurate, quick, and saves tissue for permanent sectioning and histopathological examination. This study was designed to evaluate the accuracy of Intraoperative lumpectomy margins assessment in patients with early-stage breast cancer treated with BCT, frozen section analysis versus imprint cytology.

Patients and Methods

This cross-sectional, comparative study comprised 40 female patients that were randomized into 2 groups:

- Frozen section group
  20 patients assigned to undergo intraoperative assessment of surgical margins of lumpectomy specimen using FSA.
- Imprint group
  20 patients assigned to undergo intraoperative assessment of surgical margins of lumpectomy specimen using IOTPC.

Results

Patients’ Clinical Data

Patients’ Variables of the Study Groups

Conclusion

Tumor recurrence rates are extremely higher in patients who have tumor cells on the cutting surface of specimen. Moreover, repeated operations may cause many negative results such as poor cosmetic appearance as it is well known that the best cosmetic result after breast conservation therapy occurs after only a single excisional biopsy is performed, an aesthetical risk, adverse psychological reactions, delay on starting oncological treatments and higher costs. All of these problems can be prevented by intraoperative margin assessment and repeated re-examinations that can be made in a single operation by numerous methodologies as FSA and IOTPC.

Imprint cytology had a diagnostic accuracy of 100% when compared with the final examination of margins in paraffin sections. The more accurate of imprint cytology than frozen section examination could be attributed to the possibility to survey the entire surface area of the lumpectomy margin using imprint cytology, however, as such survey is not practical with frozen section technique. The mean operative time was significantly longer in frozen section group compared to that recorded in imprint group, reflecting the technical demands and the prolonged duration required for FSA.

It could be concluded that intraoperative margin assessment by FSA or IOTPC is an effective procedure in reducing the need of a second operation for margin control. However, imprint cytology, in addition to saving tissue for paraffin histopathological examination, has the advantages of being more accurate to ensure clear margins with significant decrease in the operative time.