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TOLIP

Updates In Management of Aortic Stenosis

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- 82 years old male with past history of CVS and calcific severe AS

How to manage

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Essential questions in the evaluation of patients for valvular intervention



Questions

- How severe is VHD?
- What is the aetiology of VHD?
- Does the patient have symptoms?
- Are symptoms related to valvular disease?
- Are any signs present in asymptomatic patients that indicate a worse outcome if the intervention is delayed?
- What are the patient's life expectancy and expected quality of life?



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Essential questions in the evaluation of patients for valvular intervention (continued)



Questions (continued)

- Do the expected benefits of intervention (versus spontaneous outcome) outweigh its risks?
- What is the optimal treatment modality? Surgical valve replacement (mechanical or biological), surgical valve repair, or catheter intervention?
- Are local resources (local experience and outcome data for a given intervention) optimal for the planned intervention?
- What are the patient's wishes?



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- WHEN MANAGING ANY CASE OF SEVERE AORTIC STENOSIS **WE SHOULD COLLECT DATA ABOUT**

- HISTORY AND CLINICAL DATA

- Gender , body mass index
- Co-morbidities (diabetes, hypertension, renal impairment, chest disease, peripheral arterial disease, previous cardiac surgery)
- Presence of symptoms and functional status.



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- Haemodynamic state

Shock state, inotropes use

- Cardiac state

Arrhythmia, angina, other valvular disease, endocarditis,

Coronary anatomy



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Important echo-cardiographic data

- assesses the degree of valve calcification
- LV function
- LV wall thickness
- the presence of other associated valve disease or aortic pathology
- Pulmonary hypertension



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• INVESTIGATION

- **Exercise testing** is recommended in physically active patients for **unmasking symptoms** and for risk stratification of **asymptomatic** patients with severe aortic stenosis.



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- Exercise stress echocardiography may provide prognostic information in asymptomatic severe aortic stenosis by assessing the increase in mean pressure gradient and change in LV function during exercise.



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- MSCT and CMR provide additional information on the **dimensions** and **geometry** of the aortic root and ascending aorta and the **extent of calcification**, size and shape of the aortic valve **annulus**, distance to the **coronary ostia**



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- Two important questions must be answered to decide management strategy

conservative

Invasive

SVR

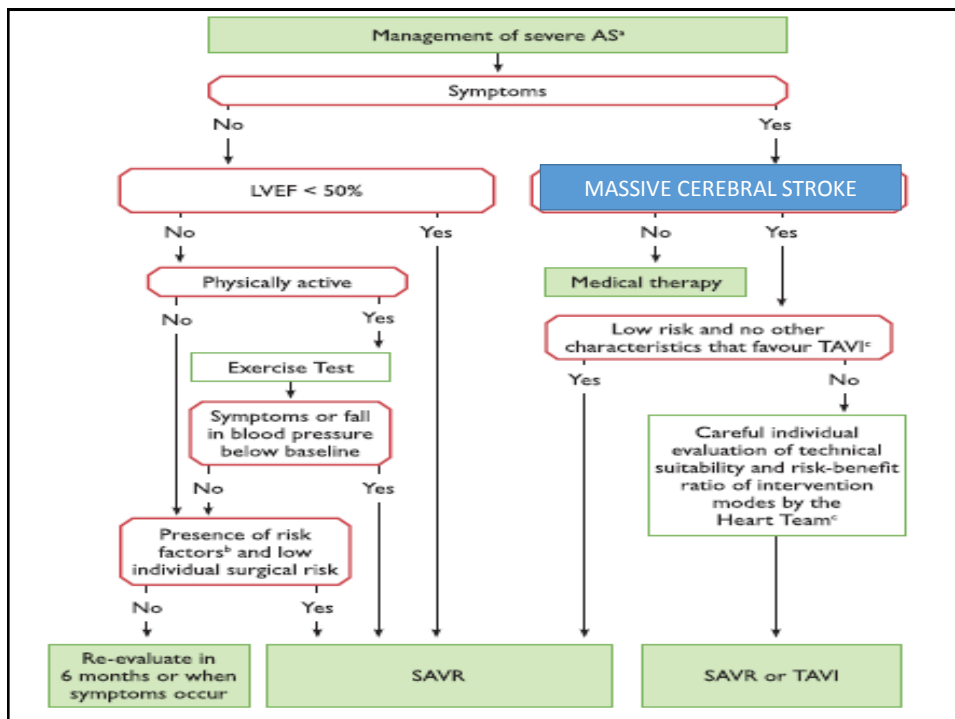
TAVR



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Indications for intervention in aortic stenosis and recommendations for the choice of intervention mode		
A) Symptomatic aortic stenosis	Class ^a	Level ^b
Intervention is indicated in symptomatic patients with severe <u>high-gradient aortic stenosis</u> (mean gradient ≥ 40 mmHg or peak velocity > 4.0 m/s). ⁹⁵⁻⁹⁷	I	B
Intervention is indicated in symptomatic patients with severe <u>low-flow, low-gradient</u> (< 40 mmHg) aortic stenosis with reduced ejection fraction and evidence of flow (contractile) reserve excluding <u>pseudo-severe aortic stenosis</u> .	I	C
Intervention should be considered in symptomatic patients with low-flow, low-gradient (< 40 mmHg) aortic stenosis with normal ejection fraction after <u>careful confirmation of severe aortic stenosis</u> ^c (see Figure 2 and Table 6).	IIa	C
Intervention should be considered in symptomatic patients with low-flow, low-gradient aortic stenosis and reduced ejection fraction without flow (contractile) reserve, particularly when <u>CT calcium scoring confirms severe aortic stenosis</u> .	IIa	C
Intervention should not be performed in patients with severe comorbidities when the intervention is unlikely to improve quality of life or survival.	II	C



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Options for Aortic Valve Replacement

Inoperable OR High Risk

Patients Suitable for Open Chest Surgery

Transcatheter Aortic Valve Replacement (TAVR)

Transfemoral Approach

Surgical Aortic Valve Replacement (SAVR)

Minimal Incision Valve Surgery (MIVS)



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Tilting Disc Valve



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Bio-prosthetic Valve



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What is TAVR-Transcatheter Aortic Valve Replacement?

- An aortic valve replacement as an alternative to traditional thoracotomy.
- Less invasive than traditional thoracotomy for patients considered too high risk for traditional surgery.



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B) Choice of intervention in symptomatic aortic stenosis		
Aortic valve interventions should only be performed in centres with both departments of cardiology and cardiac surgery on site and with structured collaboration between the two, including a Heart Team (heart valve centres).	I	C
The choice for intervention must be based on careful individual evaluation of technical suitability and weighing of risks and benefits of each modality (aspects to be considered are listed in Table 7). In addition, the local expertise and outcomes data for the given intervention must be taken into account.	I	C
SAVR is recommended in patients at low surgical risk (STS or EuroSCORE II < 4% or logistic EuroSCORE I < 10% ⁹³) and no other risk factors not included in these scores, such as frailty, porcelain aorta, sequelae of chest radiation. ⁹³	I	B
TAVI is recommended in patients who are not suitable for SAVR as assessed by the Heart Team. ^{93,94}	I	B
In patients who are at increased surgical risk (STS or EuroSCORE II > 4% or logistic EuroSCORE I > 10% ⁹³) or other risk factors not included in these scores such as frailty, porcelain aorta, sequelae of chest radiation), the decision between SAVR and TAVI should be made by the Heart Team according to the individual patient characteristics (see Table 7), with TAVI being favoured in elderly patients suitable for transfemoral access. ^{93,94-102}	I	B
Balloon aortic valvotomy may be considered as a bridge to SAVR or TAVI in haemodynamically unstable patients or in patients with symptomatic severe aortic stenosis who require urgent major non-cardiac surgery.	IIb	C
Balloon aortic valvotomy may be considered as a diagnostic means in patients with severe aortic stenosis or other potential causes for symptoms (i.e. lung disease) and in patients with severe myocardial dysfunction, pre-renal insufficiency or other organ dysfunction that may be reversible with balloon aortic valvotomy when performed in centres that can escalate to TAVI.	IIb	C




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C) Asymptomatic patients with severe aortic stenosis (refers only to patients eligible for surgical valve replacement)		
SAVR is indicated in asymptomatic patients with severe aortic stenosis and systolic LV dysfunction (LVEF <50% not due to another cause.	I	C
SAVR is indicated in asymptomatic patients with severe aortic stenosis and an abnormal exercise test showing symptoms on exercise clearly related to aortic stenosis.	I	C
SAVR should be considered in asymptomatic patients with severe aortic stenosis and an abnormal exercise test showing a decrease in blood pressure below baseline.	IIa	C
SAVR should be considered in asymptomatic patients with normal ejection fraction and none of the above-mentioned exercise test abnormalities if the surgical risk is low and one of the following findings is present: <ul style="list-style-type: none"> • Very severe aortic stenosis defined by a $V_{max} > 5.5$ m/s • Severe valve calcification and a rate of V_{max} progression > 0.3 m/s/year • <u>Markedly elevated BNP levels</u> ($>$threefold age- and sex-corrected normal range) confirmed by repeated measurements without other explanations • <u>Severe pulmonary hypertension</u> (systolic pulmonary artery pressure at rest > 60 mmHg confirmed by invasive measurement) without other explanation. 	IIa	C



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D) Concomitant aortic valve surgery at the time of other cardiac/ascending aorta surgery		
SAVR is indicated in patients with severe aortic stenosis undergoing CABG or surgery of the ascending aorta or of another valve.	I	C
Continued		
SAVR should be considered in patients with moderate aortic stenosis ^a undergoing CABG or surgery of the ascending aorta or of another valve after Heart Team decision.	IIa	C



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- HOW CEREBRAL STROKE IMPACT THE MANAGEMENT OF SEVERE AORTIC STENOSIS

Massive cerebral stroke is considered one of the important co-morbidity that may push the decision toward conservative therapy



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- Incident perioperative stroke is a potential devastating complication with estimated rate of stroke of approximately 1.5% for isolated AVR surgery and up to 4% with concomitant CABG (coronary artery bypass grafting). Prior stroke is a well-known independent risk factor for perioperative adverse events
- The combination of previous MI and stroke raised surgical mortality risk 5.54-fold and postoperative stroke risk 5.02-fold



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- Data are lacking on the optimal scheduling of valve replacement surgery after stroke, the optimal timing of AVR surgery in patients with prior stroke remains unknown
- one large study showed Absolute risk of MACE was 6.4% in no prior stroke patients, compared with 29.1% in patients with stroke <3 months and 10.7% patients with stroke >12 months prior to surgery



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What is new in the 2017 Valvular Heart Disease Guidelines?



2017 New recommendations

Ila B

- In patients who have undergone PCI, discontinuation of antiplatelet treatment should be considered at 12 months.
- In patients requiring aspirin and/or clopidogrel in addition to VKA, the dose intensity of VKA should be carefully regulated with a target INR in the lower part of the recommended target range and a time in therapeutic range >65–70%.

Ila C

- Dual antiplatelet therapy should be considered for the first 3–6 months after TAVI, followed by lifelong single antiplatelet therapy in patients who do not need oral anticoagulation for other reasons.

Iib C

- Single antiplatelet therapy may be considered after TAVI in the case of high bleeding risk.

III B

- The use of NOACs is contraindicated in mechanical valves.



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