

FROZEN SECTION: THE NEED FOR INTRA-OPERATIVE CONSULTATION BETWEEN THE SURGEON, AND THE PATHOLOGIST.

*A A MAYUN

*U H PINDIGA

**A ABUBAKAR

INTRODUCTION

History of frozen section: As the 19th century was coming to an end, many advances in microscopy, histotechnique including the application of various natural and synthetic aniline dyes and the use of special equipment for histological sectioning and processing allowed for the fresh, frozen, and archival tissues for microscopic examination.^{1,2,3} As surgeons tackled complex surgical procedures, they sought to investigate whether the microscopic examination of fresh tissue, namely, the frozen section, could be used for intra-operative diagnosis and thus influence the surgical procedure. They needed to know if a growth is malignant, benign, infections, or otherwise. With this knowledge at hand, the surgeon could then opt for a palliative or radical surgery.⁴ The brothers William Mayo, MD and Charles Mayo, MD, played a pivotal role in the development of frozen section. The Mayo brothers needed a very competent pathologist and they found Louis B. Wilson, MD. Dr. Wilson clearly saw the need for a technique to evaluate tissues removed at surgery and to develop novel methods of cutting and staining.

He then set forth on the path of discovery.⁵ With a lot of hard work and various experiments, he was able to perfect his frozen section technique. He then standardized each step of the freezing, cutting, and staining procedures. By April 1905, Dr Wilson was quite comfortable with this procedure and was able to provide the surgeon with a diagnosis within 5 minutes. The details of his technique were published in the December 2, 1905 issue of the Journal of the American Medical Association.^{4,5} Although there were various descriptions of frozen section technique before and after the turn of the 20th century, the publication by Louis B. Wilson, MD, heralded the beginning of a new era in intra-operative diagnosis.

The need for intra-operative consultation between the surgeon and the histopathologist can not be over emphasized. Frozen section technique performed by a well equipped histopathology department is one of the greatest means of enhancing this kind of intra-operative consultation. The frozen section is one of the most important and difficult procedures that the pathologist performs during his practice.⁶ It

ABSTRACT

Intra-operative consultation between the surgeon and the pathologist is very important. Frozen section technique performed by an experienced pathologist requested for by a surgeon well known to him or her is most valuable in this regard.

The aim of frozen section is to establish the presence and nature of a lesion, adequacy of resection margins, positivity of lymph nodes, and the presence of malignant implants or metastasis in other organs. It however may not be possible to determine the accurate mitotic count and the degree of dysplasia by frozen sections.

Although there were various descriptions of frozen section technique before and after the turn of the 20th century, LB Wilson of the Mayo Clinic heralded the beginning of a new era in intra-operative diagnosis.

The purpose of this review is therefore to activate intra-operative consultation between the surgeon and the pathologist using frozen sections, as this will improve clinical services, give better training to resident doctors and improve hospital income.

Author Affiliations: Departments of Histopathology* and Surgery**, University of Maiduguri Teaching Hospital Maiduguri

Corresponding Author: Dr. A A Mayun
Histopathology Department
U.M.T.H
P M B 1414
Maiduguri

Keyword: Frozen sections; Intra-operative consultations

therefore requires a well trained and experienced pathologist who is also conversant and knows the requesting surgeon very well.⁶

Frozen section is a good source of income to the hospital and provides excellent training for residents both in pathology and the surgical specialties. This review is therefore aimed at reactivating intra-operative consultation between surgeons and pathologists with the use of frozen sections.

THE PURPOSE OF FROZEN SECTION

In requesting for a frozen section, the surgeon should ask himself if the result will influence the surgical procedure in any way. If no, then it is not indicated.^{7,8} This is because this painstaking and highly technical and collaborative procedure is only justifiable if it can influence the course of the surgery.

INDICATIONS FOR FROZEN SECTION

The indications for frozen section examination include the following: establishing the presence and nature of lesion; adequacy of surgical margins, positivity of lymph nodes, presence of malignant implants or metastases in other organs; and the presence of diagnosable material even if the exact diagnosis

cannot be made on frozen section.^{8,9,10} From these indications it is clear that curiosity on the part of the surgeon or the patient and need to know the results as soon as possible are definitely not indications for frozen section examinations.⁴ Frozen sections have been practiced and found useful for over one hundred years now.

It has been found to be an invaluable tool to assist the surgeon with intra-operative diagnosis.⁵

CONTRAINDICATIONS TO THE USE OF FROZEN SECTION EXAMINATION

Contraindications to the use of frozen section examinations exist, such as small lesions that could be destroyed by freezing and sectioning, leaving no tissue for a definitive diagnosis with optimally processed tissues, or a situation in which the orientation of the tissues could be distorted to the point where a proper staging of the lesion is compromised during the subsequent observation of the

permanent sections.¹⁰

LIMITATIONS OF FROZEN SECTION EXAMINATION

In a lot of cases it is quite possible to determine the type of malignancy, the status of the resection margins or the lymph nodes, and the extent and depth of involvement by a tumour.^{11,12}

The role of intra-operative consultation is however limited in cases that require an accurate mitotic count, determination of the degree of dysplasia, or extensive sampling to establish the diagnosis. In these cases, a definitive diagnosis must be deferred until evaluation of permanent sections.¹² The pathologist in this situation must be firm, categorical and need not be apologetic. The use of frozen section analysis in some situations may in fact alter cytological or architectural features that are necessary for establishing an accurate diagnosis.^{11,12} With these limitations in mind, the use of intra-operative consultation remains a highly sensitive and specific

technique that plays a critical role in the management of patients.¹²

CONCLUSION

The frozen section has proven to be the most useful procedure in intra-operative consultation. It is therefore necessary for tertiary health institutions to be performing this procedure as a routine one. Most teaching Hospitals in Nigeria have the cryostat machines but these are not functional in almost all the centres. This may be largely due to lack of backup materials for the cryostat, lack of properly trained laboratory technologists and also lack of experience in intra-operative consultation by both pathologists and surgeons.

There is a serious need for a concerted effort to activate intra-operative consultations as this will improve our clinical services, give better training to our resident Doctors and improve Hospital income.

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