

# ***Annual Report of Cardiovascular Surgery 2023***

## ***Nagasaki University***

***2023.1.1 ~ 2023.12.31***

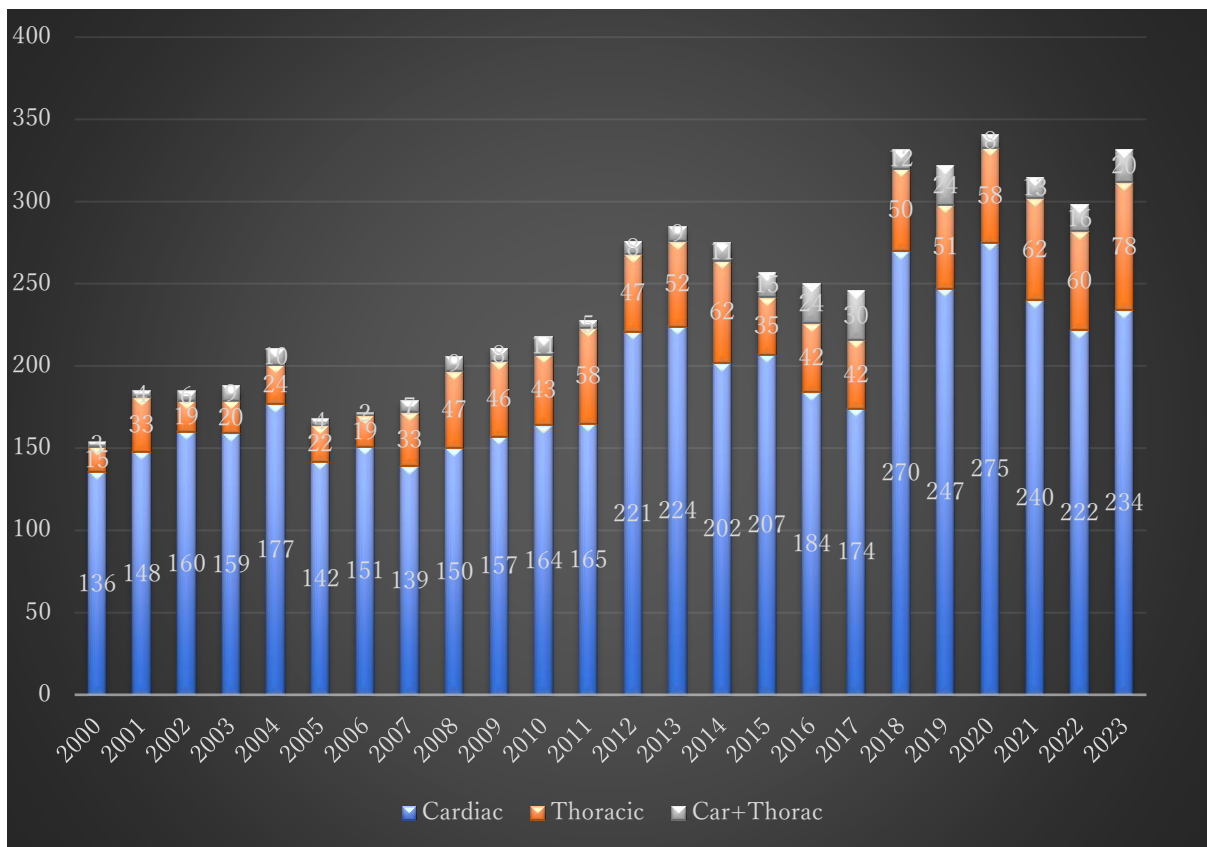
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~ Overall~

I . Number of Operations and Surgical mortality

Division	No. OP.	No. Cases	OP. mortality (%)	Hosp. mortality (%)
Cardiac	234 (58*)	230 (58*)	1 (0.4)	2 (0.9)
Car. + Thoracic	20	19	1 (5.0)	1(5.0)
Thoracic	78	76	1 (1.3)	2 (2.6)
<b>Total</b>	<b>332 (58*)</b>	<b>325 (58*)</b>	<b>3 (0.9)</b>	<b>5 (1.5)</b>
Abdominal aorta	44	44	0	0
Peripheral	38	38	0	0
<b>Total</b>	<b>414</b>	<b>407</b>	<b>3 (0.7)</b>	<b>5 (1.2)</b>

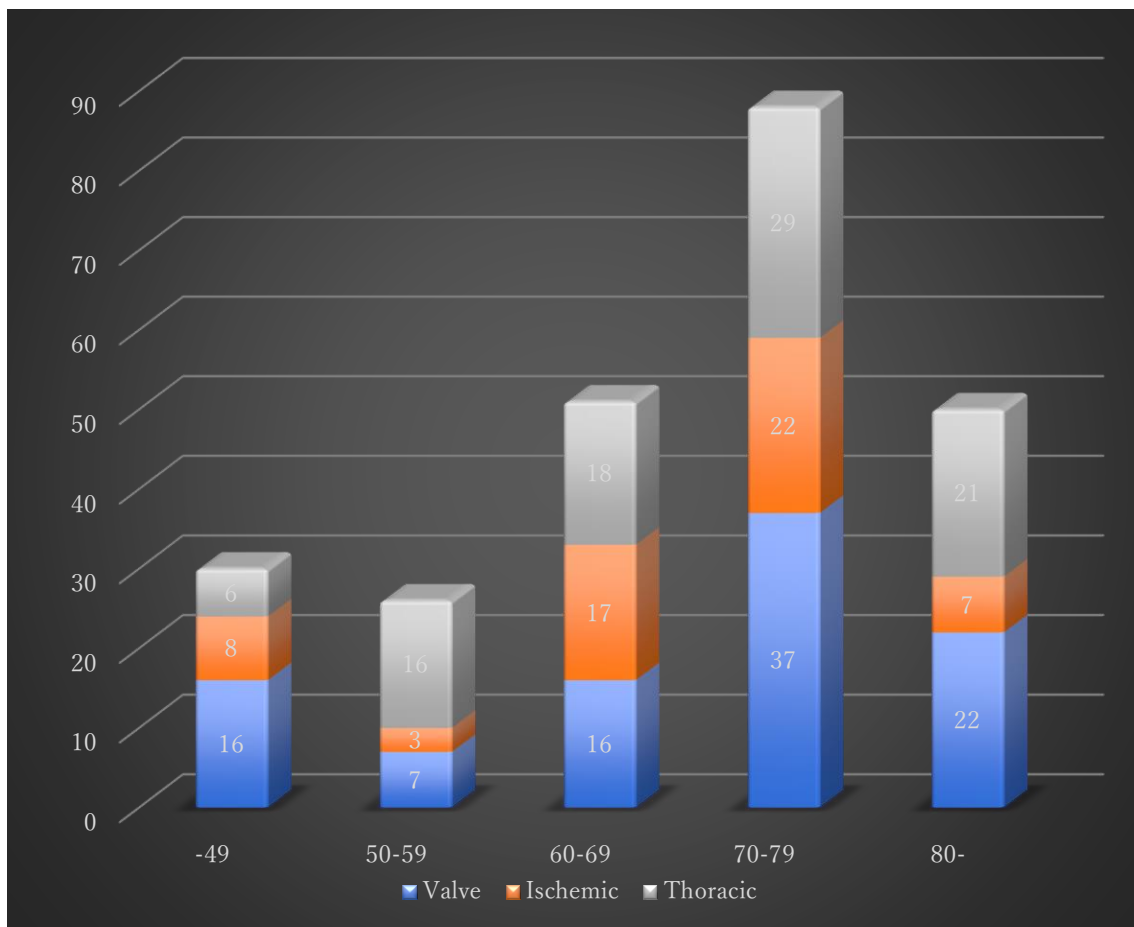
\*TAVI mainly performed by Cardiovascular medicine



## II. Mode of Operation

	Total	Scheduled (%)	Urgent (%)	Emergent (%)
Ischemic	57	50 (87.7)	4 (7.0)	3 (5.3)
Valvular	157	145 (92.4)	9 (5.8)	3 (1.9)
Congenital	5	5 (100)	0	0
Others	23	15 (65.2)	3 (13.0)	5 (21.7)
Thoracic aorta	90	44 (48.9)	8 (8.9)	38 (42.2)
Abdominal aorta	44	38 (86.4)	0	6 (13.6)
Peripheral artery	38	12 (32.4)	3 (8.1)	23 (59.5)
<b>Total</b>	<b>414</b>	<b>309 (74.6)</b>	<b>27 (6.5)</b>	<b>78 (18.8)</b>

## 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	174	174	0	0
(redo)	(11)	(11)	0	0
Ischemic	74	72	0	0
(redo)	(1)	(1)	0	0
Congenital	9	9	0	0
Others	50	49	0	2 #1, 2
<u>Vascular</u>				
Thoracic aorta	101	98	1 #4	3 #3, 4, 5
(TEVAR)	(19)	(19)	0	0
(redo)	(12)	(12)	0	0
Abdominal aorta	45	45	0	0
(EVAR)	(24)	(24)	0	0
Peripheral artery	40	40	0	0

Concomitant Procedure

Valvular (only): 118 cases

Valvular + Congenital: 0 case

CABG (only): 50 cases

Valvular + Others: 20 cases

Congenital (only): 4 cases

CABG + Thoracic aorta: 5 cases

Others (only): 19 cases

CABG + Others: 0 cases

Thoracic aorta (only): 66 cases

Thoracic Extra: 3 cases

Valvular + CABG: 16 cases

Congenital + Others: 1 case

Valvular + Thoracic aorta: 15 cases

Valvular + Thoracic aorta + CABG: 1 case

Valvular + Congenital + Others: 2 cases

Valvular + + CABG + Others: 2 cases

## II . Valvular Heart Disease

	No. OP.	No. Cases	OP mortality	Hosp. mortality
Aortic *	114	114	0	0
Mitral	30	30	0	0
Tricuspid	4	4	0	0
Pulmonary	1	1	0	0
-----				
Combined				
A+M *	10	10	0	0
M+T	11	11	0	0
A+M+T *	5	5	0	0
A+T *	1	1	0	0
Total	176	176	0	0

\*: AVR 49, Bentall 5, Reimplantation +AVP 7, Total Root Remodeling only 1, Total Root Remodeling +AVP 2, TAVI-TF 63

### a) Mitral valve disease

#### Diagnosis

MR	MS / MSR	Total	MVR (%)	Repair (%)
45	9	54	15 (28.3)	39 (71.7)

### b) Mitral valve repair

#### Etiology

Congenital	Infectious	Degenerative	Rheumatic	Ischemic	Tethering	Others
0	3	29	0	3	0	4

#### Post ope. follow up

Jet area	Intra. Op. n = 39	At discharge, n=39	Follow(~12M), n = 19
non to trivial (0-2cm <sup>2</sup> )	34	34	12
Mild (2-4cm <sup>2</sup> )	5	5	7
mild to moderate, (4-8cm <sup>2</sup> )	0	0	0
moderate to severe, (8cm <sup>2</sup> - )	0	0	0

c) Valve substitutes implanted

	Mechanical	Tissue	Total
AVR	17	100 (63*)	117 (63*)
MVR	1	14	15
TVR	0	0	0
PVR	0	1	1
Total	18	115 (63*)	133 (63*)

\*TAVI

d) Minimally invasive cardiac surgery

Procedures	No. Op.
MP*	19 (0)
MVR**	3 (1)
AVR	4
ASD/PFO	6
TP	2 (1)
MIDCAB	0
LA mass/ thrombus	5
Total	39 (2)

( ) redo

\*) MP isolated ( $\pm$ Maze, LAAP) 17

MP+TAP ( $\pm$ Maze, LAAP) 2

\*\*\*) MVR isolated ( $\pm$ Maze, LAAP) 2

MVR+TAP 1

LAAP: LA Appendage plication

### III. Ischemic heart disease

	Total	Isolated CABG	Op. Mortality	Hosp. Mortality
SVD	20	7	0	0
DVD	14	8	0	0
TVD	39	31	0	0
LMT	2	2	0	0
Total	75	48	0	0

Conventional CABG: 35 cases

Off pump CABG: 8 cases

On pump beating CABG: 32 cases.

a) Conduit 2.5 / patient

	ITA	SVG	Cases
SVD	9	12	20
DVD	21	10	14
TVD	56	70	39
LMT	4	2	2
Total	90	94	184 / 75 cases

b) Anastomoses (Distal site) 2.5 / patient

No. Anastomoses	No. Cases (%)
1	18 (24.0)
2	14(18.7)
3	32 (42.7)
4	10 (13.3)
5	1 (1.3)
Total Cases	75
Total anast.	187

## b') Anastomoses by OPCAB

1.5 / patient

No. Anastomoses	No. Cases (%)
1	4 (50.0)
2	4 (50.0)
3	0 (0)
Total Cases	8
Total anast.	12

## c) Anastomoses

No. Anastomoses	1	2	3	4	5	No. OP.
SVD	18	2	0	0	0	20
DVD	0	12	2	0	0	14
TVD	0	0	29	9	1	39
LMT	0	0	1	1	0	2
Total cases	18	14	32	10	1	75
Total anast.	18	28	96	40	5	187

## d) Graft patency

	No. of grafts	Examined	Patent	Patency Rate (%)
<u>Artery</u>	90	87	84	96.6
LITA	60	57	55	96.5
RITA	30	30	29	96.7
<u>SVG</u>	94	93	91	97.8
Total	184	180	175	97.2



#### IV. Congenital heart disease

	No. Cases	No. OP.	OP. mortality	Hosp. mortality
ASD/PFO	8	8	0	0
VSD	1	1	0	0
PDA	0	0	0	0
Total	9	9	0	0

#### V. Others

	No. OP.	No. Cases	OP. mortality	Hosp. mortality
Cardiac tumor	6	6	0	0
Thrombus/ CAT	4	4	0	0
Surgical ventricular repair (VSP)	3	3	1	1#1
VAS implantation	2	2	0	0
Bleeding (LV rupture)	3	3	0	0
Pericardiectomy	1	1	0	1#2
Morrow / Myectomy	7	7	0	0
LAAP	15	15	0	0
Atrial Fibrillation Surgery	15	15	0	0
Pulmonary endarterectomy	1	1	0	0
Other	3	3	0	0
Total	60	60	0	0

#### VI. Maze operation

	Device	SR recover / Total cases
Full Maze*, n = 1	cryo-ICE	1 / 1 (100)
LA Maze**, n = 14	cryo-ICE	10 / 14 (71.4)
PV isolation only, n = 0	-	0 / 0 (0)
Total, n = 15		11 / 15 (73.3)

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

VII. VAD

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	No. OP.	No. Cases	OP. mortality	Hosp. mortality
HeartMate III	2	2	0	0
Total	2	2	0	0

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VIII. Vascular disease

a) Replacement site (Thoracic)

	No. OP.	No. Cases	OP. mortality (%)	Hosp. mortality (%)
Root	10	10	0	0
Ascending aorta	20	20	0	0
Hemiarch	5	5	0	0
Total arch	42	42	2 #3,5	2 #3,5
Descending aorta	22	22	0	0
(Stent graft)	(18)	(18)	(0)	(0)
Thoracoabdominal aorta	5	5	1#4	1#4
(Stent graft)	(0)	(0)	(0)	(0)
Total	104	104	3 (2.9)	3 (2.9)

b) Classification of Thoracic aorta

	No. Cases	Hosp. mortality
<u>Dissection</u>		
Acute	44	2
I	36	1 #5
II	5	1 #3
IIIa	0	0
IIIb	3	0
Chronic	16	0
IIIa	0	0
IIIb	16	0
<u>True</u>	49	0
Root	8	0
Ascending	10	0
Arch	19	0
Descending	17	0
Thoracoabdominal	5	1#4

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Operation method	
Root replacement	16
Bentall	7
Isolated	3
+ Ascending	2
+ TAR	1
+ TAR + OSG	1
Reimplantation (David)	8
Isolated	6
+ Ascending	2
Total Root Remodeling (Sleeve)	1
+ TAR	1
Ascending aorta replacement	22
Hemiarch replacement	6
Total arch replacement (TAR)	23
+ Descending	1
+ OSG	14
Descending aorta replacement	5
Thoracoabdominal aorta replacement	5
TEVAR	15
Debranch TEVAR	4

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c) Classification of Abdominal aorta, peripheral artery

	No. OP.	No. Cases	OP. mortality (%)	Hosp. mortality (%)
Abdominal aorta	45	45	0	0
(Stent graft)	(24)	(24)	0	0
Peripheral artery	41	41	0	0
Total	86	86	0	0

	No. Cases	Hosp. mortality	Operation method	
<u>Abdominal aorta</u>	45	0		
AAA	45	0	Graft replacement	21
Impending rupture	1	0	EVAR	24
Ruptured	6	0		
ASO	0	0		
Others	0	0		
<u>Peripheral artery</u>		0		
ASO	8	0	Thrombectomy	12
Acute arterial occlusion	14	0	Bypass grafting	12
Aneurysm	10	0	Plasty	10
Traumatic	0	0	Others	6
Others	8	0		

~ Summary of hospital death ~

No	Age	Gender	Dx	Emergency	Risk factors	
			Operation procedures	POD (days)	Autopsy	Cause of death
1	74	M	VSP		Urgency	Cardiogenic shock, IABP, Intubation
			VSP closure	10	Not done	HF
2	67	M	Constrictive pericarditis		Elective	CRF on HD, Pneumonia
			Pericardiotomy	36	Not done	MOF
3	86	F	AADA, TAA		Emergency	Cardiac tamponade, CPA
			TAR (long EF), TEVAR	31	Not done	UTI, Sepsis
4	74	M	TAAA		Elective	p/o TEVAR, AAA grafting
			Grafting	0	Not done	Bleeding
5	56	M	AADA, AMI (LMT)		Emergency	Cardiogenic shock, ECMO
			TAR, CABG-1	2	Not done	Cerebral ischemia

\* 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～)