

How Are Pancreas Cancer Surgery Outcomes Affected by Tumor Board Decisions?

Introduction

- Tumor board review of complex patients is an important factor for quality and safety.
- We compare the surgical outcomes of patients presented at two gastrointestinal cancer-specific tumor boards within a large healthcare system.
- Site A represents an academic-type tumor board with a focus on neoadjuvant therapy
- Site B represents a community-type tumor board with a primary surgical approach.

Research Question

- Given the differences in Site A versus Site B, do the tumor board decisions made result in different outcomes for patients that undergo surgical resection for pancreatic adenocarcinomas?

Materials and Methods

- This was an IRB-approved study through Banner MD Anderson Cancer Center
- From 2015 to 2020, tumor board patients in Site A (27 patients) and Site B (31 patients) who underwent curative surgical resection were retrospectively compared.
- Pre-operative variables and pathologic surgical outcomes were reviewed.
- Wilcoxon Rank sum was used to compare continuous variables and Chi-squared/Fisher's Exact was used to compare categorical variables.
- A p-value equal to or less than 0.05 was statistically significant.

Results

- Average age was 67.6 (SD=9.9) with 58.6% males and 41.4% females
- Use of neoadjuvant therapy was higher at Site A than Site B (52% vs. 10%).
- Site A had a lower PNI (59% vs. 84%, $p=0.048$), and greater treatment effect ($p<0.009$)
- Site A had a lower % of close or positive margins (26% vs. 39%, $p=0.30$), though both not statistically significant.
- More patients died within 30 days of surgery at Site B (4 vs 1 patient, $p=0.35$), though not statistically significant.
- Site A patients were more likely to be seen by one oncologist (medical or radiation) after tumor board, but before surgery, than at Site B (67% vs 42%).
- Follow up period was shorter at Site B, which may account for a lack of difference in some survival variables



Figure 1: The structure of a multidisciplinary tumor board: providers from different specialties that meet to discuss the care of a complex case.

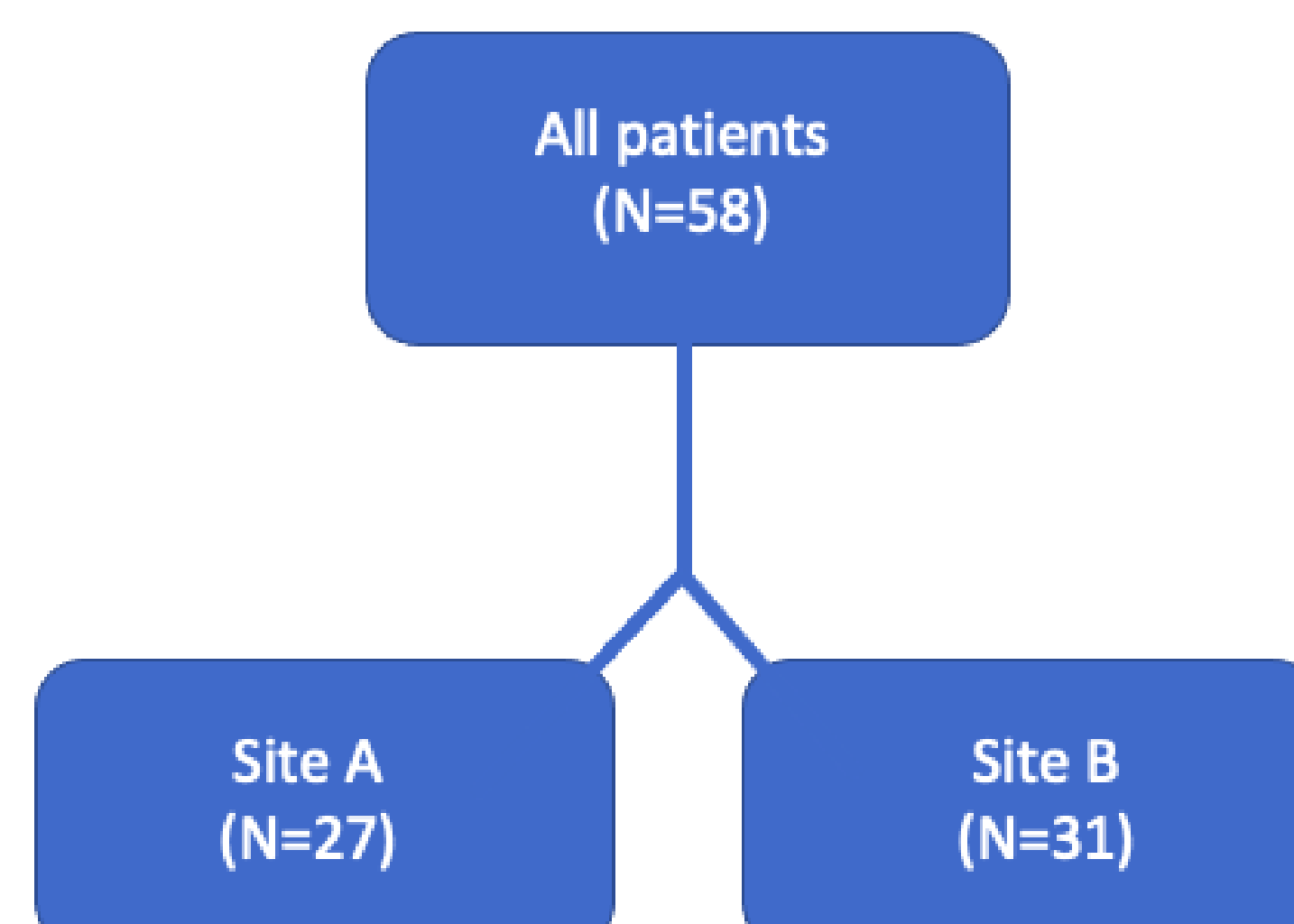


Figure 2: Breakdown of the patient population used in the study

Variables	Site A		Site B		p-value
	No treatment prior to surgery (n=13)	Treatment prior to surgery (n=14)	No treatment prior to surgery (n=28)	Treatment prior to surgery (n=3)	
Age, years (median, IQR)	69 (59, 76)	70.5 (65, 75)	68 (64.5, 71)	69 (54, 71)	0.79
Gender (male, %)	9 (69.2)	11 (78.6)	12 (42.9)	2 (66.7)	0.12
Site of Organ (n, %)					0.62
Head	10 (76.9)	11 (78.6)	21 (75.0)	3 (100.0)	
Body	2 (15.4)	0 (0.0)	5 (17.9)		
Tail	0 (0.0)	2 (14.3)	1 (3.57)		
Neck	1 (7.69)	1 (7.14)	1 (3.57)		
Resectability (n, %)					0.001
Resectable	11 (84.6)	5 (35.7)	23 (82.1)		
Borderline resectable	1 (7.69)	8 (57.1)	3 (10.7)	3 (100.0)	
Unresectable/metastatic	1 (7.69)	1 (7.14)	2 (7.14)		
Stage (n, %)					0.076
I	3 (23.1)	2 (14.3)	5 (17.9) b		
II	10 (76.9)	8 (57.1)	12 (42.9)	2 (66.7)	
III	0 (0.0)	2 (14.3)	11 (39.3)	1 (33.3)	
IV	0 (0.0)	2 (14.3)	0 (0.0)		
Seen Rad/Onc DR prior to Surgery (yes, %)	4 (30.8)	14 (100.0)	10 (35.7)	3 (100.0)	<0.0001

Table 1: Patient demographics for Site A and Site B. Kruskal-Wallis Test to compare continuous variables. Chi-squared Fisher's Exact to compare categorical variables.

Variables	Site A N=27	Site B N=31	p-value
Follow Up Period (mean, SD)	22.4 (14.6)	13.7 (9.6)	0.009
Margins (Positive, %)	7 (25.9)	12 (38.7)	0.40
30-Day Mortality (yes, %)	1 (3.70)	4 (12.9)	0.36
Disease Progressed (yes, %)	14 (51.9)	16 (51.6)	1.0
Grade (n, %)			0.14
0	2 (7.41)	0 (0.0)	
1	3 (11.1)	6 (19.4)	
2	10 (37.0)	17 (54.8)	
3	12 (44.4)	8 (25.8)	
T stage (n, %)			0.007
0	2 (7.41)	0 (0.0)	
1	4 (14.8)	3 (9.68)	
1b	0 (0.0)	2 (6.45)	
2	7 (25.9)	19 (61.3)	
3	14 (51.9)	6 (19.4)	
4	0 (0.0)	1 (3.23)	
N stage (n, %)			0.28
0	12 (44.4)	9 (29.0)	
≥ 1	15 (55.6)	22 (70.9)	
Perineural Invasion (PNI) (present, %)	16 (59.3)	26 (83.9)	0.045
Lymphovascular Invasion (LVSI) (present, %)	8 (29.6)	13 (41.9)	0.42
Treatment Effect (n, %)			0.18
Absent/Not identified	4 (14.8)	1 (3.23)	
No Known Pre-Surgical therapy	0 (0.0)	28 (90.3)	<0.0001
No prior treatment	13 (48.2)	0 (0.0)	<0.0001
No regression of Treatment	1 (3.70)	0 (0.0)	0.47
Present	9 (33.3)	2 (6.45)	0.009
Hospital Length of Stay, days (median, IQR)	10 (7, 14)	9 (6, 13)	0.25
Number of Nodes Removed (median, IQR)	18 (12, 24)	18 (15, 27)	0.22
Number of Positive Nodes (median, IQR)	1 (0, 4)	2 (0, 6)	0.31

Table 2: Post-operative pathology results for Site A and Site B. Wilcoxon Rank Sum to compare continuous variables. Chi-squared Fisher's Exact to compare categorical variables.

Conclusion

- A multi-disciplinary, neoadjuvant therapy approach within a tumor board results in better surgical outcomes.
- Patients who were seen at Site A, which focused on neoadjuvant therapy rather than an initial surgical approach, had a lower rate of perineural invasion and treatment effect was more apparent in the surgical pathology report.
- While not statistically significant, there was a noticeably lower 30-Day Mortality Rate at Site A.
- Within this hospital system, the results taken from Site A, an academic-type tumor board, can be used to drive a policy change throughout the hospital system.

Summary

- The use of neoadjuvant therapy was higher at Site A than Site B (52% vs. 10%).
- Site A had a lower PNI (59% vs. 84%) and greater treatment effect, on account of a greater use of neoadjuvant therapy
- More patients died within 30 days of surgery at Site B (4 vs 1 patient), though not statistically significant.

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