

XXXI.

kongres České společnosti
anesteziologie, resuscitace a intenzivní
medicíny

Jak na miniinvazivní výkony v kardiochirurgii

tipy a triky anesteziologů z Podlesí

9. – 11. Říjen 2025 PRAHA

MUDr. Michal Briško

ARO + Kardiochirurgické oddělení

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kongres České společnosti
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medicíny



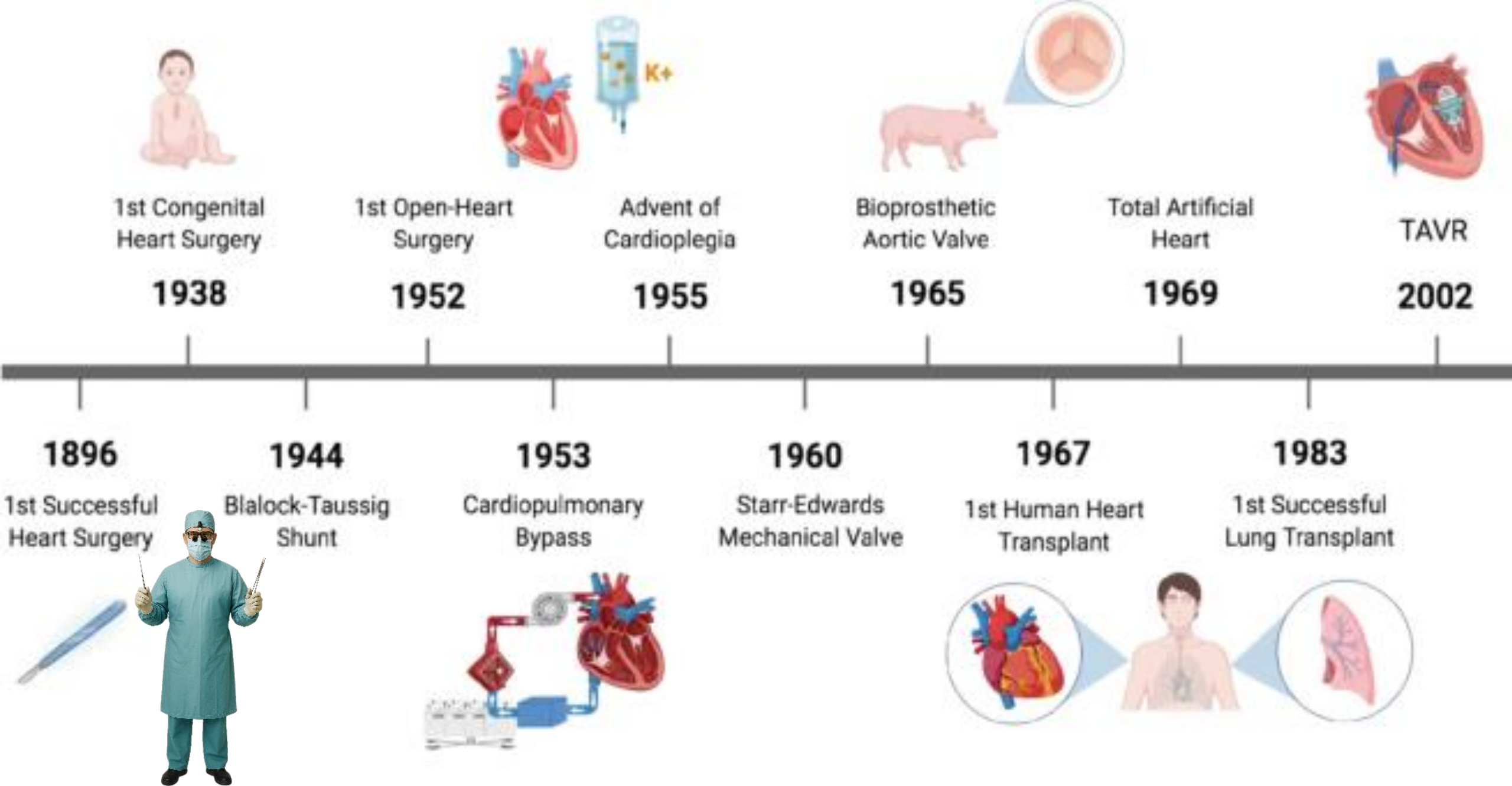
Nemám žádný konflikt zájmů

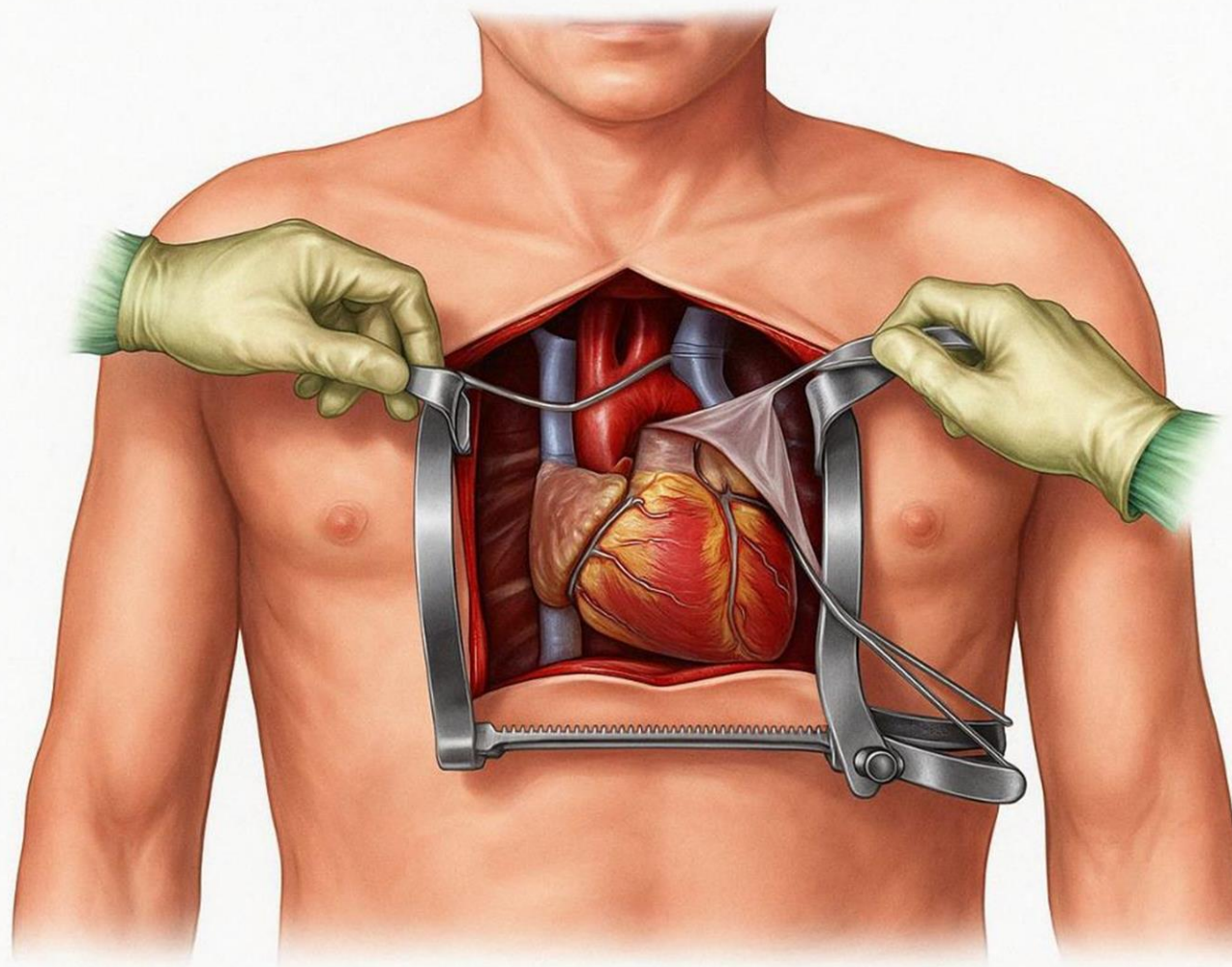


Osnova

1. Úvod
2. Miniinvazivní kardiokirurgie - obecně
3. MICS v Třinci “na Podlesí”
4. Trajektorie pacienta
5. Závěr
6. Dotazy a diskuse



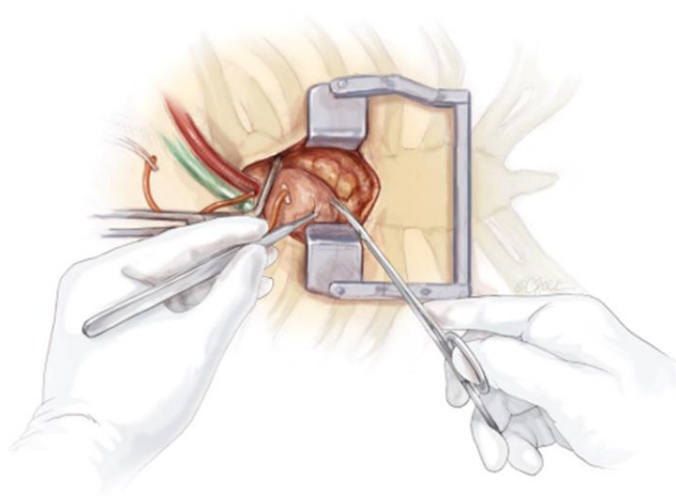




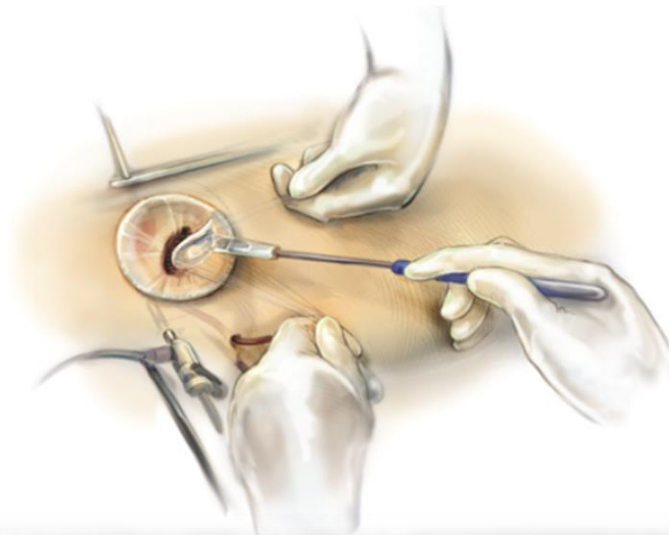


Minimally invasive cardiac surgery (MICS)

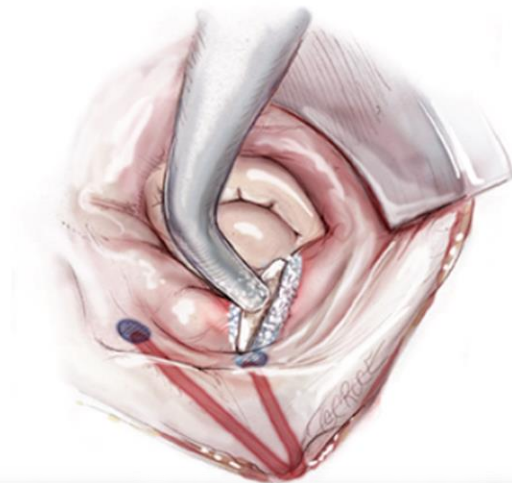
Mini-Aortic Surgery



Mini-Mitral Surgery



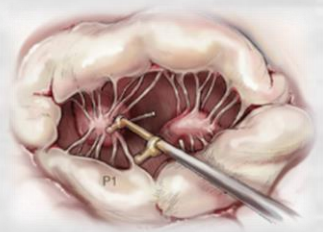
Mini-AF Surgery



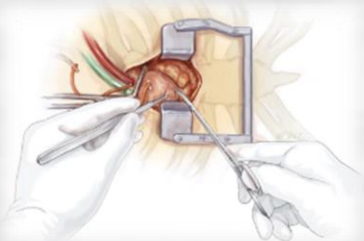
- Akowuah EF, Maier RH, Hancock HC, et al. **Minithoracotomy vs Conventional Sternotomy for Mitral Valve Repair: A Randomized Clinical Trial.** *JAMA.* 2023;329(22):1957–1966. doi:10.1001/jama.2023.7800
 - **Minithoracotomy is not superior to sternotomy in recovery of physical function at 12 weeks.** Minithoracotomy achieves **high rates and quality of valve repair** and has **similar safety outcomes at 1 year** to sternotomy. The results provide evidence to inform shared decision-making and treatment guidelines.
- Nasso G, Bonifazi R, Romano V, Bartolomucci F, Rosano G, Massari F, Fattouch K, Del Prete G, Riccioni G, Del Giglio M, Speziale G. **Three-year results of repaired Barlow mitral valves via right minithoracotomy versus median sternotomy in a randomized trial.** *Cardiology.* 2014;128(2):97-105. doi: 10.1159/000357263. Epub 2014 Apr 5. PMID: 24714349.
 - The 3-year results of repair of Barlow valves were **satisfactory irrespective of the approach used to repair the valve.** The advantages of MI surgery can be achieved in patients with mitral Barlow disease without concerns over the durability of repair.
- Dogan S, Aybek T, Risteski PS, Detho F, Rapp A, Wimmer-Greinecker G, Moritz A. **Minimally invasive port access versus conventional mitral valve surgery: prospective randomized study.** *Ann Thorac Surg.* 2005 Feb;79(2):492-8. doi: 10.1016/j.athoracsur.2004.08.066. PMID: 15680822.
 - **The minimally invasive port access technique for mitral valve surgery can be done with similar clinical safety** as procedures through median sternotomy. The problems with endoclamping have forced us to change our practice to the more simple and economic transthoracic aortic clamping technique.



- Eqbal AJ, Gupta S, Basha A, Qiu Y, Wu N, Rega F, Chu FV, Belley-Cote EP, Whitlock RP. **Minimally invasive mitral valve surgery versus conventional sternotomy mitral valve surgery: A systematic review and meta-analysis of 119 studies.** J Card Surg. 2022 May;37(5):1319-1327. doi: 10.1111/jocs.16314. Epub 2022 Feb 16. PMID: 35170791.
 - MMVS may **be associated with shorter length of hospital stay** with no significant difference in short-term morbidity and mortality. There is a paucity of high-quality data on the long-term outcomes of MMVS when compared with conventional sternotomy.
- Amin A, Kumar R, Mokhtassi SS, Alassiri AK, Odaman A, Khan MAR, Lakshmana S, Din ZU, Acharya P, Cheema HA, Nashwan AJ, Khan AA, Hussain A, Bhudia S and Vincent RP (2024) **Minimally invasive vs. conventional mitral valve surgery: a meta-analysis of randomised controlled trials.** Front. Cardiovasc. Med. 11:1437524. doi: 10.3389/fcvm.2024.1437524
 - **MIMVS reduced the number of days spent in the hospital** and showed a trend toward **lower postoperative pain scores**, but it did not decrease the risk of all-cause mortality or the number of patients needing blood product transfusions. Further large-scale RCTs are required to inform definitive conclusions, particularly with regard to quality-of-life outcomes investigating functional recovery.

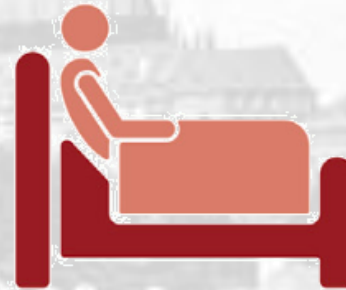


- Lim JY, Deo SV, Altarabsheh SE, Jung SH, Erwin PJ, Markowitz AH, Park SJ. **Conventional versus minimally invasive aortic valve replacement: pooled analysis of propensity-matched data.** J Card Surg. 2015 Feb;30(2):125-34. doi: 10.1111/jocs.12493. Epub 2014 Dec 22. PMID: 25533177.
 - Minimally invasive aortic valve replacement **can be performed safely despite the longer ischemic time.** While minimally invasive surgery does demonstrate some **advantages in postoperative recovery**, we failed to find any other substantial improvement in outcome over conventional aortic valve replacement.
- Bonacchi M, Prifti E, Giunti G, Frati G, Sani G. **Does ministernotomy improve postoperative outcome in aortic valve operation? A prospective randomized study.** Ann Thorac Surg. 2002 Feb;73(2):460-5; discussion 465-6. doi: 10.1016/s0003-4975(01)03402-6. PMID: 11845860.
 - Our results showed that **ministernotomy had not only important cosmetic advantages** but also beneficial effects in **blood loss and transfusion, postoperative pain, and probably in sternal stability.** Ministernotomy also improved recovery of respiratory function and allowed earlier extubation and hospital discharge.
- D'Onofrio A, Tessari C, Lorenzoni G, Cibir G, Martinelli G, Alamanni F, Polvani G, Solinas M, Massetti M, Merlo M, Vendramin I, Di Eusanio M, Mignosa C, Mangino D, Russo C, Rinaldi M, Pacini D, Salvador L, Antona C, Maselli D, De Paulis R, Luzi G, Alfieri O, De Filippo CM, Portoghese M, Musumeci F, Colli A, Gregori D, Gerosa G. **Minimally Invasive vs Conventional Aortic Valve Replacement With Rapid-Deployment Bioprostheses.** Ann Thorac Surg. 2021 Jun;111(6):1916-1922. doi: 10.1016/j.athoracsur.2020.06.150. Epub 2020 Oct 9. PMID: 33039363
 - According to our data, rapid-deployment bioprostheses allow the performance of minimally invasive aortic valve replacement **with similar surgical times and similar clinical and hemodynamic outcomes to conventional surgery** and should be considered the first choice in these procedures.





Srovnatelná
mortalita a riziko
reoperace



Rychlejší zotavení,
krátší doba pobytu
na JIP, kratší doba
hospitalizace

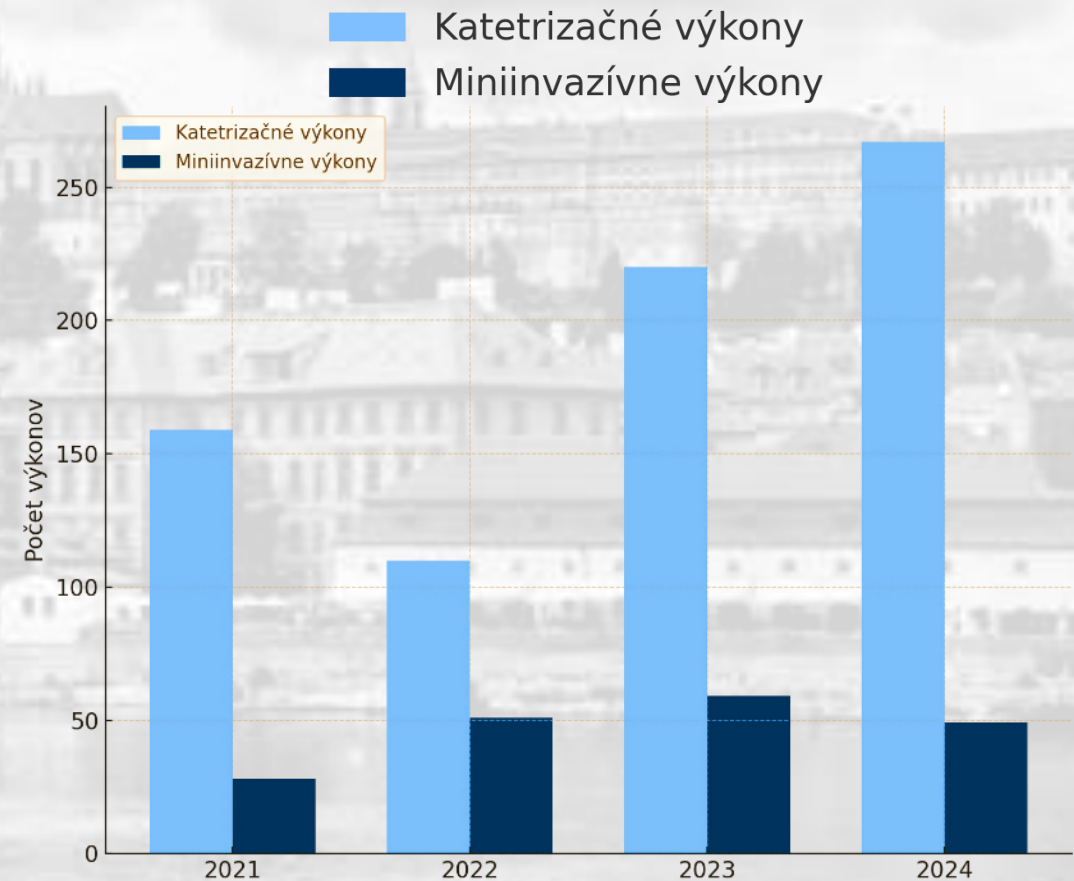


Menší bolestivost,
nižší riziko infekcí

Ideální pacient –
mladý, nízké riziko
perioperačních
komplikací

Kardiochirurgie Třinec

- 620-630 operací ročně
- 45-60 výkonů miniinvazivně
– Ao chlopeň, Mi chlopeň, Tri chlopeň
- První operace z
“minipřístupu”- plastika
mitrální chlopně v roce 2005

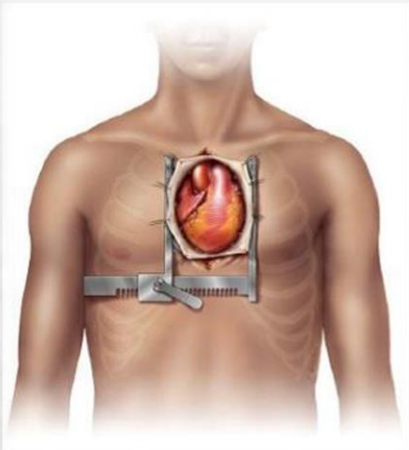


Typy miniinvazivních výkonů

Aortální chlopeň

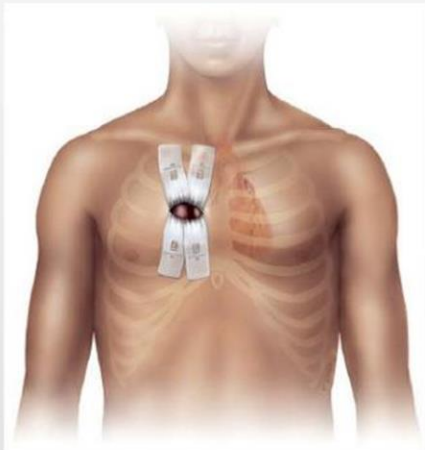
Mitrální a Trikuspidální chlopeň

Conventional

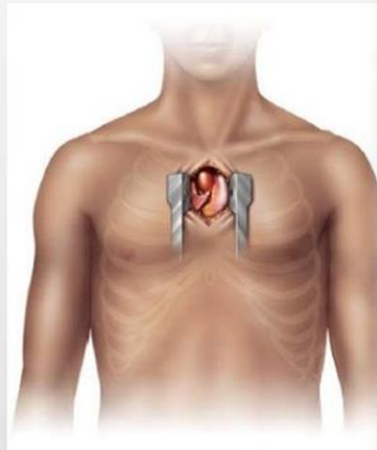


Open-chest or Sternotomy

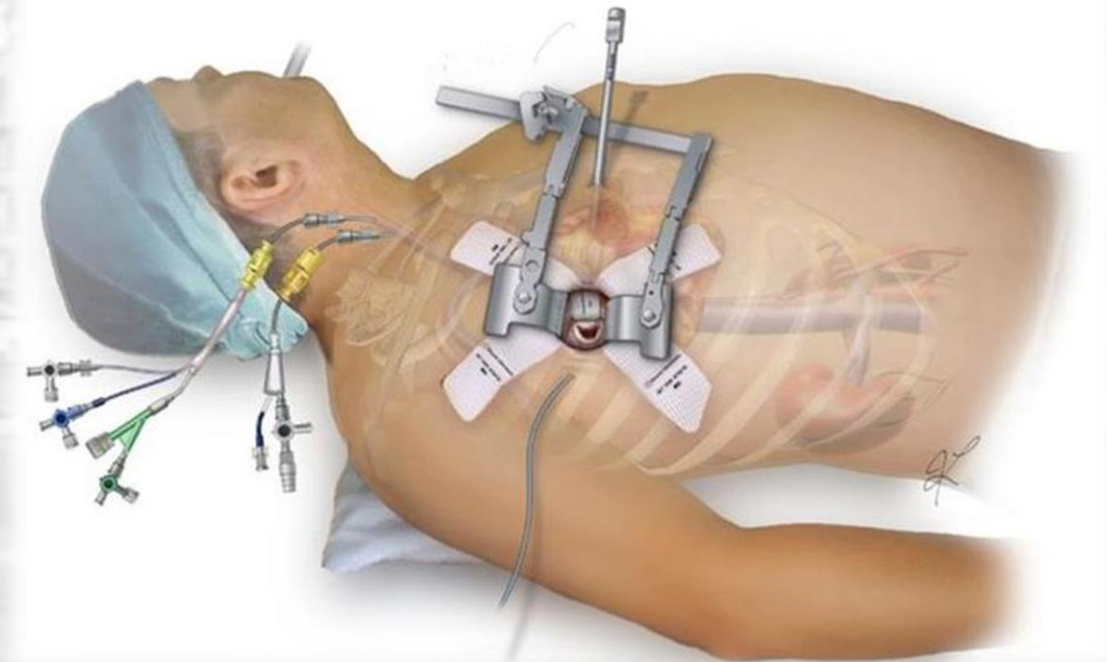
Minimal Incision



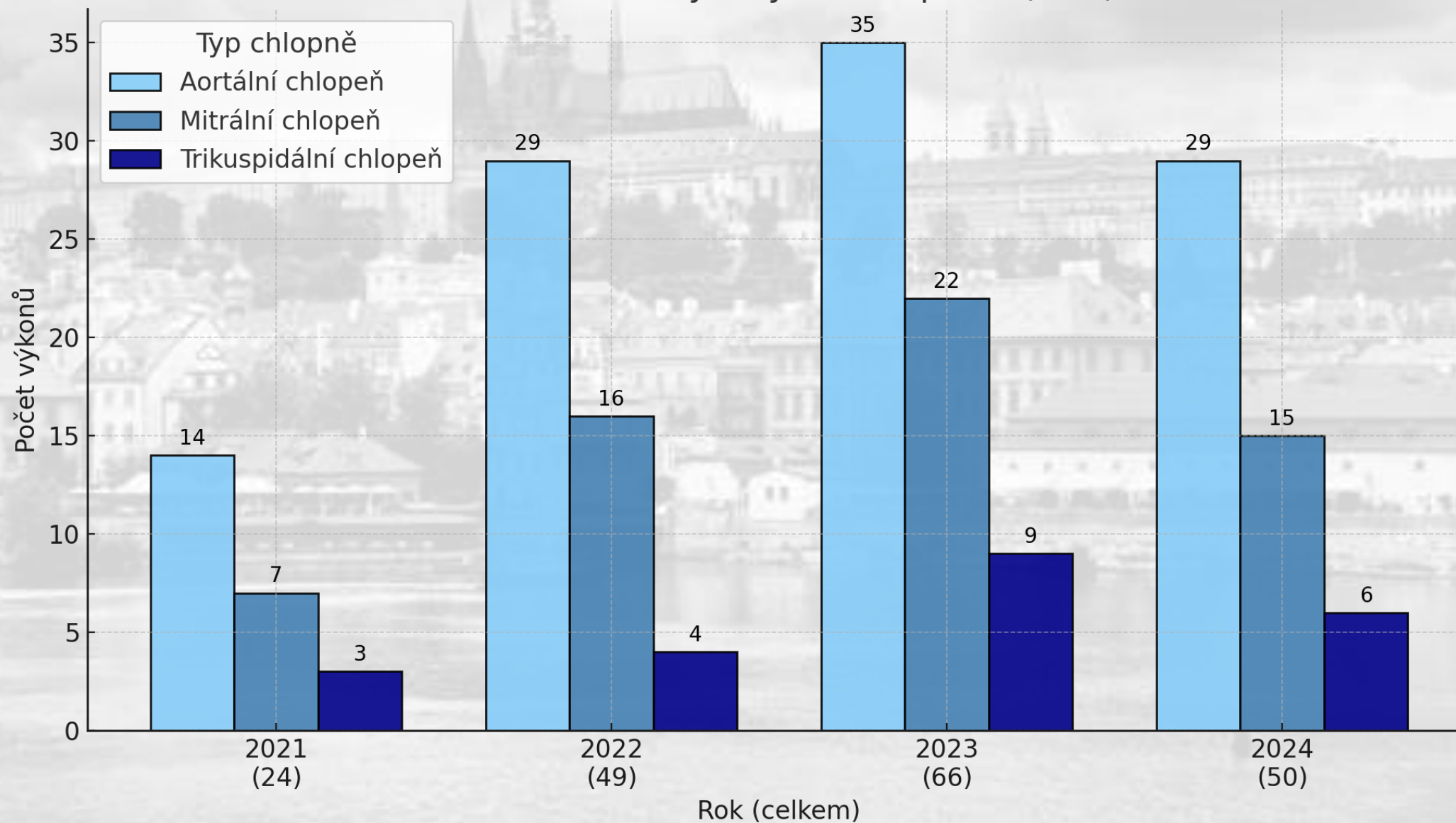
Right Anterior
Thoracotomy



Mini-sternotomy



Miniinvazivní výkony na chlopních (KCH)



Trajektorie pacienta

Miniinvazivní kardiochir.výkon – pohled anesteziologa



Výber pacienta



Monitorace



Zajištění DC



Anestezie



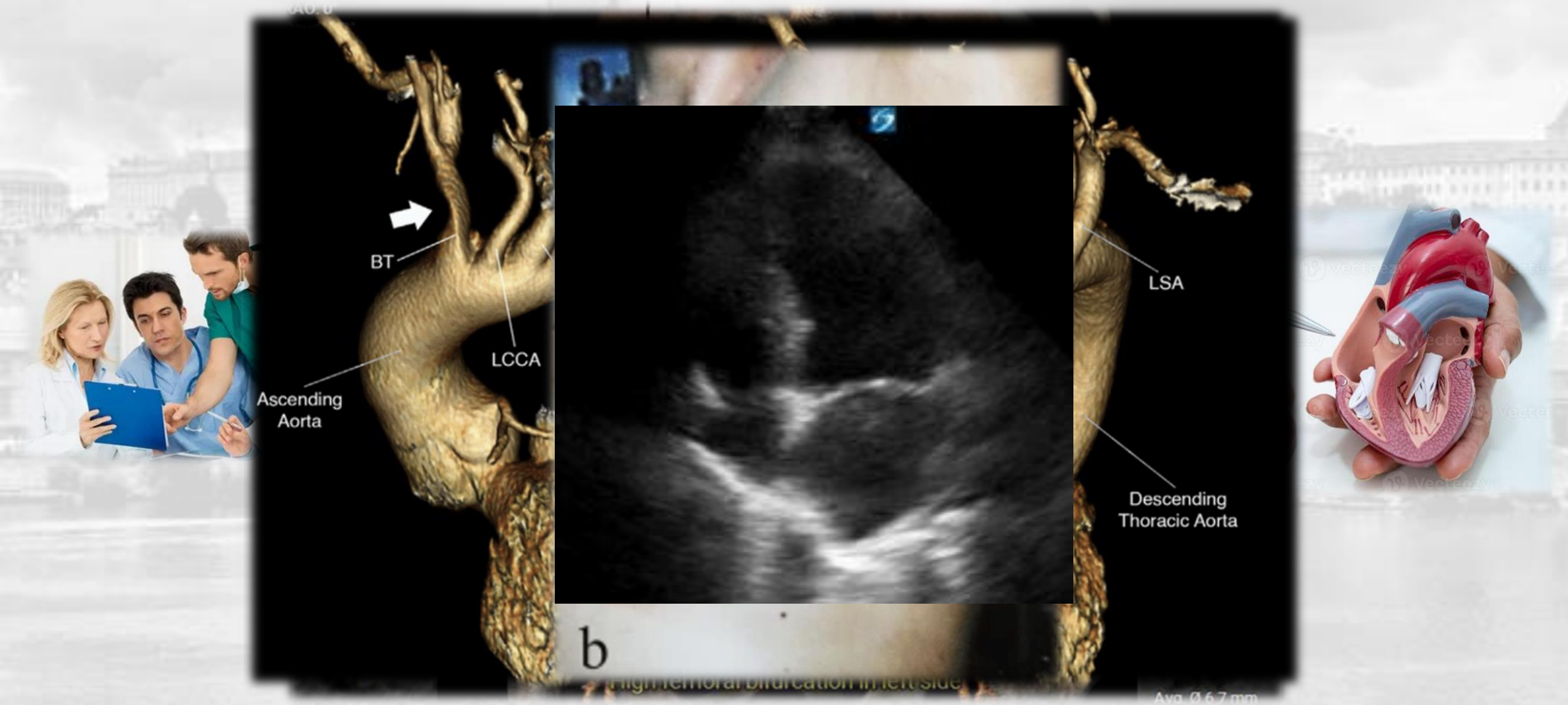
Mimotělní oběh



Pooperační péče

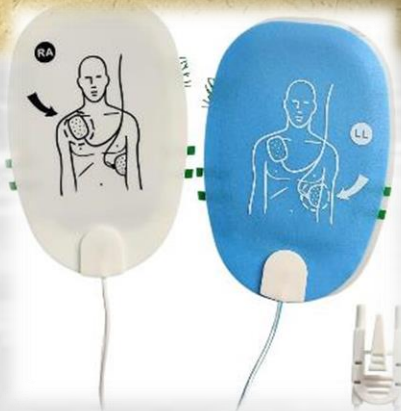


Výber pacienta



Avg. Ø 6.7 mm

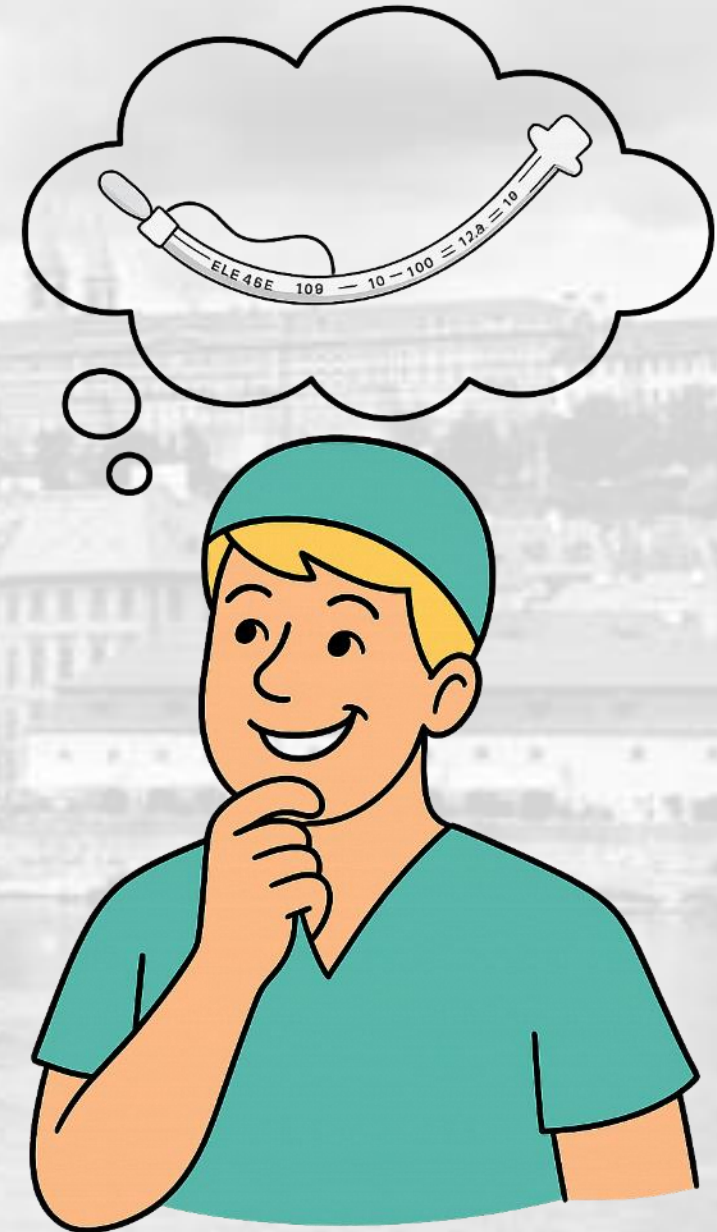
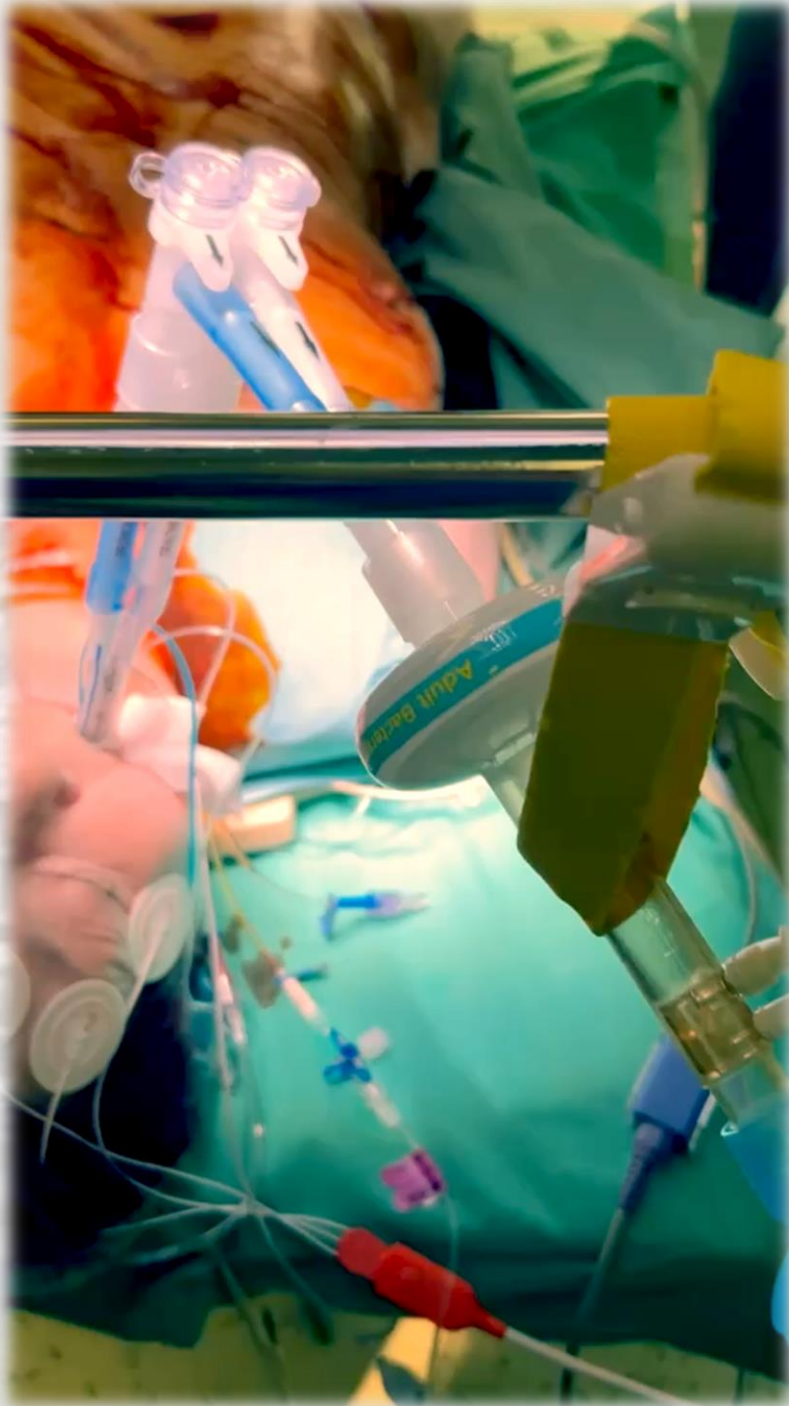
Monitorace



Monitorace - TEE



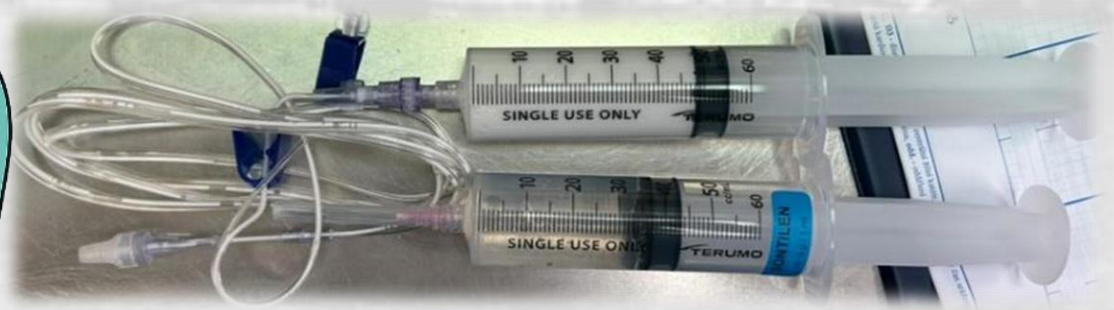
Zajištění DC



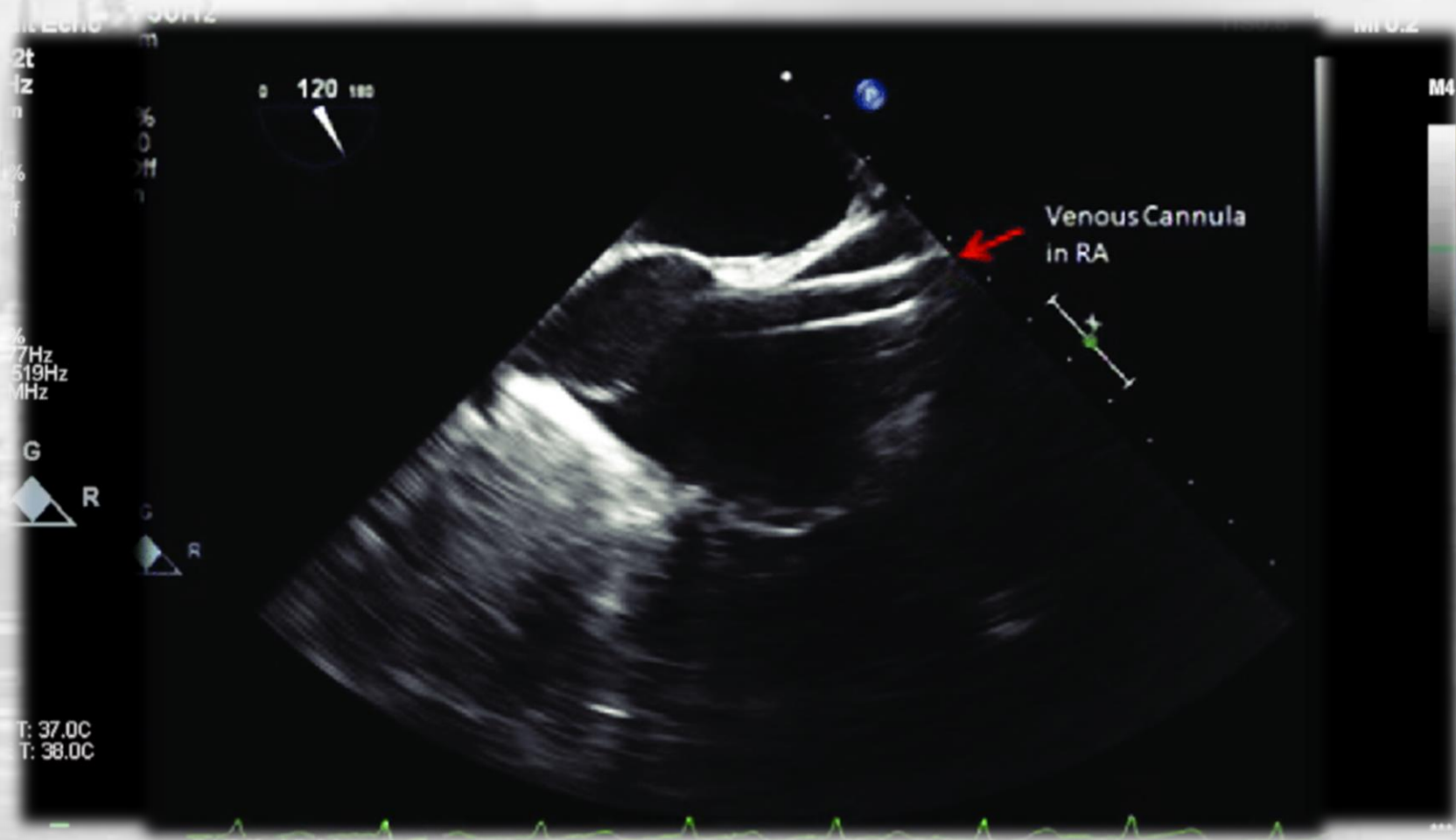
Anestézie



TIVA
vs. gases



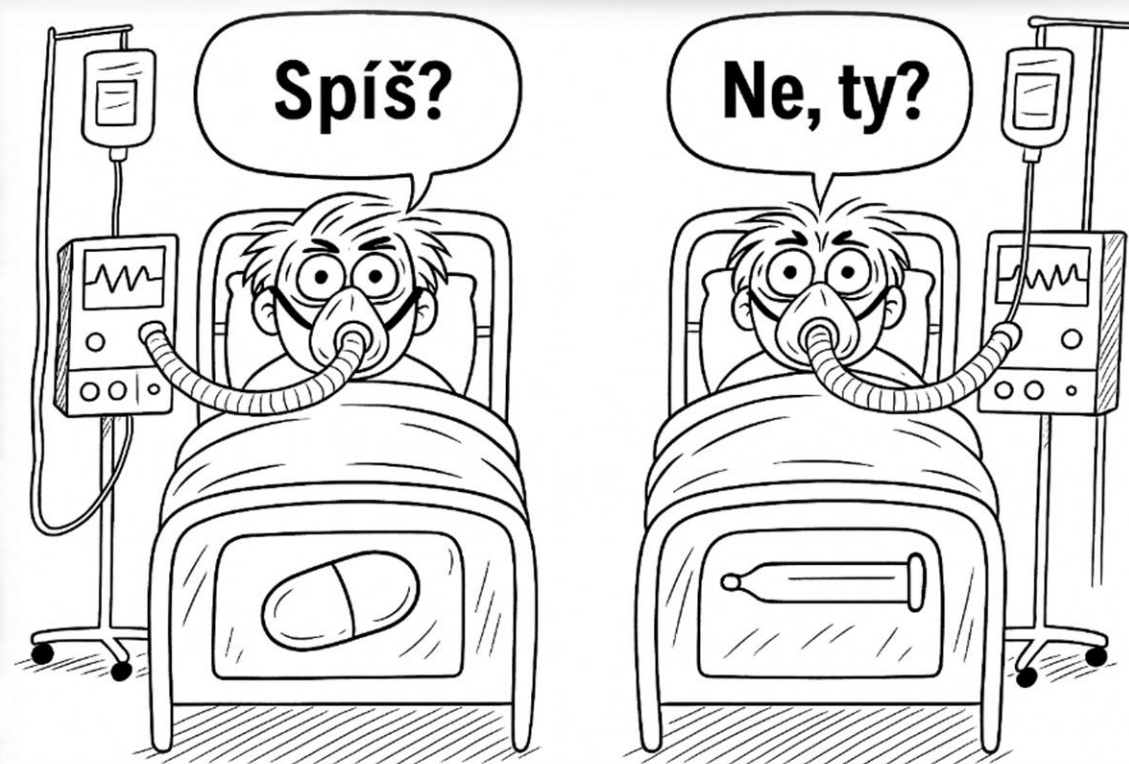
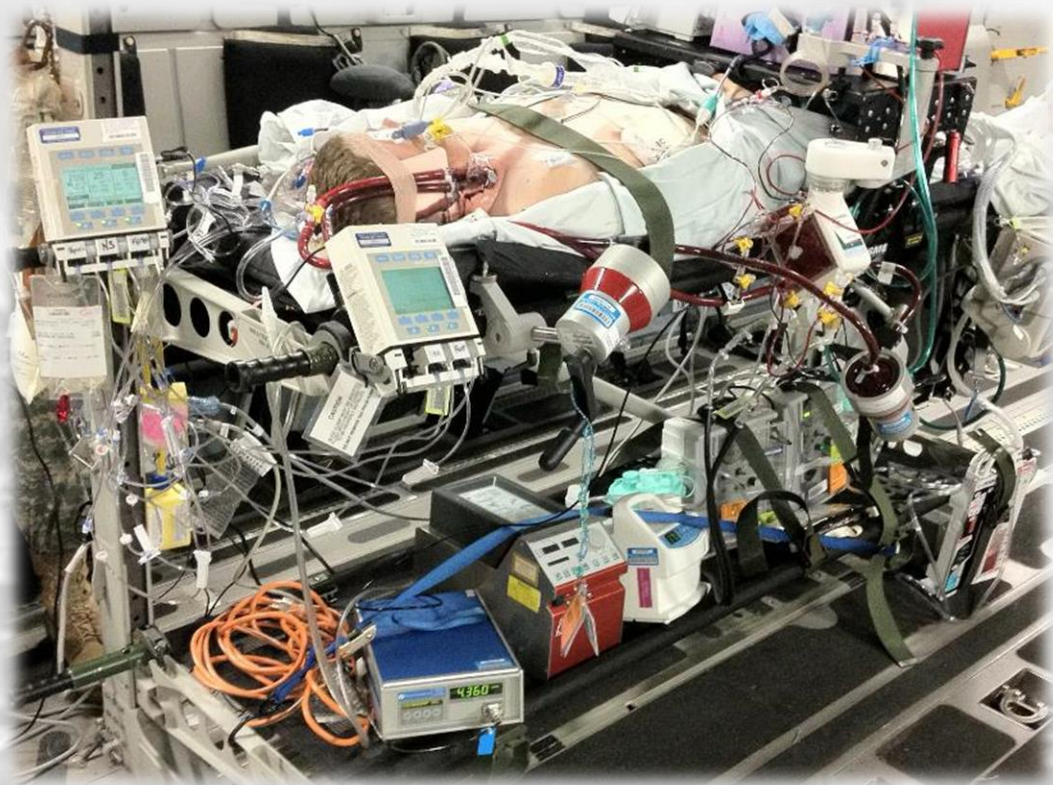
Mimotělní oběh





Pooperační péče a komplikace

Pooperační péče – extubace



ERAS[®] Cardiac Surgery

Enhanced Recovery After Cardiac Surgery Society

Analgézie

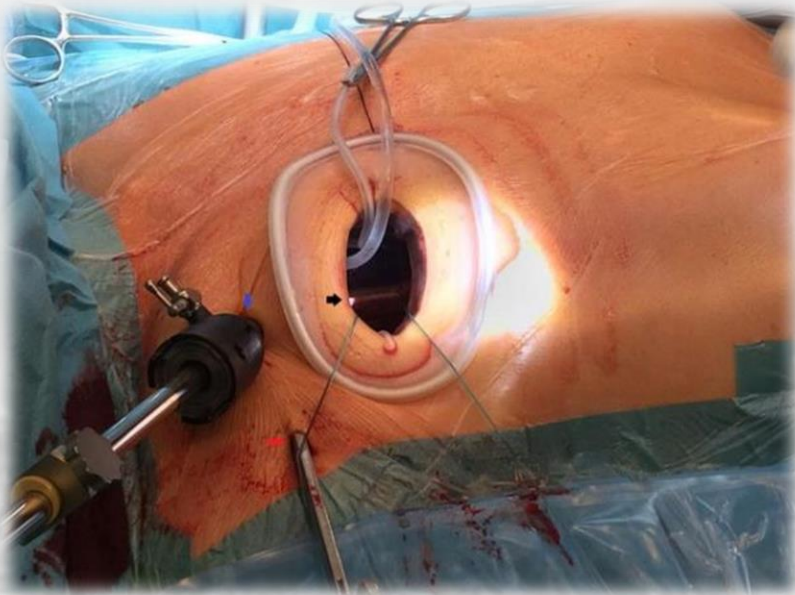


"Very funny doc, but don't you think I should have some medicine?"

Multimodální
analgézie



Ventilace

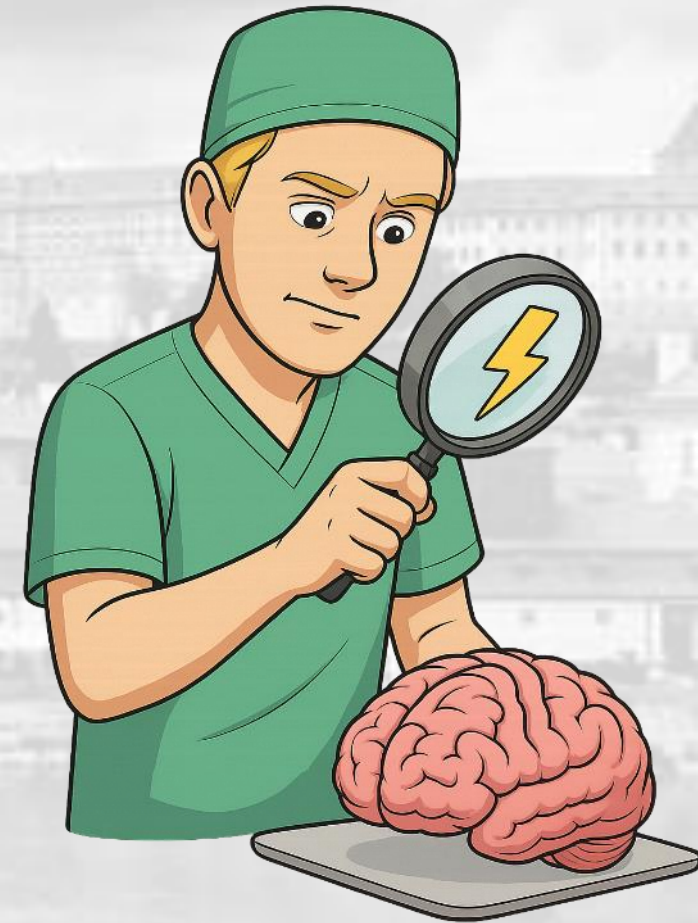


Atelektázy na RTG
časté, klinicky
málo významné

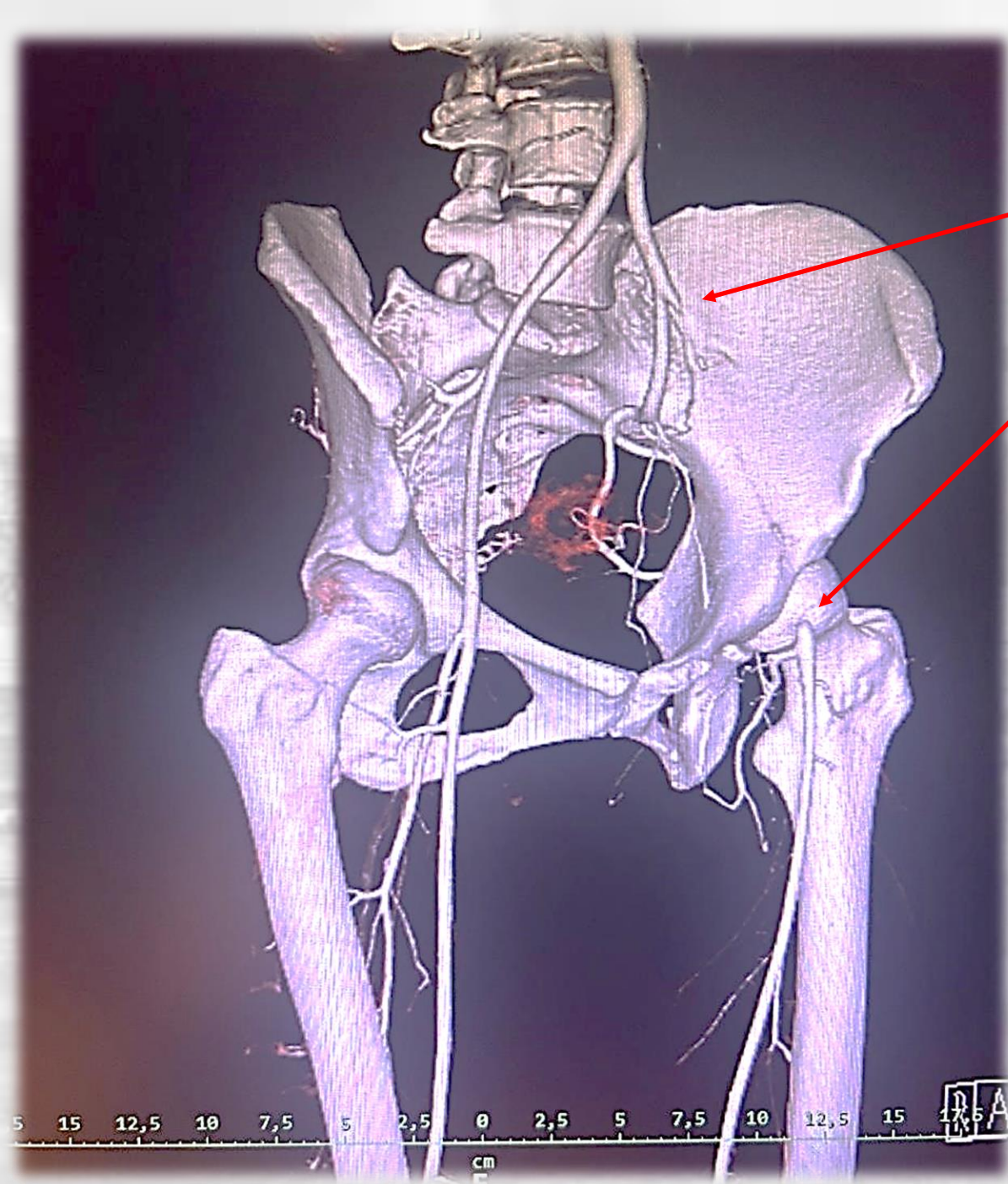
Neurologické komplikace



MICS není spojen s
vyšším rizikem
ischemických příhod
CNS



Retrograde femoral arterial perfusion and stroke risk during minimally invasive mitral valve surgery: is there cause for concern?



Take home message

Rozdíly v anestezii nevelké, ale...

ECHO

Komplikace

Umění indikovat a rozhodovat se

Miníčko hotové –
teď můžete domů!



Děkuji za pozornost

