

THE USE OF FROZEN SECTION IN RAPID DIAGNOSIS OF GYNAECOLOGIC TISSUE INCLUDING BREAST

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SUMMARY

Cryostat frozen section technique was used on 524 surgical biopsies which included 180 tissues from uterus, 110 tissues from cervix, 45 tissues from ovary, 4 tissues from vulva and 185 tissues from breast. The overall accuracy using frozen section on gynaecologic tissues was 98.3 per cent with only 6(1.7 per cent) false negative results. There were 3(1.62 percent) false negative results in breast tissues with an accuracy rate of 98.38 per cent. There were no false positive results and deferred diagnosis in present study. There were 11 errors due to faulty selection in breast, 2 in uterus, 2 in cervix, 6 in ovary and one in vulva. There were 12 errors due to interpretation in breast tissue and one in vulva. The frozen section technique is simple and easy to perform with higher rate of accuracy.

Introduction

The principal use of frozen section is to determine the malignancy or benign nature of tumour at the time of biopsy so as to make a therapeutic decision if necessary without delay. The rapid frozen section technique as a means of establishing a pathological diagnosis at the time of operation has been in use for about a century. The present communication deals with our experience with frozen section technique in rapid diagnosis of gynaecologic tissues including breast.

Material and Methods

The present study was carried out on 524 surgical biopsies received in the department of Pathology, Sardar Patel Medical College, Bikaner from the Associated group of hospital Bikaner, and included 180 tissues from uterus, 110 tissues from cervix, 45 tissues from ovary, 4 tissues from vulva and 185 tissues from breast. The tissues used for frozen sections were subsequently processed for paraffin embedding, so as to compare the frozen section diagnosis with the paraffin section diagnosis of the same tissue. The results were also compared with final paraffin section diagnosis in the department on separate tissue, so as to evaluate

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TABLE - II
SHOWS ERROR DUE TO FAULTY SELECTION OF THE
TISSUES FOR FROZEN SECTION DIAGNOSIS

<i>Sr. Organ No.</i>	<i>Diagnosis on frozen tissue</i>	<i>Final Paraffin diagnosis</i>
1. Uterus	Leiomyoma with dystropic calcification	Adenocarcinoma
2. Uterus	Only blood clots seen	Undifferentiated Carcinoma
3. Cervix	Chronic non-specific cervitis	S.C.C.
4. Cervix	Chronic non-specific cervitis	S.C.C Microinvasive
5. Ovary	Follicular cyst	Serous cyst adenoma
6. Ovary	Normal ovary	Serous cyst adenoma
7. Ovary	Normal ovary	Serous cyst adenoma
8. Ovary	Follicular cyst	Benign cystic teratoma
9. Ovary	Normal ovary	Products of gestation
10. Ovary	Normal Ovary	Products of gestation
11. Vulva	Chronic non-specific inflammation	Met. S.C.C.
12. Breast	Fibrous disease	I.D.C.
13. Breast	Fibrous disease	I.D.C.
14. Breast	Normal	I.D.C.
15. Breast	Fibroadenosis	Cystic hyperplasia
16. Breast	Fibroadenosis	Cystic hyperplasia
17. Breast	Fibrous disease	Cystic hyperplasia
18. Breast	Fibrous disease	Cystic hyperplasia
19. Breast	Fibrous disease	Cystic hyperplasia
20. Breast	Fibrous disease	Fibroadenosis
21. Breast	Fibroadenosis	Cystic hyperplasia
22. Breast	Cystic hyperplasia	Fibroadenosis

S.C.C. - Squamous cell carcinoma

I.D.C. - Infiltrating duct carcinoma

TABLE - III
SHOWS ERRORS AS A RESULT OF INTERPRETATION

<i>Sr. Organ No.</i>	<i>Frozen Section Diagnosis</i>	<i>Final Paraffin Diagnosis</i>
1. Ovary	Malignant ovarian tumour	Endodermal sinus tumour
2. Breast	I.D.C.	I.L.C.
3. Breast	I.D.C.	I.L.C.
4. Breast	I.D.C.	Tubular Carcinoma
5. Breast	I.D.C.	Medullary carcinoma
6. Breast	Fibrous disease	Fibroadenoma
7. Breast	Fibrous disease	Fibroadenoma
8. Breast	Fibrous disease	Fibroadenoma
9. Breast	Fibrous disease	Fibroadenoma
10. Breast	Normal	Fibroadenoma
11. Breast	Cystic hyperplasia	Fibroadenoma
12. Breast	Cystic hyperplasia	Fibroadenoma
13. Breast	Fibroadenosis	Adenoma

I.D.C. - Infiltrating duct carcinoma.

I.L.C. - Infiltrating lobular carcinoma.

failure rate if any based on selection of the tissue or interpretation of frozen section. The frozen sections were cut 6 μ thickness and were stained with rapid toluidine blue and Harri's Haematoxyline and Eosin staining method. In each case a diagnosis of non-neoplastic, benign or malignant was made using frozen section and wherever possible a definitive diagnosis was also given.

Results

Table No.1 shows organwise distribution of 524 tissues from gynaecologic

Discussion

There were 6 false negative results in gynaecologic tissues with an overall accuracy of 98.3 percent, which compares favourably to those of other workers (Sakai and Lauslahti 1969, Lerman and Pitcock 1972, Dalal et al 1979 and Rogers et al 1987). There was no false positive results in present study, however, Holaday and Assor (1974) had 2 false positive results, whereas Dalal et al (1979) and Rogers et al (1987) had one case each false positive result in gynaecologic tissues (Table IV).

TABLE - I
SHOWS ORGANWISE DISTRIBUTION OF 524 TISSUES ALONGWITH
FALSE NEGATIVE, FALSE POSITIVE AND PERCENTAGE OF ACCURACY

Sr. Organ No.	No. of Cases	Benign	Malig- nant	Non-Neo plastics	False Negative	False Positive	FS	FI	Accuracy
1. Uterus	180	118	4	58	2	-	2	-	98.89
2. Cervix	110	1	2	107	2	2	2	-	98.19
3. Ovary	45	8	11	26	1	-	6	1	97.78
4. Vulva	4	-	1	3	1	-	1	-	75.00
5. Breast	185	55	75	55	3	-	11	12	98.38

FS - Faulty Selection

FI - Faulty Interpretation

sites and breast alongwith incidence of false negative and false positive results and percentage rate of accuracy. The overall accuracy rate was 98.3 percent for gynaecologic tissues with 6(1.7 per cent) false negative results and no false positive results. There were 3(1.62 per cent) false negative results. The overall accuracy rate was 98.36 per cent for breast tissues. There were in all 11 errors due to faulty section amongst breast tissues (Table II). The error due to faulty selection in gynaecologic tissues were seen in 10 cases. Table III shows errors due to faulty interpretation.

The incidence of false positive, false negative and deferred diagnosis with percentage rate of accuracy in breast tissues by various authors are shown in Table V. The accuracy rate in present study was 98.38 per cent and is comparable with those of other workers (Table V). There were 3 false negative results with no false positive and deferred results in present study. The incidence of false positive results varies from 0.04 per cent (Lessels and Simpson 1976) to 2.2 per cent (Melnik 1969). The overall incidence of false negative results ranges from 0.3 per cent (French and Laffler 1960) to 2,6 per cent

TABLE - IV
SHOWS INCIDENCE OF FALSE POSITIVE, FALSE NEGATIVE, DEFERRED
DIAGNOSIS AND ACCURACY IN GYNAECOLOGIC TISSUES BY VARIOUS AUTHORS

Sr. No.	Authors	Year	No. of cases	False Positive	False Negative	Deferred Diagnosis	Accuracy
1.	Winship and Rosvoll	1969	12	-	-	-	100.00
2.	Sakai and Lauslahti	1969	25	-	1(4.0)	-	96.00
3.	Lerman and Pitcock	1972	348	-	4(1.0)	3(1.0)	98.00
4.	Nahum and Saltzstein	1973	127	-	8(6.3)	-	93.70
5.	Holaday and Asoor	1974	586	2(0.3)	2(0.3)	1(0.2)	99.20
6.	Dalal et al	1979	31	1(3.2)	-	-	96.80
7.	Rogers et al	1987	302	1(0.3)	-	12(4.0)	95.70
8.	Present study	1989	339	-	6(1.7)	-	98.30

TABLE - V
SHOWING INCIDENCE OF FALSE POSITIVE, FALSE NEGATIVE AND DEFERRED
DIAGNOSIS AND ACCURACY IN BREAST TISSUE BY VARIOUS AUTHORS

Sr. No.	Authors	Year	No. of Cases	False Positive	False Negative	Deferred diagnosis	Accuracy
1.	Fuller	1957	460	-	2(0.40%)	22(5.40%)	94.20%
2.	Jennings and Landers	1957	212	-	2(0.90%)	12(5.70%)	93.40%
3.	Pitts et al.	1958	327	-	-	1(0.30%)	99.70%
4.	Ackerman and Ramirez	1959	440	-	4(0.90%)	10(2.30%)	96.80%
5.	Winship and Rosvoll	1959	1004	-	8(0.80%)	11(1.20%)	98.00%
6.	French and Laffler	1960	228	-	1(0.30%)	2(0.70%)	99.00%
7.	Winship	1961	805	-	5(0.60%)	3(0.40%)	99.00%
8.	Broders, Sr.	1962	469	-	-	-	100.00%
9.	Sparkman	1962	571	-	-	7(1.22%)	98.78%
10.	Trout, Jr.	1962	200	-	2(1.00%)	-	99.00%
11.	Tribe	1965	311	-	5(1.60%)	-	98.00%
12.	Desai	1966	1006	-	-	30(2.98%)	97.02%
13.	Nakazawa et al	1968	1001	1(0.10%)	7(0.70%)	10(1.00%)	98.20%
14.	Melink	1969	3428	76(2.20%)	91(2.68%)	-	95.12%
15.	Sakai and Lauslahti	1969	196	-	2(1.02%)	-	98.98%
16.	Lerman and Pitcock	1972	1085	-	5(0.47%)	5(0.47%)	90.06%
17.	Tribe	1973	510	-	3(0.60%)	-	99.40%
18.	McCormick and Shivas	1973	106	1(1.00%)	1(1.00%)	-	98.00%
19.	Saltzstein and Nahum	1973	441	1(0.22%)	2(0.45%)	-	99.33%
20.	Holaday and Assor	1974	1616	1(0.06%)	8(0.49%)	6(0.37%)	99.08%
21.	Solanki	1975	49	-	-	-	100.00%
22.	Lessels and Simpson	1976	2197	1(0.04%)	6(0.27%)	-	99.69%
23.	Dalal et al	1979	109	-	1(0.91%)	1(0.91%)	98.18%
24.	Dankwa and Davies	1985	557	-	11(1.97%)	6(1.07%)	96.96%
25.	Rogers et al	1987	315	-	4(1.26%)	6(1.91%)	95.89%
26.	Present study	1988	185	-	3(1.62%)	-	98.38%

(Melink 1969). The accuracy rate was in between 93.4 per cent (Jennings and Landers 1957) to 100 per cent (Broders Sr. 1962). The first frozen section was used on a benign breast lesion by Welch in 1891 (Jennings and Landers 1957). In breast it required both thin and thick section in unusual lesions like papillary, intraductal, lobular carcinoma and lesions including area of hemorrhage, necrosis and mucinous material (Ackerman and Ramirez 1959). A history of previous operation, trauma and pregnancy is desirable in cases where clinically it mimics carcinoma and includes area of fat necrosis, lactational changes and granular cell myoblastoma. Multiple tissues should be processed from ill defined diffuse growth or when it shows small growth on mam-mography.

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