Surgical Outcomes of Thoracoabdominal Aortic Surgery in patients who had previous aortic surgery through thoracotomy

Suk Kyung Lim, Muhyung Heo, Seyeon Jeon, Siwon Oh, Suryeun Chung, Yang Hyun Cho, Dong Seop Jeong, Wook Sung Kim, Kiick Sung

Department of Thoracic and Cardiovascular Surgery,
Samsung Medical Center,
Sungkyunkwan University School of Medicine, Seoul, Korea.

Objective

- Challenges in Redo-Thoracotomy
- Some cases requiring Redo-thoracotomy in thoracoabdominal aorta aneurysm (TAAA)
- Limited Research on Redo-Thoracotomy
- The Study Aimed to Investigate:
  - ➢ the outcomes of patients who underwent TAAA surgery with a prior thoracotomy approach

Massive bleeding

Acute lung injury

Methods

Retrospective cohort study, Single-center

214 patients of TAAA surgery
(June 1996~March 2023)

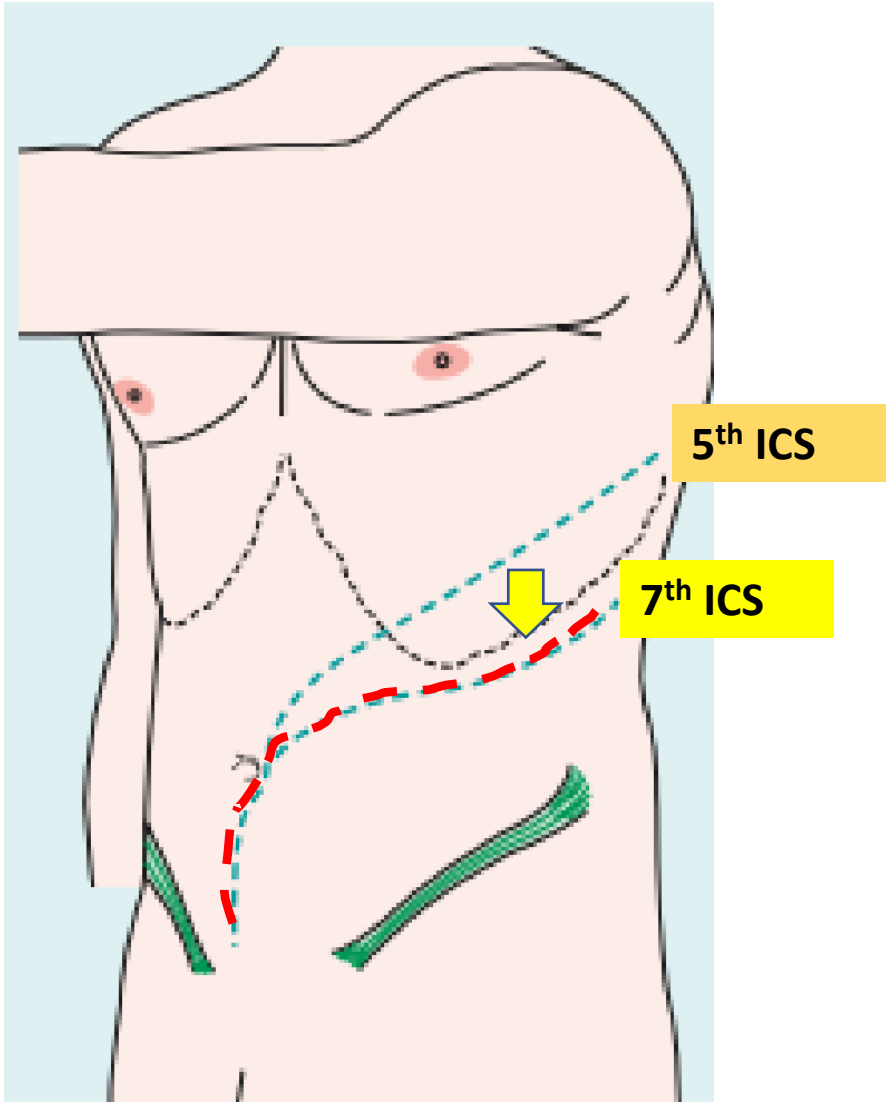
- **Control group (n=184)** : patient without previous left thoracotomy
- **Redo-thoracotomy group (n=30)**

Clinical outcomes
(Survival, Postoperative complication)

Results – Redo-group previous surgery information

Variable	Number (n=30)
Type of previous aortic surgery (n,%)	
Descending thoracic aorta replacement	26 (86.7)
Thoracoabdominal aorta replacement	3 (10.0)
Descending thoracic aorta wrapping	1 (3.3)
Time interval to redo surgery (year)	3.4 (1.0-4.9)
Indication of redo aortic surgery (n,%)	
Aneurysm	25 (83.3)
Impending rupture	1 (3.3)
Dissection	1 (3.3)
Pseudoaneurysm	2 (6.7)
Graft infection	1 (3.3)

Results – Redo-group previous surgery information



Variable	Number (n=30)
Previous surgical approach (n,%)	
4th ICS	4 (16.0)
5th ICS	**13 (52.0)**
6th ICS	5 (20.0)
7th ICS	3 (12.0)
Redo surgical approach (n,%)	
6th ICS	4 (13.3)
7th ICS	**22 (73.3)**
8th ICS	4 (13.3)
Proximal Replacement level (n,%)	
T3 - T6	2 (6.7)
T6 – T12	**28 (93.3)**

Results - Basal clinical characteristics

Variable	Control group (n=184)	Redo-thoracotomy (n=30)	*p* value
Age (years) (median, IQR)	**60.2 (43.8-69.9)**	**49.1 (40.1-56.3)**	**0.019**
Male (n,%)	127 (69.0)	25 (83.3)	0.166
Connective tissue disease (n,%)	**55 (29.9)**	**15 (50.0)**	**0.049**
Marfan syndrome	49 (26.6)	12 (40.0)	0.198
Loeys Dietz syndrome	6 (3.3)	3 (10.0)	0.116
HTN(n,%)	113 (61.4)	22 (73.3)	0.293
DM,%)	13 (7.1)	2 (6.7)	>0.999
CVA (n,%)	15 (8.2)	1 (3.3)	0.706
CRF(n,%)	11 (6.0)	2 (6.7)	>0.999
COPD(n,%)	4 (2.2)	1 (3.3)	0.534

Results - Basal clinical characteristics

Variable	Control (n=184)	Redo-thoracotomy (n=30)	*p* value
Previous cardiac surgery (n,%)	**74 (40.2)**	**19 (63.3)**	**0.030**
Previous dissection (n,%)	110 (59.8)	23 (76.7)	0.118
Crawford type (n, %)			**<0.001**
I	14 (7.6)	0 (0.0)	
II	**87 (47.3)**	2 (6.7)	
III	**43 (23.4)**	**25 (83.3)**	
IV	25 (13.6)	3 (10.0)	
V	15 (8.2)	0 (0.0)	

Results - Operative data

Variable	Control group (n=184)	Redo-thoracotomy (n=30)	*P* value
Emergency operation (n,%)	13 (7.1)	3 (10.0)	0.476
Operation time(mins) (mean, IQR)	492.5 (421.0-554.0)	500.5 (476.0-559.0)	0.369
CPB time (mins) (mean, IQR)	171.0 (125.5-213.0)	168.0 (128.0-192.0)	0.618
ACC time(mins) (mean, IQR)	157.0 (110.0-184.0)	159.0 (128.0-174.0)	0.945
Circulatory arrest (n,%)	6 (3.3)	1 (3.3)	>0.999
Rectal temperature (℃)	30.4 (29.6-31.5)	30.1 (29.4-30.7)	0.051
Lumbar drainage (n,%)	162 (88)	29 (96.7)	0.213
MEP monitoring (n%)	132 (71.2)	27 (90.0)	0.058

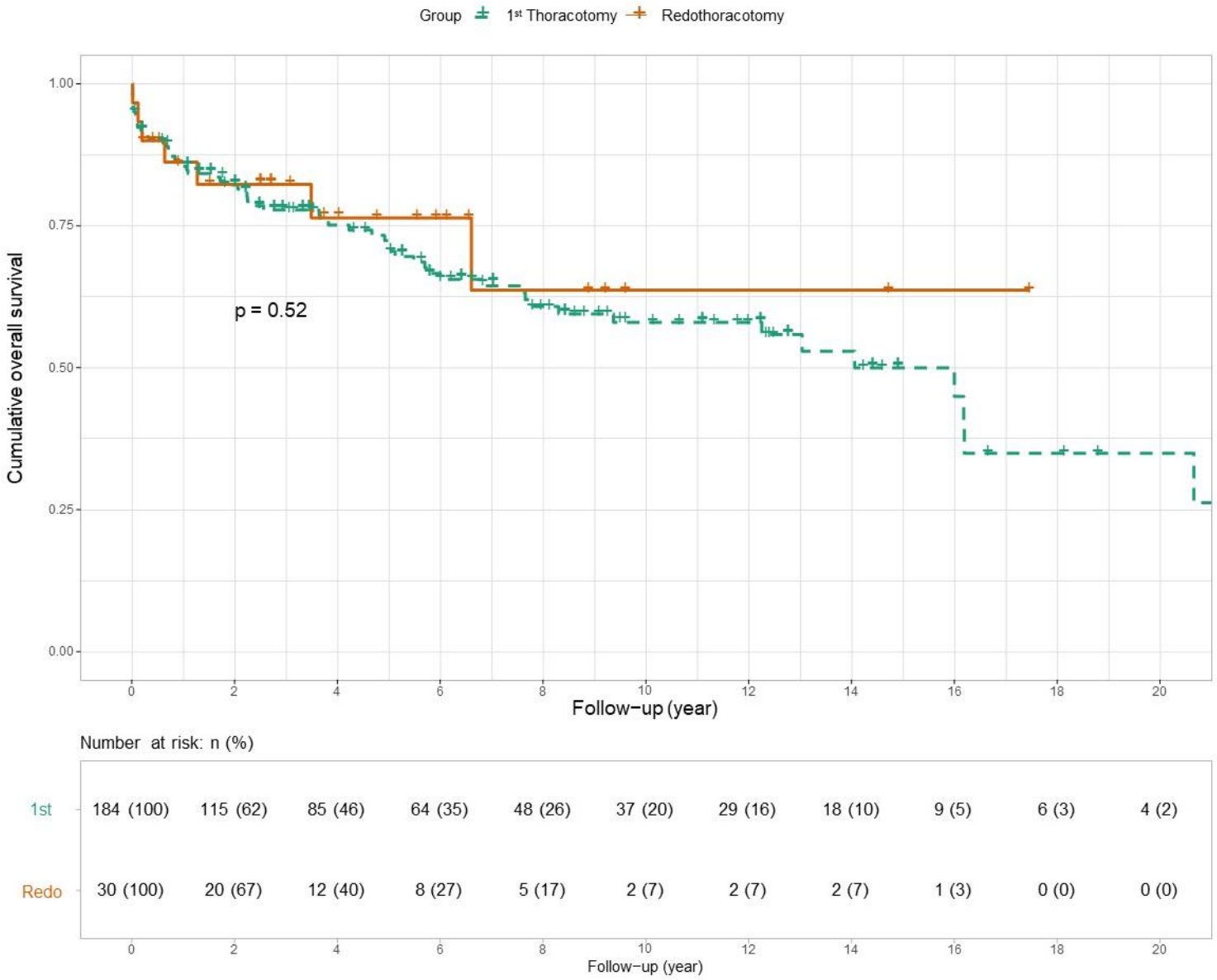
Results - Post-operative outcomes

Variable	Control (n=184)	Redo-thoracotomy (n=30)	*P* value
30-day mortality (n,%)	10 (5.4)	1 (3.3)	0.104
In-hospital mortality (n,%)	13 (7.1)	2 (6.7)	0.598
Hospital day (mean, IQR)	15.0 (10.0-21.5)	11.0 (9.0-20.0)	>0.999
ICU duration (day) (mean, IQR)	2.9 (2.0-4.8)	2.9 (2.2-3.9)	>0.999
Ventilator time (hr)(mean, IQR)	15.9 (10.6-25.5)	14.0 (7.0-21.0)	0.223

Results - Post-operative outcomes

Variable (n,%)	Control (n=184)	Redo-thoracotomy (n=30)	*p* value
Postoperative bleeding	16 (8.7)	3 (10.0)	>0.999
Pneumonia	4 (2.6)	1 (3.3)	0.589
Tracheostomy	11 (7.1)	1 (3.3)	0.694
Paraplegia	8 (4.3)	0 (0.0)	0.604
Renal failure (Hemodialysis)	20 (10.9)	3 (10.0)	>0.999
Stroke or hemorrhage	10 (5.4)	3 (10.0)	0.400
Gastrointestinal complication	4 (2.2)	1 (3.3)	0.534
Graft infection	0 (0.0)	1 (3.3)	0.140
ECMO (VV or VA)	3 (1.6)	0 (0.0)	> 0.999

Results - Overall survival



Conclusion

- There were no differences observed in postoperative outcomes
  - Survival rate
  - Postoperative complications

- Performing surgery through a Redo-thoracotomy might not be significantly worse than anticipated