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Pathology

COMPARISON AND ANALYSIS OF FNAC AND FROZEN SECTION IN THE DIAGNOSIS OF BREAST LESIONS

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ABSTRACT Aspiration of a palpable mammary tumor is a definitive procedure with results equivalent to frozen section and eqaually suitable for choosing and undertaking definitive therapy ; yet the need for frozen section evaluation is felt in the following situation :1.The aspirate is scanty or acellular due to desmoplastic reaction or due to extensive necrosis.2.The tumor is of low cytologic grade.3.The lesion is either a lobular carcinoma or a lymphoma, and distinction between the two is difficult but therapeutically important.4.Evaluation of lumpectomy margins.Frozen section is an invaluable intra-operative tool for evaluation of breast lumps.The aim of this study was to calculate the overall accuracy, false positivity, false negativity for frozen section of breast lumps,to analyze the causes of discrepancies, and compare the data with that of published literature on frozen section of breast lumps. Frozen section has a role despite the raging popularity of aspiration cytology in the following settings: (1) Difficult cytology (2) Evaluation of lumpectomy margins. (3) Intra-operative nodal status.

KEYWORDS : Frozen section,FNAC, Breast, Accuracy, Utility, Diagnosis.

INTRODUCTION

Frozen section procedure is a pathology laboratory procedure to perform rapid microscopic analysis of specimen .It is used most often in oncologocal surgery. The technical name for this procedure is cryosection.The frozen section procedure as practiced today in medical Laboratories is based on the description by Dr.Louis B.Wilson in 1905.In breast pathology, frozen section allows the surgeons to take an Immediate therapeutic decision, possibly sparing the patient a Second operation and reducing hospitazation costs.More recently,Fine Needle Aspiration Cytology (FNAC) has diminished the demand for frozen section evaluation of breast lumps. Yet in certain situations, particulary when FNAC fail ,the need for frozen section persists.

MATERIAL AND METHOD

In our institution, we conducted a study of 50 cases , with breast lesions .The diagnosis of FANC and intraperative Frozen section was compared. Keeping histopathology as gold standard.On receipt in the laboratory ,the breast specimen of the lymph nodes were examined grossly.The size of the breast lesions,their shape , circumscription, coiours, consistency and presence of necrotic ,haemorrhagic or cystic areas were noted.Each node was bisected and the abnormal looking hemi-section was processed for frozen section.To evaluate the margins of a lumpectomy specimen,the closest margin(s) were selected,inked and frozen. The most respective tissue slice measuring about 1cmX1cmX0.3 cm was processed in an open door cryostat at a temperature of -23°C section measuring 5µ in thickness were cut and toluidine blue staning and rapid hematoxylin and eosin staining were performed. After the frozen section diagnosis was rendered, the frozen tissue was thawed to room temperature and fixed in formalin overnight for further paraffin processing. The unfrozen remaining tissue was also transferred to formalin for paraffin embedding.The H & E stained actual frozen section slides on which the diagnosis was rendered and the subsequent paraffin embedded tissue sections were together evaluated with an emphasis on studying the paraffin processed sections of the tissue actually frozen. The lesions were classified as fibrocystic disease,fibroadenoma,inflammatory lesions and malignancies,the latter were further subclassified were ever possible on comparing the frozen section diagnoses with par affin section diagnoses.

RESULTS

Out of the 50 cases stusied , the false negavtive cases on FANC was 4 & the false positive case on Frozen section was 2.There was no false positive case on both FANC as well as Frozen section.The sensitivity of FANC was 92% and sensitivity of Frozen section Was 98% Specificity of both is 100%.Accuracy of frozen section is 98% and that of FANC is 94% . The Positive predictive value of both is 100% . Negative predictive Value of Frozen section is 95% and that of FANC is 86%.

DISCUSSION

Breast carcinoma is the second most common malignant tumor among rural Indian women after carcinoma cervix whereas in urban Indian women, breast carcinoma overcomes the incidence of carcinoma cervix. Frozen section is useful for obtaining diagnosis of a breast lump, axillary nodes, and lumpectomy margins. FNAC is a simple, cheap technique, which is utilized much more frequently in the evaluation of breast lumps, and axillary nodes; yet the need for frozen section evaluation is felt in the following situations:1.The aspirate is scanty or acellular due to desmoplastic reaction or due to extensive necrosis.2.The tumor is of low cytologic grade.3.The lesion is either a lobular carcinoma or a lymphoma, and the distinction between the two is difficult but therapeutically important.4.Evaluation of lumpectomy margins.In the present study, 51 % of frozen sections on breast lumps were requested despite earlier FNAC evaluation. One-fourth of the FNACs were suspicious for malignancy for which tissue diagnosis was adviced.Although clinically radial scars are non palpable small lesions detected incidentally, microscopically they can be mistaken for malignant lesions especially when the spindle cell and inflammatory component is conspicuous and scarring is less. Papillomas, both solitary and multiple, may undergo infarction and extensive sclerosis; this in turn can produce frightening distortion and patterns which can lead to an over diagnosis of carcinoma. However, blandness of epithelial proliferation is an important feature to recognize. The confident distinction between a papilloma and a papillary carcinoma on frozen section is difficult and according to some should not be attempted till paraffin section is ready.The present study did not reveal any false positive diagnosis on frozen section.The malignant lesions which are commonly under diagnosed as benign.The single false negative entity in the present study was an infiltrating lobular carcinoma on paraffin sections.Amongst the 16 cases (including present study) in publications comprising lobular carcinoma,5 false negatives were finally diagnosed as lobular carcinomas (5 out of 16 = 31.5%), and out of the total 40 false negatives enlisted, 19 were intraductal carcinomas. Thus, invasive lobular carcinoma and intraductal carcinoma are the two most frequently underdiagnosed lesions on frozen section. The presence of intracytoplasmic lumina within the proliferating cells and their pagetoid growth pattern within the involved ducts favors a diagnosis of lobular neoplasia.Intraductal carcinoma is an intraductal proliferation of monotonous cells, with hyperchromatic, round or oval nuclei forming regular spaces, rigid geometric configuration and no swirls or streaming.The incidence of false negativity on frozen tissues increases with diminishing size of the

lesion, due to artifactual distortion on freezing, and the apprehension about lack of adequate tissue for paraffin section. Hence the Association of Directors of Anatomic Surgical Pathology recommends that lesions less than 1cm should not be frozen.In the present study, there were 10 requests for axillary node sampling. There were no false positive diagnoses. The false negativity rate was 20 % [2 cases] which is unacceptably high due to microscopic metastasis. Step sectioning at frozen,and assessment of entire node including adipose tissue, trisection of the node and immunohistochemistry at frozen for detection of micrometastasis have all been recommended to improve the diagnostic accuracy of frozen section. Literature published on axillary node analysis by frozen has shown accuracy rates of 92.08%,95.58%,96.29% and false negativity rates of 8%,4.5%, 3.8% respectively in studies comprising 88, 68, 54 cases respectively.

CONCLUSION

Despite increasing popularity and undisputed utility of FNAC, there will be situations where frozen section still stands out as the method of choice for rapid diagnosis. Only in those few conditions where frozen section fails to provide a conclusive diagnosis, will the final paraffin section be needed to accurately arrive at a definitive diagnosis. A judicious selection of one or more of these modalities is required in every patient presenting with a suspicious breast lump.

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