SÚČASNÁ SITUÁCIA V CHIRURGICKEJ LIEČBE CHLOPŇOVÝCH VAD

Čanádyová Júlia

Kardiocentrum Nemocnice České Budějovice, a.s.

18. sympózium PS Chlopenní a vrozené srdeční vady v dospělosti,
Hradec Králove 25.2.-26.2.2016

Souhrn Doporučených postupů ESC pro diagnostiku a léčbu pacientů s chlopenními vadami (verze 2012).

Připraven Českou kardiologickou společností

(Summary of the ESC guidelines on the management of valvular heart disease (version 2012). Prepared by the Czech Society of Cardiology)

ČESKÁ KARDIOLOGICKÁ SPOLEČNOST
THE CZECH SOCIETY OF CARDIOLOGY

Jana Popelová[a,b], Miroslav Brtko[c], Petr Němec[d]

[a] *Oddělení kardiochirurgie, Kardiocentrum, Nemocnice Na Homolce, Praha, Česká republika*
[b] *Dětské kardiocentrum, Fakultní nemocnice Motol, Praha, Česká republika*
[c] *Kardiocentrum, Kardiochirurgická klinika, Lékařská fakulta Univerzity Karlovy v Hradci Králové a Fakultní nemocnice Hradec Králové, Hradec Králové, Česká republika*
[d] *Centrum kardiovaskulární a transplantační chirurgie, Brno, Česká republika*

Autoři původního textu ESC guidelines v plném znění [1]: Alec Vahanian, Ottavio Alfieri jménem společné pracovní skupiny European Society of Cardiology (ESC) a European Association for Cardio-Thoracic Surgery (EACTS) Joint Task Force on the Management of Valvular Heart Disease

---

SÚČASNÉ TRENDY V KARDIOCHIRURGII

- snaha postupovať **menej invazívne**

s cieľom minimalizovať chirurgickú traumu, bolest i ekonomické náklady

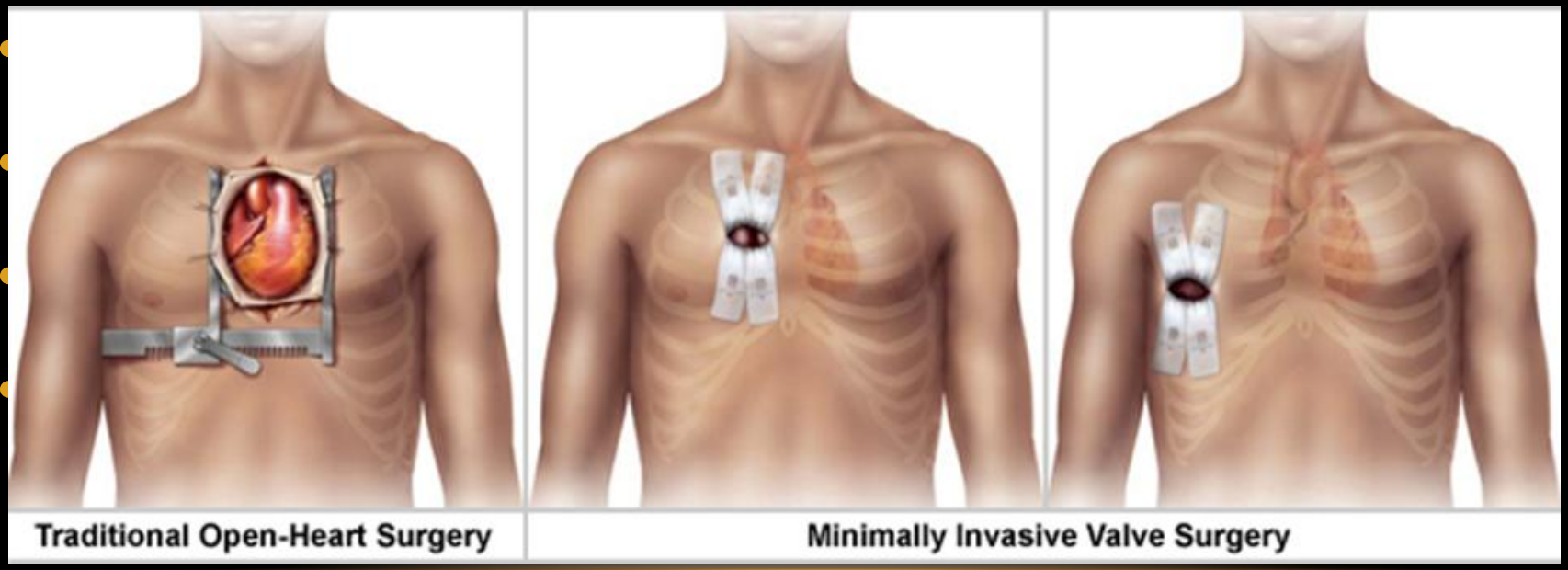
- **„držať krok“** s najnovšími technikami a technologiami

- Neustály **rozvoj intervenčnej kardiologie**

nás núti byť tiež menej invazívnymi a spolupracovat (hybridné výkony)

MINIMÁLNE INVAZÍVNA KARDIOCHIRURGIA

- Menšie rany – lepší kozmetický efekt



Why time saving is vital importance

ELSEVIER

International Journal of Surgery

journal homepage: www.theijs.com

Cross-clamp time is an independent predictor of mortality and morbidity in low- and high-risk cardiac patients

Prolonged cross-clamp time significantly correlates **with major post-operative morbidity and mortality in both low- and high-risk patients**. This effect increases with increasing XCL time. Prior knowledge on this effect can help in preventing some of these complications

Article history:
Received 19 May 2010
Received in
18 Septemb
Accepted 13
Available on

Keywords:
Aortic cross-
Mortality
Morbidity

incremental increase of 1 min interval in XCL time was associated with a 2% increase in mortality in both groups.

Objectives: We sought to assess the effects of aortic cross-clamp time (XCL) on outcome following cardiac surgery in low- and high-risk patients.

tients who
tients sub-
1108, 29%).
e. Group 1
morbidity

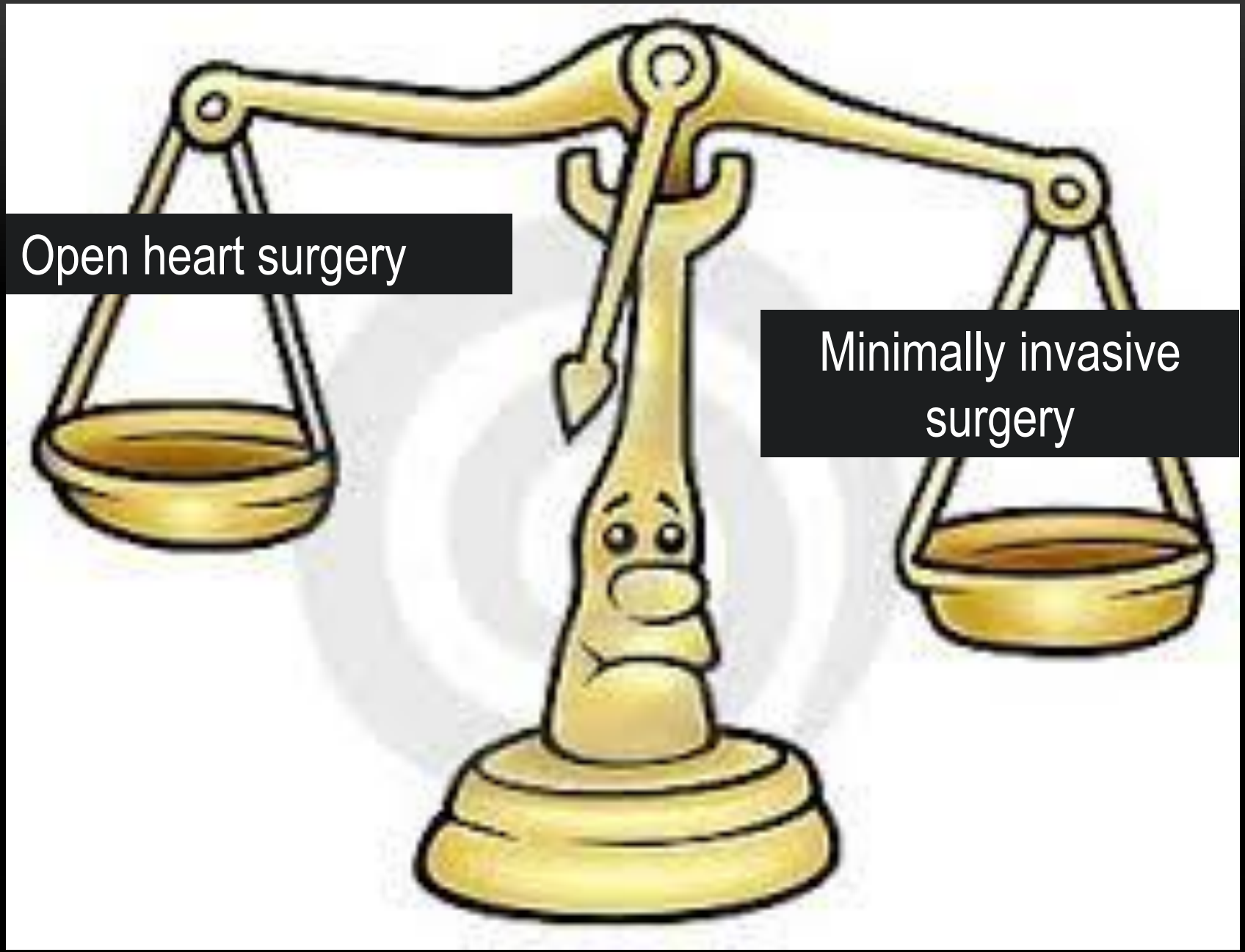
d XCL time
plications,

prolonged hospital stay, blood transfusion and increased mortality ($p < 0.05$). By using multiple logistic regression, aortic XCL time >60 min was independent risk factor for low cardiac output, prolonged ventilation, renal complication, blood transfusion, mortality and prolonged hospital stay in both groups. By using XCL time as a continuous variable, an incremental increase of 1 min interval in XCL time was associated with a 2% increase in mortality in both groups.

Conclusion: Prolonged cross-clamp time significantly correlates with major post-operative morbidity and mortality in both low- and high-risk patients. This effect increases with increasing XCL time. Prior knowledge on this effect can help in preventing some of these complications.

MINIMÁLNE INVAZÍVNA KARDIOCHIRURGIA

- Menšie rany – lepší kozmetický efekt
- Kratší čas trvania operácie
- Bez mimotelového obehu
- Hybridný prístup


Open heart surgery
Minimally invasive surgery

MOŽNOSTI MICS

Parciálna sternotomia

Minitorakotomia

pravostranná:

4. medzirebrový priestor - mitrálna,trikuspidálna chlopeň, MAZE, LAST

2. medzirebrový priestor - aortálna chlopeň, aorta

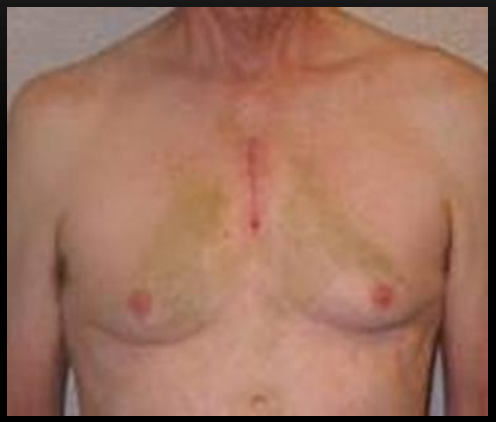
ľavostranná:

elektrody, TAVI. TMVI

Torakoskopia (EndoMAZE, epikardiálne elektrody)

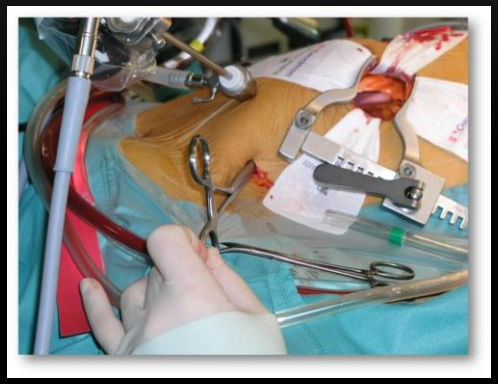
Hybridné operácie (hrudná aorta, CABG)

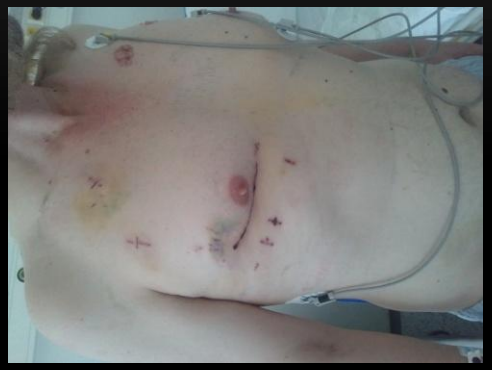
PARCIÁLNA STERNOTOMIA



- Obrátené „L“ do 3. až 5. medzirebrového priestoru
- štandardná kanylačná i operačná technika
- Aortálna chlopeň, vzostupná aorta
- U rizikových pc (COPD, DM) – redukcia infekčných komplikácii sterna, nižšie krvné straty, menej revízii pre krvácanie vč. redukcie krvných prevodov
- Zachovaná stabilita hrudného koša – rýchlejšia RHB
- V kombinácii so Sutureless biochlopňami (Perceval S) – skrátenie operácie

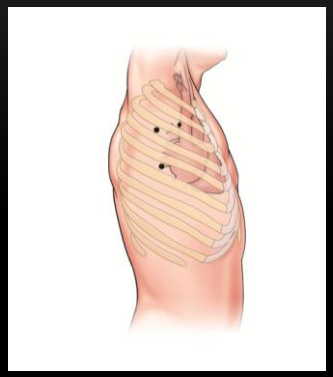
PRAVOSTRANNÁ MINITORAKOTOMIA

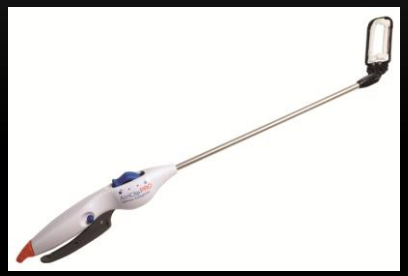


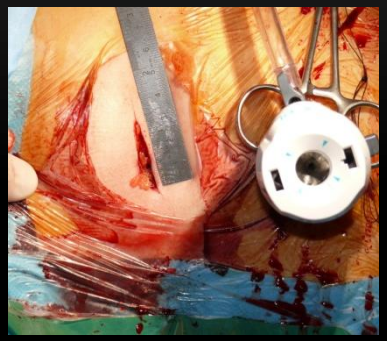


- CAVE – dilatácia asc.aorty
- Kanylácia AFC a VFC v P třísle a VJ
- mitrálna, trikuspidálna chlopeň, medzipredsieňové septum – FOP, myxomy, MAZE, aortálna chlopeň
- Sutureless aortálna bio
- Transaortálna TAVI

TORAKOSKOPIA







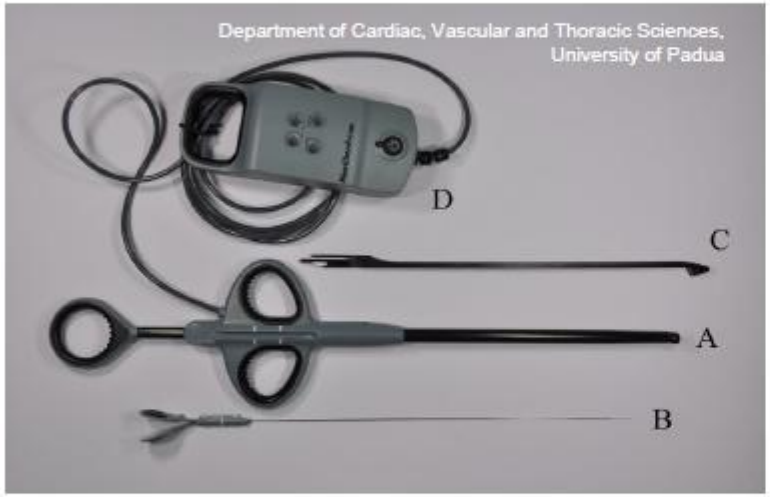
- endoskopický MAZE, ľavokomorové elektrody, implantácia AtriClip
- Rychlá rehabilitace, kontinuita hrudníku, minimum klasických chirurgických komplikací

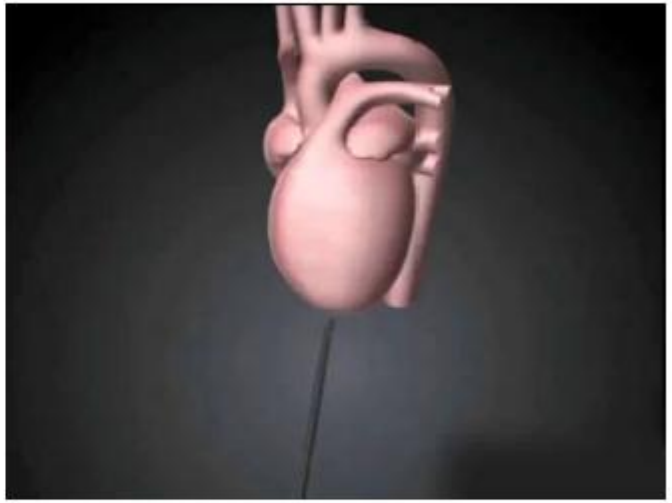
HYBRIDNÉ OPERÁCIE

- Kombinácia chirurgickej a intervenčnej techniky
- TAVI (levostranná minitorakotomie)
- TA off pump mitral valve repair with neochordae implantation
- Stentgraft pre zostupnú (oblouk) hrudní aortu
- MIDCAB (bypass on LAD + PCI)

MITRÁLNA CHLOPEŇ

Transapical Off-Pump Mitral Valve Intervention with Neochord Implantation (TOP-MINI)



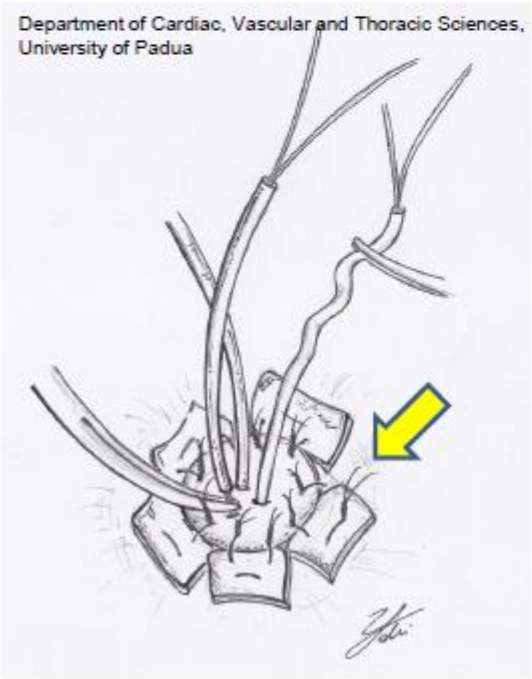


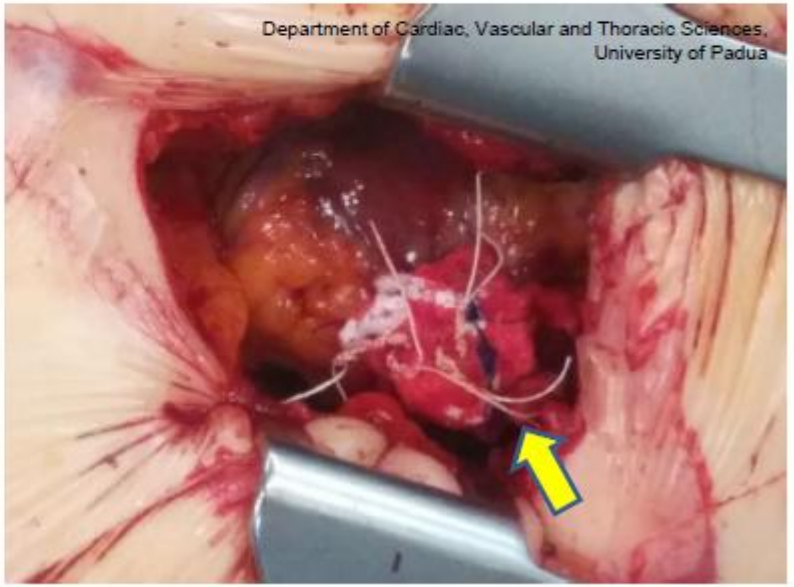
- Skin incision: left-lateral mini-thoracotomy at 5-6th intercostal space
- Transapical access
- No Cardiopulmonary bypass
- Delivery system: *Neochord DS-1000*
- Real-Time TEE guidance
- Final fixation of Neochords (ePTFE, GoreTex^{TM}) on the epicardium

Andrea Colli, Laura Besola, Eleonora Bizzotto, Fabio Zucchetta, Erica Manzan, Roberto Bellu, Dario Gregori, Demetrio Pittarello, Gino Gerosa , *Department of Cardiac, Thoracic and Vascular Sciences, University of Padua, Italy*

TOP-MINI

Neochord passed into a round apical teflon pledget

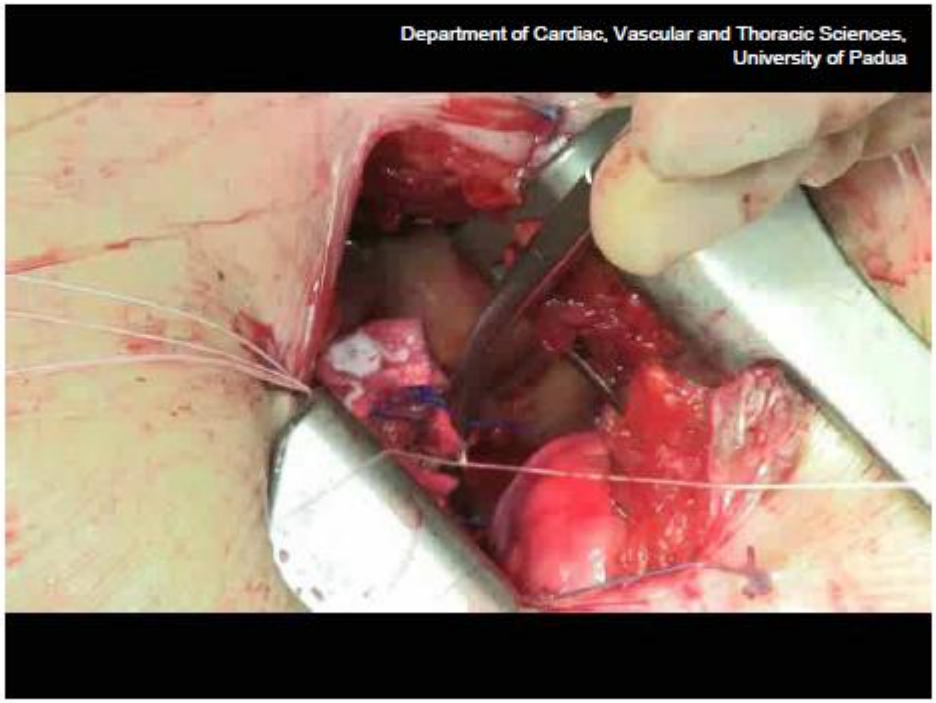




Andrea Colli, Laura Besola, Eleonora Bizzotto, Fabio Zucchetta, Erica Manzan, Roberto Bellu, Dario Gregori, Demetrio Pittarello, Gino Gerosa , *Department of Cardiac, Thoracic and Vascular Sciences, University of Padua, Italy*

TOP-MINI

Anchoring of the NeoChords on the epicardium



Leaflet involvement

PML	28 (87,5%)
AML	3 (9,4%)
AML and PML	1 (3,1%)

Residual MR at discharge

2 (15,6%)

Residual MR at 30-days

2+ (18,7%)

3+ (9,4%)

93% MR ≤2+ at 1 Year

Andrea Colli, Laura Besola, Eleonora Bizzotto, Fabio Zucchetta, Erica Manzan, Roberto Bellu, Dario Gregori, Demetrio Pittarello, Gino Gerosa , *Department of Cardiac, Thoracic and Vascular Sciences, University of Padua, Italy*

TOP-MINI Summary

- TOP-MINI procedure is safe, reproducible, standardized.
- Multiple Neochords are needed
- Good preoperative and intraoperative Imaging assessment improve results
- Early efficacy is demonstrated in particular for Type A and B anatomies and is maintained over time.

Andrea Colli, Laura Besola, Eleonora Bizzotto, Fabio Zucchetta, Erica Manzan, Roberto Bellu, Dario Gregori, Demetrio Pittarello, Gino Gerosa , *Department of Cardiac, Thoracic and Vascular Sciences, University of Padua, Italy*

TOP-MINI Summary

- Further refinement of the technique and preoperative assessment may help to improve results in challenging (Type C) anatomies.
- Echocardiographic data support the concept of a trend toward reverse remodelling of the ventricle and the annulus.
- Longer follow-up in larger series of patients is needed before drawing more definitive conclusions

Andrea Colli, Laura Besola, Eleonora Bizzotto, Fabio Zucchetta, Erica Manzan, Roberto Bellu, Dario Gregori, Demetrio Pittarello, Gino Gerosa , *Department of Cardiac, Thoracic and Vascular Sciences, University of Padua, Italy*

AORTÁLNA CHLOPEŇ

TAVI – INDIKÁCIE VO SVETLE GUIDELINES ESC/EACTS

Table 10: Recommendations for the use of transcatheter aortic valve implantation

Recommendations	Class[a]	Level[b]
TAVI should only be undertaken with a multidisciplinary 'heart team' including cardiologists and cardiac surgeons and other specialists if necessary.	I	C
TAVI should only be performed in hospitals with cardiac surgery on-site.	I	C
TAVI is indicated in patients with severe symptomatic AS who are not suitable for AVR as assessed by a 'heart team' and who are likely to gain improvement in their quality of life and to have a life expectancy of more than 1 year after consideration of their comorbidities.	I	B
TAVI should be considered in high-risk patients with severe symptomatic AS who may still be suitable for surgery, but in whom TAVI is favoured by a 'heart team' based on the individual risk profile and anatomic suitability.	IIa	B

AS = aortic stenosis; AVR = aortic valve replacement; TAVI = transcatheter aortic valve implantation.
[a]Class of recommendation; [b]Level of evidence.

TAVI – DNES

- Hľadanie alternatívnych prístupov

  (Tao-TAVI, TS-TAVI)
- Posun implantácii k menej rizikovým a mladším pacientom
- Rozšírenie indikácii pre t.č.off-label použitie
  - Valve-in-valve do bioprotéz či ringov
  - TAVI pri AVR

Perceval S Sutureless biological valve (Sorin Group, Saluggia, Italy)

based on years of tissue valve technology

3f Enable aortic bioprosthesis (Medtronic, Minneapolis, MN)

based on the ATS 3f® Aortic Bioprosthesis and a self-expanding Nitinol™ frame

INTUITY Valve System (Edwards Lifesciences Corporation, Irvine, CA)

based on the Carpentier-Edwards PERIMOUNT Magna Ease

PREČO SUTURELESS CHLOPNE ?

kombinujú výhody klasickej náhrady a TAVI

- kompletná excízia natívnej chlopne, ↓ paravalv. insuf.
- minimálne invazívny prístup (parc. sternotomia, torakotomia)
- rešpektovanie individuálnych anatomických pomerov
- rýchle, netraumatické zavedenie pod kontrolou zraku
- skrátenie ECC a Cx času pri sternotomii
- rýchlejšia learning curve

Inclusion Criteria

- age ≥ 75 years; **> 65 years**
- aortic valve stenosis;
- high surgical risk and candidate for a standard surgical intervention of aortic valve replacement with biological prosthesis;
- NYHA functional class III and IV;
- Small and calcified aortic root / annulus;

Exclusion Criteria

- Aneurismal dilation or dissection of the ascending aorta requiring surgical correction;
- aortic annulus size (after decalcification) **< 19 mm** or **> 23 mm** by direct intra-operative measurement. **<19 mm or > 25 mm**

- **Nutnosť intervencie na mitrálnej chlopni ???**

SUTURELESS CHLOPNE A INTERVENCIA NA MITRÁLNEJ CHLOPNI
OUT OFF LABEL APPROACH??

- Obecne KI pre riziko interferencie 2 chlopní na úrovni aortomitrálnej kontinuity, možnosť narušenia 3D štruktúry koreňa Ao a LVOT
- Nutnosť rešpektovať niektoré technické okolnosti
- Minimálna dĺžka ao-mi fibroznej kontinuity pre pacientov s mechanickou Mi chlopňou pred TAVI je 9 mm, pre sutureless chlopne bude pravdepodobne ešte menšia
- Zavedenie sutureless chlopne do Ao pozície až po výkonu na mitrálnej a/alebo trikuspidálnej chlopni
- Výber vhodnej protézy event prstenca (semirigidný anuloplast. prstenec, zachovanie flexibility v anter. časti, minimalizácia rizika interferencie

Expanding the indication for sutureless aortic valve replacement to patients with mitral disease

Tam Hoang Minh, MD, Amine Mazine, MD, Ismail Bouhout, MD, Ismail El-Hamamsy, MD, PhD, Michel Carrier, MD, MBA, Denis Bouchard, MD, PhD, and Philippe Demers, MD, MSc

Objectives: To review our experience with sutureless aortic valve replacement (AVR) in the setting of concomitant mitral valve (MV) surgery and discuss the technical considerations.

Methods: Between January 2012 and March 2013, 10 patients underwent sutureless AVR with the Perceval prosthesis in the setting of concomitant mitral disease. Five patients underwent MV repair, 4 underwent MV replacement, and 1 had a previously implanted mechanical mitral prosthesis.

Results: The median age was 79 years and 7 patients (70%) were male. Median logistic EuroSCORE II was 6.2%. All valves were successfully implanted with no 30-day mortality. There was no residual aortic paravalvular leak. Two patients had from third-degree atrioventricular block requiring permanent pacemaker implantation. At a mean follow-up of 8 ± 4 months (range, 2-16 months), the overall survival was 80% with 2 non–valve-related deaths and the mean transaortic gradient and aortic valve area had improved to 11.1 ± 4.6 mm Hg and 1.5 ± 0.3 cm^2, respectively. There was no evidence of mitral dysfunction in any patient.

Conclusions: In our experience, sutureless AVR in the setting of concomitant mitral surgery is a feasible and reproducible procedure. Elderly patients undergoing multiple valve surgery present a higher operative risk, therefore extending the indication for sutureless AVR to patients with concomitant mitral disease could greatly benefit this specific population. (J Thorac Cardiovasc Surg 2014;148:1354-9)

Sutureless AVR in the setting of concomitant mitral valve surgery is a feasible, reproducible and safe procedure

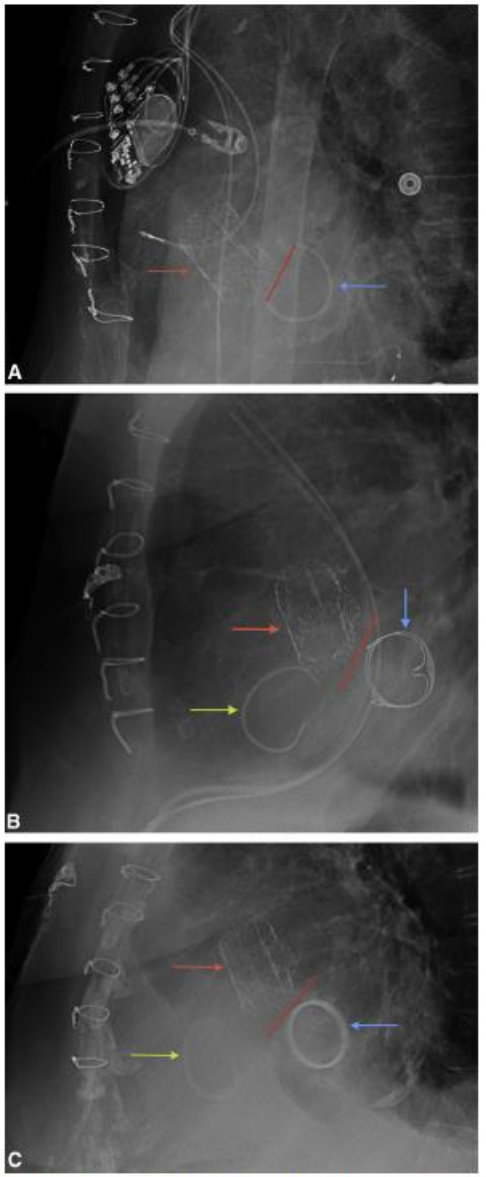


FIGURE 2. Postoperative lateral chest radiographs showing the absence of interference between the Perceval S and mitral prostheses. A, Sorin Annuloflex partial ring for mitral annuloplasty. B, Carpentier-Edwards Perimount Magna Mitral Ease bioprosthetic valve. C, Sorin Carbomedics mechanical mitral prosthesis. The *blue arrow* points to the mitral prosthesis. The *red arrow* points to the Perceval aortic sutureless bioprosthesis.

ZÁVERY

MICS je realitou, ktorá prináša výhody predovšetkým v niektorých podskupinách pacientov (COPD, DM, obezita, vysoký vek, REDO…)

MICS nie je kompromisom čo do kvality operácie, ale je to riešenie porovnateľné so zavedenými spôsobmi liečby

MICS ako súčasť hybridných výkonov rozširuje spektrum možností v rizikových skupinách pacientov

ĎAKUJEM ZA POZORNOSŤ

ANATOMICKE TYPY MITRÁLNEJ CHLOPNE

TYP A	izolovany centrálny prolaps P2 bez tetheringu predného cípu
TYP B	prolaps zadného cípu rozširujúci sa i laterálne do P1/P3 alebo s mnohočetnými prolabujúcimi častmi zadného cípu
TYP C	prolaps predného cípu, prolaps oboch cípov a/alebo kalcifikacia cípov anulu

MV anatomy (Type A) presented isolated central posterior leaflet (P2) prolapse and without anterior leaflet tethering. Patients with acceptable MV anatomy (Type B) showed a posterior leaflet prolapse extending laterally into the P1 or P3 segments, or showed multiple posterior prolapsing segments. Patients with a challenging MV anatomy (Type C) had an anterior leaflet prolapse, a bileaflet prolapse or leaflet/annular calcifications.