Annual Report of Cardiovascular Surgery 2019

Nagasaki University

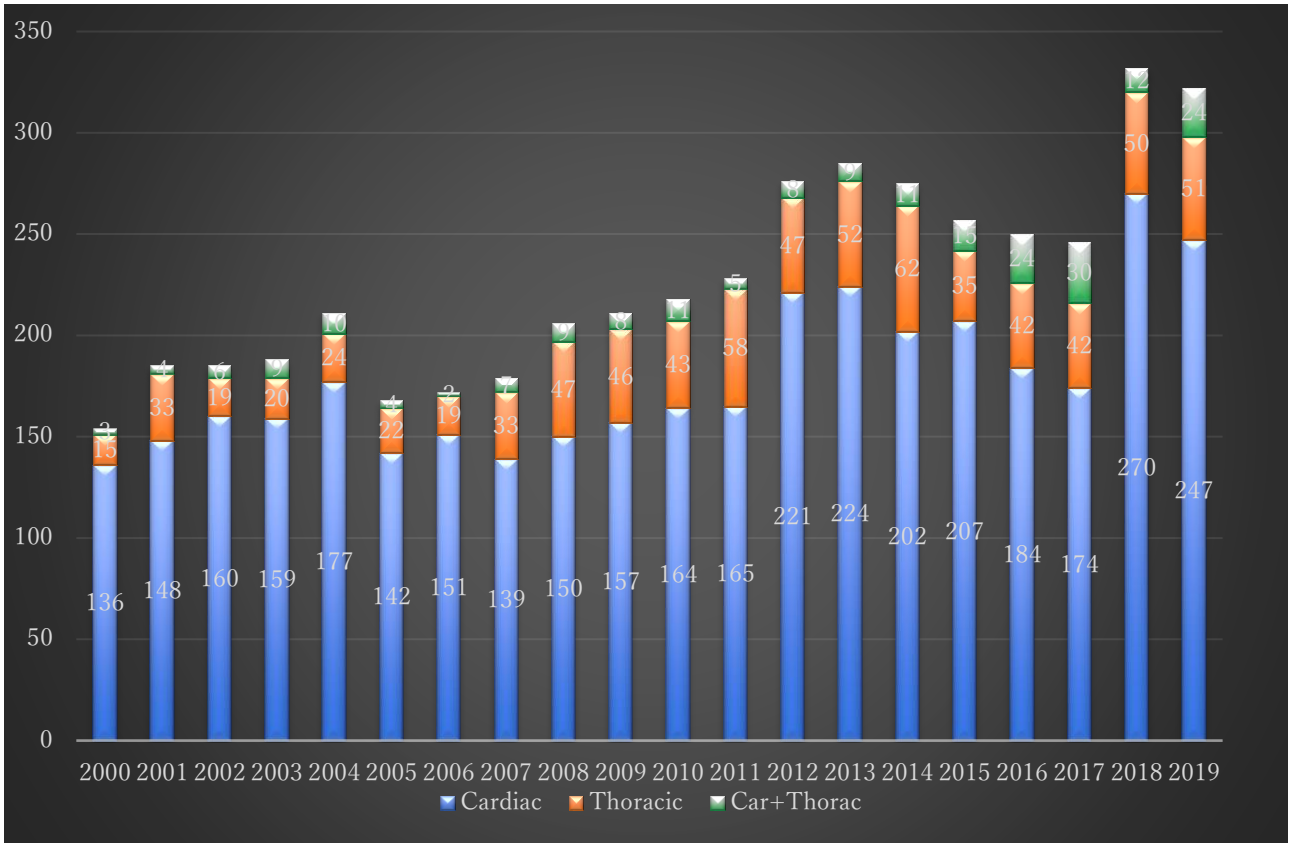
2019.1.1～2019.12.31

~ Overall~

Ⅰ. Number of Operations and Surgical mortality

Division	No. OP.	No. Cases	OP. mortality (%)	Hosp. mortality (%)
Cardiac	247 (41*)	245	7 (2.9)	9 (3.7)
Car. + Thoracic	24	23	1 (4.3)	1 (4.3)
Thoracic	51	50	0	2 (4.0)
Total	322 (41*)	318	8 (2.5)	12 (3.8)
Abdominal aorta	47	47	0	0
Peripheral	31	31	0	0
Total	400	396	8 (2.0)	12 (3.0)

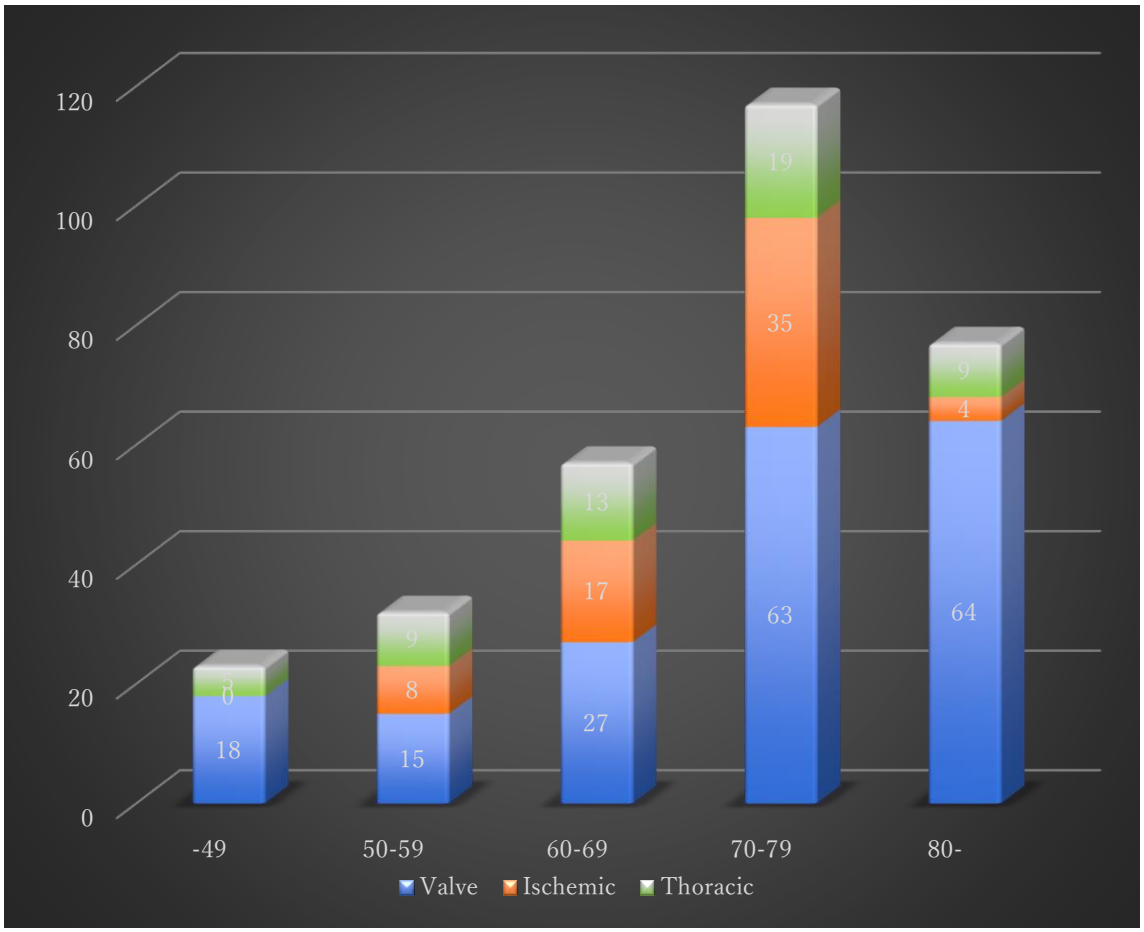
*TAVI



Ⅱ. Mode of Operation

	Total	Scheduled (%)	Urgent (%)	Emergent (%)
Ischemic	64	45 (70.3)	11 (17.2)	8 (12.5)
Valvular	187	170 (90.9)	10 (5.3)	7 (3.7)
Congenital	5	5 (100)	0	0
Others	12	6 (50.0)	3 (25.0)	3 (25.0)
Thoracic aorta	55	29 (52.7)	1 (1.8)	25 (45.4)
Abdominal aorta	46	39 (84.8)	2 (4.3)	5 (10.9)
Peripheral artery	31	13 (41.9)	2 (6.5)	16 (51.6)
Total	400	307 (76.8)	29 (7.3)	64 (16.0)

Ⅲ. Age Distribution



~ Summary of Cardio-Vascular Division ~

Ⅰ. Number of Operations and Surgical Mortality

	No. OP.	No. Cases	OP. mortality (%)	Hosp. mortality (%)
Cardiac				
Valvular	197	196	0	1 (0.5)
(redo)	(23)	(22)	0	0
Ischemic	75	74	2 (2.7)	4 (5.4)
(redo)	(1)	(1)	0	0
Congenital	5	5	0	0
Others	38	38	0	0
Vascular				
Thoracic aorta	76	75	1 (1.3)	3 (4.0)
(redo)	(7)	(7)	0	0
(Stent graft)	(16)	(16)	0	0
Abdominal aorta	47	47	0	0
(Stent graft)	(20)	(20)	0	0
Peripheral artery	32	32	0	0

Concomitant Procedure

Valvular (only): 135 cases

CABG (only): 57 cases

Congenital (only): 3 cases

Others (only): 10 cases

Thoracic aorta (only): 48 cases

Valvular + CABG: 14 cases

Valvular + Thoracic aorta: 22 cases

Valvular + Congenital: 1 case

Valvular + Others: 24 cases

CABG + Thoracic aorta: 3 cases

CABG + Others: 5 cases

Thoracic + Extra: 1 case

Congenital + Others: 1 case

Ⅱ. Valvular Heart Disease

	No. OP.	No. Cases	OP mortality	Hosp. mortality
Aortic *	114	114	1	1 #1
Mitral	48	47	0	0
Tricuspid	3	3	0	0
Pulmonary	3	3	0	0
Combined				
A+M *	8	8	0	0
M+T	19	19	1	1#4
A+M+T *	4	4	0	0
A+T *	2	2	0	0
Total	201	200	1 (0.5)	1 (0.5)

*: AVR 64, Bentall 1, Reimplantation only 3, Reimplantation +AVP 4, AVP only 5, Total Root Remodeling only 2, Total Root Remodeling +AVP 8, TAVI-TF 41

a) Mitral valve disease

Diagnosis

MR	MS	MSR	Total	MVR (%)	Repair (%)
67	5	3	75	14 (18.7)	61 (81.3)

b) Mitral valve repair

Etiology

Congenital	Infectious	Degenerative	Rheumatic	Ischemic	DCM
1	7	46	0	1	6

Post ope. follow up

Jet area	Intra. Op.	@ discharge	Follow(～12M)
non to trivial (0-2cm^2)	50	45	13
Mild (2-4cm^2)	11	14	7
mild to moderate, (4-8cm^2)	0	2	2*
moderate to severe, (8cm^2-)	0	0	0

* 1 case, re-do MVR, PO 3 month

c) Valve substitutes implanted

	Mechanical	Tissue	Total
AVR	16	91*	107*
MVR	6	7	13
TVR	0	1	1
PVR	0	1	1
Total	22	100	122

(TAVI: 41 cases)

d) Minimally invasive cardiac surgery

Procedures	No. Op.
MP*	32 (2)
MVR**	5 (2)
AVR	1
ASD/PFO	3
TP	1
MIDCAB	0
LA mass/ thrombus	1
Total	43

() redo

*) MP isolated 20
MP+TAP 0
MP + Maze 9
MP + TAP + Maze 1
MP+TAP+LAAP 1
MP + TAP + Maze + LAAP 1

**) MVR isolated 4
MVR+TAP 1

LAAP: LA Appendage plication

Ⅲ. Ischemic heart disease

	Total	Isolated CABG	Op. Mortality (%)	Hosp. Mortality (%)
SVD	12	3	0 / 0	1 (8.3) [#8]
DVD	19	13	0	0
TVD	28	25	1 (3.6)	2 (7.1) [#2, 7]
LMT	16	16	1 (6.3)	1 (6.3) [#9]
Total	75	57	2 (2.7)	4 (5.3)

Conventional CABG: 54 cases

Off pump CABG: 16 cases

On pump beating CABG: 9 cases

a) Conduit 178 (2.3 / patient)

	ITA	SVG	Cases
SVD	5	11	16
DVD	17	21	19
TVD	35	43	28
LMT	23	23	16
Total	80	198	178/79 cases

b) Anastomoses 183 (2.5 / patient)

No. Anastomoses	No. Cases (%)
1	15 (19.0)
2	21 (26.6)
3	35 (44.3)
4	6 (7.6)
5	2 (2.5)
Total Cases	79
Total anast.	196

b') Anastomoses by OPCAB 34 (2.1 / patient)

No. Anastomoses	No. Cases (%)
1	2 (12.5)
2	10 (62.5)
3	4 (25.0)
Total Cases	16
Total anast.	34

c) Anastomoses

No. Anastomoses	1	2	3	4	5	No. OP.
SVD	15	1	0	0	0	16
DVD	0	18	1	0	0	19
TVD	0	0	22	5	1	28
LMT	0	2	12	1	1	16
Total	15	21	35	6	2	79
Total anast.	15	42	105	24	10	196

d) Graft patency

	No. of grafts	Examined	Patent	Patency Rate (%)
SVG	103	89	82	92.1
Artery	86	79	78	98.7
LITA	66	60	60	100
RITA	20	19	18	94.7
Total	189	168	161	95.8

Ⅳ. Congenital heart disease

	No. Cases	No. OP.	OP. mortality (%)	Hosp. mortality (%)
ASD/PFO	4	4	0	0
VSD	1	1	0	0
Total	5	5	0	0

Ⅴ. Others

	No. OP.	No. Cases	OP. mortality (%)	Hosp. mortality (%)
Cardiac tumor	4	4	0	0
Thrombus/ CAT	2	2	0	0
Surgical ventricular repair	1	1	1 (100)	1 (100) [#5]
VAS implantation	2	2	0	0
Bleeding (LV rupture)	3	3	0	0
Pericardiectomy	1	1	0	0
Morrow / Myectomy	4	4	0	0
LAAP	5	5	0	0
Atrial Fibrillation Surgery	19	19	0	0
Pulmonary endarterectomy	1	1	0	0
Other	3	3	0	0
Total	45	45	1 (2.2)	1 (2.2)

Ⅵ. Maze operation

	Device	SR recover / Total cases
Full Maze*, n = 7	cryo-ICE	5/7 (71.4)
LA Maze**, n = 12	cryo-ICE	10/12 (83.3)
PV isolation only, n=0	Atri-cure (Clamp type)	0
Total, n = 19		15/19 (79.0)

* PV isolation + mitral isthmus ablation + RA Maze

** PV isolation + mitral isthmus ablation

Ⅶ. VAD

	No. OP.	No. Cases	OP. mortality (%)	Hosp. mortality (%)
Nipro LVAS	0	0	0	0
HeartMate Ⅱ	2	2	0	0
Total	2	2	0	0

Ⅷ. Vascular disease

a) Replacement site

	No. OP.	No. Cases	OP. mortality (%)	Hosp. mortality (%)
Thoracic				
Root	18	18	0	0
Ascending aorta	21	21	1 (4.8)	3 (14.3) [#10,11,12]
Hemiarch	1	1	0	0
Total arch	15	15	0	0
Descending aorta	20	20	0	0
(Stent graft)	(14)	(14)	(0)	(0)
Thoracoabdominal aorta	2	2	0	0
Total	77	77	1 (1.3)	3 (3.9)

	No. OP.	No. Cases	OP. mortality (%)	Hosp. mortality (%)
Abdominal aorta	47	47	0	0
(Stent graft)	(20)	(20)	0	0
Peripheral artery	32	32	0	0
Total	79	79	0	0

b) Classification of Thoracic aorta

	No. Cases	Hosp. mortality (%)
Dissection		
Acute	25	2 (8.0)

Ⅰ	19	2 (10.5) [#10,12]
Ⅱ	3	0
Ⅲa	2	0
Ⅲb	1	0
Chronic	9	1 (11.1) [#11]
Ⅰ	1	0
Ⅱ	3	1
Ⅲa	0	0
Ⅲb	5	0
True	53	0
Root	18	0
Ascending	8	0
Arch	9	0
Descending	17	0
Thoracoabdominal	2	0

Operation method	
Root replacement	18
Bentall	1
Reimplantation	7
Total Root Remodeling	10
Bentall + Ascending	0
Reimplantation + Ascending	1
Total Root Remodeling+ Ascending	2
Bentall + TAR	1
Reimplantation + TAR	0
Total Root Remodeling + TAR	1
Bentall + TAR+OSG	0

Reimplantation + TAR + OSG	0
Total Root Remodeling + TAR + OSG	0
Ascending aorta replacement	24
Hemiarch replacement	1
Total arch replacement (TAR)	8
TAR + OSG	6
TAR+ Descending aorta replacement	1
Descending aorta replacement	7
Thoracoabdominal aorta replacement	1
TEVAR	14
Debranch TEVAR	2

c) Classification of Abdominal aorta, peripheral artery

	No. Cases	Hosp. mortality (%)	Operation method	
Abdominal aorta	47	0		
AAA	46	0	Graft replacement	27
Impending rupture	1	0	Stent Graft	19
Ruptured	4	0		
ASO	0	0		
Others	1	0		
Peripheral artery	32	0		
ASO	8	0	Thrombectomy	9
Acute arterial occlusion	12	0	Bypass grafting	14
Aneurysm	2	0	Plasty	8
Traumatic	6	0	Resection	0
Others	4	0	Others	1

~ Summary of hospital death ~

No	Age	Gender	Dx	Ope date	Emergency	Risk factors	*1
			Operation procedures	POD (days)	Autopsy	Cause of death	*2
Cardiac 6 cases							
1	70	F	Severe AS, uAP,	1/31	Emergency	CRF on HD, cardiogenic shock, PCPS+ IABP	82.5
			AVR, CABG	23	Not done	Pneumonia, MOF	83.9
2	77	M	AMI, Anterior	2/2	Emergency	Cardiogenic shock, IABP	14.6
			On pump beating CABG-2	29	Not done	LOS（ECMO）	51.1
			Central ECMO				
3	71	M	uAP	2/7	Elective	CRF o HD, DM type 1, COPD, Bleeding	20.1
			On pump beating CABG-3	198	Not done	Respiratory failure	34.6
4	79	F	MR, TR	2/19	Elective	PMI	2.6
			MICS MP, TAP, LAAP	17	Not done	VF?	12.9
5	86	M	VSP, cardiogenic shock	4/24	Emergency	High age	39.2
			VSP closure	22	Not done	LOS, MOF	52.6
6	74	F	AMI, Anterior	8/6	Emergency	Cardiogenic shock, PCPS	3.5
			CABG-2	11	Not done	LOS, MOF	27.9
7	76	M	uAP, Cardiogenic shock	9/7	Urgency	ICM, OMI	24.5
			CABG-3	12	Not done	VT storm, PCPS	50.6
8	78	F	uAP	10/15	Elective	CRF on HD, frailty	7.9
			CABG-1 (OPCAB)	53	Not done	NOMI, Sepsis	28.1
9	77	M	uAP, AMI, Cardiogenic shock	11/10	Emergency		26.4
			CABG-3	21	Not done	LOS, PCPS	47.5
Thoracic 3 cases							
10	57	M	AAD, SMA Malperfusion	2/12	Emergency	Cardiogenic shock	14.2
			Ascending Aorta replacement	66	Not done	Bowel necrosis, MOF	50.6
11	74	M	Chronic aortic dissection	6/18	Elective	Redo (p/o AVR), low EF	8
			Ascending Aorta replacement	49	Not done	LOS, IABP dependent,	16.6

						MOF, Bowel necrosis	
12	51	F	AAD, AMI (RCA Malperfusion) Ascending Aorta replacement, CABG-1, PCPS	7/11 17	Emergency Not done	COPD, current smoker MOF, LOS, respiratory failure	22.5 58.0
Abdominal: 0 cases							
Peripheral 0 cases							

＊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）

基本的に Japan Score Ver.4 から算出。

各種データの解釈

1)OP mortality: 術後 30 日以内の全死亡。Hospital mortality:術後院内での全死亡。

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,Reimpantation→ 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 Reimpantation+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 手術を除外することとした。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通し番号を追記した。(2019～)