

To Establish Imprint Cytology Technique as a Routine Procedure for Intra-Operative Assessment of Margin Status in Carcinoma Breast CasesMeha Ghodawat¹, Ali Abbas Sabunwala², Rajesh Kumar Agarwal³, Ayushi Chouhan⁴¹Ex Post Graduate Student, Dept. General Surgery, Sri Aurobindo Medical College and PG institute, Indore, M.P.²Assistant Professor, Dept. General Surgery, American International Institute of Medical Science, Udaipur, Rajasthan³Assistant Professor, Dept. General Surgery, American International Institute of Medical Science, Udaipur, Rajasthan⁴Post Graduate Student, RD Gardi Medical College, Ujjain, M.P.

Received: 13-10-2023 / Revised: 28-10-2023 / Accepted: 14-11-2023

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Conflict of interest: Nil

Abstract

Background & Methods: the aim of the study is to establish imprint cytology technique as a routine procedure for intra-operative assessment of margin status in Carcinoma Breast Cases. Detailed clinical history and thorough physical examination were done in each patient. Complete pre-operative work-up investigations and medical fitness for surgery were obtained. Each patient was informed about the procedure and informed consent was obtained. Primary diagnoses were obtained by fine-needle aspiration cytology, stereotactic core biopsy, or other open biopsy procedures.

Results: Plan for all our cases to start, was BCT with Axillary Sampling. Further course was based on Intra-op Imprint Cytology reported by pathologist. Imprint quoted free margins for 60 lumps out of which NO further dissection was done in 52 cases and surgery was completed after finishing Axillary Sampling. In spite of negative Imprint, 08 cases were converted to MRM because of patient's preference towards it. Involved margins were reported in 26 cases, out of which 24 were converted to MRM. For single case, patient refused MRM, hence margins were extended further 2 cm.

Conclusion: Effective breast-conserving surgical techniques for early-stage disease were developed to improve breast cancer women's quality of life. BCT may offer an advantage over MT in terms of body image, psychological and social adjustment, but BCT may be associated with higher rates of positive margins than MT and the incidence of local failure. Imprint cytology although not a substitute for conventional histopathology, but as complementary to it, is useful for rapid diagnosis of malignant conditions as well as benign conditions.

Keywords: cytology, intra-operative, Carcinoma & Breast.

Study Design: Observational Study.

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Introduction

Each year, more than 211,000 cases of invasive breast cancer and more than 58,000 cases of in situ breast cancer are diagnosed in the United States, and approximately 40,000 women die of breast cancer [1]. More than a million cases of breast cancer are diagnosed worldwide each year. The overall incidence of breast cancer has been rising because of increases in the average life span, lifestyle changes that increase risk for breast cancer, and improved survival from other diseases. Despite an increasing incidence, mortality from breast cancer has continued to fall, thought to be the result of both earlier detection and improvements in therapy [2].

Patients with invasive ductal and lobular cancers are candidates for conservative therapy if the tumor is not diffuse and negative surgical margins can be achieved. The presence of positive axillary nodes is not a contraindication to breast conservation therapy [3]. Tumors located near the nipple areolar complex may require excision of the nipple, but this also is not a contraindication. The status of the margins of resection after lumpectomy is important when determining the optimal surgical treatment. When negative margins can be achieved with the preservation of adequate amounts of breast tissue, the patient is a candidate for conservative surgical therapy [4]. If tumor remains at the margin after re-excision, as can be determined by intra-operative

Imprint Cytology or Frozen Section Evaluation, modified radical mastectomy may be the treatment of choice.

The preferred method of treatment for many women with early breast cancer is conservative surgical therapy (principally lumpectomy and axillary dissection) followed by breast irradiation. Sentinel node biopsy is being investigated as an alternative to standard axillary node dissection. The aim of local treatment of breast cancer is to achieve long-term local disease control with the minimum of local morbidity. The majority of women who present to breast clinics with symptoms or who are diagnosed as having breast cancer through screening programs have small breast cancers that are suitable for breast-conserving surgery [5]. Public education and proactive screening programs have contributed to the early detection of small tumors in a greater percentage of women. Studies have shown that women diagnosed at early stages of invasive breast cancer have equivalent outcomes when they are treated by lumpectomy and radiation therapy or modified radical mastectomy [6].

Material and Methods

Present study was conducted at Indore, M.P. for 01 Year. Detailed clinical history and thorough physical examination were done in each patient. Complete pre-operative work-up investigations and medical fitness for surgery were obtained. Each

patient was informed about the procedure and informed consent was obtained. Primary diagnoses were obtained by fine-needle aspiration cytology, stereotactic core biopsy, or other open biopsy procedures. Preoperative FNAC / EB / IB in these 82 cases, suggested 76 to be malignant and 12 were reported suspicious for malignancy.

As per these reports in each case, patients underwent Breast Conservation Surgery. The surgeon oriented lumpectomy specimens intraoperatively as superior, medial, lateral, inferior, deep, or superficial using suture material and written or verbal communication. After glass slides were labeled to correspond with the margin of interest, touch imprints were made from these sites by gently pressing the corresponding margin to the glass slide.

Inclusion criteria: Both pre and post-menopausal female patients (between 18 & 75 yrs) undergoing elective surgeries for breast lump of size <5cm without clinical Axillary lymphadenopathy. FNAC/Excision Biopsy/Incision Biopsy suggestive of carcinomatous lesions like DCIS / LCIS / Atypical Hyperplasia and reports inconclusive to rule malignancy were included.

Exclusion criteria: Patients with acute breast abscess, Inflammatory Carcinoma and Breast Lump >5cm and proven benign lesions were excluded.

Result

Table 1: Distribution of cases according to age group

S. No.	Age group (in Years)	No. of patients	Percentage
1.	18 – 30	08	9.7%
2.	31 – 45	36	43.9%
3.	46 – 60	30	36.5%
4.	61 – 75	08	9.7%
	Total	82	100%

In present study maximum number of patients belonged to age group of 31 - 45 years (~ 44 %). Mean age - 45 years.

Table 2: Distribution of cases according to location of breast lump

S. No.	Location	No. of cases	%
1.	Fresh Cases	82	100%
	Upper outer Quadrant	34	41.4%
	Upper inner Quadrant	06	7.3%
	Lower outer Quadrant	15	18.2%
	Lower inner Quadrant	05	6.1%
	Located around NAC	22	26.8%
2.	Known Carcinoma Cases with Lump	06	
	Total	88	

Above table shows distribution of 41 cases in which for 3 cases bilateral breasts were involved. Hence, 44 presumptive lumps were present which were located in various quadrants as described. In present study, most lumps fulfilling the criterias of

Breast Conservation Surgery were found located in UPPER OUTER QUADRANT (41.4 %). Upper inner quadrant in 7.3%, NAC in 26.8%, lower outer quadrant in 18.2% and lower inner quadrant in 6.1% cases.

Table 3: Distribution of cases according to slide positivity at Imprint Cytology

S. No.	Group	No. of Smears	Percentage
1.	Positive Smears	50	8.1%
2.	Negative Smears	566	91.9%
	Total	616	100%

Best of 14 smears were taken from each lump for imprint cytology. This yielded 616 smears out of which 50 smears were found positive for malignancy. Only conclusive smears were included in study and equivocal smears excluded. Smears were reported either positive or negative. Suspicious or atypical cells were out of our study.

Table 4: Final surgery done after Imprint Cytology

Lesion	Total	BCT		MRM	
		No.	%	No.	%
Imprint Negative	60	52	86.7%	08	13.3%
Imprint Positive	26	02	7.6%	24	92.4%
Total	86	54	62.8%	32	37.2%

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Discussion

Carcinoma of the breast is the second most common cancer among female Indian population next only to carcinoma cervix. However in the urban population, carcinoma of breast has surpassed the incidence of carcinoma cervix. FNAC diagnosis depends only on the aspirated material [7]. The tissue immediately adjacent to or contained within another part of tissue may harbour malignant cells. In a clinical scenario, the consultant surgeon will be in a dilemma to counsel and propose the appropriate surgical modality of treatment. Another major concern about breast FNAC has been the fear that mastectomy may be performed on a false positive cytological diagnosis with clinical and medicolegal implications.

Though core needle biopsy (CNB) can routinely be done and is superior to FNAC because insufficient specimens are unusual. Some investigators believe that CNB is inappropriate for lesions that are highly suggestive of malignancy. The surgeon may choose to discuss treatment options with the patient pre-operatively and proceed directly to one stage surgery, which reduces costs by eliminating a separate biopsy for tissue diagnosis. CNB is cost-effective for lesions that are highly suggestive of malignancy only if a two-stage procedure is planned. There are some contraindications to CNB [8]. Certain mammographic findings indicate a condition, best managed with complete excision for example, if calcifications are few in number and

not tightly clustered, CNB sampling errors are highly likely to occur. There are also limitations related to the location of the lesion or the size of the breast. A lesion very close to the skin or located in a very small breast may not be suitable for CNB because of the required throw of the needle. It may not be possible to visualize lesions adjacent to chest wall on a stereotactic biopsy unit. Hence in our study, for suspicious reports of FNA and small breast lesions, directly BCT was planned with intra-op Imprint Cytology without much concern for a tissue diagnosis [9].

Intraoperative evaluation of surgical margins is a major advantage because reexcision can be performed, if necessary, during the same operation, saving the patient both the burden and cost of a second procedure. Additionally, it is well known that the best cosmetic result after breast conservation therapy occurs after only a single excisional biopsy is performed [10]. The source of all false-negatives was the apparent failure of microscopic foci of either intraductal or invasive carcinoma to adhere to the glass slide, a problem that seems unavoidable. False-positives were generally the result of interpretive error and were associated with fibrocystic changes in many cases and, in 2 cases, atypical ductal hyperplasia at the margin.

Conclusion

Effective breast-conserving surgical techniques for early-stage disease were developed to improve breast cancer women's quality of life. BCT may offer an advantage over MT in terms of body image, psychological and social adjustment, but BCT may be associated with higher rates of positive margins than MT and the incidence of local failure. Imprint cytology although not a substitute for conventional histopathology, but as complementary to it, is useful for rapid diagnosis of malignant conditions as well as benign conditions.

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