

Annual Report of Cardiovascular Surgery 2021

Nagasaki University

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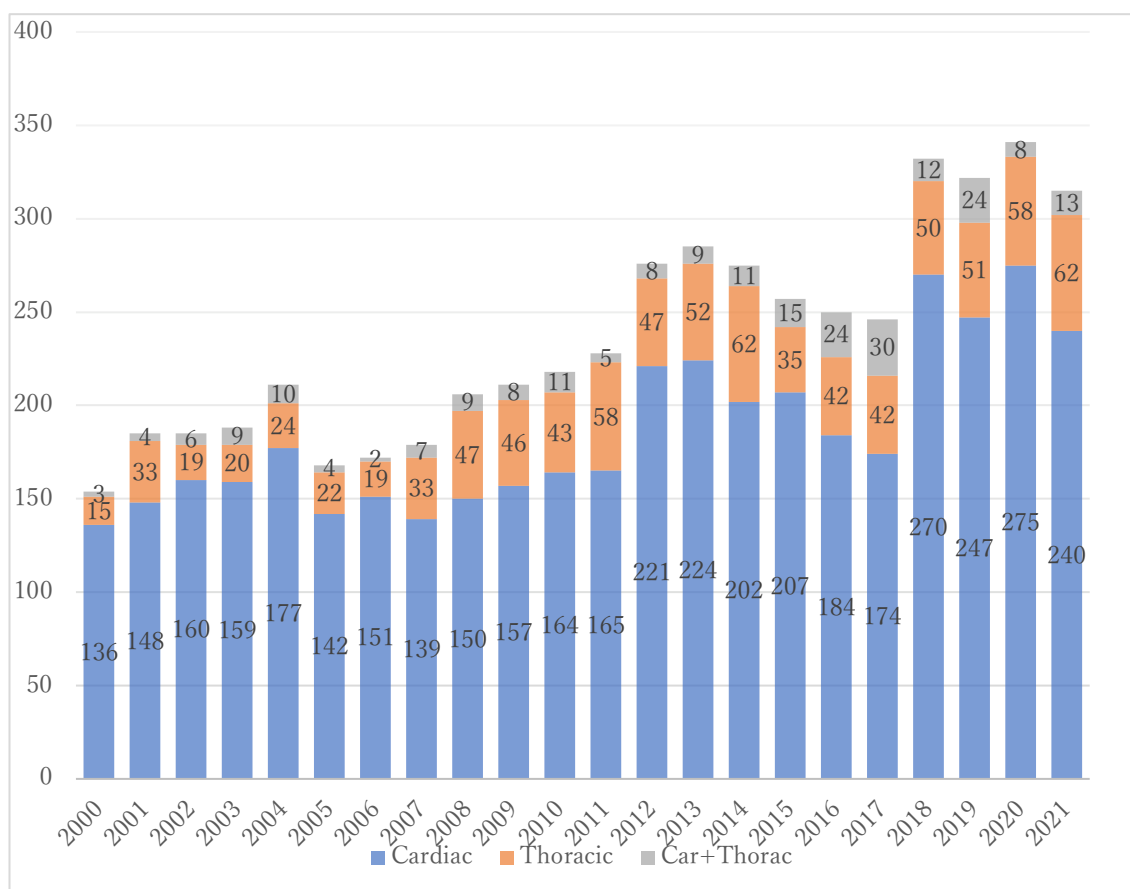
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~ Overall~

I . Number of Operations and Surgical mortality

Division	No. OP.	No. Cases	OP. mortality (%)	Hosp. mortality (%)
Cardiac	240 (39*)	240 (39*)	0	2 (0.8)
Car. + Thoracic	13	13	0	0
Thoracic	62	61	1 (1.6)	3 (4.9)
Total	315 (39*)	314 (39*)	1 (0.3)	5 (1.6)
Abdominal aorta	47	47	2 (4.3)	2 (4.3)
Peripheral	54	51	0	0
Total	416	412	3 (0.7)	7 (1.7)

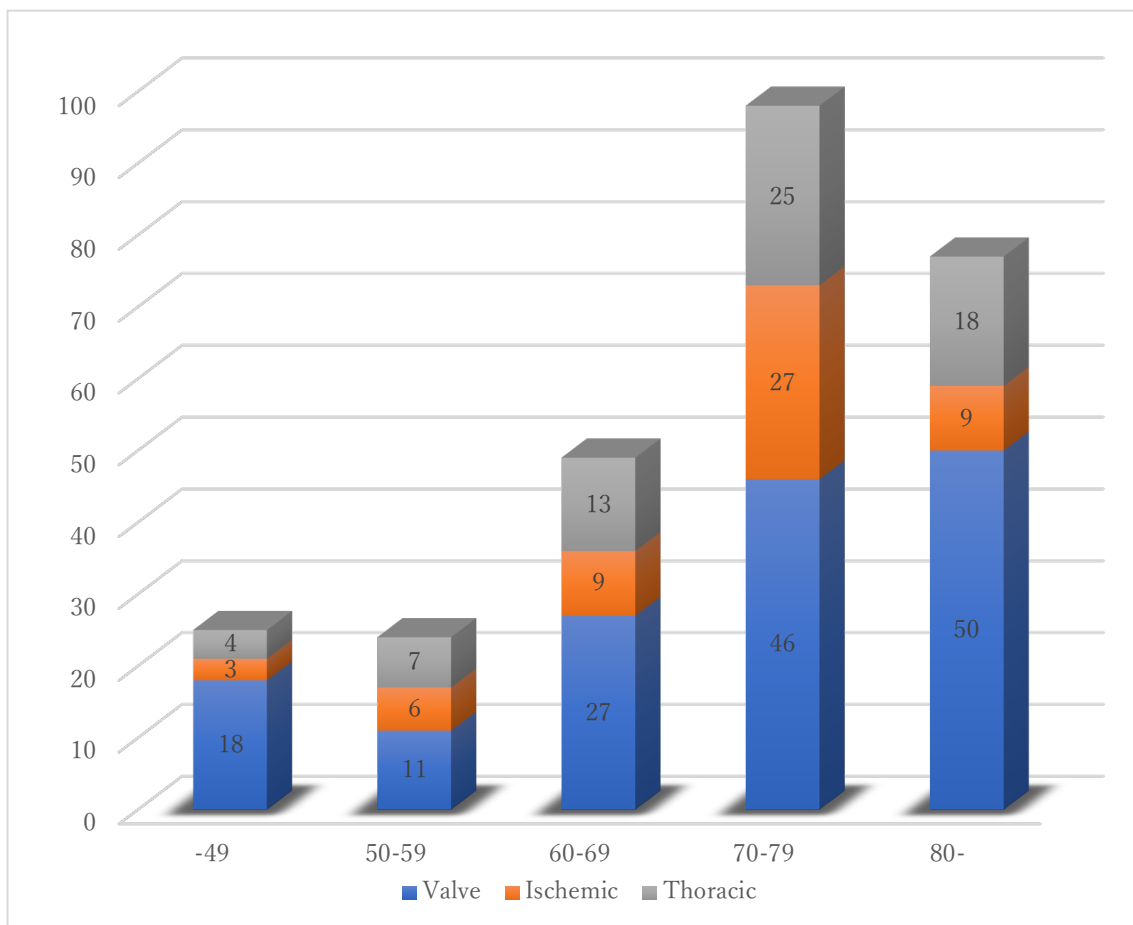
*TAVI



II. Mode of Operation

	Total	Scheduled (%)	Urgent (%)	Emergent (%)
Ischemic	54	39 (72.2)	8 (14.8)	7 (13.0)
Valvular	163	149 (91.4)	7 (4.3)	7 (4.3)
Congenital	13	13 (100)	0	0
Others	18	11 (61.1)	4 (22.2)	3 (16.7)
Thoracic aorta	67	36 (53.7)	1 (1.5)	30 (44.8)
Abdominal aorta	47	35 (74.5)	2 (4.3)	10 (21.3)
Peripheral artery	54	15 (27.8)	6 (11.1)	33 (61.1)
Total	416	298 (71.6)	28 (6.7)	90 (21.6)

III. Age Distribution



~ Summary of Cardio-Vascular Division ~

I . Number of Operations and Surgical Mortality

	No. OP.	No. Cases	OP. mortality (%)	Hosp. mortality (%)
<u>Cardiac</u>				
Valvular	180	180	0	1 #2
(redo)	(15)	(15)	0	0
Ischemic	69	69	0	0
(redo)	(1)	(1)	0	0
Congenital	17	17	0	0
Others	41	41	0	1 #1
<u>Vascular</u>				
Thoracic aorta	76	75	1 #4	3 #3, 4, 5
(TEVAR)	(22)	(21)	0	0
(redo)	(4)	(4)	0	0
Abdominal aorta	52	52	2 #6,7	2 #6,7
(EVAR)	(27)	(27)	1#7	1#7
Peripheral artery	54	51	0	0

Concomitant Procedure

Valvular (only): 116 cases

Valvular + Thoracic aorta: 18 cases

CABG (only): 43 cases

Valvular + Congenital: 1 case

Congenital (only): 13 cases

Valvular + Others: 20 cases

Others (only): 16 cases

CABG + Thoracic aorta: 1 case

Thoracic aorta (only): 63 cases

CABG + Others: 3 cases

Valvular + CABG: 16 cases

Valvular + Thoracic aorta + CABG: 3 cases

Valvular + Congenital + Others: 2 cases

Valvular + + CABG + Others: 4 cases

II . Valvular Heart Disease

	No. OP.	No. Cases	OP mortality	Hosp. mortality
Aortic *	112	112	0	1 #2
Mitral	41	41	0	0
Tricuspid	5	5	0	0
Pulmonary	1	1	0	0

Combined				
A+M *	11	11	0	0
M+T	11	11	0	0
A+M+T *	1	1	0	0
A+T *	0	0	0	0
Total	182	182	0	1 (0.5)

*: AVR 53, Bentall 4, Reimplantation only 3, Reimplantation +AVP 3, AVP only 2, Total Root Remodeling +AVP 7, TAVI-TF 38, TS-TAVI 1

a) Mitral valve disease

Diagnosis

MR	MS / MSR	Total	MVR (%)	Repair (%)
56	6	62	12 (19.4)	50 (80.6)

b) Mitral valve repair

Etiology

Congenital	Infectious	Degenerative	Rheumatic	Ischemic	Tethering	Others
0	5	37	0	3	3	2

Post ope. follow up

Jet area	Intra. Op. n = 50	Follow(~12M), n = 61
non to trivial (0-2cm ²)	45	40
Mild (2-4cm ²)	4	8

mild to moderate, (4-8cm ²)	1	1
moderate to severe, (8cm ² -)	0	1

c) Valve substitutes implanted

	Mechanical	Tissue	Total
AVR	11	93 (39*)	104(39*)
MVR	4	8	12
TVR	0	0	0
PVR	0	1	1
Total	15	102(39*)	117(39*)

*TAVI

d) Minimally invasive cardiac surgery

Procedures	No. Op.
MP*	24 (0)
MVR**	5 (3)
AVR	1
ASD/PFO	7
TP	1
MIDCAB	0
LA mass/ thrombus	1
Total	39 (3)

() redo

*) MP isolated (\pm Maze, LAAP) 22

MP+TAP (\pm Maze, LAAP) 2

***) MVR isolated (\pm Maze, LAAP) 5

MVR+TAP 0

LAAP: LA Appendage plication

III. Ischemic heart disease

	Total	Isolated CABG	Op. Mortality	Hosp. Mortality
SVD	19	8	0	0
DVD	15	7	0	0
TVD	29	16	0	0
LMT	6	4	0	0
Total	69	35	0	0

Conventional CABG: 51 cases

Off pump CABG: 10 cases

On pump beating CABG: 8 cases

a) Conduit 2.2 / patient

	ITA	SVG	Cases
SVD	14	5	19
DVD	15	16	15
TVD	33	52	29
LMT	6	9	6
Total	68	82	150 / 69 cases

b) Anastomoses (Distal site) 2.2 / patient

No. Anastomoses	No. Cases (%)
1	20 (29.0)
2	17 (24.6)
3	30 (43.5)
4	2 (2.9)
Total Cases	69
Total anast.	152

b') Anastomoses by OPCAB

1.6 / patient

No. Anastomoses	No. Cases (%)
1	5 (50.0)
2	4 (40.0)
3	1 (10.0)
Total Cases	10
Total anast.	16

c) Anastomoses

No. Anastomoses	1	2	3	4	No. OP.
SVD	18	1	0	0	19
DVD	1	11	3	0	15
TVD	1	2	24	2	29
LMT	0	3	3	0	6
Total cases	20	17	30	2	69
Total anast.	20	34	90	8	152

d) Graft patency

	No. of grafts	Examined	Patent	Patency Rate (%)
<u>Artery</u>	68	66	66	100
LITA	60	58	58	100
RITA	8	8	8	100
<u>SVG</u>	82	72	70	97.2
Total	150	138	136	98.6

IV. Congenital heart disease

	No. Cases	No. OP.	OP. mortality	Hosp. mortality
ASD/PFO	14	14	0	0
VSD	2	2	0	0
PDA	1	1	0	0
Total	17	17	0	0

V. Others

	No. OP.	No. Cases	OP. mortality	Hosp. mortality
Cardiac tumor	2	2	0	0
Thrombus/ CAT	2	2	0	0
Surgical ventricular repair (VSP)	3	3	0	0
VAS implantation	1	1	0	0
Bleeding (LV rupture)	2	2	0	0
Pericardiectomy	2	2	0	0
Morrow / Myectomy	8	8	0	0
LAAP	13	13	0	0
Atrial Fibrillation Surgery	19	19	0	0
Pulmonary endarterectomy	0	0	0	0
Other	1	1	0	0
Total	53	53	0	0

VI. Maze operation

	Device	SR recover / Total cases
Full Maze*, n = 0	cryo-ICE	0
LA Maze**, n = 17	cryo-ICE	10 / 17 (58.8)
PV isolation only, n = 2	Atri-cure (Clamp type)	0 / 2 (0)
Total, n = 19		10 / 19 (52.6)

* PVI + mitral isthmus ablation + RA Maze, ** PVI + mitral isthmus ablation

VII. VAD

	No. OP.	No. Cases	OP. mortality	Hosp. mortality
HeartMate III	1	1	0	0
Total	1	1	0	0

VIII. Vascular disease

a) Replacement site (Thoracic)

	No. OP.	No. Cases	OP. mortality (%)	Hosp. mortality (%)
Root	20	20	1 ^{#5}	1 ^{#5}
Ascending aorta	11	11	0	1 ^{#3}
Hemiarch	1	1	0	0
Total arch	23	23	0	1 ^{#4}
Descending aorta	23	23	0	0
(Stent graft)	(20)	(20)	(0)	(0)
Thoracoabdominal aorta	7	7	0	0
(Stent graft)	(0)	(0)	(0)	(0)
Total	85	85	1 (1.2)	3 (3.5)

b) Classification of Thoracic aorta

	No. Cases	Hosp. mortality
<u>Dissection</u>		
Acute	27	3
I	20	2 ^{#4.5}
II	3	1 ^{#3}
IIIa	2	0
IIIb	2	0
Chronic	10	0
IIIa	3	0
IIIb	7	0
<u>True</u>	49	0
Root	6	0
Ascending	5	0
Arch	18	0
Descending	14	0
Thoracoabdominal	6	0

Operation method	
Root replacement	29
Bentall	5
Reimplantation	8
Total Root Remodeling	8
Bentall + Ascending	1
Bentall + TAR	1
Reimplantation + TAR	4
Bentall + TAR + OSG	1
Reimplantation + TAR + OSG	1
Ascending aorta replacement	13
Hemiarch replacement	1
Total arch replacement (TAR)	12
TAR + OSG	8
Descending aorta replacement	4
Thoracoabdominal aorta replacement	7
TEVAR	18
Debranch TEVAR	3

c) Classification of Abdominal aorta, peripheral artery

	No. OP.	No. Cases	OP. mortality (%)	Hosp. mortality (%)
Abdominal aorta	52	52	1 ^{#6}	1 ^{#6}
(Stent graft)	(26)	(26)	1 ^{#7}	1 ^{#7}
Peripheral artery	54	51	0	0
Total	106	103	2 (1.9)	2 (1.9)

	No. Cases	Hosp. mortality	Operation method	
<u>Abdominal aorta</u>	52	0		
AAA	49	2 ^{#6,7}	Graft replacement	25
Impending rupture	1	0	EVAR	26
Ruptured	6	2		
ASO	2	0		
Others	1	0		
<u>Peripheral artery</u>	54	0		
ASO	12	0	Thrombectomy	17
Acute arterial occlusion	16	0	Bypass grafting	12
Aneurysm	7	0	Plasty	11
Traumatic	3	0	Others	14
Others	16	0		

~ Summary of hospital death ~

No	Age	Gender	Dx	Ope date	Emergency	Risk factors	*1
			Operation procedures	POD (days)	Autopsy	Cause of death	*2
Cardiac: 2 cases							
1	78	F	VSP, AMI	3/31	Urgency	Cardiogenic shock, IABP	NA
			VSP closure, TAP	67	Not done	Pneumonia	NA
2	75	M	AIE	4/21	Urgency	Steroid user, RA, IP	65.9
			AVR	74	Not done	Ischemic colitis, Sepsis	70.0
Thoracic: 3 cases							
3	81	M	AAD	2/5	Emergency	Severe COPD, ASO, LC	33.6
			Ascending Ao repl	89	Not done	Pneumonia	68.0
4	68	F	AAD	6/25	Emergency	CRF, LC, SSc, Situs inversus	12.3
			TAR	42	Not done	Liver failure	46.8
5	84	M	AAD, AMI, LMT dissection	10/8	Emergency	AMI, High age	52.3
			Bentall, CABG-2 (Salvage)	11	Not done	Cardiogenic shock	65.2
Abdominal: case							
6	71	M	AAA rupture	3/1	Emergency	Shock	NA
			Grafting (Salvage)	0	Not done	Rupture	NA
7	70	M	AAA rupture	4/14	Emergency	Shock	NA
			EVAR	2	Not done	Shock, MOF	NA
Peripheral 0 case							

* 1 : Japan score 手術死亡 発生予測値

* 2 : Japan score 手術死亡+主要合併症 発生予測値

(主要合併症 : Stroke, Newly dialysis, Prolonged ventilation >24hrs, Deep sternal wound infection, Reoperation for bleeding)

Japan Score Ver.4 から算出。

各種データの解釈

- 1) OP mortality: 術後 30 日以内全死亡。Hospital mortality:術後院内全死亡。
- 2) Mode of Operation: 二つ以上のカテゴリーを含む手術は主病変と考えられるいずれかのカテゴリーに分類。
- 3) Number of Operations and Surgical : 各手術手技の延べ数を合算。
例:CABG+MP+As.Ao.置換→Ischemic, Valvular, Thoracic aorta のそれぞれに加算。
Bentall1,Reimplantation→ Valvular, Thoracic aorta のそれぞれに加算。
- 4) Valvular Heart Disease: 弁に対する操作を行った (付加手術の有無にかかわらず)症例数、手術数を計算。
- 5) Ischemic Heart Disease: CABG を行った (付加手術の有無にかかわらず)症例数を計算。
- 6) Vascular Disease: Bentall, Reimplantation は Replacement site を新たに Root に分類。ただし Reimplantation+Total Arch Replacement でも Root とする。(2013～)
- 7) Graft patency : 冠動脈 CT による評価が増加したため、分類を Patent, Stenosis (含:occlusion)とした。(2014～)
- 8) MVR 術後の perivalvular leakage 症例に対する修復術は術式を Repair とし、Etiology を Other とした。
- 9) 2016 年の TAVI 開始ともない、TAVI Transfemoral approach, Transapical approach のいずれも Cardiac, Valvular, Tissue valve としてカウントした。
- 10) TRR は Cardiac/Valve/Aortic に分類した。(2017～)
- 11) Number of Operations and Surgical (各手術手技の延べ数)における死亡率算出の対象から、心肺停止蘇生後や PCPS を要するような重症心不全症例、術中の予期しない冠動脈閉塞に対する追加バイパス術などの Salvage 手術を除外した。なお、Mode of Operation (主たる手術をカウント、重複なし)では従来通り全ての死亡症例を含んで算出した。(2019～)
- 12) Number of Operations and Surgical における死亡数の欄に死亡症例の通し番号を追記した。(2019～)