

2023 대한심장혈관흉부외과학회

제55차 추계학술대회 & APELSO 2023

2023. 11. 02 (Thu) - 11. 04 (Sat), 그랜드 인터컨티넨탈 파르나스 서울

Safety of Total Circulatory Arrest in Hemi-arch Replacement : Diffusion Weighted Magnetic Resonance Imaging study

공지사항

- 소속기관이나 저자명이 드러나지 않도록 해주세요.
- 제목 슬라이드 포함 최대 6장, Font size 20 이상
- **PPT 파일 작성 후 PDF로 전환해서 접수(필수)**



- The optimal cerebral protection strategy for aortic arch surgery is on debate.
- Total circulatory arrest (**TCA**) during distal anastomosis of **hemi-arch** replacement has both **advantages** and **concerns**.
 - **Advantages**: **Simple** and **intuitive** bypass circuit, **less time consuming**, May reduce embolic risk by **less manipulation on arch vessels**
 - **Concerns**: Risk of **hypoxic brain** damage, **tightness of surgical time**
- We sought to investigate **neurologic safety** of TCA by routine postoperative diffusion weighted magnetic resonance imaging (**DWI**)

- From Jan. 2019 through Aug. 2023

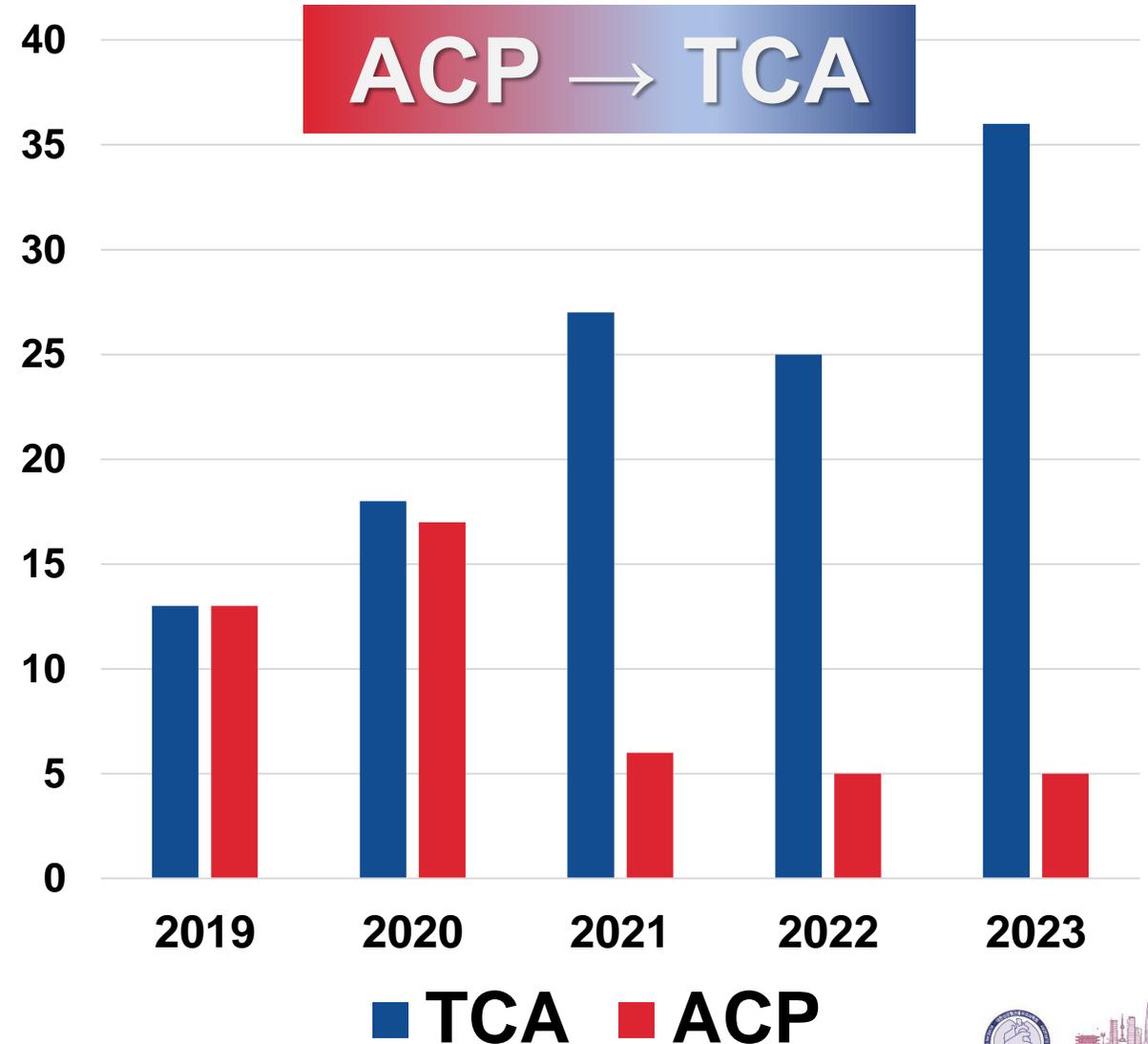
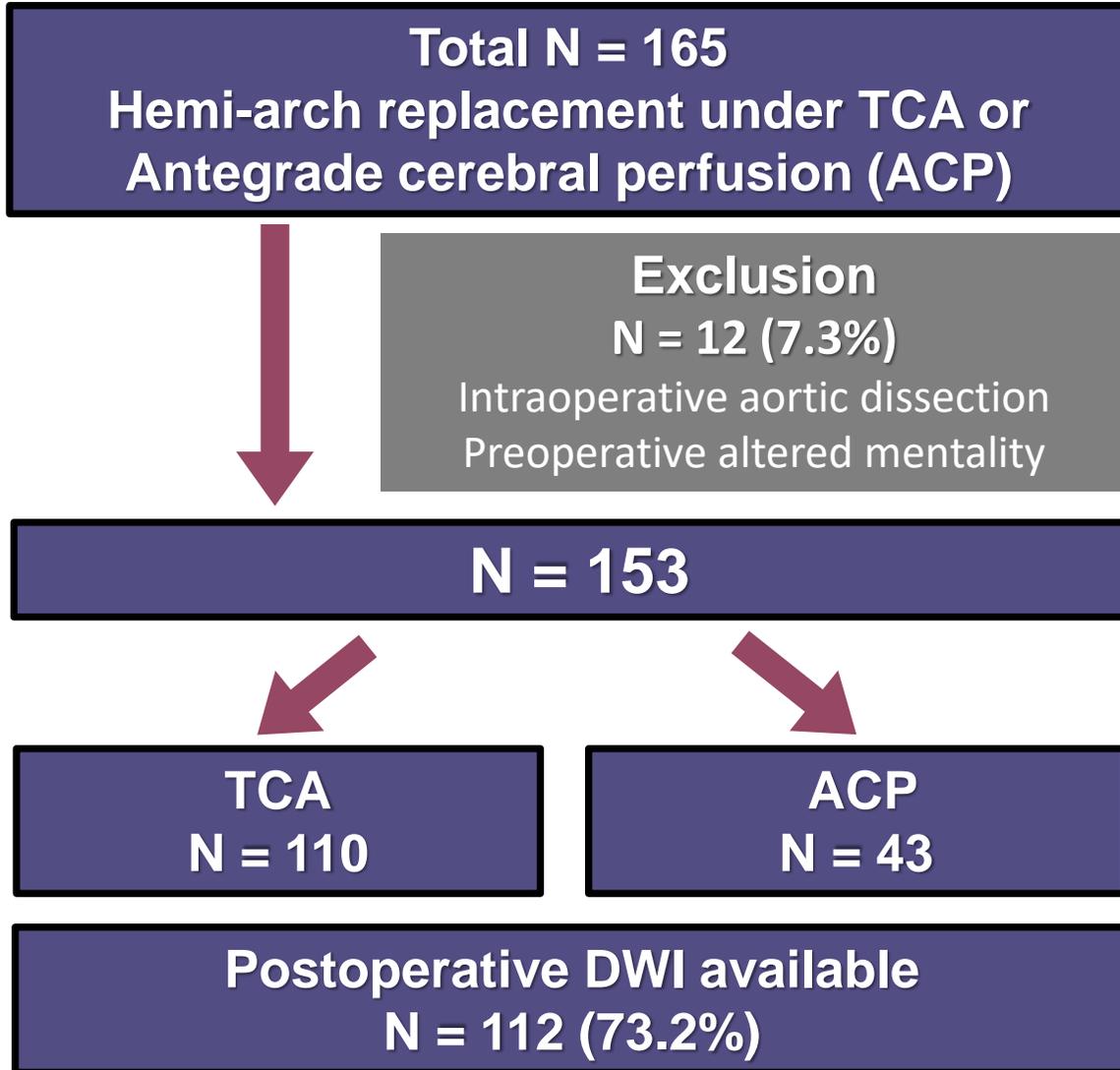


Table 1. Baseline profiles

n (%) or mean \pm SD	TCA (N = 110)	ACP (N = 43)	P-value
Age (year)	66.6 \pm 13.1	63.5 \pm 13.3	0.200
Female gender	59 (53.6)	15 (34.9)	0.057
Diabetes	18 (16.4)	5 (11.6)	0.675
Hypertension	72 (65.5)	28 (65.1)	0.331
Dyslipidemia	62 (56.4)	29 (67.4)	0.284
Prior CVA	13 (11.9)	6 (14.0)	0.925
CKD stage \geq 3	39 (35.5)	15 (34.9)	> 0.99
NYHA Functional class \geq 3	50 (45.5)	17 (39.5)	0.007
EuroSCORE II	15.6 \pm 20.4	8.8 \pm 13.1	0.044
LV ejection fraction (%)	58.2 \pm 9.6	56.1 \pm 10.1	0.313
Acute aortic dissection	46 (41.8)	23 (53.5)	0.261
Emergency or salvage	48 (43.6)	22 (51.2)	0.339
Preoperative CPR	9 (8.2)	0	0.121
Preoperative Aortic rupture	4 (3.6)	1 (2.3)	> 0.99

Table 2. Operative profiles

n (%) or median [IQR]	TCA (N = 110)	ACP (N = 43)	P-value
Operative procedures			
Hemi-arch only	42 (38.2)	23 (53.5)	0.124
David or Bentall	41 (37.3)	6 (14.0)	0.009
Mitral valve	1 (0.9)	1 (2.3)	> 0.99
Aortic valve	27 (24.5)	15 (34.9)	0.277
AF ablation	6 (5.5)	2 (4.7)	> 0.99
Other	4 (3.6)	2 (4.7)	> 0.99
Re-do operation	9 (8.2)	3 (7.0)	> 0.99
Minimally invasive access	22 (20.0)	10 (23.3)	0.823
TCA time (min)	18 [15, 21]	6 [4, 8]	< 0.001
ACP time (min)	0 [0, 0]	16 [13, 25]	< 0.001
Cardiopulmonary bypass (min)	104 [89, 125]	123 [109, 156]	0.001
Cardiac ischemic time (min)	79 [60, 101]	96 [77, 114]	0.013

Table 3. Early clinical outcomes

n (%) or median [IQR]	TCA (N = 110)	ACP (N = 43)	P-value
Clinical outcomes			
Re-exploration for bleeding	5 (4.5)	4 (9.3)	0.458
Need for ECMO	1 (0.9)	1 (2.3)	> 0.99
New onset dialysis	4 (3.6)	3 (7.0)	0.647
Mechanical Ventilation ≥ 24 hours	14 (12.7)	10 (23.3)	0.173
Early mortality	6 (5.5)	3 (7.0)	> 0.99
Without transfusion	19 (17.3)	6 (14.0)	0.798
Bleeding amount for 12 hours (ml)	467 [319, 700]	470 [335, 722]	0.985
Intensive care unit stay (hour)	25 [22, 46]	25 [22, 46]	0.977
Length of stay (day)	7 [6, 8]	7 [6, 9]	0.279

Table 4. Neurologic outcomes and postoperative DWI findings

n (%) or mean ± SD	TCA (N = 110)	ACP (N = 43)	P-value
All cohort			
Temporary neurologic deficit	10 (9.1)	7 (16.3)	0.324
Disabling stroke	2 (1.8)	1 (2.3)	> 0.99
Postoperative DWI available			
Incidence of watershed infarction	2 (2.4)**	2 (7.4)	0.524
Incidence of embolic infarction	52 (61.2)	17 (63.0)	> 0.99
Quantity of embolic infarctions	2.26 ± 3.62	4.67 ± 9.54	0.055

**Both cases were acute aortic dissection requiring preoperative CPR.

- **Hemi-arch** replacement under **TCA** showed acceptable **clinical & neurologic safety** compared with ACP
- **Asymptomatic embolic stroke** occurs in more than **60%** of patients in both groups as evaluated by **postoperative magnetic resonance imaging**
- The **quantity** of **embolic** infarctions tend to be **lower** in **TCA** group