

# FROZEN SECTION DIAGNOSIS: AN EXPERIENCE AT THE INSTITUTE (CHUGHTAI'S LAHORE LAB, LAHORE)

MUHAMMAD FAYYAZ ANWAR<sup>1</sup>, MUHAMMAD IRFAN BASHEER<sup>2</sup>, SADIA RANA<sup>3</sup>, NAJAM-UL-HASNAIN<sup>4</sup>, HASEEB AHMED KHAN<sup>5</sup>, IQBAL AHMED<sup>6</sup>, MUHAMMAD KASHIF MUGHAL<sup>7</sup>

<sup>1</sup>Assistant Professor, Pathology Department, Post Graduate Medical Institution, Lahore, Pakistan, dr.rana.fayyaz@gmail.com, <sup>2</sup>Post Graduate Resident Histopathology, Chughtai's Lahore Laboratory, Lahore, Pakistan dr.irfanbasheer@gmail.com, <sup>3</sup>Post Graduate Resident, Department of Obstetrics and Gynecology, Services Institute of Medical Sciences, Lahore, Pakistan, sadiarana1111@gmail.com, <sup>4</sup>Professor, Department of ENT/Head & Neck Surgery, Lahore General Hospital, Lahore, Pakistan, najament@hotmail.com, <sup>5</sup>Assistant Professor, Pathology Department, FMH College of Medicine and Dentistry, Lahore, Pakistan, haseeb0709@gmail.com, <sup>6</sup>Senior Demonstrator, Pathology Department, Post Graduate Medical Institution, Lahore, Pakistan, Iqbaldr20@gmail.com, <sup>7</sup>Senior Demonstrator, Pathology Department, Post Graduate Medical Institution, Lahore, Pakistan, drkashif21@gmail.com

Corresponding Author: Muhammad Fayyaz Anwar, Assistant Professor, Pathology Department, Post Graduate Medical Institution, Lahore, Pakistan, dr.rana.fayyaz@gmail.com

## ABSTRACT

**Background:** Frozen section based histological diagnosis is required by the surgeon(s) to make immediate intra-operative decision(s). So, high accuracy of frozen section is important for the reporting surgical pathologist(s) and surgeon(s) to make subsequent on-table decision for the management of the patient.

**Objective:** To assess the concordance of frozen section histological diagnosis reported in our institute by comparing it with subsequent final histological diagnosis.

**Material & Methods:** Biopsy specimens 100 patients submitted for frozen section diagnosis were included in the study. The diagnosis rendered on fresh frozen section was compared with the diagnosis rendered on paraffin-embedded formalin-fixed section of the same specimen.

**Results:** Male-to-female ratio of the patients included in the study was 2:1 with mean age of 48.70 years. The diagnosis could be rendered in 99 cases, while in 1 case diagnosis was deferred to permanent sections (deferral rate: 1%). There was no difference found between the frozen section diagnosis and the final diagnosis in 97 (concordance rate: 97.9%) cases.

**Conclusion:** Frozen section-based histological assessment for diagnosis and/or surgical resection margins status is a reliable technique in terms of its timely and accurate reporting and low deferral rate.

**Keywords:** frozen section, histopathology, surgical pathology, biopsy.

## PURPOSE/OBJECTIVES

A surgical pathologist routinely encounters intraoperative decision makings along with the surgeon. Routinely, three methods are used for intraoperative assessment i.e. gross examination, imprint cytology or frozen section analysis. The use of other methods has been reduced significantly. Particularly most of the surgeons use frozen section analysis intraoperatively in order to ensure adequate safety margins of specimens being resected. It is simple method with high specificity and sensitivity<sup>1</sup>.

The concept and technique of frozen section or cryosection based histological diagnosis were first

presented by Dr. Louis B. Wilson and Dr. William Mayo.<sup>2</sup> This practice has achieved an important role as one of the accurate diagnostic methods. So, high accuracy of frozen section is important for the reporting surgical pathologist(s) and surgeon(s) to make subsequent on-table decision for the management of the patient.

The current study was, therefore, designed to assess the concordance of frozen section histological diagnosis reported in our institute by comparing it with subsequent final histological diagnosis made on formalin fixed paraffin-embedded section in our institute.

## MATERIAL/METHODS

A prospective study was made at Chughtai Lahore Lab, Lahore and biopsy specimens of 100 consecutive patients were submitted and their frozen section analysis diagnosis were included. The slides were read by two consultants and the diagnosis rendered on fresh frozen section was compared with the diagnosis rendered on paraffin-embedded formalin-fixed section of the same specimen. Results were then statistically analysed to evaluate the concordance of the diagnosis made on both the fresh frozen and formalin-fixed tissue sections.

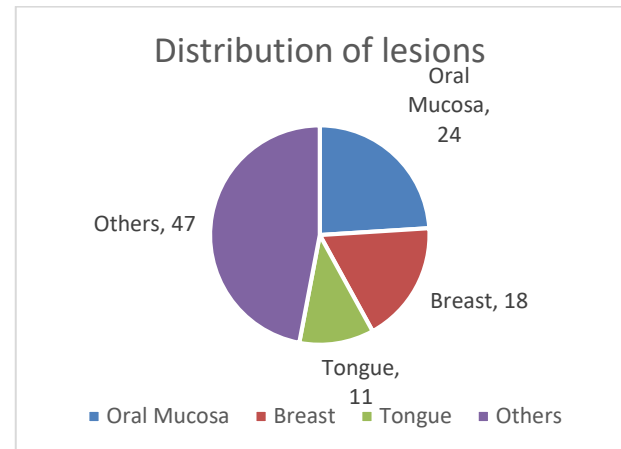
## RESULTS

Male-to-female ratio of the patients included in the study was 2:1 with mean age of 48.70 years.

**Table 1.0**

|                    | N<br>(N=100) | %  | MEAN $\pm$ SD     |
|--------------------|--------------|----|-------------------|
| <b>Age (years)</b> |              |    |                   |
| • 18-30            | 05           | 05 | 48.70 $\pm$ 10.51 |
| • 31-45            | 34           | 34 |                   |
| • 46-60            | 61           | 61 |                   |
| <b>Gender</b>      |              |    |                   |
| • Male             | 67           | 67 |                   |
| • Female           | 33           | 33 |                   |

Most of the frozen section specimens comprised oral mucosa lesions, representing 24% of the cases, followed by lesions of breast (18% cases) and lesions of tongue (11% cases). The rest of the lesions represented various body sites including maxillofacial region, scalp, naso-pharynx, genito-urinary tract, thyroid and parathyroid glands.



The diagnosis could be rendered in 99 cases, while in 1 case diagnosis was deferred to permanent sections (deferral rate: 1%). There was no difference found between the frozen section diagnosis and the final diagnosis in 97 (concordance rate: 97.9%) cases.

| Tissue type          | Concordance (%) | Discordance (%) | Deferral (%) | Total number of specimens in category (%) |
|----------------------|-----------------|-----------------|--------------|---|
| Oral Mucosa          | 23              | 1               | -            | 24  |
| Breast               | 17              | -               | 1            | 18  |
| Tongue               | 11              | -               | -            | 11  |
| Maxillofacial region | 9               | -               | -            | 9   |
| Scalp                | 3               | -               | -            | 3   |
| Nasopharynx          | 6               | -               | -            | 6   |
| Genito-urinary tract | 12              | -               | -            | 12  |
| Thyroid Gland        | 4               | 1               | -            | 5   |
| Parathyroid Gland    | 3               | -               | -            | 3   |
| Others               | 9               | -               | -            | 9   |
| <b>Total</b>         | <b>97</b>       | <b>2</b>        | <b>1</b>     | <b>100</b>                                |

## DISCUSSION

The overall rate of accuracy frozen section diagnosis (97.9%) reported in the current study was quite comparable to the accuracy rates reported in various international studies to be 97.8%,<sup>4</sup> 96.8%,<sup>5</sup> 95.1%<sup>6</sup> and 93.30%<sup>7</sup>. One local study conducted in Pakistan also depicted somewhat similar concordance rate, 97.08%.<sup>8</sup>

Among the discordant cases, in 1 case, one of the 6 surgical margins of oral mucosa lesion was reported as 'free of tumour' that was subsequently found to be 'involved' on formalin-fixed section. The reason for discordance in this particular case was found to be the embedding/orientation of the specimen. In the second discordant case, one peripheral margin of an oral mucosa lesion was reported as 'suspiciously involved by tumour' that was later on found to be 'free' on

formalin-fixed section of the same tissue and the subsequent extension specimen of that margin.

In recent past, Osako et al<sup>9</sup> reported the study using circumferential intraoperative frozen section analysis, stating that this method can reduce the need for additional surgeries with improved clinical outcomes. One study conducted by Ohno et al<sup>10</sup> used tangential IFSA, according to which frozen sections can help in decision making for the selective part of re-excision.

## CONCLUSION

Frozen section-based histological assessment for diagnosis and/or surgical resection margins status is a reliable technique in terms of its timely and accurate reporting and low deferral rate.

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