

# Severe TR with AF

- I DO MAZE -

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정동섭

# Benefits of concomitant maze operation

## Peri-operative

- Minimize hemodynamic instability just after CPB weaning
- Minimize stroke risk if NSR restoration

## Long-term outcomes

- May improve long-term survival
- Symptom relief (rhythm related: palpitation, dizziness)
- May prevent from recurrent tricuspid regurgitation after valve repair

# Risks of concomitant maze operation

## Peri-operative

- Prolonged ACC time: Aggravated RV function
- Bleeding due to thin atrial wall

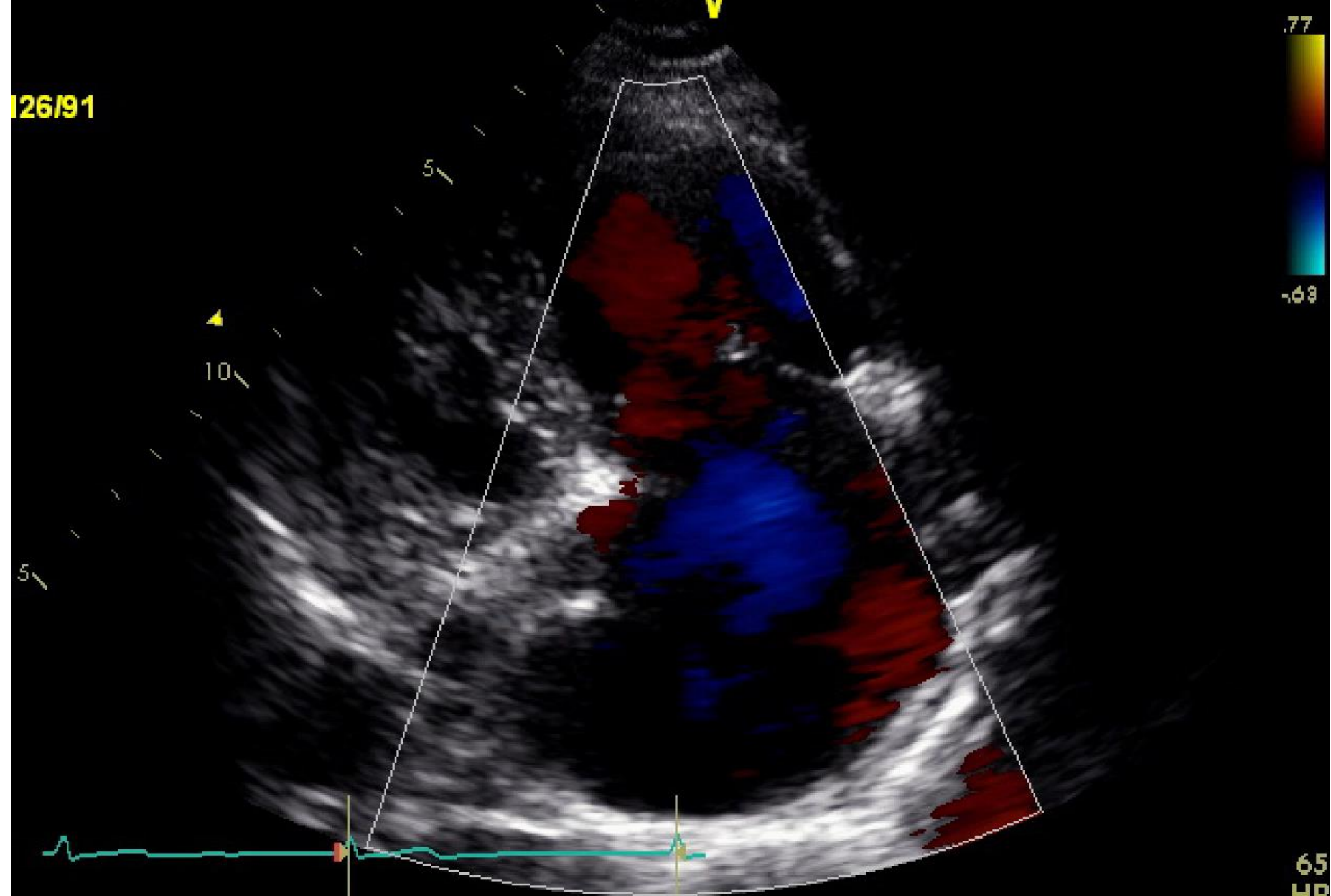
## Adverse events

- Junctional bradycardia: long hospital stay with high cost
- Permanent pacemaker implantation
- Long standing stunned atrium: fluid retention, AKI

# CASE #1

- M/57
- 2016년 심방세동 진단받으면서 몸 붓는 증상
- EchoCG
  - Isolated severe TR
  - No AR, MR
  - Normal LV function
  - Decreased RV systolic function and borderline dilated RV cavity
  - LAVI = 43ml/m<sup>2</sup>

126/91



65  
HR

32183471

2016-08-16

16:28:10

김하섭

65 years

Male

Institution:

Dept: TS

Room: 17W

Operator:

Rate 79  
RR 760  
PR interval  
QRSD 100  
QT 364  
QTcB 418  
QTcF 399

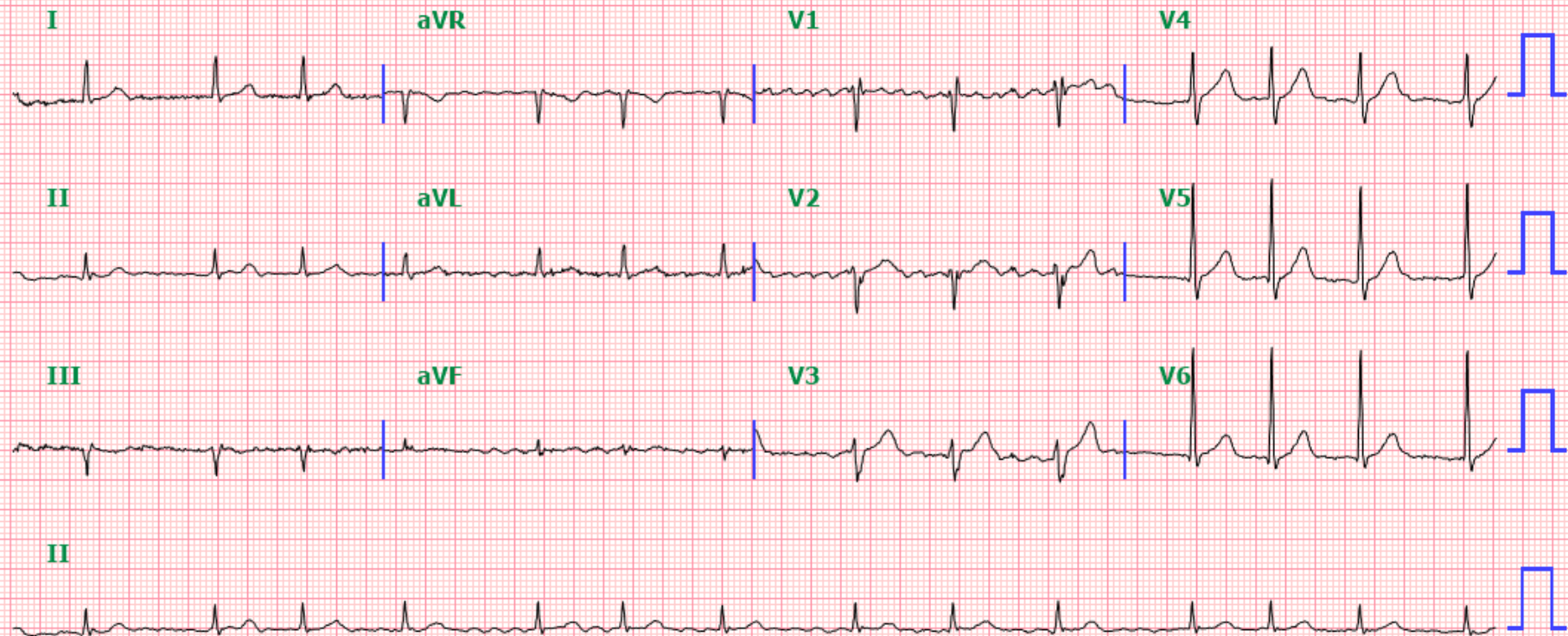
.....AXIS.....

P  
QRS 4  
T 12

ATRIAL FIBRILLATION, V-RATE 66-101 .....var'd rate, irreg atrial activity  
RSR' IN V1 OR V2, RIGHT VCD OR RVH .....QRS area positive & R' V1/V2  
BASELINE WANDER IN LEAD(S) I,V2,V4,V5,V6

[ UID : ]  
[ PID : 32183471 / Date : 2016-08-16 ]  
Unconfirmed Diagnosis

- ABNORMAL ECG -



# CASE #1: operation

## OPERATION

Tricuspid annuloplasty with SJ tailor ring 31mm

Modified crymaze operation

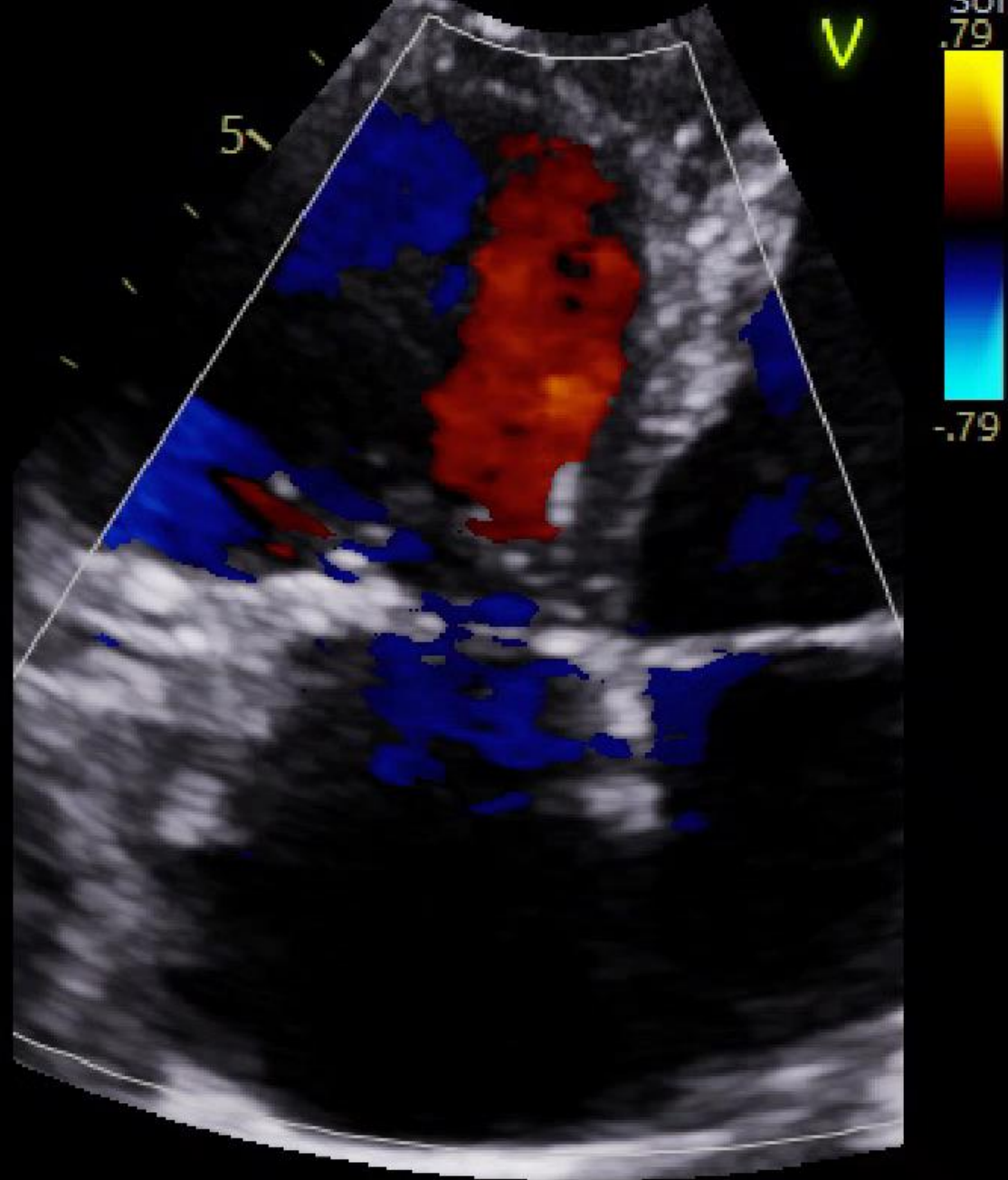
LAA internal obliteration

**POD 5<sup>th</sup> : discharge with normal sinus rhythm and mild TR**

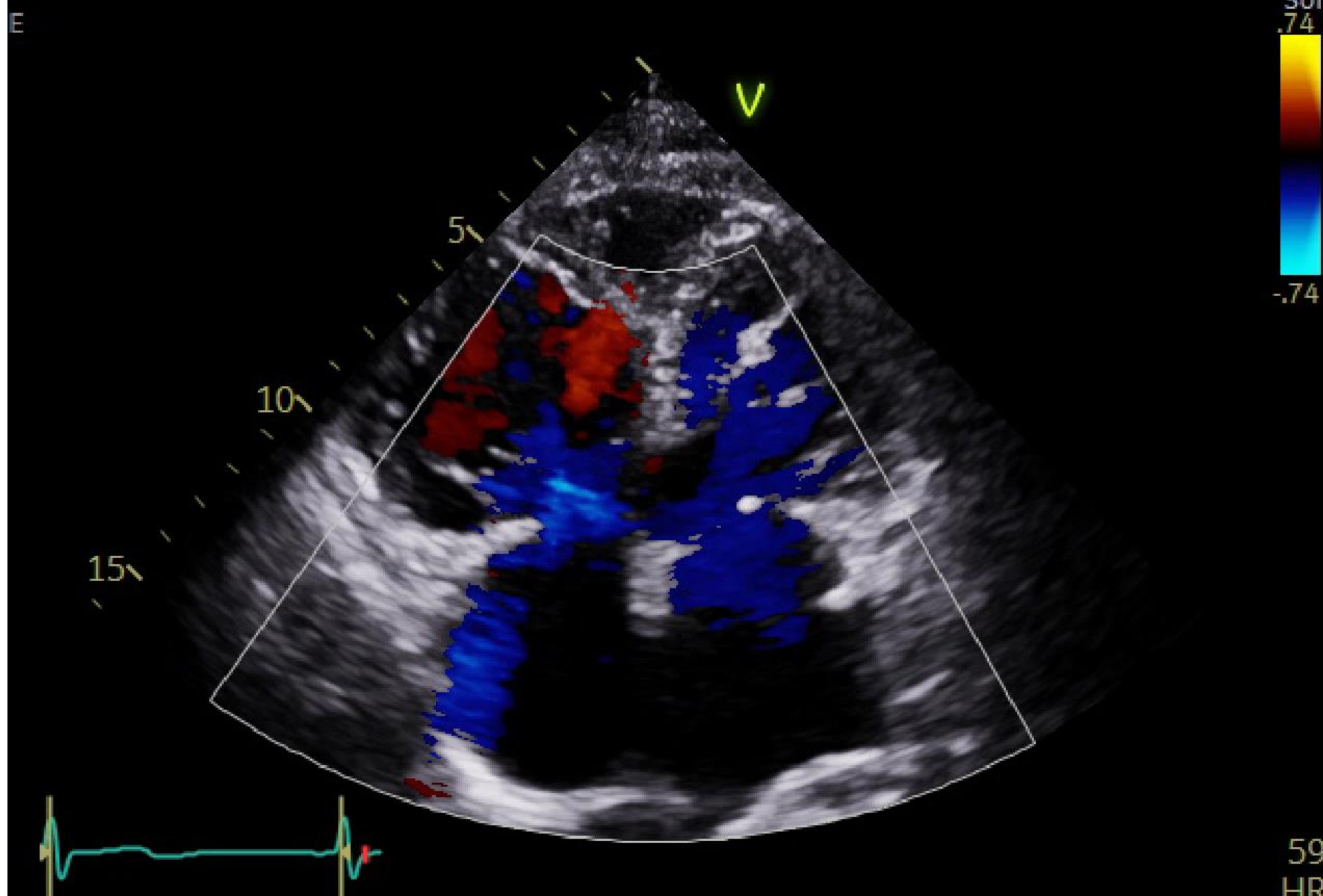




8 YEARS LATER



58  
HR







32183471

2024-04-24

14:14:36

김하섭

72 years

Male

Institution:

Dept: TS

Room:

Operator:

Rate 63

RR 952

PR interval 159

QRSD 123

QT 440

QTcB 451

QTcF 447

..... AXIS .....

P -2

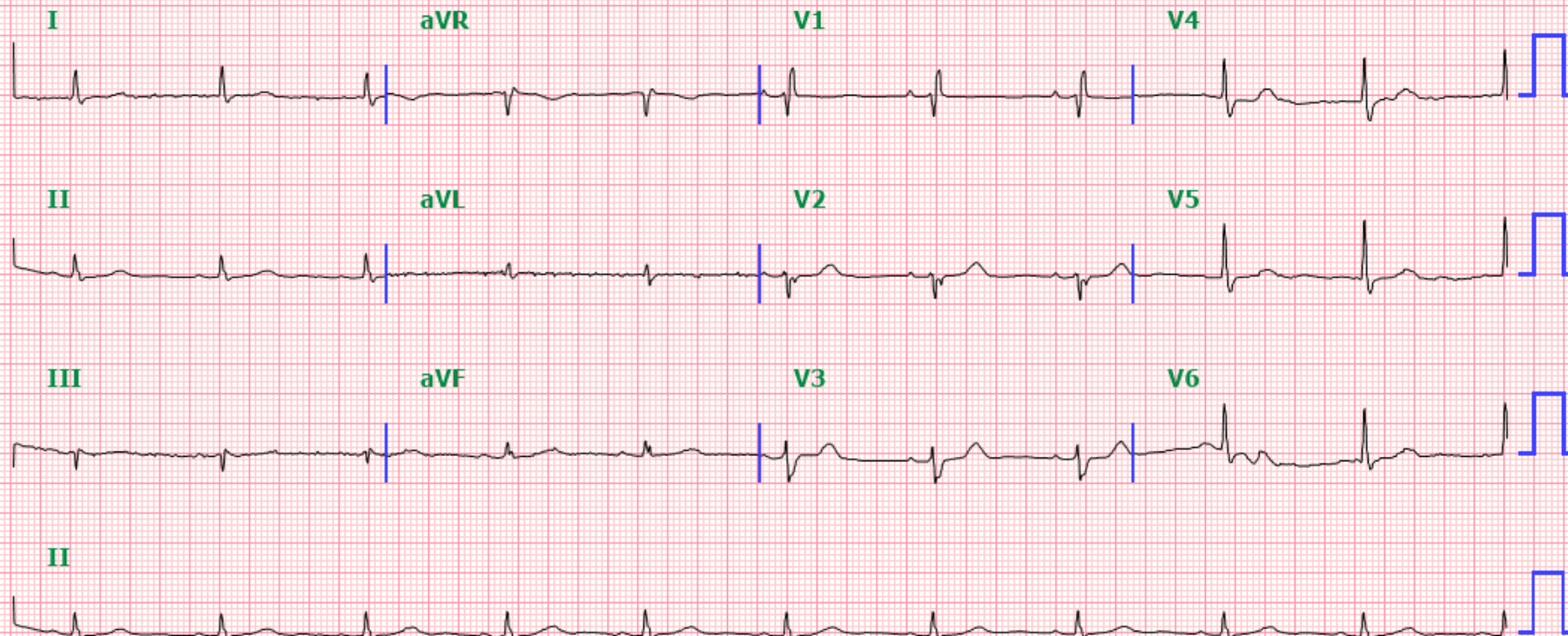
QRS 43

T 62

Sinus rhythm ..... normal P axis, V-rate 50- 99  
Right bundle branch block ..... QRSd>120, terminal axis(90,270)  
Baseline wander in lead(s) V3

[ UID : ]  
[ PID : 32183471 / Date : 2024-04-24 ]  
Unconfirmed Diagnosis

- ABNORMAL ECG -




# CASE #2

- M/68
- 2015년 severe TR 진단
- 2017년 TVR with CE magna 33mm, **cryomaze with LAA resection**
- 2022년 prosthetic valve failure (severe TR) with **AF**
- EchoCG at first operation
  - Isolated prosthetic severe TR
  - No AR, MR
  - Normal LV function
  - dilated RV cavity with borderline pulmonary hypertension (RVSP = 38mmHg)
  - LAVI = 78ml/m<sup>2</sup>



06/09/2017 10:39:07 AM

0dB / MI: 1.26 / TIS: 0.91  
Cardiac / ADULT ECHO\* / 4V1c  


0.92 m/s

0.92 m/s

22 fps / R 25.30 mm

39 bpm / Gen Flow

117/73 mmHg

---2D---

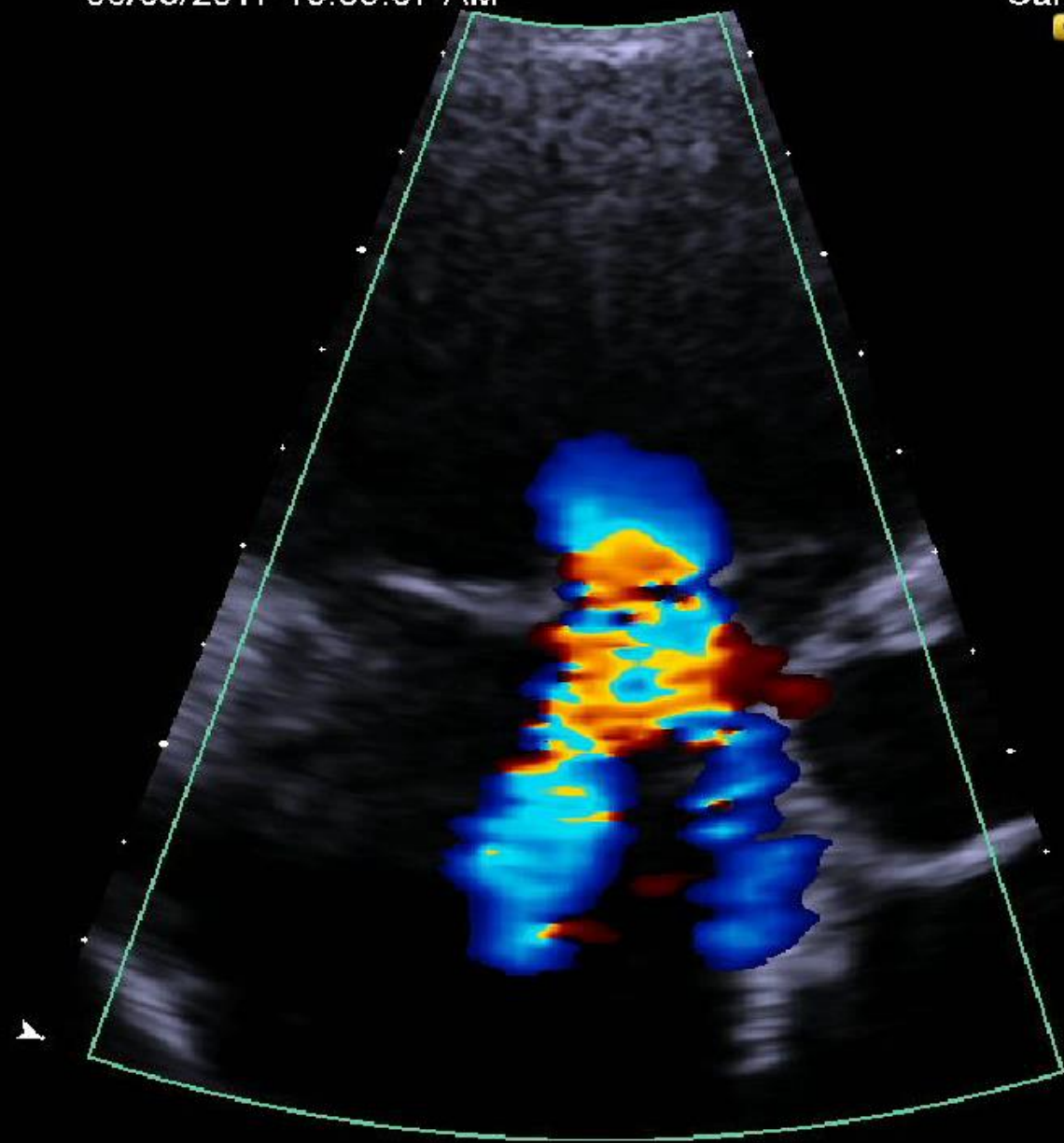
LVO / -2 dB

DR: 55 dB

---Color---

CDV / 2.0MHz

-4 dB





5 YEARS LATER

# CASE #2

- **Atrial fibrillation**
- EchoCG at second operation
  - Isolated prosthetic severe TR
  - No AR, MR
  - Normal LV function
  - Decreased RV function (D-shaped LV)
  - dilated RV cavity with moderate pulmonary hypertension  
(RVSP = 68mmHg)
  - LAVI = 84.7ml/m<sup>2</sup>

# CASE #2: operation: 2nd

- On pump beating TVR with Hancock 31mm (VATS)
- Hospital course
  - ✓RV dysfunction 진행
  - ✓CRRT due to AKI
  - ✓Delirium
  - ✓Permanent pacemaker insertion
  - ✓POD 22일째 퇴원

2 YEARS LATER

Lossy compressed

05/26/2023 11:04:39 AM

0dB / MI: 1.25 / TIS: 0.65  
Cardiac / ADULT-ECHO\* / 4V1c

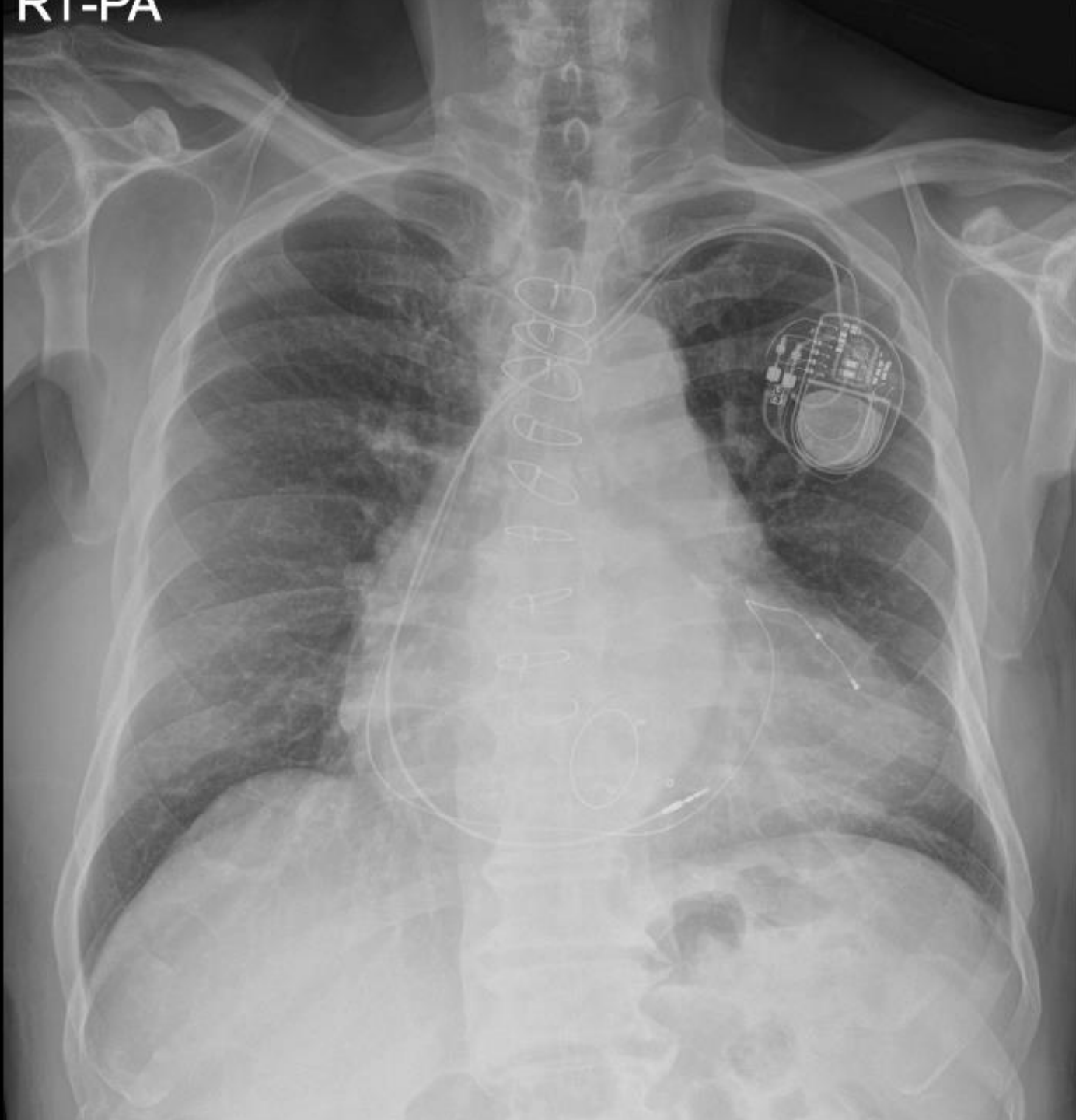
0.84 m/s

0.84 m/s

14 fps / 180 mm  
64 bpm / II / Gen Flow  
---2D---  
LVO / 5 dB  
DR: 65 dB  
---Color---  
CDV / 2.0MHz  
-4 dB



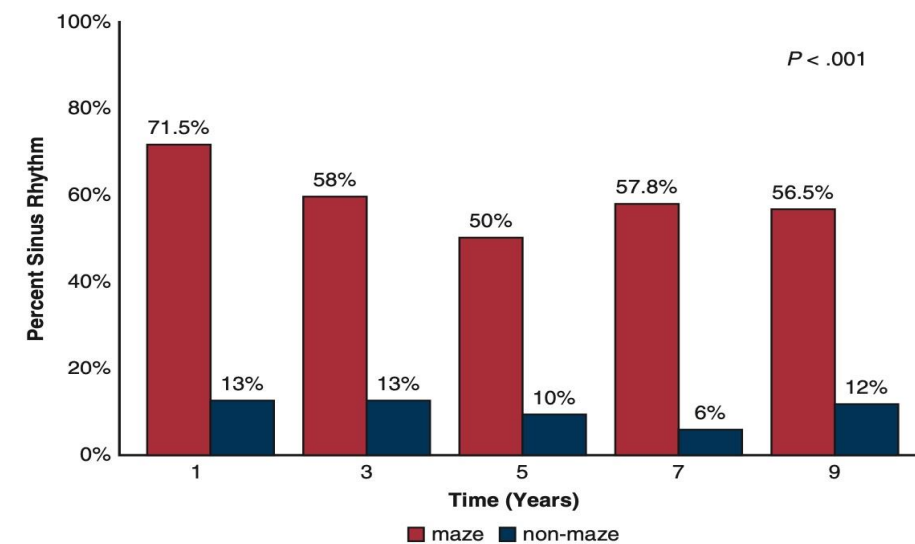
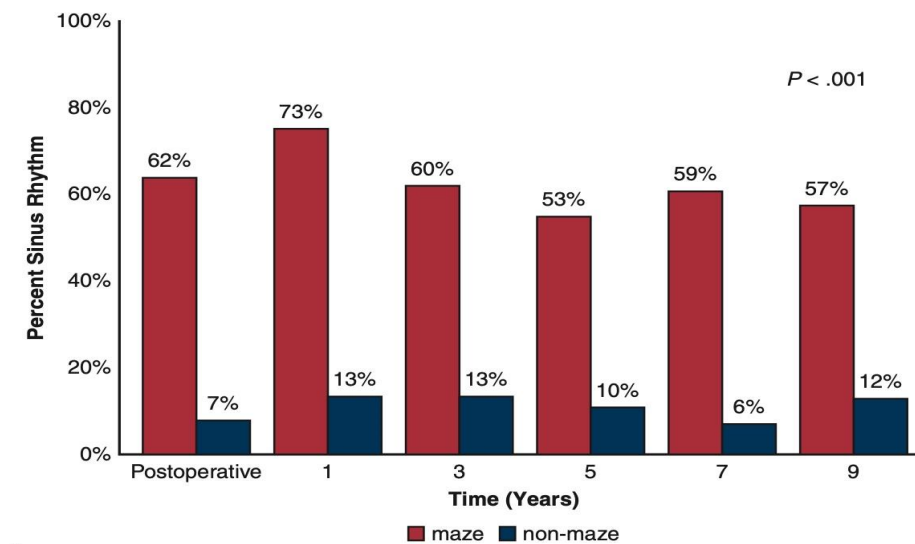
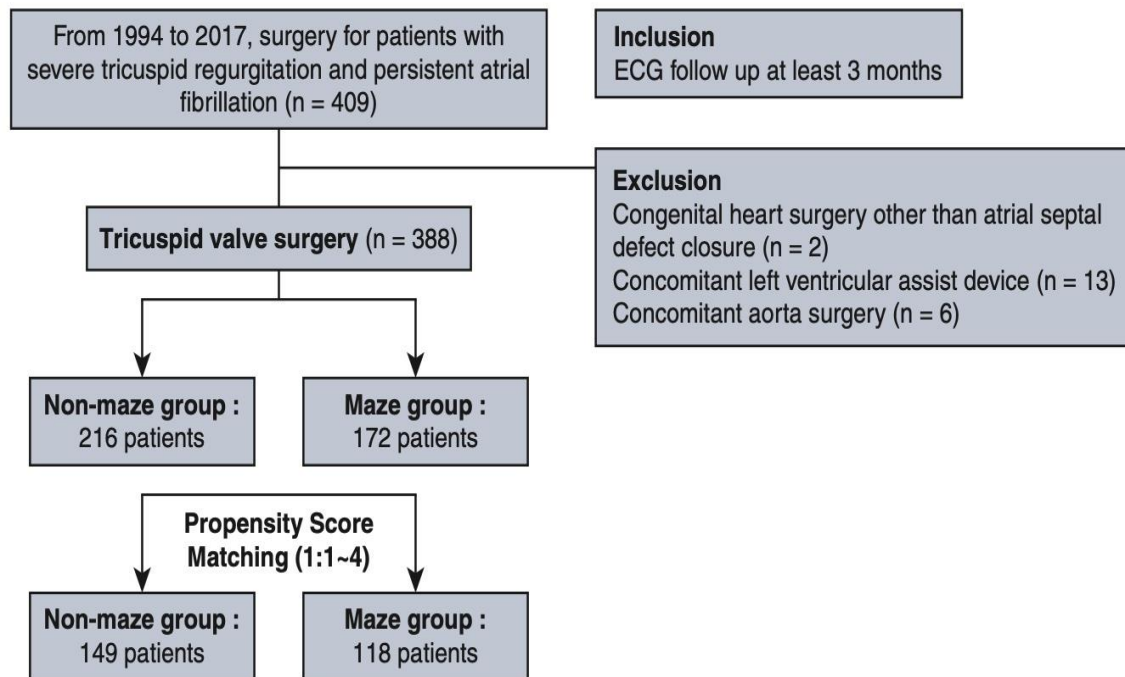
RT-PA



# Impact of maze procedure in patients with severe tricuspid regurgitation and persistent atrial fibrillation

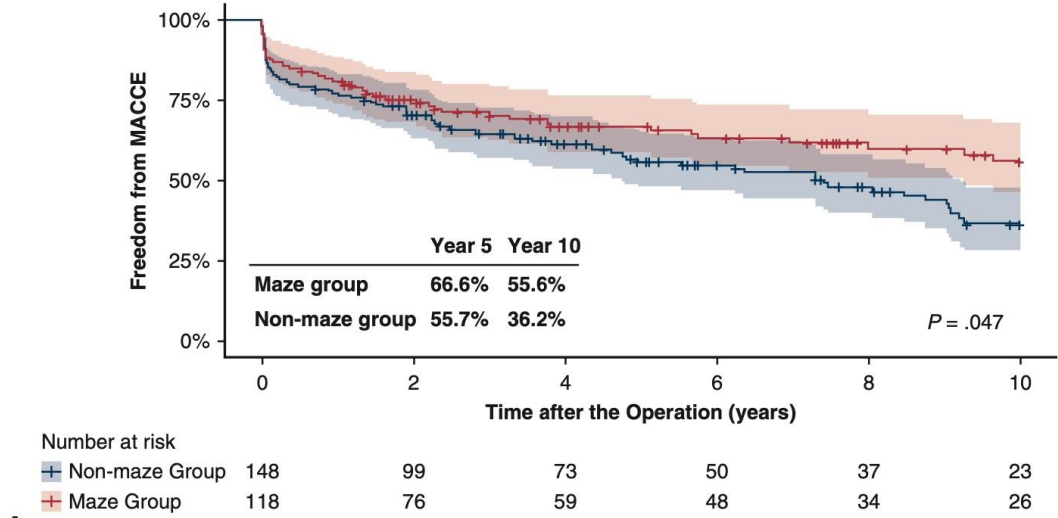


Ilkun Park, MD, MS,<sup>a</sup> Dong Seop Jeong, MD, PhD,<sup>a</sup> Sung-Ji Park, MD, PhD,<sup>b</sup> Joong Hyun Ahn, MS,<sup>c</sup> Jihoon Kim, MD, PhD,<sup>b</sup> Eun Kyoung Kim, MD, PhD,<sup>b</sup> Kiick Sung, MD, PhD,<sup>a</sup> Wook Sung Kim, MD, PhD,<sup>a</sup> and Pyo Won Park, MD, PhD<sup>d</sup>

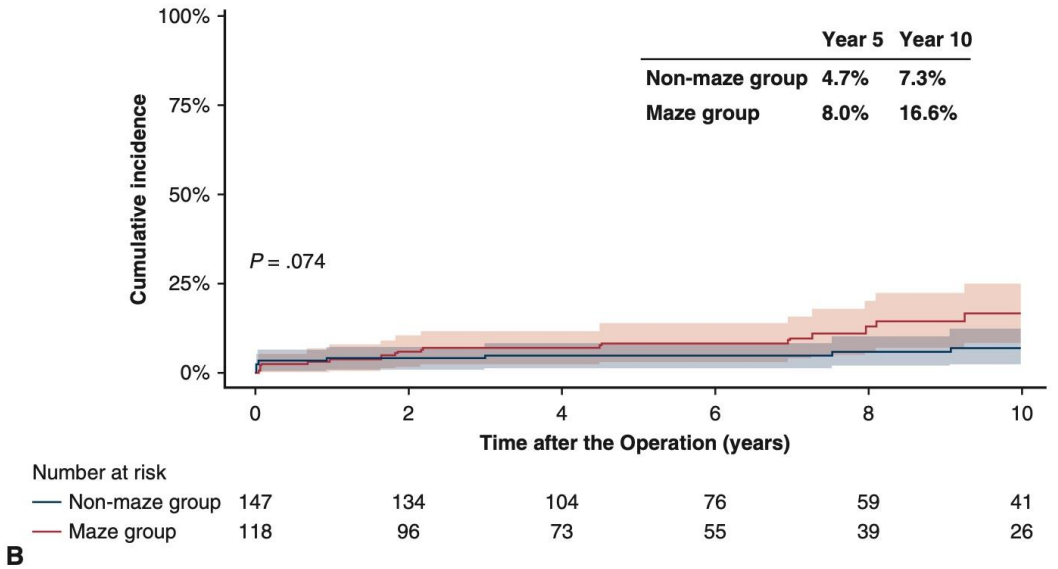




MACE



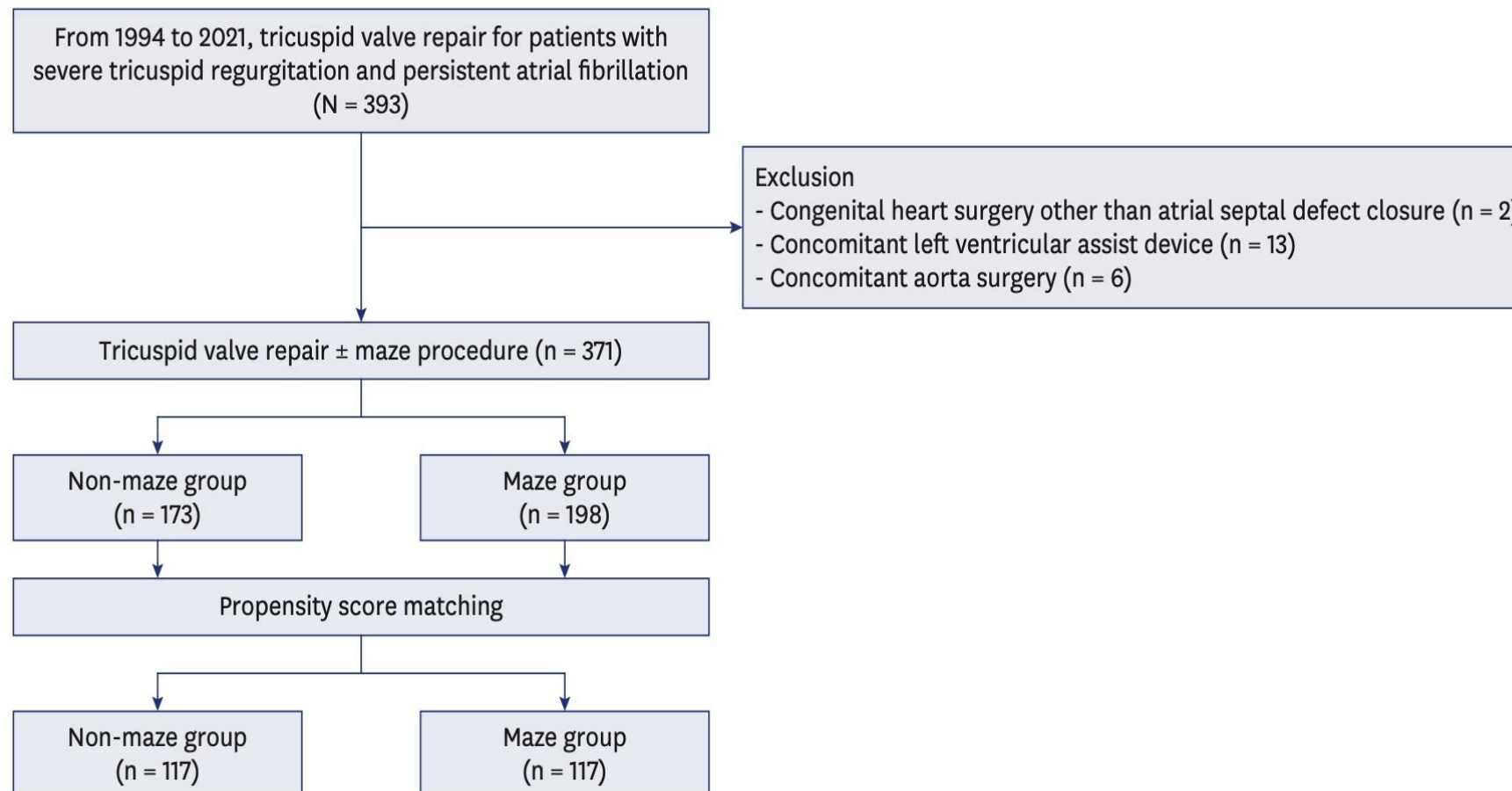
PPM insertion

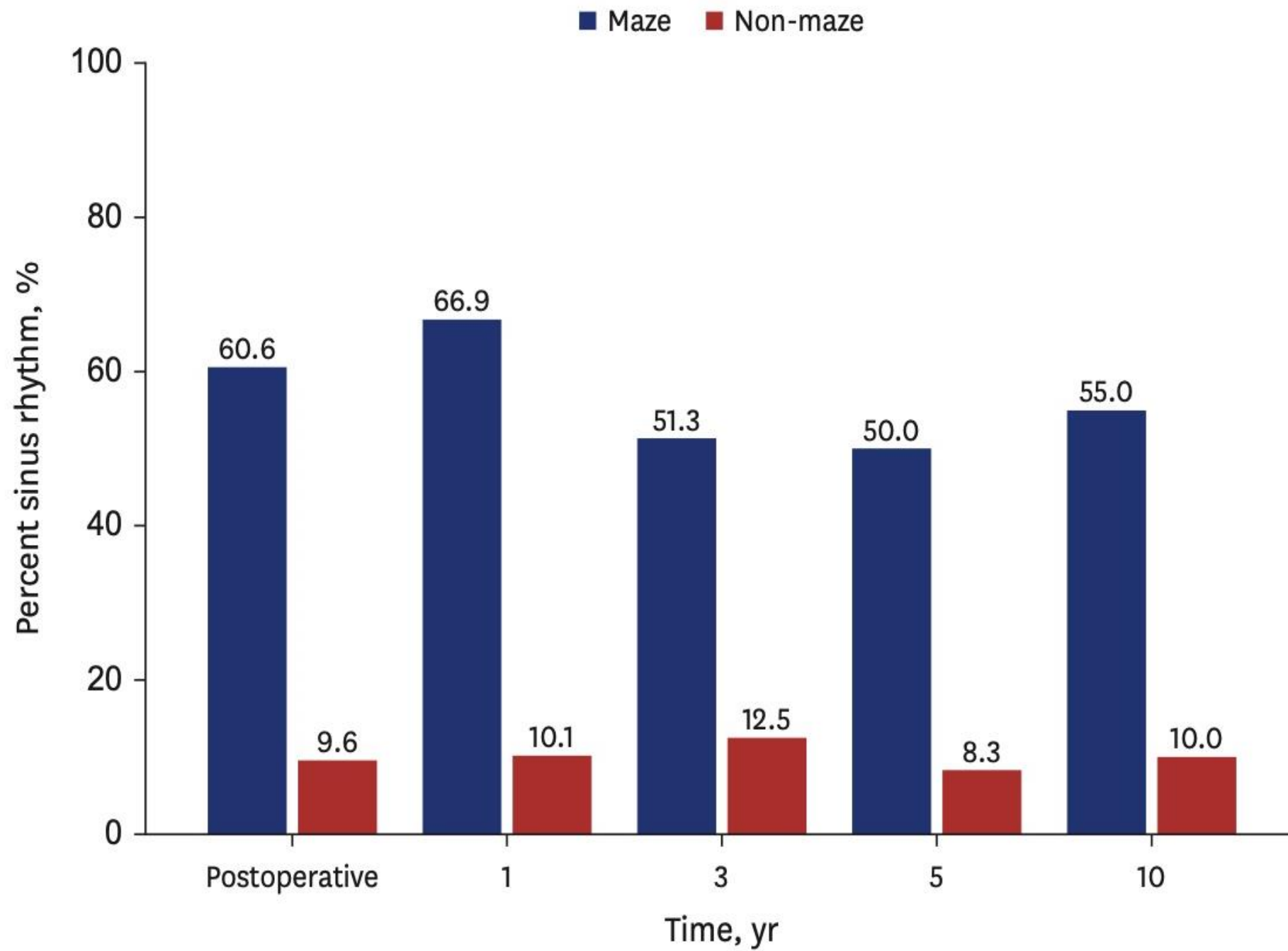


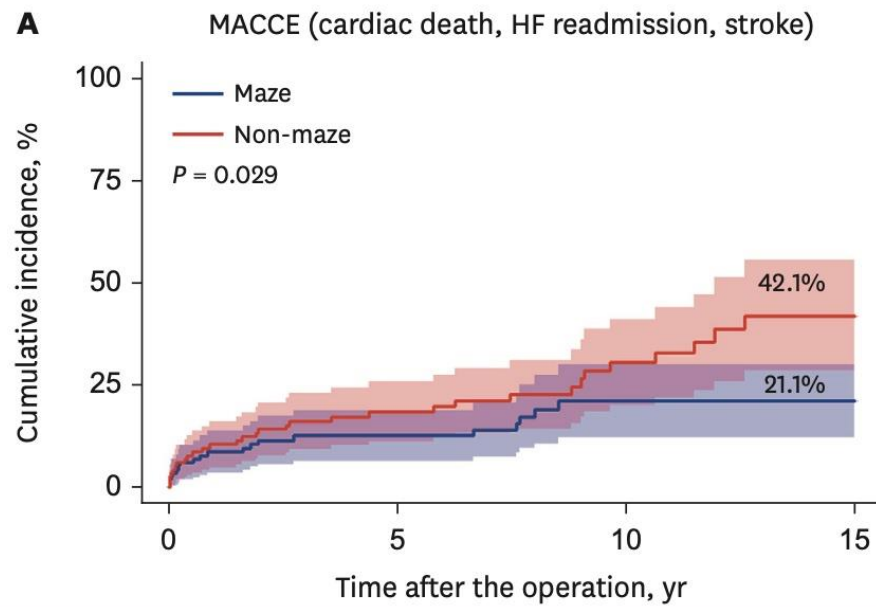
Original Article  
Cardiovascular Disorders

# Outcomes of Concomitant Maze Procedure in Tricuspid Repair for Severe Tricuspid Regurgitation

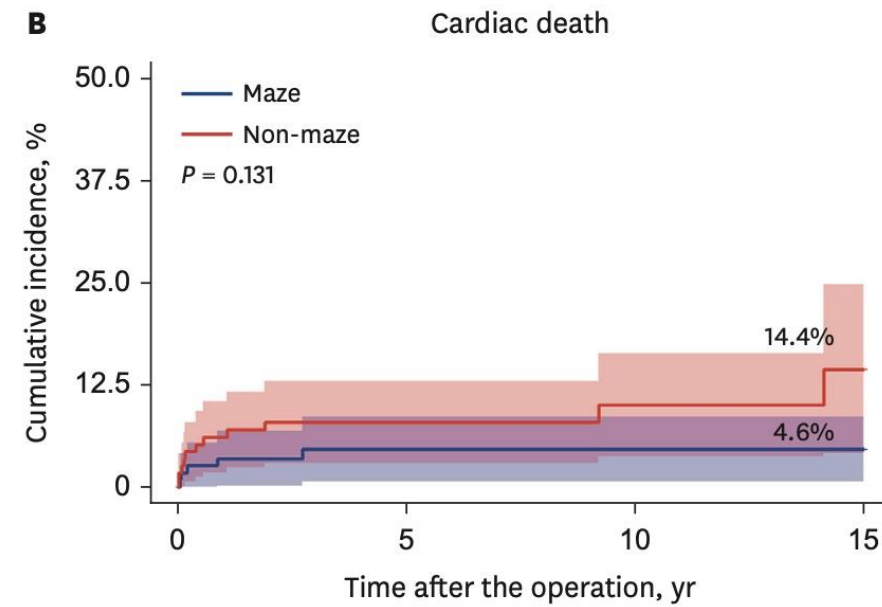
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Wook Sung Kim <sup>1</sup>, Kyungsub Song <sup>2</sup>, Joong Hyun Ahn <sup>3</sup>, Chang Seok Jeon <sup>4</sup>,  
Pyo Won Park <sup>4</sup> and Dong Seop Jeong <sup>1</sup>



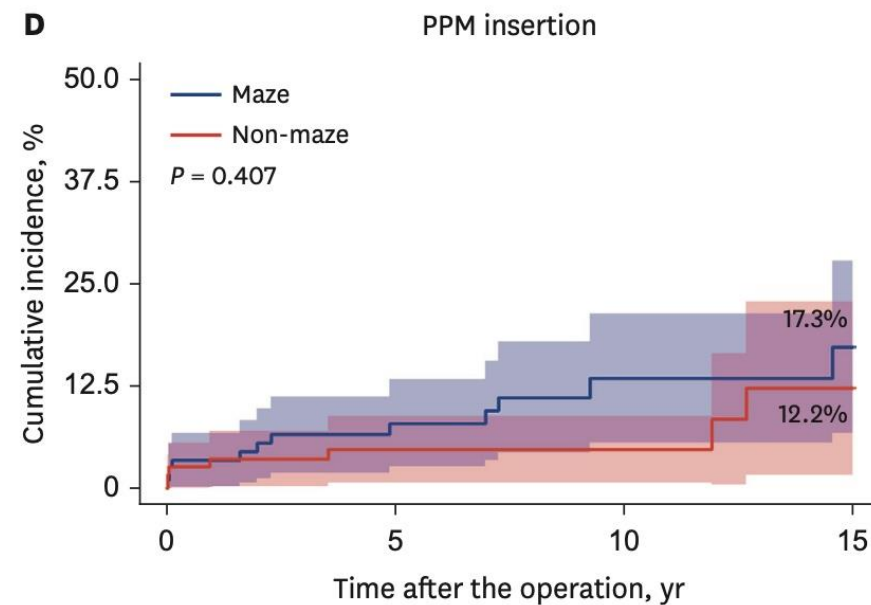
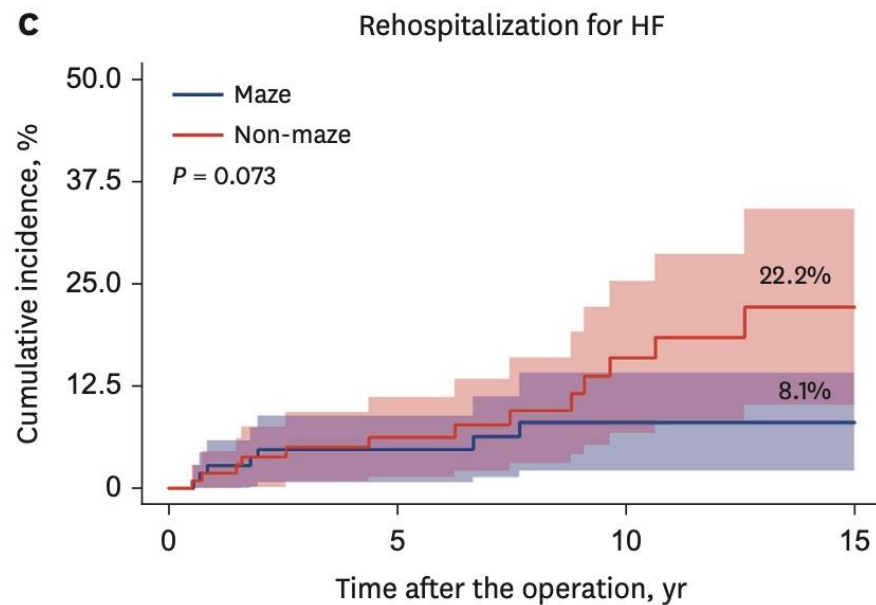




| No. at risk |     |    |    |    |
|-------------|-----|----|----|----|
| Maze        | 117 | 63 | 30 | 16 |
| Non-maze    | 117 | 67 | 32 | 14 |



| No. at risk |     |    |    |    |
|-------------|-----|----|----|----|
| Maze        | 117 | 65 | 33 | 18 |
| Non-maze    | 117 | 73 | 38 | 17 |



# Summary: pros

- Less hemodynamic instability
- Mainly combined with **valve repair** rather than valve replacement
- More effective in isolated (functional) tricuspid regurgitation
- Left atrial appendage exclusion more effectively
- Less recurrent tricuspid regurgitation after valve repair
- **Rhythm control in tricuspid valve repair (>> intervention)**
- Not too much in valve surgery (e.g. core-knot.....)

감사합니다.

