

# Antegrade selective cerebral perfusion in aortic arch surgery: how outcomes change comparing different Kazui's flow? A two-center analysis

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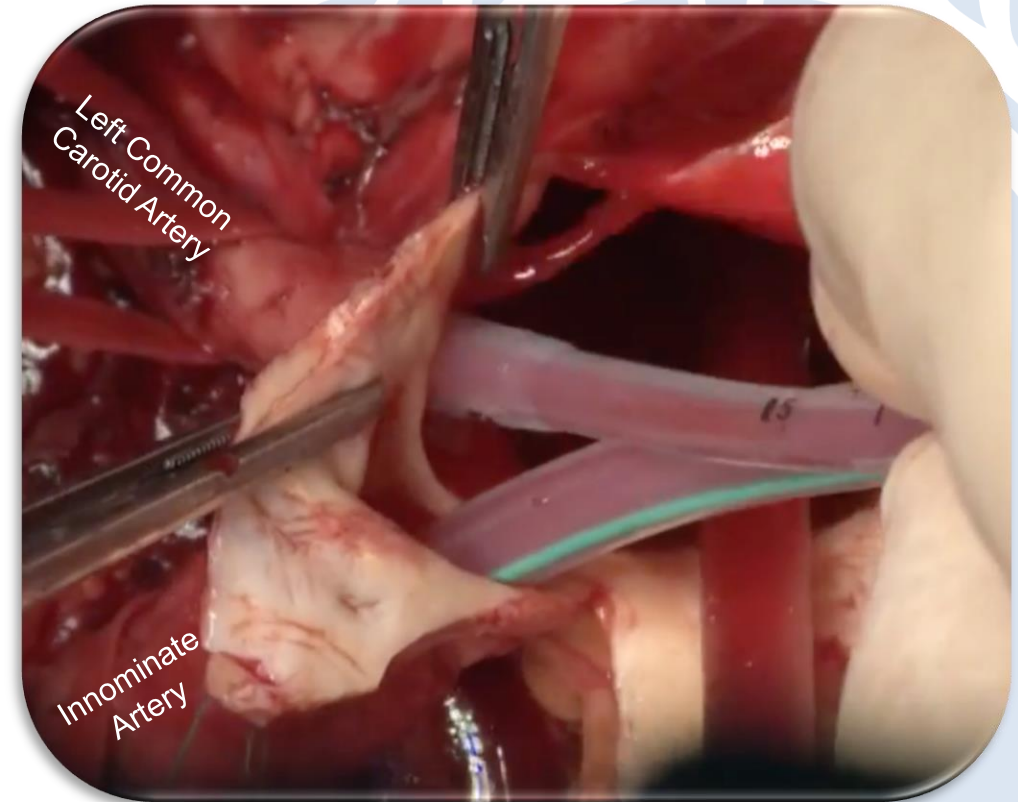
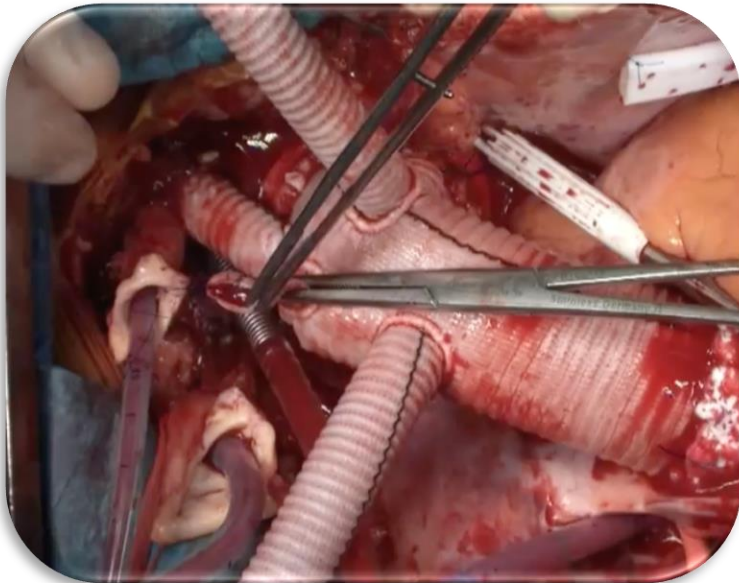
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# Objective

- **Background:**

Bilateral antegrade selective cerebral perfusion (ASCP) has been shown to be a useful strategy in aortic arch surgery for cerebral protection.



- **Aim** → To establish the relationship between ASCP average flow and cerebral damage, considering both transient (TND) and permanent (PND) neurological deficits

# Study Cohort

All aortic arch surgery from January 2015 to October 2023 at two aortic centers with available data for Kazui flow during ASCP n=712

Patients are divided into two groups according to the Kazui flow

Low Flow Group (LF): Flow < 10 ml/Kg/min  
n = 67

High Flow Group (HF): Flow  $\geq$  10 ml/Kg/min  
n = 652

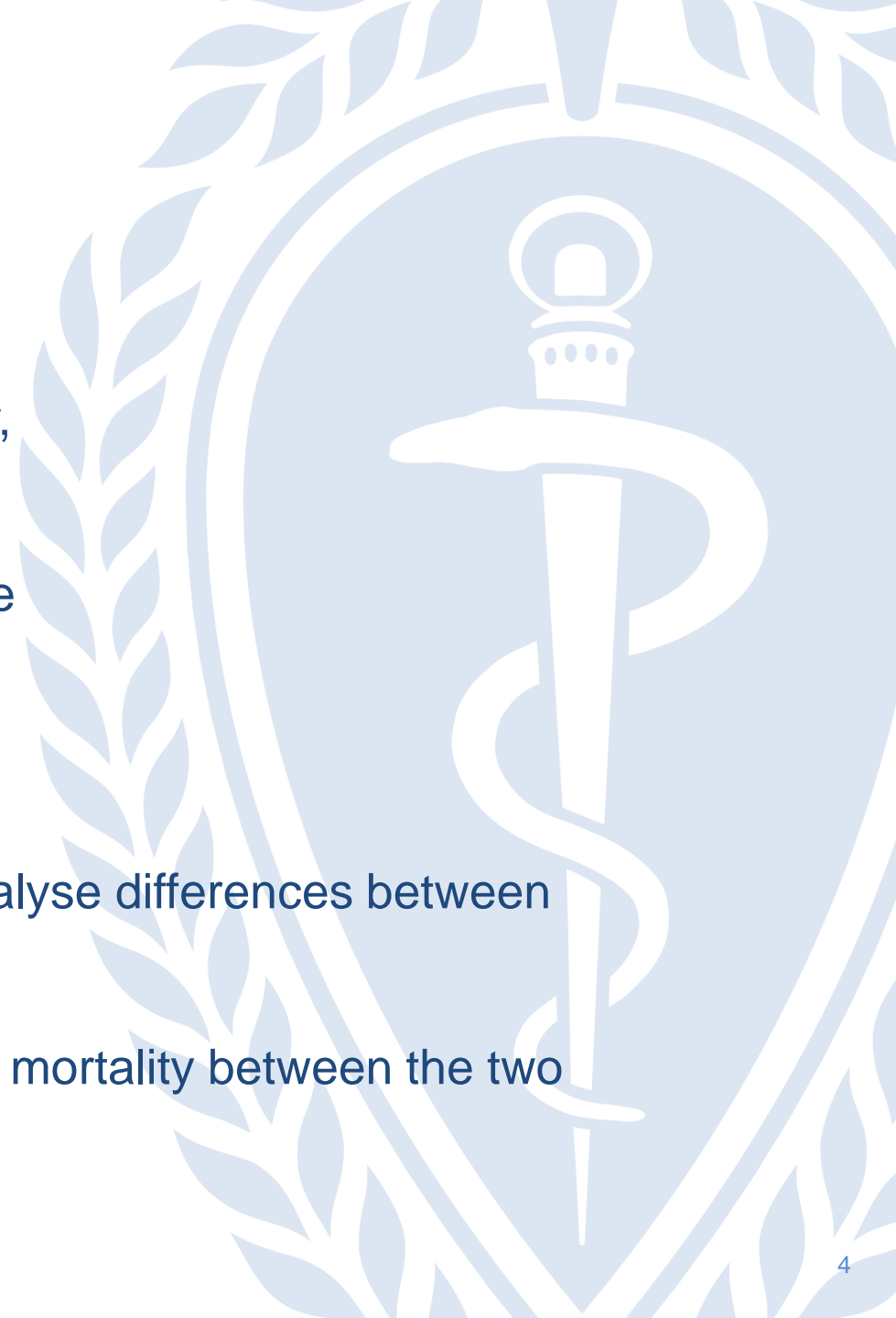
# Methods

- **Endpoints:**

Major postoperative outcomes included in-hospital mortality, temporary neurological deficit (TND), permanent neurological deficit (PND), hemorrhagic and ischemic stroke

- **Statistical Analysis:**

- Chi-square test and T-test have been employed to analyse differences between two groups
- Kaplan-Meier curves have been used to compare late mortality between the two groups



	LF n=67	HF n=645	p
<b>Demographic Characteristics</b>			
Age	62.4 ± 12.7	63.5 ± 12.5	0.612
Female sex	20 (29.9%)	201 (31.2%)	0.962
Bicuspid aortic valve	3 (4.5%)	67 (10.0%)	0.034
Hypertension	55 (82.1%)	465 (72.1%)	0.042
DM	10 (14.9%)	57 (8.8%)	0.118
CKD	6 (9.0%)	52 (8.1%)	0.827
CVD	7 (10.4%)	70 (10.9%)	0.819
Redo	10 (14.9%)	174 (27.0%)	0.010
<b>Aortic Pathology at Presentation</b>			
Aneurysm	18 (26.9%)	325 (50.4%)	<0.001
Acute TAAD	40 (59.7%)	226 (35.0%)	<0.001
Chronic TAAD	3 (4.5%)	9 (1.4%)	0.241
Acute TBAD	0	12 (1.9%)	0.001
Chronic TBAD	1 (1.5%)	11 (1.7%)	0.886
IMH	2 (3.0%)	28 (4.3%)	0.585
PAU	0	12 (1.9%)	0.001
Pseudoaneurysm	0	19 (2.9%)	<0.001

Values are reported as mean ± st.dev or number (percentage)

# Preoperative Characteristics

	LF n=67	HF n=645	<i>p</i>
<b><i>Aortic Replacement Extension</i></b>			
Hemiarch	28 (41.8%)	305 (47.3%)	0.467
One-head	2 (3.0%)	9 (1.4%)	0.326
Two-head	4 (6.0%)	41 (6.4%)	0.879
Three-head	32 (47.8%)	288 (44.7%)	0.705
ET	5 (7.5%)	37 (5.7%)	0.591
FET	16 (23.9%)	172 (26.7%)	0.577
<b><i>Intraoperative features</i></b>			
CPB time	228.3 ± 68.3	208.5 ± 65.4	0.034
ACC time	138.9 ± 52.2	131.5 ± 50.7	0.350
ASCP time	75.2 ± 53.1	64.1 ± 47.9	0.097
<b><i>Cannulation Site</i></b>			
Axillary Artery	8 (11.9%)	104 (16.1%)	0.302
Aorta	24 (35.8%)	196 (30.4%)	0.405
Femoral Artery	24 (35.8%)	142 (22.0%)	0.031
Innominate Artery	8 (11.9%)	163 (25.3%)	0.009
LCCA	4 (6.0%)	42 (6.5%)	0.841

*Values are reported as mean ± st.dev or number (percentage)*

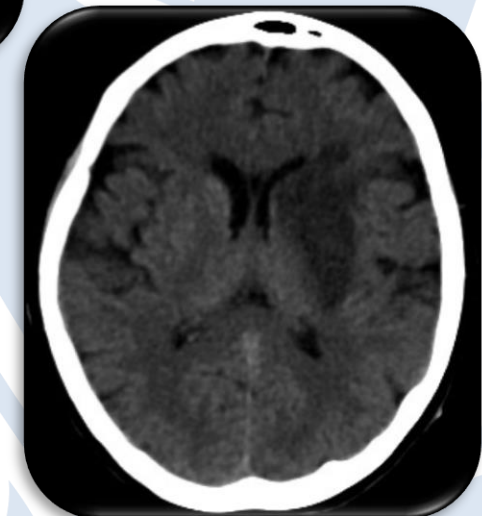


**Surgery**

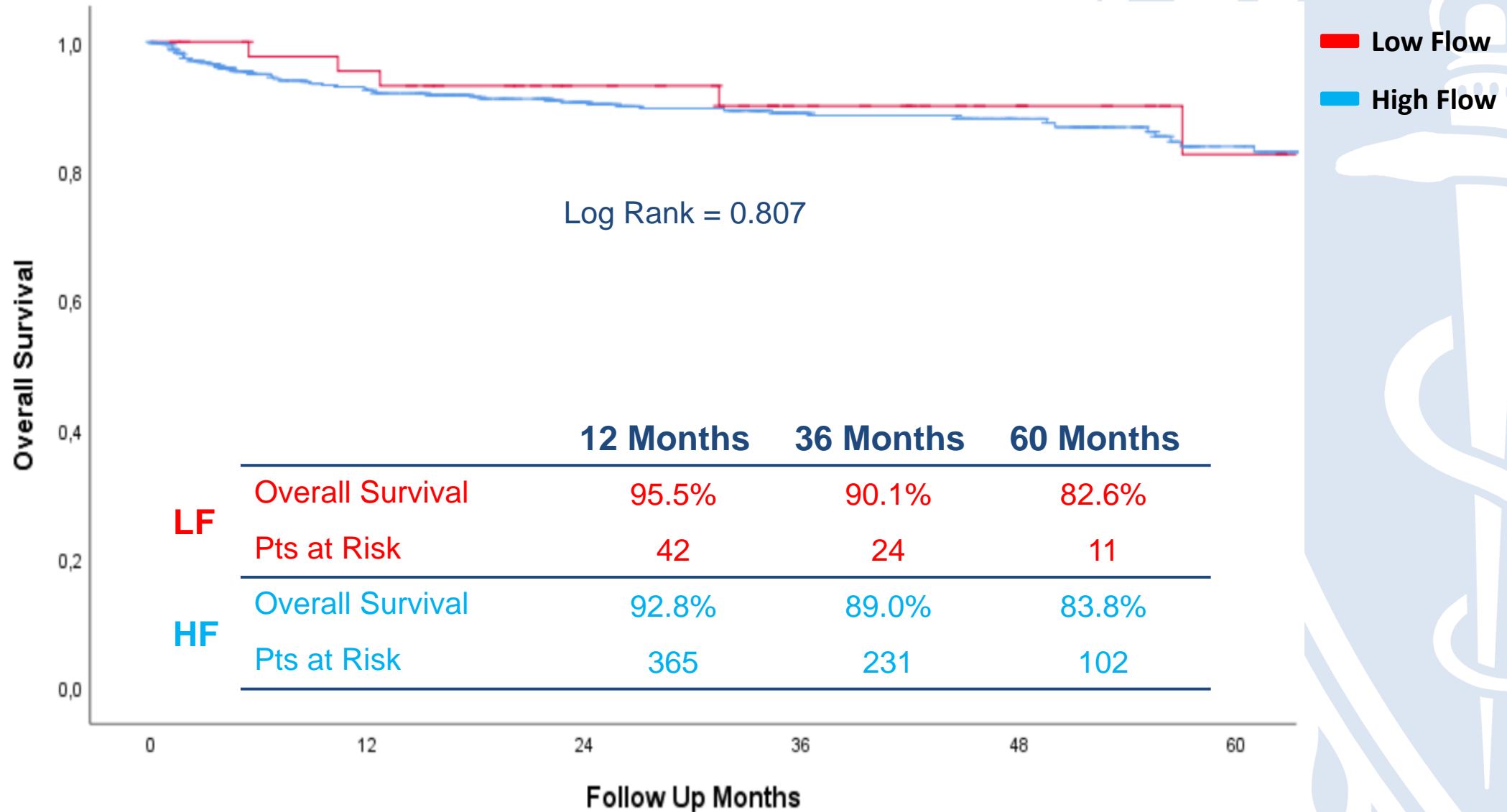
# Results I: Neurological Outcomes

	LF n=67	HF n=645	<i>p</i>
Stroke	5 (7.5%)	57 (8.8%)	0.680
<i>Ischemic</i>	4 (80.0%)	31 (54.4%)	0.697
<i>Hemorrhagic</i>	1 (20.0%)	24 (42.1%)	0.175
PND	6 (9.0%)	61 (9.5%)	0.865
TND	13 (19.4%)	96 (14.9%)	0.270

*Values are reported as number (percentage)*



# Results II: Survival Rates at 60 Months





# Conclusions

- **In aortic arch surgery utilizing ASCP no significant difference** has been detected in the incidence of permanent neurological defects (PND) and ischemic stroke in patients with **high or low Kazui flow**.
- **A trend toward a higher hemorrhagic stroke rate was observed in patients who received a higher flow**, instead, temporary neurological diseases were higher in low flow group.
- **Overall survival was comparable** between the two cohort of patients.