SURGICAL APGAR SCORE

AN UNDERRATED TOOL TO ENHANCE POST-SURGICAL CARE?

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- Surgical apgar score (SAS) integrates worldwide surgical security monitoring check lists. It is obtained from the summation of 3 intraoperative variables¹:

- Gastric neoplasia is the third global leading cancer-related death cause².
- Gastrectomy with lymphadenectomy remains the treatment of choice, despite persistent high morbidity rates (up to 46%) that may impair patient final outcome³.
- Judicious and precocious identification of high-risk patients outweighs subjective clinical evaluation and may enhance clinical results⁴.

- In this study, we aimed to evaluate SAS performance predicting postoperative morbimorbidity following total (TG) and partial gastrectomy (PG).

METHODS

- Cross-sectional study; Population: N=94
 - Patients diagnosed with gastric cancer and scheduled for elective total or partial gastrectomy January 2014 – June 2016
- Variables:
 - Preoperative (PREOP): Age, Gender; ASA status; Body Mass Index; TNM neoplasia classification
 - Intraoperative (IO): Surgical technique, duration, SAS, L-HR; EBL; L-MAP
 - Postoperative (PO): Length of stay, incidence and characteristics of morbimorbidity

RESULTS

		PG (1) n = 58	TG (2) n = 36	Total (3) n=94	P value
PREOP	Age (years) ^{a,b}	44.1 (±10.1) 47-91	41.7 (±13.7) 37-89	72.7 (±11.6) 37-91	0.375 ^d
	Gender ^c				0.064 ^e
	F	29 (50.0)	11 (30.6)	40 (42.9)	
	M	29 (50.0)	25 (69.4)	54(57.9)	
	ASA physical status ^c				0.966 ^e
	I	1 (1.7)	1 (2.8)	2 (2.1)	
	II	32 (55.2)	21 (58.3)	53 (56.4)	
	III	21 (36.2)	12 (33.3)	33 (35.1)	
	IV	4 (6.9)	2 (5.6)	6 (6.4)	
IO	Mean SAS ^{a,b}	8.0 (±1.5) 4-10	7.5 (±1.4) 3-9	7.8 (1.5) 3-10	0.121 ^d
	Low SAS(0-6) ^c	9 (±15.5)	7 (±19.4)	16 (±17.0)	0.622 ^e
	High SAS (7-10) ^c	49 (±84.5)	29 (±80.6)	78 (±83.0)	
	Surgery duration (min) ^a	167.7 (±76.9)	216.0 (±57.0)	186.4 (±73.4)	0.002 ^d
	Length of hospital stay (days) ^{a,b}	13.7 (±7.5) 5-44	15.8 (±9.4) 8-47	14.4 (±8.3) 5-47	0.234 ^d
PO	Morbidity ^c	32 (55.2)	20 (55.6)	52 (55.3)	0.971 ^e
	Mortality ^c	17 (29.3)	13 (36.1)	30 (31.9)	0.492 ^e
	< 30 days post-op ^c	5 (8.6)	5 (13.9)	10 (10.6)	0.472 ^e
	>30 days post-op ^c	12 (20.7)	8 (22.2)	20 (21.3)	

^a Mean (Standard deviation),^b Min-Max, ^c n (%), ^d T-test, ^e Chi-square

SAS AND MORBIDITY

Higher morbidity patients showed significantly lower medium SAS and higher surgery duration, blood losses and length of hospital stay. That was also valid when they were classified according to their ASA physical status.

Poorer ASA status were associated with lower mean SAS(p=0.040), higher morbidity(X2(1)=5.219;p=0.022) and length of stay (p=0.09).

- Regarding global SAS from all participants, we verified:

Significantly different

Length of stay
(-R²=-.209; p=.040)
ASA status
(-p=.040)

No difference

Age (-R²=.140; p=.177)
BMI (-R²=.135; p=.256)
TNM grading (-p=.182)
Surgery duration (-R²=-.164; p=.117)
Mortality (X2(1)=0.277;p=0.599)

DISCUSSION

- We reinforce pre-existent evidence regarding SAS utility predicting postoperative morbidity following gastrectomy, when complemented with detailed physical status evaluation⁵.
- Early identification of high-risk patients is crucial in face of the significant association found between postsurgical morbidity, length of stay, and, consequently, poorer clinical outcomes.

REFERENCES

1. Gawande AA, Kwaan MR, Regenbogen SE, Lipsitz SA, Zinner MJ. An Apgar score for surgery. Journal of the American College of Surgeons. 2007;204(2):201-8.
2. Ferlay J, Soerjomataram I, Ervik M, et al. GLOBOCAN 2012 v1.0. Cancer Incidence and Mortality Worldwide: IARC CancerBase No. 11 [Internet]. Lyon, France: International Agency for Research on Cancer; 2013. Available at: <http://globocan.iarc.fr>; accessed October 10, 2016.
3. Yamada T, Tsuburaya A, Hayashi T, Aoyama T, Fujikawa H, Shirai J, et al. Usefulness of Surgical Apgar Score on Predicting Survival After Surgery for Gastric Cancer. Annals of Surgical Oncology. 2016;1-7.
4. Meijerink HJ, Brokelman RB, van Loon CJ, van Kampen A, de Waal Malefijt MC. Surgeon's expectations do not predict the outcome of a total knee arthroplasty. Archives of orthopaedic and trauma surgery. 2009;129(10):1361-5.
5. Miki Y, Tokunaga M, Tanizawa Y, Bando E, Kawamura T, Terashima M. Perioperative risk assessment for gastrectomy by surgical apgar score. Ann Surg Oncol. 2014;21(8):2601-7.

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