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What's New in the Guidelines for Surgical Ablation for Atrial Fibrillation?

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**The Society
of Thoracic
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EACTS
European Association For Cardio-Thoracic Surgery

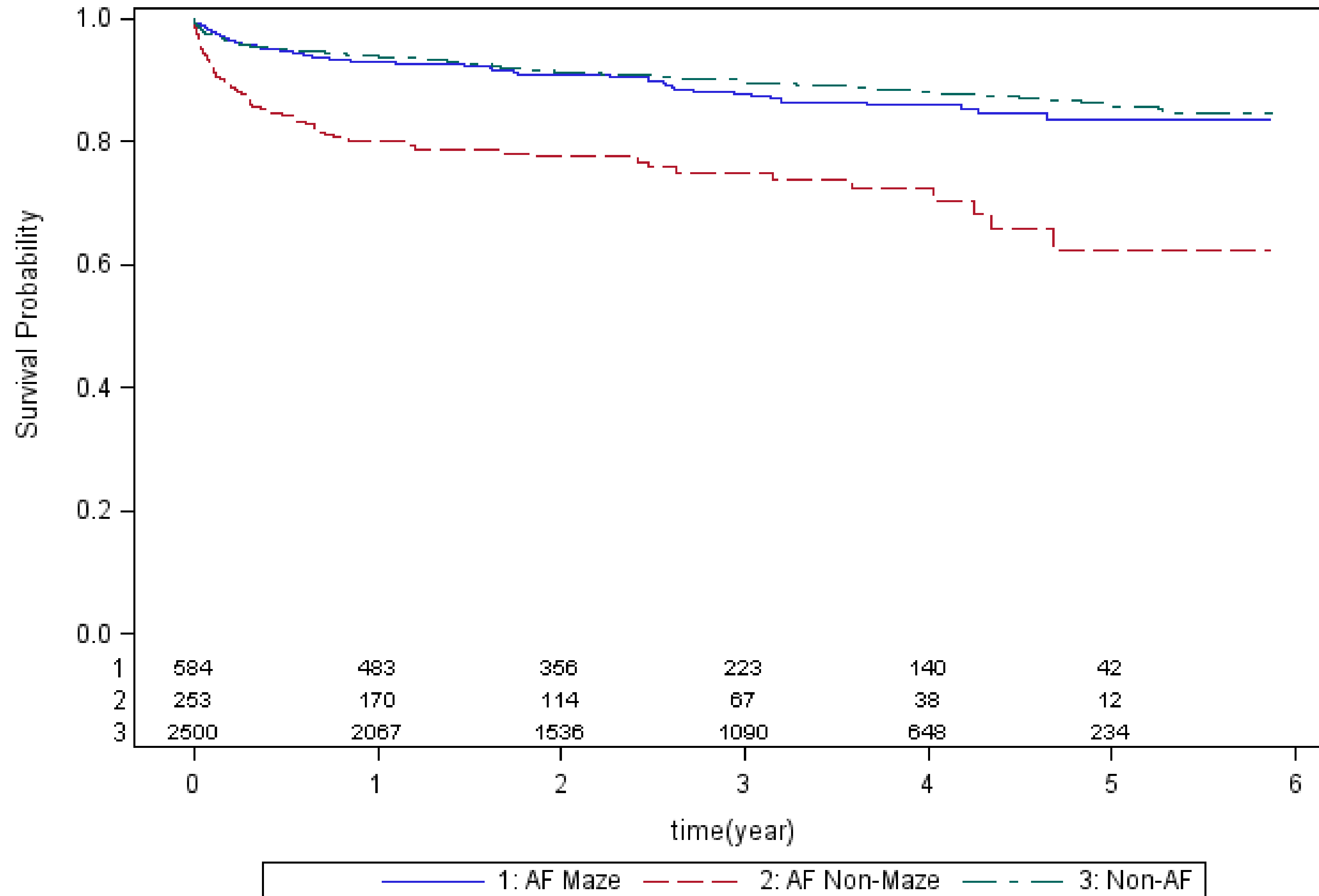


Disclosures

No relevant financial disclosures



Why Perform Surgical Ablation ?



AF Definitions

Paroxysmal	AF that terminates spontaneously or with intervention within 7 d
Persistent	Continuous AF sustained > 7d
LS Persistent	Continuous AF sustained > 12m
Permanent	Joint decision, no effort to maintain SR



AF Definitions

Paroxysmal

AF that terminates spontaneously or with intervention within 7 d

Persistent

Continuous AF sustained beyond 7d

Early Persistent

AF that is sustained beyond 7 days but is less than 3 months in duration.

LS Persistent

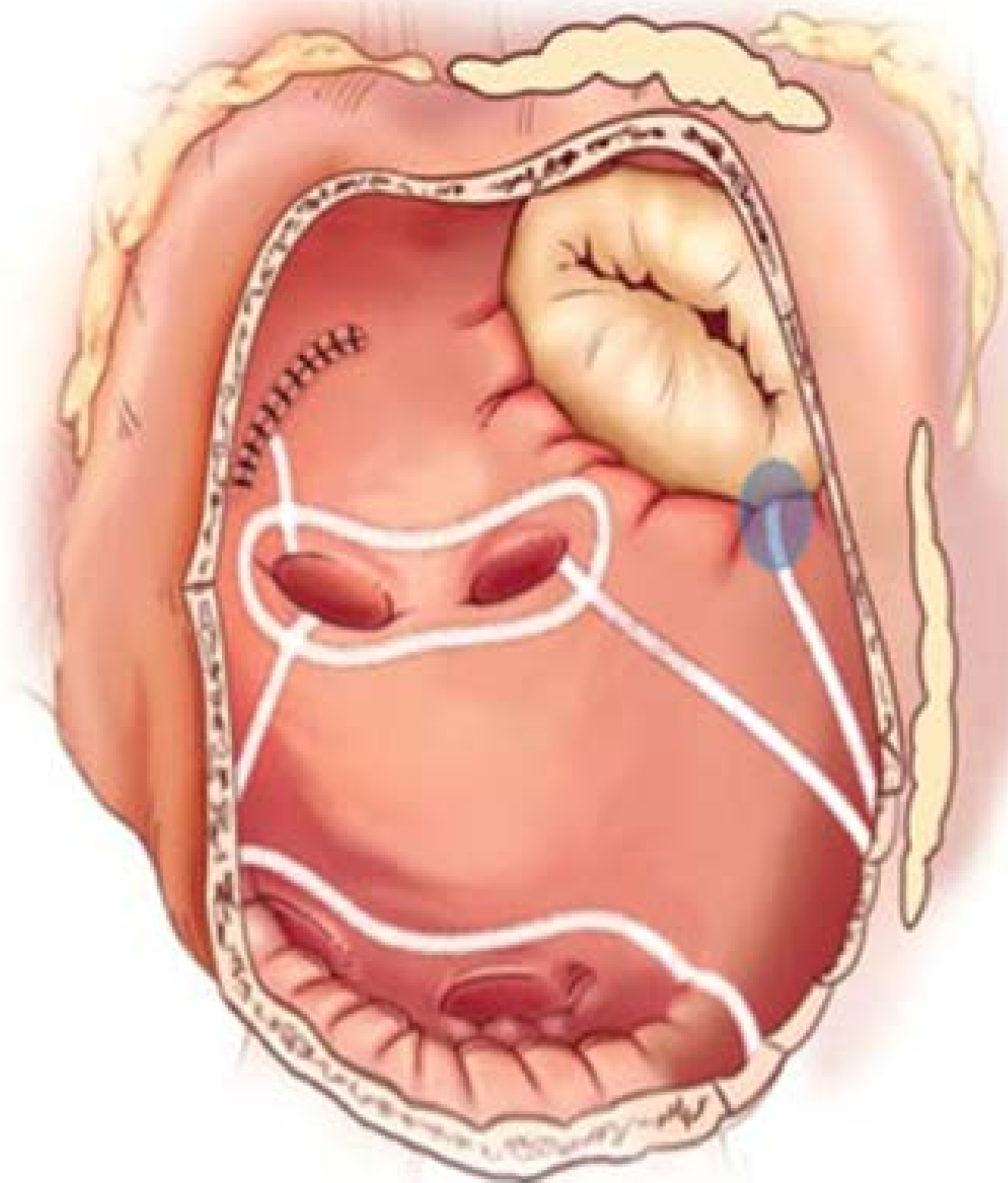
Continuous AF sustained > 12m

Permanent

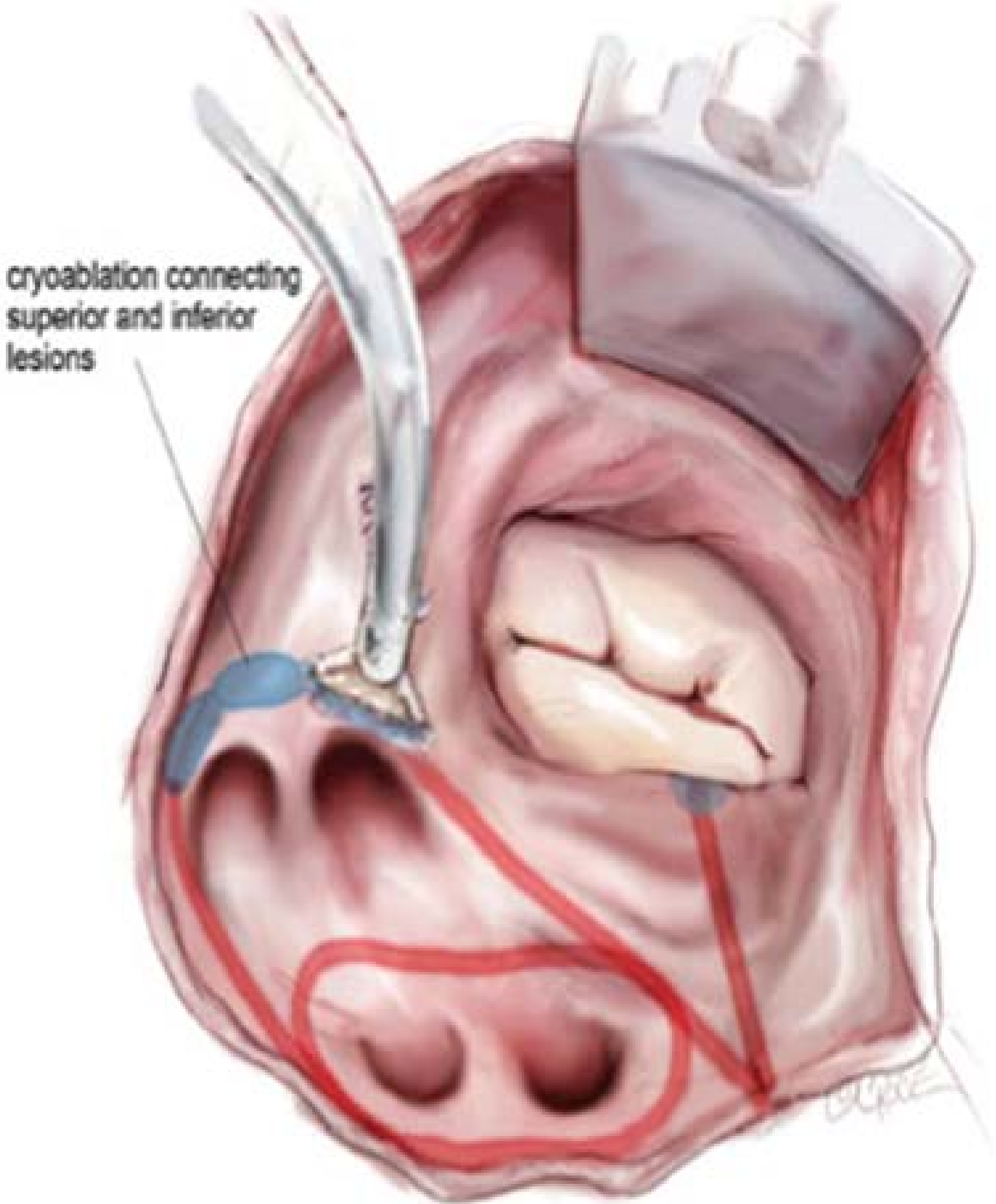
Joint decision, no effort to maintain SR as a therapeutic attitude and *should no longer be used*



Left Atrial Lesion Set

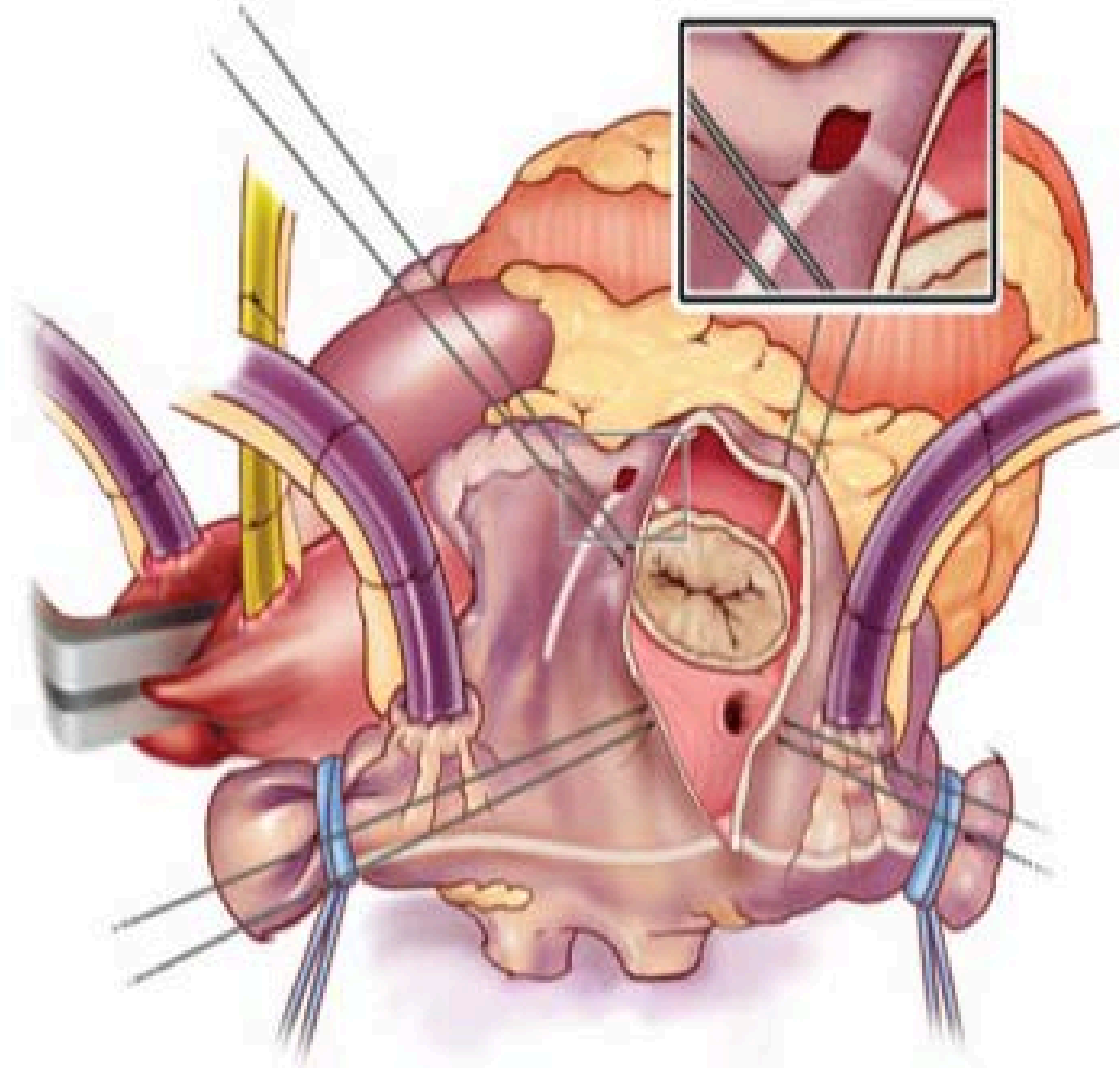


Sternotomy

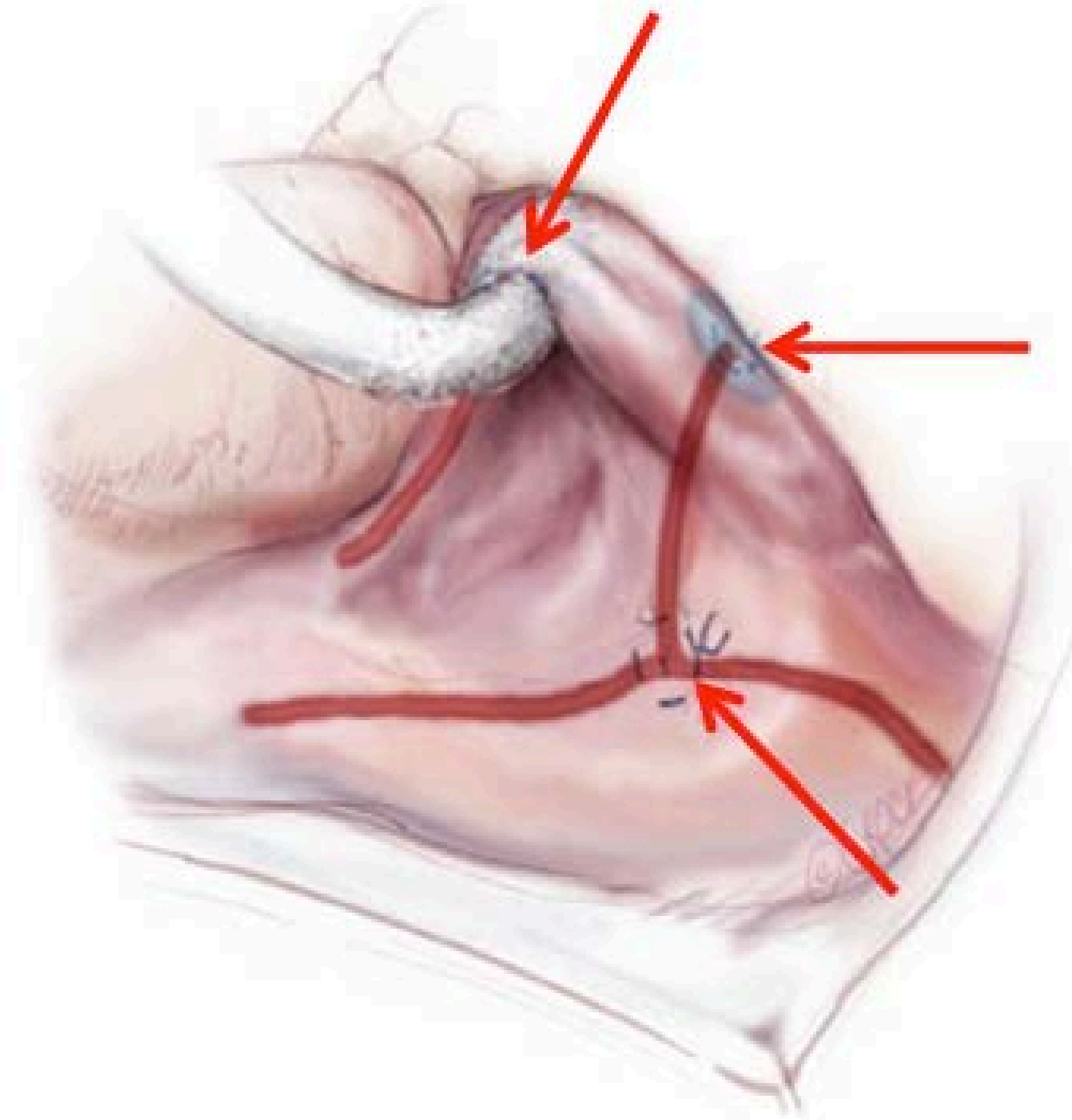


Right Mini-thoracotomy

Right Atrial Lesion Set



Sternotomy



Right Mini-thoracotomy

Clinical Practice Guidelines

Methodology

	Published Search Criteria	Systematic Review	Products of Review On-line	COI Resolution	Surgeon and EP Authorship	External Society Review	Defined Consensus (Modified Delphi)
STS 2017	Yes	Yes	Yes	Yes	No	No	Yes
AATS 2017	Yes	Yes	No	Yes	Yes	No	Yes
ESC/EACTS 2016	No	Yes	No	Yes	Yes	Yes	Yes
HRS 2012/2014/2017	No	No	No	Yes	Yes	Yes	Yes



Clinical Practice Guidelines

2014 ACC AHA HRS Guideline

- Grouped all cardiac operations as a whole
- Utilized early surgical ablation data acquired from cases performed between 1998-2005



Clinical Practice Guidelines

2014 ACC AHA HRS Guideline

6.5. Surgery Maze Procedures: Recommendations

Class IIa

- 1. An AF surgical ablation procedure is reasonable for selected patients with AF undergoing cardiac surgery for other indications. (*Level of Evidence: C*)**

Class IIb

- 1. A stand-alone AF surgical ablation procedure may be reasonable for selected patients with highly symptomatic AF not well managed with other approaches (440). (*Level of Evidence: B*)**



Clinical Practice Guidelines

2016 ESC Guidelines for the Management of Atrial Fibrillation (in collaboration with EACTS)

- Similar to 2014 HRS guidelines with respect to concomitant operations
- Important additions of minimally invasive surgery, heart team assessment, experience, lesion set



Clinical Practice Guidelines

2016 ESC Guidelines for the Management of Atrial Fibrillation (in collaboration with EACTS)

Catheter or surgical ablation should be considered in patients with symptomatic persistent or long-standing persistent AF refractory to AAD therapy to improve symptoms, considering patient choice, benefit and risk, supported by an AF Heart Team.	IIa	C
Minimally invasive surgery with epicardial pulmonary vein isolation should be considered in patients with symptomatic AF when catheter ablation has failed. Decisions on such patients should be supported by an AF Heart Team.	IIa	B
Maze surgery, possibly via a minimally invasive approach, performed by an adequately trained operator in an experienced centre, should be considered by an AF Heart Team as a treatment option for patients with symptomatic refractory persistent AF or post-ablation AF to improve symptoms.	IIa	C
Maze surgery, preferably biatrial, should be considered in patients undergoing cardiac surgery to improve symptoms attributable to AF, balancing the added risk of the procedure and the benefit of rhythm control therapy.	IIa	A
Concomitant biatrial maze or pulmonary vein isolation may be considered in asymptomatic AF patients undergoing cardiac surgery.	IIb	C



Clinical Practice Guidelines

New Assessment Methodology

CLASS I (STRONG)	Benefit >>> Risk
Suggested phrases for writing recommendations:	
<ul style="list-style-type: none"> ■ Is recommended ■ Is indicated/useful/effective/beneficial ■ Should be performed/administered/other ■ Comparative-Effectiveness Phrases†: <ul style="list-style-type: none"> ○ Treatment/strategy A is recommended/indicated in preference to treatment B ○ Treatment A should be chosen over treatment B 	
CLASS IIa (MODERATE)	Benefit >> Risk
Suggested phrases for writing recommendations:	
<ul style="list-style-type: none"> ■ Is reasonable ■ Can be useful/effective/beneficial ■ Comparative-Effectiveness Phrases†: <ul style="list-style-type: none"> ○ Treatment/strategy A is probably recommended/indicated in preference to treatment B ○ It is reasonable to choose treatment A over treatment B 	
CLASS IIb (WEAK)	Benefit ≥ Risk
Suggested phrases for writing recommendations:	
<ul style="list-style-type: none"> ■ May/might be reasonable ■ May/might be considered ■ Usefulness/effectiveness is unknown/unclear/uncertain or not well established 	

LEVEL A	
<ul style="list-style-type: none"> ■ High-quality evidence‡ from more than 1 RCT ■ Meta-analyses of high-quality RCTs ■ One or more RCTs corroborated by high-quality registry studies 	
LEVEL B-R	(Randomized)
<ul style="list-style-type: none"> ■ Moderate-quality evidence‡ from 1 or more RCTs ■ Meta-analyses of moderate-quality RCTs 	
LEVEL B-NR	(Nonrandomized)
<ul style="list-style-type: none"> ■ Moderate-quality evidence‡ from 1 or more well-designed, well-executed nonrandomized studies, observational studies, or registry studies ■ Meta-analyses of such studies 	
LEVEL C-LD	(Limited Data)
<ul style="list-style-type: none"> ■ Randomized or nonrandomized observational or registry studies with limitations of design or execution ■ Meta-analyses of such studies ■ Physiological or mechanistic studies in human subjects 	
LEVEL C-EO	(Expert Opinion)
Consensus of expert opinion based on clinical experience	

Clinical Practice Guidelines

New Assessment Methodology

CLASS III: No Benefit (MODERATE)

(Generally, LOE A or B use only)

Benefit = Risk

Suggested phrases for writing recommendations:

- Is not recommended
- Is not indicated/useful/effective/beneficial
- Should not be performed/administered/other

CLASS III: Harm (STRONG)

Risk > Benefit

Suggested phrases for writing recommendations:

- Potentially harmful
- Causes harm
- Associated with excess morbidity/mortality
- Should not be performed/administered/other

Clinical Practice Guidelines

2017 STS Clinical Practice Guidelines for the Surgical Treatment of Atrial Fibrillation

- Distinct from 2014 HRS guidelines as separated concomitant operations into specific operative procedures: Mitral Valve, Aortic Valve, CABG
- Weighed in on lesion set based on new evidence since 2016 ESC effort



Clinical Practice Guidelines

2017 STS Clinical Practice Guidelines for the Surgical Treatment of Atrial Fibrillation

- Distinct from HRS and ESC efforts on weight and ability to define symptoms of AF when patients already going for cardiac operation
- Risk defined by STS database major morbidity
- Evidence based options for surgeons in typical clinical scenarios based on mortality, morbidity and 1-year outcome



2017 STS Clinical Practice Guidelines

Mitral Valve Operations

- Multiple populations studied: 11 RCTs, 4 Meta-analyses, Several Institutional experiences

Recommendation:

- **Surgical ablation for AF can be performed without additional risk of operative mortality or major morbidity, and is recommended at the time of concomitant mitral operations to restore sinus rhythm. (COR: I, LOE: A)**



2017 STS Clinical Practice Guidelines

AVR, isolated CABG, AVR+CABG Operations

- Limited populations studied: 2 RCTs, 2 Meta-analyses, limited Institutional experiences

Recommendation:

- **Surgical ablation for AF can be performed without additional risk operative of mortality or major morbidity, and is recommended at the time of concomitant isolated AVR, isolated CABG, and AVR+CABG operations to restore sinus rhythm. (COR: I, LOE: B-NR)**



2017 STS Clinical Practice Guidelines

Stand Alone Operations

- Multiple populations studied: 4 RCTs, 4 Meta-analyses, Several Institutional experiences

Recommendation:

- **Surgical ablation for symptomatic AF in the absence of structural heart disease that is refractory to class I/III anti-arrhythmic drugs and/or catheter-based therapy is reasonable as a primary stand-alone procedure, to restore sinus rhythm. (COR: IIA, LOE: B-R)**



2017 STS Clinical Practice Guidelines

Stand Alone Operations

Recommendation:

- **Surgical ablation for symptomatic persistent or longstanding persistent AF in the absence of structural heart disease is reasonable, as a stand-alone procedure using the Cox-Maze III/IV lesion set compared to pulmonary vein isolation alone. (COR IIA, LOE B-NR)**



2017 STS Clinical Practice Guidelines

All Operations

Recommendation:

- **Surgical ablation for symptomatic AF in the setting of left atrial enlargement (≥ 4.5 cm) or more than moderate mitral regurgitation by pulmonary vein isolation alone is not recommended. (COR: III - No Benefit, LOE: C-EO)**



2017 STS Clinical Practice Guidelines

All Operations

Recommendation:

- **It is reasonable to perform LA appendage excision or exclusion in conjunction with surgical ablation for AF for longitudinal thromboembolic morbidity prevention.
(COR: IIA, LOE: C-LD)**



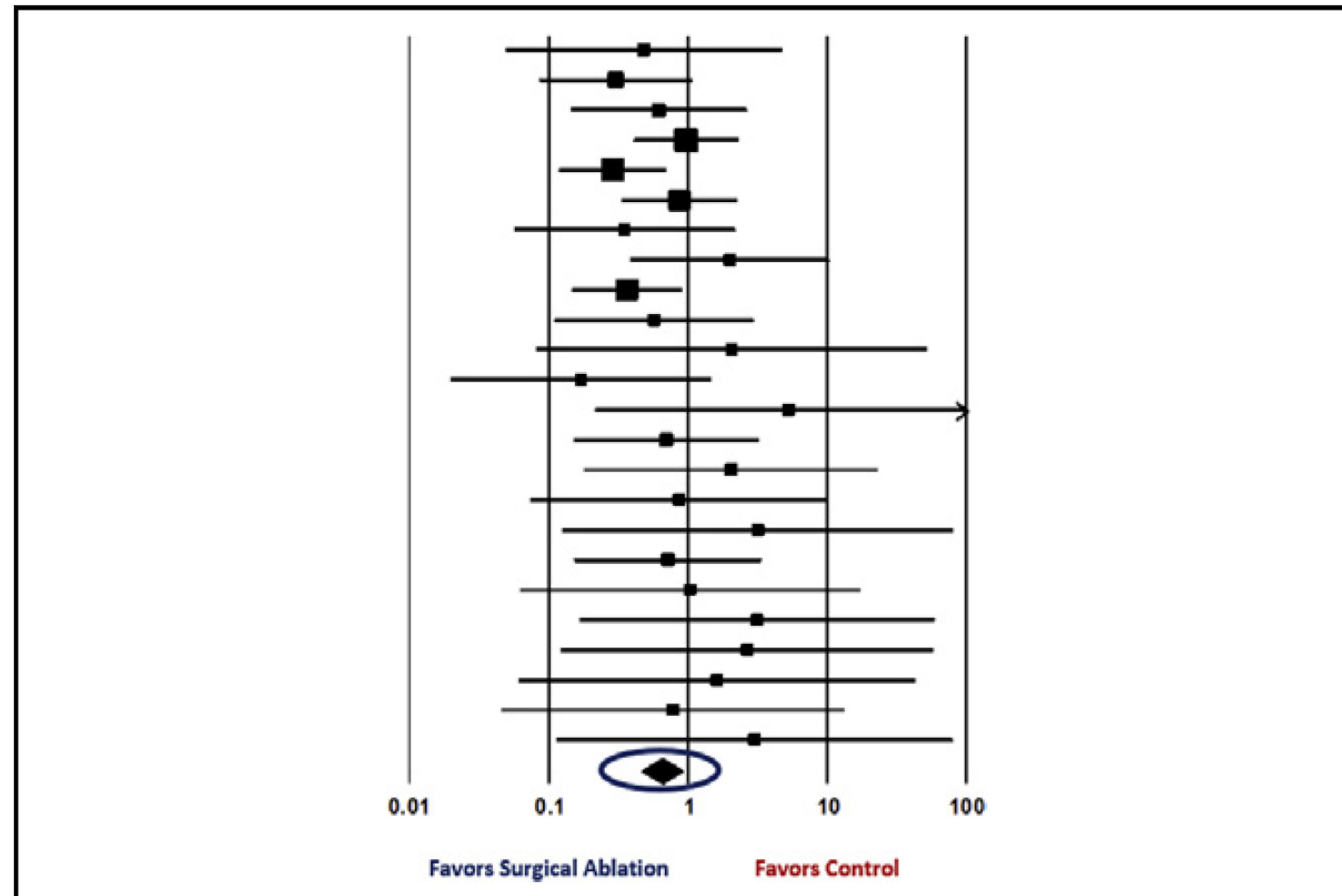
Clinical Practice Guidelines

2017 AATS Expert Consensus Guidelines Examining Surgical Treatment for Atrial Fibrillation

- Aligned with STS Clinical Practice Guidelines with complimentary non-duplicative recommendations
- Important additional clarity provided on mortality, stroke prevention, quality of life, surgical experience, energy source
- Meta-analyses, Forest plot comparisons



2017 AATS Expert Consensus Guidelines



Forest plot: Improved perioperative survival (<30 days) with concomitant surgical ablation.

(COR: I, LOE: A)

2017 AATS Expert Consensus Guidelines

Survival at 1 year and > 1 year

Recommendation:

- **It is reasonable to choose to perform a concomitant surgical ablation procedure for patients with a history of AF over no treatment of AF because long-term survival is unaffected or improved by surgical ablation.**
- **(COR: IIA, LOE: A 1 year, B-NR > 1 year)**



2017 AATS Expert Consensus Guidelines

Stroke

Recommendation:

- **It is reasonable to choose to perform a concomitant surgical ablation procedure for patients with a history of AF over no treatment of AF because there is no increased risk of perioperative stroke/TIA.**
- **(COR: IIA, LOE: A)**



2017 AATS Expert Consensus Guidelines

Quality of Life

Recommendation:

- **It is reasonable to choose to perform a concomitant surgical ablation procedure for patients with a history of AF over no treatment of AF because there is significant improvement in Health Related Quality of Life (HRQL) and AF-related symptoms associated with surgical ablation for AF.**
- **(COR: IIA, LOE: B-R HRQL, C-LD AF Symptoms)**



2017 AATS Expert Consensus Guidelines

Experience – Proctored 3-5 cases

Recommendation:

- **Training and education should be considered before the performance of surgical ablation, but the effectiveness of a training program is unclear. More specific research needs to be conducted because there have been limited populations evaluated.**
- **(COR: I, LOE: C-EO)**



Clinical Practice Guidelines

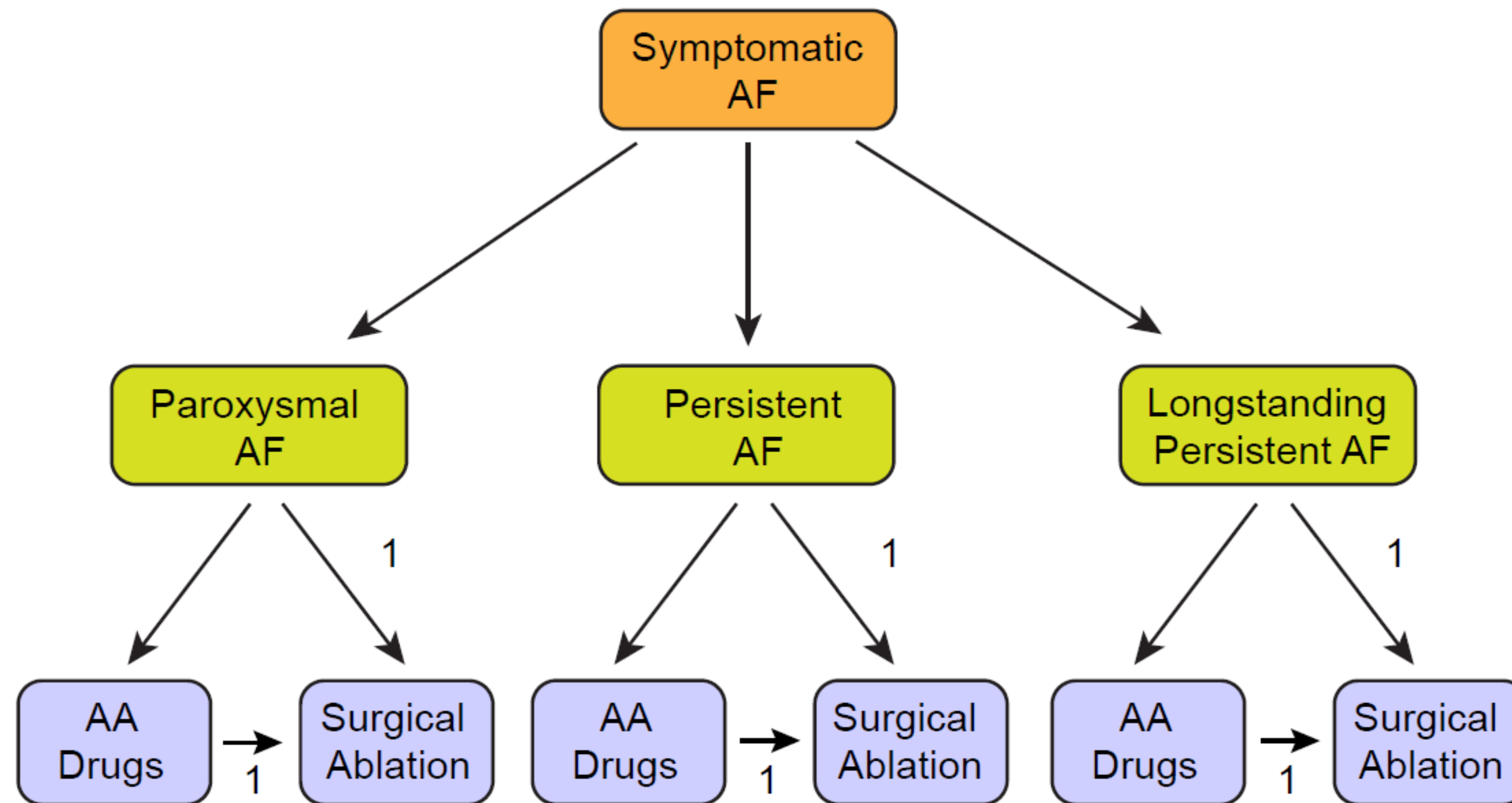
2017 HRS Expert Consensus Statement on Catheter and Surgical Ablation of Atrial Fibrillation

- Aligned with STS and AATS Clinical Practice Guidelines with complimentary recommendations
- Important agreement of COR for Surgical Ablation
- Distinct from STS and AATS in that HRS retains recommendations based establishment of AF symptoms and medicinal treatment
- However, language of acknowledgement on relevance of symptoms in concomitant operation



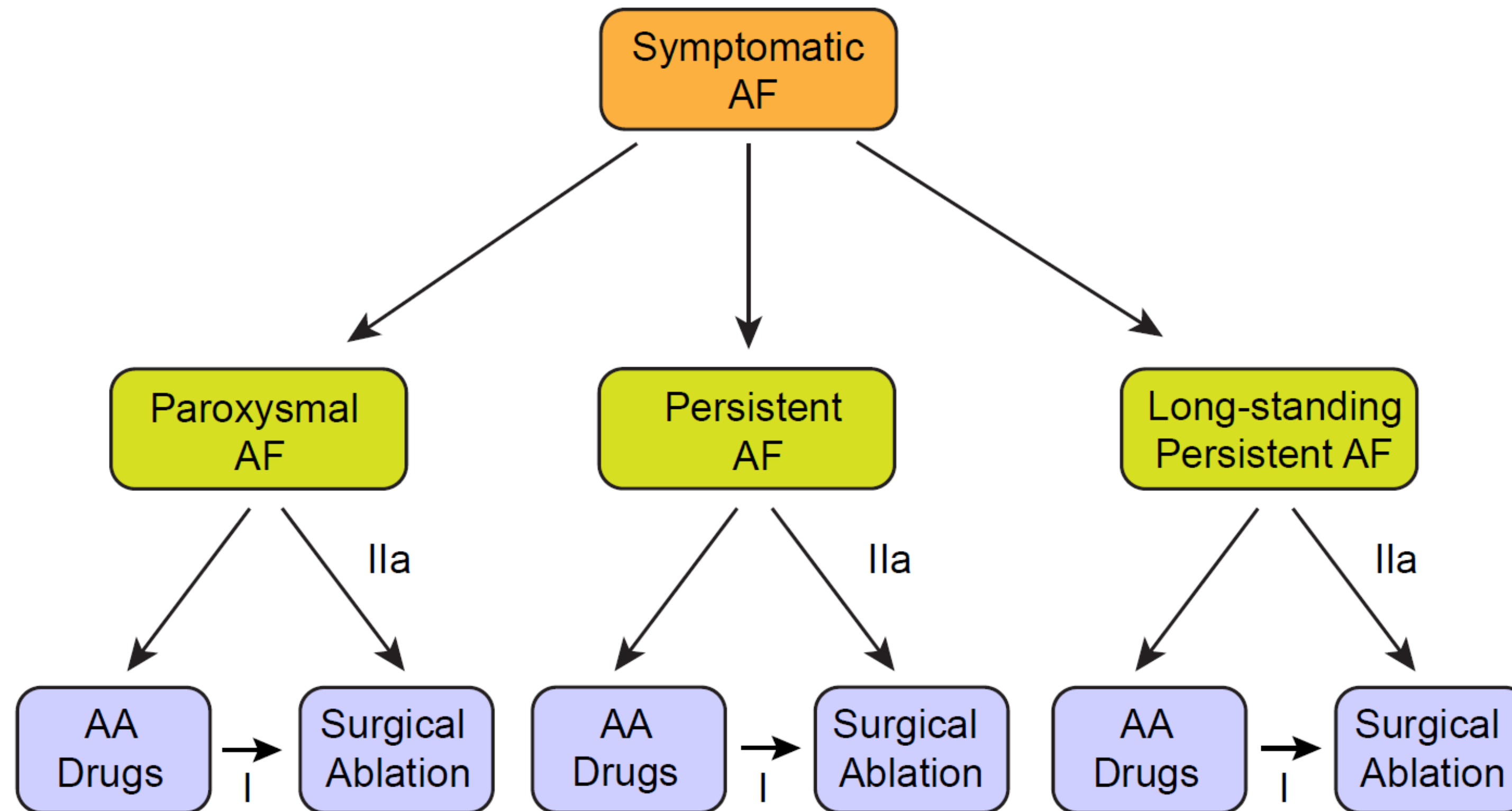
2017 HRS Expert Consensus Statement on Catheter and Surgical Ablation of Atrial Fibrillation

Indications for Concomitant Open (Such as Mitral Valve) Surgical Ablation of AF



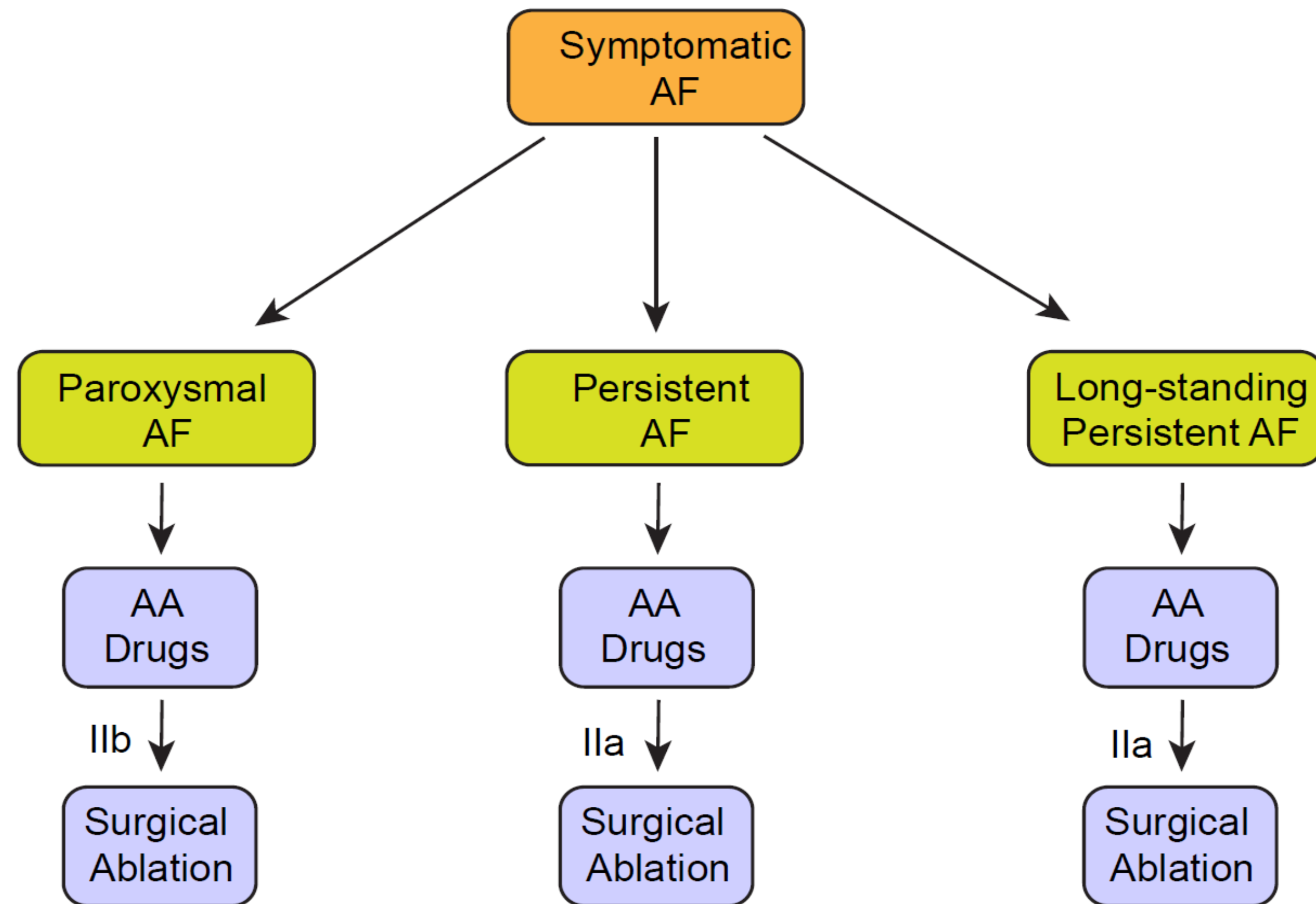
2017 HRS Expert Consensus Statement on Catheter and Surgical Ablation of Atrial Fibrillation

Indications for Concomitant Closed (Such as CABG or AVR) Surgical Ablation of AF



2017 HRS Expert Consensus Statement on Catheter and Surgical Ablation of Atrial Fibrillation

Indications for Stand-Alone Surgical Ablation of AF



Clinical Practice Guidelines Summary

- Substantial progress on multidisciplinary collaboration and societal recommendations
- Classification of surgical ablation by operative category: open atrial, close atrial, stand-alone
- Important new knowledge on the impact of surgical ablation on mortality, survival and late morbidity
- Guidelines provide recommendations based on an interpretation of the evidence but do not replace the decision between patient and surgeon



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Thank You



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