Aortální stenóza s nízkým gradientem

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Klinika kardiologie IKEM

Konference ČAAK 2017

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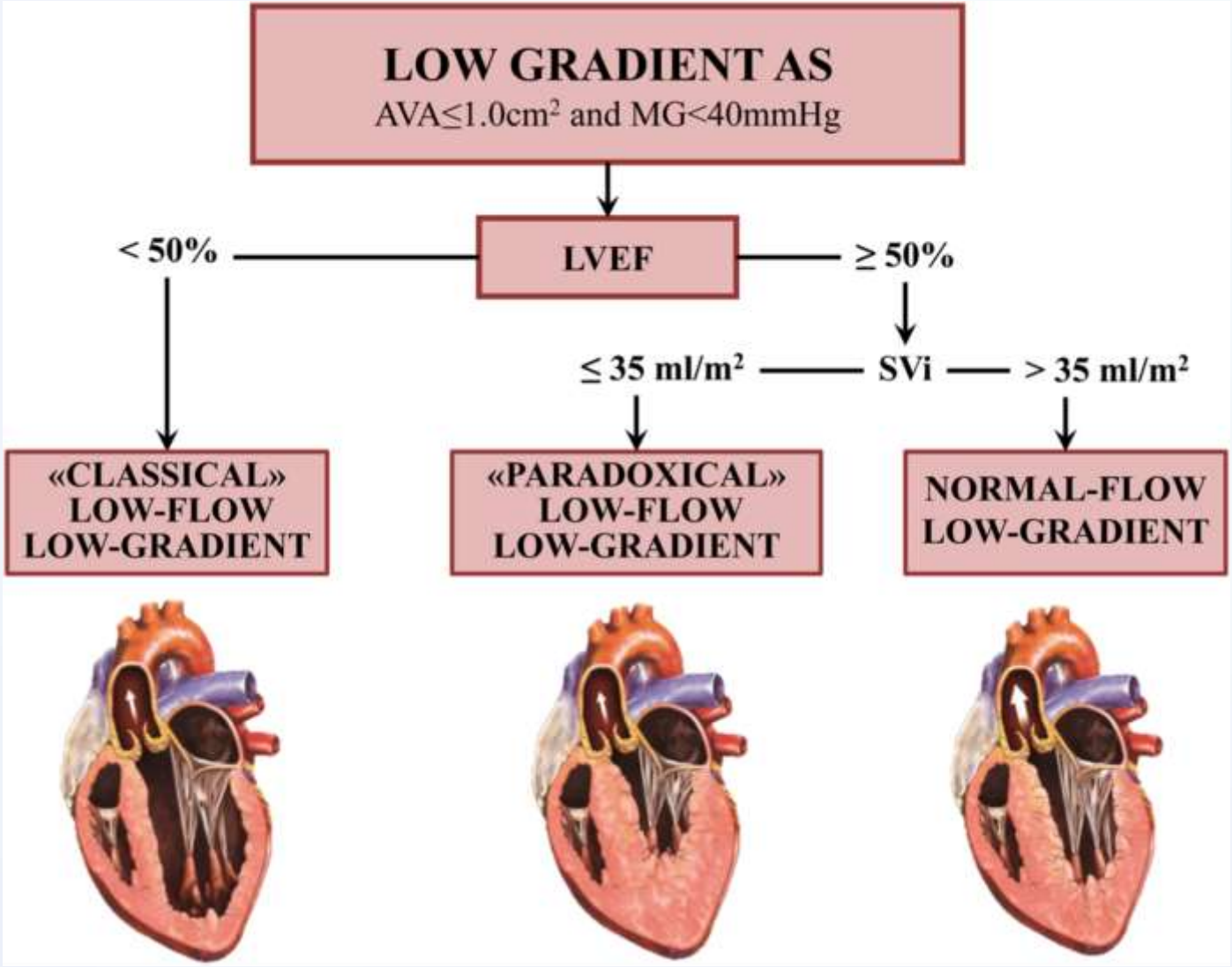

LOW GRADIENT AS
AVA≤1.0cm² and MG<40mmHg
LVEF
< 50%
≥ 50%
SVi
≤ 35 ml/m²
> 35 ml/m²
«CLASSICAL» LOW-FLOW LOW-GRADIENT
«PARADOXICAL» LOW-FLOW LOW-GRADIENT
NORMAL-FLOW LOW-GRADIENT

LF-LG aortální stenóza s dysfunkcí LK

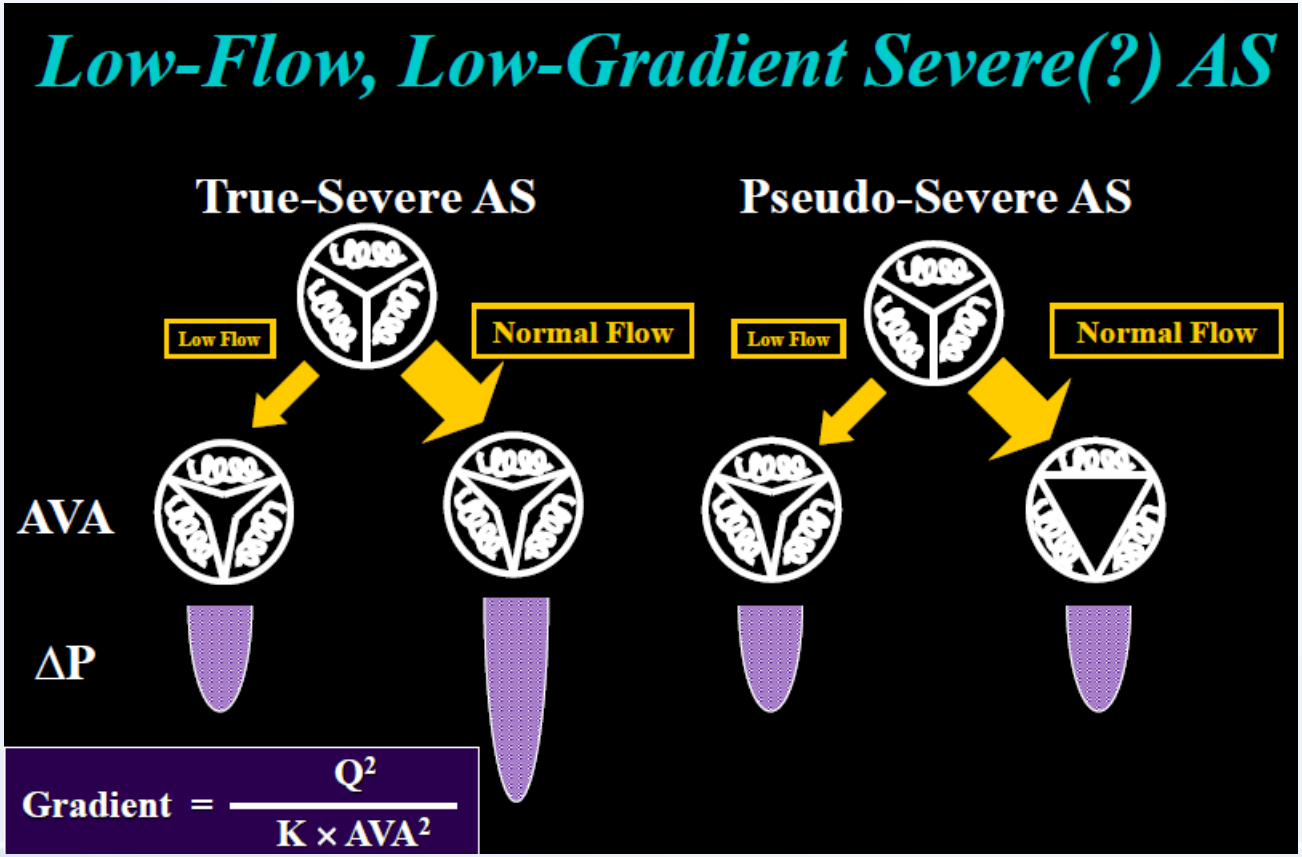
„klasická“ LF-LG aortální stenóza

AVAi <0,6 cm^2/m^2, mean AVG <40 mmHg,

LVEF << 50%

Klasická „low-flow-low gradient“ AS s kontraktilní rezervou:

dobutamin. TEE *(protokol 5,10,15 a 20 ug/kg/min vždy á 5-8 min)*



TOPAS study: True Or Pseudo severe Aortic Stenosis multicenter prospective observational study. 101 patients with LF-LG AS
(AVA ≤1.2 cm^2, AVA i≤0.6 cm^2/m^2, mean AVG≤40 mm Hg, LVEF ≤40%).

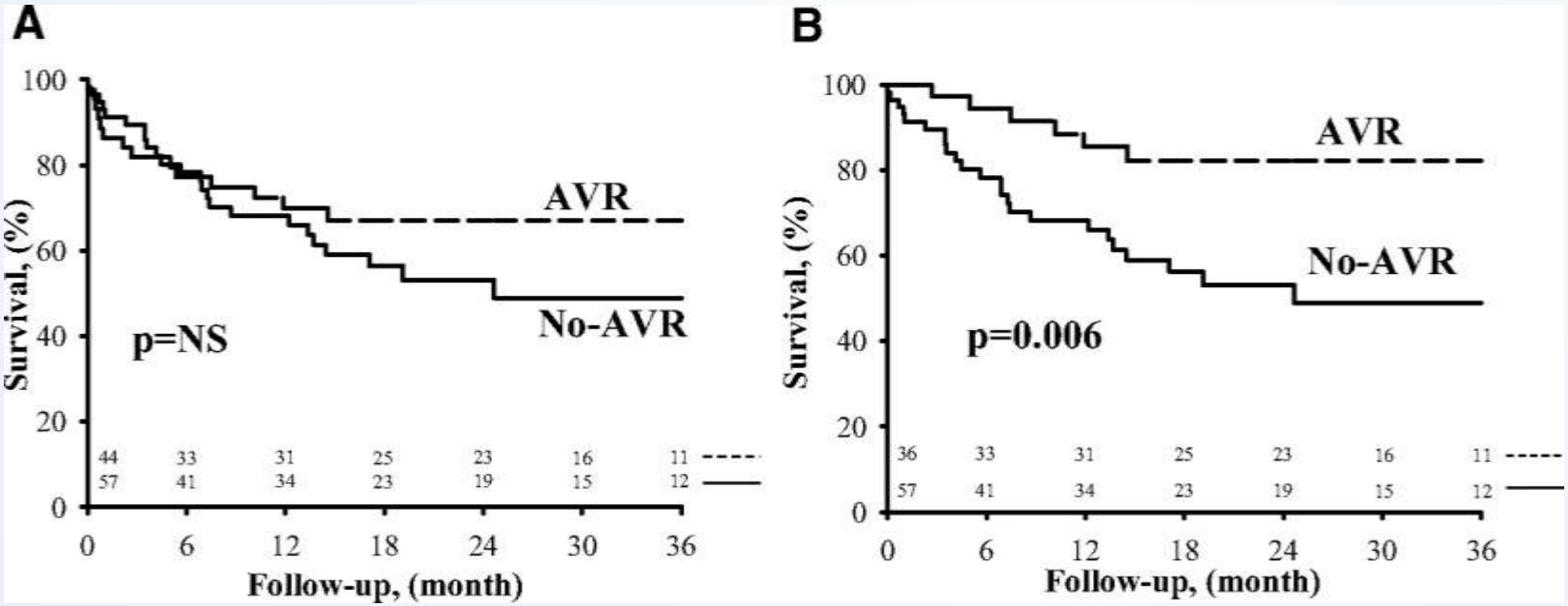


Figure 1. Survival as a function of the type of treatment in the whole cohort (A) and after excluding operative mortality in the AVR group (B).

Marie-Annick Clavel et al. Circulation. 2008;118:S234-S242

American Heart Association.

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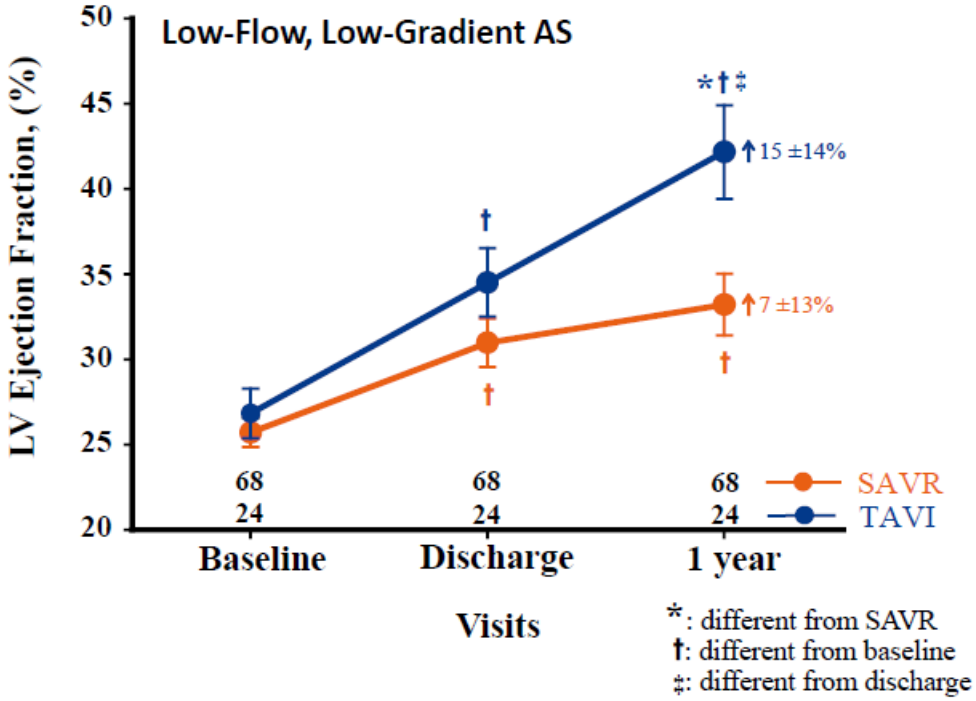
Comparison of the postprocedural change in LVEF in TAVI vs SAVR groups Baseline LV EF ≤ 35%.

Recovery of LVEF in Patients with Low-LVEF, Low-Flow, Low-Gradient AS: TAVR versus SAVR



M.A. Clavel et al. Circulation. 2010;122:1928-1936

American Heart Association.

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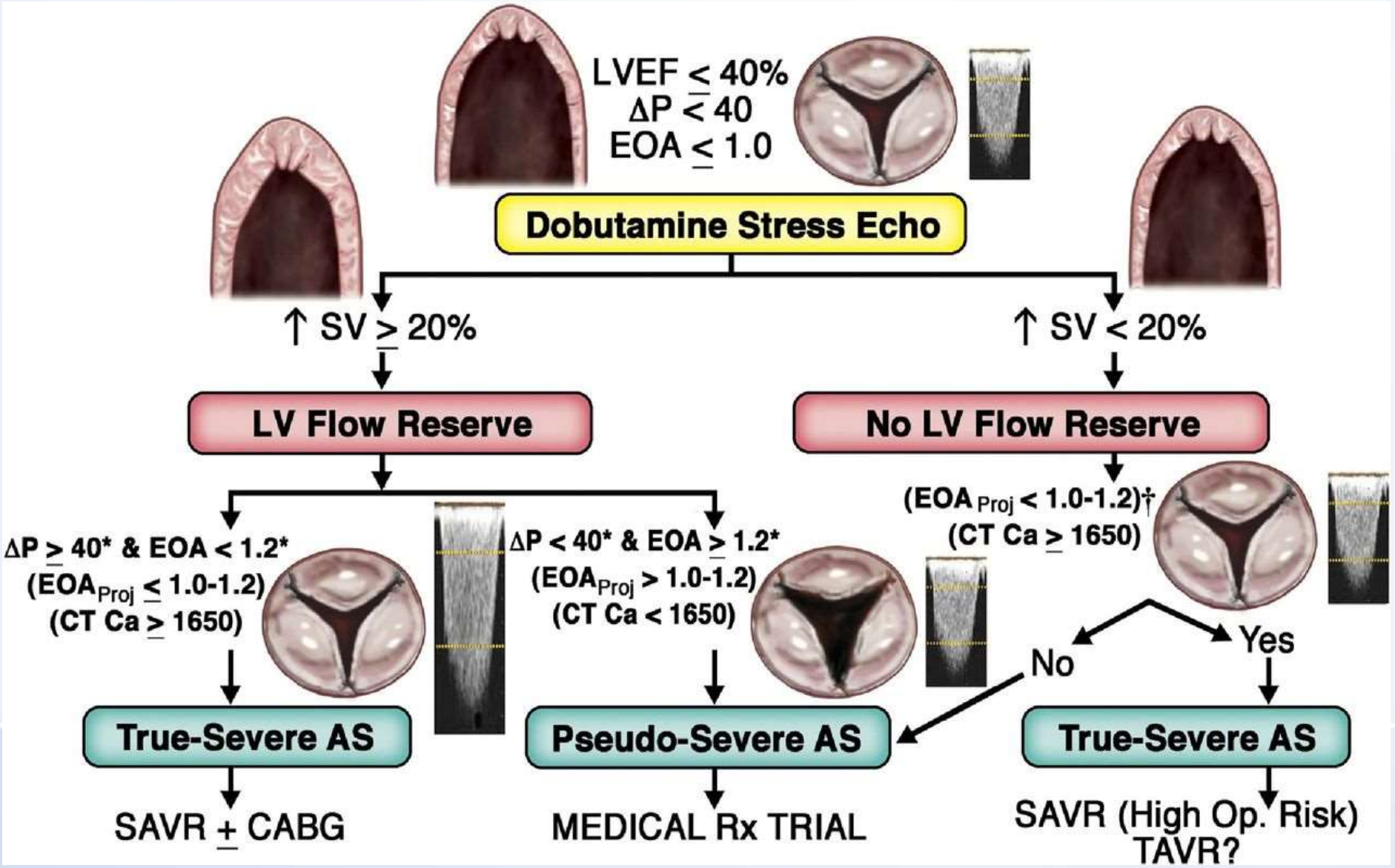
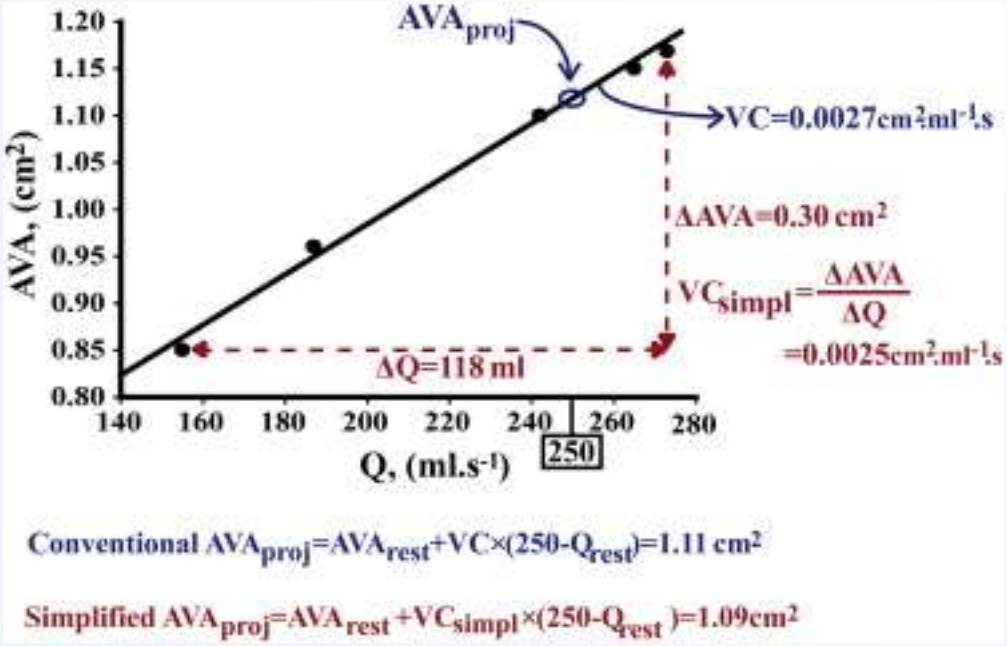
LF-LG aortální stenóza s dysfunkcí LK bez kontraktilní rezervy

LF-LG AS + dysfunkce LK: algoritmus postupu



Calculation of conventional and simplified AVAproj in a patient with low-flow AS. VCsimpl is derived from ΔAVA and ΔQ, the maximum absolute increases in AVA and flow, respectively, during dobutamine infusion.



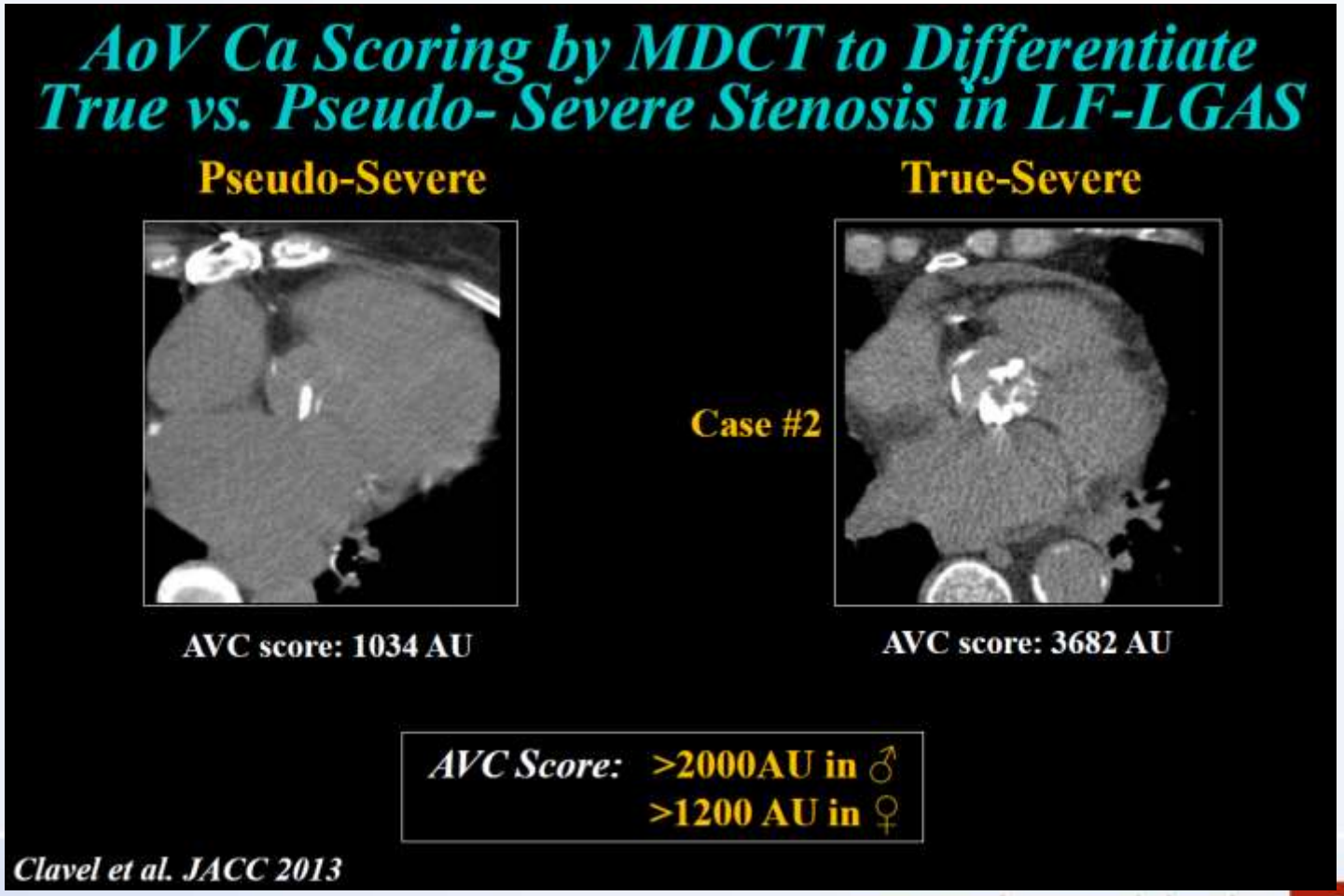
Marie-Annick Clavel, Ian G. Burwash, Gerald Mundigler, Jean G. Dumesnil, Helmut Baumgartner, Jutta Bergler-Klein, Mario Sénéchal, Patrick Mathieu, Christian Couture, Rob Beanlands, Philippe Pibarot

Validation of Conventional and Simplified Methods to Calculate Projected Valve Area at Normal Flow Rate in Patients With Low Flow, Low Gradient Aortic Stenosis: The Multicenter TOPAS (True or Pseudo Severe Aortic Stenosis) Study

Journal of the American Society of Echocardiography, Volume 23, Issue 4, 2010, 380–386

http://dx.doi.org/10.1016/j.echo.2010.02.002

LF-LG AS s dysfunkcí LK bez kontraktilní reservy



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FOCUS ISSUE: VALVULAR HEART DISEASE

CME

Outcome After Aortic Valve Replacement for Low-Flow/Low-Gradient Aortic Stenosis Without Contractile Reserve on Dobutamine Stress Echocardiography

Christophe Tribouilloy, MD, PHD,* Franck Lévy, MD,† Dan Rusinaru, MD,† Pascal Guéret, MD,‡ Hélène Petit-Eisenmann, MD,§ Serge Baleynaud, MD,‖ Yannick Jobic, MD,¶ Catherine Adams, MD,# Bernard Lelong, MD,** Agnès Pasquet, MD,†† Christophe Chauvel, MD,‡‡ Damien Metz, MD,§§ Jean-Paul Quéré, MD,* Jean-Luc Monin, MD, PHD‡

Amiens, Créteil, Strasbourg, Lorient, Brest, Argenteuil, Rennes, Bordeaux, and Reims, France; and Brussels, Belgium

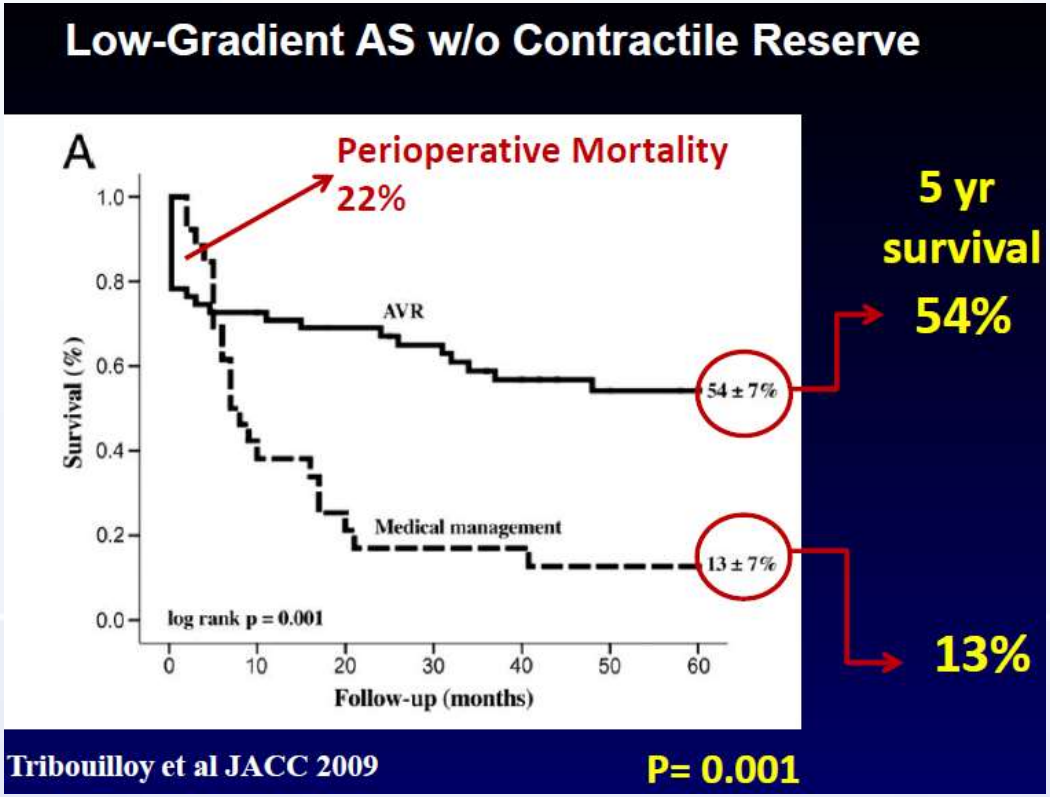
EU multicentrický registr

81 nemocných

AVA ≤1 cm^2, AVG ≤ 40 mmHg

EF LK ≤40%,

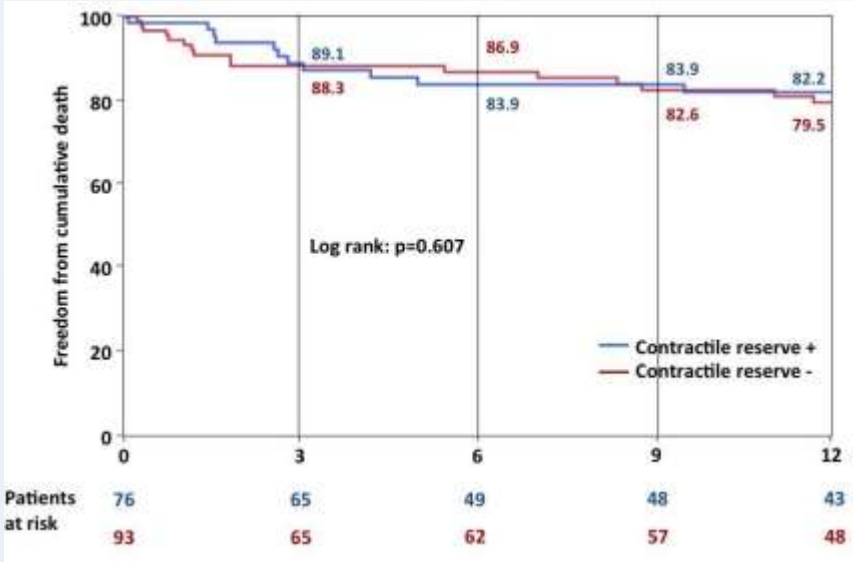
Bez průkazu kontraktilní rezervy



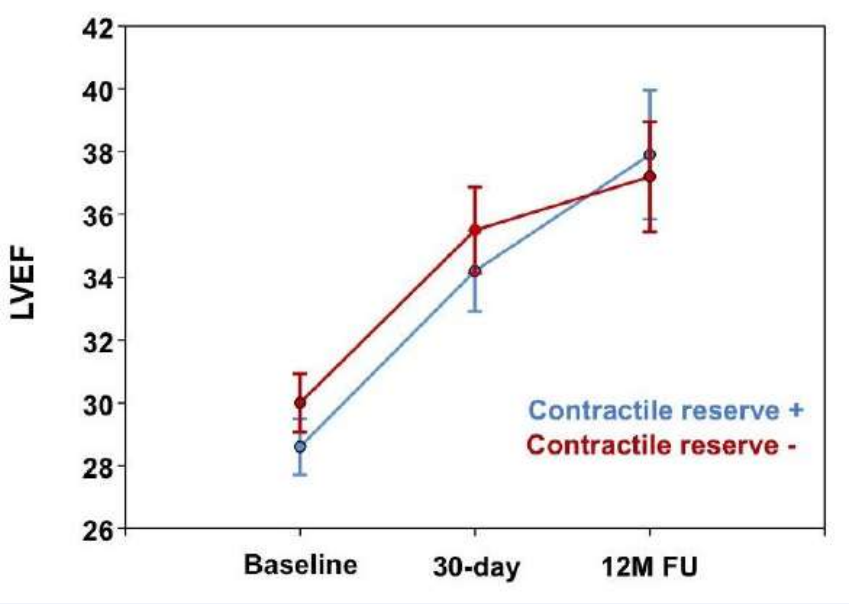
TRANSCATHETER AORTIC VALVE IMPLANTATION IN PATIENTS WITH LOW-FLOW, LOW-GRADIENT AORTIC STENOSIS. THE PROSPECTIVE MULTICENTER TOPAS-TAVI STUDY.

vliv kontraktilní rezervy osud nemocných s LF-LG AS

Mortalita



EF LK



- In patients with LFLG-AS undergoing TAVI, contractile reserve as evaluated by dobutamine stress echo does not help in risk stratifying clinical outcomes and predicting LVEF recovery at 1-year.

LF-LG aortální stenóza s normální EF LK

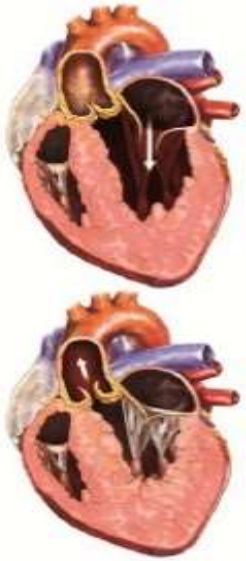
„paradoxní“ LF-LG aortální stenóza

AVAi <0,6 cm^2/m^2, mean AVG <40 mmHg,

tepový index < 35 ml/m^2

LVEF > 50%

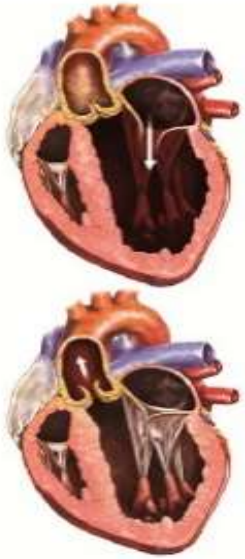
NORMAL-LVEF
"PARADOXICAL"
LOW-FLOW,
LOW-GRADIENT

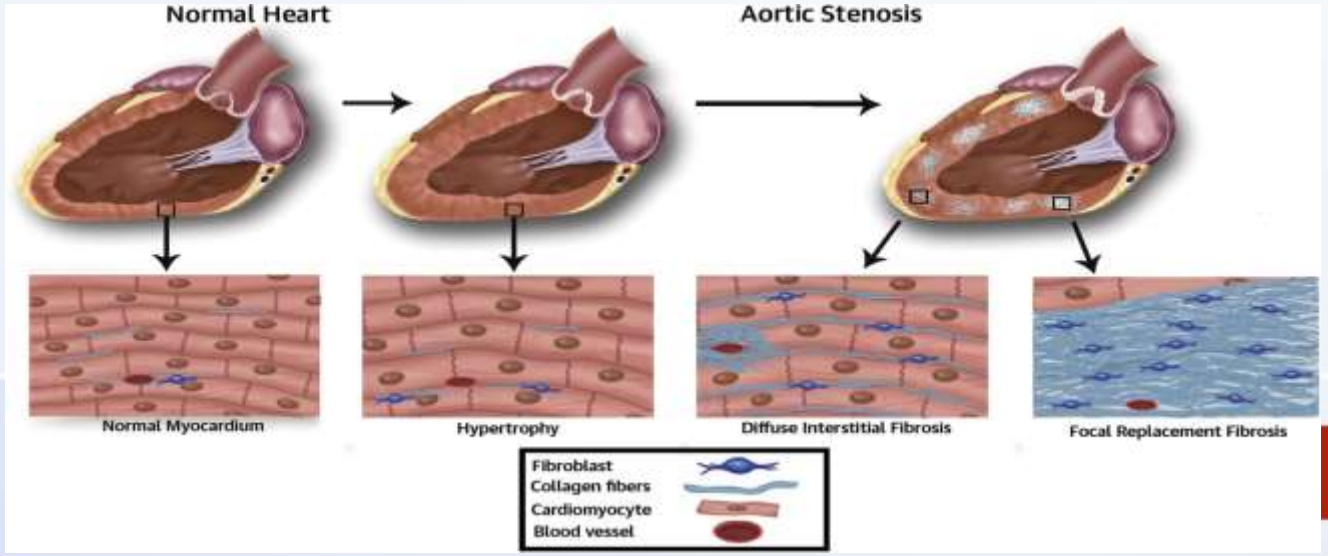


- Myocardial fibrosis
- Restrictive physiology
- Small LV cavity
- Resembles heart failure with preserved EF (Diastolic Heart failure)
- Pseudo-normalization of blood pressure
- Impaired LV function yet normal EF

  (around 50-60%)

LOW-LVEF
"CLASSICAL"
LOW-FLOW,
LOW-GRADIENT AS



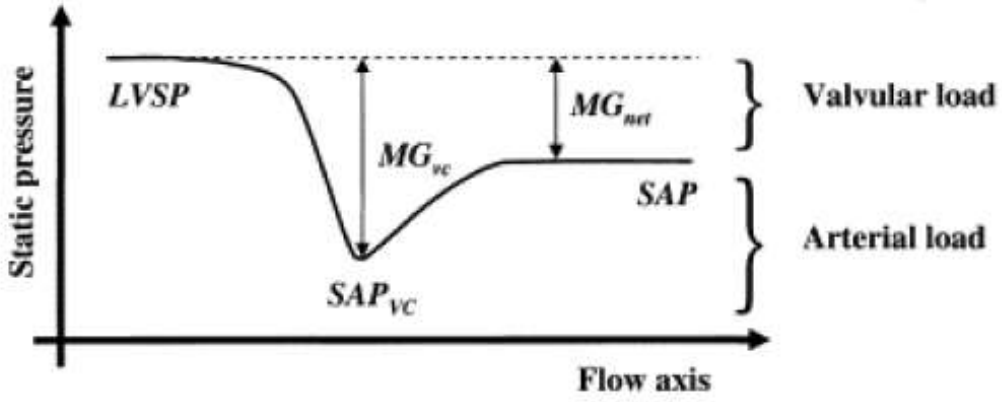


Index celkové(valvulo-arteriální)rezistence

Z_{va} ≥5,5

koresponduje s 2,5 násobným zvýšením mortality

$$Z_{VA} = \frac{LVSP}{SVi} = \frac{SAP + MG_{net}}{SVi}$$



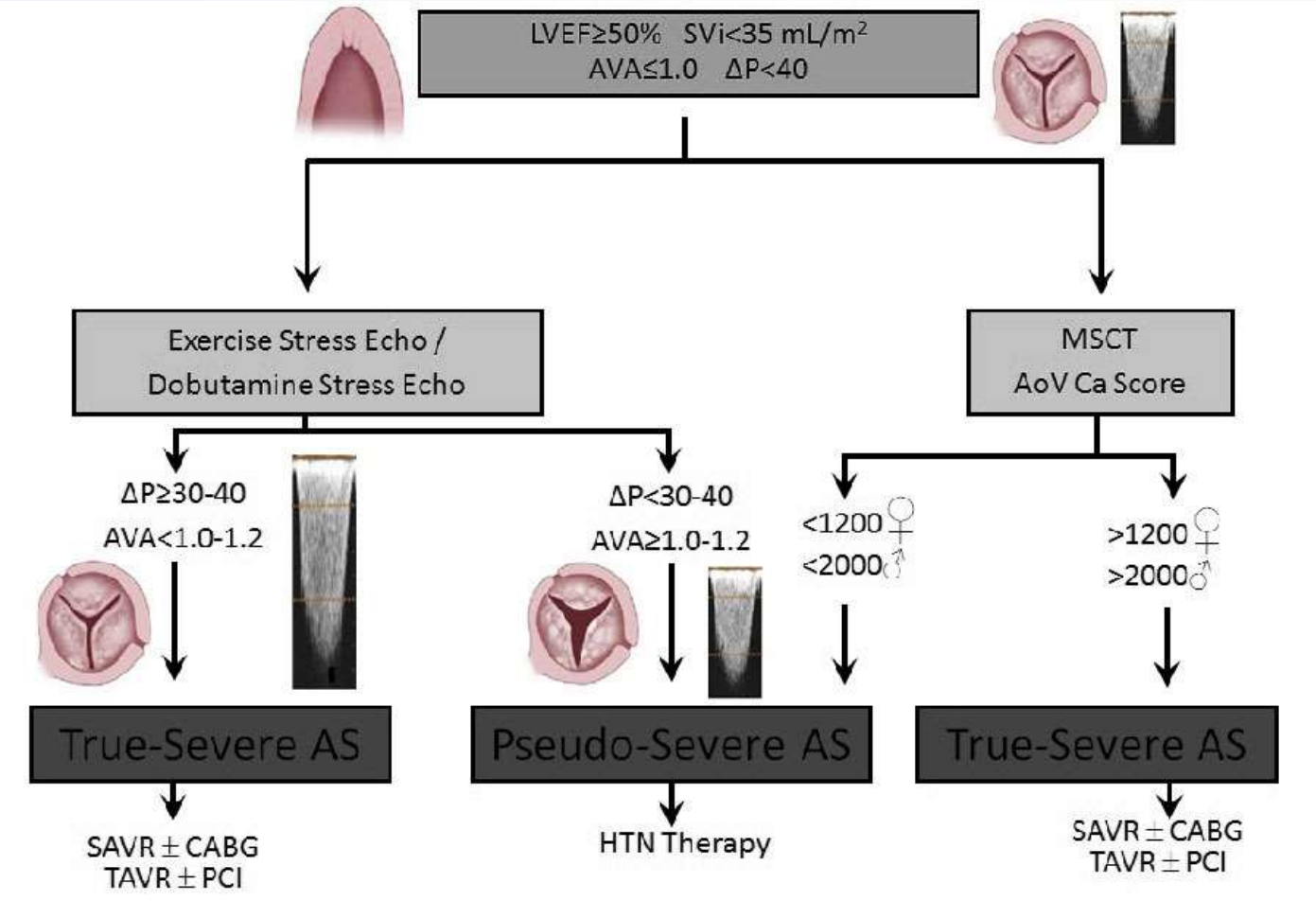
Kombinace AS a systémové hypertenze:
AVG může být snížen při systémové HT

Valve Resistance

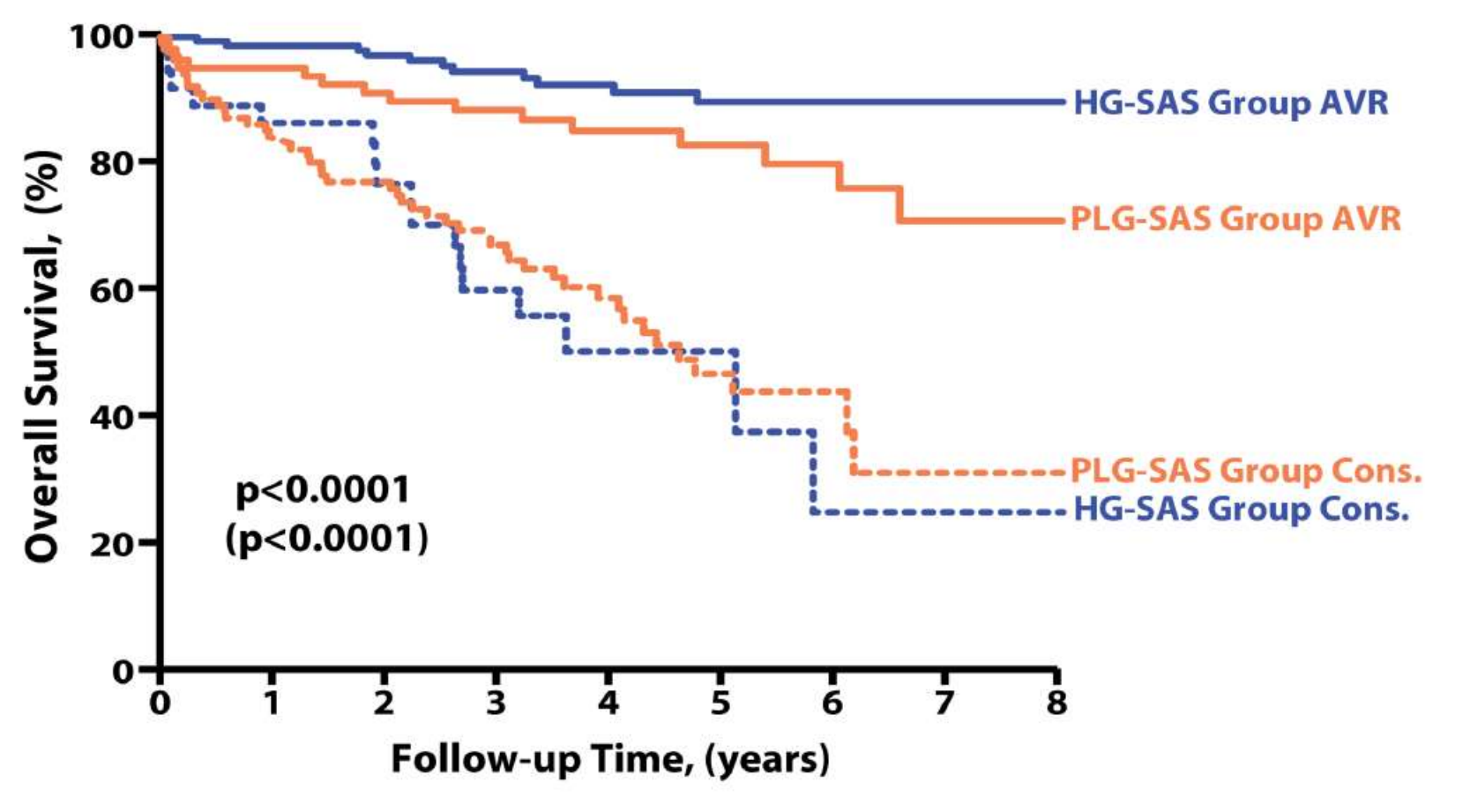
Lincoln E. Ford, MD; Ted Feldman, MD; John D. Carroll, MD

Circulation Vol 89, No 2 February 1994

LF-LG AS + zachovalá EF LK

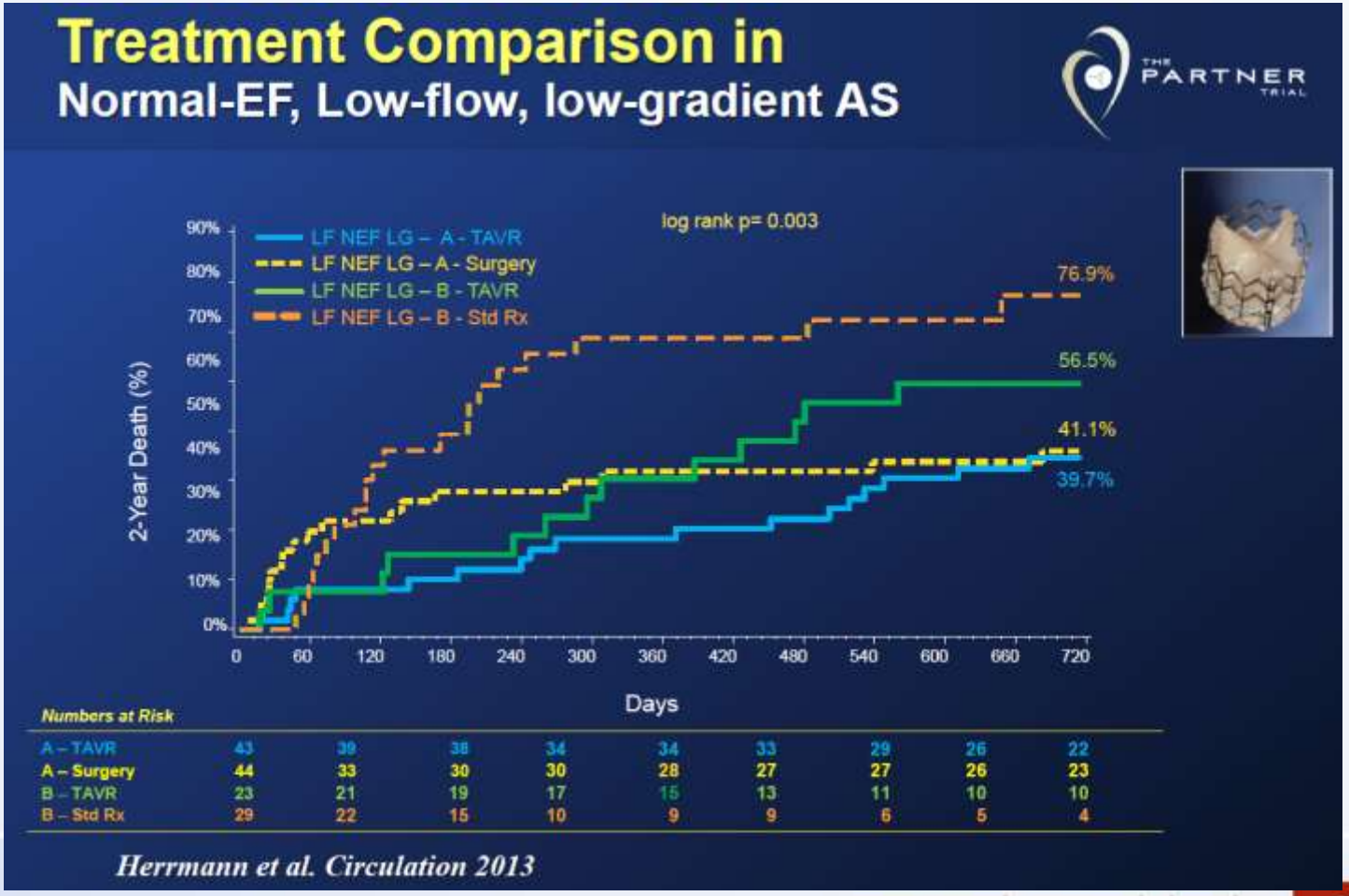


„paradoxní“ LF-LG aortální stenóza příznivý vliv AVR



Clavel, JACC 2012

„paradoxní“ LF-LG aortální stenóza příznivý vliv TAVI ve studii PARTNER



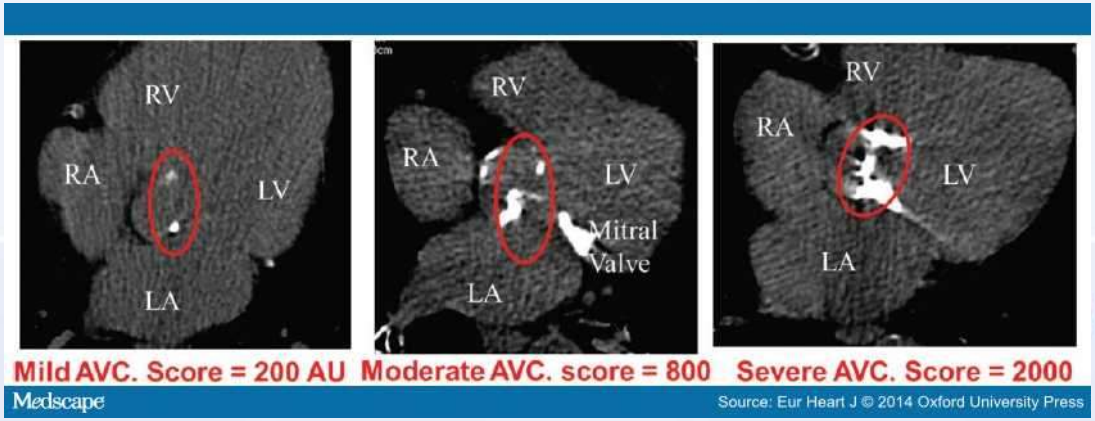
Normal flow - LG aortální stenóza s normální EF LK

AVAi <0,6 cm^2/m^2, mean AVG <40 mmHg,

LVEF ≥ 50%, tepový index > 35 ml/m^2

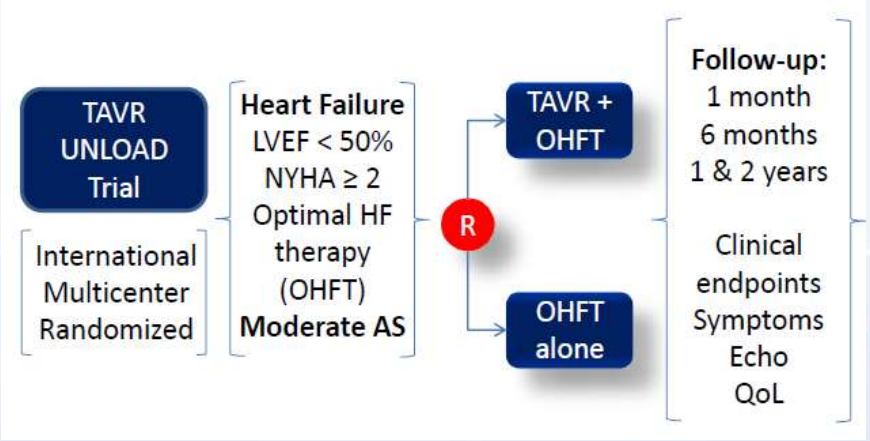
NF-LG AS

- Méně pokročilá vada ve srovnání s LF-LG AS
- Lepší přežívání („wait for symptoms“ strategy)
  - Eliminovat chyby měření
  - Zhodnocení symptomů
  - Kontrola a léčba hypertenze
    - Vliv periferní rezistence (systolická HT zvyšuje rezistenci a snižuje AVG)
  - CT scan – množství kalcifikací chlopně



Závěry -I

- LF-LG AS s dysfunkcí LK a kontraktilní reservou ***(II a)***
  - Dobutamin. TEE k odlišení pseudostenózy
  - AVR: benefit za >1 rok
  - TAVI: výraznější zlepšení EF LK nežli AVR
- LF-LG AS s dysfunkcí LK bez kontraktilní reservy ***(II b)***
  - Metoda kalkulované AVA při Q=250 ml/sec
  - CT scan – rozsah kalcifikací
  - BAV – přechodné snížení AVG, bridge to AVR/TAVI
  - AVR: vysoká operační mortalita, ale dlouhodobý mortalitní benefit
  - TAVI: preferovaná metoda
- Časná intervence
  - u nemocných s CHSS
  - TAVR UNLOAD Trial



Závěry - II

- Paradoxní LF - LG AS s normální EF LK ***(II a)***
  - Hypertrofie – malá LK – diastol. Dysfunkce
  - Fibróza – amyloidóza – HT
  - Vliv periferní rezistence (systolická HT zvyšuje rezistenci a snižuje AVG)
  - Intervence lepší nežli konzervativní léčba
- NF - LG AS s normální EF LK ***(guidelines – žádné doporučení)***
  - Primárně konzervativní postup
  - Sledovat symptomy, léčba HT
  - CT – kalcifikace Ao chlopně