



Original Research Article

Correlation between histopathology and frozen study of ovarian carcinoma

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ABSTRACT

Introduction: To compare the frozen section results with definitive histopathological results of ovarian tumors diagnosed intra operatively at Saveetha medical college and hospital, Chennai.

Materials and Methods: In this study we compared the results of 30 cases of frozen histology with histopathological diagnosis at the department of pathology, Saveetha medical college and hospital, Chennai during July 2017-July 2018.

Results: A total of 30 cases were studied correlating the histopathological and frozen diagnosis of ovarian carcinoma. Out of which the diagnosis of 28 cases were concordant whereas diagnosis of 2 cases were discordant.

Conclusion: The frozen section is a very accurate method and it provides rapid results. Out of the 30 cases, 2 cases were discordant, which might have resulted due to any sampling errors, technical problem or intraoperative error. Appropriate measures should be taken to reduce error rates.

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1. Introduction

The frozen section procedure is a pathological laboratory procedure to perform fast microscopic analysis of a specimen.¹ The technical name for this procedure is cryosection. Using this procedure

The accuracy of frozen section diagnosis concluded that for tumors that were clearly either benign or malignant the accuracy of the frozen section was good which was later confirmed by regular biopsy. On the contrary, where the frozen section diagnosis was a borderline tumor, the diagnosis was less accurate.²

The frozen section is used to guide intraoperative or perioperative patient management as it provides rapid diagnosis. Thus it is used to provide a more efficient management to the patient.³

Ovarian cancer is one of the most common cancer in women, especially women aged over 60 years.

Ovarian cancer mostly goes undetected until it has spread within the pelvis and abdomen. At the late stage, ovarian cancer is more difficult to treat but if it is detected in early

stages, in which the disease is confined to the ovary, is more likely to be treated successfully.⁴

The type of ovarian cancer is determined from the type of cell from where the cancer has begun.

WHO has classified ovarian tumours into 4 categories:

Epithelial tumours — it is the most commonest type of ovarian tumours

1. Germ cell tumours — it comprises 10-20% of ovarian tumours
2. Sex cord -stromal tumours — it comprises about 5% of ovarian tumours
3. Others

The cryostat is the instrument to freeze the tissue and additionally to chop the frozen tissue for microscopic section. The freezing of the tissue sample converts the water to ice.⁵ Within the tissue there is a firm ice which acts as embedding media to cut the tissue.⁶

Periodic review of the correlation between the frozen section diagnosis and final diagnosis is useful to identify the potential causes of errors and thus measures can be implemented to help prevent similar occurrences.⁷ Proper

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guidelines will definitely help to reduce such occurrences. So strict guidelines should be followed to prevent these errors.

2. Methods and materials

The study was carried out in the Frozen Section and Histopathology Division of Department of Pathology, Saveetha medical college and hospitals, Chennai from July 2017 to July 2018. A total of 30 cases were taken.

Fresh tissue was sent to the frozen section room and the specimens were dissected and inspected.⁸ Optimal cooling temperature compound is used to cut out blocks on the cryostat. After which it is stained by hematoxylin-eosin staining. Immediately the frozen section diagnoses are informed to the concerned authorities.⁹

The non-frozen tissues were then sent to the histopathological lab where it is fixed in 10% formalin solution and processed for routine paraffin section followed by hematoxylin-eosin staining on the next day and further reporting was done.¹⁰

The impression of frozen histology and histopathology was compared and the accuracy and specificity of the frozen section reporting was determined in comparison to the routine histopathology reporting.¹¹

A total of 30 cases were taken and the histopathological and frozen section diagnosis were compared.

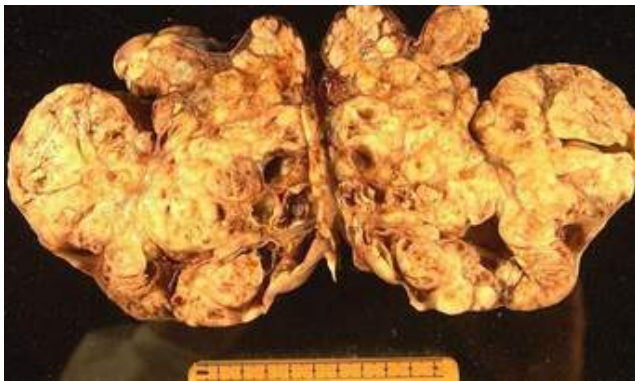


Fig. 1: A pathological specimen of ovarian carcinoma

Correlation between the frozen diagnosis and histopathological diagnosis of ovarian carcinoma

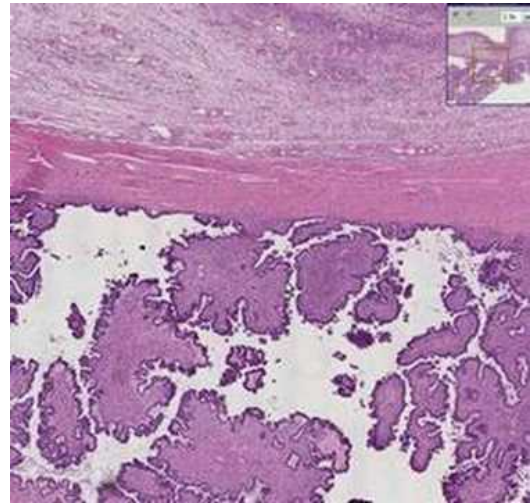


Fig. 2: Histology of ovarian carcinoma

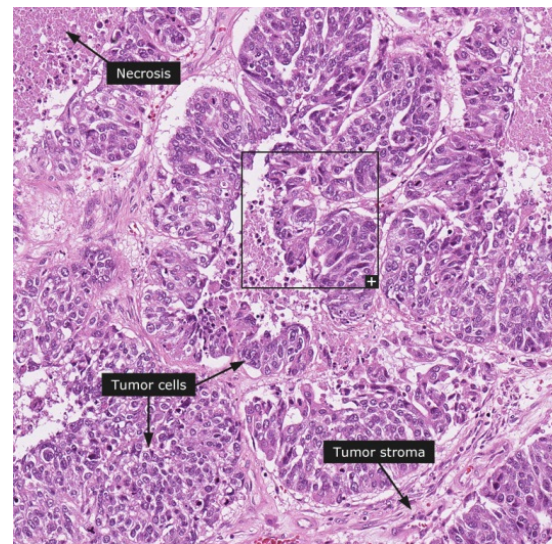


Fig. 3: Histopathology of ovarian carcinoma

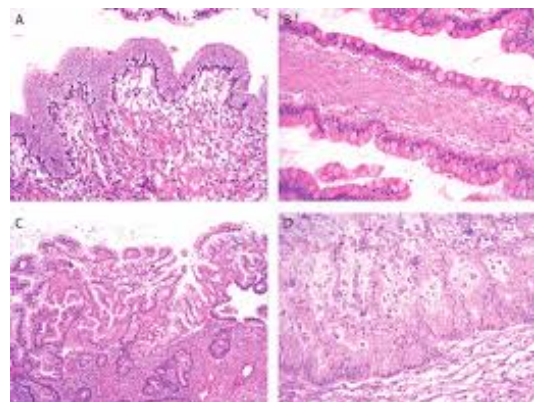


Fig. 4: Intraoperative frozen section diagnosis

Table 1:

S. No	Hospital number	Age	Frozen histology	Histopathology
1	1608150092	55	benign ovarian tumor	fibroma of ovary
2	1608270035	53	malignant mucinous adenocarcinoma of ovary	mucinous adenocarcinoma of ovary
3	1609080023	39	benign mucinous cystadenoma with hemorrhage	benign cystic teratoma
4	1610060073	48	bilateral high grade serous carcinoma of both ovaries	bilateral high grade serous carcinoma of both ovaries
5	1611100010	17	boderline mucinous tumor	boderline mucinous tumor
6	1408153236	47	fibrothecoma of both ovaries	ovarian fibrothecoma
7	1701241013	50	mucinous neoplasm	mucinous boderline tumor
8	1701040104	65	sertoli leydig cell tumor	serous highgrade carcinoma
9	1608180045	17	benign serous cystadenofibroma	benign serous cystadenofibroma
10	161100126	55	benign serous cystadenofibroma	benign serous cystadenofibroma
11	1702090068	37	benign cystic teratoma	benign cystic teratoma
12	1702160036	43	benign cyst probably serous cystadenoma	benign serous cystadenoma
13	1702240120	29	mixed germ cell tumor of ovary	mixed malignant germ cell tumor
14	1703150078	60	mucinous cystadenoma of ovary	mucinous cystadenoma
15	1703130006	63	benign mucinous cyst	benign mucinous cystadenoma of right ovary
16	1703170010	52	benign serous cystofibroma	serous boderline tumor
17	170325014	53	benign cystic teratoma	benign cystic teratoma
18	1704070185	64	benign serous cystadenofibroma	benign serous cystadenofibroma
19	1703160043	49	benign mucinous cystadenoma of ovary	benign mucinous cystadenoma
20	1704270119	70	benign serous cystadenoma ovary	benign serous cystadenoma of ovary
21	1705080235	44	serotic leydig cell tumor	right ovary lipid cell tumor
22	1706271109	46	granulosa cell tumor	adult granulosa cell tumor of right ovary
23	1710091009	23	benign mucinous cystadenoma	benign mucinous cystadenoma of ovary
24	1803280018	21	benign papillary serous cystadenofibroma	benign serous cystadenofibroma of ovary
25	1804140042	60	benign mucinous cyst	benign mucinous cystadenofibroma
26	1805310297	45	benign fibrothecoma ovary	benign ovarian fibroma of left ovary
27	1807120042	50	atypical proliferative mucinous tumor	boderline mucinous tumor
28	1810030254	28	benign mucinous cystadenoma of ovary	benign mucinous cystadenoma of ovary
29	1809060530	37	benign serous cystadenoma of ovary	benign serous cystadenoma of ovary
30	1811220032	50	serous carcinoma of ovary	highgrade serous carcinoma of ovary

3. Discussion

The histopathological section diagnosis of all 30 ovarian specimens revealed 66.66% benign tumours and 33.34% malignant tumours. The final frozen section revealed 60% benign tumours and 40% malignant tumours.

The overall accuracy rate of frozen section analysis is 93.33%. However there is a failure rate of 6.67%. The 6.67% negative results could have occurred due to any sampling errors.

These findings are in concordance with that of Chandramouleeswari K. et al¹² and³ Shrestha S. et al.² They have reported the accuracy rates as 92% and 94.6% respectively. But the study of Junn-Liang et al¹³ and Farah- Klibi F. et al.¹⁴ Showed slightly higher accuracy rates of 97.7% and 97.5% respectively. These showed a relative decrease in the negative results.

In one case, benign ovarian tumor reported on frozen section turned out to be fibroma of ovary on conventional

paraffin section.¹⁵

In another case, it was reported as benign serous cystofibroma on frozen section but it turned out to be serous borderline tumor on paraffin section.

Sometimes these kind of negative results can also be observed.⁵ The negative diagnosis was due to the error by the pathologist which may have resulted due to the method of freezing, type of procedure, type of lesion etc.

Appropriate measures and strict guidelines would help to reduce the failure rates.

4. Conclusion

Intraoperative frozen section diagnosis appears to be an accurate technique for the histopathological diagnosis of ovarian tumours.

The results can be used to guide the surgery. Frozen diagnosis can provide rapid, reliable, cost effective information necessary for optimum patient care.¹⁶

Evaluation of the frozen section diagnosis and histopathological diagnosis should be carried out regularly for more efficient management of ovarian tumors.

The diagnostic accuracy of frozen section as an important source of information in surgical procedure is important not only in the management of surgical patients but also as a measure of quality control in surgical pathology.¹⁷

To reduce error rates and to improve frozen section diagnosis, continues monitoring in the pathology department should be done. This should be done on a regular basis to attain better results.¹⁸

This correlation between the histopathological diagnosis and frozen section diagnosis is definitely very useful to identify the tumours.

5. Source of Funding

None.

6. Conflict of Interest

None.

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