

Evaluation of Frozen Section Biopsy in Gynecological Neoplasms in Southern Odisha

Sanghamitra Sahoo¹, Atanu Kumar Bal^{2*}, Debi Prasad Mishra³, Samira Ku. Behera⁴

¹Senior Resident, Department of Pathology, MKCG Medical College, Ganjam, Odisha, India

²Assistant professor, Department of Pathology, MKCG Medical College, Ganjam, Odisha, India

³Professor, Department of Pathology, MKCG Medical College, Ganjam, Odisha, India

⁴Associate Professor, Department of Pathology, SLN Medical College, Koraput, Odisha, India

Original Research Article

*Corresponding author

Atanu Kumar Bal

Article History

Received: 13.02.2018

Accepted: 20.02.2018

Published: 28.02.2018

DOI:

10.36347/sjams.2018.v06i02.043



Abstract: Gynecologic cancers form a huge burden of morbidity and mortality around the world. Cancers of the female reproductive tract has a high incidence amongst Indian women. Frozen section is to provide rapid diagnosis to guide intra or perioperative patient's management. This diagnostic procedure can reduce regret of doing incomplete surgery for malignant tumor or radical surgery for benign condition in a majority of patients. The importance lies in determining the nature of a lesion whether benign or malignant during surgery, assessment of resection margins, and demonstration of fat in tissues and preservation of enzymes /antigenic markers to assess the role of frozen section in analyzing gynecological neoplasms & to correlate with routine histopathology. The prospective study was conducted in the Department of Pathology with collaboration with Department of Obstetrics & Gynecology of MKCG Medical College & Hospital, Berhampur from 2012 to 2014. Eighty nine neoplastic lesions of female genital tract constituted the study group. Fresh unfixed specimens were received in the frozen section unit, were grossed in the unfixed state and 5 micron sections were prepared using the cryostat, stained with rapid H&E stain and evaluated immediately. The average turnaround time was 15 min. After definitive surgery routine histopathological evaluation of the specimen was performed and the results of both procedures were correlated. The site distributions of the cases were ovary (50), cervix (25) and rest 14 cases from other parts of female genital tract. Eighty three cases showed positive correlation (93.25%) and 6 cases showed negative correlation (6.74%). Frozen section is less time consuming, helping the surgeons for an on table decision for radical surgery, reduces repeated anesthetic need and ultimately reducing the patient's anxiety for waiting for results.

Keywords: Female genital tract neoplasms, frozen section, Routine paraffin sectioning.

INTRODUCTION

Cancer has become an important public health problem with over 800,000 new cases occurring every year in India. It is estimated that there are nearly 2.5 million cases in the country with nearly 400,000 deaths occurring due to cancer. Gynecologic cancers form a huge burden of morbidity and mortality around the world and have a high incidence amongst Indian women and more than 70% of cancers occur in the age group of 35-64 years and these cancers exercise an adverse influence on the productive role of women in our society [1].

Gynecological malignancies constitute 27.8% of total cancer burden in India as compared to western countries where it is only 10% [2]. This is because of lack of education, cultural beliefs, poverty, lack of awareness of health and unavailability of advanced

medical facilities. Newer and more widely available investigation modalities like ultrasonography, other imaging techniques like bone scan, and frozen section have given rays of hope for early detection of cancers which together with total resection of tumor along with adjacent area and nodes can increase the survival rate.

Intraoperative consultation and diagnosis by frozen section is used in gynecological surgical oncology to aid in planning the surgical management. This diagnostic procedure can reduce both regret of doing incomplete surgery for malignant tumors and radical surgery for benign conditions in a majority of patients.

The major areas of gynecologic oncology where intraoperative consultations are most requested are in the assessment of pelvic/ ovarian masses, and

cervical and endometrial carcinoma [3]. Frozen section is also used to detect lymph node metastases and to assess tumor margins, especially in cervical and vulval carcinoma, to assess prognostic factors in endometrial carcinoma and to confirm tumor recurrence.

OBJECTIVES

- To assess the role of frozen section in the analysis of gynecological neoplasms.
- To correlate with routine histopathology.

MATERIALS & METHODS

This was a prospective study conducted in the Department of Pathology in the collaboration with the Department of Obstetrics & Gynecology of M.K.C.G Medical College, Berhampur, Odisha, between 2012 to 2014. Fresh unfixed specimens along with a brief clinical history were received in the frozen section unit, grossed in the unfixed state and 5 micron sections were prepared using the cryostat, stained with rapid H&E stain, evaluated and conveyed immediately to the

operating surgeons. The average turnaround time was 15 mins. After definitive surgery routine histopathological evaluation of the specimen was performed and the results of both procedures were correlated.

OBSERVATIONS

In the present study, 99 gynecological specimens were submitted for frozen section biopsy, out of this, 6 cases (6.06%) were nonneoplastic and 4 cases (4.04%) were inconclusive at the time of frozen section. So these cases were considered as deferred cases and excluded from the study. These 89 cases were subsequently followed by routine histopathological study and the final diagnosis was compared with the Frozen Section diagnosis. The site distributions of the cases were ovary (50) cervix (25), endometrium (13) and 1 case from vulva. 83 cases showed positive correlation (93.25%) and 6 cases showed negative correlation (6.74%).

Table-1: Percentage of organs distribution

Tissue	No of cases	Percentage
Ovary	50	56%
Cervix	25	28%
Endometrium/uterus	13	15%
Vulva	1	1%

Table-2: Comparison between frozen section and routine histopathology in ovarian tumors

Type	No of cases in frozen section	No of concordant cases in histopathology	No of discordant cases	Accuracy rate
Benign epithelial tumor(BET)	28	28	0	100%
Borderline epithelial tumor(BIET)	03	02	01	66.6%
Malignant epithelial tumor(MET)	09	08	01	88.88%
Germ cell tumor(GCT)	05	04	01	80%
Sex cord stromal tumor(SST)	04	04	0	100%
Metastatic tumor(MT)	01	01	0	100%
Total	50	47	3	94%

Table-3: Comparison between frozen section and routine histopathology in the grading of endometrial carcinoma

FROZEN SECTION	HISTOPATHOLOGY			
		Grade-I	Grade-II	Grade-III
Grade-I	6	1	0	7
Grade-II	0	4	0	4
Grade-III	0	0	2	2
Total	6	5	2	13

Table-4: Comparison between frozen section and routine histopathology in the depth of invasion of myometrium in endometrial carcinoma

Frozen Section	Histopathology			
		Not involved /Minimal involvement	<50% Myoinvasion	>50% Myoinvasion
Not involved/Minimal involvement	7	0	0	7
<50% Myoinvasion	1	3	0	4
>50% Myoinvasion	0	0	2	2
Total	8	3	2	13

Table-5: Comparison between frozen section and routine histopathology in cervical conisation specimens

Cervix		Histopathology		No of cases	
		Concordant	Discordant	Concordant	Discordant
Frozen Section	*CIN-I	CIN-I		4	
	CIN-II	CIN-II		9	
	CIN-III	CIN-III	**MI	7	1
	MI	MI		2	
	Total			23	

*-=Cervical intraepithelial neoplasia **= Microinvasion

Table-6: Comparison between frozen section and routine histopathology in the margin status of cervical conisation specimens

Frozen section	Histopathology		
		Positive margin	Negative margin
Positive margin	7	0	7
Negative margin	0	16	16
Total	7	16	23

Table 7: Discordant diagnosis between frozen section and routine histopathology

Serial no	Site	Frozen sectionDiagnosis	HistopathologyDiagnosis
1	Ovary	Malignant epithelial tumor	Struma ovari
2	Ovary	Borderline serous tumor	Borderline mucinous tumor
3	Ovary	Yolk sac tumor	Papillary serous adenocarcinoma
4	Endometrium	*Gr -I endometrialadenocarcinoma	Gr-II endometrial adenocarcinoma
5	Endometrium	50% Myometrial invasion	Not involved
6	Cervix	**CIN-III	Microinvasion

DISCUSSION

Out of 50 cases of ovary, 40(80%) were epithelial tumors, 5(10%) germ cell tumor, 4(8%) sex cord stromal tumor and only 1 case (2%) was metastatic tumor on frozen section. Epithelial ovarian tumors consisted of benign 28(56%), borderline 3(6%) and malignant 9(18%) in frozen section whereas the final diagnosis was benign in 28(56%), borderline 2 (4%) and malignant16%. In the epithelial tumors, maximum cases were benign serous cyst adenoma and minimum cases belonged to borderline category. In sex cord stromal tumor, all cases were fibroma. The germ cell tumors consisted of yolk sac tumor and dysgerminoma.

The present study showed a high overall accuracy for the diagnosis of ovarian neoplasms (94%) and was in agreement with previous studies (89%–

98.8%)[4,5]. The deferred cases were due to sampling error and interpretation error.

In the present study, 25 cervical specimens were evaluated. Out of 25 cases, two specimens were subjected to identify the cervical involvement in diagnosed endometrial carcinoma and rest 23 were cone specimens to know the margin status and invasion. Among these 23 cases, 22 (95.65%) had the same results in frozen and permanent sections and only in one case frozen section result was CIN3 while permanent sections showed micro invasive carcinoma which was of clinical importance and considered as significant and found to be due to sampling error of small foci. Margin status of all the 23 cases showed 100% concordance.

The Paired Sample T-test showed no significant difference between the two groups of frozen and permanent section ($P=0.716$). The present study showed a concordance of 96.5% comparable with other studies [6] and no significant difference was seen between frozen and permanent section results in patients with high grade cervical intraepithelial neoplasia (CIN). It implied that frozen section evaluation of cervical cone biopsy was a reliable procedure in selected cases.

The first objective of this study was to correlate the grade and depth of myometrial invasion by Frozen Section with that of routine histopathology which has the prognostic significance. In the present study, 2 cases (15.38%) gave discordant results, one case (7.7%) was downgraded and one case (7.7%) showed no myometrial involvement in routine histopathology. In the present study, the overall accuracy of frozen section is 84.58% which is lower than Richardson *et al.* 93.5% [7].

The factors responsible for disagreement of frozen section include inadequate sampling or technical artifact associated with the surgery. Determination of the exact extent of myometrial involvement in the setting of frozen section is challenging as the invasion line can be extremely heterogeneous with presence of skip metastasis and irregular endomyometrial junction. It has got a poor sensitivity to detect microscopic foci of the disease in the cervix, which could be found only in permanent sections.

CONCLUSION

Frozen section diagnosis is not just about reporting histology on cryostat sections but represents an intra-operative consultation in the true sense with the pathologist having a duty to help the surgeon in the best possible manner. It is accurate regarding determination of the type of malignancy, the status of the resection margins or the lymph nodes, and the extent and depth of involvement by a tumor and has a limited value 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. It may alter the cytology or architectural features that are necessary for establishing an accurate diagnosis. With this limitation in mind, the use of intraoperative consultation remains a highly sensitive and specific technique that plays a critical role in the management of gynecologic disease.

ACKNOWLEDGEMENT

We would like to thank Dr. Saroj Ranjan Mohanty, Senior resident, Department of Pathology, MKCG Medical College for his substantial help during this research work. We thank to the staffs of Department of Pathology of MKCG Medical College and Hospital, Berhampur for their cooperation to

conduct this study. We acknowledge the active participation of subjects.

REFERENCES

1. Devi KU. Current status of gynecological cancer care in India. *Journals of Gynecol Oncol*; June 2009, Vol 20, No. 2:77-80.
2. Annual report of hospital cancer registry. Bangalore: Kidwai Memorial Institute of Oncology; 2006.
3. Acs G. Intraoperative consultation in gynecologic pathology. *Seminars in diagnostic pathology* 2002; 19:237-54.
4. Wootipoom V, Dechsukhum C, Hanprasertpong J, Lim A. Accuracy of intraoperative frozen section in diagnosis of ovarian tumors. *Journal-Medical Association of Thailand*. 2006 May 8;89(5):577.
5. Abbasi F, Yekta Z, Aryan A. Accuracy of Frozen sections. 2012.
6. Carvalho JP, Carvalho FM, Pincerato KM, Pereyra EA. Conization, frozen section examination, and planned hysterectomy in the treatment of high-grade cervical intraepithelial neoplasia. *Revista do Hospital das Clínicas*. 2001 Dec;56(6):169-72.
7. Richardson KJ, Soeters R, Whittaker J, Van Wijk R, Dehaeck K. The role of frozen section in the management of early endometriosis endometrial carcinoma. *Southern African Journal of Gynecological Oncology*. 2011 Jan 1;3(1):29-33.