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# ROLE OF INTRAOPERATIVE SCRAPE CYTOLOGY IN DIAGNOSIS, AND ITS CORRELATION WITH POST-OPERATIVE HISTOPATHOLOGICAL FINDINGS IN BREAST TUMORS.

Pathology

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## ABSTRACT

**INTRODUCTION:** Rapid diagnosis of surgically removed specimen has created many controversies and a single completely reliable method has not yet been developed. Histopathology of the tissue remains the gold standard in the tissue diagnosis. However intra-operative scrape cytology has been used to help in the diagnosis before hand.1

**MATERIALS AND METHODS:** 55 surgically removed specimens of breast tumor were studied. Scrapes were taken from each specimen before formalin fixation and stained by modified rapid H&E staining. Its findings were compared with the histopathological findings.

**RESULTS:** Out of 55 cases, Scrape smear diagnosed 21 (38.2%) cases to be benign and 34 (61.8%) cases to be malignant while actually 19 (34.5%) cases were benign and 36 (65.5%) cases were malignant confirmed by histopathology.

**CONCLUSION:** Intraoperative scrape smears help in on-table diagnosis, with regard to the nature of the tumors. Intraoperative scrape smears help in taking proper decisions with prior counselling of the patient, so that a repeat surgery is avoided.

## KEYWORDS

Scrape, intraoperative, histopathology, H&E staining.

## INTRODUCTION

Breast cancer is the most common cancer in the western world. In India also breast cancer is the most common leading cause of death in women aged 40 to 79 years of age. Mortality has decreased in the recent past. Many a times FNAC leads to a diagnosis that is "suspicious, but not confirmatory." Another major concern about breast FNAC has been the fear that mastectomy may be performed on a false positive cytological diagnosis with clinical and medico-legal implications.[2,3] The need for intraoperative confirmation of the nature of the tumor, benign or malignant led to the adoption of Frozen-Section technique. An alternative to frozen-section technique, scrape smears from these tumors are taken and stained with Hematoxylin and Eosin (Rapid H&E). Rapid hematoxylin and eosin staining of scrape smears is tried in some cases of breast tumors as a pilot study and has given promising results. The present study is undertaken to note the accuracy of intraoperative scrape smears in breast tumors. Scrape smear yields a more cellular and uniform smear as compared to touch smear.

## MATERIAL AND METHODS

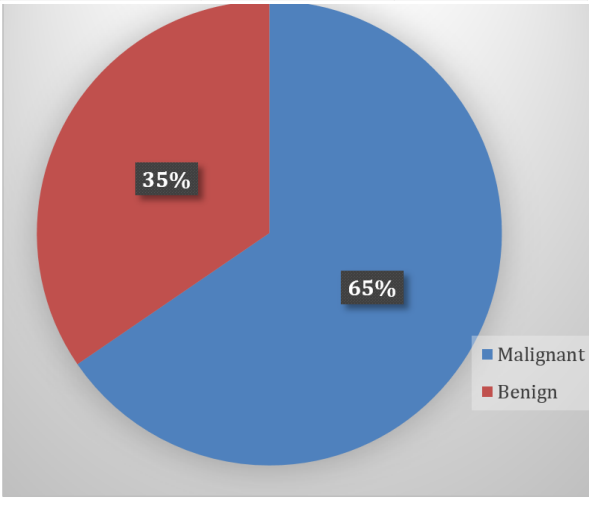
The study was conducted in department of pathology RIMS, Ranchi in collaboration with department of surgery. We took 55 cases of surgically removed specimens of breast including cases of lumpectomy, simple mastectomy with or without axillary clearance and Modified Radical Mastectomy (MRM) specimen. The cut surface of the specimen were scraped and the smears were prepared from the suspected areas in unfixed state. They were stained using rapid H&E staining methods, examined, evaluated and results were noted.Then proper grossing of the specimen was done. Sections were taken, processed, stained and its histopathological examination was done. The results of the scrape smear were compared with the histopathological findings.

## OBSERVATIONS AND RESULTS

Total 55 cases were studied over a period of december 2017 to October 2019.

In our series, 19 (34.6% ) were benign and 36 (65.4% ) were malignant as confirmed by histopathological examination. Benign tumor was common in age group 11-20 years (7) followed by 21-30 years (5). Malignant tumor was common in 41-50 years (14) followed by 51-60 years .

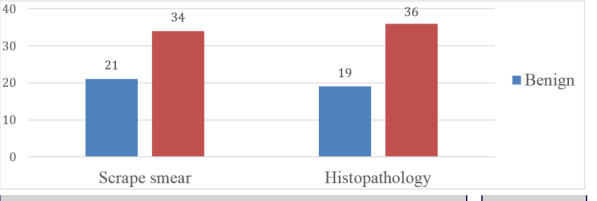
| Age (in years) | Benign | Malignant |
|---|---|---|
| 11-20 | 7 | 0 |
| 21-30 | 5 | 1 |
| 31-40 | 3 | 5 |
| 41-50 | 2 | 14 |
| 51-60 | 1 | 11 |
| 61-70 | 1 | 3 |
| 71-80 | 0 | 2 |
| **Total** | **19** | **36** |




**Comparison between Scrape Smear and Histopathological Findings.**

| | Scrape smear | Histopathology |
|---|---|---|
| Benign | 21 | 19 |
| Malignant | 34 | 36 |

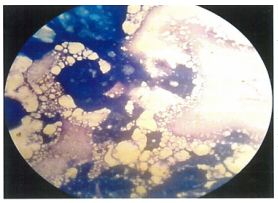
Out of 55 cases, scrape smear diagnosed 21(38.2%) cases to be benign and 34(61.8%) cases to be malignant while actually 19(34.5%) cases were benign and 36(65.5%) cases were malignant confirmed by histopathology.



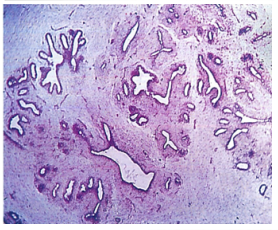
**Result of the findings in Scrape cytology**

| Result | Positive for Malignancy | Negative for Malignancy |
|---|---|---|
| Malignant | True positive= 48 | False Negative= 3 |
| Benign | False Positive= 1 | True Negative= 18 |

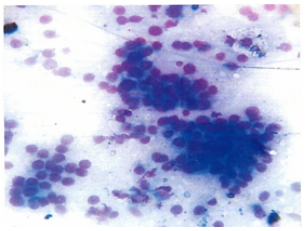
**Sensitivity = 91.7% Specificity = 94.7%**
**Positive Predictive Value(PPV) = 97.1%**
**Positive Predictive Value(NPV) = 85.7%**



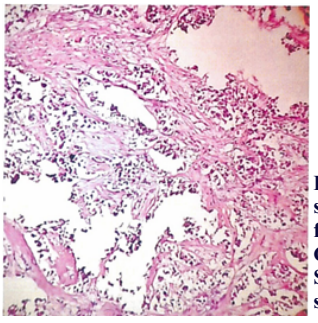
**Scrape smear prepared from the tumor mass after it was surgically resected and cytologically diagnosed to be Fibroadenoma and found to be negative for malignancy. (Leishman's stain; 40x)**



**Biopsy from the same specimen showed histopathological features of Fibroadenoma. (H & E stain; 40x)**



**Scrape smear prepared from the tumor mass after it was surgically resected and cytologically diagnosed to be Ductal Carcinoma and found to be positive for malignancy. (Leishman's stain; 40x)**



**Biopsy from the same specimen showed histopathological features of Infiltrating Ductal Carcinoma, Not Otherwise Specified (IDC NOS). (H & E stain; 40x)**

## DISCUSSION:

On Scrape smear, out of 55 cases: Total 21 cases were found to be negative for malignancy (18 cases were negative for malignancy without atypia and 3 were negative for malignancy with atypia), and 34 were found to be positive for malignancy.

Out of these 21 cases found to be negative for malignancy on Scrape smear, 18 correlated with histopathology. 1 case diagnosed to be negative for malignancy with atypia was found to be malignant in histopathology. Out of the 3 cases found to be negative for malignancy with atypia, 1 found to be benign and 2 were found to be malignant in histopathology. Out of 34 cases found to be positive for malignancy on Scrape smear, 1 case was diagnosed to be benign (Fibrocystic disease) and rest correlated with the histopathological findings of malignant lesions.

Out of 55 cases, 19 were benign and 70 were malignant on histopathology. From the 19 benign lesions, 12 were non neoplastic and 7 were benign neoplastic lesions. Scrape cytology was correct in 18. Out of 36 malignant lesions, Scrape cytology was correct in 33 cases. There was one false positive case and 3 false negative cases. Thus, Scrape cytological diagnosis was inconsistent with histopathology in 3 in benign group and 1 in malignant group. Clinical diagnosis was consistent with histopathology in 18 benign lesions and inconsistent in 3 which was diagnosed as fibrocystic disease on histopathology. There was positive correlation in 33 cases of malignancy and inconsistent in 1 case.

Leonard S. Dudgeon and Vincent patrick at the university of London raised the horizons of the rapid cytological diagnosis of freshly cut specimens by Scrape cytology with reliable accuracy rates traced back to 1927.1 Cox and colleagues4 were the first to report the use of Scrape preparations for intra-operative evaluation of margin status in 1991.

In a study of 114 patients undergoing partial mastectomy for breast malignancies, scrape preparation was 97% accurate. Several studies have compared the diagnostic accuracy of scrape smears with that of frozen-section. Tribe CR(5), Esteban et al(6), Cox CE(7), Kolte SS et al(1)), Briffod M et al(8) suggested that the two techniques are roughly equivalent , with Scrape smears having a slightly higher propensity for false positive results. Khanna A K reported a sensitivity of 98.4% and specificity of 100%; Scopa(9) reported an accuracy rate of 94.3%. Kim K in 1990 reported the efficacy of intra-operative scrape cytology to be superior to frozen section. Vinod shidham(10) in 2000 reported a strong favour for routine practice of scrape cytology during intra-operative consultation. Hassanain H. Khudier et al(11) reported a sensitivity and specificity of 96.3% and 100% respectively.

In our study Scrape cytology found 21 cases to be negative for malignancy and 34 cases to be positive for malignancy. Histology confirmed 19 cases to be benign lesions and 36 cases to be malignant The Sensitivity and Specificity of Intraoperative Scrape smear are 91.7% and 94.7% respectively. The Positive Predictive Value is 97.1% and Negative Predictive Value 85.7%

## CONCLUSION

An intraoperative cytological evaluation is important as FNAC is a blind procedure.It may miss the actual representative focus of the lesion.In the scrape smear we take samples from the visible area of suspicion. Intraoperative imprint smear is good for margin assesment and also for evaluation of sentinel lymph node. Intraoperative Scrape smears help in on-table diagnosis, with regard to the nature of the tumors. This is of paramount importance wherein the FNAC is inconclusive or suspicious. Intraoperative Scrape smears help in taking proper decisions with p Finally we conclude that Scrape smears are simple, accurate, rapid and cost-effective diagnostic tool for intraoperative evaluation of breast tumors. The sensitivity and specificity support their utility intraoperatively wherein facilities for frozen-sections are not available.

Prior counselling of the patient, so that a repeat surgery is avoided.

## REFERENCES:


(1) Kolte S Sachin,Satakar Rahul N et al; Role of scrape cytology.Vol.27, No.3, July-September,2010,pp86-90.
(2) Wanebo H.J, Feldman: FNAC in lieu of open biopsy in the management of primary breast cancer. Ann.Surg.1984, 199: 569-579.
(3) F.cHARLES, Brunicardi,Dan K.A, Timothy R.B, David L.D, JOHN G Hunter, Raphael E.P:Schwartz's Principles of surgery, 8th edition, 2005, p.no.454.
(4) Fitzal F, Gnant M. Breast conservation: Evolution of surgical strategies, Breast J 2006;12:S 165-173.Tribe CR. A comparison of rapid methods including imprint cytodiagnosis for the diagnosis of breast tumors. Journal of Clinical Pathology. 1973;26(4):273-277.
(5) Esteban JM, Zaloudek C, Silverberg SG; Intraoperative diagnosis of breast lesions. Comparison of cytologic with frozen section techniques. Am J Clin Pathol. 1987 Dec; 88(6):6818.
(6) Cox CE, Ku NN, Reintgen DS, Greenberg HM, Nicosia SV, Wangensteen S. Touch preparation cytology of breast lumpectomy margins with histologic correlation. Arch Surg. 1991 Apr; 126(4):490-3.
(7) Kolte SS, Satarkar RN. Role of scrape cytology in the intraoperative diagnosis of tumor. Journal of Cytology/Indian Academy of Cytologists. 2010; 27(3):86-90. doi: 10.4103/0970-9371.71871.
(8) Briffod M1, Cabaret V, Trassard M, Labbe S Intraoperative cytology of breast lesions: Clin Exp Pathol. 1999; 47(6): 279-85.
(9) Scopa CD et al; Tissue Imprint in Surgical Pathology; A rapid intraoperative diagnostic aid; Diagnostic Cytopathology 1996, 46-1: 5-8.
(10) Vinod Shidham, Dilip Gupta, Lorenzo M, Galindo, Marian Haber, Carolyn G et al: Intra operative scrape cytology - comparison with frozen sections, using receiver operating characteristic (ROC) curve. Diagnostic Cytopathology, 2000, Aug. 23(2): 134-9.
(11) Hassanain H Khudier, Tahir A Hawramy, Goran M Abdul-Qadir: Role of imprint cytology in breast lesions; Iraqi Journal of Medical Sciences, Dec 2009 (61-66).