

Multicenter study on Post-operative Morbidity after resection of Recurrent Retroperitoneal Sarcoma: A TARPSWG Collaborative

Carolyn Nessim MD, MSc, FRCSC, FACS

Surgical Oncologist

March 27, 2019

ORIGINAL ARTICLE

Postoperative Morbidity After Radical Resection of Primary Retroperitoneal Sarcoma

A Report From the Transatlantic RPS Working Group

Andrea J. MacNeill, MD,† Alessandro Gronchi, MD,† Rosalba Miceli, PhD,‡ Sylvie Bonvalot, MD, PhD,§ Carol J. Swallow, MD, PhD,* Peter Hohenberger, MD,¶ Frits Van Coevorden, MD,|| Piotr Rutkowski, MD,** Dario Callegaro, MD,† Andrew J. Hayes, MD, PhD,†† Charles Honoré, MD,‡‡ Mark Fairweather, MD,§§ Amanda Cannell, BSc,¶¶ Jens Jakob, MD,¶ Rick L. Haas, MD,|||| Milena Szacht, MD,** Marco Fiore, MD,† Paolo G. Casali, MD,*** Raphael E. Pollock, MD, PhD,††† Francesco Barretta, PhD,‡ Chandrajit P. Raut, MD, MSc,§§ and Dirk C. Strauss, MD††*

Background

- Based on the Morbidity paper done on the first 1007 TARPSWG Primary Sarcoma Patient Series
- Resected Organ Score: a weighted organ score was devised to account for differences in surgical complexity
- Scores:
 - 0 = adrenal, LN, appy, GB, inguinal lig, omentum, psoas fascia, skin
 - 1 = adnexa, uterus, kidney, colorectal, small bowel, testis, duodenum, vascular resections, major nerve resections, distal panc, splenectomy, bladder, bone diaphragm, liver, lung
 - 2=Whipple

Background

- Severe adverse events, Clavien-Dindo ≥ 3 was associated with:
 - Age
 - Transfusion requirements
 - ROS
- Patterns of Resection with highest morbidity (OR):
 - Vascular Resections 2.136
 - Whipple: 1.822
 - Colon/kidney/distal panc/spleen: 1.595

Current Patient Population + Analysis

- 681 patients
 - All recurrent sarcomas
 - All had surgery
- Univariable and multivariable logistic models were fitted to study the association between Clavien-Dindo complications (grade ≥ 3 vs no complications or < 3) and patients and surgery characteristics.
- Survival end-points were overall survival (censoring for post-operative deaths, Clavien-Dindo=5), local relapse or distant metastasis-free survival.

Demographics

- 51.8% female, median age 59, median tumour size 11cm
- Grade 1: 29.5%, Grade 2: 27.2%, Grade 3: 36.1%
- Histologic Subtype:
 - DDLPS 43%
 - WDLPS 28.2%
 - LMS 12%
 - SFT 2.9%
 - MPNST 1%
 - Other 11.9%
- Unifocal 62.4%

Surgery + Treatment

- Med OR time: 3.8h
- R0/R1: 83.3%, R2: 15%
- Med #organs resected: 2
 - None: 22.5%
 - 1: 26%
 - >1: 51.5%
- Tumour Rupture in 11.3%
- 28.2% had Chemo and 29.8% had Radiation

Surgery

- Transfusion : Median was 0 (21% with missing data)
- ROS:
 - 0: 23.2%
 - 1: 29.5%
 - ≥ 2 : 47.3%
- 23% had only the tumor resected
 - 2.5% colon + kidney + distal panc + spleen +/- other
 - 5.3% vascular resection +/- other
 - 0.9% whipple +/- other
 - 57% had other combinations of organs resected

Severe Complications Dindo-Clavien ≥ 3 in 16% of the cohort

- Anastomotic leak: 6%
- Post-op Bleed/Hematoma: 2.2%
- All others less than 1.4%
 - Ileus/obstruction
 - Panc/urine/chyle/bile leak
 - Cardioresp
 - Seroma/Retro Collection
 - Abscess
 - Sepsis
 - Deheiscence
- Mortality 0.4% (3 patients)

	Univariable models			Multivariable model		
	OR	95% CI	P	OR	95% CI	P
Age (years)			0.683			0.701
67 vs 50*	1.07	0.78-1.45		1.05	0.75-1.48	
Tumor size (cm)			0.070			0.542
18 vs 6*	1.21	0.80-1.83		0.77	0.49-1.23	
Resected organs score			0.003			0.411
3 vs 1*	1.58	1.19-2.10		1.24	0.89-1.73	
Transfusion requirement (blood units)			<0.001			<0.001
1-3 vs 0	2.94	1.66-5.23		2.82	1.53-5.18	
3+ vs 0	7.66	4.40-13.34		7.34	4.01-13.43	
Unknown vs 0	0.82	0.40-1.70		1.00	0.47-2.13	
Radiotherapy**			0.173			0.212
Pre-intraoperative [†] vs no	1.20	0.74-1.96		1.24	0.71-2.16	
Only postoperative vs no	0.46	0.18-1.18		0.44	0.15-1.30	
Chemotherapy**			0.184			0.668
Pre-postoperative [§] vs no	1.48	0.91-2.4		1.28	0.75-2.20	
Only postoperative vs no	0.73	0.30-1.76		1.06	0.40-2.79	

Abbreviations: OR, odds ratio; CI: 95% OR confidence interval; P, two-sided Wald test p value; FNCLCC, French National Federation of the Centers for the Fight Against Cancer; DD LPS, dedifferentiated liposarcoma; WD LPS, well differentiated liposarcoma; LMS, leiomyosarcoma. * Third vs first quartile. **Not specified treatment not included. † including patients with preoperative, intraoperative, pre+intraoperative and intra+postoperative RT. § including patients with preoperative or pre+postoperative CT

	Local Recurrence			Distant Metastasis			Overall Survival		
	HR	95% CI	P	HR	95% CI	P	HR	95% CI	P
Age (years)			0.094			0.097			0.007
68 vs 50*	1.18	1.02-1.38		1.35	1.03-1.76		1.31	1.09-1.57	
Tumor size (cm)			0.001			0.900			0.031
18 vs 6*	1.40	1.15-1.70		1.08	0.77-1.50		1.33	1.05-1.67	
FNCLCC grade			<0.001			0.002			<0.001
II vs I	0.80	0.57-1.13		2.23	1.04-4.78		1.08	0.69-1.70	
III vs I	1.34	0.94-1.89		3.24	1.52-6.93		2.05	1.31-3.20	
Not available vs I	1.66	1.07-2.56		4.44	1.97-10.0		2.41	1.40-4.15	
Histologic subtype			0.007			<0.001			0.007
WD LPS vs SFT	0.63	0.33-1.20		0.87	0.26-2.85		1.00	0.44-2.27	
DD LPS vs SFT	1.15	0.64-2.06		1.06	0.38-2.99		2.21	1.04-4.57	
LMS vs SFT	0.97	0.51-1.86		2.79	0.96-8.12		1.87	0.85-4.12	
MPNST vs SFT	0.59	0.12-2.78		5.55	1.14-27.0		2.22	0.55-8.87	
Other vs SFT	1.33	0.70-2.52		2.42	0.82-7.16		2.13	0.97-4.69	
Completeness of resection			<0.001			0.001			<0.001
R2 vs R0/R1	1.79	1.36-2.35		2.14	1.38-3.34		1.96	1.44-2.67	
Multifocality			<0.001			0.300			<0.001
Yes vs no	1.63	1.32-2.01		1.22	0.84-1.77		1.58	1.24-2.01	
Chemotherapy			0.100			0.025			0.020
Yes vs no	0.82	0.65-1.04		1.52	1.05-2.18		1.35	1.05-1.74	
Radiotherapy			0.170			0.820			0.440
Yes vs no	0.86	0.68-1.07		0.96	0.66-1.39		0.90	0.69-1.17	
Clavien-Dindo complications			0.320			0.180			0.250
Grade ≥3 vs grade<3 or none	1.14	0.88-1.48		1.36	0.87-2.13		1.20	0.87-1.66	

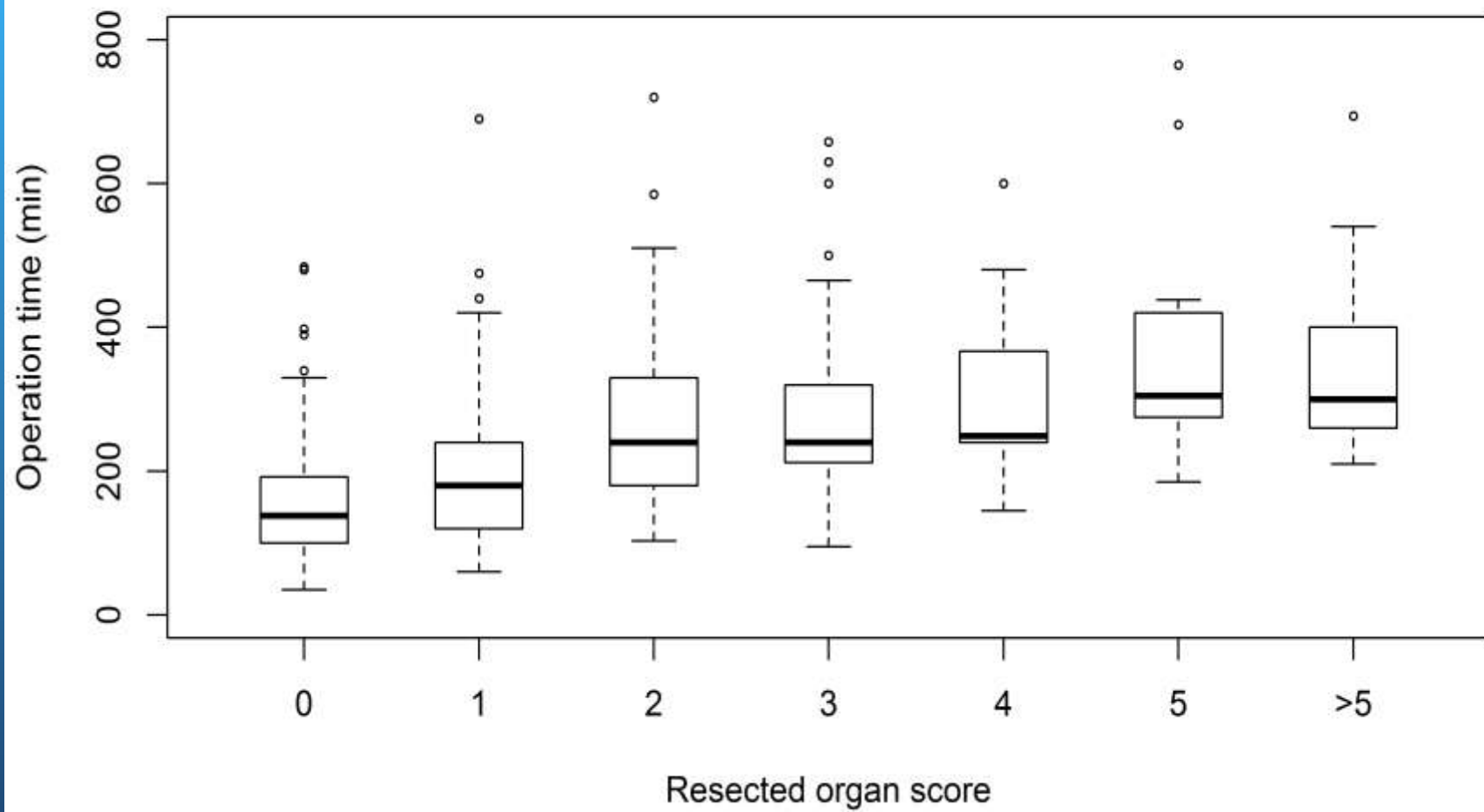
Abbreviations: HR, hazard ratio; CI: 95% HR confidence interval; P, two-sided Wald test p value; FNCLCC, French National Federation of the Centers for the Fight Against Cancer; DD LPS, dedifferentiated liposarcoma; WD LPS, well differentiated liposarcoma; LMS, leiomyosarcoma. * Third vs first quartile

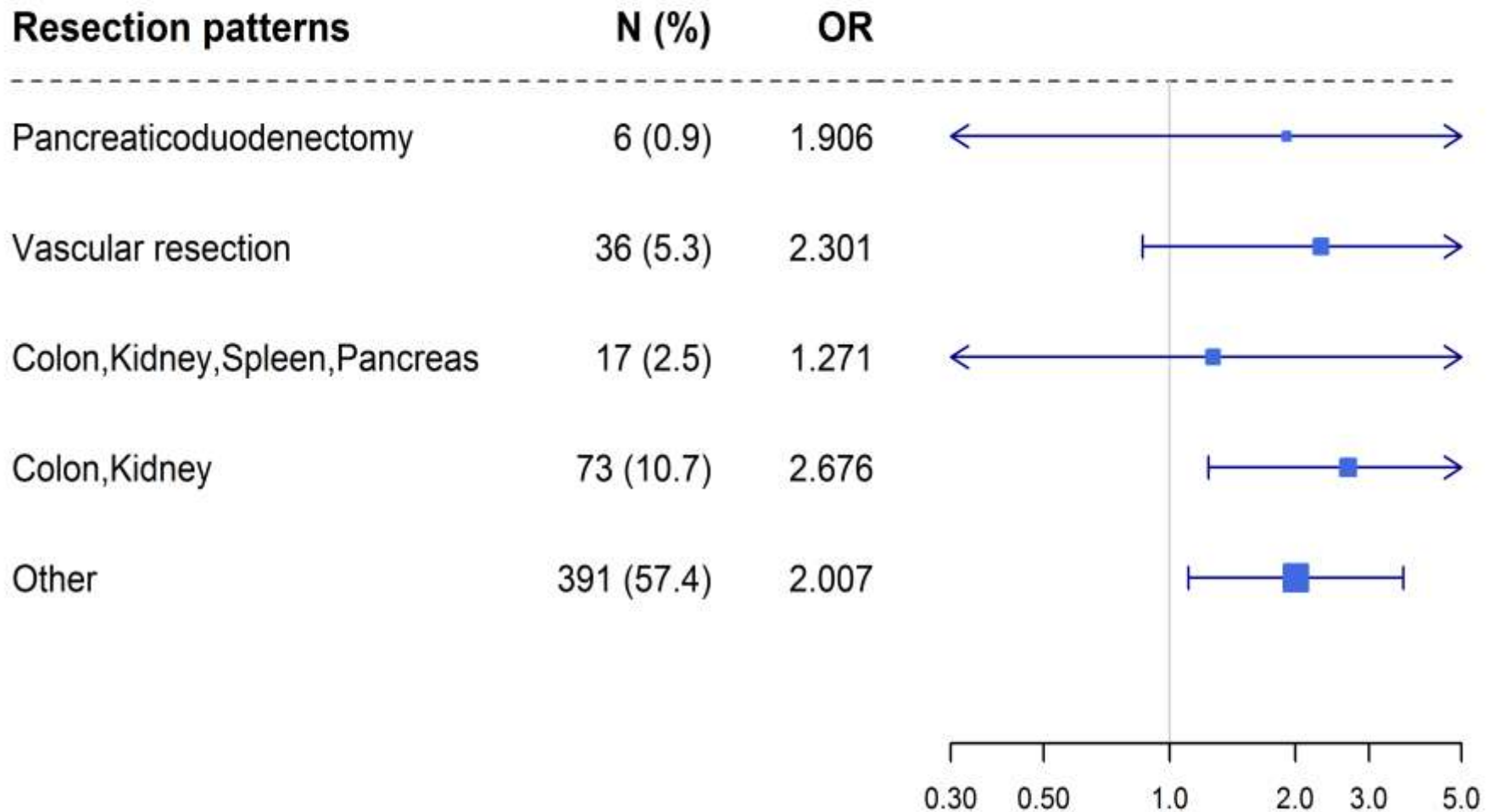
	N	%
Kidney	177	26.0
Left colon and/or rectum	151	22.2
Psoas muscle	144	21.1
Small bowel	131	19.2
Right colon	126	18.5
Diaphragm	68	10.0
Distal pancreas	63	9.3
Spleen	59	8.7
Abdominal wall muscles	59	8.7
Iliac vein and/or IVC	31	4.6
Stomach	30	4.4
Liver	26	3.8
Adnexa and/or uterus	25	3.7
Bladder	17	2.5
Bone	15	2.2
Testis and/or spermatic cord and/or vas deferens	11	1.6
Iliac artery and/or aorta	10	1.5
Major lumbar nerves	9	1.3
Duodenum/head of the pancreas	6	0.9
Uterus	5	0.7
Ureter	4	0.6
Other	4	0.6
Lung	2	0.3

* Organs weighted zero were omitted

Morbidity and effect on OS

- Med F/U: 73 mos
- Having a severe complication was not associated with OS
- Needing blood transfusions was (p 0.01)
- Cumulative mortality at 30, 60, and 90 days from surgery was 1.0%, 1.8%, and 2.8%, respectively





Discussion

- Blood transfusion needs was independently associated with a higher chance of severe adverse event and OS
- ROS may have not been independently significant as patterns of surgery are extremely variable.
 - If patient had initial surgery in sarcoma center a lot of the organs were likely already resected at the previous operation
 - This cohort looks like a cohort that mainly had residual disease after a surgery done elsewhere where MVR was not performed
 - I would like to look at other patterns of resection more likely to occur if recurrence was in patients where they had their initial surgery at Sarcoma center