

Supplementary Tables

Supplementary table 1a – Other predictors of anastomotic leak - patient demographics and comorbidities

	N	Anastomotic Leak		<i>p</i> -Value
		<i>No</i>	<i>Yes</i>	
Age at Surgery	411	64.7 ± 9.8	65.4 ± 8.2	0.546
Gender	411			0.047
<i>Female</i>		67 (77.0%)	20 (23.0%)	
<i>Male</i>		279 (86.1%)	45 (13.9%)	
BMI	400	26.8 ± 5.0	26.8 ± 4.5	0.995
ASA	396			0.979*
1		66 (84.6%)	12 (15.4%)	
2		184 (83.3%)	37 (16.7%)	
3		76 (85.4%)	13 (14.6%)	
4		6 (75.0%)	2 (25.0%)	
ECOG Status	324			0.118*
0		127 (87.0%)	19 (13.0%)	
1		119 (83.8%)	23 (16.2%)	
2		27 (75.0%)	9 (25.0%)	
Ischemic Heart Disease	410			0.417
<i>No</i>		304 (84.7%)	55 (15.3%)	
<i>Yes</i>		41 (80.4%)	10 (19.6%)	
Renal Impairment	410			0.500
<i>No</i>		342 (84.2%)	64 (15.8%)	
<i>Yes</i>		3 (75.0%)	1 (25.0%)	
Diabetes	410			0.673
<i>No</i>		304 (83.7%)	59 (16.3%)	
<i>Yes</i>		41 (87.2%)	6 (12.8%)	
COPD	410			0.608
<i>No</i>		320 (84.4%)	59 (15.6%)	
<i>Yes</i>		25 (80.6%)	6 (19.4%)	
Previous Cancer	410			1.000
<i>No</i>		329 (84.1%)	62 (15.9%)	
<i>Yes</i>		16 (84.2%)	3 (15.8%)	

Significant Smoking History	410			0.702
<i>No</i>		297 (84.4%)	55 (15.6%)	
<i>Yes</i>		48 (82.8%)	10 (17.2%)	
Alcohol Misuse/ Heavy Drinker	410			1.000
<i>No</i>		338 (84.1%)	64 (15.9%)	
<i>Yes</i>		7 (87.5%)	1 (12.5%)	

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Supplementary Table 1b – Other predictors of anastomotic leak - disease and treatment-related factors

	N	Anastomotic Leak		<i>p</i> -Value
		<i>No</i>	<i>Yes</i>	
Neoadjuvant Chemotherapy	411			1.000
<i>No</i>		57 (83.8%)	11 (16.2%)	
<i>Yes</i>		289 (84.3%)	54 (15.7%)	
Mandard Score**	317			0.858*
<i>Mandard 1 (Complete)</i>		18 (90.0%)	2 (10.0%)	
<i>Mandard 2</i>		20 (76.9%)	6 (23.1%)	
<i>Mandard 3</i>		61 (88.4%)	8 (11.6%)	
<i>Mandard 4</i>		95 (82.6%)	20 (17.4%)	
<i>Mandard 5 (None)</i>		74 (85.1%)	13 (14.9%)	
Operation Stages	411			0.330
<i>Two-Stage</i>		316 (83.6%)	62 (16.4%)	
<i>Three-Stage</i>		30 (90.9%)	3 (9.1%)	
Operation Type	411			0.223
<i>Hybrid</i>		181 (81.5%)	41 (18.5%)	
<i>MIO</i>		88 (85.4%)	15 (14.6%)	
<i>Open</i>		77 (89.5%)	9 (10.5%)	
Tumour Type	407			0.915
<i>Adenocarcinoma</i>		268 (83.8%)	52 (16.3%)	
<i>Adenosquamous</i>		7 (87.5%)	1 (12.5%)	
<i>Squamous</i>		54 (83.1%)	11 (16.9%)	
<i>Other</i>		13 (92.9%)	1 (7.1%)	
T-Stage	408			0.864*

<i>T0</i>		16 (94.1%)	1 (5.9%)	
<i>T1</i>		32 (74.4%)	11 (25.6%)	
<i>T2</i>		44 (86.3%)	7 (13.7%)	
<i>T3</i>		231 (84.9%)	41 (15.1%)	
<i>T4</i>		20 (80.0%)	5 (20.0%)	
N-Stage	410			0.445*
<i>N0</i>		131 (86.2%)	21 (13.8%)	
<i>N1</i>		142 (83.0%)	29 (17.0%)	
<i>N2</i>		44 (81.5%)	10 (18.5%)	
<i>N3</i>		28 (84.8%)	5 (15.2%)	
M-Stage	403			0.639
<i>M0</i>		332 (84.3%)	62 (15.7%)	
<i>M1</i>		7 (77.8%)	2 (22.2%)	
R-Status	405			0.899*
<i>R0</i>		214 (84.3%)	40 (15.7%)	
<i>R1</i>		116 (82.9%)	24 (17.1%)	
<i>R2</i>		10 (90.9%)	1 (9.1%)	
Peri-Neural Invasion	313			0.871
<i>No</i>		173 (84.0%)	33 (16.0%)	
<i>Yes</i>		91 (85.0%)	16 (15.0%)	
Lymph Nodes Total	410	30.8 ± 10.9	28.4 ± 9.8	0.099
Lymph Nodes Involved	410	1 (0 - 4)	2 (0 - 4)	0.353
Percentage of Resected Nodes Involved	410	5 (0 - 13)	6 (0 - 18)	0.237

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Supplementary table 2a – Other predictors of conduit necrosis - patient demographics and comorbidities

	Conduit Necrosis
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	<i>No</i>	<i>Yes</i>	<i>p-Value</i>
Age at Surgery	64.8 ± 9.4	65.6 ± 11.8	0.756
Gender			0.014
<i>Female</i>	80 (92.0%)	7 (8.0%)	
<i>Male</i>	317 (97.8%)	7 (2.2%)	
BMI	26.8 ± 4.9	26.0 ± 5.3	0.552
ASA			0.024*
1	77 (98.7%)	1 (1.3%)	
2	215 (97.3%)	6 (2.7%)	
3	83 (93.3%)	6 (6.7%)	
4	7 (87.5%)	1 (12.5%)	
ECOG Status			0.112*
0	143 (97.9%)	3 (2.1%)	
1	137 (96.5%)	5 (3.5%)	
2	33 (91.7%)	3 (8.3%)	
Ischemic Heart Disease			0.397
<i>No</i>	348 (96.9%)	11 (3.1%)	
<i>Yes</i>	48 (94.1%)	3 (5.9%)	
Renal Impairment			0.130
<i>No</i>	393 (96.8%)	13 (3.2%)	
<i>Yes</i>	3 (75.0%)	1 (25.0%)	
Diabetes			0.014
<i>No</i>	354 (97.5%)	9 (2.5%)	
<i>Yes</i>	42 (89.4%)	5 (10.6%)	
COPD			0.081
<i>No</i>	368 (97.1%)	11 (2.9%)	
<i>Yes</i>	28 (90.3%)	3 (9.7%)	
Previous Cancer			0.491
<i>No</i>	378 (96.7%)	13 (3.3%)	
<i>Yes</i>	18 (94.7%)	1 (5.3%)	
Significant Smoking History			0.008
<i>No</i>	344 (97.7%)	8 (2.3%)	
<i>Yes</i>	52 (89.7%)	6 (10.3%)	
Alcohol Misuse/ Heavy Drinker			0.245
<i>No</i>	389 (96.8%)	13 (3.2%)	
<i>Yes</i>	7 (87.5%)	1 (12.5%)	

Data are reported as N (%), with p-values from Fisher's exact tests; mean±SD, with p-values from t-tests; or as median (IQR), with p-values from Mann-Whitney tests, unless stated otherwise. Bold p-values are significant at p<0.05. *p-Value from a Mann-Whitney test, as the factor was ordinal.

Supplementary table 2b – Other predictors of conduit necrosis - disease and treatment-related factors

	Conduit Necrosis		p-Value
	No	Yes	
Neoadjuvant Chemotherapy			0.064
No	63 (92.6%)	5 (7.4%)	
Yes	334 (97.4%)	9 (2.6%)	
Mandard Score**			0.133*
Mandard 1 (Complete)	17 (85.0%)	3 (15.0%)	
Mandard 2	25 (96.2%)	1 (3.8%)	
Mandard 3	68 (98.6%)	1 (1.4%)	
Mandard 4	113 (98.3%)	2 (1.7%)	
Mandard 5 (None)	85 (97.7%)	2 (2.3%)	
Operation Stages			0.616
Two-Stage	364 (96.3%)	14 (3.7%)	
Three-Stage	33 (100.0%)	0 (0.0%)	
Operation Type			1.000
Hybrid	214 (96.4%)	8 (3.6%)	
MIO	100 (97.1%)	3 (2.9%)	
Open	83 (96.5%)	3 (3.5%)	
Tumour Type			0.269
Adenocarcinoma	311 (97.2%)	9 (2.8%)	
Adenosquamous	8 (100.0%)	0 (0.0%)	
Squamous	60 (92.3%)	5 (7.7%)	
Other	14 (100.0%)	0 (0.0%)	
T-Stage			0.061*
T0	16 (94.1%)	1 (5.9%)	
T1	38 (88.4%)	5 (11.6%)	
T2	51 (100.0%)	0 (0.0%)	
T3	264 (97.1%)	8 (2.9%)	
T4	25 (100.0%)	0 (0.0%)	

N-Stage			0.073*
<i>N0</i>	143 (94.1%)	9 (5.9%)	
<i>N1</i>	168 (98.2%)	3 (1.8%)	
<i>N2</i>	53 (98.1%)	1 (1.9%)	
<i>N3</i>	32 (97.0%)	1 (3.0%)	
M-Stage			1.000
<i>M0</i>	380 (96.4%)	14 (3.6%)	
<i>M1</i>	9 (100.0%)	0 (0.0%)	
R-Status			0.199*
<i>R0</i>	243 (95.7%)	11 (4.3%)	
<i>R1</i>	137 (97.9%)	3 (2.1%)	
<i>R2</i>	11 (100.0%)	0 (0.0%)	
Peri-Neural Invasion			0.723
<i>No</i>	199 (96.6%)	7 (3.4%)	
<i>Yes</i>	105 (98.1%)	2 (1.9%)	
Lymph Nodes Total	30.4 ± 10.8	30.6 ± 10.8	0.944
Lymph Nodes Involved	1 (0 - 4)	0 (0 - 1)	0.034
Percentage of Resected Nodes Involved	5 (0 - 14)	0 (0 - 3)	0.025

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Supplementary Table 3 – Inter-rater reliability of calcification scores

Proximal (N=412)				Distal (N=380)			
Reviewer 1	Reviewer 2			Reviewer 1	Reviewer 2		
	0	1	2		0	1	2
0	156	4	0	0	50	0	0
1	5	191	3	1	1	185	7
2	0	0	53	2	0	3	134
<i>Absolute Agreement = 97.1%, κ_w = 0.968</i>				<i>Absolute Agreement = 97.1%, κ_w = 0.967</i>			
Coeliac (N=413)				Bifurcation (N=380)			
	Reviewer 2				Reviewer 2		

Reviewer 1	0	1	2	Reviewer 1	0	1	2
0	308	7	1	0	108	0	0
1	8	82	2	1	6	171	9
2	0	0	5	2	0	1	85
<i>Absolute Agreement = 95.6%, $\kappa_w = 0.884$</i>				<i>Absolute Agreement = 95.8%, $\kappa_w = 0.960$</i>			
R Post (N=413)				L Post (N=413)			
	Reviewer 2				Reviewer 2		
Reviewer 1	0	1	-	Reviewer 1	0	1	-
0	398	4	-	0	328	15	-
1	0	11	-	1	0	70	-
<i>Absolute Agreement = 99.0%, $\kappa_w = 0.841$</i>				<i>Absolute Agreement = 96.4%, $\kappa_w = 0.881$</i>			

κ_w = Quadratic weighted kappa

Supplementary Table 4 – Correlations between calcification scores and ECCG grades of complications

	Anastomotic Leak Grade			Conduit Necrosis Grade		
	<i>N</i>	<i>Rho</i>	<i>p-Value</i>	<i>N</i>	<i>Rho</i>	<i>p-Value</i>
Proximal	65	-0.023	0.853	14	-0.109	0.710
Coeliac	65	0.003	0.981	14	-0.111	0.705
R Post	65	-0.099	0.433	14	<i>NC</i>	<i>NC</i>
L Post	65	0.132	0.294	14	-0.155	0.597
Distal	59	0.071	0.595	14	0.276	0.339
Bifurcation	59	0.119	0.369	14	0.204	0.484

Analyses are performed for the subset of patients where the outcome occurred, and correlate the grade of the complication with the calcification scores.

Rho – Spearman’s correlation coefficient

NC – Not calculable, since all patients with leaks scored 0 for R Post

