

Short-term outcomes of laparoscopic surgery for colorectal cancer in elderly patients : a single institution analysis

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Abstract

Background: Along with an aging society, the number of elderly patients with colorectal cancer (CRC) treated with a surgical modality has gradually increased. Our purpose is to verify the safety of surgery for the treatment of colorectal cancer in elderly patients.

Methods: We analyzed the short-term outcomes of open and laparoscopic surgery in patients aged 85 years or older with colorectal cancer between 2009 and 2018. The patients were categorized into two groups: Complication group (postoperative complication of Clavien-Dindo classification >grade2) and Non-Complication Group (grade0 or 1). Patient characteristics and surgical outcomes were compared between the two groups. In this study, we examined the influence of surgical stress using the estimation of physiologic ability and surgical stress (E-PASS) scoring system (preoperative risk scores(PRS), surgical stress score (SSS), and comprehensive risk score (CRS)).

Results: A total of 110 patients were evaluated in the present study. The median age of patients was 87 (85-99) years old, and there were 46 males and 64 females. Postoperative complications of Clavien-Dindo classification grade2 and above were 24 cases (21.8%). There were two postoperative mortality because of interstitial pneumonia and acute renal failure. In Complication Group, CEA is higher (6.05 vs. 3.95 ng/ml, p=0.04) and tumor size is bigger (55 vs. 48mm, p=0.011) than in Non-Complication Group. Prognostic nutritional index (PNI), modified Glasgow Prognostic Score (mGPS), and PRS were not statistically different between the two groups. SSS (-0.16 vs. -0.19, p=0.028) and CRS (0.26 vs. 0.12, p=0.016) is higher in Complication Group than in Non-Complication Group.

Conclusion: E-PASS appears to be useful in predicting postoperative risk in elderly patients with colorectal cancer. In patients who were >85 years old, preoperative risk factors are higher, so it is important to reduce invasiveness in the operation by minimalizing incision, reducing blood loss and shortening operation time. Laparoscopic surgery for colorectal cancer might be relatively safe option in elderly patients.

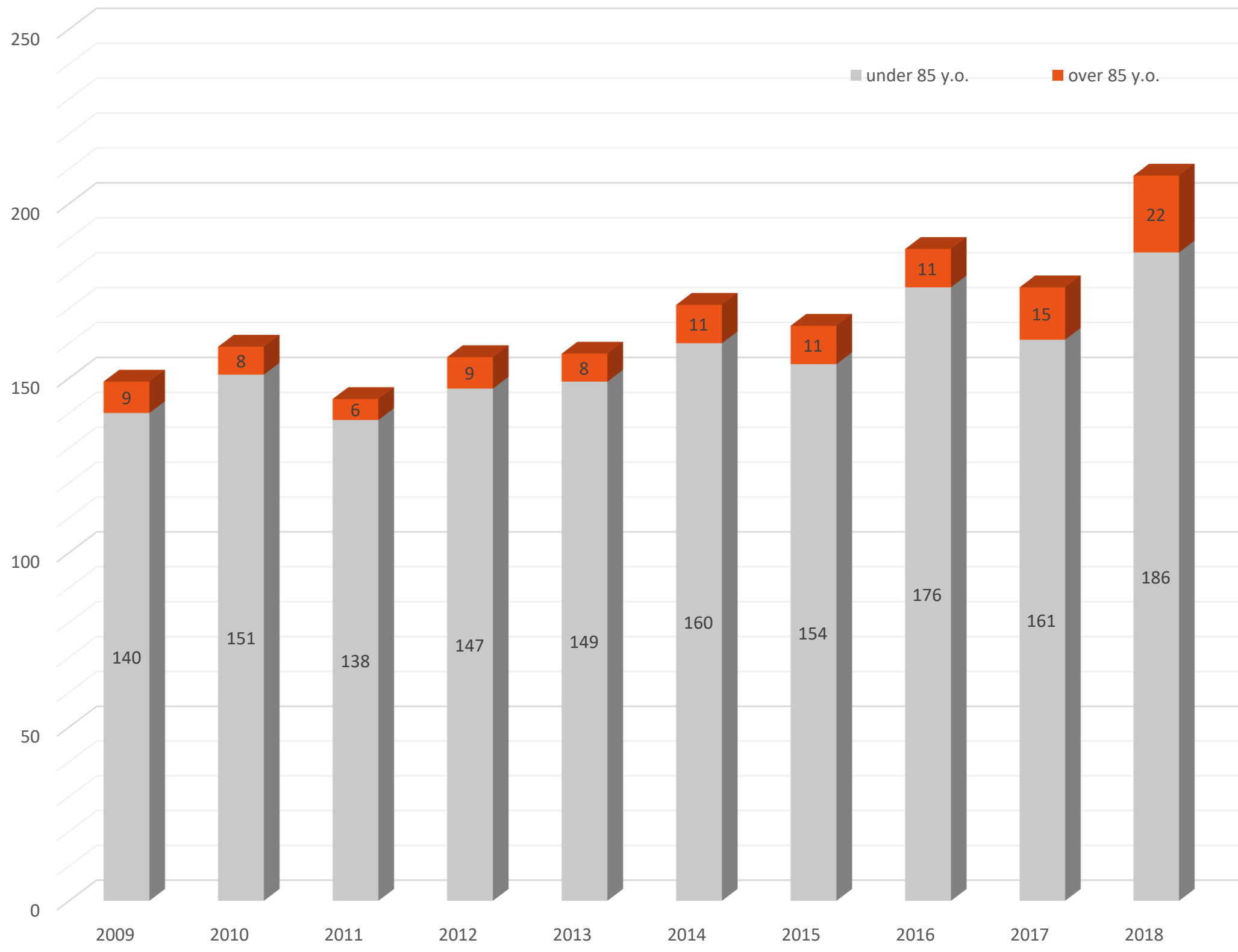


Fig1 : Patients with CRC underwent primary tumor resection in our institution (excluded patients underwent palliative surgery)

		n=110
Gender, n	M:F	46:64
Age, year(range)		87(85-99)
Location, n		
right sided colon		40
left sided colon		45
rectum		25
Tumor obstruction, n(%)		28(25.5%)
Emergency surgery, n(%)		4(3.6%)
BMI, (range)		21.3(14.8-33.2)
PS, n	0/1/2/3/4	7/49/32/18/4
PNI, (range)		44(21-57)
ASA-PS, n	1/2/3	0/57/53
Laparoscopic surgery, n(%)		85(77.3%)
p-Stage, n	0/ I / II /Ⅲ/Ⅳ	1/16/38/39/16

Table1 : Patient characteristics
PS : Performance Status, PNI : Prognostic Nutritional index (10xAlb+0.005xtotal lymphocyte count of the peripheral blood), ASA-PS : American Society of Anesthesiologists physiological status classification

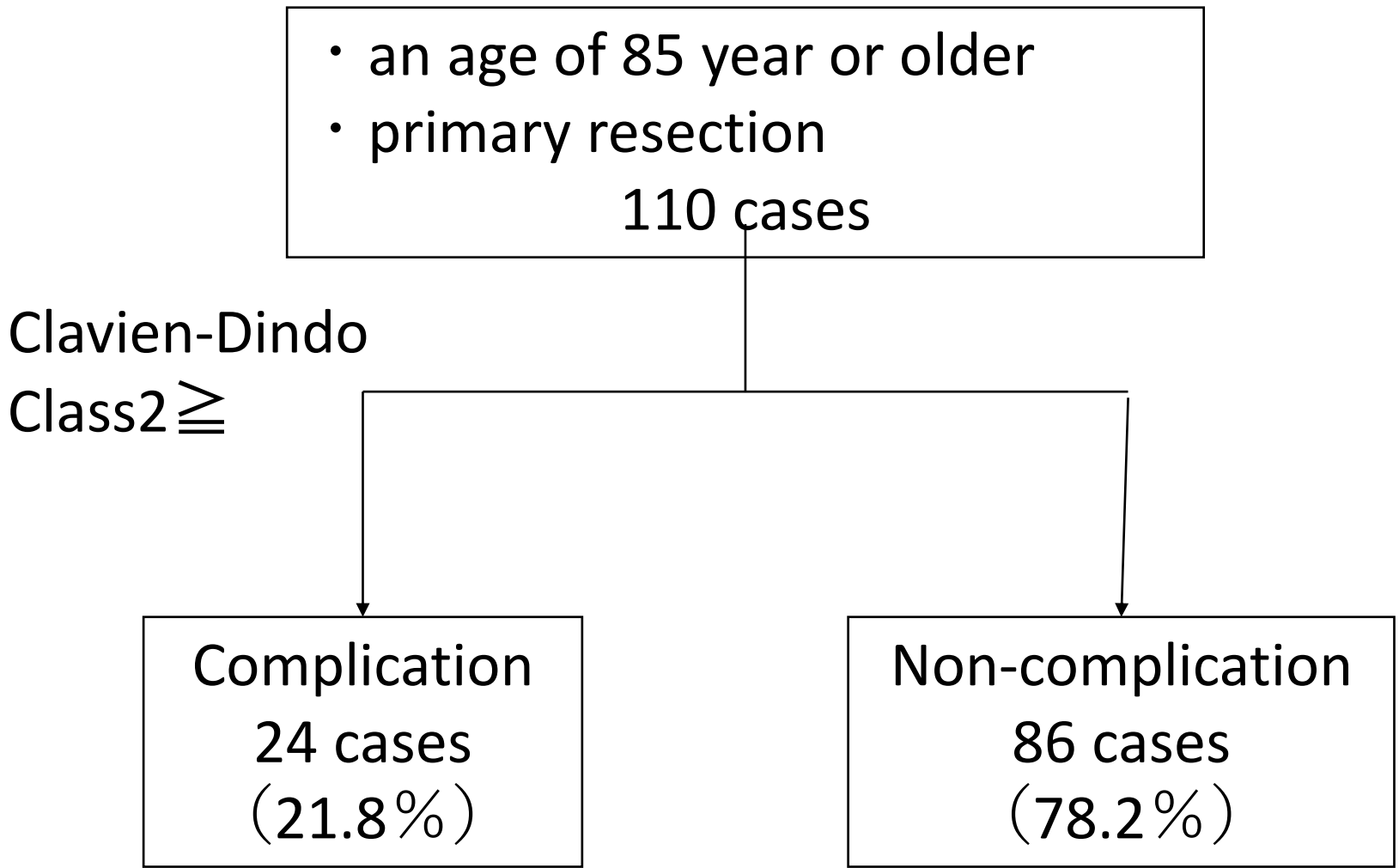
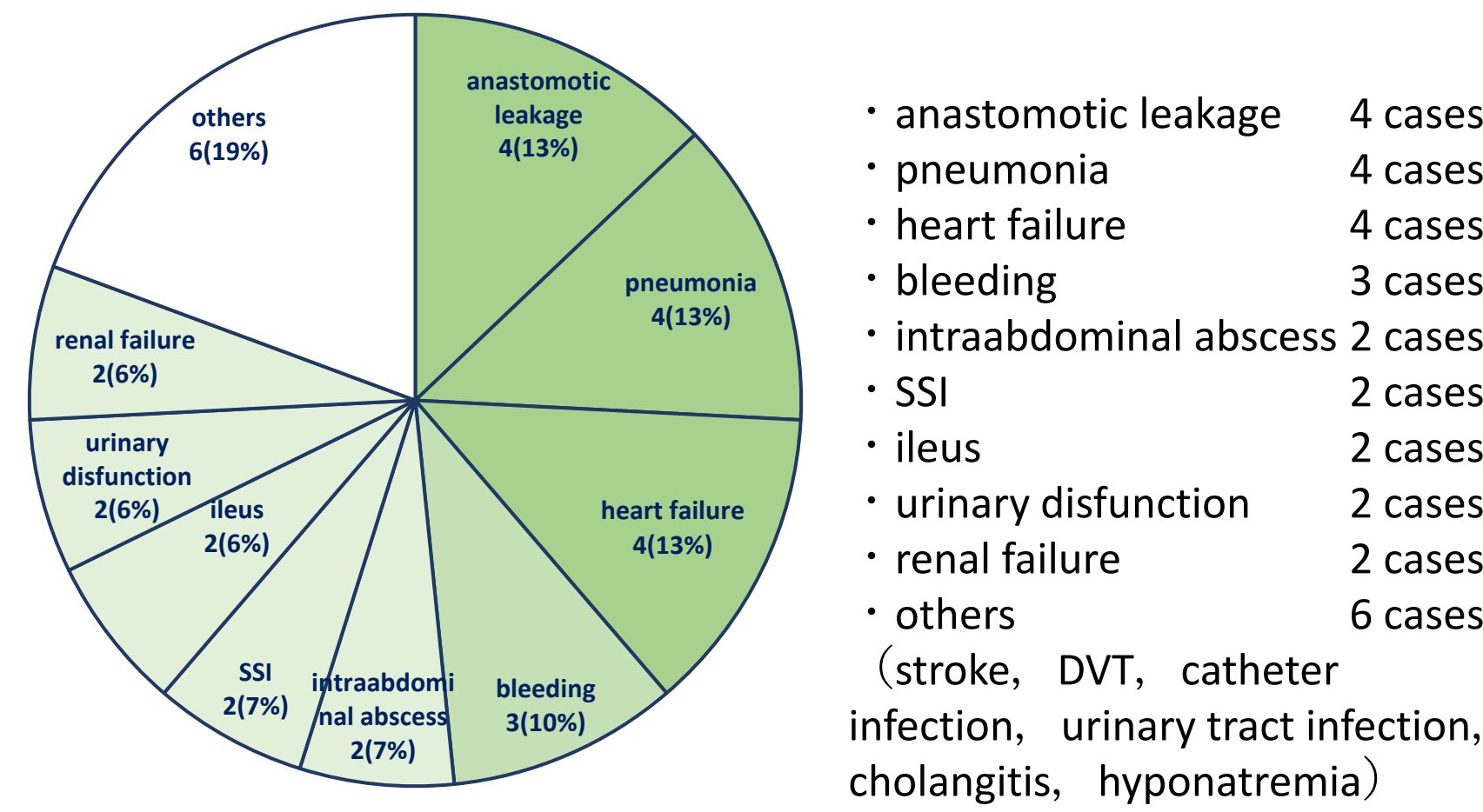


Fig2 : diagram depicting allocation of patients

Postoperative complications

- Mortality 2 cases (1.8%)
 - interstitial pneumonia 1 case
 - acute renal failure 1 case
- Complication Clavien-Dindo Class 2 ≥ 24 cases (21.8%)



- anastomotic leakage 4 cases
- pneumonia 4 cases
- heart failure 4 cases
- bleeding 3 cases
- intraabdominal abscess 2 cases
- SSI 2 cases
- ileus 2 cases
- urinary dysfunction 2 cases
- renal failure 2 cases
- others 6 cases (stroke, DVT, catheter infection, urinary tract infection, cholangitis, hyponatremia)

Prognostic factors

	Complication (n=24)	Non-complication (n=86)	p
PNI, (range)	44(31-55)	44(21-57)	0.997
mGPS, n	0/1/2	10/7/7	0.137
E-PASS, (range)			
PRS	0.73(0.50-1.19)	0.66(0.36-1.04)	0.163
SSS	-0.16(-0.30-0.25)	-0.19(-0.26-0.39)	0.0275
CRS	0.26(-0.21-0.87)	0.12(-0.07-0.88)	0.0157

Table3 : prognostic factors
PRS(preoperative risk score), SSS(surgical stress score), CRS(comprehensive risk score)

- < E-PASS scoring system >
- ① preoperative risk score (PRS)
=-0.0686 +
0.00345X₁+0.323X₂+0.205X₃+0.153X₄+0.148X₅+0.0666X₆
X₁ : age
X₂ : presence(1) or absence(0) of severe heart disease
X₃ : presence(1) or absence(0) of severe pulmonary disease
X₄ : presence(1) or absence(0) of diabetes melitus
X₅ : Performance status index(0-4)
X₆ : American Society of Anesthesiologists physiological status classification (1-5)
- ② surgical stress score (SSS)=-0.342+0.0139X₁+0.0392X₂+0.352X₃
X₁ : **blood loss**/body weight (g/kg)
X₂ : **operation time** (hr)
X₃ : **extent of skin incision** (0 : minor incision for laparoscopic or thoracoscopic surgery including scope-assisted surgery, 1 : laparotomy or thoracotomy alone, 2 : both laparotomy and thoracotomy)
- ③ comprehensive risk score (CRS)=-0.328+0.936(PRS)+0.976(SSS)