Gas versus Gasless Robot-Assisted Nipple Sparing Mastectomy.

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Disclosure

- I have no conflicts of interest to this study.

Background

- Since the introduction of robot-assisted nipple-sparing mastectomy (RANSM), two different techniques have been attempted: gasless and gas techniques.

- **The aim of the study:**

  To compare different methods of carbon dioxide (CO2) gas-inflated and gasless RANSM in terms of clinicopathologic characteristics and post-operative outcomes.

Materials and Methods

- Retrospective study
- 32 RANSM in 25 patients (7 patients with bilateral) from November 2016 to January 2019
- We did not perform RANSM when:

- NAC or skin invasion

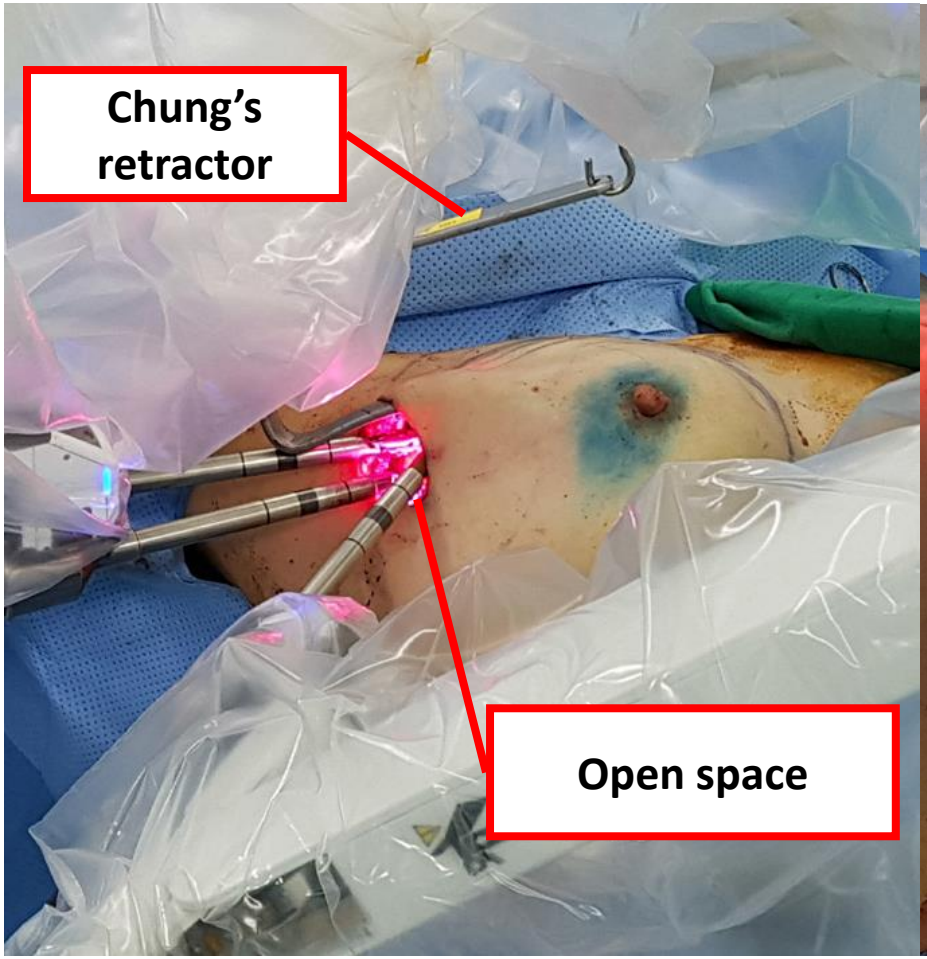
- Proven metastasis of axillary lymph node

- Planned radiotherapy

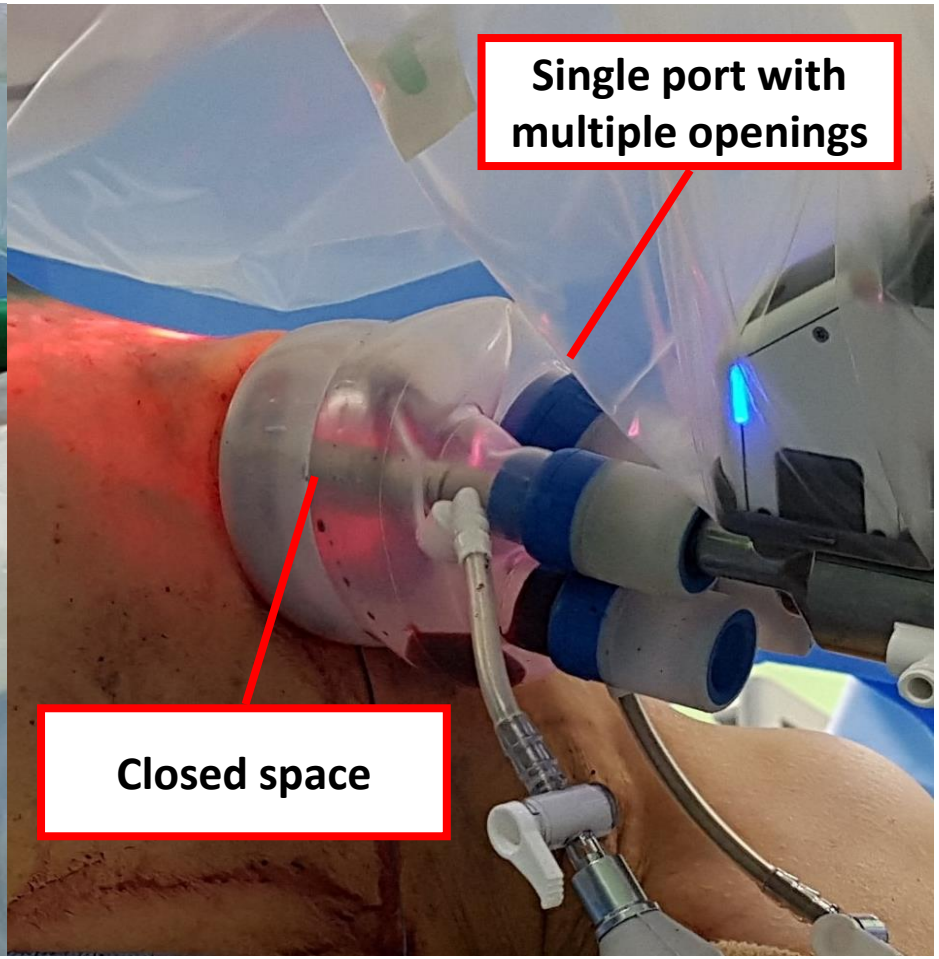
- Neoadjuvant chemotherapy

Materials and Methods: Surgical procedures

- Gasless



- Gas

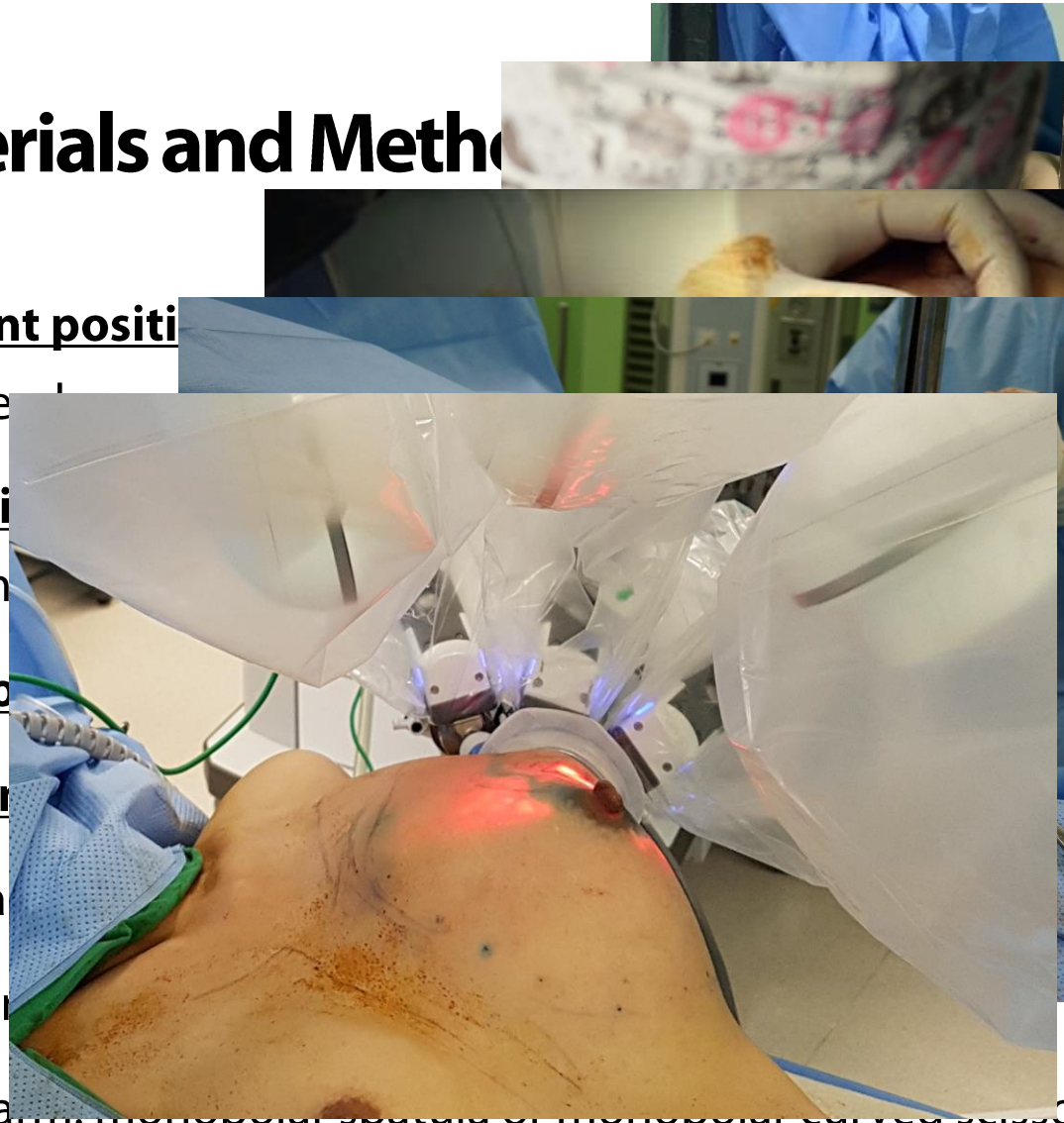


Materials and Meth

- **Patient positi**
  the he
- **Creati**
  and m
- **Hydro**
- **Placer**

- Centra
- Left ar
- Right a

- **Robotic dissection**



Results

< Clinicopathologic characteristics of the study population >

		Methods		
		Gasless (n=14)	Gas (n=18)	P-value
		Median (min-max) or N(%)	Median (min-max) or N(%)	
Age (year old)		46.5 (29.0 - 56.0)	41.5 (29.0 - 66.0)	0.283
BMI (kg/m^2)		22.0 (18.4 - 23.9)	21.6 (18.4 - 28.0)	0.955
Breast volume (g)		243.0 (94.0 - 538.0)	306.5 (84.0 - 505.0)	0.488
Ptosis	Normal	11 (78.6)	13 (72.2)	1.00
	Grade 1	3 (21.4)	4 (22.2)	
	Grade 2	0 (0.0)	0 (0.0)	
	Grade 3	0 (0.0)	1 (5.6)	
BRCA1 mutation	No	4 (80.0)	9 (90.0)	1.00
	Yes	1 (20.0)	1 (10.0)	
	VOUS	0 (0.0)	0 (0.0)	
BRCA2 mutation	No	5 (100.0)	5 (50.0)	0.231
	Yes	0 (0.0)	4 (40.0)	
	VOUS	0 (0.0)	1 (10.0)	

Results

< Clinicopathologic characteristics of the study population >

		Methods		
		Gasless (n=14)	Gas (n=18)	P-value
		N(%)	N(%)	
Diagnosis	Benign	2 (14.4)	0 (0.0)	0.487
	DCIS	3 (21.4)	6 (33.3)	
	Invasive carcinoma	8 (57.1)	10 (55.6)	
	BRCA mutation carrier	1 (7.1)	2 (11.1)	
ER	Negative	2 (18.2)	0 (0.0)	0.157
	Positive	9 (81.8)	16 (100.0)	
PR	Negative	4 (36.4)	2 (12.5)	0.187
	Positive	7 (63.6)	14 (87.5)	
HER2	Negative	6 (54.5)	10 (66.7)	0.689
	Positive	5 (45.5)	5 (33.3)	
Ki 67	< 14%	4 (36.4)	6 (37.5)	1.00
	≥ 14%	7 (63.6)	10 (62.5)	

Results

< Clinicopathologic characteristics of the study population >

		Methods		
		Gasless (n=14)	Gas (n=18)	P-value
		N(%)	N(%)	
Histologic grade	1	0 (0.0)	2 (12.5)	0.471
	2	7 (63.6)	11 (68.8)	
	3	4 (36.4)	3 (18.8)	
T	Tis	3 (27.3)	7 (43.8)	0.42
	1	4 (36.4)	7 (43.8)	
	2	4 (36.4)	2 (12.5)	
N	0	8 (72.7)	16 (100.0)	0.056
	1	2 (18.2)	0 (0.0)	
	2	1 (9.1)	0 (0.0)	
TNM stage	0	3 (27.3)	5 (31.3)	0.836
	I	6 (54.5)	9 (56.3)	
	II	1 (9.1)	2 (12.5)	
	III	1 (9.1)	0 (0.0)	

Results

< Surgical methods and outcomes between gas- and gasless-RANSM>

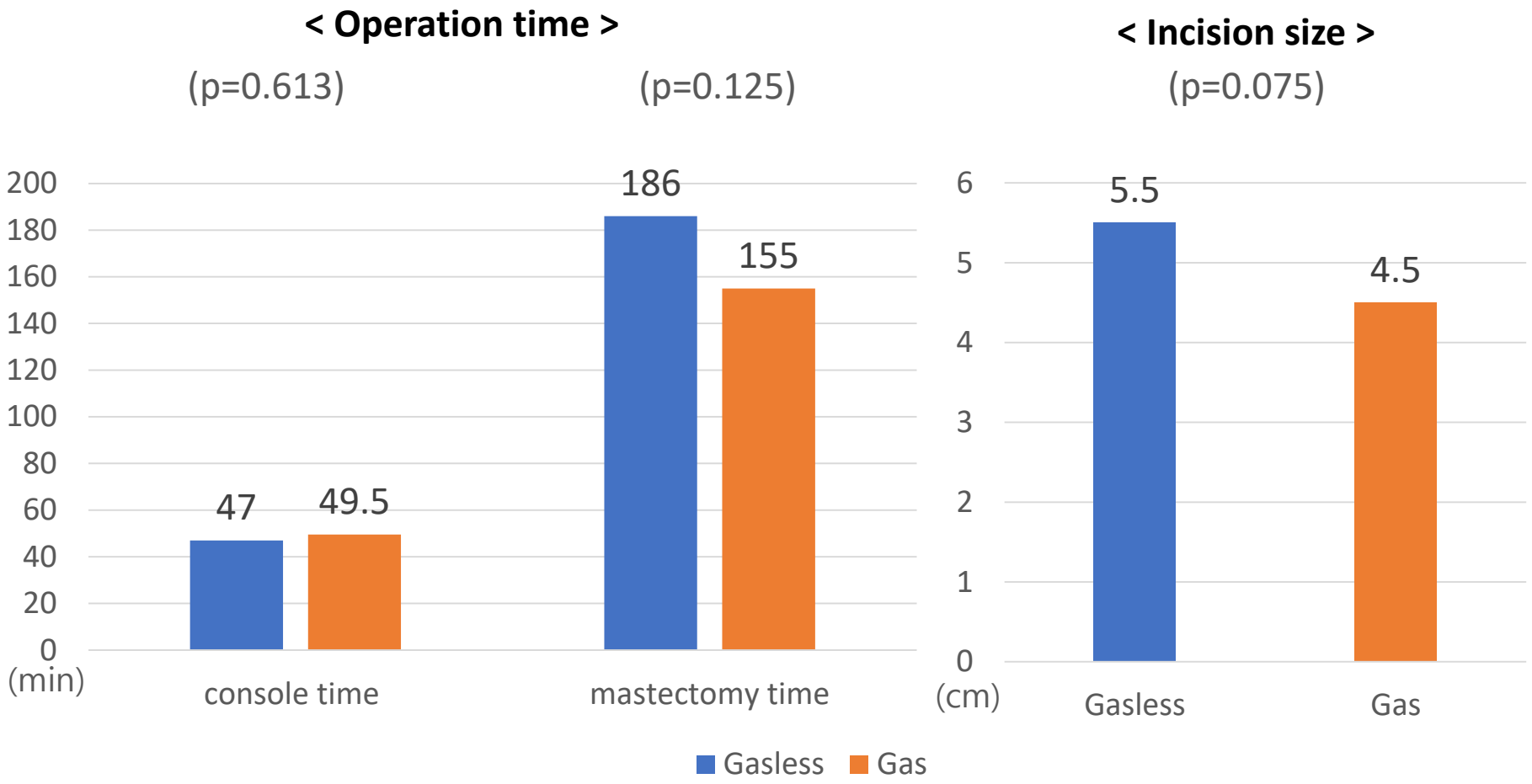
		Methods		
		Gasless (n=14)	Gas (n=18)	P-value
		Median (min-max) or N(%)	Median (min-max) or N(%)	
Length of stay (days)		11.5 (9.0 - 15.0)	15.0 (11.0 - 20.0)	0.003
Total operation time (min)		320 (214.0 – 415.0)	329 (214.0 – 423.0)	0.613
Docking time of mastectomy (min)		6.5 (3.0 - 15.0)	8.5 (3.0 - 19.0)	0.22
Console time of mastectomy (min)		47 (16.0 – 133.0)	49.5 (16.0 - 214.0)	0.613
Mastectomy operation time (min)		186 (89.0 – 280.0)	155 (67.0 – 212.0)	0.125
Reconstruction operation time (min)		125 (110.0 – 233.0)	125 (96.0 – 356.0)	0.722
Incision size (cm)		5.5 (4.0 - 6.0)	4.5 (2.7 - 6.0)	0.075
Margin involvement	No	10 (90.0)	15 (93.8)	1.00
	Yes	1 (9.1)	1 (6.3)	

Results

< Surgical methods and outcomes between gas- and gasless-RANSM>

		Methods		
		Gasless (n=14)	Gas (n=18)	P-value
		N(%)	N(%)	
Type of reconstruction	Tissue expander	10 (71.4)	9 (50.0)	0.289
	Direct-to-implant	4 (28.6)	9 (50.0)	
Robot system	Si	2 (14.3)	0 (0.0)	0.157
	Xi	12 (85.7)	16 (88.9)	
	SP	0 (0.0)	2 (11.1)	
Grade of complication	Grade I	13 (92.9)	13 (72.2)	0.613
	Grade II	0 (0.0)	2 (11.1)	
	Grade IIIa	1 (7.1)	2 (11.1)	
	Grade IIIb	0 (0.0)	1 (5.6)	
NAC necrosis	No	13 (92.9)	18 (100.0)	0.437
	Yes	1 (7.1)	0 (0.0)	
Skin ischemia/necrosis	No	11 (78.6)	15 (83.3)	1.00
	Yes	3 (21.4)	3 (16.7)	

Results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200
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160
140
120
100
80
60
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20
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(min)
47
49.5
186
155
console time
mastectomy time
< Incision size >
(p=0.075)
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5
4
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(cm)
5.5
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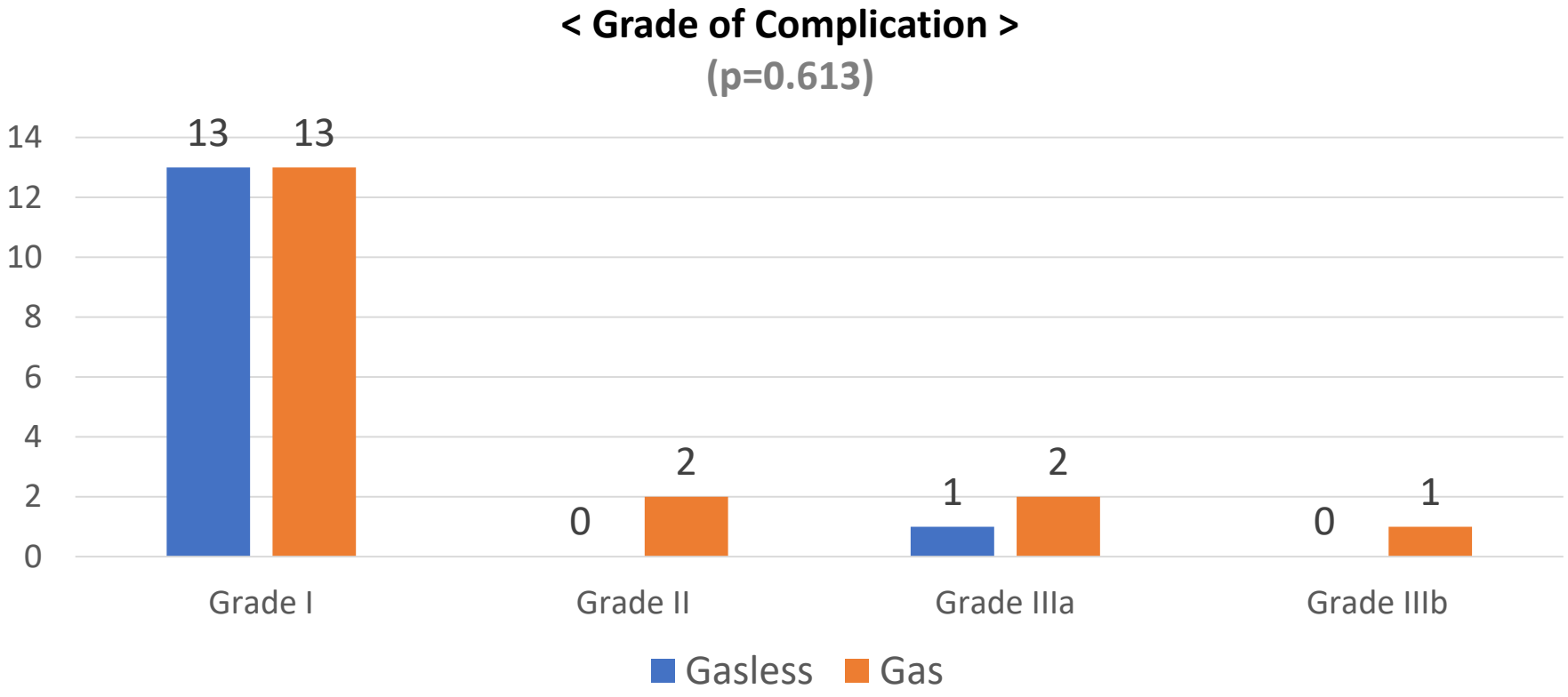
Gasless
Gas
Gasless
Gas

Results


< Grade of Complication >
(p=0.613)
14
12
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13
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2
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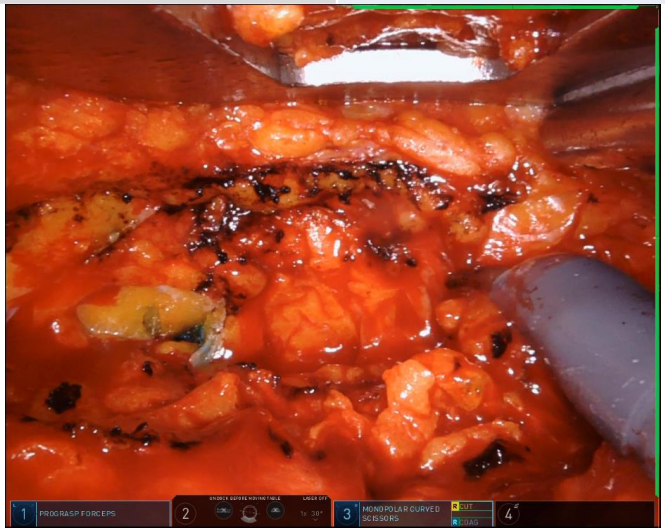
2
0
1
Grade I
Grade II
Grade IIIa
Grade IIIb
Gasless
Gas

Discussion

- **The comparison of gas- and gasless-RANSM**

	Gasless	Gas
Devices	Chung's-retractor	CO2 insufflation Single port
Operation field	Open space	Closed space
Resection of nipple margin	Manual resection before docking	Robotic resection after docking
Visual disturbance	Smoke-free	Smoke-filled

Gasless >>



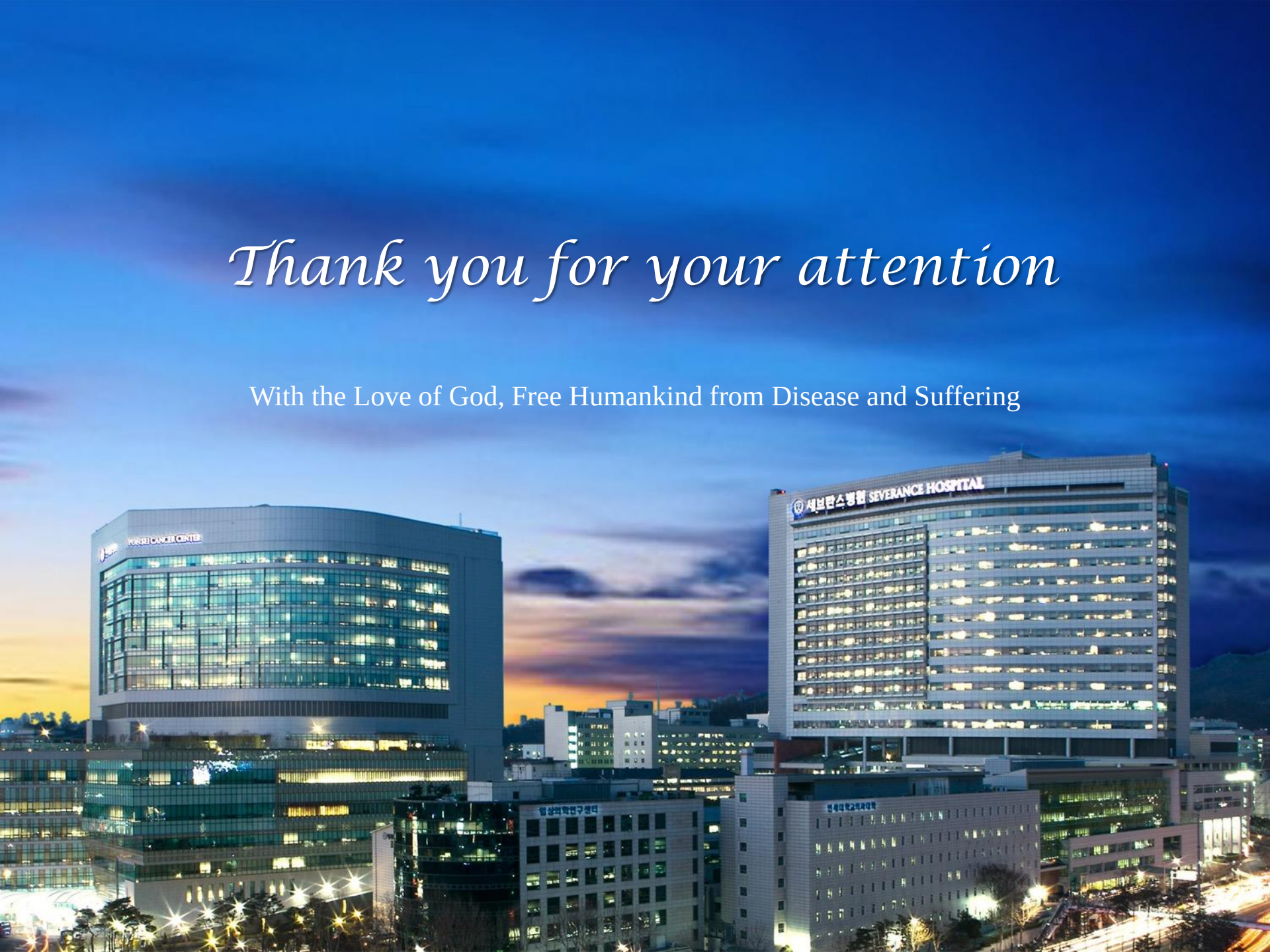
<< Gas

Conclusions

- There are some difference between gas- and gasless-RANSM in terms of surgical techniques, surgical devices, operation field, and visual disturbance.

- Surgical outcomes including grade of complication, NAC necrosis, and skin necrosis were not different between gas- and gasless-RANSM.

- A further study will be conducted to evaluate long term outcomes of RANSM.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