



## INTRAOPERATIVE FROZEN SECTIONS- AN AUDIT STUDY

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## ABSTRACT

**Context:** Audit aims to verify conformance to quality work and assesses practical implementation. **Aims:** To evaluate pre-analytic and analytic phases of frozen sections (FS) at a tertiary healthcare centre. **Setting & Design:** Observational ambispective study over six months. **Materials & Methods:** Preanalytical phase (clinical information and grossing adequacy) and analytical phase (turnaround time TAT and section quality) were assessed. **Results:** Total 56 cases of FS noted. TAT for FS diagnoses was 26.5+8.7 minutes. TAT between FS and final report was 3.7 + 2.4 days. Discordance between FS and final report was noted in 8(14.3%) cases. **Conclusions:** Quality results were achieved as per international norms despite limited resources. Remedial actions by teamwork can assist to improve quality output.

**KEYWORDS :** audit, quality, frozen section, turnaround time

## INTRODUCTION

Intraoperative diagnoses utilize frozen section (FS) technique for rapid reporting. Quality control is essential at pre-analytical, analytical, and post-analytical steps. Audit compares current practices with standard criteria and suggests improvements.<sup>[1-3]</sup>

## AIMS &amp; OBJECTIVES

To audit the pre-analytic and analytical phases of FS.

## MATERIALS &amp; METHODS

The audit study was conducted over six months period. Ethics approval was obtained. Data was sourced manually from archival histopathology forms. Quality Indicators (QI) of pre-analytic phase included patient demographics, clinical history, clinical investigations, specimen adequacy and grossing adequacy. QI of analytical phase included technical performance, turnaround time (TAT), and concordance between FS and formalin fixed paraffin embedded section (FFPE)

## Statistical Analysis

All data compiled in MS Excel was analysed by PSPP 0.8.5. Qualitative data was assessed by Chi-Square test, while quantitative data by One-Way Analysis of Variance. A p-value of < 0.05 was considered significant.

## RESULTS

Total 56 frozen tissue samples were received over six-months. Maximum cases belonged to central nervous system (12, 21.4%) and female genital system (11, 19.6%). Rest of cases included 8 cases each of gastrointestinal tract, breast, and endocrine system, 3 cases each of lymph node and head, face, neck system and 2 cases of hepatobiliary system (p < 0.05).

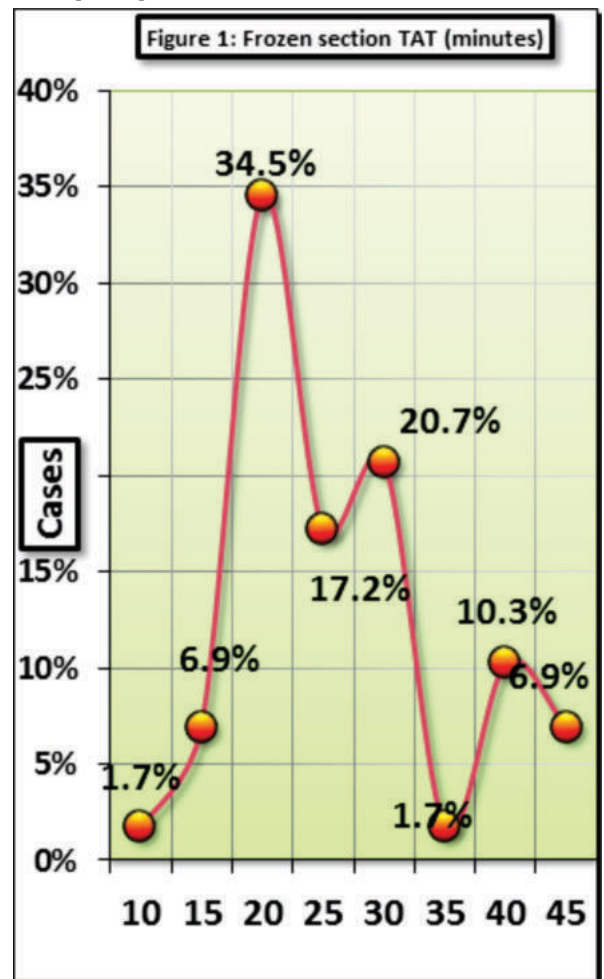
Pre-analytical phase showed inadequate demographic data (4, 7.1%), inadequate clinical history (3, 5.4%), inadequate clinical investigations (6, 10.7%). None of cases had specimen or grossing inadequacy.

Analytical phase evaluation for technical quality showed 2 cases each (3.6%) with poor staining and folds on slides. Mean +SD for paraffin blocks was 2.3+ 1.3 per case.

M+SD for TAT was 26.5+8.7 minutes. Maximum cases (19, 34.5%) were reported in 20 minutes (range 10-45 minutes Figure 1).

M+SD for TAT between FS and FFPE was 3.7+ 2.4 days (range 2 - 19). Discordance between FS and FFPE was noted in 8 cases (14.3%). Major discordance included inflammatory lesions misdiagnosed as neoplastic (5 cases) while minor

discordance (high grade malignancy reported as low grade) in 3 cases. Three major discordance cases were due to misinterpretation, 1 due to sampling error and 1 due to inadequate specimen volume.



## DISCUSSION

The present audit covered 50% of annual workload, whereas 1-4% is the recommended minimum.<sup>[4]</sup>

Inadequate demographic data and clinical details can be attributed to errors by clerical or nursing staff. Priyadharisini et al found 12.2% requisition forms complete, while clinical history/investigations were missing in 35.5% and 30.7%

respectively<sup>[5]</sup>. Zuk et al noted poor section quality in 3% cases due to holes, folds, debris, chatter etc.<sup>[4]</sup> Bhattacharya et al noted staining and grossing errors in 0.03 and 0.01% cases.<sup>[6]</sup> TAT is reported below 20 minutes in 85% cases.<sup>[7,8]</sup> TAT between FS to FFPE is reported as 1.3 days.<sup>[4]</sup> Supervised grossing and multiheaded teaching microscopes can improve TAT. We found delays of 35 - 45 minutes in 11 cases (18.9%). This was attributed to inadequate clinical details which necessitated repeated telephonic calls. Single cryostat, paucity of trained technicians and multiple FS are reported to cause delay.<sup>[8]</sup>

Ahmed Z et al reported maximum FS from breast, ovary and brain. Commonest indications for FS were verification and categorization of neoplasms in 195 (63.7%), evaluation of margins in 100 (32.7%) and determination of the organ of origin in 11 (3.6%) of cases.<sup>[8]</sup>

Khoo JJ found 1.7% discordance between FS and FFPE.<sup>[7]</sup> Acceptable threshold for major discordance is 3%.

### CONCLUSION

Our team adhered to universally accepted QI. Administration should provide computerization and good quality reagents/equipment. Technicians should be motivated to upgrade knowledge via conferences. Faculty should provide constructive feedback. Detailed SOPs will guide the trainees. Continued dialogue with physicians is essential to provide rapid and relevant FS diagnosis.

### REFERENCES

- 1] Karki S. Errors: Detection and minimization in histopathology laboratories. *Journal of Pathology of Nepal* 2015; 5:859-864
- 2] Omorodion NT, Achukwu PU, Ebo N. Review on Laboratory Auditing in Histopathology Laboratory. *Sokoto Journal of Medical Laboratory Science* 2017; 2 (1): 124 – 128
- 3] Iyengar JN. Quality control in the histopathology laboratory: An overview with stress on the need for a structured national external quality assessment scheme. *Indian Journal of Pathology and Microbiology* 2009; 52 (1):1-5
- 4] Zuk JA, Kenyon WE, Myskow MW. Audit in histopathology- Description of internal quality assessment scheme with analysis of results. *J Clin Pathol* 1991; 44:10-16
- 5] Priyadharisini, Porko S, Barman PP. Audit of Histopathology Request Forms Submitted in Laboratory of a Tertiary Care Hospital. *Journal of Medical Science and Clinical Research* 2019; 7 (4): 1085-1089
- 6] Bhattacharya AB, Bohara S, Das R, Sharma P, Vidyadhar S. An audit of diagnostic surgical pathology: A tool for quality assurance. Original study in a rural teaching hospital in Eastern Uttar Pradesh, India. *Journal of Dental and Medical Sciences* 2015; 14 (5): 32-33
- 7] Khoo JJ. An Audit of Intraoperative Frozen Section in Johor. *Med J Malaysia* 2004;59 (1):50-55
- 8] Ahmed Z, Barakzai MA, Idrees R, Bhurgri Y. Correlation of intraoperative frozen section with final diagnosis at referral centre in Karachi. *Indian Journal of Pathology and Microbiology* 2008; 51: 469-473