

# The Challenge of Achieving Good Results in Complex Aortic Emergencies by New Faculty: In-depth Analysis of First 100 Consecutive Cases

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**Expedient, patient tailored strategy is crucial for improved outcomes in acute aortic syndrome (AAS). On top of establishing true lumen flow, in malperfusion, we need to enhance it too.**

# Objectives

- 1. To review the initial experience of a new faculty at a large aortic center, lessons learned**



# Study Overview

- 1. Study Period: January 13, 2022, to December 4, 2023**
- 2. Patients: 101 diagnosed with AAS underwent surgical repair by a single surgeon**



# **New Surgeon's Background**

- **Cardiothoracic residency at aortic center**
- **Additional aortic training for 6 months**
- **Begins independent practice**



# Patients

During the time period, 5 patients (all >87 yrs and at nursing homes/assisted living) were deemed unsuitable for surgery as they would not be able to tolerate sternotomy, 3 patients experienced mortality during hospital transfer, in transport.

Every other patient was taken for surgery in urgent fashion

Characteristics	N=101
Mean Age	62 years
Male	61
Average BMI	31
Hypertension	88
Recent drug use	7
CKD	11
Dialysis	2
Anti-thrombotic therapy	12

# Types of AAS

Type of AAS	Number of Patients
DeBakey Type 1	79
DeBakey Type 2	16
Intramural hematoma	3
Perforating ulcers in ascending aorta	2
Arch mycotic pseudoaneurysm	1

# Distribution of Entry Tears

Entry Tear Location	Number of Cases
Ascending aorta	52
Arch	36
Descending	8
Left subclavian artery	1
Femoral artery	1

# Clinical Presentation

Malperfusion	Number of Cases
Lower extremity	15
SMA obstruction	19
Complete occlusion of infrarenal aorta	2
Complete occlusion of Right carotid artery	4

Clinical Presentation	Number of Cases
Bloody bowel movements	2
Stroke	8
TIA	2
Intubation prior to transfer	10
Lower extremity paresis	16
Preoperative Pressors	5
Cardiac Arrest in OR	5

# Cannulation Techniques

## Guiding principles:

1. Reestablish true lumen flow in expedient fashion to stop or reduce malperfusion
2. Ensure, as possible, the true lumen flow to all vascular beds

Cannulation Techniques	Number of Patients
Direct aortic cannulation	93
Axillary (all redo)	6
Innominate	1
Modified Samurai cannulation	1



# Surgical Procedures

## Guiding principles:

1. Reestablish true lumen flow
2. Enhance the true lumen flow

Almost all malperfusion cases were resolved with central operation only, with use of FET, 10 or 15 cm in length

4 patients with occluded right carotid artery had viabahn stent placed at the time of innominate debranching at the level of bifurcation

Surgical Procedures	Number of Patients
Arch Procedures: Frozen Elephant Trunk (B-SAFER)	61
Arch Procedures: Zone 1	3
Arch Procedures: Zone 2	1
Arch Procedures: Total Arch	1
Hemiarch Replacement	34
Root Replacement: Biobentall	20
Root Replacement: Valve-Sparing	2
Root Replacement: Homograft	1

# Enhance the true lumen flow

**Frozen elephant trunk, to ensure maximal true lumen pressurization in distal thoracic and abdominal aorta**

**Use of head branch vessel stents on top of debranching in cases of complete occlusion**

**Most of the malperfusion can be resolved with central approach that will not only aim to reestablish but also maximally enhance true lumen flow**

# Outcomes

## Causes of death:

Hemorrhagic conversion of preoperative stroke in 80 yo

Liver failure due to celiac dissection and occlusion of hepatic artery

PEA arrest due to PA compression in 70 yo long time dialysis patient

Too strict postoperative blood pressure control in a chronic hypertensive patient with systolics in 200s

Outcomes	Number of Patients
Perioperative Deaths	4 (4%)
Strokes	4
Tracheostomy	9
Dialysis	5

About 50% of tracheostomies and dialysis were resolved during hospital stay

# Conclusions

- 1. On top of surgeon experience, cumulative institutional experience and teamwork contribute to good outcomes by a junior surgeon**
- 2. Multidisciplinary care and technical innovations enable safe operations on high-risk patients**