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Original Research Article

Spectrum of Frozen Biopsy Processed in Tertiary Care Hospital

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Abstract:

Background: Frozen section is a process of quick frozen of specimen for rapid diagnosis. Common indications of frozen section include confirmation of malignancy, margin status evaluation and metastasis evaluation.

Materials and methods: A retrospective study of frozen section cases (92 cases) was conducted at a tertiary care center. Indications for frozen section, reports of frozen section with final reports of hematoxylin and eosin stained sections were analyzed.

Results: Highest number of cases was carcinoma buccal mucosa followed by ovarian carcinoma and gastrointestinal tract carcinoma. Commonly indications were for assessment of lymph node metastasis, tumor confirmation and margin status evaluation.

Conclusion: Frozen section is a reliable diagnostic tool intraoperatively for surgeons. Periodic review of functioning of cryostat and following all steps with utmost care can improve the accuracy of frozen reporting.

Keywords: Frozen section, Oral carcinoma, Tumor.

Introduction

Frozen section is a rapid diagnostic technique using microscopic tissue analysis most commonly in malignant lesions. First identified by Welch in 1981.Frozen section is performed using cryostat. It is a refrigerated machine containing a rotatory microtome with a temperature of -20’ C to -30’C.

Frozen section guides surgeon in intra operative diagnosis, identifying the type of lesion, margin status and lymph node status evaluation. Disadvantages of frozen section include improper sections and staining and artifacts which can mislead the diagnosis. Hence frozen report should not be considered as final diagnosis. It must be correlated with final histopathological report. It is critical to determine the optimal functioning of cryostat machine; hence it must be reviewed periodically to improve accuracy and to avoid errors.

Materials and methods

It is a retrospective study for a time period of 2 years in a tertiary care centre. Specimens were received from operation theatres without fixatives. The specimen was properly measured, tumour areas, margins and lymph nodes were identified, and appropriate sections were taken. Sections were kept in a mounting medium such as polyethylene glycol and polyvinyl alcohol and freezed at the temperature of – 20’ C in cryostat. 5 micron thick sections were cut, placed on glass slide, fixed and stained with hematoxylin and eosin and examined under microscope.

Results were informed to the surgeon immediately. The remaining specimen was fixed overnight in 10% formalin. Grossing was done, sections were taken. Tissue processing and staining were done. The final histopathological report was compared with frozen report

Results

During our study period we received 92 cases for frozen section and from them 115 specimens were sent. Out of 92 cases, 28 were oral carcinomas received for margin clearance assessment and lymph node metastasis. Next common case was female genital tract carcinomas, 19 specimens were received for confirmation and categorization of tumours and peritoneal metastasis assessment. Table 1 shows the distribution of cases received for frozen section.

Table 1: Distribution of Cases received for Frozen Section (n=92)

Serial. No	Cases	Frequency (%)
1.	Oral cavity	28 (30.4)
2.	Female genital tract and Ovary	19 (20.7)
3.	Gastrointestinal tract	14 (15.3)
4.	Thyroid	9 (9.7)
5.	Skin	7 (7.7)
6.	Breast	5 (5.4)
7.	Soft tissue	5 (5.4)
8.	Bladder	2 (2.1)
9.	Larynx	1 (1.1)
10.	Parotid	1 (1.1)
11.	Renal	1 (1.1)
	Total	92 (100)

Table 2: Distribution of Specimens sent for Frozen Section (n=115)

Serial. No	Specimens	Frequency (%)
1.	Lymph nodes	58 (50.4)
2.	Margins	39 (33.9)
3.	Tumours	7 (6.1)
4.	Peritoneal deposits	5 (4.3)
5.	Sigmoid deposits	2 (1.7)
6.	Omentum	1 (0.9)
7.	Pancreatic tissue	1(0.9)
8.	Cyst	1(0.9)
9.	Liver nodule	1(0.9)
	Total	115 (100)

Table 2 shows the distribution of specimens sent for frozen section. Majority of them were lymph nodes (50.4%) followed by margins (33.9%). Among 28 oral cavity cases, 11were from buccal mucosa, 8 from tongue, 6 from hard palate, 2 from lower lip and 1 from salivary gland. From 11 buccal mucosa cases 14 specimens were received (10 lymph nodes and 4 margins) of which 1 lymph node and 2 margins were inferred positive. From 8 tongue cases 8 lymph node specimens were received and 2 were inferred positive. From 6 hard palate cases 4 lymph node and 3 margin specimens were received and all were negative. Lower lip (2 nodes) and salivary gland (1 node) specimens were negative.

Among 10 cases of ovary, 6 were peritoneal deposits, 3 were masses and 1 was lymph node. Out of these 3 deposits and 1 mass were inferred positive. Totally 9 cases of genital tract (5 cervix and 4 vulva) were received. From these cases 8 margins, 3 deposits and 2 lymph node specimens were sent and one deposit in colon was found to be positive. Among 14 GIT cases, 6 lymph nodes, 5 peritoneal nodules and 4 margins were sent for frozen and one lymph node was positive. Lymph nodes were sent for all 9 thyroid cases and 4 were inferred positive. Totally 20 margins, 9 nodes and 4 masses were sent from skin, breast and soft tissue cases. Out of which 3 nodes, 1 margin and 1 mass were inferred positive for malignancy. Two masses were inferred benign. Among other cases 5 nodes and 2 masses were sent for frozen and only one node from larynx was found to be positive.

Totally out of 115 specimens sent for frozen section 21 (18.3%) were inferred positive for malignancy and 2 masses were inferred as benign.

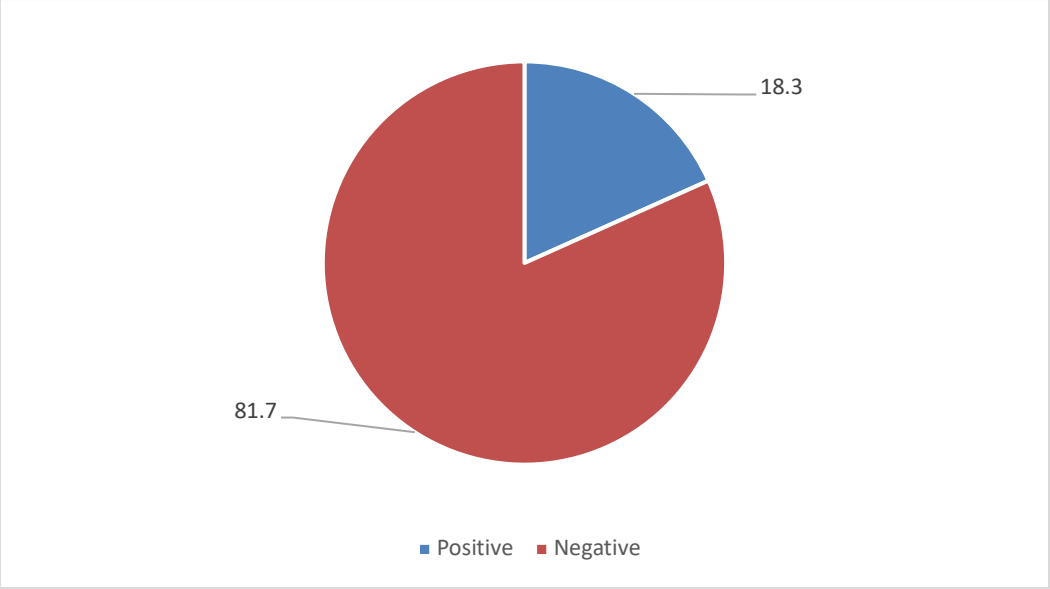

Figure 1: Proportion of Malignancy Positivity among Frozen Section Specimens (n=115)

Discussion

In our study among 92 cases sent for frozen section during study period the most common cases were from oral cavity (30.4%) followed by female genital tract and ovary (20.7%).

In a similar study by Diwagar N [6] at Chennai among160 cases sent for frozen section 67% of the cases were from female genital tract and ovary. In another study by Devi J [7] in Assam among 40 cases received for frozen section 32.5% were from ovary. In another study in State cancer institute of Assam by Bhardwaj B [8] et al among 200 cases 45 were from gall bladder, 43 from breast and 19 from ovary. These variations in proportion of cases may be due to regional variations in prevalence of different cancers.

In our study among 115 specimens' majority was lymph nodes (50.4%) followed by margins (33.9%).Similarly, in the study by Bharadwaj B [8] et al 49% of specimens sent for frozen were margins and 16% were lymph nodes. But in the study by Devi J [7] among specimens received for frozen section 32.5% were lymph nodes and 5.1% were margins. Frozen Section is considered one of the most important difficult procedures performed by the pathologist during their practice.

The reason is the pathologist should come to a correct decision in short duration based on their speciality knowledge, skills and clinical knowledge. If done correctly frozen section is an accurate and reliable method that can provide rapid and cost effective details necessary for diagnosis and on table management of cancer cases. Widespread use of frozen section in cancer cases can improve the quality of life for cancer patients and may prolong their survival.

Conclusion

Frozen section is a rapid accurate diagnostic method for malignancy confirmation, margin assessment and lymph node metastasis evaluation. Following each and every step from grossing to reporting with utmost care and interpersonal coordination will aid in accurate and reliable reporting without errors.

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