Hot Debates in Arrhythmia Surgery :

Case #1: AF combined with Giant Left Atrium (GLA) in young patients

# CON: I DO NOT maze operation and only LAA exclusion

Cheong Lim, MD, PhD


Pros
Cons

- F/53
- severe rheumatic MS, TR (mod.), Af
- LVEF 42%, h/o LAA thrombi, LA size 63 mm (LAVI 103)

- Op. ('23-4-27)
  - MVR (mech.), TAP, cryo-maze, LAAIO
- F/U
  - Echo('23-5-2) : well functioning MV, LVEF 62%, LA size 55 / 112
  - Echo('24-5-28) : well functioning MV, LVEF 64%, A wave (+), trivial TR
    => LA size 45 / 73

- On Warfarin, fate of TR?

- M/56
- severe degenerative MR, TR (sev.), Af
- ADHF (LVEF 65%), LA size 85 mm (LAVI 367)

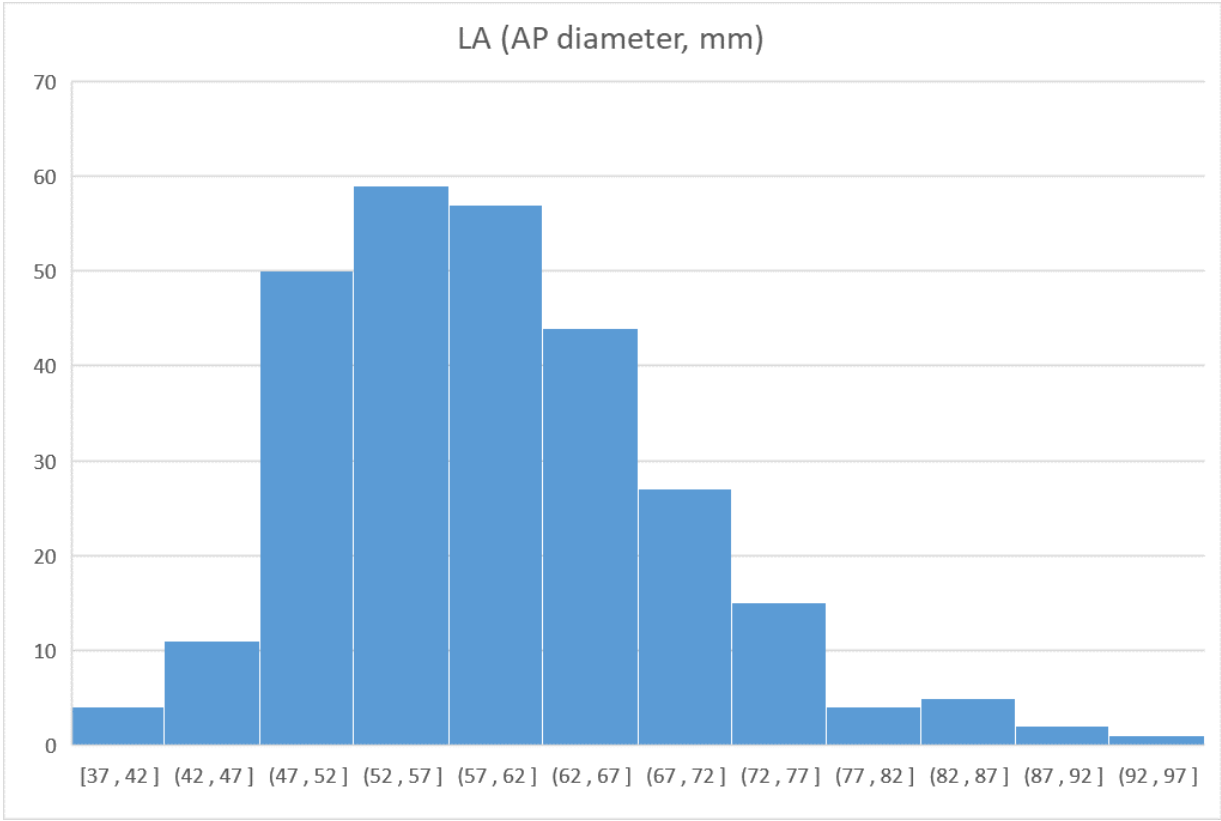
- Op. ('23-3-23)
  - MVR (mech.), TAP, LAAIO, LA/RA reduction plasty
- F/U
  - Echo ('23-4-3) : well functioning MV, LVEF 65%, LA size 56 / 146
  - Echo ('24-5-20) : well functioning MV, LVEF 68%, trivial TR

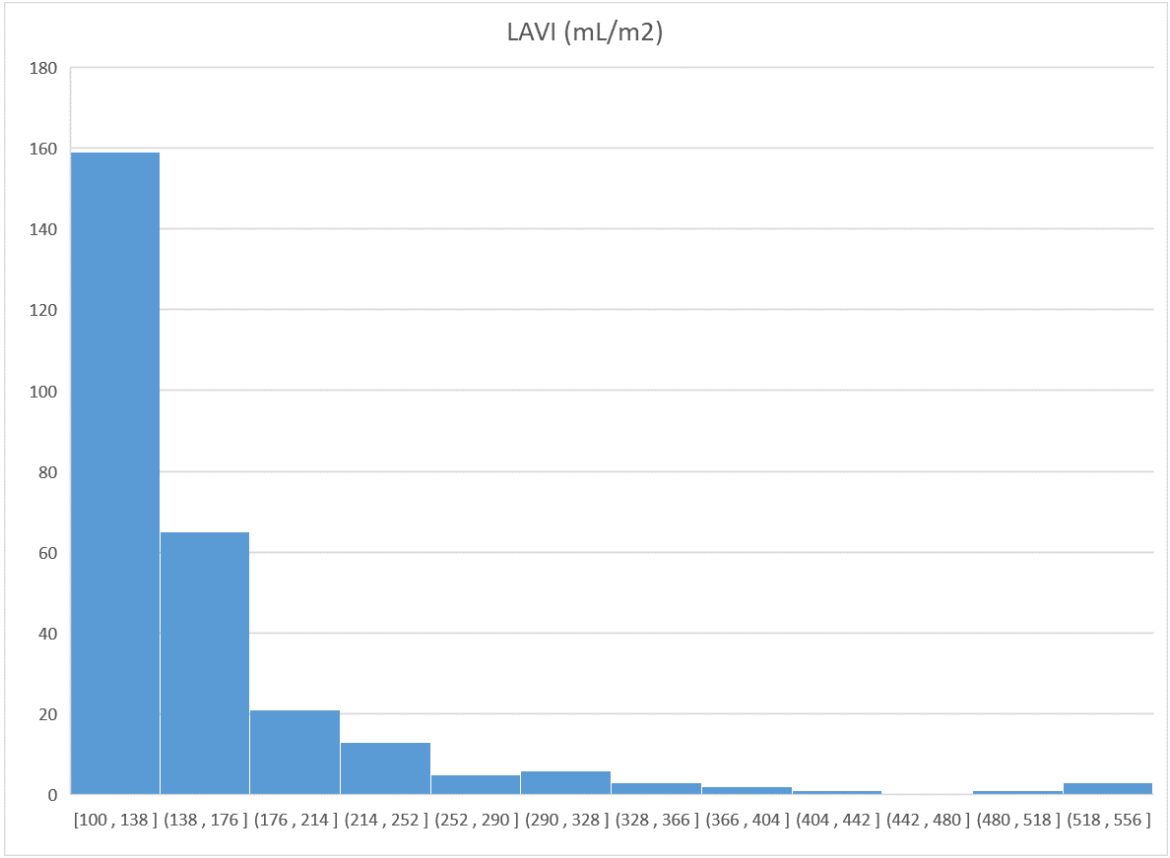
    => LA size 54 / ???

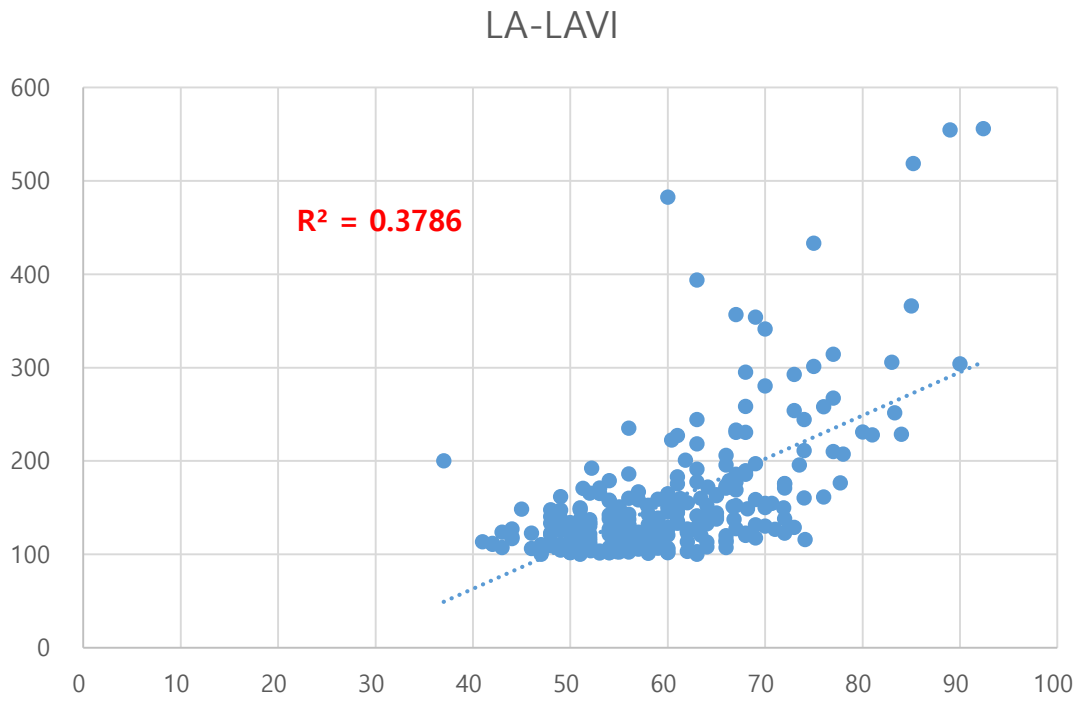
- On Warfarin, fate of TR?

# LA Size : AP ? or LAVI?

- From June 2009 to Jan. 2024
- 283 patients who underwent valve surgery in SNUBH
- M : F = 110 : 173
- Age : 64.5 ± 12 yrs (27 - 96)
- LA (AP) : 59.9 ± 9.4 mm (37 – 92)
- LAVI : 158.6 ± 94.0 mL/$m^2$ (100 – 1,196)


LA (AP diameter, mm)
70
60
50
40
30
20
10
0
[37 , 42 ]
(42 , 47 ]
(47 , 52 ]
(52 , 57 ]
(57 , 62 ]
(62 , 67 ]
(67 , 72 ]
(72 , 77 ]
(77 , 82 ]
(82 , 87 ]
(87 , 92 ]
(92 , 97 ]


LAVI (mL/m2)
180
160
140
120
100
80
60
40
20
0
[100 , 138 ]
(138 , 176 ]
(176 , 214 ]
(214 , 252 ]
(252 , 290 ]
(290 , 328 ]
(328 , 366 ]
(366 , 404 ]
(404 , 442 ]
(442 , 480 ]
(480 , 518 ]
(518 , 556 ]


LA-LAVI
R² = 0.3786
600
500
400
300
200
100
0
0
10
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30
40
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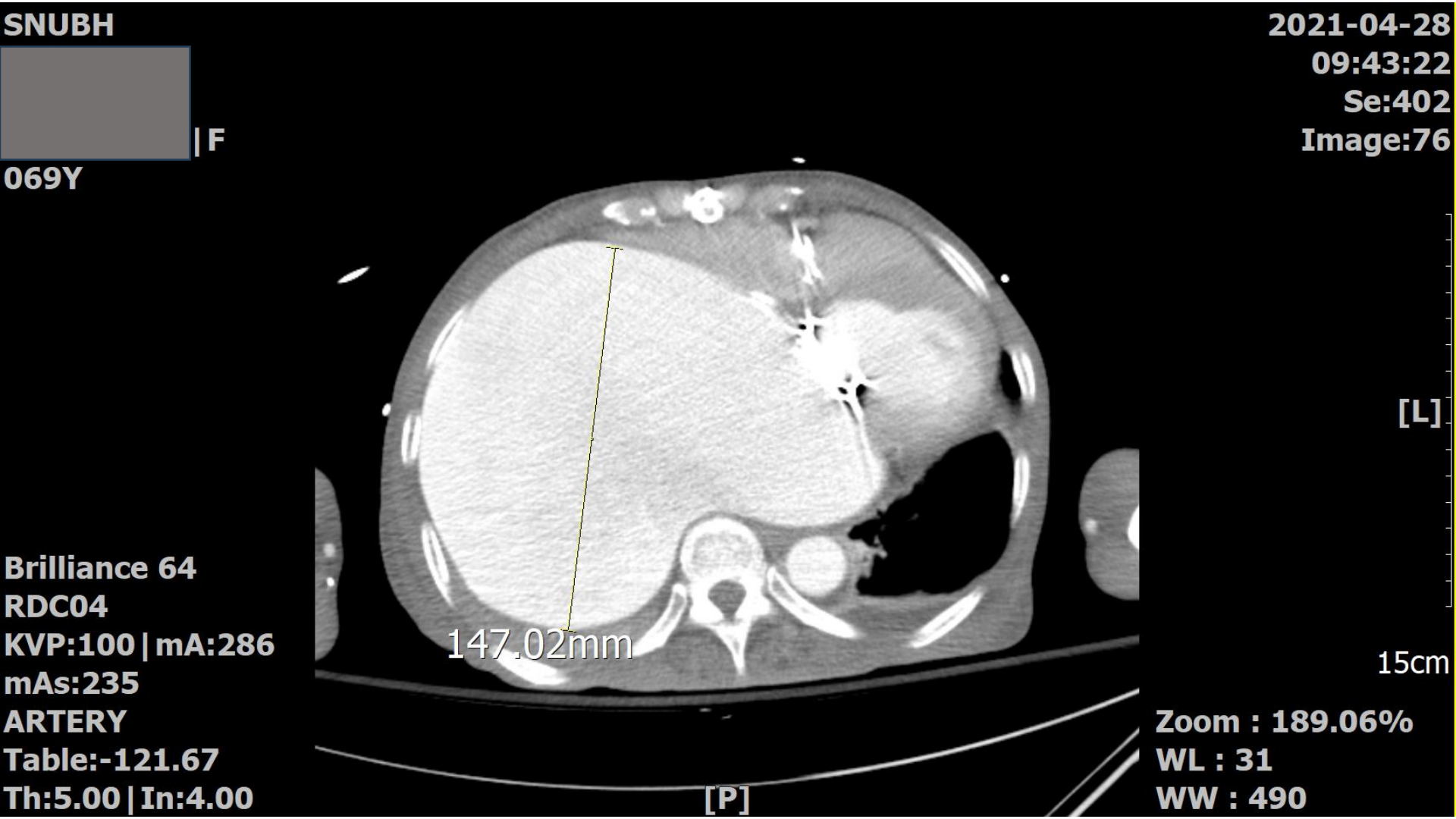
80
90
100


SNUBH
| F
069Y
2021-04-28
09:43:22
Se:402
Image:76
[L]
147.02mm
15cm
Brilliance 64
RDC04
KVP:100 | mA:286
mAs:235
ARTERY
Table:-121.67
Th:5.00 | In:4.00
[P]
Zoom : 189.06%
WL : 31
WW : 490

# LA Size : Maze vs no-Maze

- Maze group (M:F 36:59, 65±11 yrs, 34-82)
  - LA (AP) : 58.8 ± 8.7 mm (42-89)
  - LAVI : 147.7 ± 63.8 mL/$m^2$ (100-555)
- No-Maze group (M:F 74:104, 64.4±12.8 yrs, 27-96)
  - LA (AP) : 60.5 ± 9.8 mm (37-92)
  - LAVI : 165.1 ± 107.5 mL/$m^2$ (100-1,196)

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**ORIGINAL ARTICLE**

Cite this article as: Pasierski M, Batko J, Kuźma Ł, Wańha W, Jasiński M, Widenka K *et al*. Surgical ablation, left atrial appendage occlusion or both? Nationwide registry analysis of cardiac surgery patients with underlying atrial fibrillation. Eur J Cardiothorac Surg 2024; doi:10.1093/ejcts/ezae014.

# Surgical ablation, left atrial appendage occlusion or both? Nationwide registry analysis of cardiac surgery patients with underlying atrial fibrillation

Michał Pasierski[a,b,†], Jakub Batko[b,c,d,†], Łukasz Kuźma[e], Wojciech Wańha[b,f], Marek Jasiński[g], Kazimierz Widenka[h], Marek Deja[i,j], Krzysztof Bartuś[d], Tomasz Hirnle[k], Wojciech Wojakowski[f], Roberto Lorusso [l], Zdzisław Tobota[m], Bohdan J. Maruszewski [m], Piotr Suwalski [a] and Mariusz Kowalewski [a,b,l,n,*], on behalf of KROK Investigators[‡]

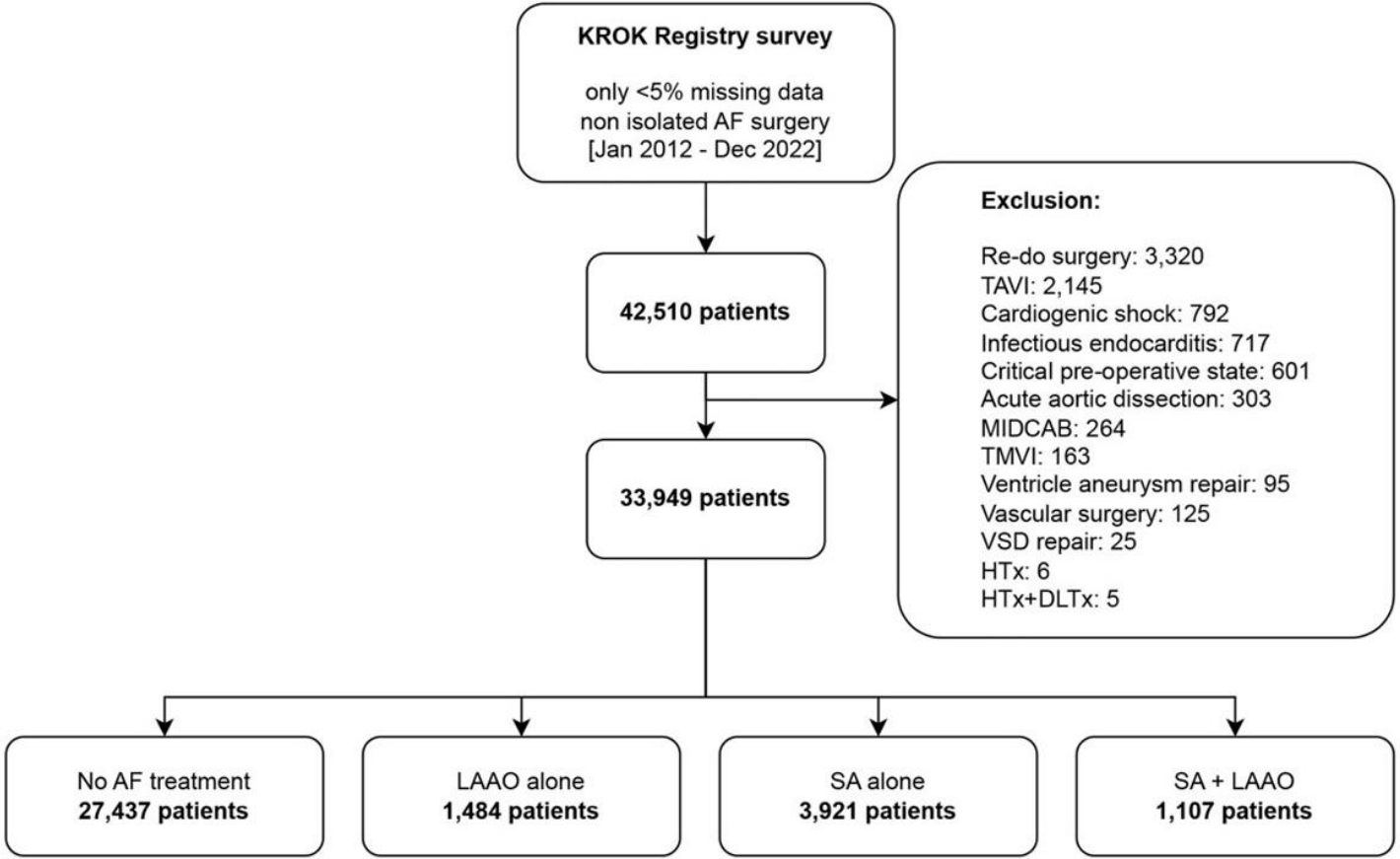



**Figure 1:** Patient flow. AF: atrial fibrillation; DLTx: double lung transplantation; HTx: heart transplantation; LAAO: left atrial appendage occlusion; MIDCAB: minimally invasive direct coronary artery bypass grafting; SA: surgical ablation; TAVI: transcatheter aortic valve implantation; TMVI: transcatheter mitral valve implantation; VSD: ventricular septum defect.

# Atrial fibrillation management during cardiac surgery

## Summary

In a large registry-based analysis, AF directed interventions (isolated SA, isolated LAAO, and combined SA+LAAO) surpassed no-treatment in 6-year survival. The strongest benefit was associated with combined treatment trailed by SA and LAAO. This study advocates SA+LAAO for preoperative AF in cardiac surgery.

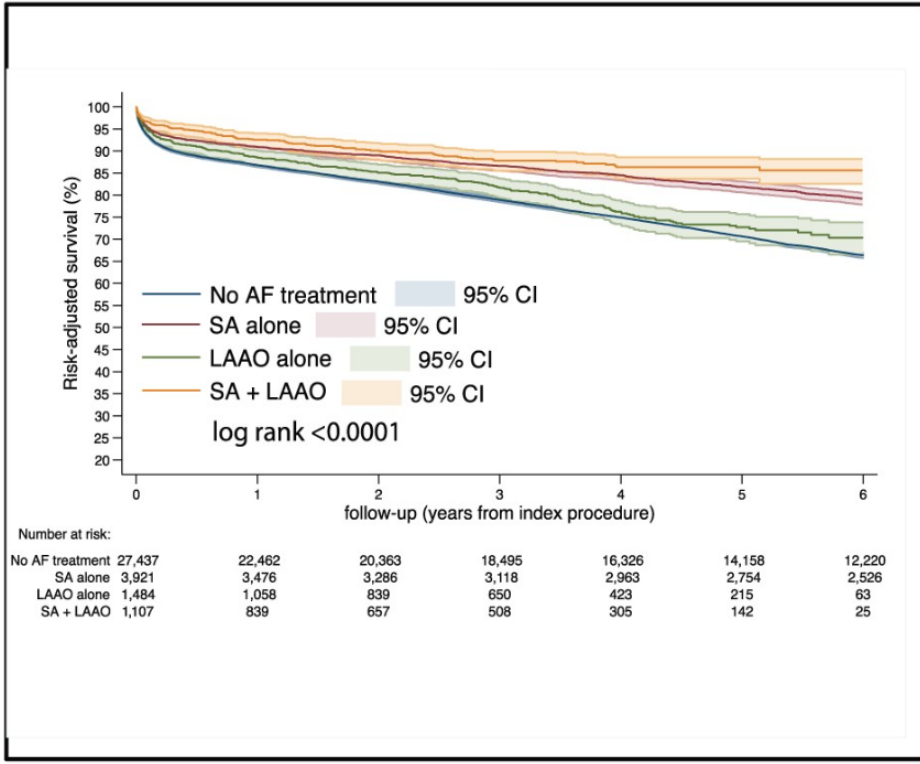
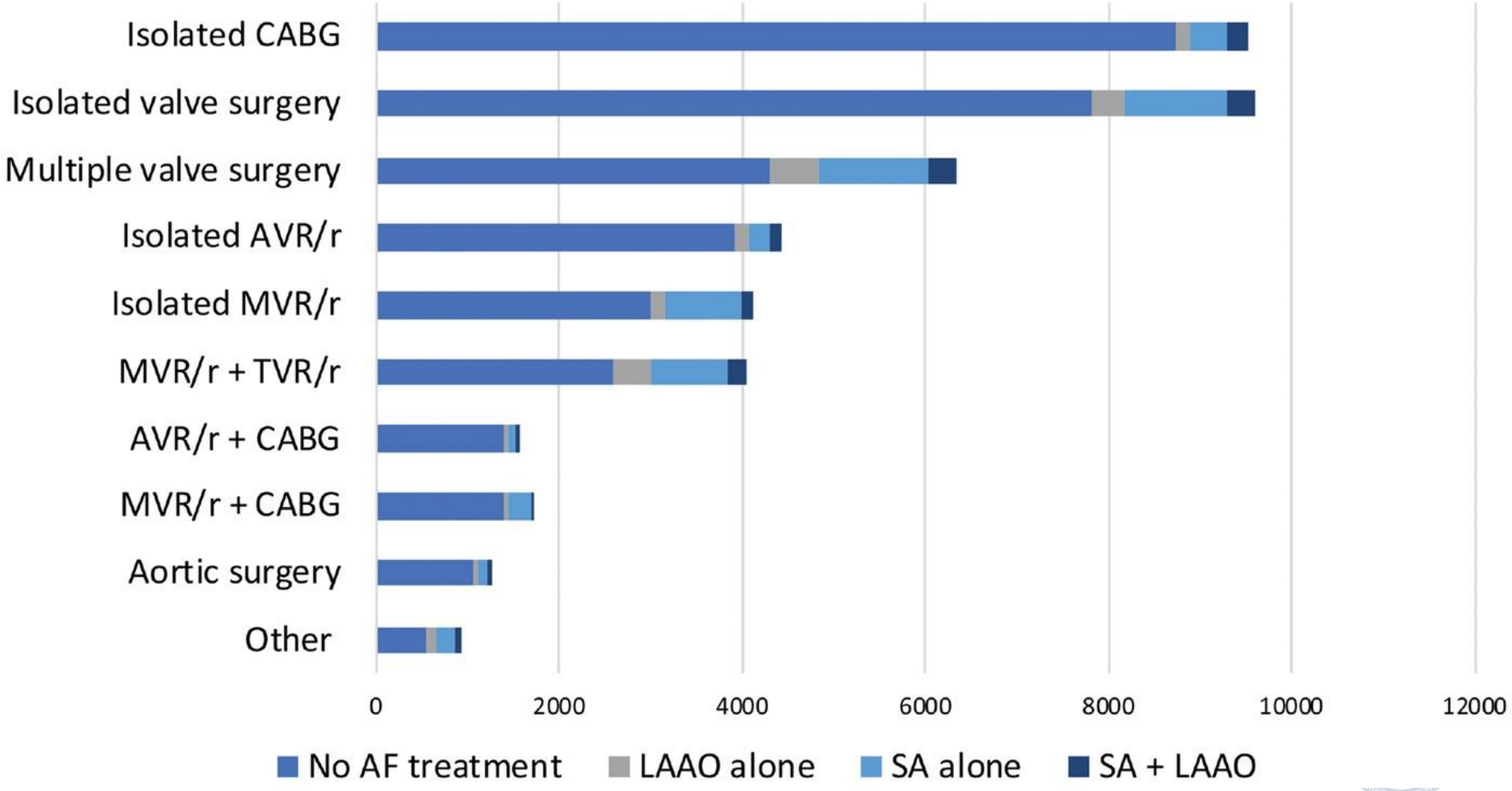


**Table 1:** Patients' unadjusted baseline characteristics

| Variable | Total (33 949) | SA + LAAO (1107) | *P*-value | LAAO alone (1484) | *P*-value | SA alone (3921) | *P*-value | No-AF treatment (27 437) |
|---|---|---|---|---|---|---|---|---|
| Age years, median [IQR] | 68 [12] | 67 [10] | <0.001 | 70 [10] | <0.001 | 64 [12] | <0.001 | 69 [11] |
| Male gender, *n* (%) | 20 633 (60.8) | 742 (67) | <0.001 | 864 (58.2) | 0.009 | 2129 (54.3) | <0.001 | 16 898 (61.6) |
| Diabetes, *n* (%) | | | | | | | | |
| Untreated | 248 (0.7) | 13 (1.2) | 0.002 | 13 (0.9) | <0.001 | 18 (0.5) | <0.001 | 204 (0.7) |
| Oral | 7099 (20.9) | 277 (25) | | 377 (25.4) | | 610 (15.6) | | 5835 (21.3) |
| Insulin | 3653 (10.8) | 100 (9) | | 129 (8.7) | | 302 (7.7) | | 3122 (11.4) |
| Smoking, *n* (%) | | | | | | | | |
| Former smoker | 14 246 (42) | 521 (47.1) | <0.001 | 645 (43.5) | 0.549 | 1549 (39.5) | <0.001 | 11 531 (42.1) |
| Smoker | 3401 (10) | 138 (12.5) | | 146 (9.8) | | 332 (8.5) | | 2 785 (10.2) |
| Hypertension, *n* (%) | 27 583 (81.3) | 905 (81.8) | 0.533 | 1253 (84.4) | 0.053 | 2795 (71.3) | <0.001 | 22 630 (82.5) |
| Hyperlipidaemia, *n* (%) | 17 993 (53) | 640 (57.8) | 0.012 | 830 (55.9) | 0.143 | 1713 (43.7) | <0.001 | 14 810 (54) |
| BMI, median [IQR] | 28.1 [6] | 28.4 [5.7] | 0.015 | 27.9 [6.4] | 1.000 | 28 [5.9] | 0.743 | 28.1 [6] |
| BSA, median [IQR] | 1.9 [0.3] | 2 [0.3] | <0.001 | 1.9 [0.3] | 1.000 | 1.9 [0.3] | 1.000 | 1.9 [0.3] |
| Pulmonary hypertension, *n* (%) | | | | | | | | |
| Moderate | 3788 (11.2) | 246 (22.2) | <0.001 | 422 (28.4) | <0.001 | 403 (10.3) | 0.292 | 2717 (9.9) |
| Severe | 1046 (3.1) | 27 (2.4) | | 87 (5.9) | | 130 (3.3) | | 802 (2.9) |
| Renal impairment, *n* (%) | | | | | | | | |
| Moderate | 9990 (29.4) | 497 (44.9) | <0.001 | 708 (47.7) | <0.001 | 836 (21.3) | <0.001 | 7949 (29) |
| Severe | 3754 (11.1) | 87 (7.9) | | 248 (16.7) | | 275 (7) | | 3144 (11.5) |
| Dialysis (regardless of CC) | 223 (0.7) | 7 (0.6) | | 13 (0.9) | | 11 (0.3) | | 192 (0.7) |
| Peripheral artery disease, *n* (%) | 6211 (18.3) | 140 (12.6) | <0.001 | 506 (34.1) | <0.001 | 306 (7.8) | <0.001 | 5259 (19.2) |
| Cerebrovascular disease, *n* (%) | 3311 (9.8) | 91 (8.2) | <0.001 | 294 (19.8) | <0.001 | 212 (5.4) | <0.001 | 2714 (9.9) |
| History of stroke | 1191 (3.5) | 20 (1.8) | <0.001 | 91 (6.1) | 0.001 | 73 (1.9) | <0.001 | 1007 (3.7) |
| History of TIA | 1085 (3.2) | 38 (3.4) | 0.664 | 126 (8.5) | <0.001 | 65 (1.7) | <0.001 | 856 (3.1) |
| Carotid intervention | 281 (0.8) | 8 (0.7) | 0.866 | 14 (0.9) | 0.664 | 25 (0.6) | 0.186 | 234 (0.9) |
| Chronic lung disease, *n* (%) | 3046 (9) | 91 (8.2) | 0.023 | 182 (12.3) | <0.001 | 261 (6.7) | <0.001 | 2512 (9.2) |
| Asthma | 1506 (4.4) | 65 (5.9) | 0.023 | 89 (6) | 0.005 | 137 (3.5) | <0.001 | 1215 (4.4) |
| LVEF,[a] median [IQR] | 52 [15] | 53 [15] | 1.000 | 50 [16] | 0.005 | 55 [17] | <0.001 | 50 [16] |
| CAD, *n* (%) | 17 348 (51.1) | 480 (43.4) | <0.001 | 543 (36.6) | <0.001 | 1301 (33.2) | <0.001 | 15 024 (54.8) |
| ACS | 1686 (5) | 30 (2.7) | <0.001 | 26 (1.8) | <0.001 | 68 (1.7) | <0.001 | 1565 (5.7) |
| LM | 3822 (11.3) | 91 (8.2) | <0.001 | 76 (5.1) | <0.001 | 186 (4.7) | <0.001 | 3469 (12.7) |
| MVD | 12 022 (35.4) | 334 (30.2) | <0.001 | 316 (21.3) | <0.001 | 765 (19.5) | <0.001 | 10 607 (38.7) |
| Previous MI, *n* (%) | 8369 (24.7) | 214 (19.3) | <0.001 | 267 (18) | <0.001 | 472 (12) | <0.001 | 7416 (27) |
| <90 days | 4589 (13.5) | 78 (7) | <0.001 | 71 (4.8) | <0.001 | 236 (6) | <0.001 | 4204 (15.3) |
| CCS, *n* (%) | | | | | | | | |
| 0 | 7936 (23.4) | 361 (32.6) | <0.001 | 551 (37.1) | <0.001 | 1297 (33.1) | <0.001 | 5727 (20.9) |
| 1 | 7572 (22.3) | 230 (20.8) | | 283 (19.1) | | 1086 (27.7) | | 5973 (21.8) |
| 2 | 10 575 (31.2) | 323 (29.2) | | 456 (30.7) | | 1025 (26.1) | | 8771 (32) |
| 3 | 6161 (18.2) | 163 (14.7) | | 168 (11.3) | | 445 (11.3) | | 5385 (19.6) |
| 4 | 1689 (5) | 30 (2.7) | | 26 (1.8) | | 68 (1.7) | | 1565 (5.7) |
| NYHA, *n* (%) | | | | | | | | |
| 0 | 2043 (6) | 63 (5.7) | <0.001 | 85 (5.7) | <0.001 | 254 (6.5) | <0.001 | 1641 (6) |
| I | 3693 (10.9) | 125 (11.3) | | 88 (5.9) | | 413 (10.5) | | 3067 (11.2) |
| II | 13 721 (40.4) | 485 (43.8) | | 580 (39.1) | | 1540 (39.3) | | 11 116 (40.5) |
| III | 12 712 (37.5) | 404 (36.5) | | 669 (45.1) | | 1557 (39.7) | | 10 082 (36.8) |
| IV | 1764 (5.2) | 30 (2.7) | | 62 (4.2) | | 157 (4) | | 1515 (5.5) |

- Selection Bias : Age, etc.
- LA size : no information
- Uneven distribution
- Two many groups
- Median age > 60 yrs

- IPTW adjustment

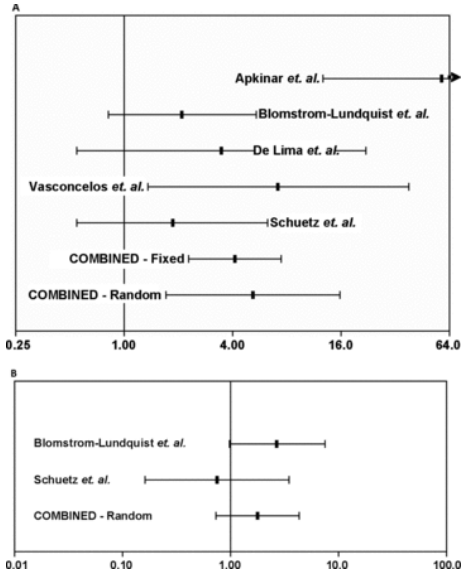

Isolated CABG
Isolated valve surgery
Multiple valve surgery
Isolated AVR/r
Isolated MVR/r
MVR/r + TVR/r
AVR/r + CABG
MVR/r + CABG
Aortic surgery
Other
0
2000
4000
6000
8000
10000
12000
No AF treatment
LAAO alone
SA alone
SA + LAAO

사람의 눈은 얼굴의 전면에 붙어있는 반면, 말은 얼굴의 양 옆 쪽에 붙어 있기 때문에 시야가 무려 350도나 되는데요, 사방을 거의 한 번에 볼 수 있는 말은 '전지적 시점(視點)'을 갖고 있다고 해도 과언이 아니죠. ^^

# RCT's : Maze vs Medical Mx.

**SYSTEMATIC REVIEW: Surgical Maze Procedure as a Treatment for Atrial Fibrillation: A Meta-Analysis of Randomized Controlled Trials**

Melissa H. Kong, Renato D. Lopes, Jonathan P. Piccini, Vic Hasselblad, Tristram D. Bahnson, Sana M. Al-Khatib




- 9 RCT's
- Maze >>> Medical Mx.
- not direct comparison b/w maze vs LAAO

** Cardiovascular Therapeutics 2010;28:311-26.*

**Table 2** Baseline patient characteristics in randomized controlled trials

| Study | Patients n | Mean age years | Males | Duration of AF months | LA diameter mm | LVEF% |
|---|---|---|---|---|---|---|
| Abreu Filho et al. | | | | | | |
| Maze | 42 | 55.4 ± 12.8 | 14 | 66.1 ± 57.4 | 61.1 ± 7.9 | 64.2 ± 8.8 |
| Control | 28 | 50.7 ± 9.7 | 12 | 43.8 ± 28.5 | 58.8 ± 4.7 | 66.6 ± 10.5 |
| Akpinar et al. | | | | | | |
| Maze | 33 | 53 ± 10 | 13 | 19.87 ± 10.6 | 62.45 ± 10.5 | 55.19 ± 6.3 |
| Control | 34 | 50 ± 8 | 9 | 21.97 ± 13.9 | 66.66 ± 9.0 | 55.03 ± 8.1 |
| Blomstrom-Lundqvist et al. | | | | | | |
| Maze | 36 | 69.5 ± 7.9 | 25 | 26 ± 33 (3–120)[a] | 61 ± 11 (41–94) | 53.6 ± 9.1 (29–67) |
| Control | 35 | 65.6 ± 8.8 | 26 | 33 ± 54 (3–240) | 58 ± 7 (43–75) | 57 ± 12 (20–77) |
| de Lima et al. | | | | | | |
| Maze | 10 | 50.1 ± 15.3 | 3 | 14 (9–63)[b] | 60 ± 16 | 0.643 ± 0.1 |
| Control | 10 | 50.1 ± 15.4 | 6 | 16.5 (13–24) | 62 ± 12 | 0.64 ± 0.1 |
| Doukas et al. | | | | | | |
| Maze | 49 | 67.2 ± 9 | 31 | 57 ± 55.1 | 58 ± 0.7 | 57 ± 6 |
| Control | 48 | 67 ± 8 | 24 | 46.7 ± 64.3 | 60 ± 1.1 | 58 ± 7 |
| Jessurun et al. | | | | | | |
| Maze | 25 | 64 ± 12 | 14 | NR | 53 ± 9 (38.5–71.2) | 45 ± 15 (25–66) |
| Control | 10 | 64 ± 9 | 5 | NR | 56 ± 7 (49–68) | 45 ± 6 (37–51) |
| Khargi et al. | | | | | | |
| Maze | 15 | 64.7 | 6 | NR | NR | NR |
| Control | 15 | 69.7 | 3 | NR | NR | NR |
| Schuetz et al. | | | | | | |
| Maze | 24 | 64.57 ± 10.0 | 12 | 3.8 ± 2.84 | 54.9 ± 11 | NR |
| Control | 19 | 70.21 ± 7.9 | 14 | 9.21 ± 9.24 | 54.37 ± 17.1 | NR |
| Vasconcelos et al. | | | | | | |
| Maze | 15 | 49.40 ± 10.1 | 4 | 23.80 ± 19.9 | 55.27 ± 5.02 | 68.33 ± 8.8 |
| Control | 14 | 50.79 ± 9.7 | 6 | 33.85 ± 28.5 | 55.86 ± 4.74 | 66.07 ± 10.6 |

# RCT's : MV Surgery w/wo Maze

Safety and efficacy of Cox-Maze procedure for atrial fibrillation during mitral valve surgery: a meta-analysis of randomized controlled trials

Yaxuan Gao[1,2], Hanqing Luo[1,2], Rong Yang[1,3], Wei Xie[1,2], Yi Jiang[1,3], Dongjin Wang[1,2*] and Hailong Cao[1,3*]

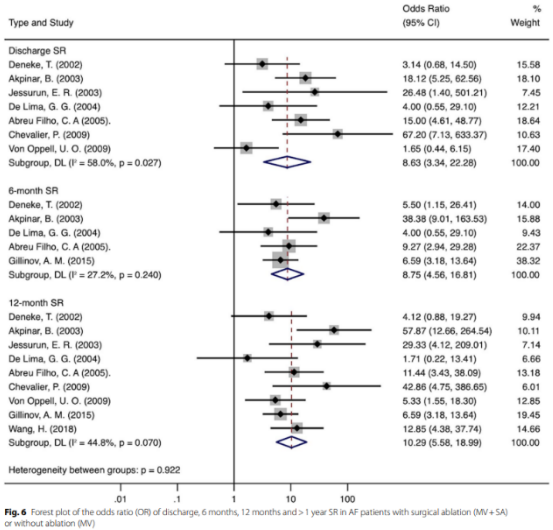



**Fig. 6** Forest plot of the odds ratio (OR) of discharge, 6 months, 12 months and > 1 year SR in AF patients with surgical ablation (MV + SA) or without ablation (MV)

- 9 RCT's (663 patients)
- Maze : higher rate or SR
- no diff. in mortality, PPM, stroke, and thromboembolism

** J Cardiothorac Surg 2024;19:*

**Mortality**

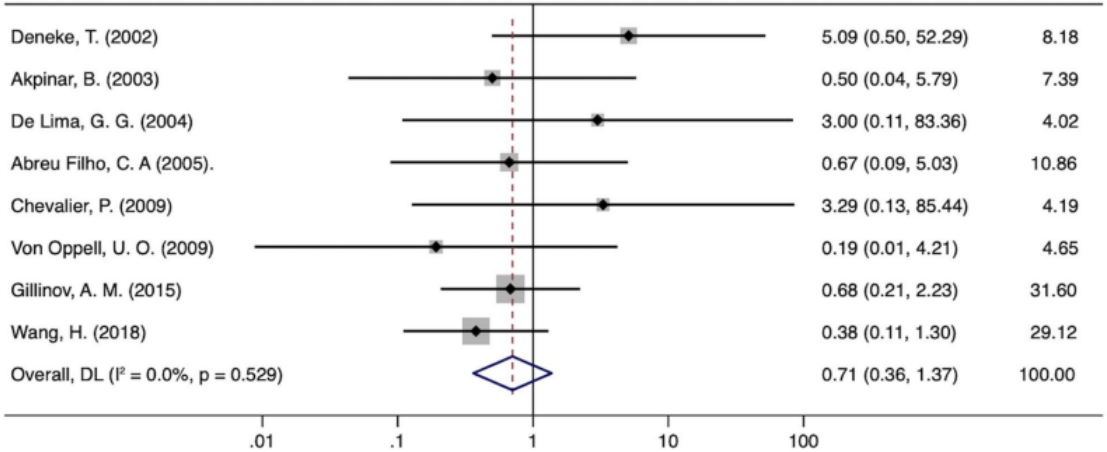



**Fig. 3** Forest plot of the odds ratio (OR) of all-cause mortality in AF patients with surgical ablation (SA + MV) or without ablation (MV)

**PPM**

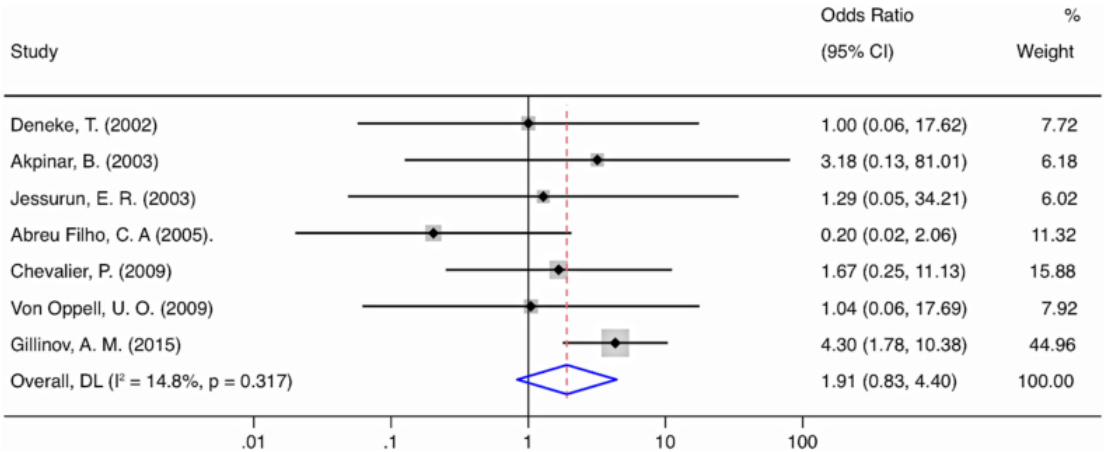



**Fig. 4** Forest plot of the odds ratio (OR) of permanent pacemaker implantation in AF patients with surgical ablation (MV + SA) or without ablation (MV)

## *Stroke and Thromboembolism*

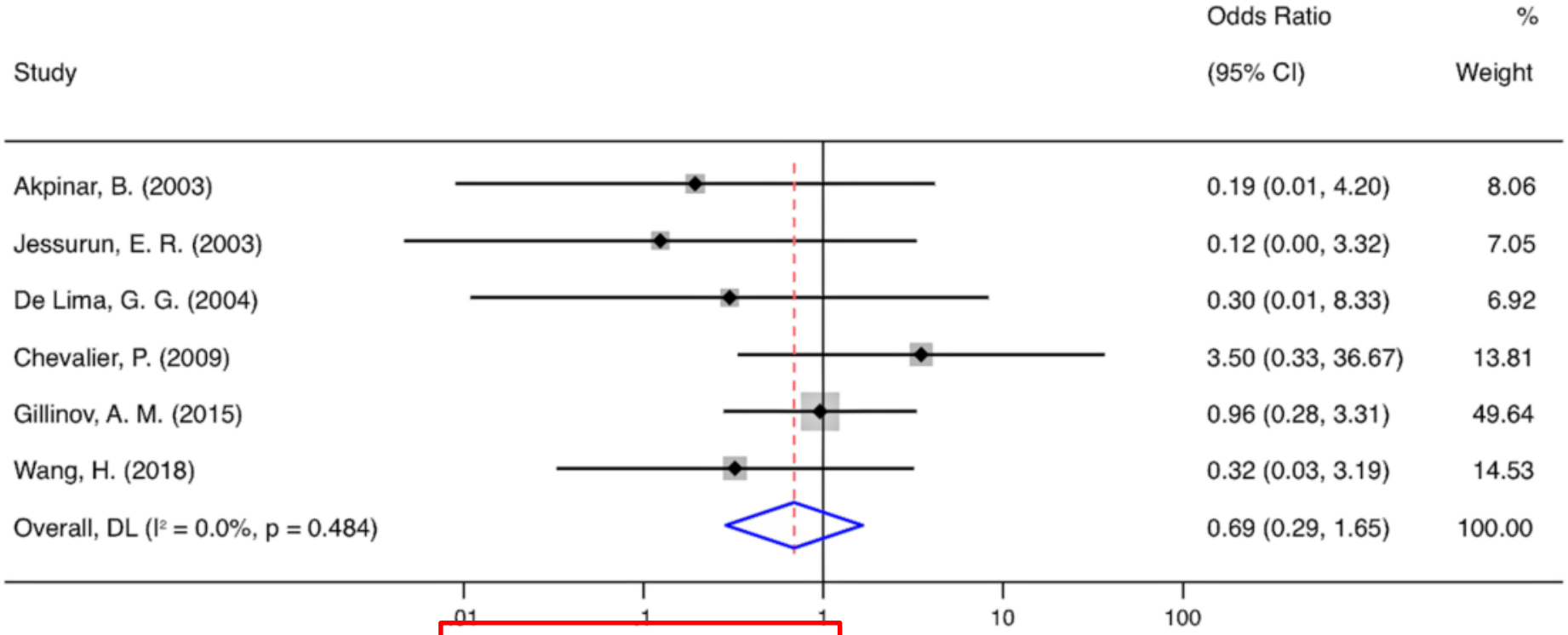



**Fig. 5** Forest plot of the odds ratio (OR) of stroke and thromboembolic events in AF patients with surgical ablation (MV + SA) or without ablation (MV)

**Table 1** Summary of RCTs comparing MV + COX versus MV only surgical treatment in AF patients

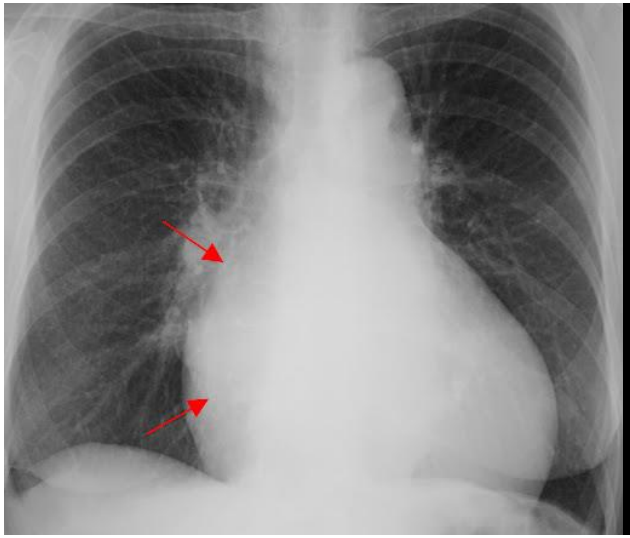
| First author | Year | Country | Study period | MVS + MAZE | MVS | Primary endpoint |
|---|---|---|---|---|---|---|
| Deneke, T | 2002 | Germany | 1998–1999 | 15 | 15 | SR |
| Akpinar, B | 2003 | Turkey | NR | 33 | 34 | AF free |
| Jessurun, E. R | 2003 | Netherlands | 1996–1999 | 25 | 10 | SR |
| de Lima, G. G | 2004 | Brazil | 1999–2001 | 10 | 10 | SR |
| Abreu Filho, C. A | 2005 | Brazil | 2000–2002 | 15 | 14 | AF free |
| Chevalier, P | 2009 | France | 2002–2005 | 21 | 22 | SR |
| von Oppell, U. O | 2009 | United Kingdom | 2004–2006 | 24 | 25 | SR |
| Gillinov, A. M | 2015 | USA | 2010–2013 | 133 | 127 | AF free |
| Wang, H | 2018 | China | 2013–2015 | 65 | 65 | Freedom from stroke or death |

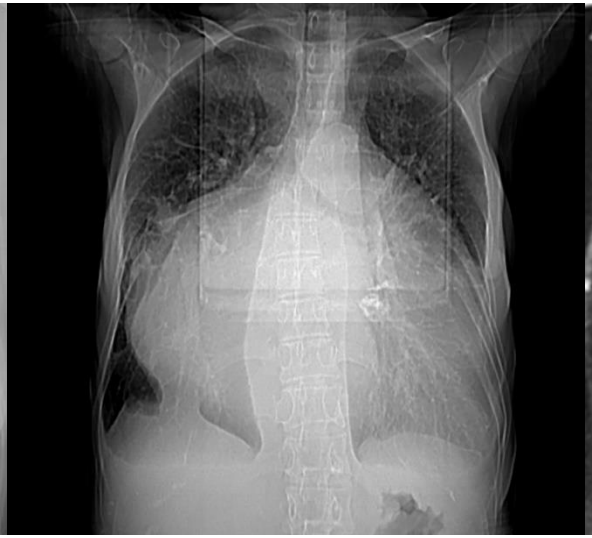
# Let's Debate!

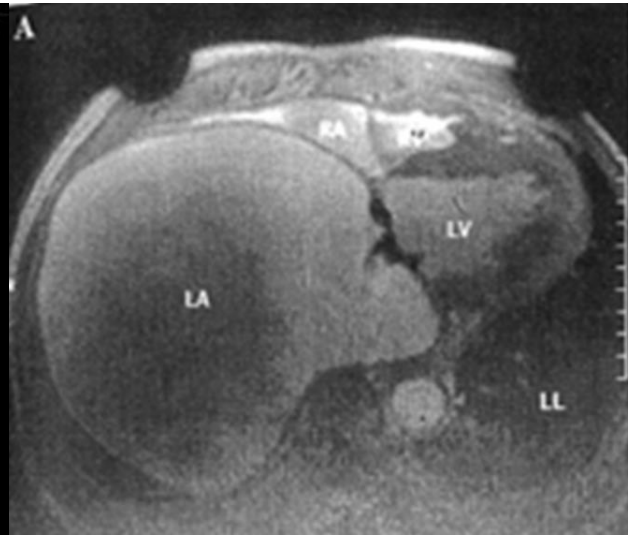
# AF Combined with Giant Left Atrium (GLA) in Young Patients

- Age factor : Warfarin for mech. valve
- Size factor : higher risk of Af recurrence

- LAA occlusion only
  - pros : c/w LAA occluder (for stroke prevention)
  - cons : Af is the risk factor for TR



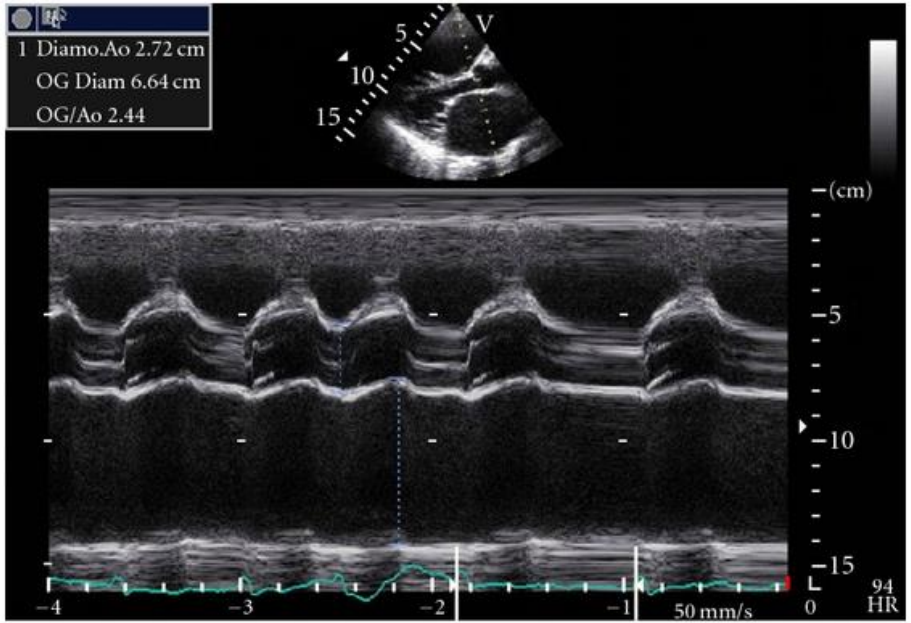


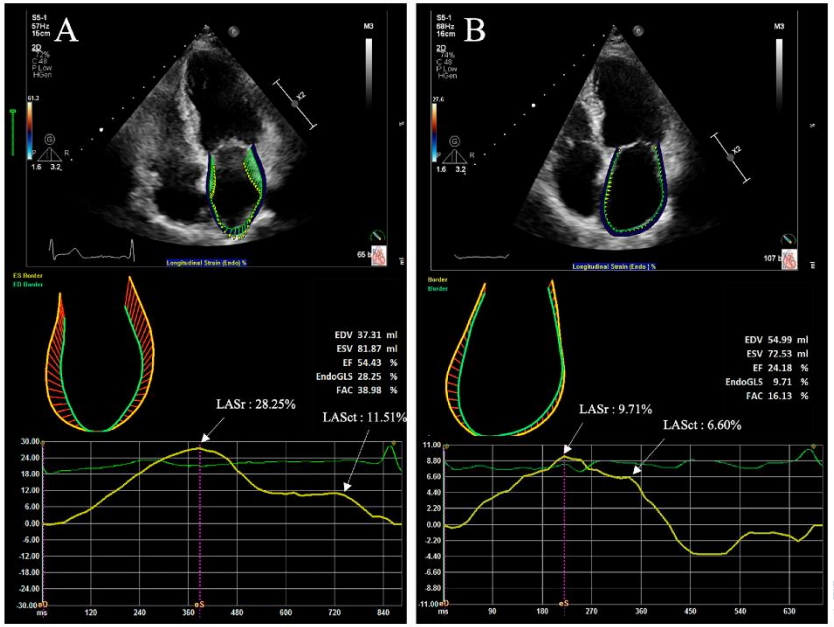


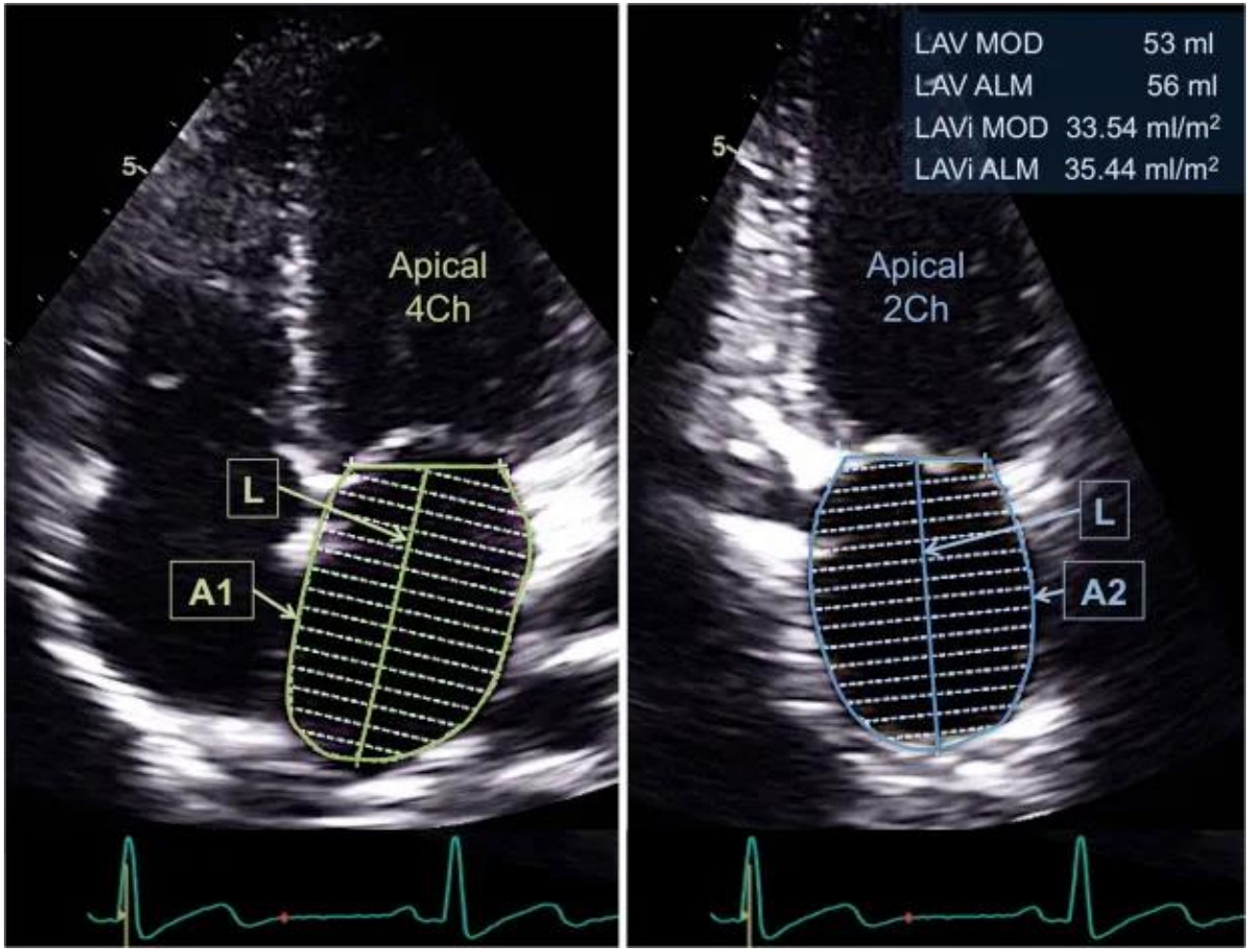

# From the ground zero…

# What is the definition of GLA?

# LA Size Measurements




Apical
4Ch
L
A1
Apical
2Ch
L
A2
LAV MOD 53 ml
LAV ALM 56 ml
LAVi MOD 33.54 ml/m²
LAVi ALM 35.44 ml/m²

# Sphere Calculator

**Sphere Calculator**

Choose a Calculation
A, V, C | Given r

radius r =

Let pi π = 3.14159265359

Units none

Significant Figures 6

Clear Calculate

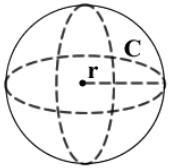
Answer:

| | |
|---|---|
| radius | r = |
| volume | V = |
| surface area | A = |
| circumference | C = |

**In Terms of Pi π**

| | |
|---|---|
| volume | V = |
| surface area | A = |
| circumference | C = |

*Get a Widget for this Calculator*




r = radius
V = volume
A = surface area
C = circumference
π = pi = 3.1415926535898
√ = square root

This online calculator will calculate the 3 unknown values o a sphere given any 1 known variable including radius r, surface area A, volume V and circumference C. It will also give the answers for volume, surface area and circumference in terms of PI π. A sphere is a set of points i three dimensional space that are located at an equal distance r (the radius) from a given point (the center point).

**Units:** Note that units are shown for convenience but do nc affect the calculations. The units are in place to give an indication of the order of the results such as ft, $ft^2$ or $ft^3$. For example, if you are starting with mm and you know r in mm your calculations will result with A in $mm^2$, V in $mm^3$ and C in mm.

## Sphere Formulas in terms of radius r:

- Volume of a sphere:
  - **V = (4/3)πr³**

CalculatorSoup®
Online Calculators
search calculators

Calculators > Geometry > Solid > Sphere Calculator

# Sphere Calculator

**Sphere Calculator**

Choose a Calculation
A, V, C | Given r

radius r = 3.25

Let pi π = 3.14159265359

Units cm

Significant Figures 6

Clear Calculate

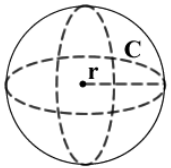
Answer:

| | |
|---|---|
| radius | r = 3.25 cm |
| volume | V = 143.793 $cm^3$ |
| surface area | A = 132.732 $cm^2$ |
| circumference | C = 20.4204 cm |

**In Terms of Pi π**

| | |
|---|---|
| volume | V = 45.7708 π $cm^3$ |
| surface area | A = 42.25 π $cm^2$ |
| circumference | C = 6.5 π cm |

*Share this Answer Link: help*
*Paste this link in email, text or social media.*




r = radius
V = volume
A = surface area
C = circumference
π = pi = 3.1415926535898
√ = square root

This online calculator will calculate the 3 unknown values of a sphere given any 1 known variable including radius r, surface area A, volume V and circumference C. It will also give the answers for volume, surface area and circumference in terms of PI π. A sphere is a set of points in three dimensional space that are located at an equal distance r (the radius) from a given point (the center point).

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## Sphere Formulas in terms of radius r:

- Volume of a sphere:
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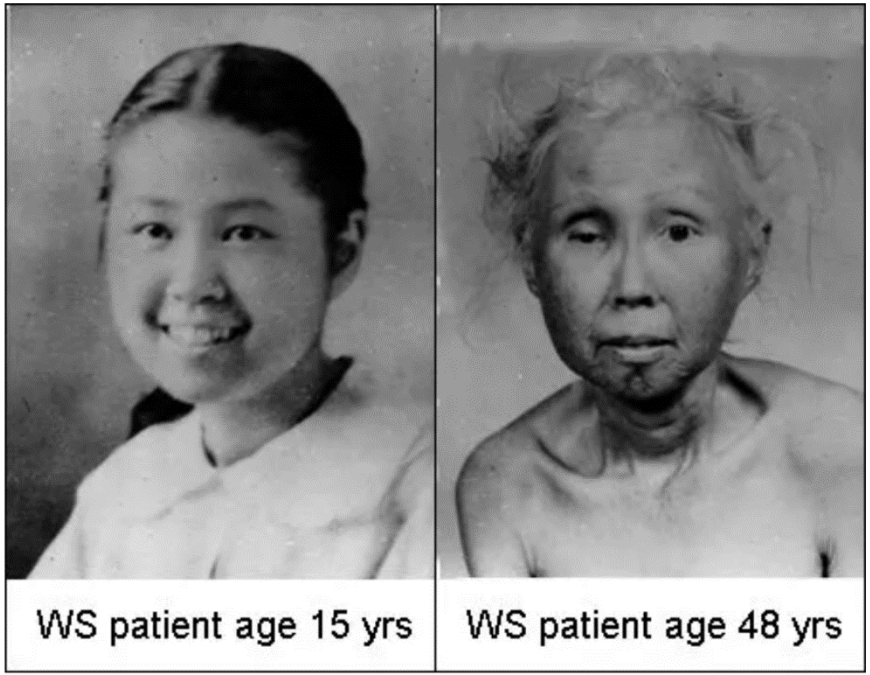
# Young Age의 기준은?

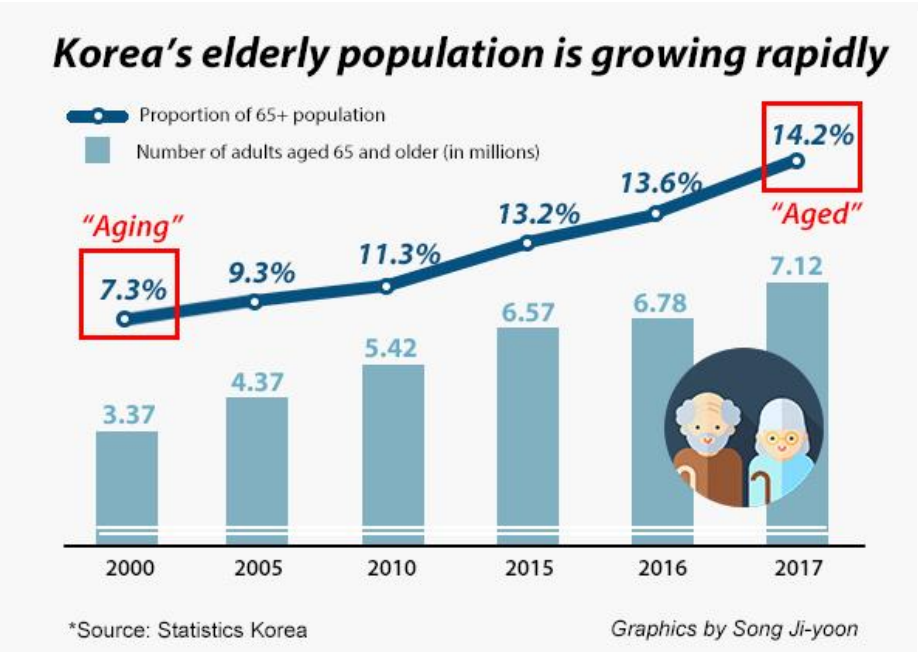

* WS : Werner Syndrome

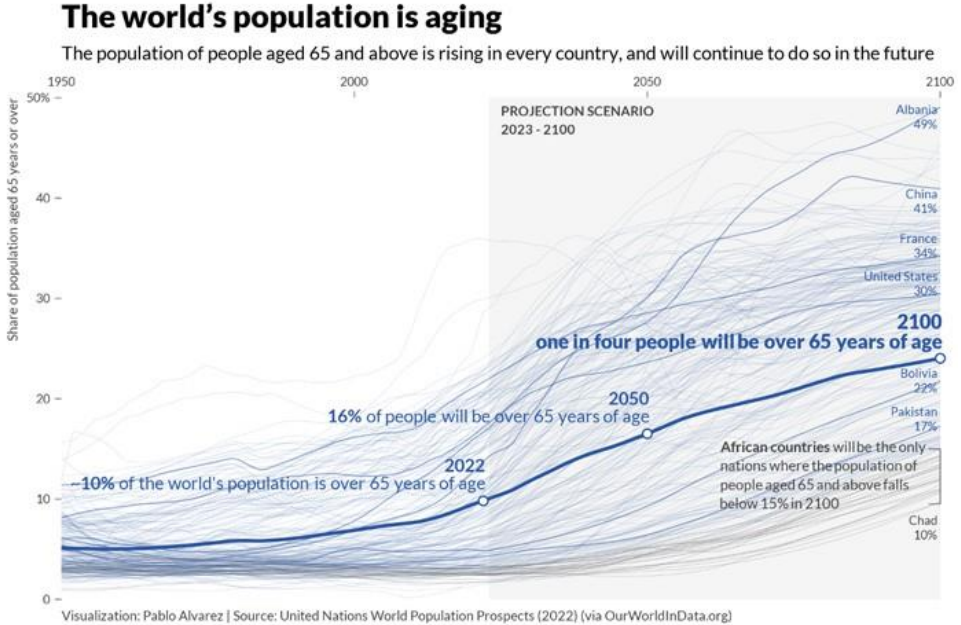
# Old Age의 기준은?

- WHO? : 60세
- Geriatrics : 65세

- 문화적 기준 : 50세? - 70세?
- 판막수술에서의 기준 : 60 - 70세?

# 노령인구의 변화


Korea's elderly population is growing rapidly
Proportion of 65+ population
Number of adults aged 65 and older (in millions)
"Aging"
"Aged"
7.3%
9.3%
11.3%
13.2%
13.6%
14.2%
3.37
4.37
5.42
6.57
6.78
7.12
2000
2005
2010
2015
2016
2017
*Source: Statistics Korea
Graphics by Song Ji-yoon


The world's population is aging
The population of people aged 65 and above is rising in every country, and will continue to do so in the future
Share of population aged 65 years or over
PROJECTION SCENARIO
2023 - 2100
~10% of the world's population is over 65 years of age
2022
16% of people will be over 65 years of age
2050
2100
one in four people will be over 65 years of age
African countries will be the only nations where the population of people aged 65 and above falls below 15% in 2100
Albania 49%
China 41%
France 34%
United States 30%
Bolivia 22%
Pakistan 17%
Chad 10%
Visualization: Pablo Alvarez | Source: United Nations World Population Prospects (2022) (via OurWorldInData.org)

# Rheumatic MS의 호발연령은?

- 류마티열 : 5세-15세
- MS의 증상발현 : 20세-40세
- non-rheumatic MS/MR : 30-50세

# Valvular Af의 호발연령은?

- 류마티열 : 5세-15세
- MS의 증상발현 : 20세-40세

- Rheumatic MS에서 Af의 발생 : 30세-50세
- Non-rheumatic의 경우는 > 60세

# Af은 왜 위험한가?

- Stroke : thrombo-embolism
- Heart failure : absence of atrial kick
- Heart rate : palpitation or syncope
- G/W, fatigue, dec. activities, QOL ↓

# Af의 일반적 치료

- Anticoagulation
  - Vit. K antagonist
  - NOAC (DOAC)
- Rate control vs rhythm control

# Af에서 와파린의 효과

- 혈전형성 방지
- 뇌졸증 예방 : 60-70% risk reduction…
  - SPAF (stroke prevention in Af) : 67%
- 문제점 : INR titration, 식이조절문제…

# Maze수술의 장점

- 높은 성공률 : rhythm control

- Stroke/CHF/TR prevention
- 약물의존도 감소 : 항응고제/항부정맥제

# Maze수술의 장점

- 높은 성공률 : rhythm control
  - failure rate가 높으면? : Af or PPM?
- Stroke/CHF/TR prevention : NSR유지時
- 약물의존도 감소 : 항응고제/항부정맥제

# Maze수술의 단점

- 침습적 절차 : 수술시간/회복기간  증가
- 비용/자원 소모
- 성공률의 저하 : Giant LA 등…
- 기타 합병증 : PPM 등

# LAAIO의 효과성

- 뇌졸증 예방 효과
  - PROTECT AF (Watchman) : 와파린과 유사
  - PREVAIL : 와파린과 유사 또는 우월
- 문제점 : residual opening...

# MV 수술 후 Af이 남아 있을때

- Af is the strong risk factor for new TR!
  - 우심방압력의 증가 / 우심방 확장
  - 심장 리모델링 / 삼첨판륜 사이즈 증가
- TAP를 같이 하는 경우와 아닌경우가 다름

# Summary

- In the young Pt. with Af & rheumatic MS, who received mechanical MVR, I usually do the maze procedure, to prevent stroke & TR recurrence
- However, Pts with higher risk of Af recurrence (older, longer duration of Af, giant LA, etc.), I prefer not to do the maze (LAAIO or LAAEO only)

# The 5th Annual Symposium of the Korean Arrhythmia Surgery Network

대한의사협회 평점: 6평점(예정)

The Korean Arrhythmia Surgery Network

Date 2024. 8. 10 (토)  Venue 일원역 삼성생명빌딩 B동 9층 히포크라테스홀



## ✓ 주요일정 및 평점안내

- 행사일시: 2024년 8월 10일(토)
- 사전등록 마감일: 2024년 6월 30일(일)
- 연수평점: 6점(예정)

인사말 바로가기
프로그램 바로가기
사전등록 바로가기
초록접수 바로가기


Thank you for your attention