

# Intraoperative MAP, Vasopressors, and Opioids in TF-TAVR patients undergoing Conscious Sedation vs General Anesthesia

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## Introduction

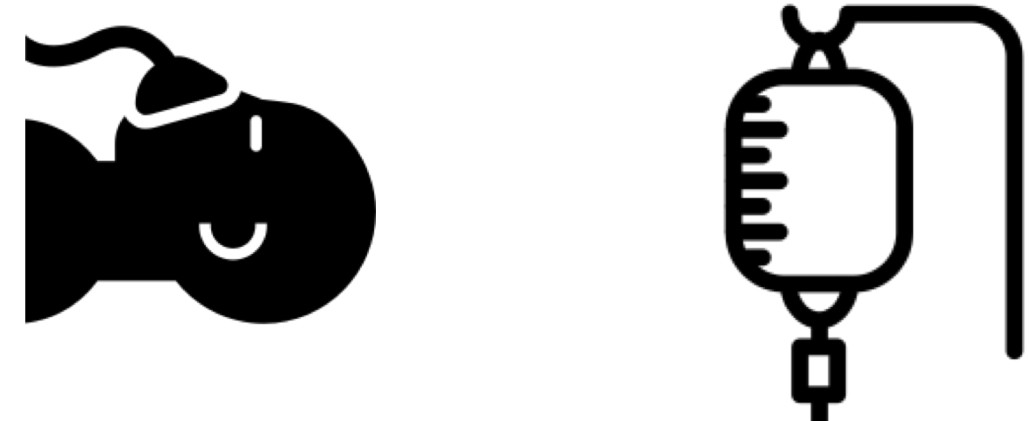
- Aortic Stenosis** is progressive narrowing of aortic valve due calcification and affects 1 in 8 persons over 75 years old.
- It can lead to syncope, heart failure, and death.
  - 20% five-year survival rate without valve replacement
- Treatment with transfemoral transcatheter aortic valve replacement (TF-TAVR)** has emerged as promising minimally invasive option for high-risk patients in the last 10 years.<sup>1</sup>
- General Anesthesia (GA) and intravenous conscious sedation (CS) are anesthetics for TF-TAVR.<sup>2-4</sup>
- Recent studies show benefits of a Fascia Iliaca Block with Minimal CS (FIB-MCS) compared to GA.**
  - shorter operating room time, shorter hospital length of stay, lower risk of 30-days re-hospitalization<sup>5, 6</sup>
- Rationale for beneficial effects of patients undergoing TF-TAVR with FIB-MCS has not been examined.**
- Correlations between mean arterial pressure (MAP) and organ damage with downstream cardiovascular events has been well established.<sup>7,8</sup>
- Non-cardiac and cardiac surgery have shown associations of blood pressure and its variability with increased 30-day mortality.<sup>9-11</sup>
- Opioid administration, especially long-acting opioids like fentanyl, may result in higher post-operative delirium in older adults.<sup>12</sup>
- Vasopressor use can cause ischemia, challenges with titration, and tachyphylaxis.<sup>13</sup>

## Aims and Objectives

To determine if intraoperative...

- mean arterial pressure (MAP) variability**
- total vasopressor administration**
- total opioid administration**

are different in General Anesthesia (GA) vs Fascia Iliaca Block + Minimal Conscious Sedation (FIB-MCS) for Transfemoral Transaortic Valve Replacement (TF-TAVR).



## Methods

### Study Design and Data Collection

- Single Center Retrospective Review of 285 patients with symptomatic severe aortic stenosis receiving TF-TAVR (2013-2017)
  - 216 Conscious Sedation, 69 General Anesthesia
  - Propensity Matched Cohort = 96 CS, 48 GA**

### Outcomes

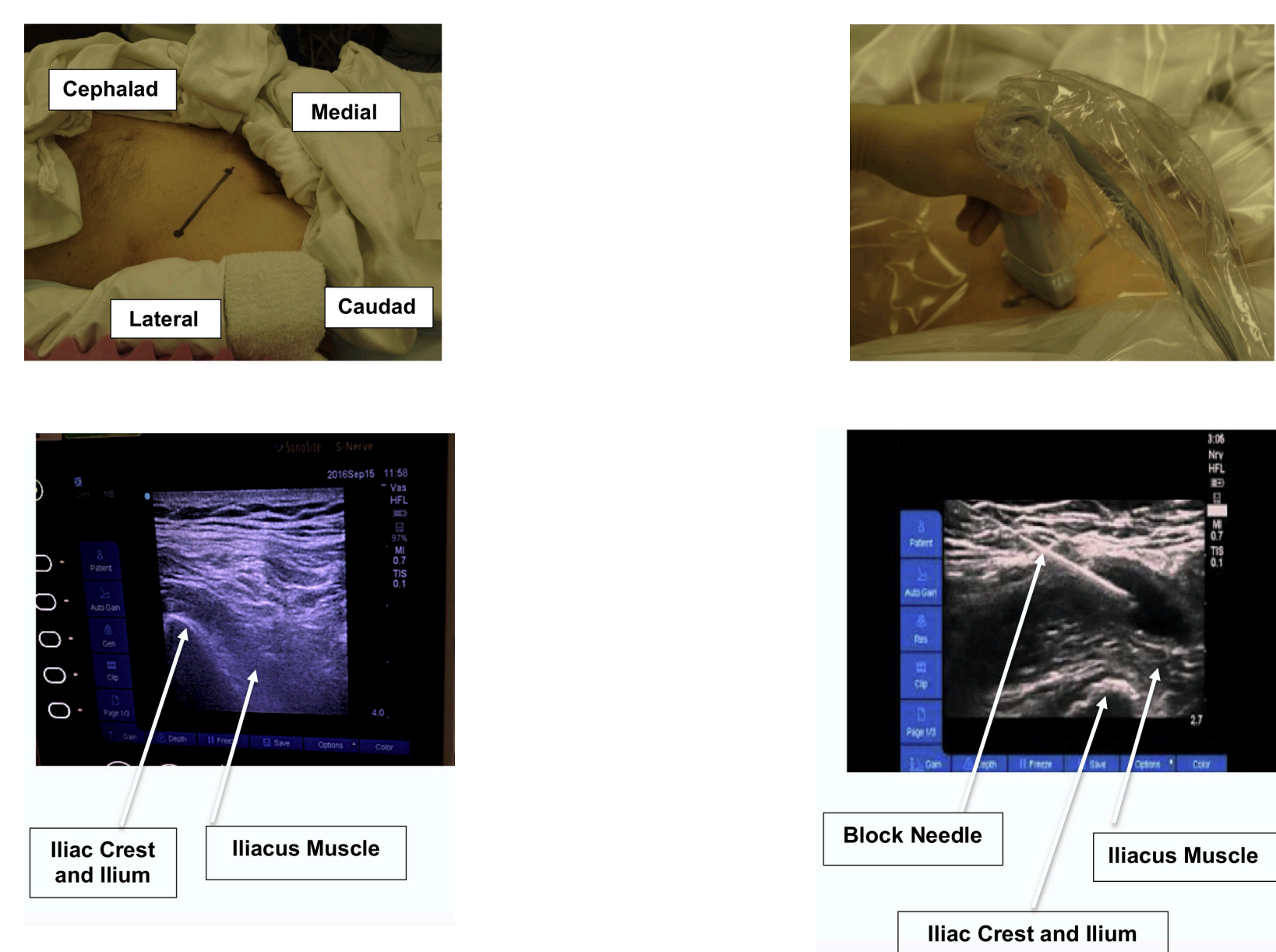
- Primary Outcomes:**
  - Intraoperative MAP, MAPV, TWA-MAP in FIB-MCS vs GA
- Secondary Outcomes:**
  - Intraoperative Opioids and Vasopressors

### Blood Pressure Variability

$$ARV = \frac{1}{N} \sum_{t=1}^{N-1} |BP_{t+1} - BP_t|$$

ARV = average real variability  
N = number of BP readings  
t = constant 1-minute time interval between each set of readings

### Fascia Iliaca Block Technique<sup>6</sup>



## Results

### Matched Cohort Baseline Demographics (n = 144)

Variable	Value
Age (years)	81.72 ± 8.49
BMI	28.67 ± 6.79
Male/Female	53.7%/46.3%
Hypertension	88.4%
Diabetes Mellitus	39.0%
Immunodeficiency	8.4%
Chronic Lung Disease	21.9%
Prior Atrial Fibrillation	40.1%
Prior Aortic Insufficiency	32.0%

## Results (continued)

### Matched Cohort Intraoperative Blood Pressure Variability

Variable	FIB-MCS (n = 96)	GA (n = 48)	p-value
MAP Average Real Variability (mmHg/min)	10.0±3.2	10.5±2.6	0.4
<b>MAP Time Weighted Average (mmHg)</b>	<b>89.4±11.8</b>	<b>85.0±7.0</b>	<b>0.006*</b>

### Matched Cohort Intraoperative Opioid and Vasopressor Administration

Drug	FIB-MCS (n=96)	GA (n=48)	p-value
<b>Fentanyl (mcg)</b>	<b>78.5±51.9</b>	<b>112.5±68.5</b>	<b>0.008*</b>
Ephedrine (mg)	16.4±12.8	20.6 (13.5)	0.3
Epinephrine (mcg)	709±800	976 (1,448)	0.8
Hydralazine (mg)	10.0±6.3	10.3 (5.2)	0.9
Labetalol (mg)	11.7±11.6	11.3 (6.9)	0.9
Norepinephrine (mcg)	286±446	381±321	0.7
Phenylephrine (mcg)	211±266	228±167	0.3

## Results Summary

### Conscious Sedation

Similar MAPV

**HIGHER TWA-MAP**  
89.4 mmHg

**LOWER Fentanyl (mcg)**  
78.5 mcg

Similar Vasopressor Administration

### General Anesthesia

Similar MAPV

**LOWER TWA-MAP**  
85 mmHg

**HIGHER Fentanyl**  
112.5 mcg

Similar Vasopressor Administration

## Discussion

- Benefits of ↓ Intraoperative Opioid administration**
  - Post-operative delirium, respiratory depression, nausea, vomiting<sup>12</sup>
- Benefits of ↑ Intraoperative TWA-MAP**
  - Lower 30-day mortality associated with ↑ Intraoperative TWA-MAP up to 90 mmHg<sup>11</sup>
- Next Steps:**
  - Multivariate analysis – intraoperative differences predictive of previous FIB-MCS benefits?
  - further exploration into other age demographics
  - larger sample size

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