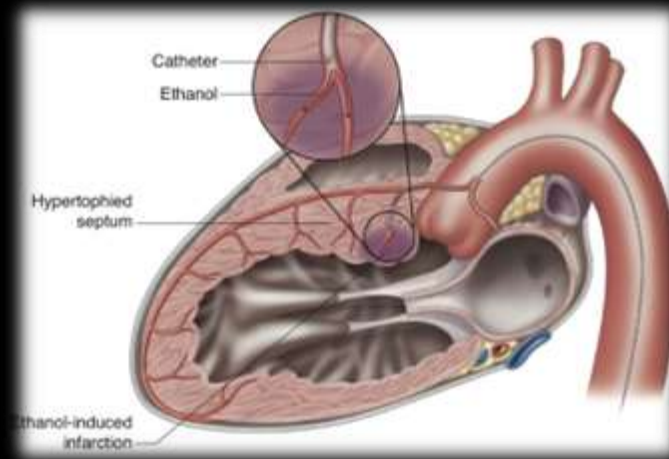


# Alcohol **S**epatal **A**blation

For Hypertrophic Obstructive Cardiomyopathy



*Presented by*

**Lasha Chantladze, MD**

**Head of Cath-Lab  
Tbilisi Institute of Medicine**



# Hyperthrophic Cardiomyopathy

E. Braunwald

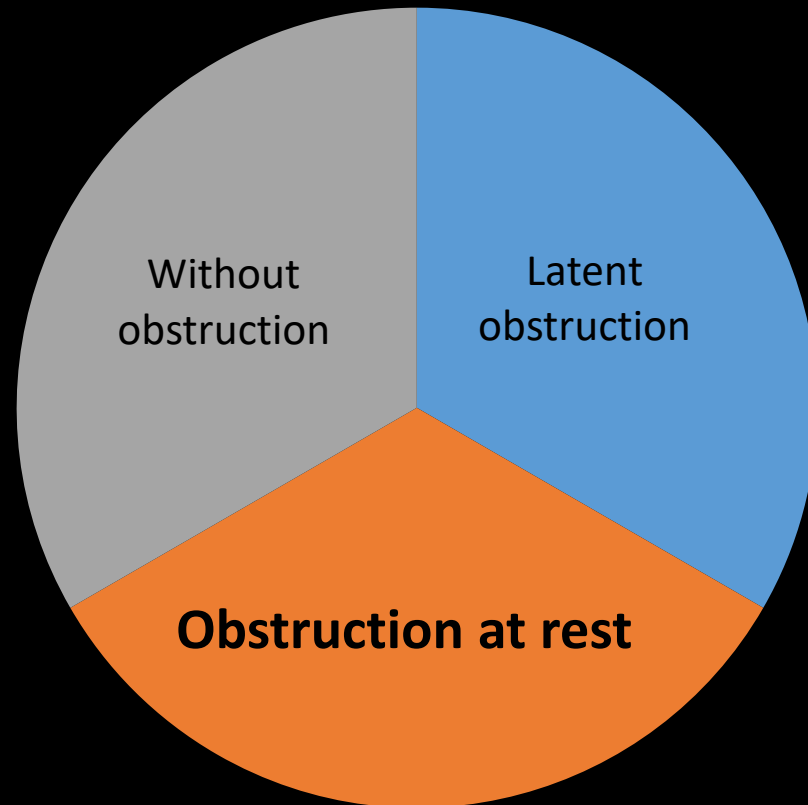
- **The most common congenital cardiac disease**
- **Is inherited in an autosomal dominant manner**
- **Prevalence in the general population 1:500**

## Definition (By ACC Expert Analysis)

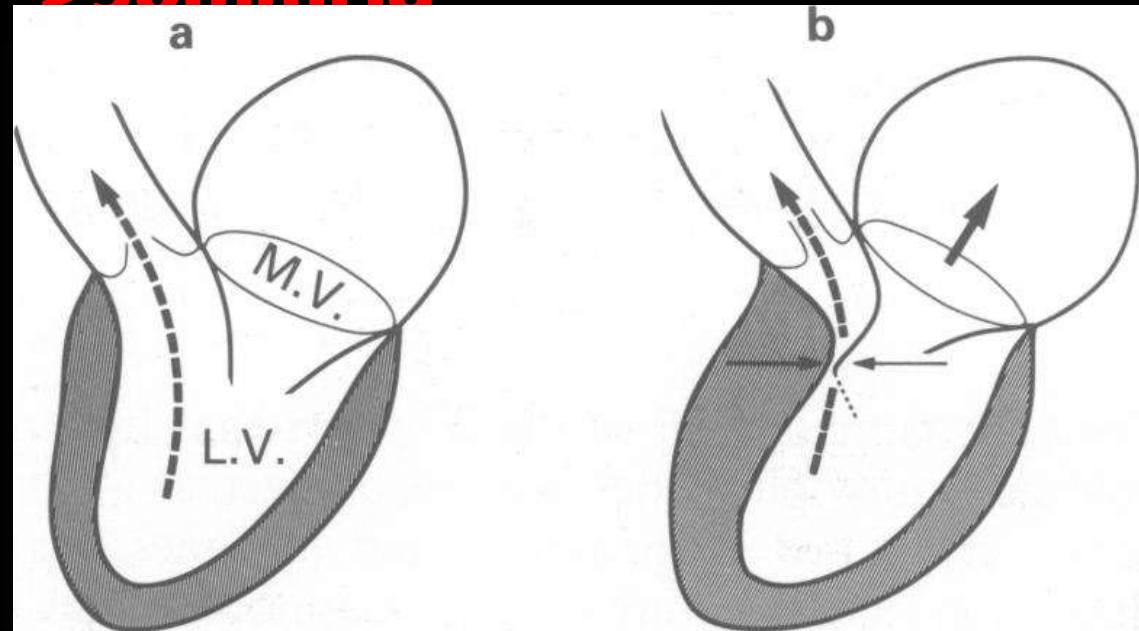
The diagnosis of HCM is confirmed with the presence of a left ventricular wallthickness of **≥15 mm** that is otherwise unexplained by abnormal loading conditions (e.g., hypertension, valvular, congenital disease) or infiltrative cardiomyopathies.



# Hyperthrophic Cardiomyopathy

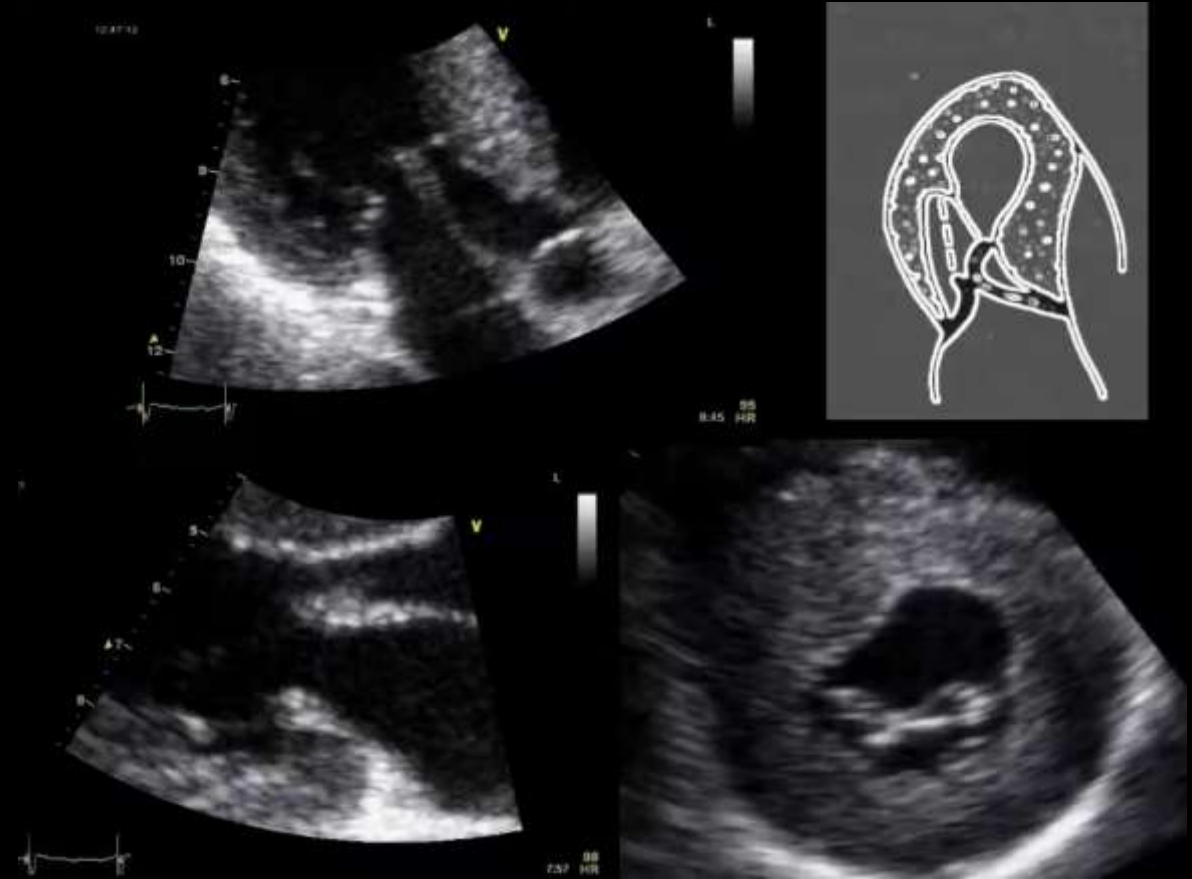


**Resting/provocable LVOT PG**  
**>50mmHg**



# Hyperthrophic Cardiomyopathy

## SAM – Systolic Anterior Motion



# Hyperthrophic Cardiomyopathy

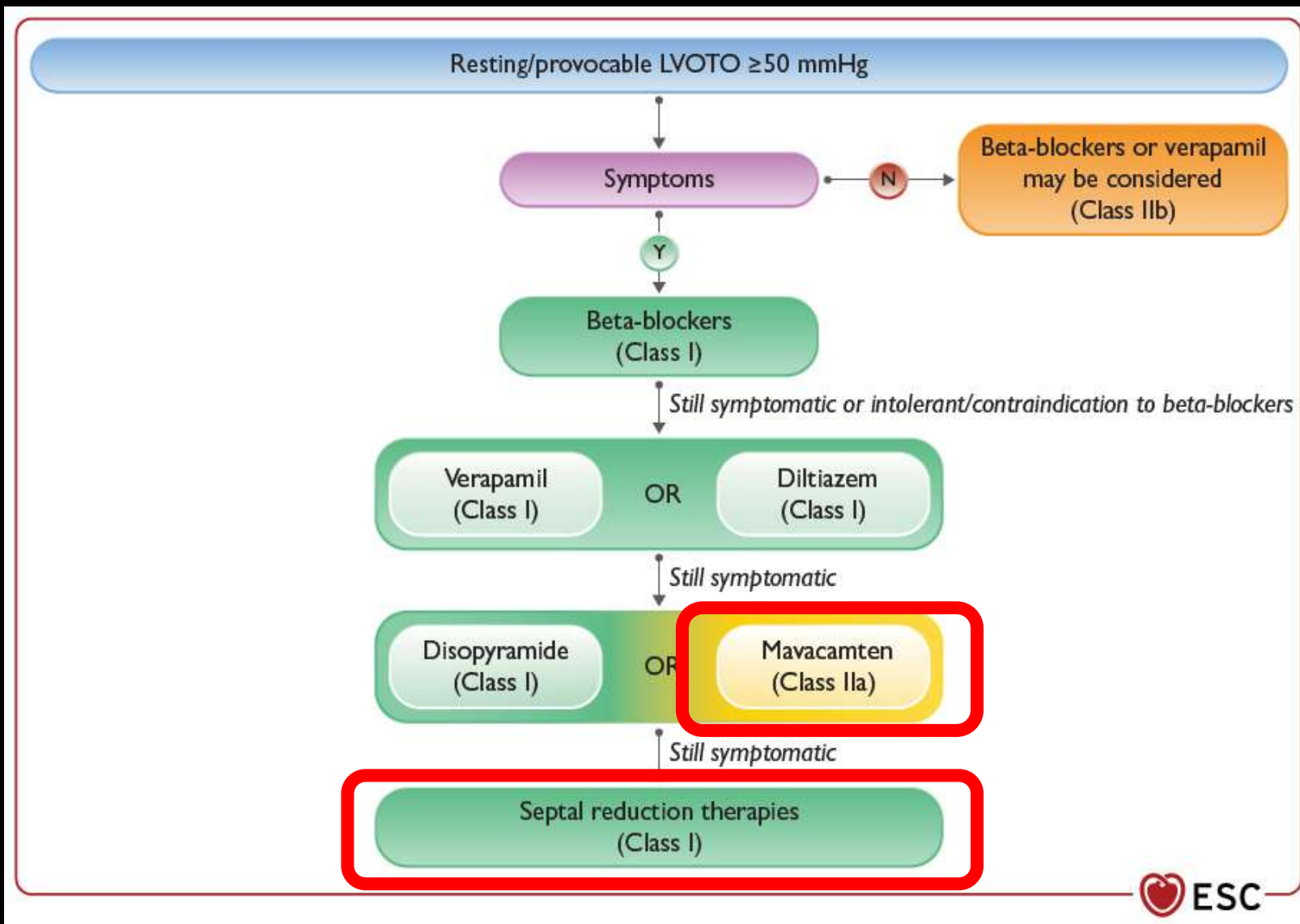
## Diagnostic methods

- 12 lead ECG
- TTE
- Cardiac MRI
- Genetic testing



# Hyperthrophic Cardiomyopathy

## Treatment





# SEPTAL REDUCTION THERAPY

## Targets for Invasive Septal Reduction Therapies

| Outcomes                                                                          | Rate (%) |                         |
|-----------------------------------------------------------------------------------|----------|-------------------------|
|                                                                                   | Myectomy | Alcohol Septal Ablation |
| 30-d mortality                                                                    | ≤1       | ≤1                      |
| 30-d adverse complications (tamponade, LAD dissection, infection, major bleeding) | ≤5       | ≤5                      |
| 30-d complete heart block resulting in need for permanent pacemaker               | ≤5       | ≤10                     |
| Mitral valve replacement within 1 y                                               | ≤5       |                         |
| More than moderate residual mitral regurgitation                                  | ≤5       | ≤5                      |
| Repeat procedure rate                                                             | ≤3       | ≤10                     |
| Symptomatic improvement (eg, ≥1 NYHA functional class)                            | >90      | >90                     |
| Rest and provoked LVOT gradient <50 mm Hg                                         | >90      | >90                     |

### AHA/ACC 2024

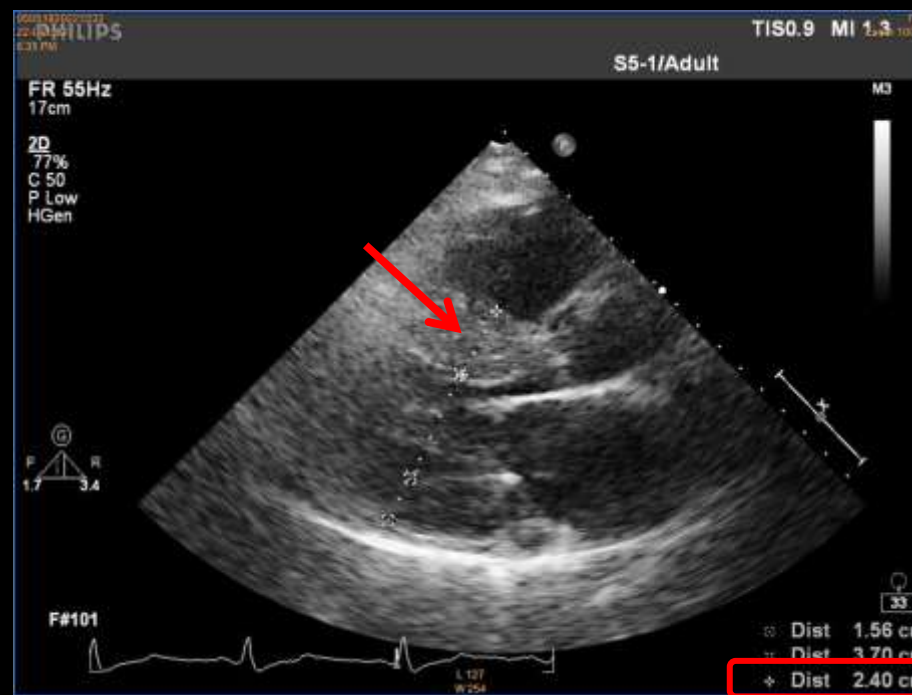
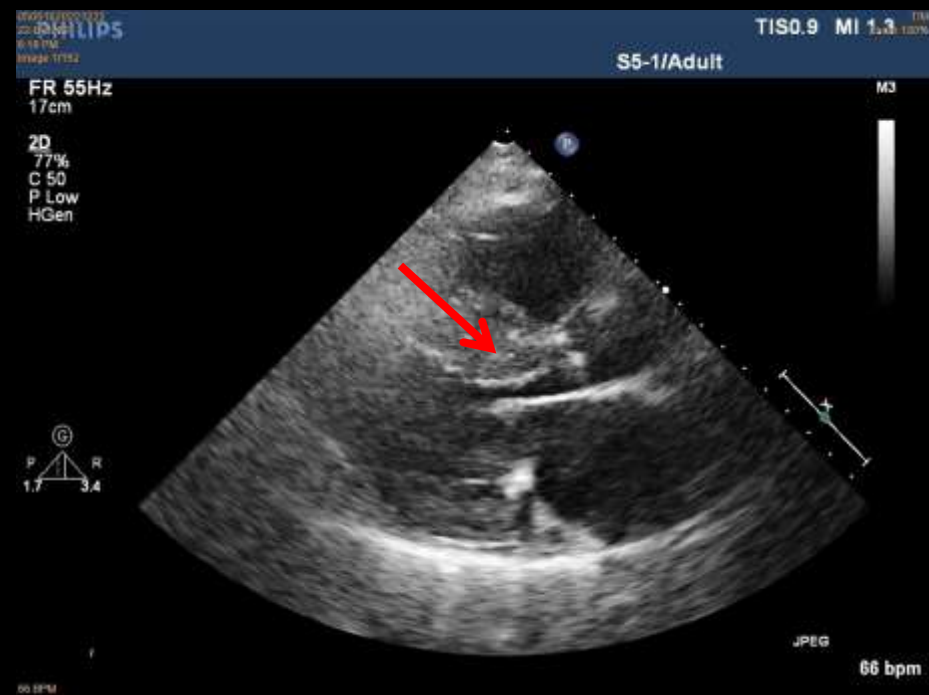
|   |      |                                                                                                                                                                                                                                                                                                                                                                |
|---|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | C-LD | 3. In adult patients with obstructive HCM who remain severely symptomatic, despite GDMT and in whom surgery is contraindicated or the risk is considered unacceptable because of serious comorbidities or advanced age, alcohol septal ablation in eligible patients,* performed at experienced HCM centers,† is recommended (Tables 4 and 5). <sup>8–10</sup> |
|---|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### ESC 2023

Septal myectomy, rather than ASA, is recommended in children with an indication for SRT, as well as in adult patients with an indication for SRT and other lesions requiring surgical intervention (e.g. mitral valve abnormalities).<sup>673</sup>

|   |   |
|---|---|
| I | C |
|---|---|

- 2023 ESC Guidelines for the management of cardiomyopathies European Heart Journal (2023) 44, 3503–3626  
<https://doi.org/10.1093/eurheartj/ehad194>
- 2024 AHA/ACC/AMSSM/HRS/PACES/SCMR Guideline for the Management of Hypertrophic Cardiomyopathy, Circulation. 2024;149:e1239–e1311. DOI: 10.1161/CIR.0000000000001250



76 y/o lady

- NYHA IV
- Severe HF
- Frequent hospitalisation
- Presyncope
- 200mg of Metoprolol p/d
- ICD implanted
- LVOT MaxPG=195mm/Hg
- IVS=24mm

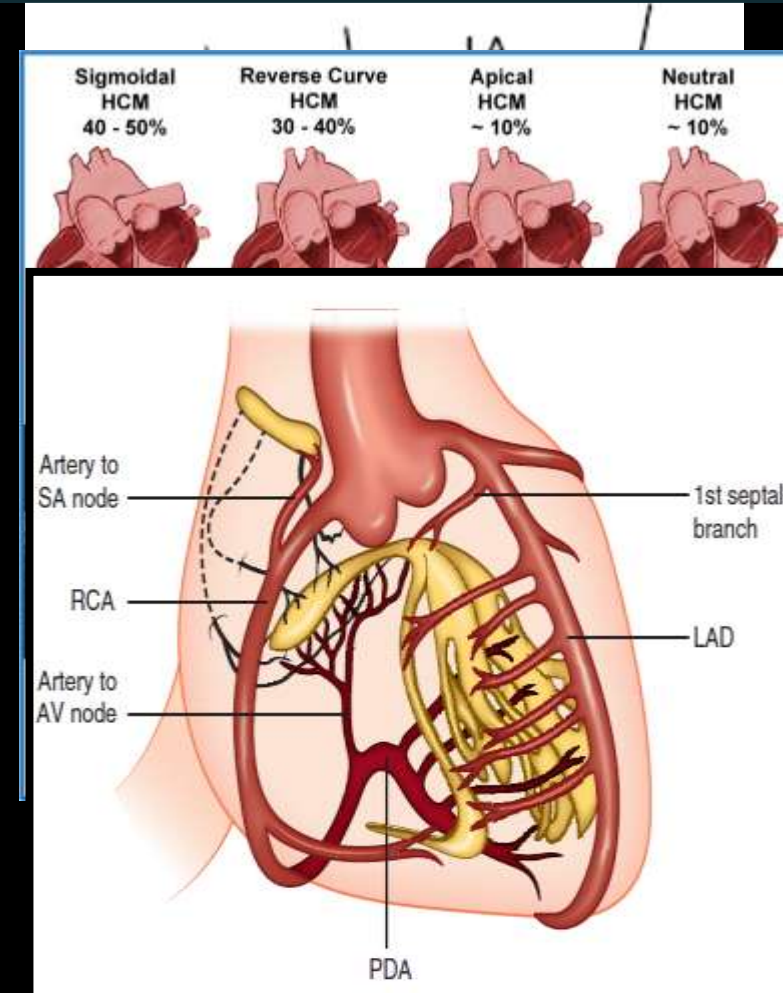
Alcohol Septal Ablation  
VS  
Septal Myectomy

?



# SEPTAL REDUCTION THERAPY

| Alcohol Septal Ablation (ASA) | Selection criteria                 | Septal Myectomy |
|-------------------------------|------------------------------------|-----------------|
|                               | Age                                |                 |
|                               | STS/Euroscore                      |                 |
|                               | Other “surgical” cardiac condition |                 |
|                               | IVS thickness                      |                 |
|                               | Hypertrophy type                   |                 |
|                               | LVOT pressure gradient             |                 |
|                               | Anatomy of septal branches         |                 |
|                               | Preexisting LBBB/RBBB              |                 |
|                               | Prior PM/ICD                       |                 |



1. Michael A Fifer, **Choice of Septal Reduction Therapies and Alcohol Septal Ablation**, 2019 Feb;37(1):83-93. doi: 10.1016/j.ccl.2018.08.009. Epub 2018 Oct 29.
2. Marco Spaziano et. al, **Alcohol Septal Ablation for Hypertrophic Obstructive Cardiomyopathy: Indications, Technical Aspects, and Clinical Outcomes**, J Invasive Cardiol. 2017 Dec;29(12):404-410

# SEPTAL REDUCTION THERAPY

| Alcohol Septal Ablation (ASA) | Selection criteria                 | Septal Myectomy | Our patient             |
|-------------------------------|------------------------------------|-----------------|-------------------------|
| ✓                             | Age                                | ✗               | 76                      |
| ✓                             | STS/Euroscore                      | ✗               | High risk               |
| ✓                             | Other “surgical” cardiac condition | ✗               | No                      |
| ✓                             | IVS thickness                      | ✓               | 24mm                    |
| ✓                             | Hypertrophy type                   | ✓               | Sigmoidal/reverse curve |
| ✗                             | LVOT pressure gradient             | ✓               | 196mmHg                 |
| ✓                             | Anatomy of septal branches         | ✗               | Suitable for ASA        |
| ✓                             | Preexisting LBBB/RBBB              | ✓               | Normal QRS              |
| ✓                             | Prior PM/ICD                       | ✗               | Yes                     |

1. Michael A Fifer, **Choice of Septal Reduction Therapies and Alcohol Septal Ablation**, 2019 Feb;37(1):83-93. doi: 10.1016/j.ccl.2018.08.009. Epub 2018 Oct 29.
2. Marco Spaziano et. al, **Alcohol Septal Ablation for Hypertrophic Obstructive Cardiomyopathy: Indications, Technical Aspects, and Clinical Outcomes**, J Invasive Cardiol. 2017 Dec;29(12):404-410

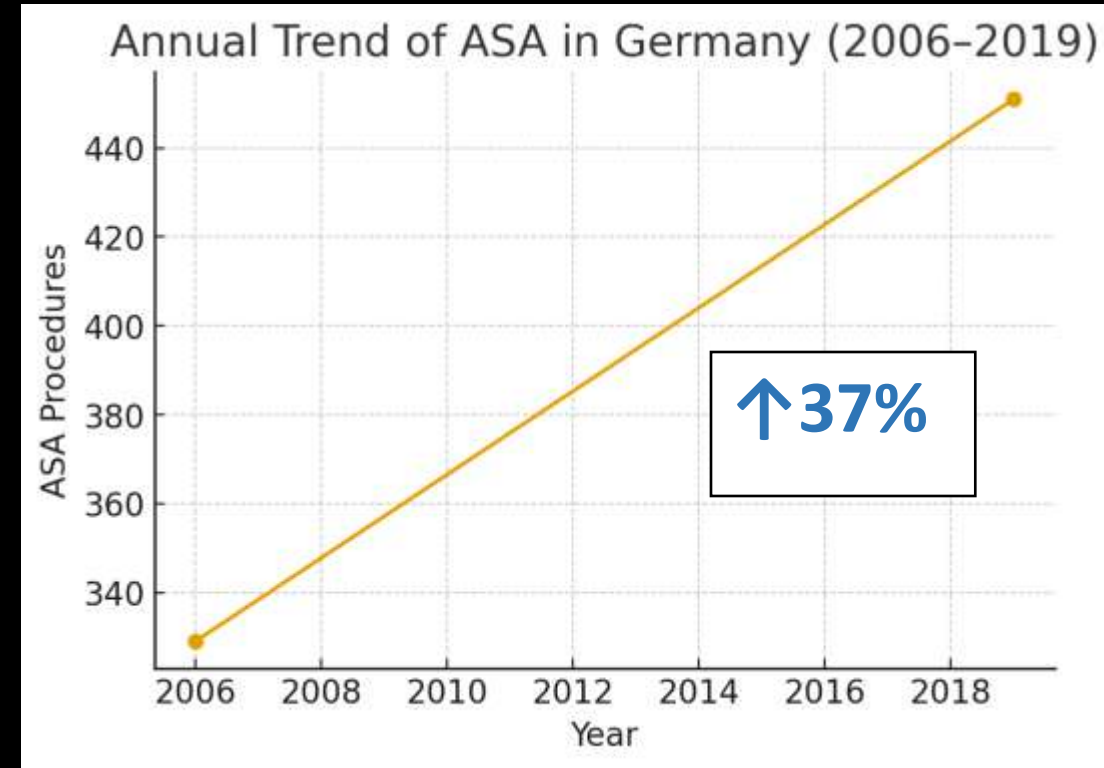
# AAASA - Alcohol Septal Ablation

## 2006-2019 Germany

- Total septal reduction therapy (SRT): **8,514 cases**
- Alcohol septal ablations (ASA): **5,293 cases (62%)**
- Annual trend: **329 (2006) → 451 (2019)**
- Rate per million population: **3.96 → 5.43**

 **19 ASA p/y**

 **54 ASA p/y**



# AAASA - Alcohol Septal Ablation

## Historical review

- 1980's – 1<sup>st</sup> ideas and publications
- 1994 – 1<sup>st</sup> ASA (U. Sigwart, Royal Brompton Hospital in London, UK )



**2019 – 1<sup>st</sup> ASA in Georgia**



# AAASA - Alcohol Septal Ablation

## Safety and long term results

European Heart Journal Advance Access published January 7, 2016



European Heart Journal  
doi:10.1093/eurheartj/ehv693

Heart failure/clinical

### Long-term clinical outcome after alcohol septal ablation for obstructive hypertrophic cardiomyopathy: results from the Euro-ASA registry

Josef Veselka<sup>1\*</sup>  
Jan Krejci<sup>5</sup>, Theodor

#### Aims

The first cases of alcohol septal ablation (ASA) for obstructive hypertrophic cardiomyopathy (HCM) were published two decades ago. Although the outcomes of single-centre and national ASA registries have been published, the long-term survival and clinical outcome of the procedure are still debated.

#### Methods and results

We report long-term outcomes from the as yet largest multinational ASA registry (the Euro-ASA registry). A total of 1275 ( $58 \pm 14$  years, median follow-up 5.7 years) highly symptomatic patients treated with ASA were included. The 30-day post-ASA mortality was 1%. Overall, 171 (15%) patients died during follow-up, corresponding to a post-ASA all-cause mortality rate of 2.42 deaths per 100 patient-years. Survival rates at 1, 5, and 10 years after ASA were 98% (95% CI 96–98%), 89% (95% CI 87–91%), and 77% (95% CI 73–80%), respectively. In multivariable analysis, independent predictors of all-cause mortality were age at ASA ( $P < 0.01$ ), septum thickness before ASA ( $P < 0.01$ ), NYHA class before ASA ( $P = 0.047$ ), and the left ventricular (LV) outflow tract gradient at the last clinical check-up ( $P = 0.048$ ). Alcohol septal ablation reduced the LV outflow tract gradient from  $67 \pm 36$  to  $16 \pm 21$  mmHg ( $P < 0.01$ ) and NYHA class from  $2.9 \pm 0.5$  to  $1.6 \pm 0.7$  ( $P < 0.01$ ). At the last check-up, 89% of patients reported dyspnoea of NYHA class  $\leq 2$ , which was independently associated with LV outflow tract gradient ( $P < 0.01$ ).

#### Conclusions

The Euro-ASA registry demonstrated low peri-procedural and long-term mortality after ASA. This intervention provided durable relief of symptoms and a reduction of LV outflow tract obstruction in selected and highly symptomatic patients with obstructive HCM. As the post-procedural obstruction seems to be associated with both worse functional status and prognosis, optimal therapy should be focused on the elimination of LV outflow tract gradient.

#### Keywords

Alcohol septal ablation • Prognosis • Survival

1. Josef Veselka et al; Long-term clinical outcome after alcohol septal ablation for obstructive hypertrophic cardiomyopathy: results from the Euro-ASA registry, European Heart Journal (2016) 37, 1517–1523, doi:10.1093/eurheartj/ehv693



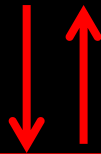
# AAASA - Alcohol Septal Ablation



თბილისის მედიცინის ინსტიტუტი  
TBILISI INSTITUTE OF MEDICINE

ASA team:

- Operator
- Assistant
- Nurse
- Echocardiographer
- Anesthesiologist



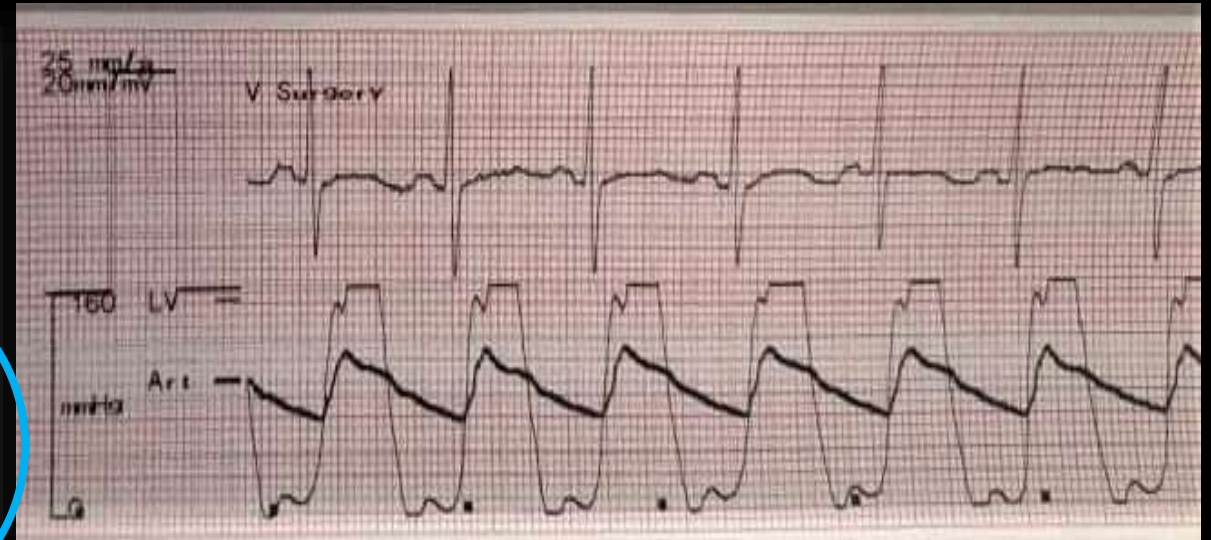
# ASA step-by-step

- Temporary pacemaker lead in RV (jugular vein)
- 2 arterial access (6F and 4F)



# ASA step-by-step

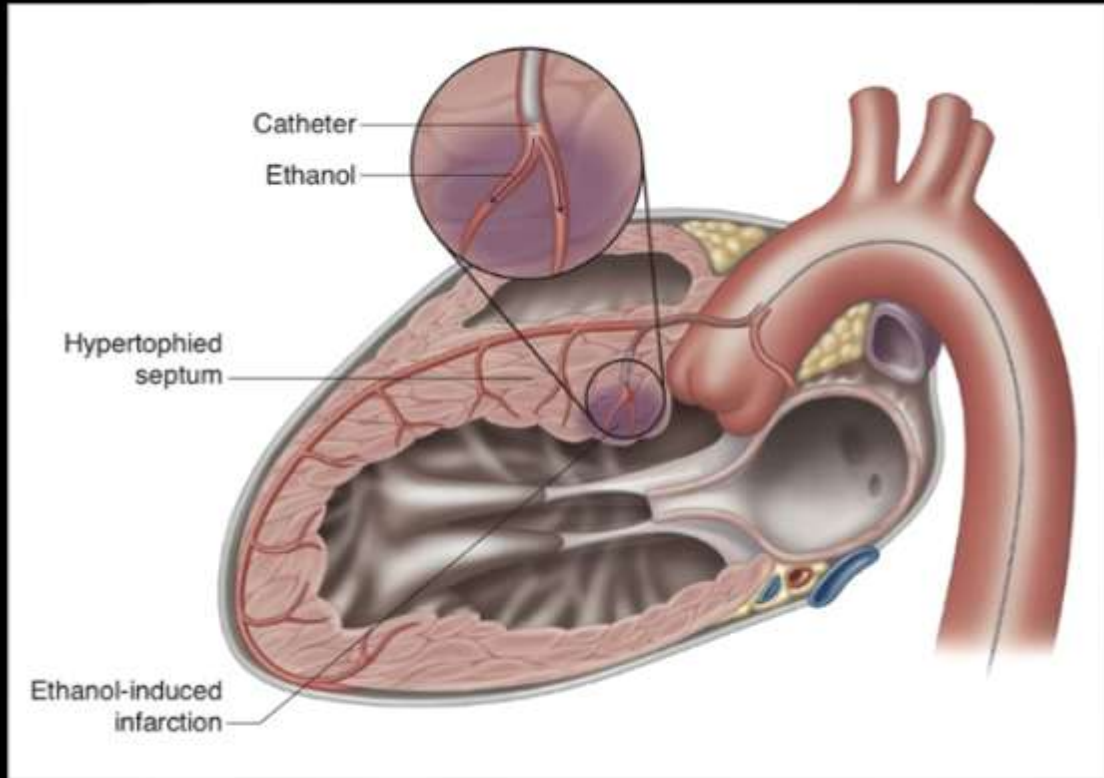
## Invasive Hemodynamics



**Brockenbrough sign**  
**Confirming dynamic obstruction**

# ASA step-by-step

## Guidewire advancement into the target septal branch



### Challenges:

- **Poor visualisation**
- **Tortuous/calcified LAD**
- **Acute angulation of septal branch**
- **Prior stent in LD (covering target septal branch)**
- **Unusual anatomy**



# ASA step-by-step

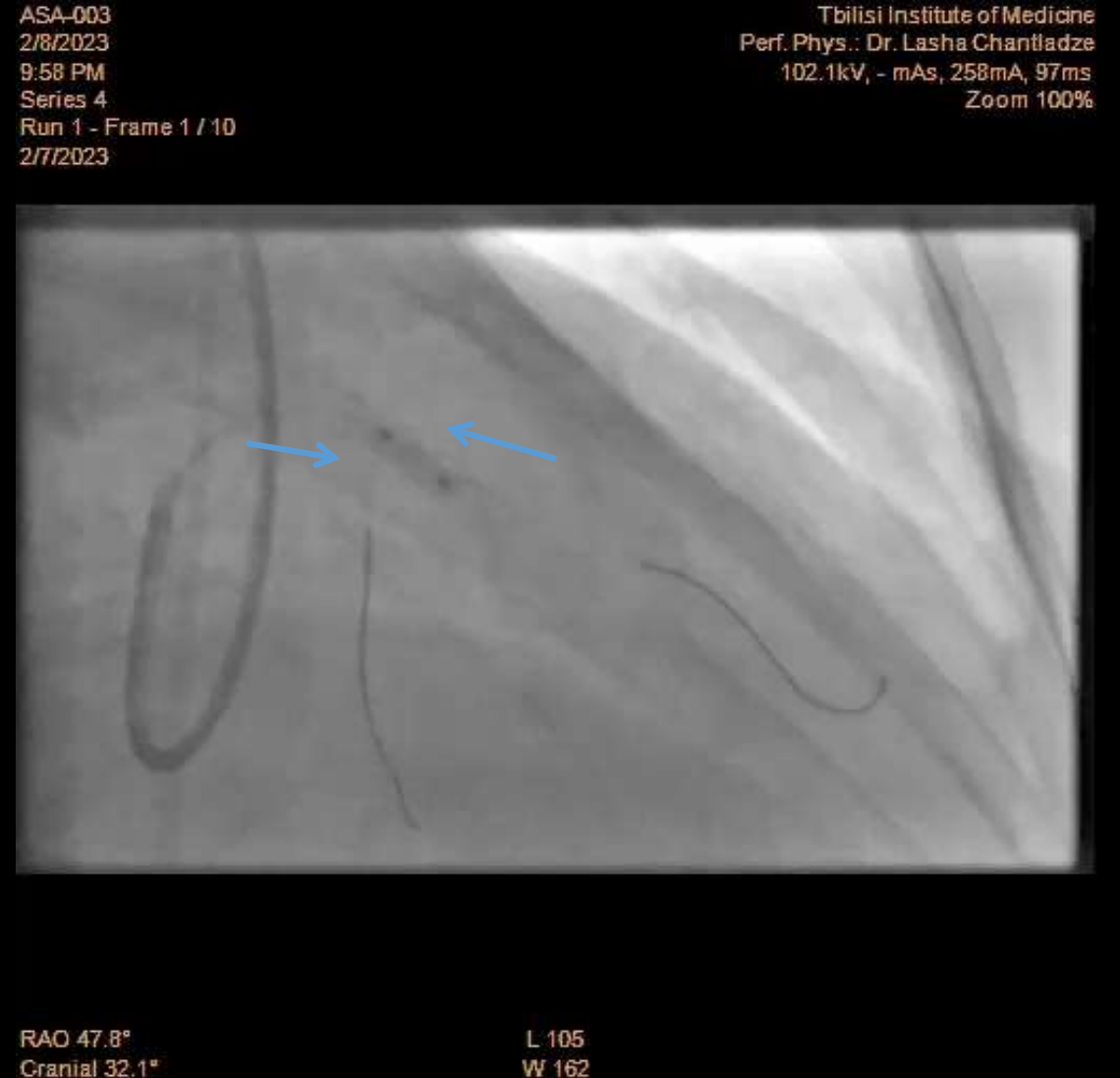
## Guidewire advancement into the target septal branch





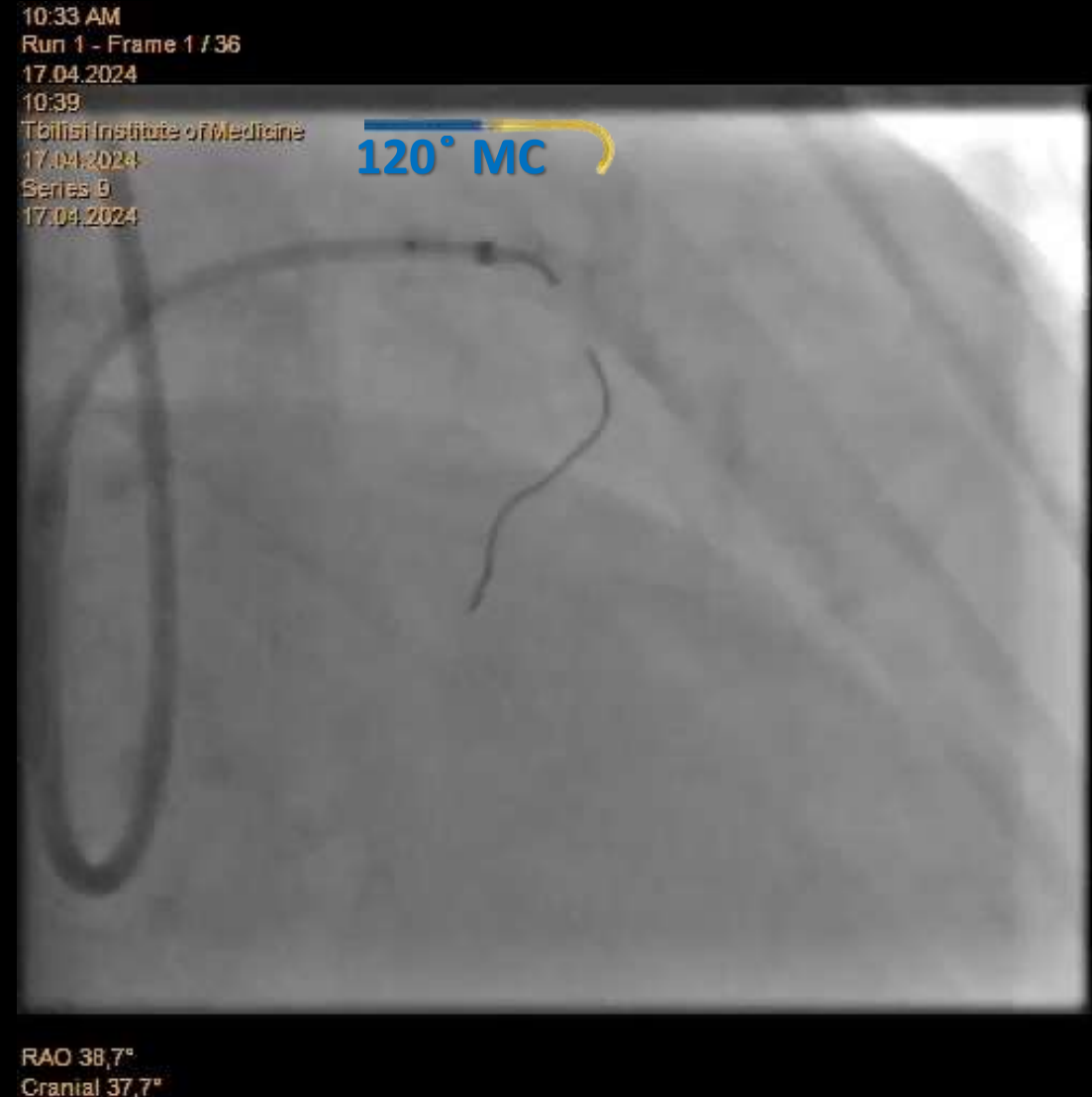
# ASA step-by-step

## Guidewire advancement into the target septal branch



# ASA step-by-step

## Guidewire advancement into the target septal branch



# ASA step-by-step

## Guidewire advancement into the target septal branch

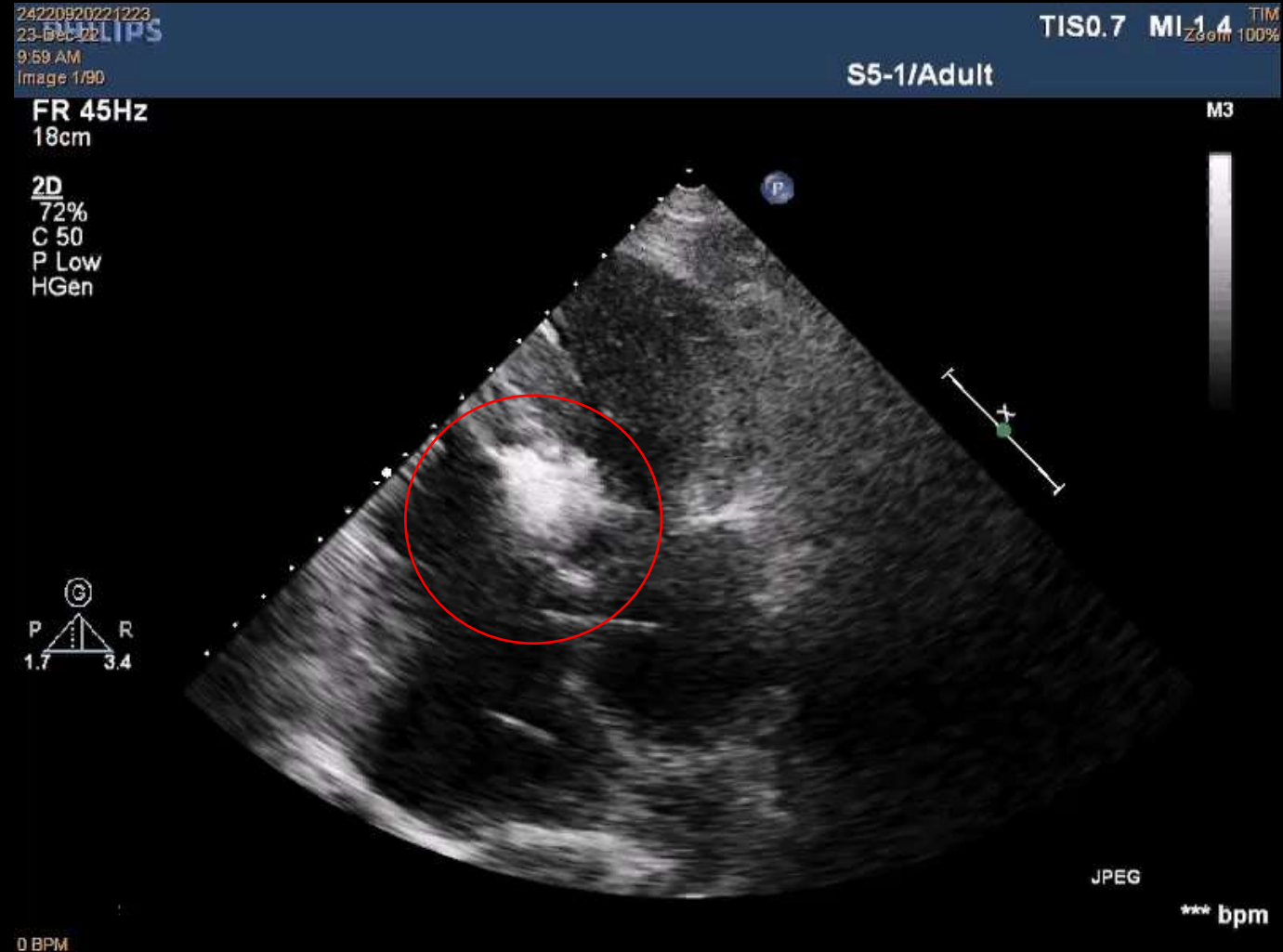


# ASA step-by-step

## Advancement of OTW balloon (1.2-2.25mm) and contrast injection

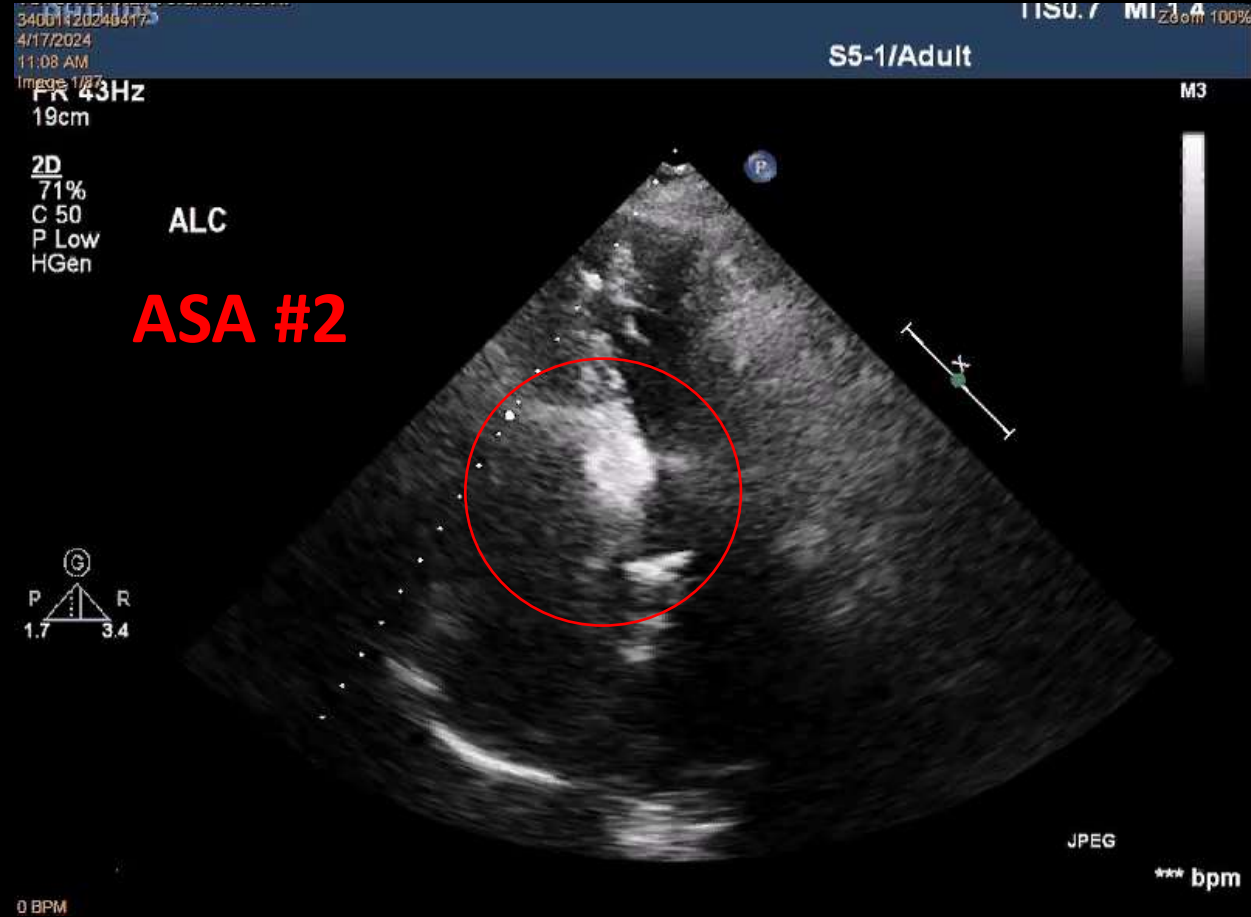
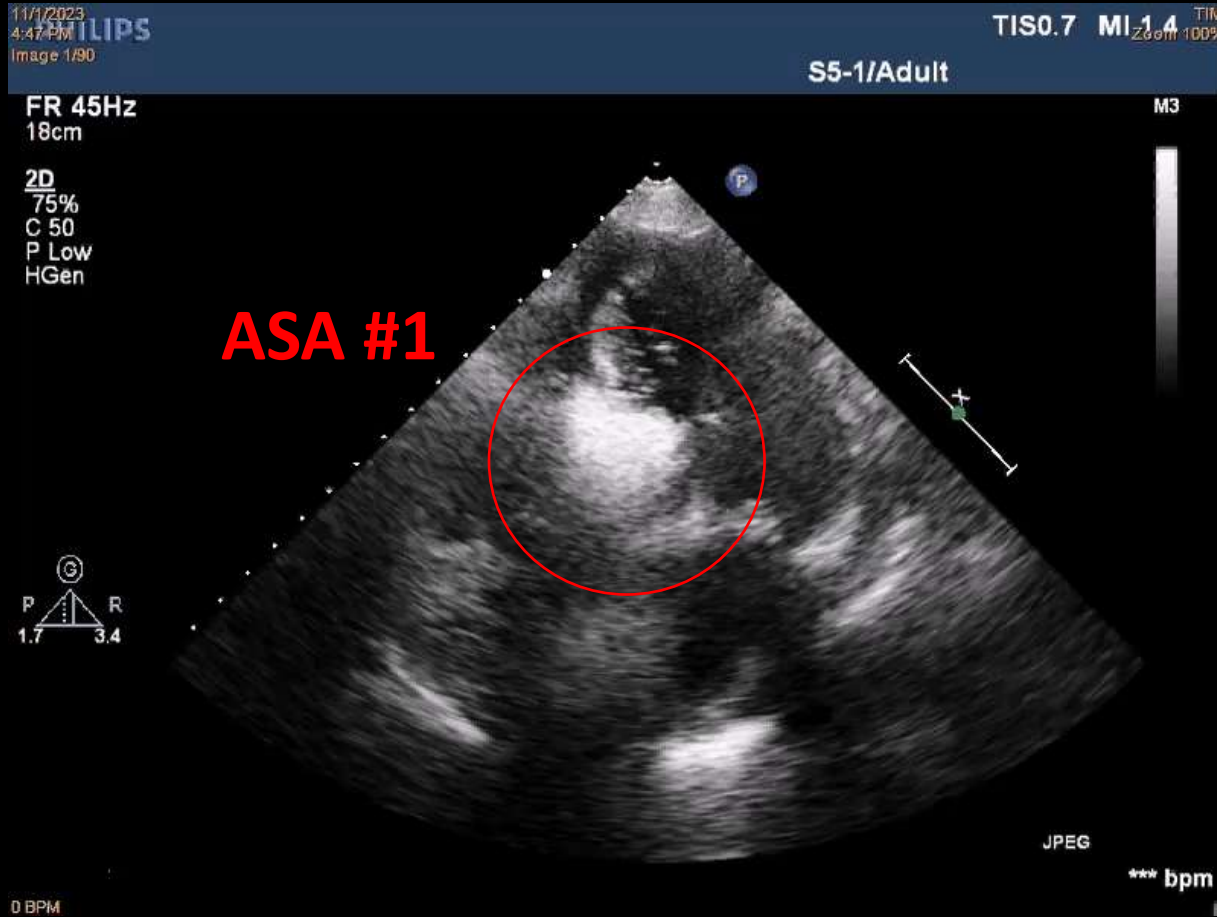
- Definity: (Lumivity in the EU): Manufactured by Lantheus.
- Optison: Manufactured by GE Healthcare.
- SonoVue: (Lumason in the USA): Manufactured by Bracco Diagnostics.
- Sonazoid: Manufactured by General Electric.

Agitated saline contrast echocardiography, or a "bubble study"



# ASA step-by-step

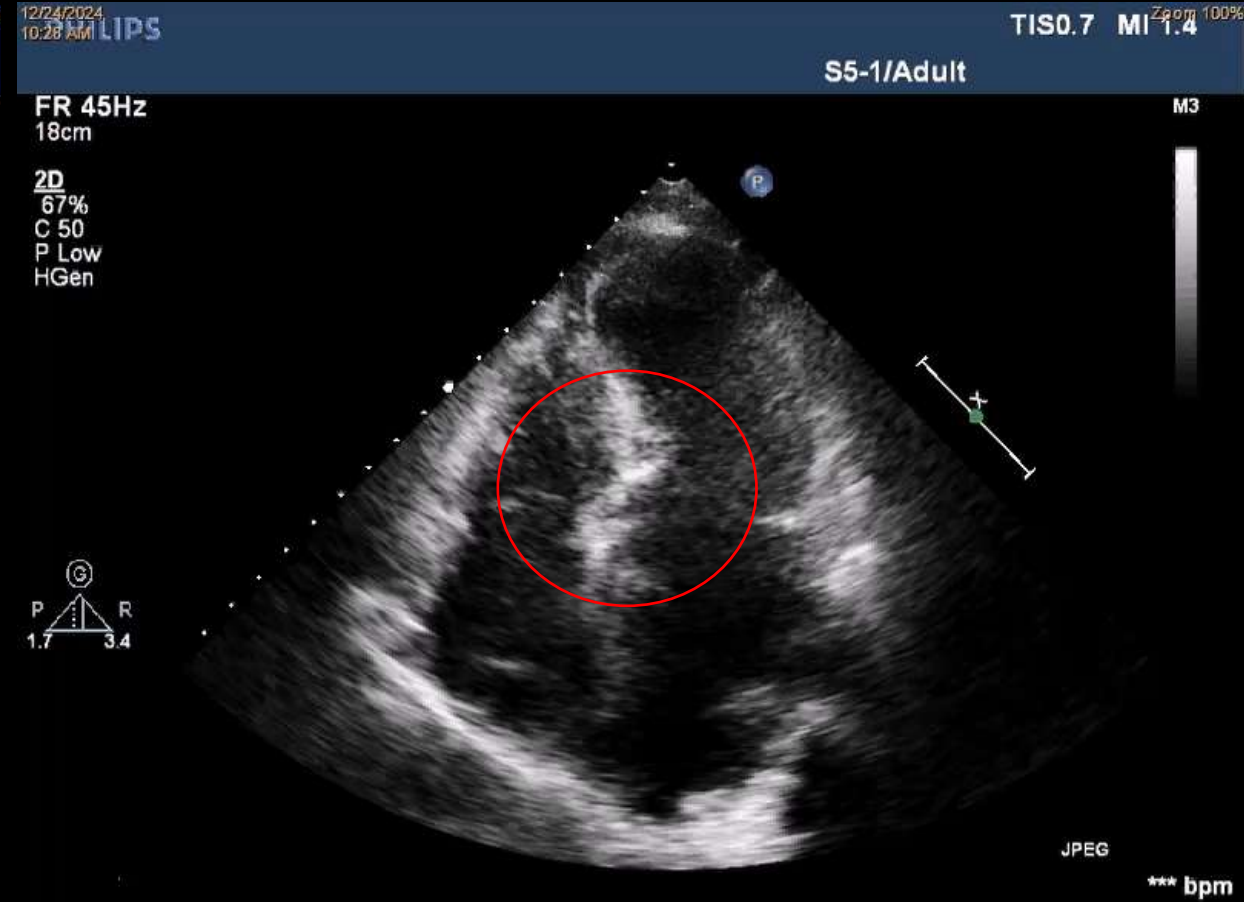
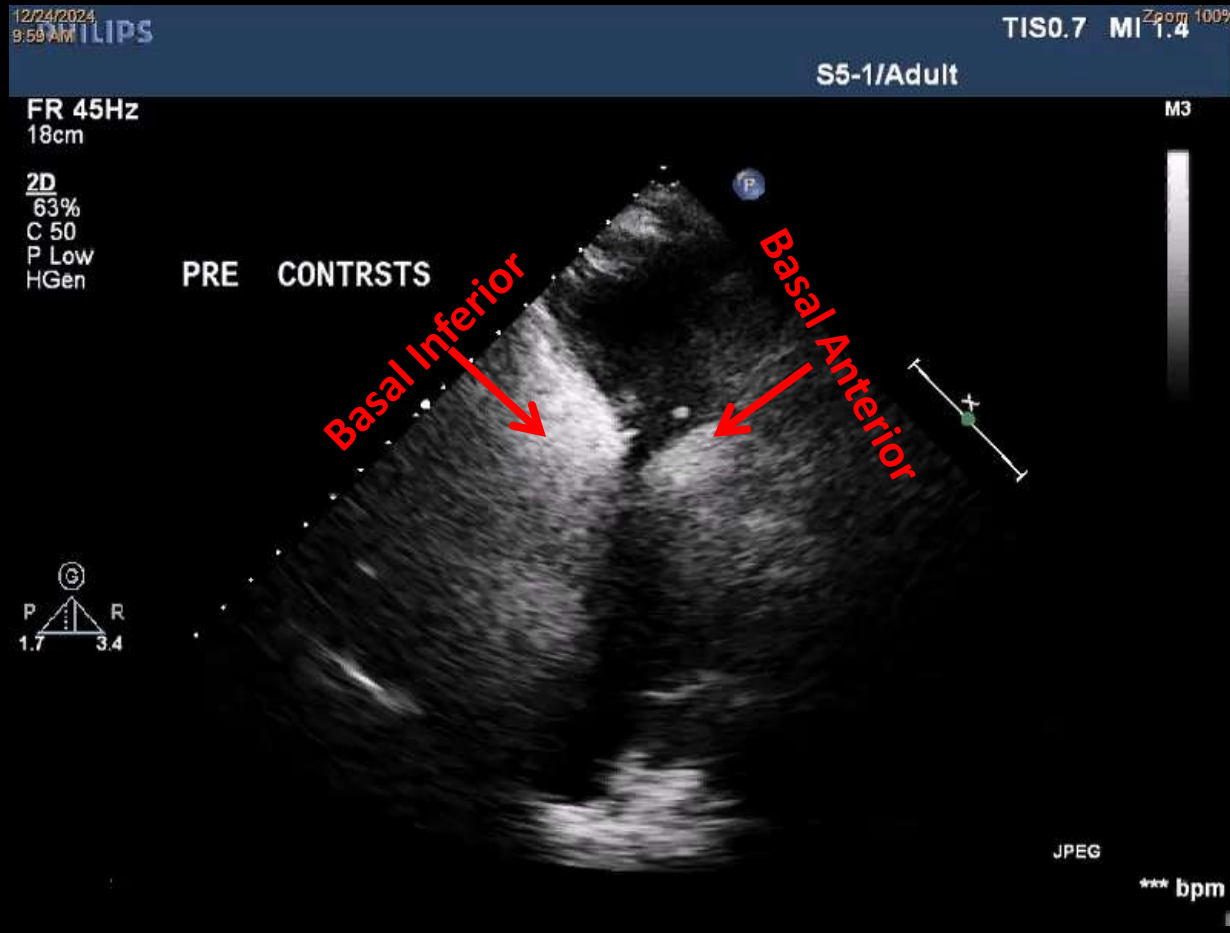
## Advancement of OTW balloon (1.2-2.25mm) and contrast injection





# ASA step-by-step

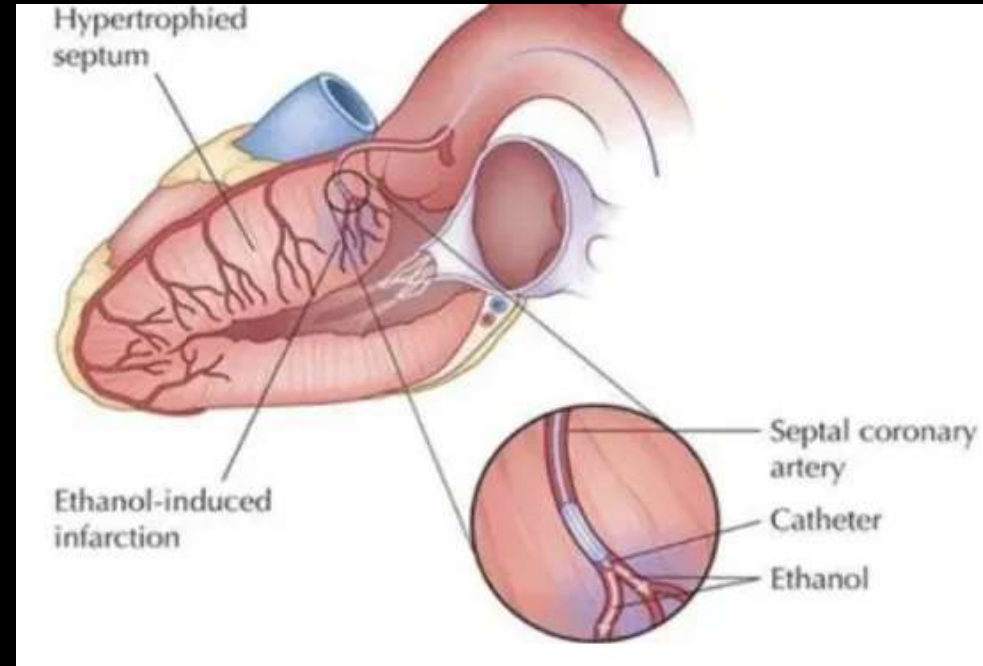
## Advancement of OTW balloon (1.2-2.25mm) and contrast injection



# ASA step-by-step

## Alcohol injection

- 2-3 ml of absolute ethanol (1ml per 1cm of IVS)
- Very slow injection 1ml/1min
- The balloon is kept inflated for 10 minutes



# ASA step-by-step

## Final angiography of the LCA



# ASA step-by-step

## 6 months later

- LVOT PG reduced by 92% (195mmHg vs 15mmHg)
- NYHA I
- Active daily lifestyle
- 50mg of metoprolol per day



**In properly selected patients **ASA** is a safe, minimally invasive and effective procedure**

## **Achievements**

- **Specialized team dedicated to HOCM & ASA**
- **Nationwide collaboration with cardiologists, cardiac surgeons, and arrhythmologists**
- **Consistent availability of ASA in Georgia**
- **Established procedural protocols and safety standards for ASA**
- **Successful treatment of multiple HOCM patients with favorable outcomes**
- **Organized workshops and training sessions for cardiologists**



**In properly selected patients **ASA** is a safe, minimally invasive and effective procedure**

## **Future goals**

- **Increase awareness and knowledge of HOCM and ASA across the region**
- **Develop a regional network to establish a registry and facilitate experience exchange**
- **Standardize patient selection for ASA**
- **Promote training and education exchange programs for cardiologists and interventional teams**
- **Improve patient access to specialized care and advanced therapies**

**Thank you for your attention!**



↑ Scan me!