

Accuracy of Frozen Section Analysis of Pancreatic Resection Margins during Pancreaticoduodenectomy for Pancreatic Adenocarcinoma is not affected by Neoadjuvant Therapy.

Background information

The spectrum of histopathological changes occurring in the pancreas after Neoadjuvant-therapy (NAT) for pancreatic adenocarcinoma (PDAC), such as extensive fibrosis and degenerative changes of the residual malignant cells, may obscure the intra-operative microscopic evaluation of resection margins, potentially reducing the accuracy of frozen section (FS) analysis. The aim of our study was to evaluate the accuracy of FS vs. paraffin section (PS) histopathology in the assessment of pancreatic resection margins (PRMs) in post- neoadjuvant-treated (PNAT) vs. treatment-naïve (TN) patients with PDAC.

Methods

We reviewed our institution's data-base and identified 81 patients who underwent pancreaticoduodenectomy (PD) for PDAC between 2015 and 2022. A comparison of the accuracy of the FS in the TN and PNAT patients was performed. All PD specimens were evaluated using a standardized protocol, and a positive margin included tumors within 1 mm of the original surgical margin. "Atypical" diagnoses were not counted as errors, whereas cases called suspicious for malignancy or high-grade PanIN that were incorrect were counted as errors.

Table 1: Accuracy of FS in evaluation of margins in 81 patients with PDAC

	Patients (=N) & (%)	Number of accurate FSs & (%)			
		PNRM	CBDM	UM	Overall
Total	81	101/103 (98.1)	76/77 (98.7)	23/25 (92.0)	200/205 (97.6)
TN	47 (58.0)	60/61 (98.4)	46/47 (97.9)	12/14 (85.7)	118/122 (96.7)
PNAT	34 (42.0)	41/42 (97.6)	30/30 (100)	11/11 (100)	82/83 (98.8)

TN: treatment-naïve, PNAT: post- neoadjuvant-treated
PNRM: Pancreatic neck resection margin, CBDM: Common bile duct margin,
UM: uncinata margin

PNAT patient with false negative
PNRM on FS (arrow)

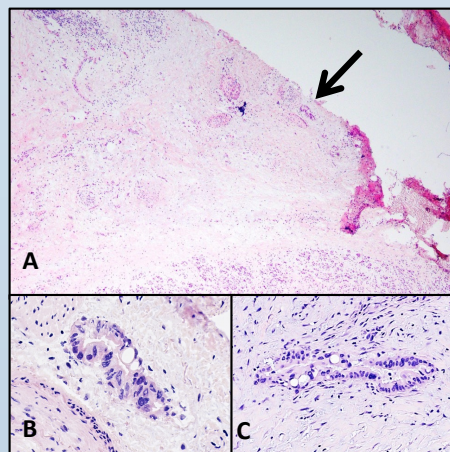


Figure 1. (A and B) PDAC on FS, low (A) and high power (B); (C) corresponding PS, high power.

TN patient with false negative
PNRM on FS (arrow)

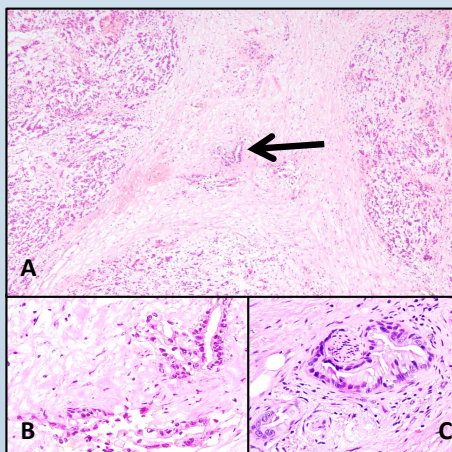


Figure 2. (A and B) PDAC on FS, low (A) and high power (B); (C) corresponding PS, high power.

Results

The overall accuracy of FS in the evaluation of pancreatic margins was 97.6%.

PNRM: 2/103 discrepancy between FS and PS-→ Accuracy of 98.1%

- Of which 60/61 cases (98.4%) TN and 41/42 cases (97.6%) PNAT

CBDM: 1/77 discrepancy between FS and PS-→ Accuracy of 98.7%

- Of which 46/47 cases (97.9%) TN and 30/30 cases (100) PNAT

UNCINATE: 2/25 discrepancy between FS and PS-→ Accuracy of 92.0%

- Of which 12/14 cases (85.7%) TN and 11/11 cases (100) PNAT

Conclusion

The histopathological changes occurring in the pancreas after NAT do not affect the interpretation of FS analysis of pancreatic margins. In fact, the accuracy of FS analysis is similar in the PNAT and TN patients.