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RESEARCH QUESTION

Do octogenarians, or patients above the age of 80, who undergo esophagectomy have a higher mortality and morbidity in comparison to patients younger than the age of 80 years? Is surgical intervention in patients with esophageal cancer over the age of 80 a favorable course of treatment?

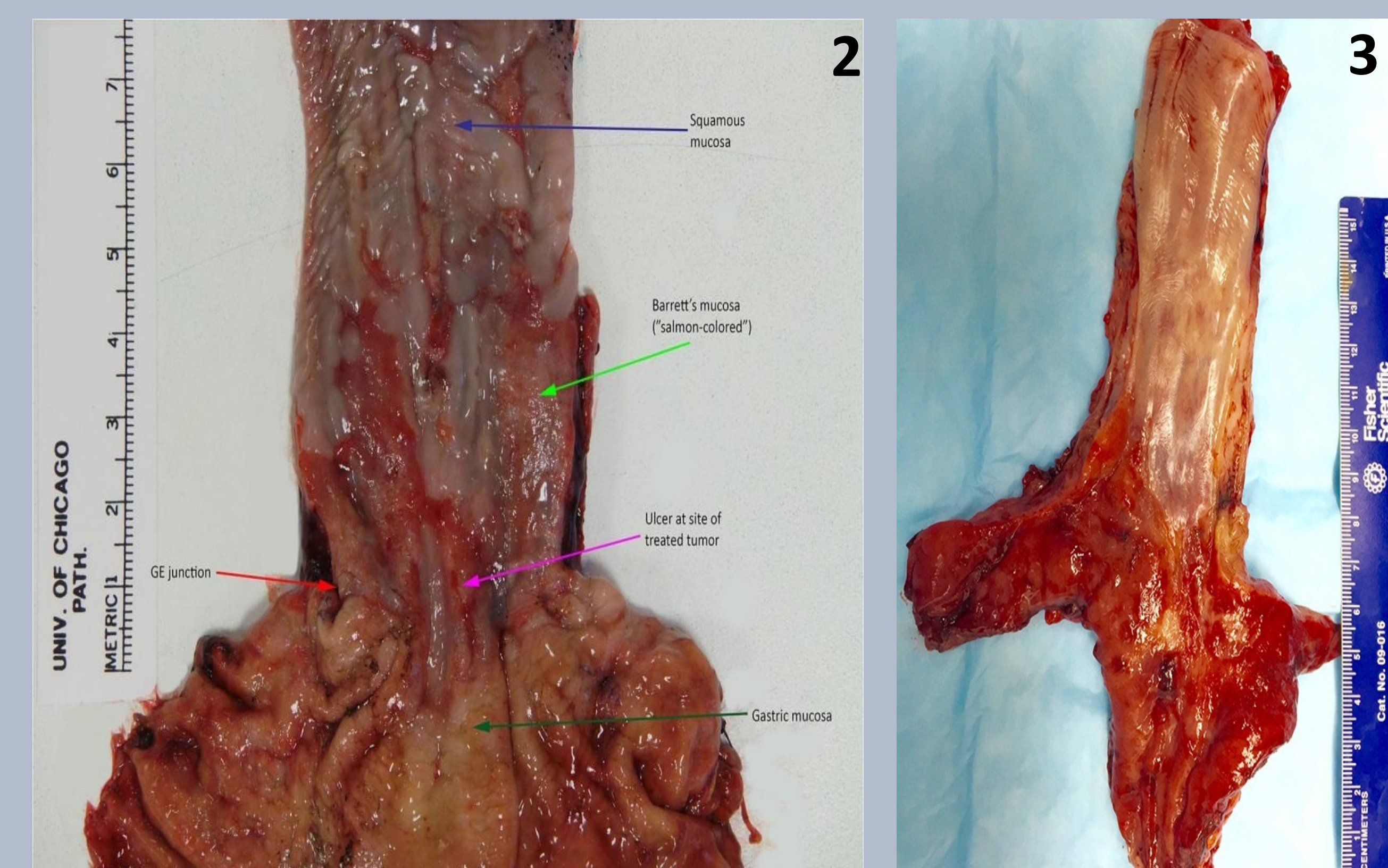
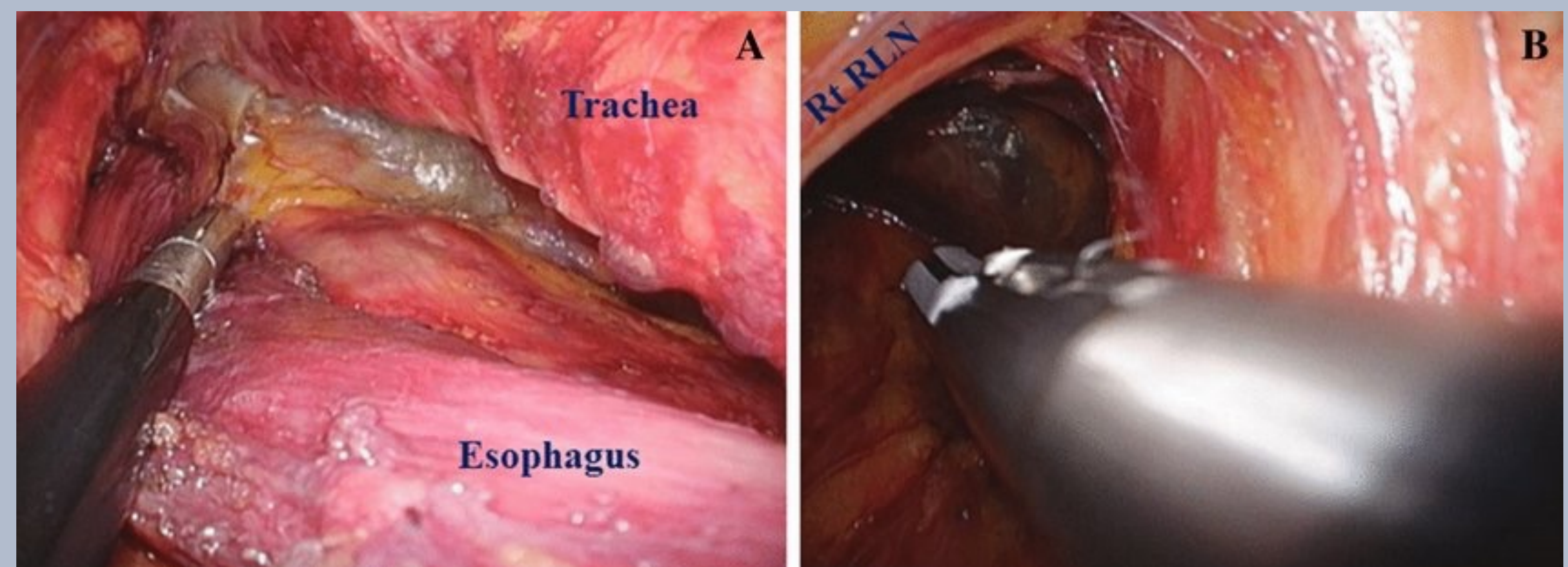
BACKGROUND

Esophageal cancer is highly aggressive cancer and typically presents at a later stage at diagnosis. Esophagectomy is the main-stay surgical procedure for the treatment of esophageal cancer. Due to the late stage of diagnosis combined with accelerated metastasis, esophageal cancer has an increased fatality rate. The incidence of esophageal cancer increases with age. With the ageing population and the increasing number of people over the age of 65, it is anticipated that there will be a rise in the demand for more surgical intervention in this demographic. Surgical intervention in the geriatric population has a higher risk of perioperative morbidity and mortality due to higher prevalence of comorbidities such as heart disease, diabetes, chronic obstructive pulmonary disorder, increased frailty, and lack of compensatory physiologic reserve. The literature on esophagectomy in octogenarians, patients over the age of 80, is limited. In order to determine the safety of esophagectomy in this cohort, this study aims to analyze the outcomes of esophagectomies performed on octogenarians who have esophageal cancer.

METHODS

In this IRB-approved study, 143 esophagectomies performed for esophageal cancer between 2012 and 2020 were retrospectively examined. Oncologic outcomes, surgical results, and patient demographics were examined. The octogenarian group was compared to patients younger than 80 years of age.

Esophagectomy can in fact be performed carefully in octogenarians and partially disproved our hypothesis. Age shouldn't be the only limiting factor. According to the findings of this study, in carefully selected octogenarians, esophagectomy can be performed for esophageal cancer without an increased risk of mortality. The study however showed that octogenarians who undergo esophagectomy have an increased severity of complication but not an increase in complication rates. With explicit expectations and preparation for the elevated risk of more serious post-operative complications, our evidence suggests that esophagectomy can be administered selectively to older patients.



RESULTS

Table 1. Surgery profiles.

	<80 years of age (n = 136)	≥80 years of age (n = 7)	p-value
Type of Surgery			$\chi^2 (1, N = 143) = 0.01, p = 0.79$
Open	33 (24.3%)	2 (28.6%)	
MIE	103 (75.7%)	5 (71.4%)	
Average EBL (mL)	291.8	1050.00	Mann-Whitney U, p = 0.82
LOS (days)	11.6	22.1	Mann-Whitney U, p = 0.06
Average #LN	14.46	11.57	Mann-Whitney U, p = 0.29
Complication			$\chi^2 (1, N = 143) = 0.81, p = 0.46$
Yes	95 (69.9%)	6 (85.7%)	
No	41 (30.1%)	1 (14.3%)	
Mortality	2 (1.5)	1 (14.3%)	Fisher's exact test p = 0.141

Table 2. Pathologic profiles.

	<80 years of age (n = 136)	≥80 years of age (n = 7)
pT ($\chi^2 (1, N = 143) = 3.61, p = 0.82$)		
0	19 (14.0%)	1 (14.3%)
1	3 (2.2%)	0
1A	16 (11.8%)	2 (28.6%)
1B	24 (17.6%)	2 (28.6%)
2	14 (10.3%)	1 (14.3%)
3	55 (40.4%)	1 (14.3%)
4A	1 (0.74%)	0
Tis	4 (2.9%)	0
pN ($\chi^2 (1, N = 143) = 3.54, p = 0.47$)		
0	82 (60.3%)	4 (57.1%)
1	25 (18.4%)	3 (42.9%)
2	18 (13.2%)	0
3	10 (7.4%)	0
X	1 (0.74%)	0
Grade ($\chi^2 (1, N = 143) = 3.24, p = 0.66$)		
0	1 (0.74%)	0
1	10 (7.4%)	1 (14.3%)
2	59 (43.4%)	1 (14.3%)
3	43 (31.6%)	4 (57.1%)
4	2 (1.5%)	0
X	21 (15.4%)	1 (14.3%)
Resection Margins		
- Open		
o Negative	23 (69.7%)	1 (50.0%)
o Positive	10 (30.3%)	1 (50.0%)
- MIE		
o Negative	92 (89.3%)	5 (100.0%)
o Positive	11 (10.7%)	0 (0.0%)
- Total ($\chi^2 (1, N = 143) = 9.16, p < .01$)		
o Negative	115 (84.6%)	6 (85.7%)
o Positive	21 (15.4%)	1 (14.3%)
Pathology		
- Adenocarcinoma	113 (83.1%)	5 (71.4%)
- Squamous Cell Carcinoma	18 (13.2%)	1 (14.3%)
- Neuroendocrine tumor	3 (2.2%)	0 (0.0%)
- Adenoneuroendocrine tumor	1 (0.7%)	0 (0.0%)

Grade	Description
1	Any deviation from the normal postoperative course without the need for pharmacological treatment or surgical, endoscopic, and radiological interventions. Allowed therapeutic regimens are drugs as antiemetics, antipyretics, analgesics, diuretics and electrolytes and physiotherapy. This grade also includes wound infections opened at the bedside.
2	Requiring pharmacological treatment with drugs other than such allowed for grade 1 complications. Blood transfusions and total parenteral nutrition are also included.
3	Required surgical, endoscopic, or radiological intervention
3a	Intervention not under general anesthesia
3b	Intervention under general anesthesia
4	Life-threatening complication (includes CNS complication) requiring ICU/ICU management
4a	Single organ dysfunction (including dialysis)
4b	Multisystem dysfunction
5	Death of a patient

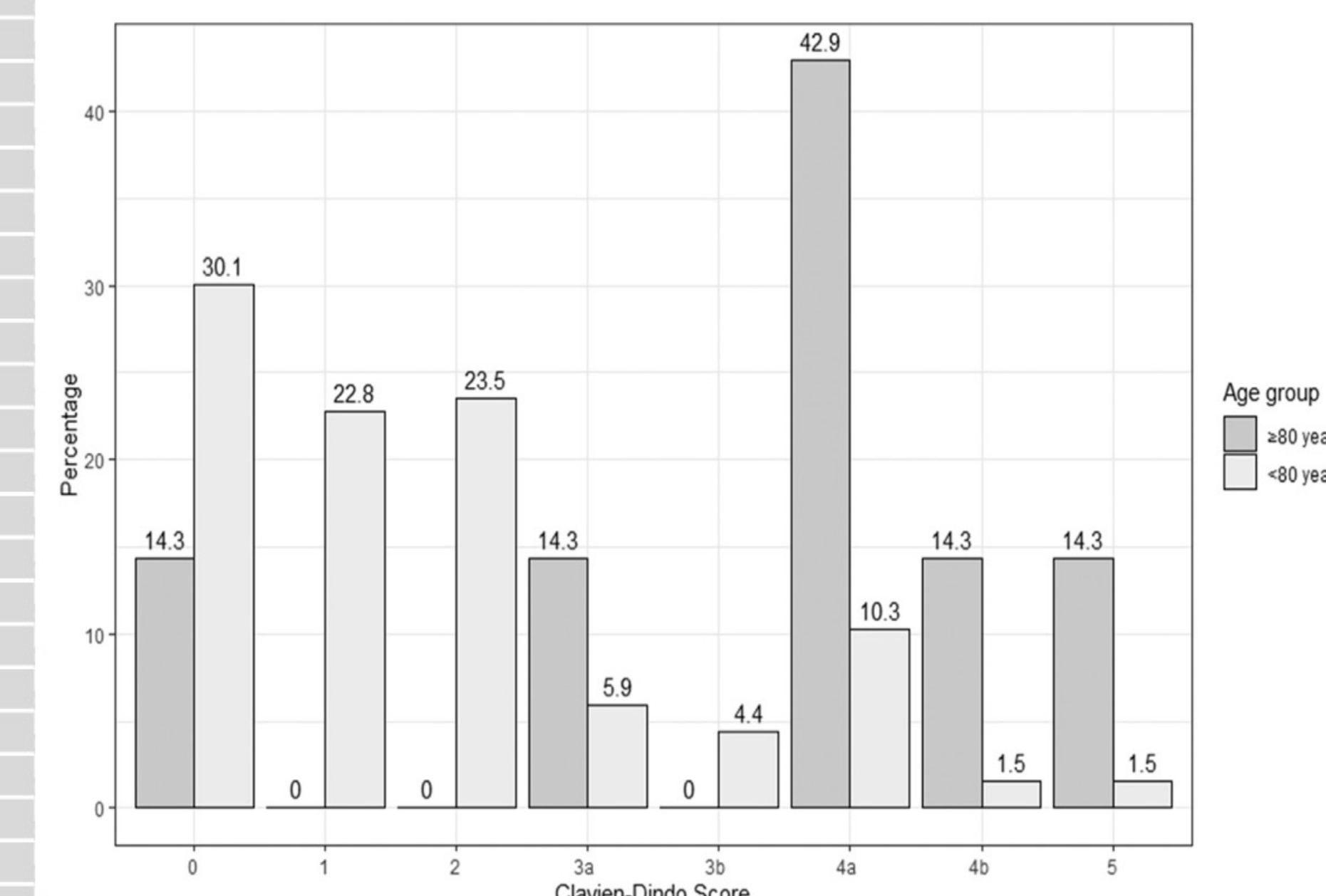


Figure 1. Clavien-Dindo grading for surgical complications.

FUTURE DIRECTIONS

The future direction of this project should include a larger sample size to fully access the term survival of octogenarians versus patients who are younger than 80 years of age. Other related areas of exploration can assess the types of comorbidities that can lead to higher rates of complications while performing esophagectomy in patients younger than 80 while compared to the patient over the age of 80.

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