Stratégie antithrombotique et prévention des complications

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I currently have, or have had over the last two years, an affiliation or financial interests or interests of any order with a company or I receive compensation or fees or research grants with a commercial company:

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Objectives

TAVI population: elderly patients with 1/3 of OAC

Ischemic complications after TAVI

- Stroke
- MI
- Valve thrombosis

Bleeding events
Patients without indication of OAC

Similar to coronary stent implantation, DAPT after TAVI (1-3 months) was used.

Aspirin/clopidoprel

Oral anticoagulation (rivarox/apixaban)

Aspirin
Patients without indication of OAC

GALILEO study
(n=1520)
After TAVI: Aspirin+Rivaroxaban 10mg (3M) vs Aspirin+clopidogrel

Dangas et al. NEJM 2019
Patients without indication of OAC

GALILEO study

Primary efficacy outcome: Death, or thromboembolic events

Rivaroxaban arm vs. Antiplatelet arm
Hazard ratio, 1.35 (95% CI: 1.01-1.81); p=0.04

Safety:
Major disabling, or life-threatening bleeding + 50% (p=0.08)
Death (+ 69%, p=0.009)

Dangas et al NEJM 2019
ATLANTIS study

Stratum 2: n= 1049 patients
Apixaban vs DAPT/SAPT

Study design

Anti-Thrombotic Strategy to Lower All cardiovascular and Neurologic Ischemic and Hemorrhagic Events after Trans-Aortic Valve Implantation for Aortic Stenosis

1510 patients after successful TAVI procedure

Stratum 1
Indication for OAT

Stratum 2
No indication for OAT

VKA

Apixaban 5mg bid*

DAPT/SAPT

Primary end-point is a composite of death, MI, stroke, systemic emboli, intracardiac or bioprosthesiis thrombus, episode of deep vein thrombosis or pulmonary embolism, major bleedings over one year follow-up.

*2.5mg bid if creatinine clearance 15–29 mL/min or if two of the following criteria: age ≥80 years, weight ≤60kg or creatinine ≥1.5mg/dL (133μMol/L) or if concomitant antiplatelet therapy (ACS or recent stenting) or physician’s choice.

Collet JP, ACC 2021
## Outcomes in stratum 2 (post-hoc)

**No need for oral anticoagulation**

<table>
<thead>
<tr>
<th></th>
<th>Apixaban (n=526)</th>
<th>Standard of Care (n=523)</th>
<th>Hazard ratio (95% CI)</th>
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</thead>
<tbody>
<tr>
<td><strong>Primary outcome</strong></td>
<td>89 (16.9%)</td>
<td>101 (19.3%)</td>
<td>0.88 (0.66-1.17)</td>
</tr>
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<td><strong>Secondary efficacy outcomes</strong></td>
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<tr>
<td>Death, MI, any stroke/TIA</td>
<td>50 (9.5%)</td>
<td>35 (6.7%)</td>
<td>1.48 (0.96-2.30)</td>
</tr>
<tr>
<td>Death, any stroke/TIA or systemic embolism</td>
<td>50 (9.5%)</td>
<td>33 (6.3%)</td>
<td>1.56 (1.01-2.43)</td>
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<tr>
<td>Death</td>
<td>31 (5.9%)</td>
<td>18 (3.4%)</td>
<td>1.86 (1.04-3.34)</td>
</tr>
<tr>
<td>• Cardiovascular death</td>
<td>17 (3.2%)</td>
<td>13 (2.5%)</td>
<td>1.42 (0.69-2.94)</td>
</tr>
<tr>
<td>• Non cardiovascular death</td>
<td>14 (2.66%)</td>
<td>5 (0.96%)</td>
<td>2.99 (1.07-8.35)</td>
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<td><strong>Safety outcomes</strong></td>
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<tr>
<td>Primary safety endpoint†</td>
<td>41 (7.8%)</td>
<td>38 (7.3%)</td>
<td>1.09 (0.69-1.69)</td>
</tr>
<tr>
<td>Minor bleeding (BARC 2 or 3a)</td>
<td>49 (9.3%)</td>
<td>51 (9.7%)</td>
<td>0.96 (0.65-1.42)</td>
</tr>
<tr>
<td>Any bleeding</td>
<td>115 (21.8%)</td>
<td>112 (21.8%)</td>
<td>1.04 (0.80-1.35)</td>
</tr>
<tr>
<td><strong>Any Valve Thrombosis</strong> **</td>
<td>6 (1.1%)</td>
<td>32 (6.1%)</td>
<td>0.19 (0.08-0.47)</td>
</tr>
</tbody>
</table>

*death, stroke, MI, systemic emboli, intracardiac or valve thrombosis, DVT/PE, major bleedings; †Life-threatening (including fatal) or disabling or major bleeding (BARC 4, 3a, b and 3c), as defined by Valve Academic Research Consortium-2 (VARC-2); ** Any evidence for valve thrombosis including HALT ⅔.
Patients without indication of OAC

Aspirin/clopidoprel

Similar to coronary stent implantation DAPT after TAVI (1-3 months) was used

Oral anticoagulation (rivaro/apixaban)

Aspirin
Patients without indication of OAC

POPULAR Cohort A (n=690)
After TAVI: Aspirin+clopidogrel 3 months vs Aspirin

All Bleeding

RR 0.57
95% CI 0.42 to 0.77
P = 0.001

26.6%

CV Mortality, Ischemic Stroke, MI

9.9%
9.7%

J. Brouwer et al NEJM 2020
Patients without indication of OAC

| Lifelong SAPT is recommended after TAVI in patients with no baseline indication for OAC. 495,496,521 | I  
| Routine use OAC is not recommended after TAVI in patients with no baseline indication for OAC. 497 | III  
| A  
| B  

ESC Guidelines Valvular Heart Disease 2021
Patients with indication of OAC

OAC +/- SAPT

NOAC

OAC Alone
ATLANTIS study

Stratum 1: n= 451 patients
Apixaban vs VKA

Study design

Anti-Thrombotic Strategy to Lower All cardiovascular and Neurologic Ischemic and Hemorrhagic Events after Trans-Aortic Valve Implantation for Aortic Stenosis

1510 patients after successful TAVI procedure

Stratum 1: Indication for OAT
Stratum 2: No indication for OAT

VKA
Apixaban 5mg bid*
DAPT/SAPT

Primary end-point is a composite of death, MI, stroke, systemic emboli, intracardiac or bioprosthesis thrombus, episode of deep vein thrombosis or pulmonary embolism, major bleedings over one year follow-up.

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Sub group of patients with anticoagulant (Stratum 1)

Apixaban not superior to SOC (VKA)

No difference in safety (bleeding)

No difference in Valve Thombosis
Patients with indication of OAC

OAC +/- SAPT

NOAC

OAC Alone
Anticoagulation with or without Clopidogrel after Transcatheter Aortic-Valve Implantation

**POPULAR Cohort B (n=326)**
**After TAVI: OAC Alone vs OAC Clopidogrel**

**PLANNED TAVI AND ON OAC (COHORT B)**

**RANDOMIZATION 1:1 PRIOR TO TAVI**
**N=326**

**OAC ALONE**
**N=164**

7 EXCLUDED
4 withdrew consent
2 TAVI not initiated/completed
1 screen failure

**Modified ITT ANALYSIS**
**N=157**

**OAC + 3M CLOPIDOGREL**
**N=162**

6 EXCLUDED
1 withdrew consent
3 TAVI not initiated/completed
2 screen failure

**Modified ITT ANALYSIS**
**N=156**

**FOLLOW-UP: 1 YEAR**

**CO-PRIMARY OUTCOMES:**
1. All bleeding (VARC-2)
2. Non-procedural bleeding (BARC)

**CO-SECONDARY OUTCOMES:**
1. CV mortality, non-procedural bleeding, all-cause stroke, and MI
2. CV mortality, ischemic stroke, and MI

Nijenhuis et al NEJM 2020
Patients with indication of OAC

POPULAR Cohort B (n=326)
After TAVI: OAC Alone vs OAC Clopidogrel

All Bleeding

CV Mortality, Ischemic Stroke, MI

Nijenhuis et al NEJM 2020
Patients with indication of OAC

Transcatheter aortic valve implantation

OAC is recommended lifelong for TAVI patients who have other indications for OAC.\(^\text{501 f}\)

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ESC Guidelines  Valvular Heart Disease 2021
Valve Thrombosis

Sub –Clinical (CT-TDM)

- Incidence of leaflet thrombosis (5-10%)
- Increase risk of stroke

Clinical <1%

- Presence of acute- or subacute-onset of heart failure
- Stroke/TIA symptoms
- Increase of mean Gradient

OAC
Conclusion

Simplification of antithrombotic therapy after TAVI
Patients w/o indication OAC : Aspirin alone
Patients w indication : OAC alone

Valve Thrombosis : a rare complication of TAVI
Indication of OAC in symptomatic patients
Thank you