TAVI – technika, výkon

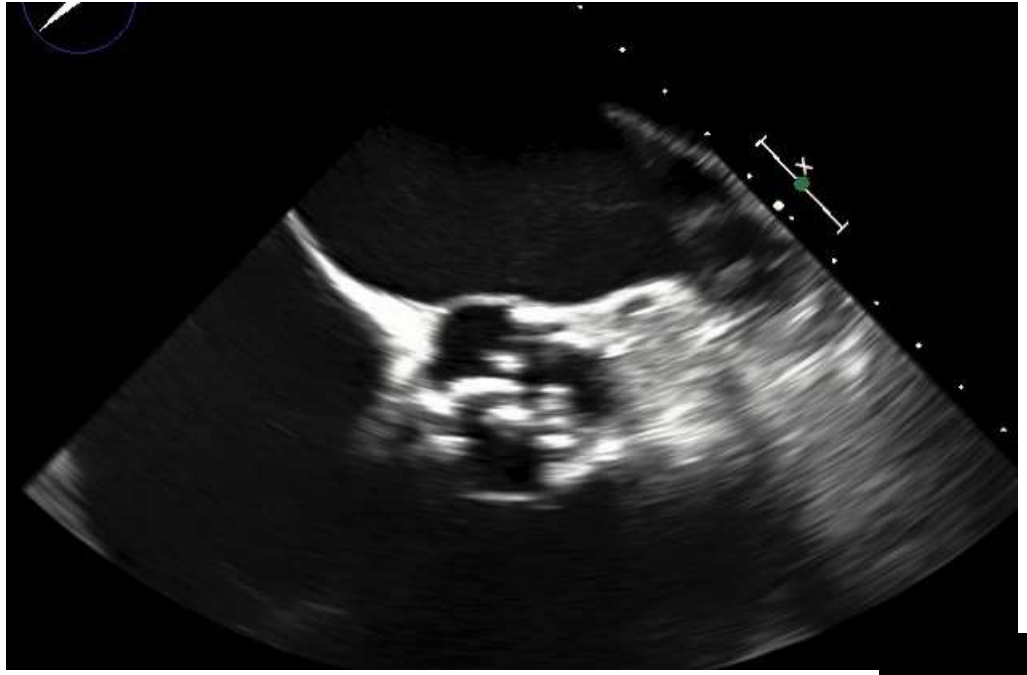
J. Šťásek

I.interní kardioangiologická klinika

Kardiochirurgická klinika

Lékařská fakulta UK Hradec Králové

Kardiocentrum Fakultní nemocnice Hradec Králové




JPEG
109 bpm

TAVI – technika, výkon

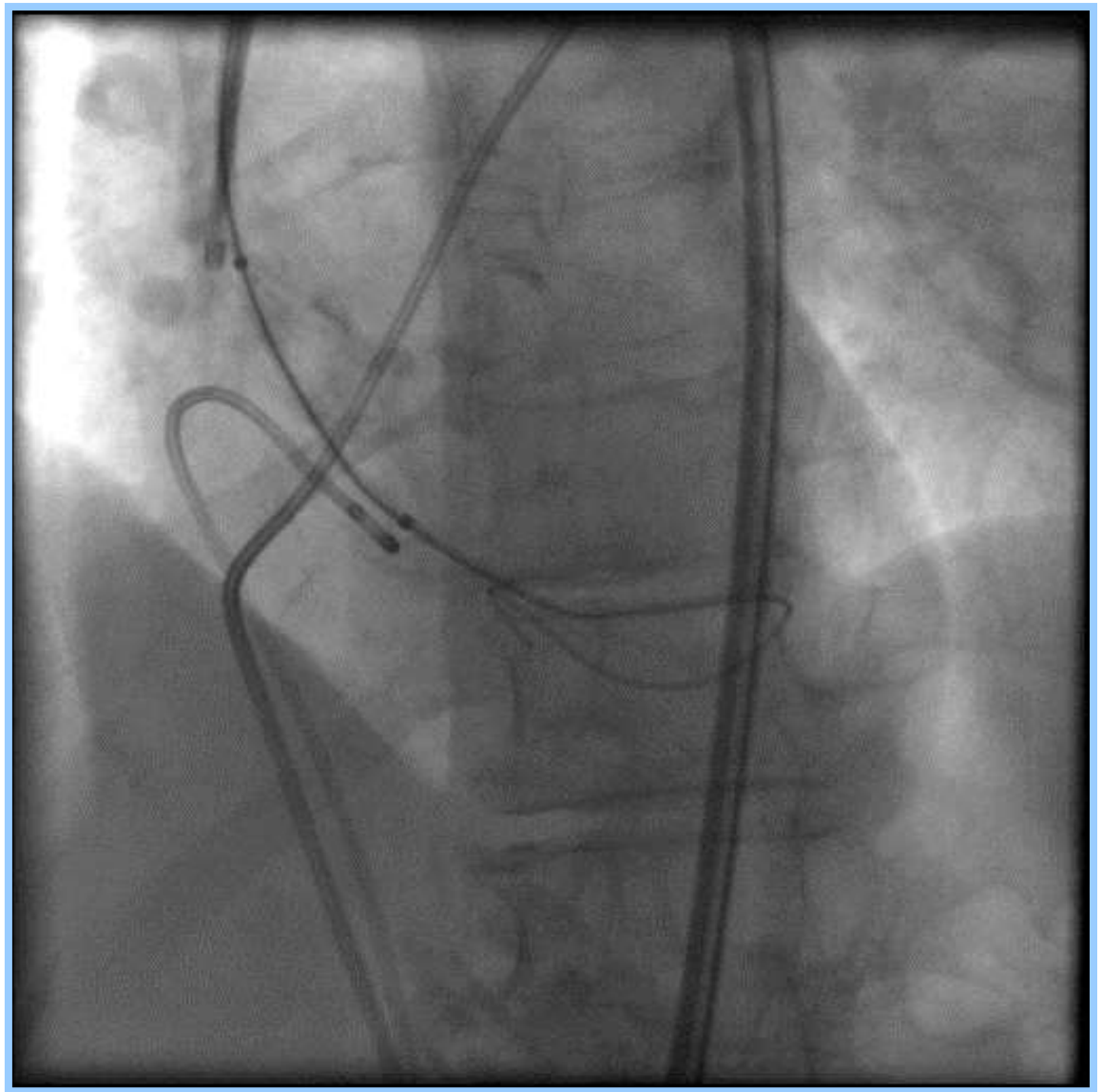
Aortální stenóza (degenerovaná Ao vada s převahou stenózy)

- ***balónková aortální valvuloplastika (BAV)***
  - **hrubě paliativní výkon**
  - **„jednoduché“ a rychle řešení**
  - **stabilizace akutního stavu s následným řešením**
  - **možnost posouzení prognózy nemocného**

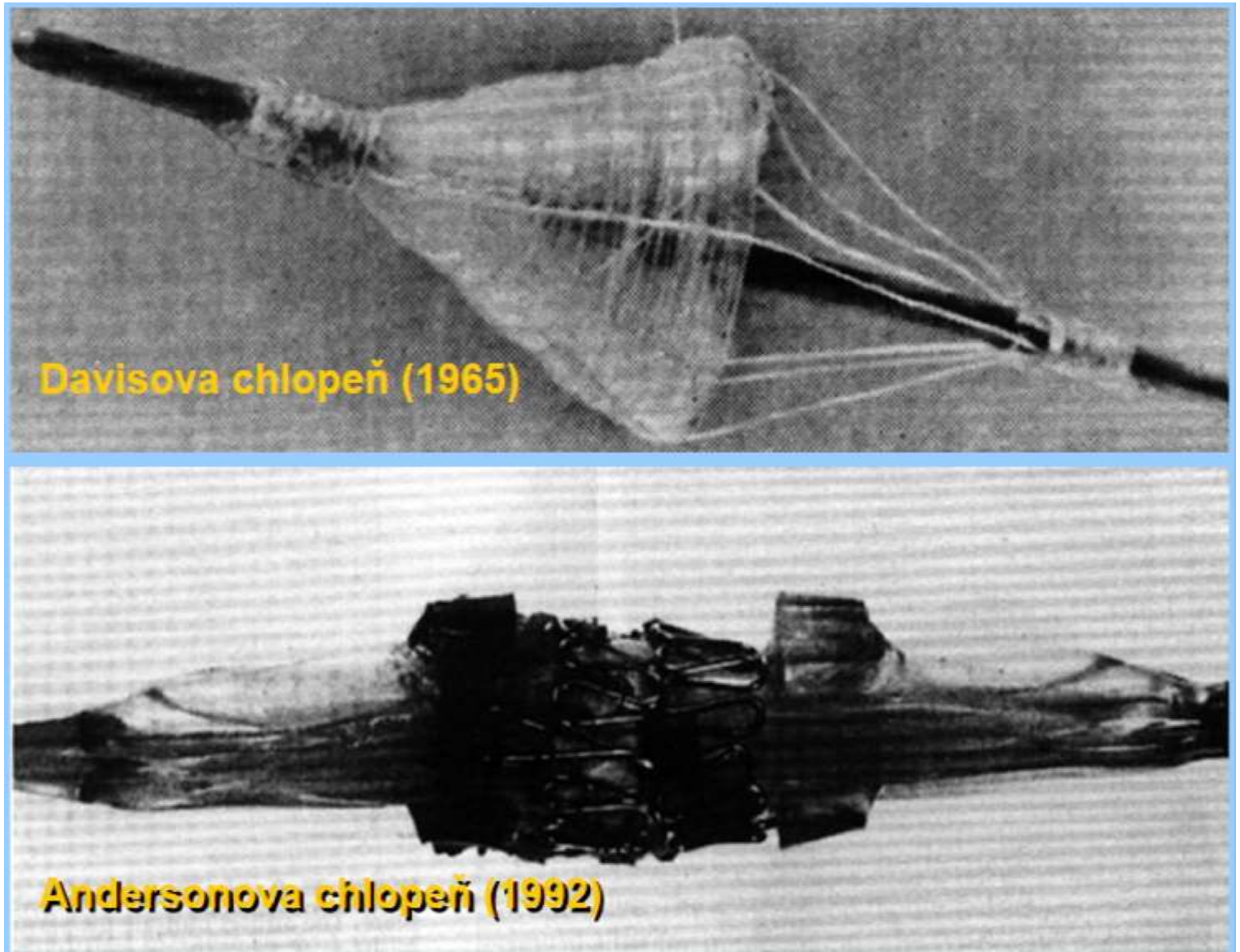
- ***katétrová implantace implantace (TAVI)***
  - ***zavedená metoda léčby Ao stenózy s vysokým rizikem chir. náhrady,***
    nově i u nemocných se středním rizikem

TAVI – technika, výkon

TAVI – technika, výkon



TAVI – technika, výkon



TAVI – technika, výkon

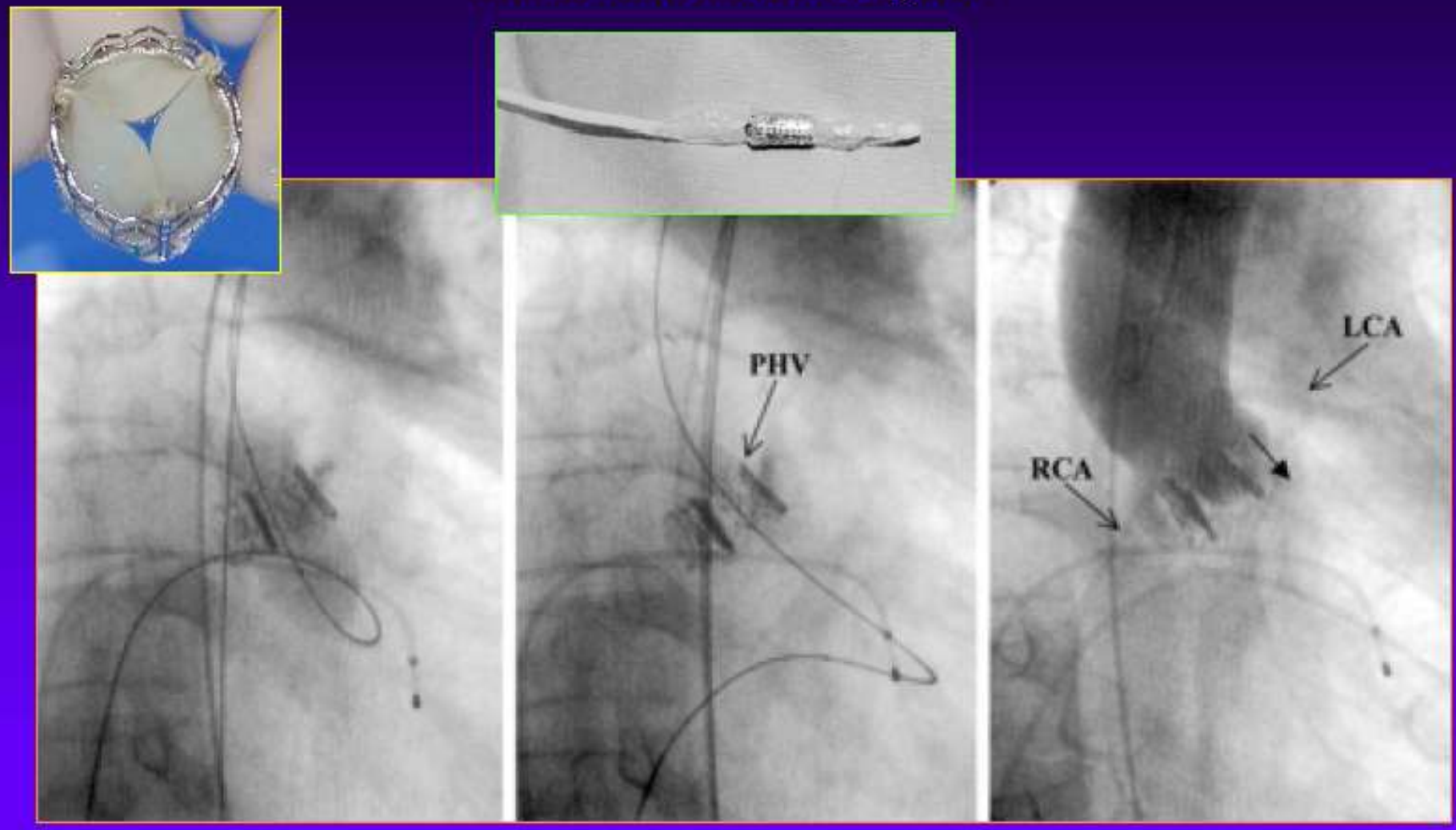
Andersonova hand made

Cribier - Edwards


VAIO

Percutaneous Transcatheter Implantation of an Aortic Valve Prosthesis for Calcific Aortic Stenosis

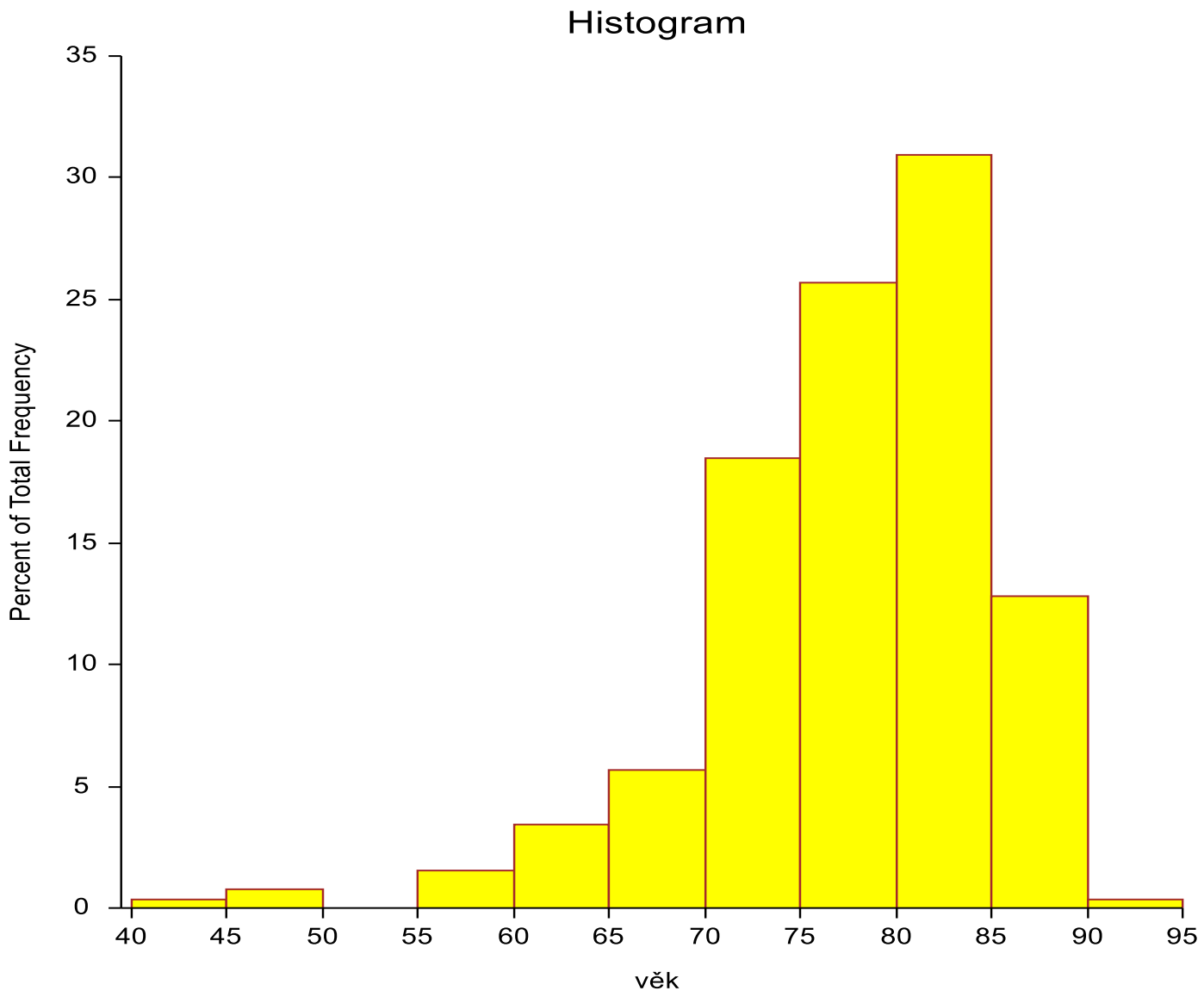
First Human Case Description



Alain Cribier, Circulation 2002 106: 3006-3008

Plots Section of věk

Zkušenosti kardiocentra FN Hradec Králové



TAVI – technika, výkon

Aortální stenóza - perkutánní implantace chlopně

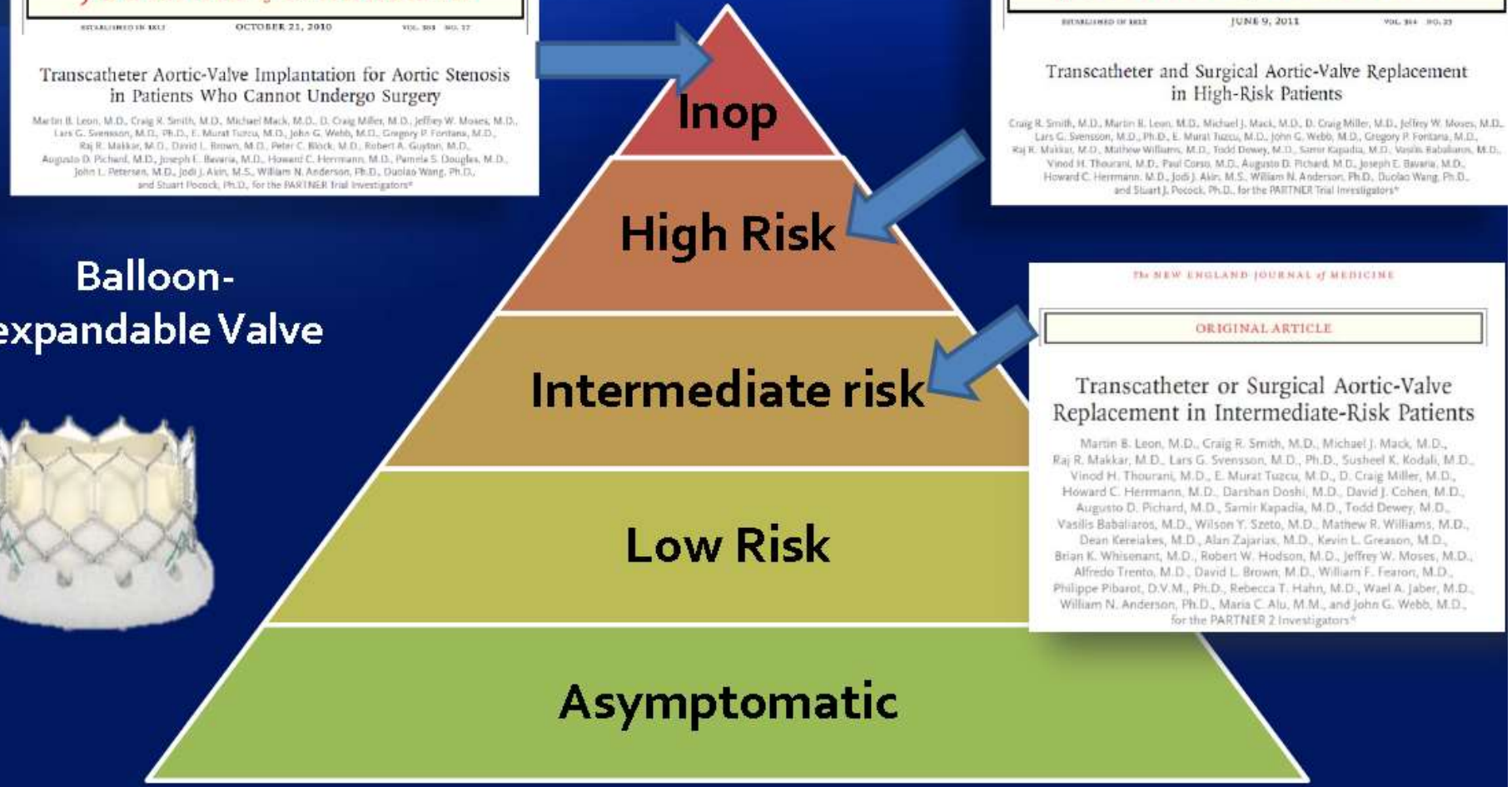
- dva koncepty implantace
  (stent s upevněnou biologickou chlopní)

  * balónem dilatované „stent“ chlopně

  * smoexpandabilní „stent“ chopeň

- přístupové cesty
  * **transfemorální**
  * treansapikální
  * transaortální
  * subclaviální
  * transkavální

Risk Trends in Transcatheter Aortic Valve Therapy



N Engl J Med. 2010;363(17):1597-607.

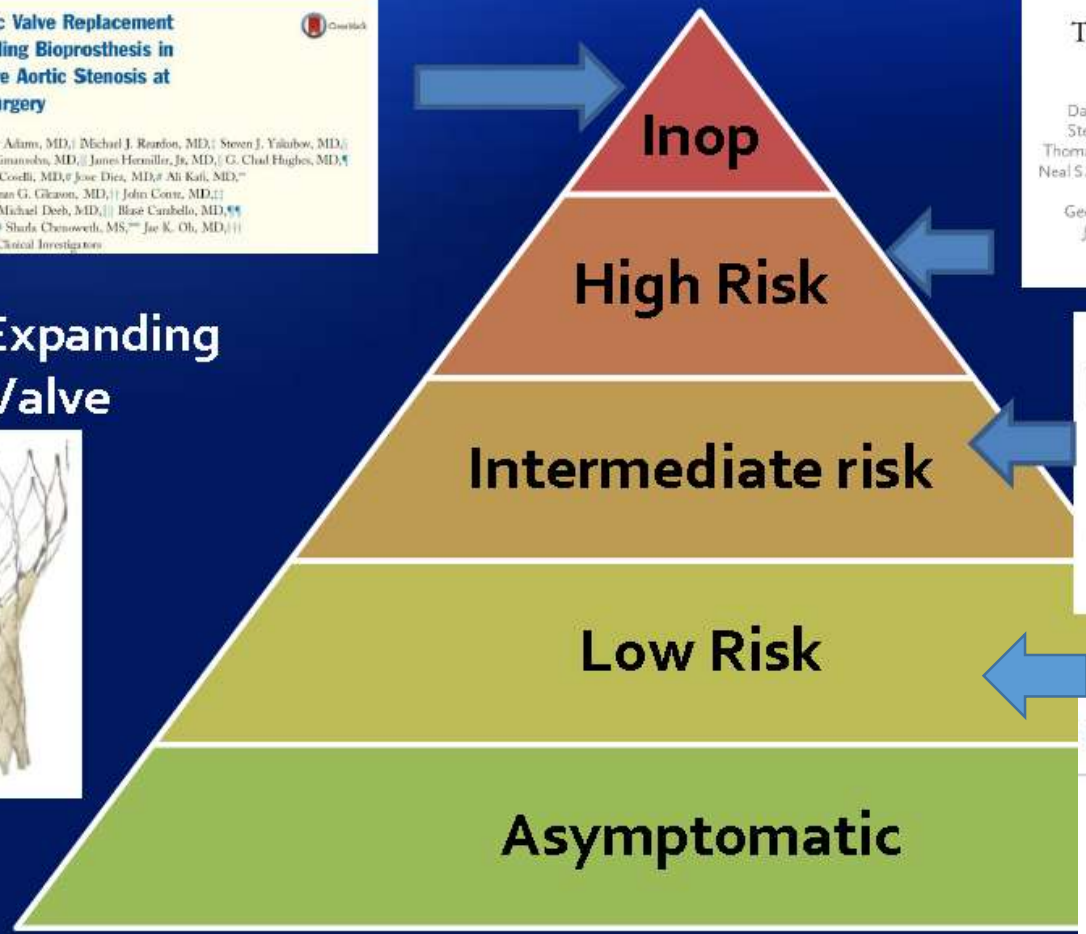
N Engl J Med. 2011;364(23):2187-98.

Risk Trends in Transcatheter Aortic Valve Therapy

Transcatheter Aortic Valve Replacement Using a Self-Expanding Bioprosthesis in Patients With Severe Aortic Stenosis at Extreme Risk for Surgery

Jeffrey J. Popma, MD,* David H. Adams, MD,† Michael J. Reardon, MD,† Steven J. Yakubov, MD,‡ Neal S. Kleiman, MD,‡ David Heimansohn, MD,‖ James Hermiller, Jr, MD,‖ G. Chad Hughes, MD,¶ J. Kevin Harrison, MD,¶ Joseph Coselli, MD,# Jose Diez, MD,# Ali Kafi, MD,** Theodore Schreiber, MD,** Thomas G. Gleason, MD,†† John Conte, MD,‡‡ Maurice Buchbinder, MD,§§ G. Michael Deeb, MD,‖‖ Blase Carabello, MD,¶¶ Patrick W. Serruys, MD, PhD,## Sharla Chenoweth, MS,** Jae K. Oh, MD,†† for the CoreValve United States Clinical Investigators

Self-Expanding Valve



The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Transcatheter Aortic-Valve Replacement with a Self-Expanding Prosthesis

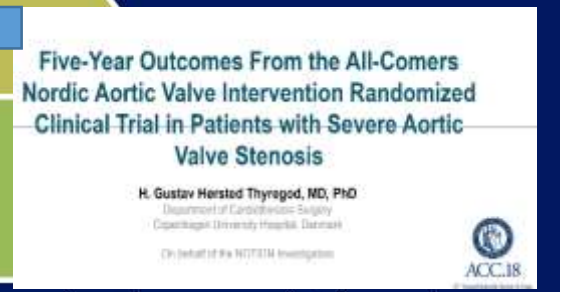
David H. Adams, M.D., Jeffrey J. Popma, M.D., Michael J. Reardon, M.D., Steven J. Yakubov, M.D., Joseph S. Coselli, M.D., G. Michael Deeb, M.D., Thomas G. Gleason, M.D., Maurice Buchbinder, M.D., James Hermiller, Jr., M.D., Neal S. Kleiman, M.D., Stan Chetcuti, M.D., John Heiser, M.D., William Merhi, D.O., George Zorn, M.D., Peter Tadros, M.D., Newell Robinson, M.D., George Petrossian, M.D., G. Chad Hughes, M.D., J. Kevin Harrison, M.D., John Conte, M.D., Brijeshwar Maini, M.D., Mubashir Mumtaz, M.D., Sharla Chenoweth, M.S., and Jae K. Oh, M.D., for the U.S. CoreValve Clinical Investigators*

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Surgical or Transcatheter Aortic-Valve Replacement in Intermediate-Risk Patients

M.J. Reardon, N.M. Van Mieghem, J.J. Popma, N.S. Kleiman, L. Søndergaard, M. Mumtaz, D.H. Adams, G.M. Deeb, B. Maini, H. Gada, S. Chetcuti, T. Gleason, J. Heiser, R. Lange, W. Merhi, J.K. Oh, P.S. Olsen, N. Piazza, M. Williams, S. Windecker, S.J. Yakubov, E. Grube, R. Makkar, J.S. Lee, J. Conte, E. Vang, H. Nguyen, Y. Chang, A.S. Mugglin, P.W.J.C. Serruys, and A.P. Kappetein, for the SURTAVI Investigators*



Five-Year Outcomes From the All-Comers Nordic Aortic Valve Intervention Randomized Clinical Trial in Patients with Severe Aortic Valve Stenosis

H. Gustav Hørsted Thyregod, MD, PhD

Department of Cardiothoracic Surgery
Copenhagen University Hospital, Denmark

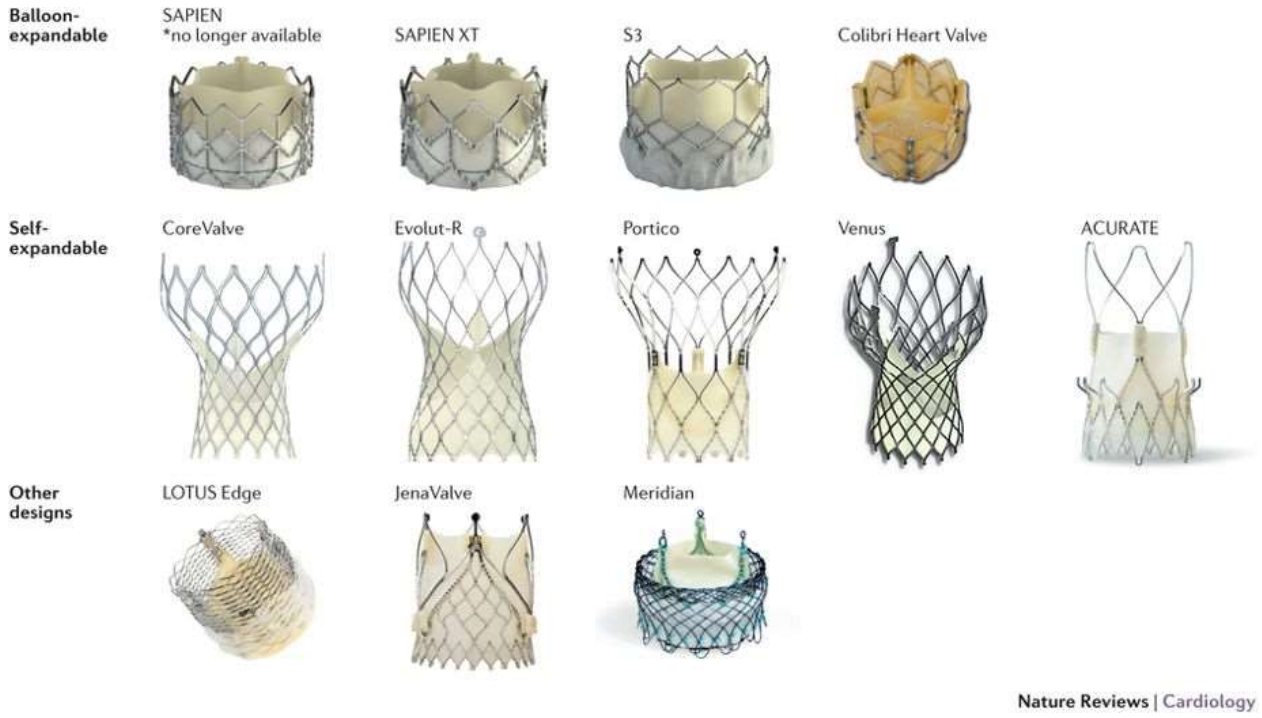
On behalf of the NOTION Investigators

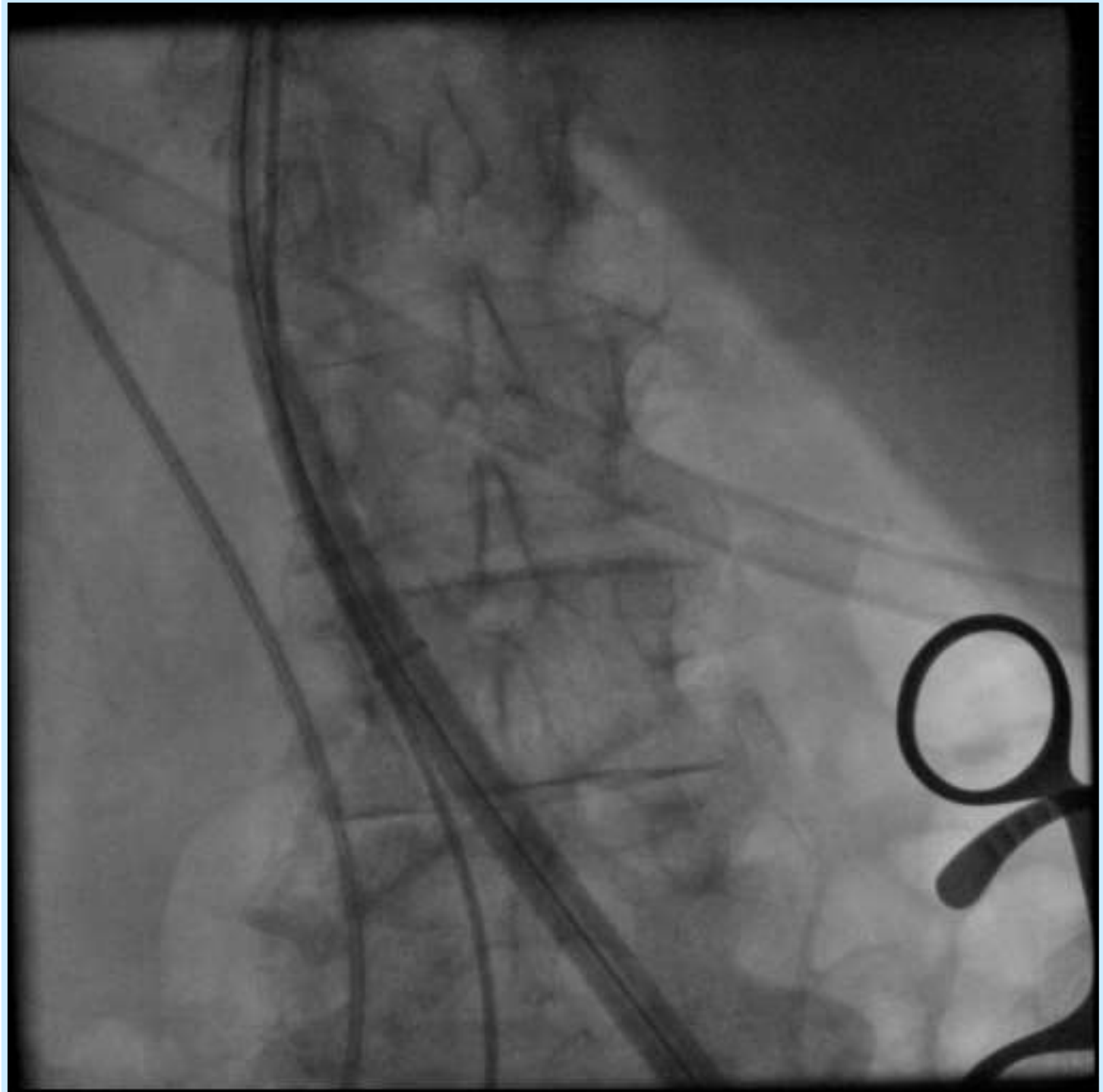
ACC.18

J Am Coll Cardiol. 2014;63(19):1972-1981

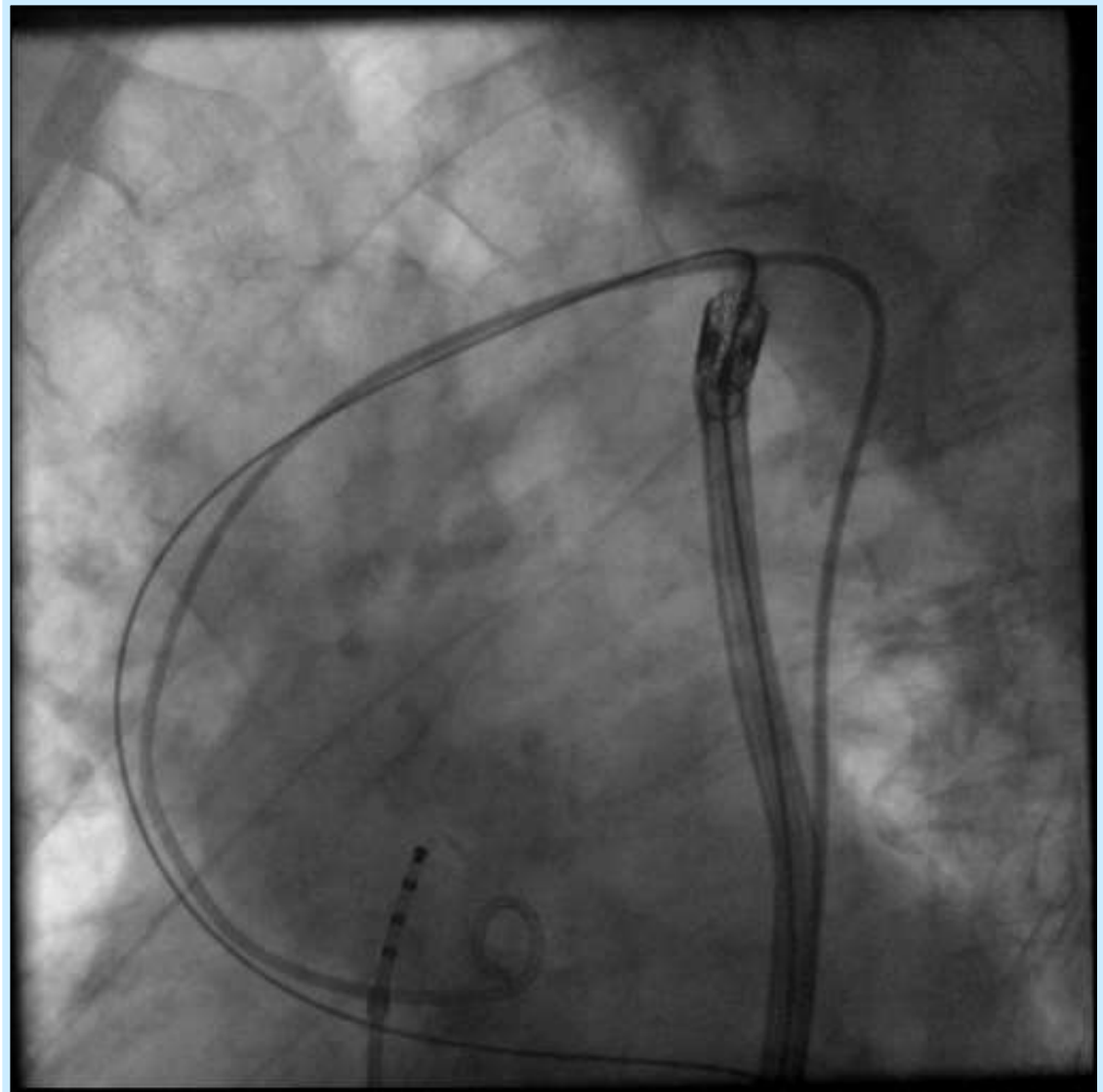
New England Journal of Medicine. 2014;370(19):1790-8.

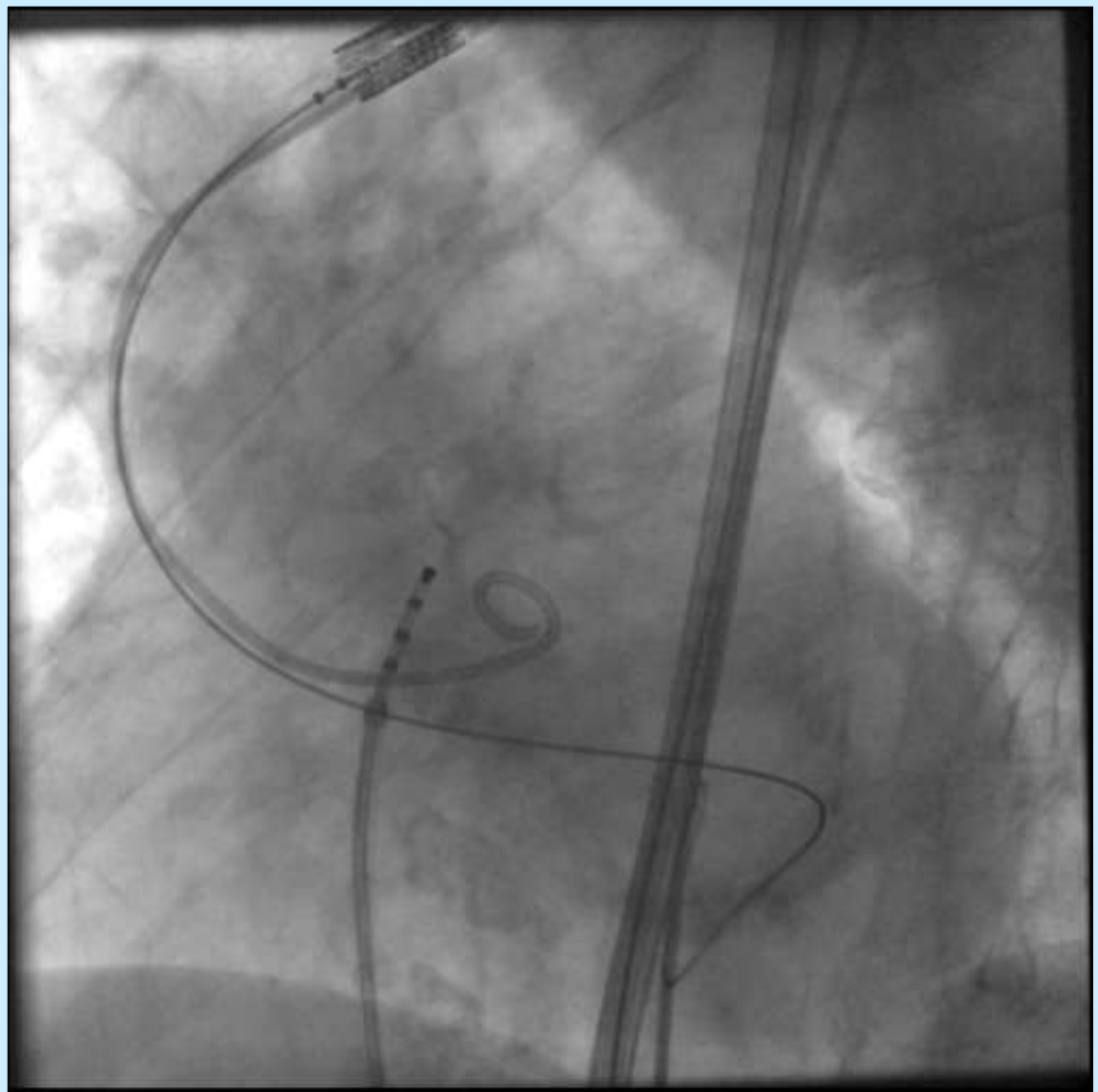
TAVI – technika, výkon

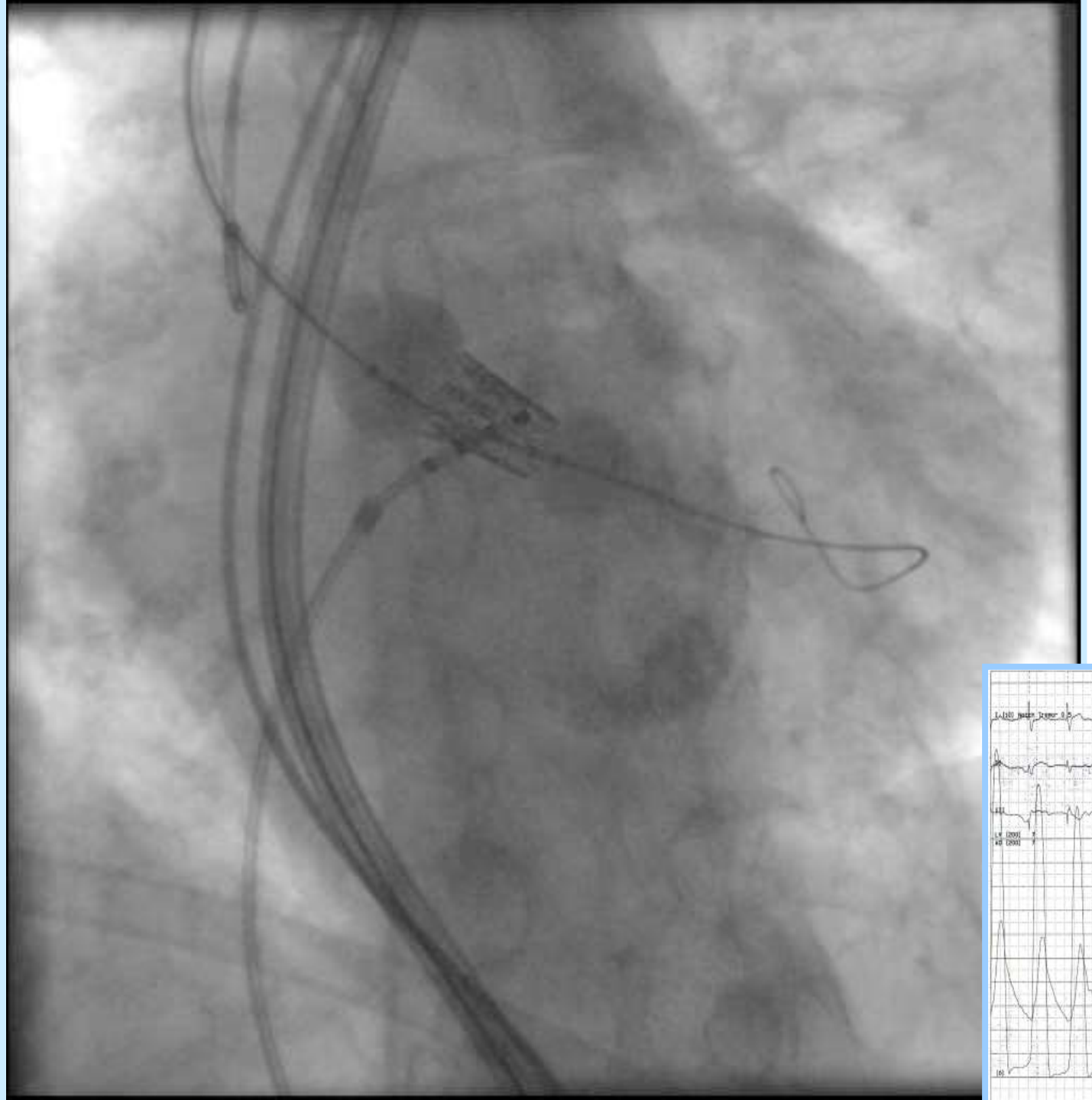




TAVI – technika, výkon

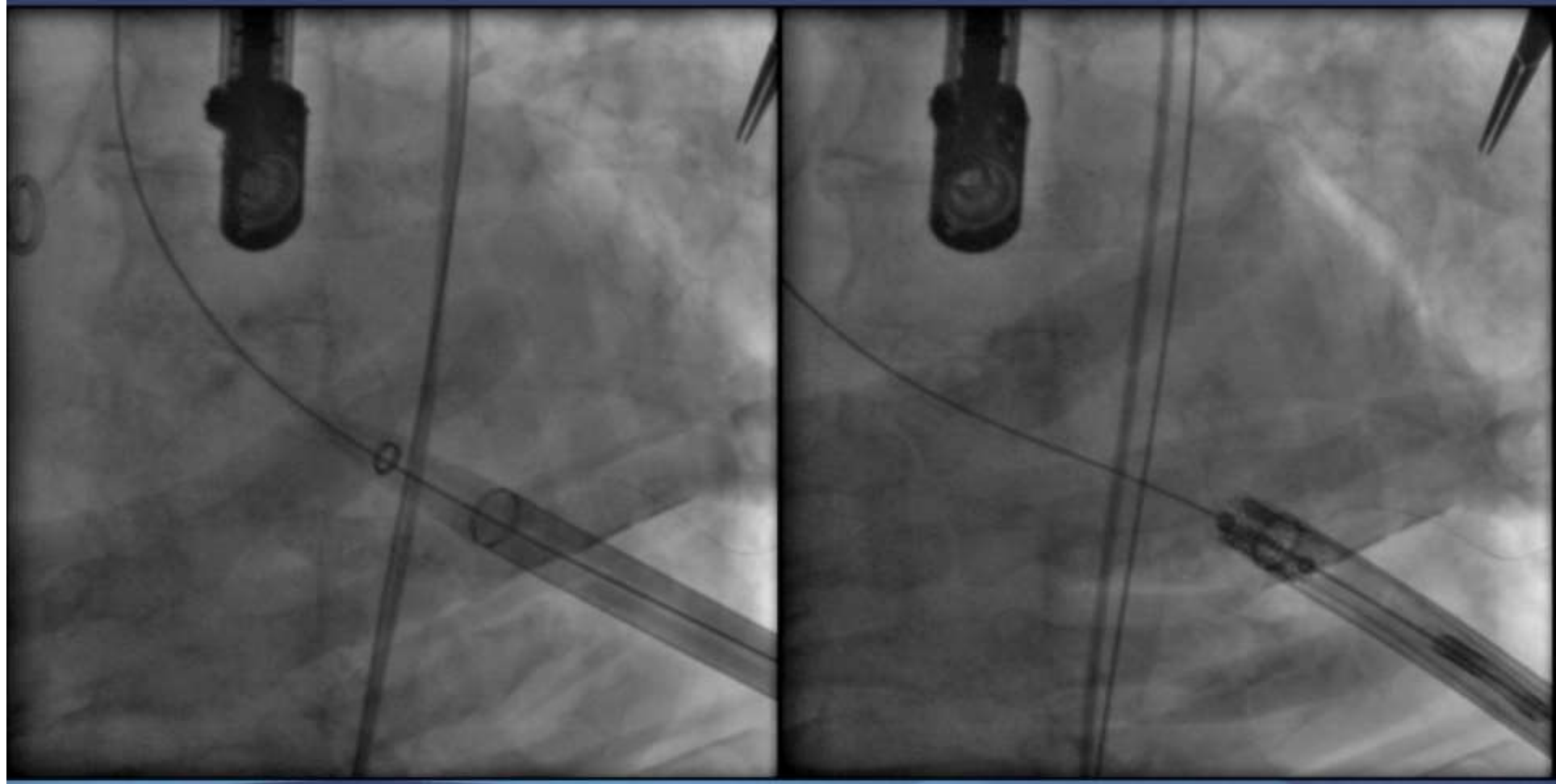






18. 12. 08 IKEM
samoexpand. chl.

15. 1. 09 HK
balnem exp. chl.



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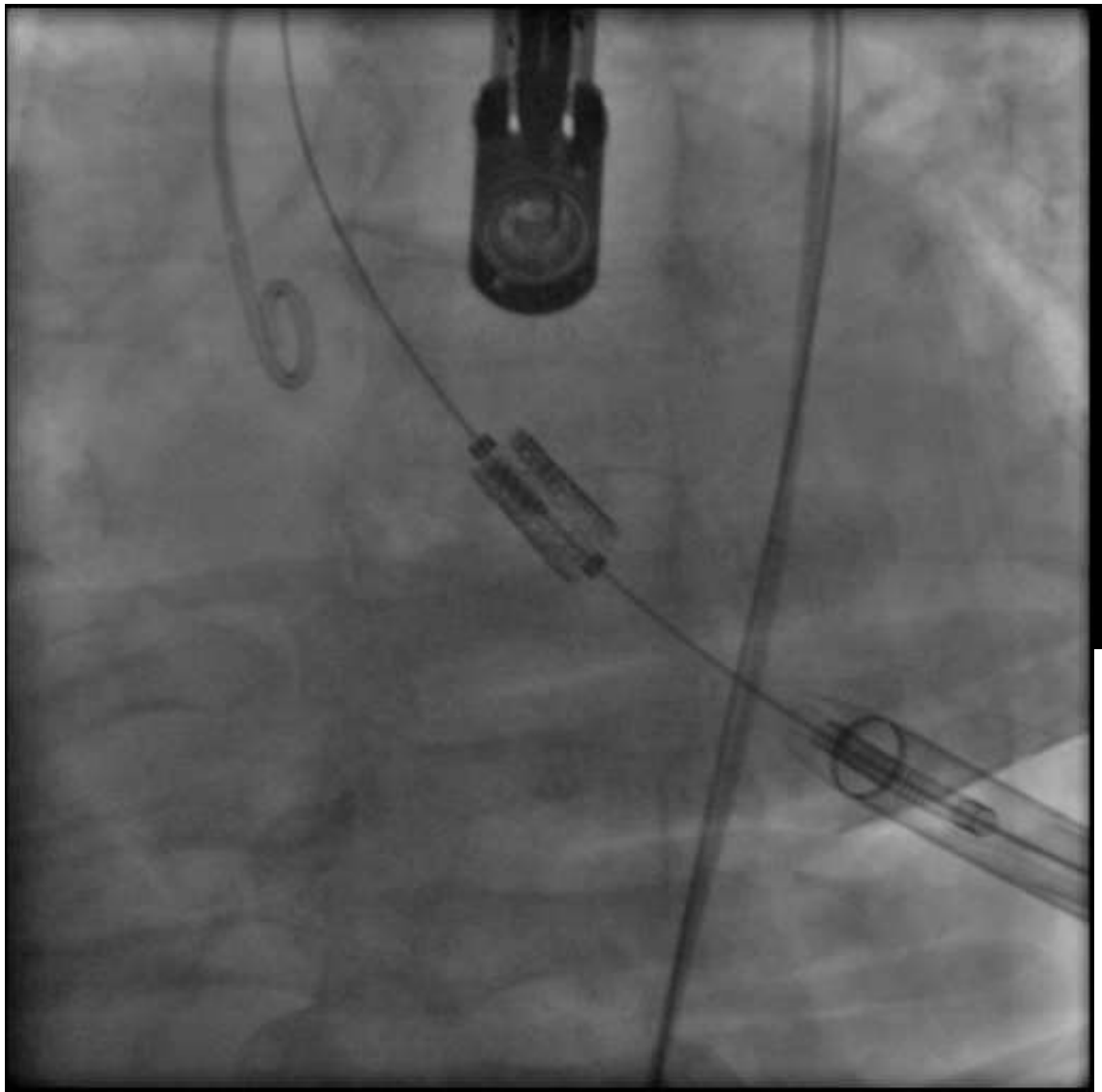

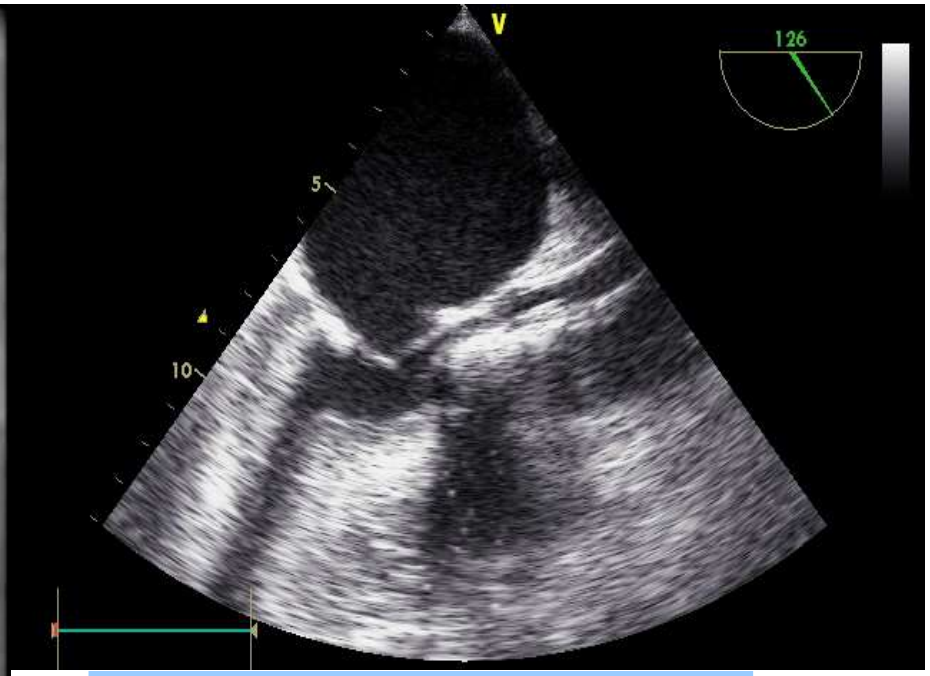

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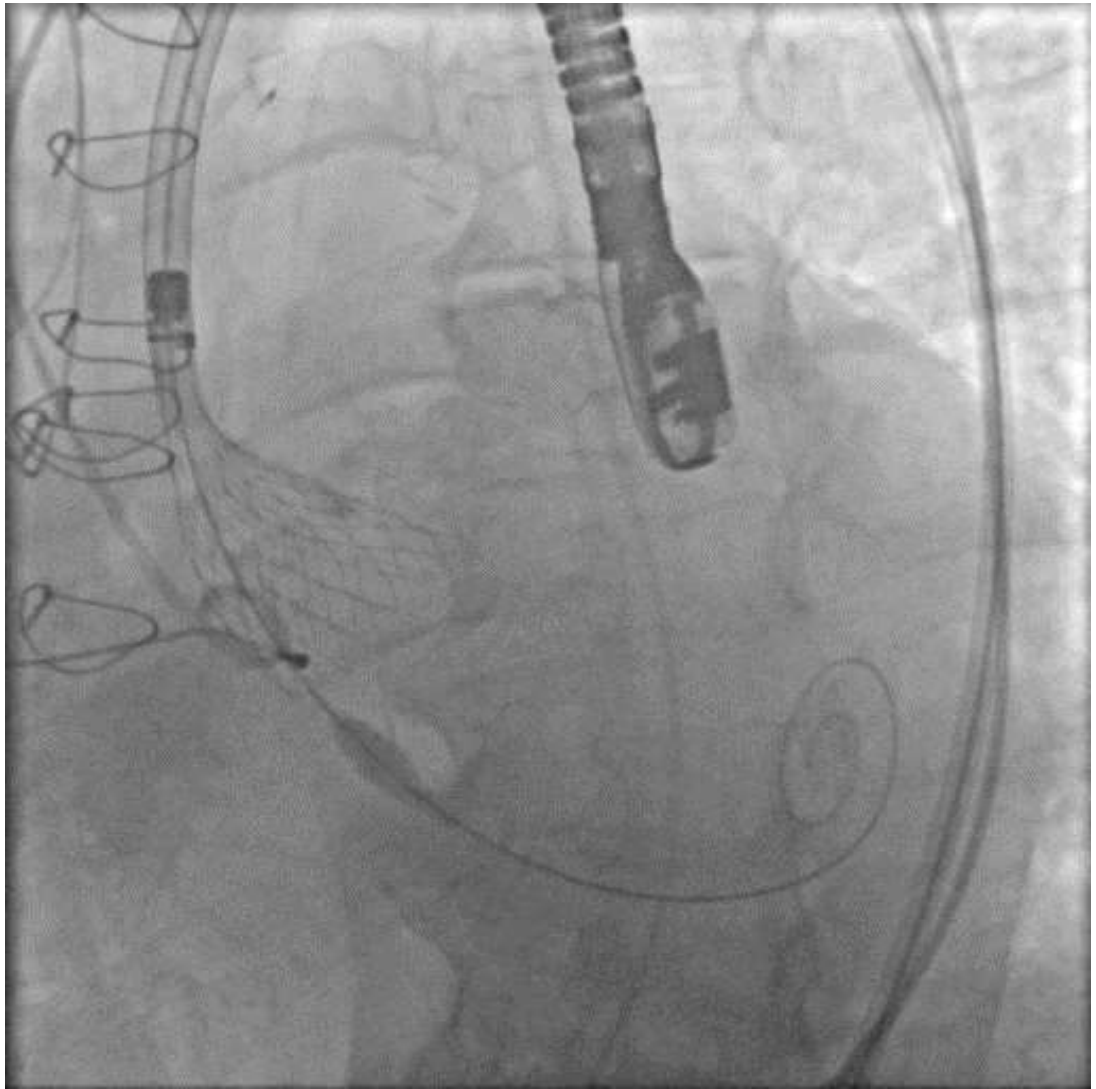


Kompletně katetrizační přístup

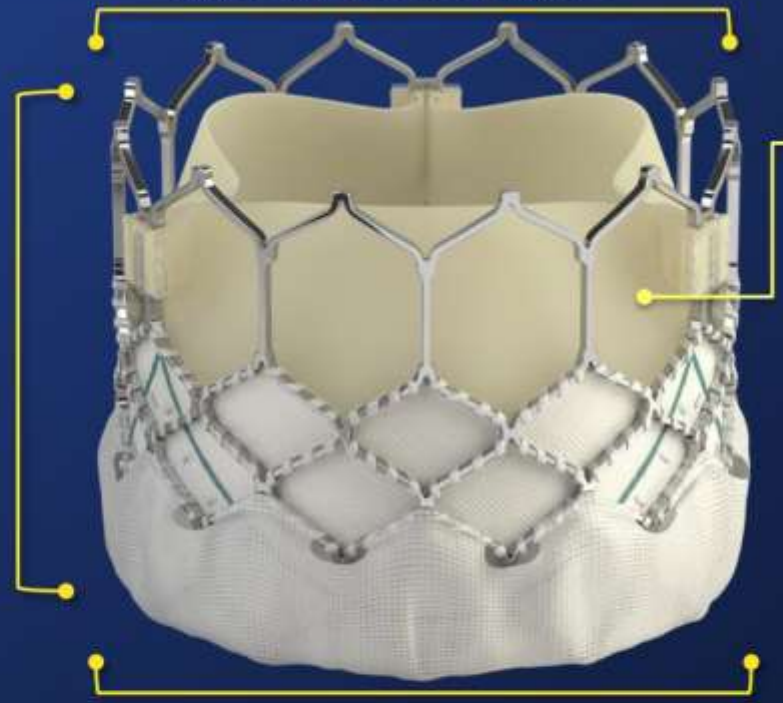
Evolution of the Edwards Balloon-Expandable Transcatheter Valves

THE PARTNER II TRIAL

* *Sheath compatibility for a 23 mm valve*

Edwards SAPIEN 3 transcatheter heart valve

Frame design
- Enhanced frame geometry for ultra-low delivery profile
- High radial strength for circularity and optimal hemodynamics



Low frame height
- Respects the cardiac anatomy

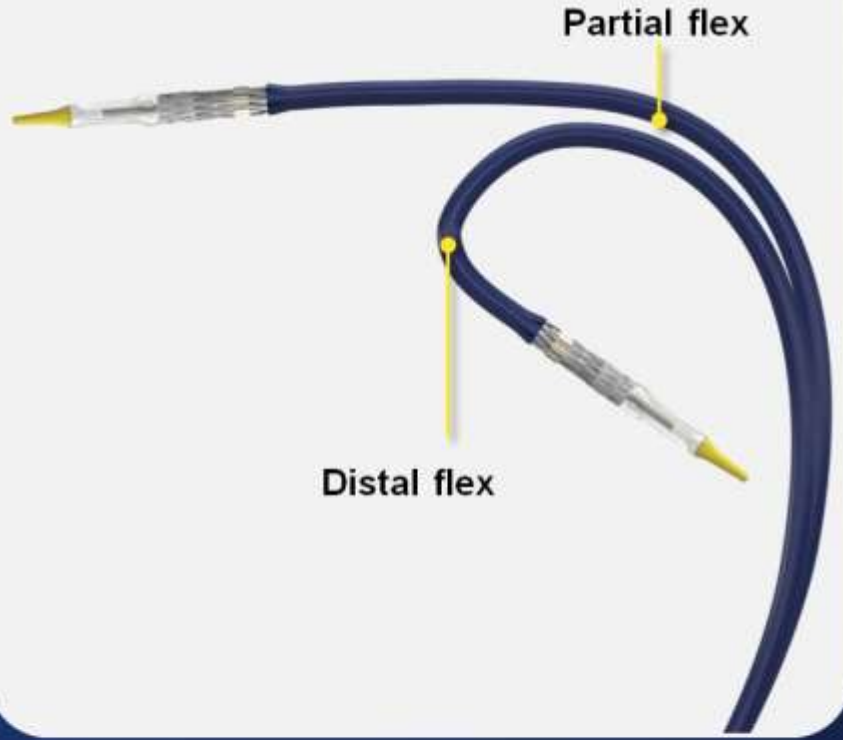
Bovine pericardial tissue
- Optimized leaflet shape
- Carpentier-Edwards ThermaFix* process for anti-calcification

Outer skirt
- Designed to reduce paravalvular leak

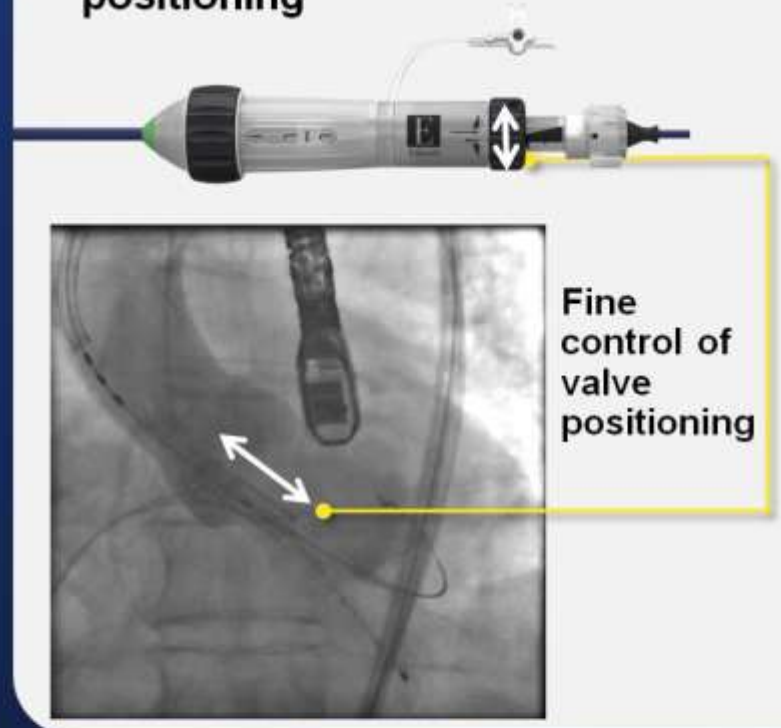
* No clinical data are available which evaluate the long-term impact of the Carpentier-Edwards ThermaFix process in patients

Edwards Commander delivery system
for the transfemoral approach

- Dual articulation for coaxiality even in challenging anatomies

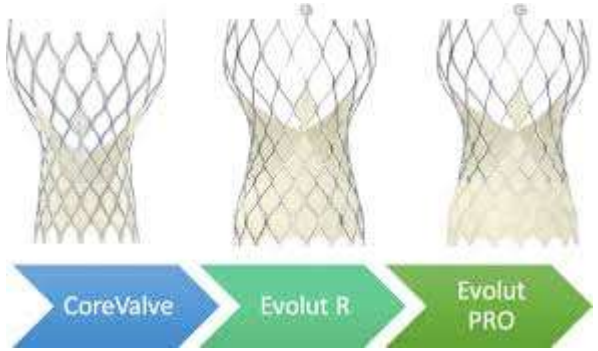


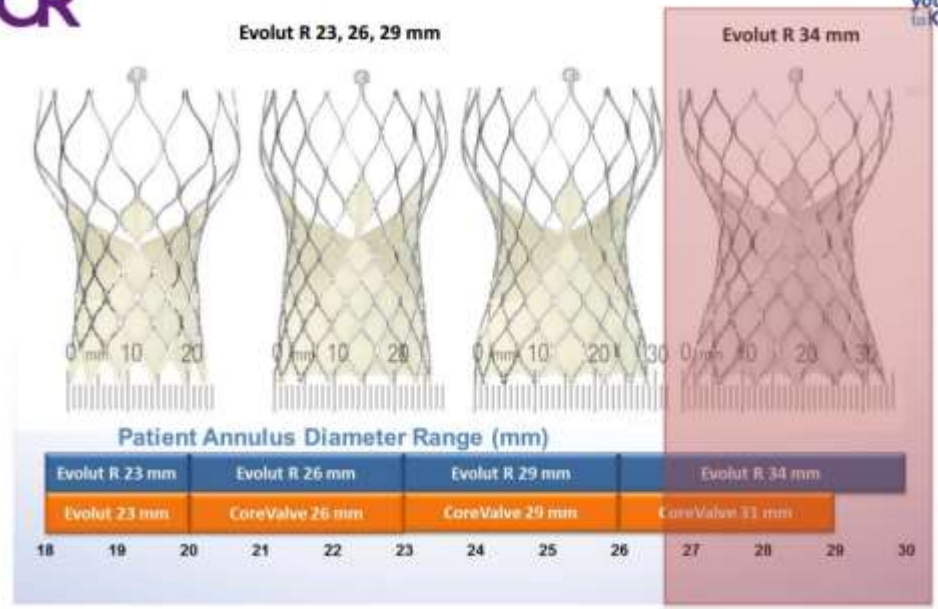
- Trusted balloon-expandable design with improved control of valve positioning



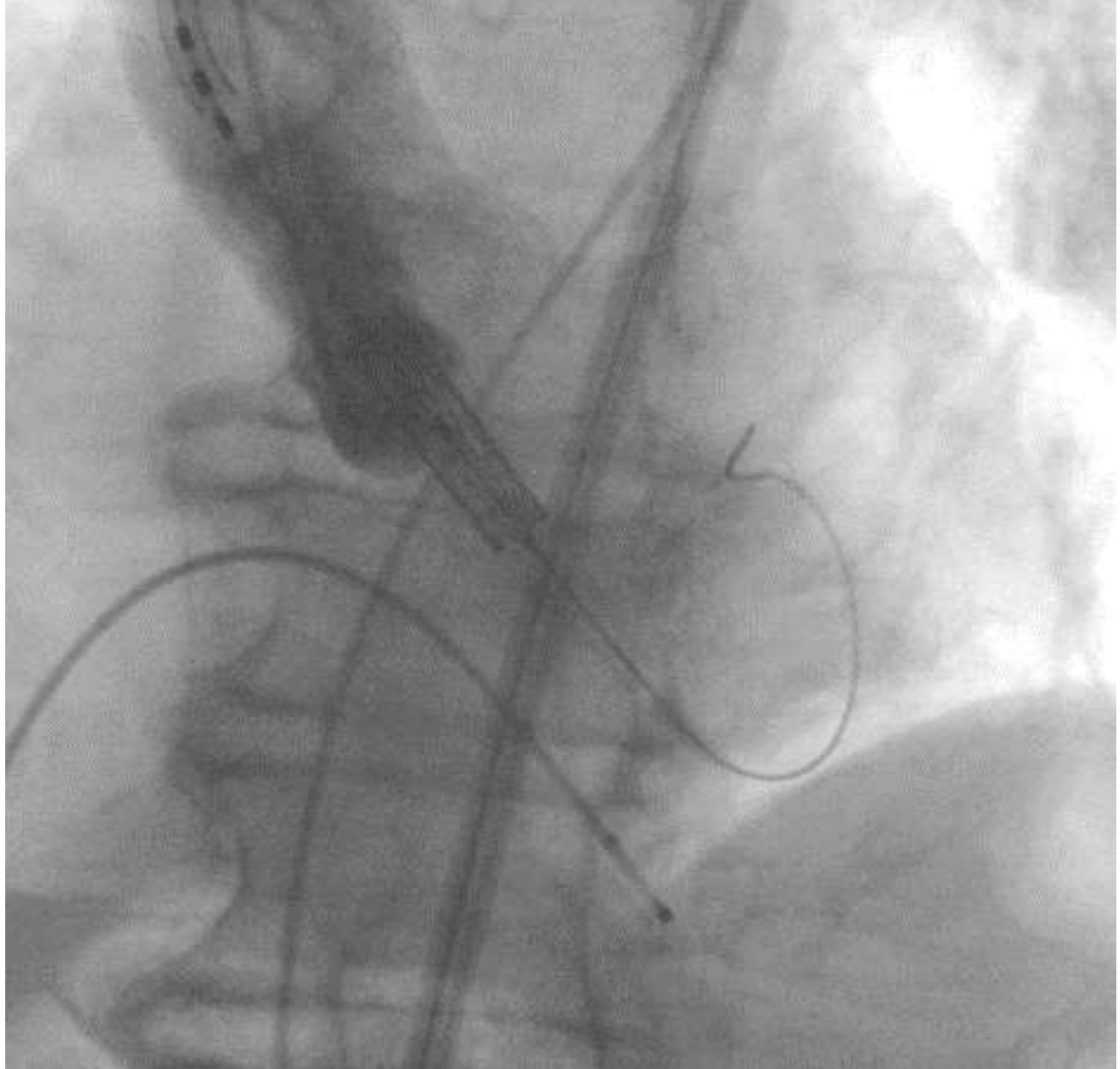
*14F eSheath compatible for 20, 23, and 26 mm valves. 16F eSheath compatible for 29 mm valve .

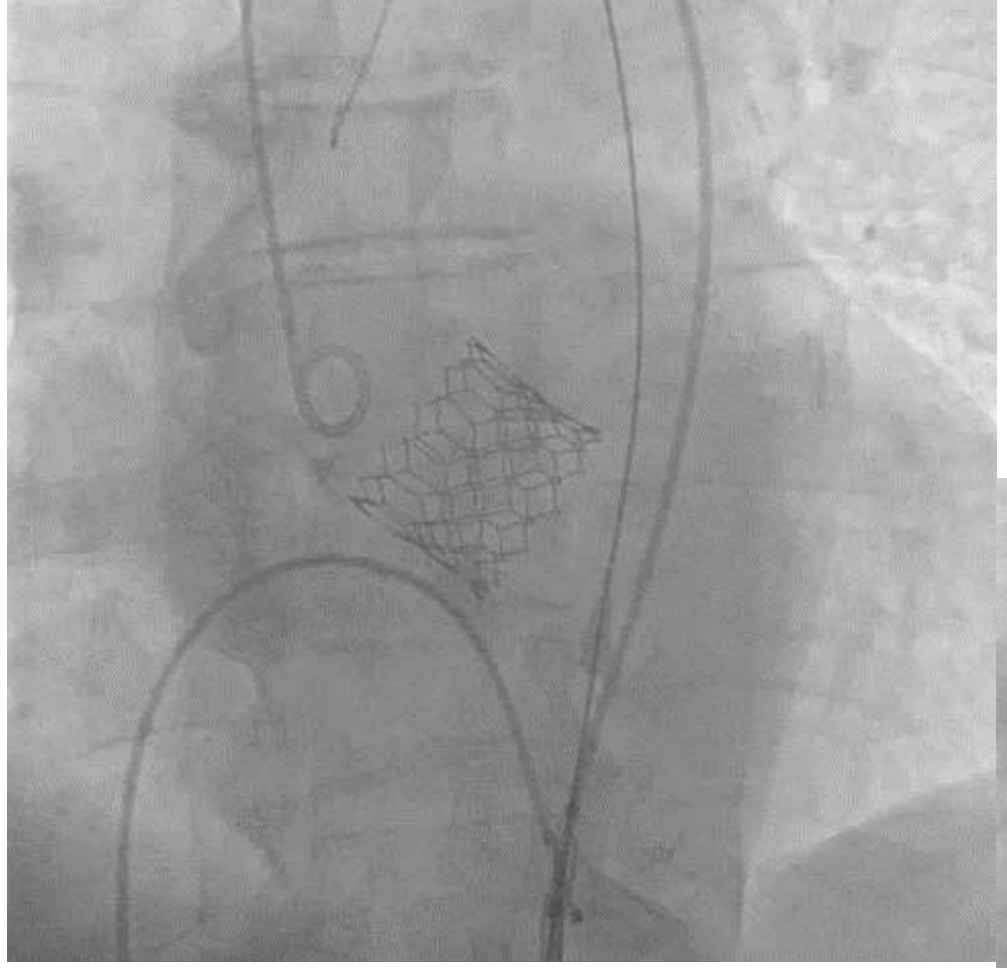
CoreValve Evolut R

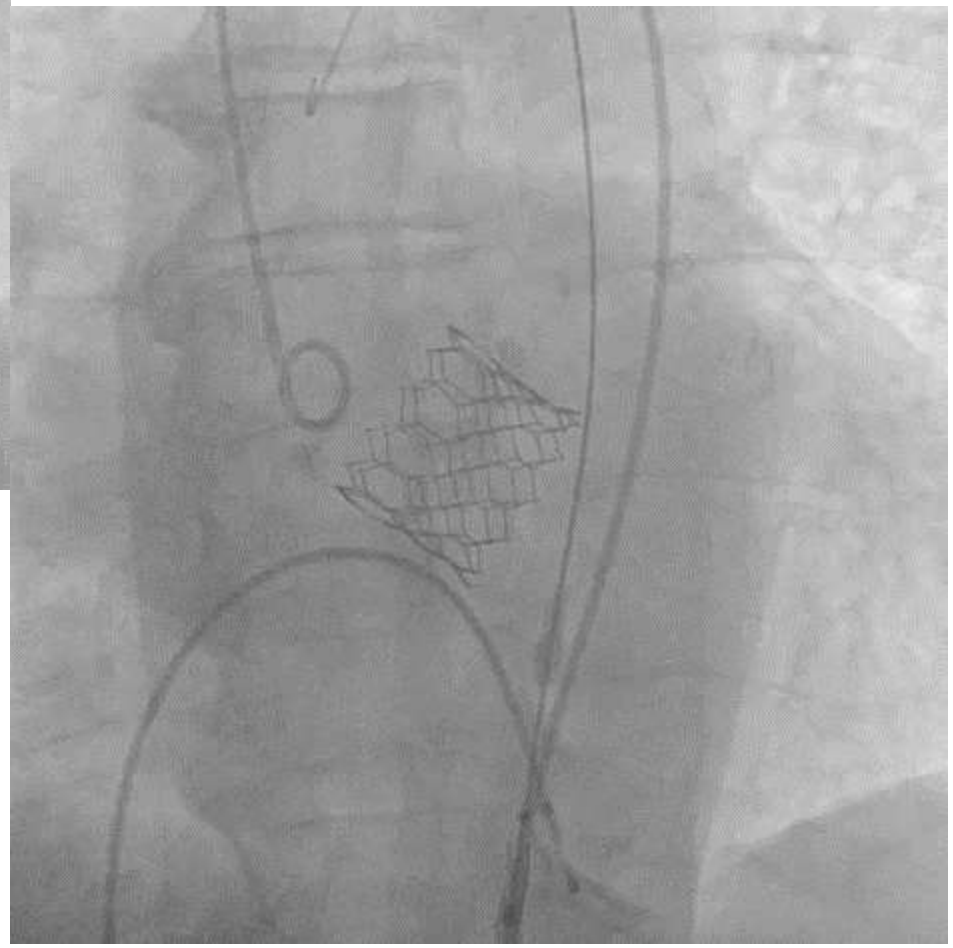




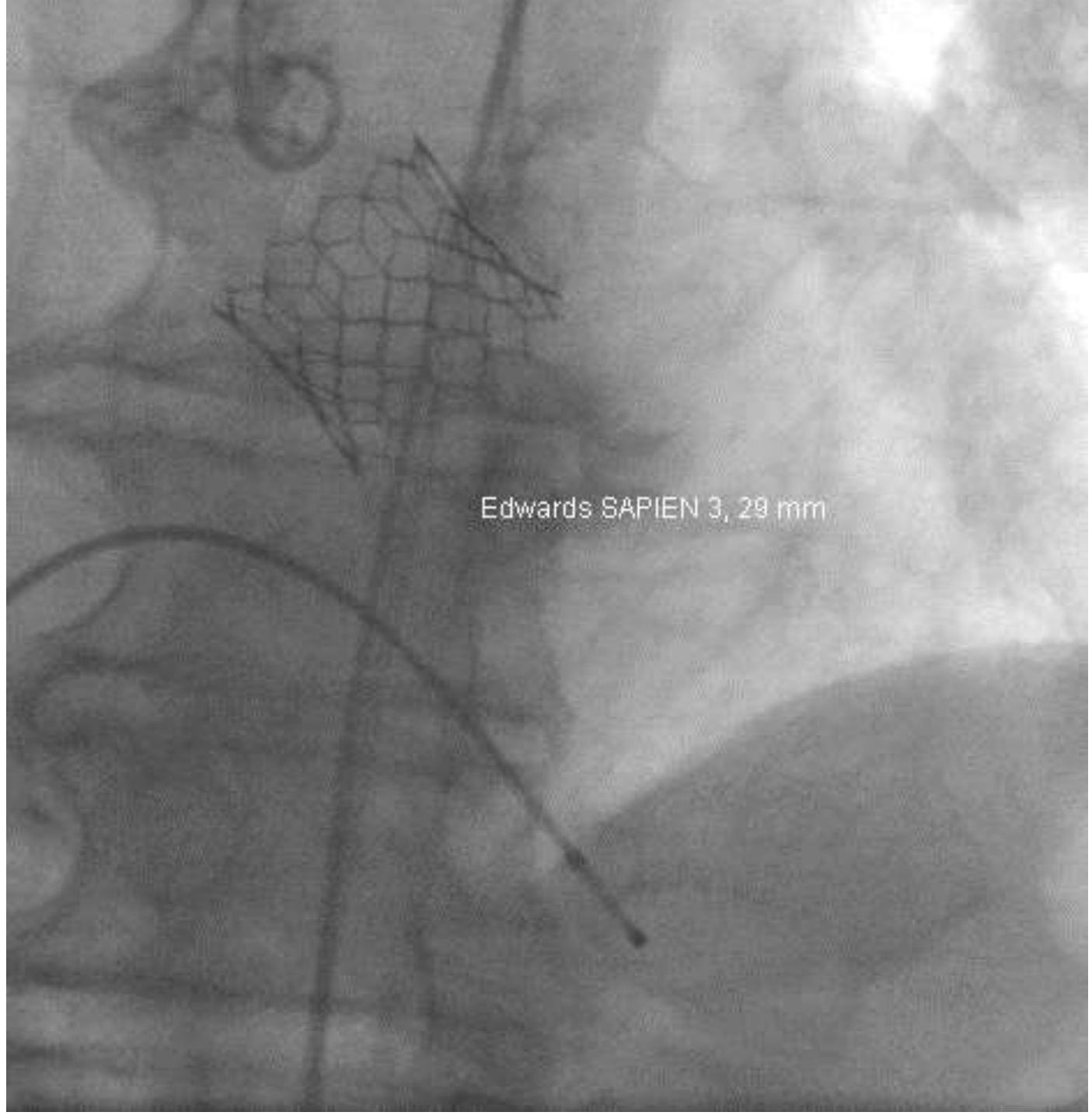
Manufacturer	Edwards Lifesciences	
Valve	• Edwards SAPIEN XT® • Edwards SAPIEN 3®	• CoreValve® Evolut R®
Type	Balloon expandable 	Self-expanding 
Benefits	• Lower delivery profile, requiring smaller sheaths (14-20 Fr) • Sealing skirt to reduce PVR	• Repositionable to maximize positioning and reduce PVR
Risks	• Increased risk of annulus rupture • Increased risk of coronary occlusions	• Increased chance patient will need permanent pacemaker
Similar endpoints	Mortality, stroke, repeat hospitalizations, vascular or bleeding events, acute renal injury, impaired valve hemodynamics, and reduced durability performance	
Approved TAVR approach	TF, TA, TAo	TF, TAx, TAo

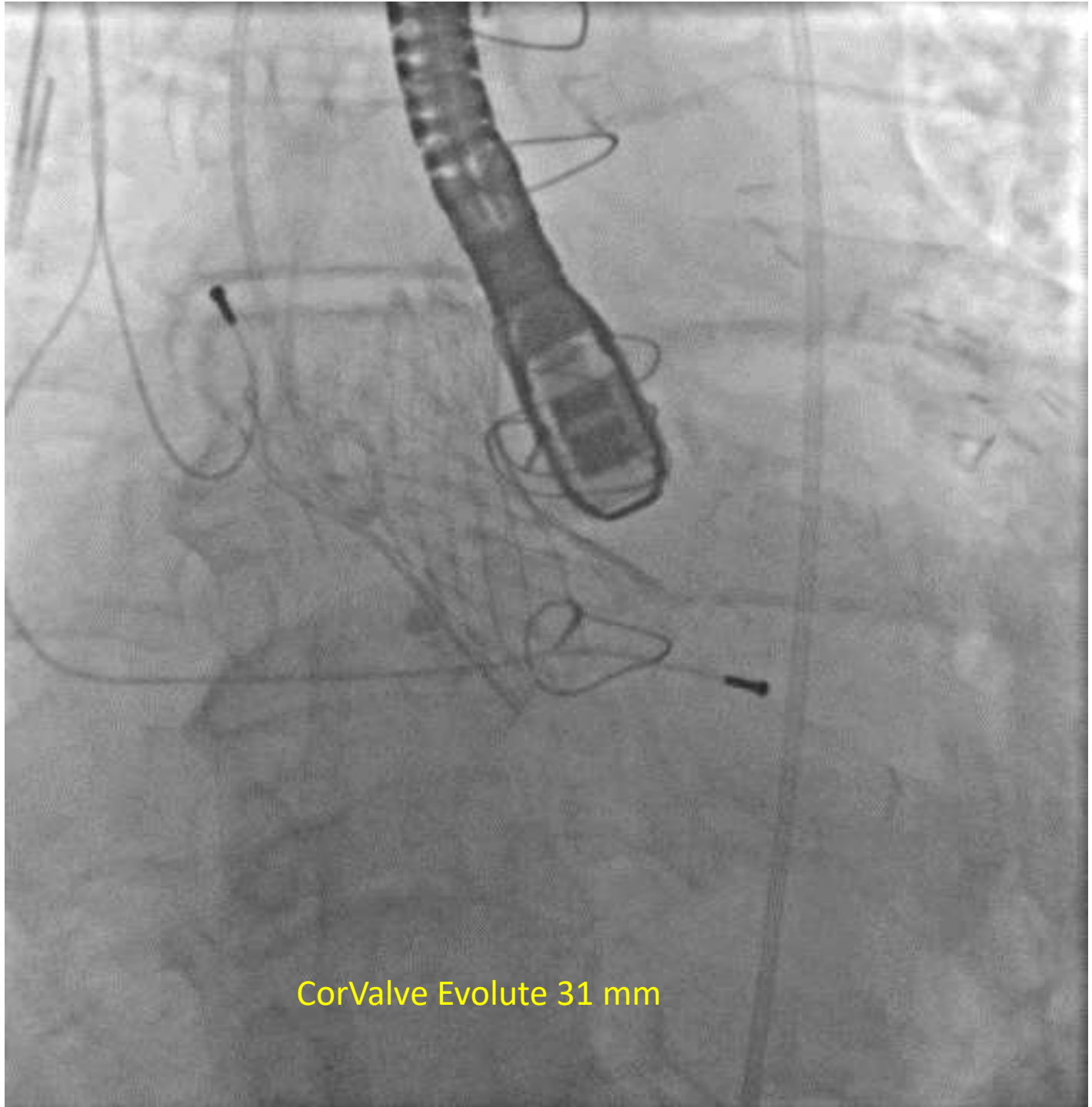






Edwards Sapien S3 26 mm

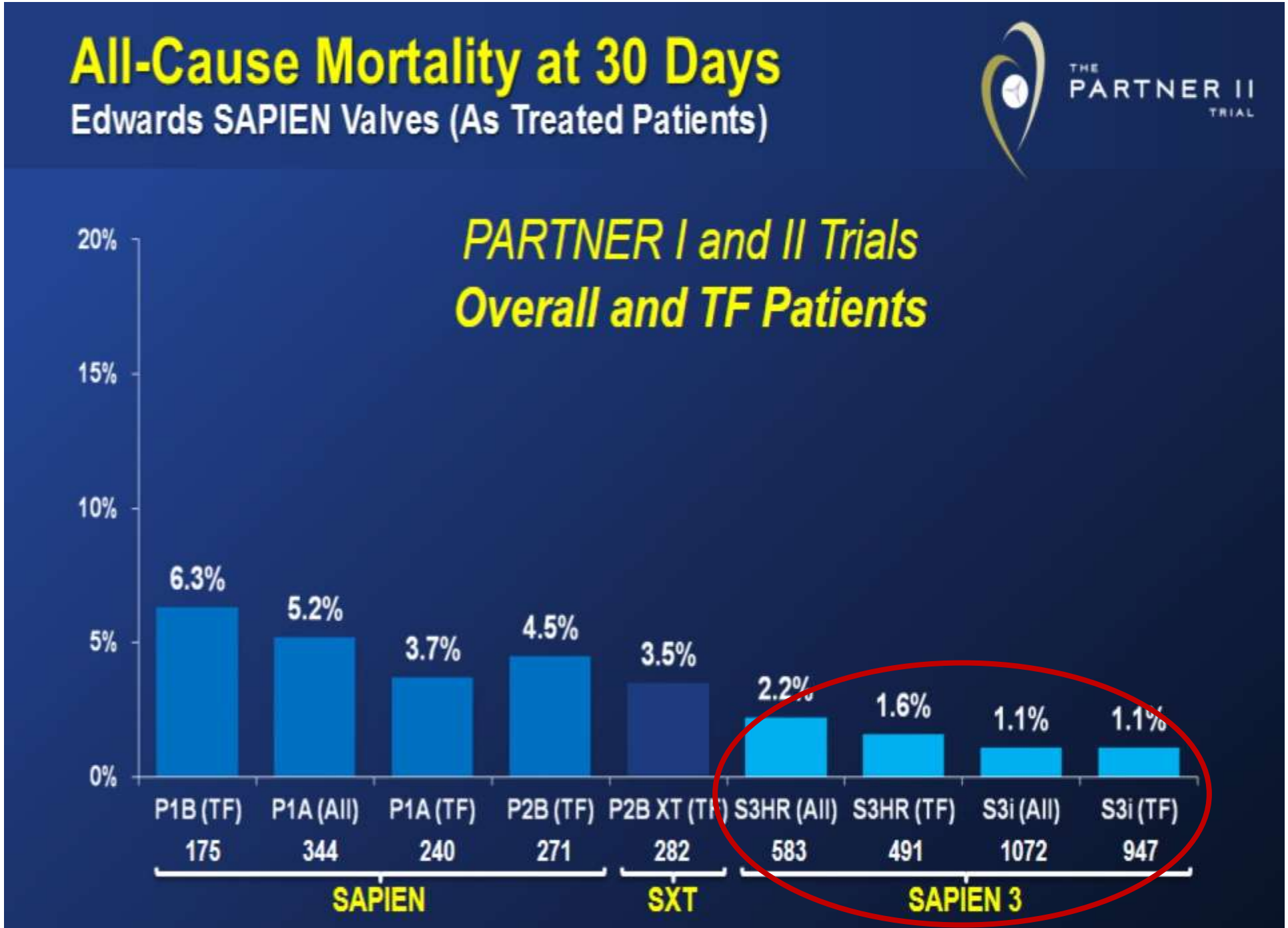

Edwards SAPIEN 3, 29 mm


CorValve Evolute 31 mm

All-Cause Mortality at 30 Days

Edwards SAPIEN Valves (As Treated Patients)

THE PARTNER II TRIAL



TAVI – technika, výkon

Zkušenosti kardiocentra FN Hradec Králové

		Rok úmrtí												
Rok implantace	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	1.1. 2019-25.1.2019	Celkem úmrtí	Počet žijících	Počet implantací
2009	1	2		2	1			1	2	2		11	1 (8%)	12
2010		1	4	3	1	3	3	3	1			19	6 (24%)	25
2011			1	1	2	2	1		2	1		10	7 (41%)	17
2012							2	5	4	2		13	6 (31%)	19
2013					1		2	1	2	2		8	8 (50%)	16
2014						1	2	3	2	3		11	14 (56%)	25
2015							2	4	3		1	10	29 (74%)	39
2016								1	1	3		5	33 (87%)	38
2017									6	3		9	43 (83%)	52
2018										5		5	50 (91%)	55
2019													18(100%)	18
Celkový součet	1	3	5	6	5	6	12	18	23	21	1	101	213(67%)	316

Průměrná doba dožití zemřelých s chlopní 3,2 roky

TAVI – technika, výkon

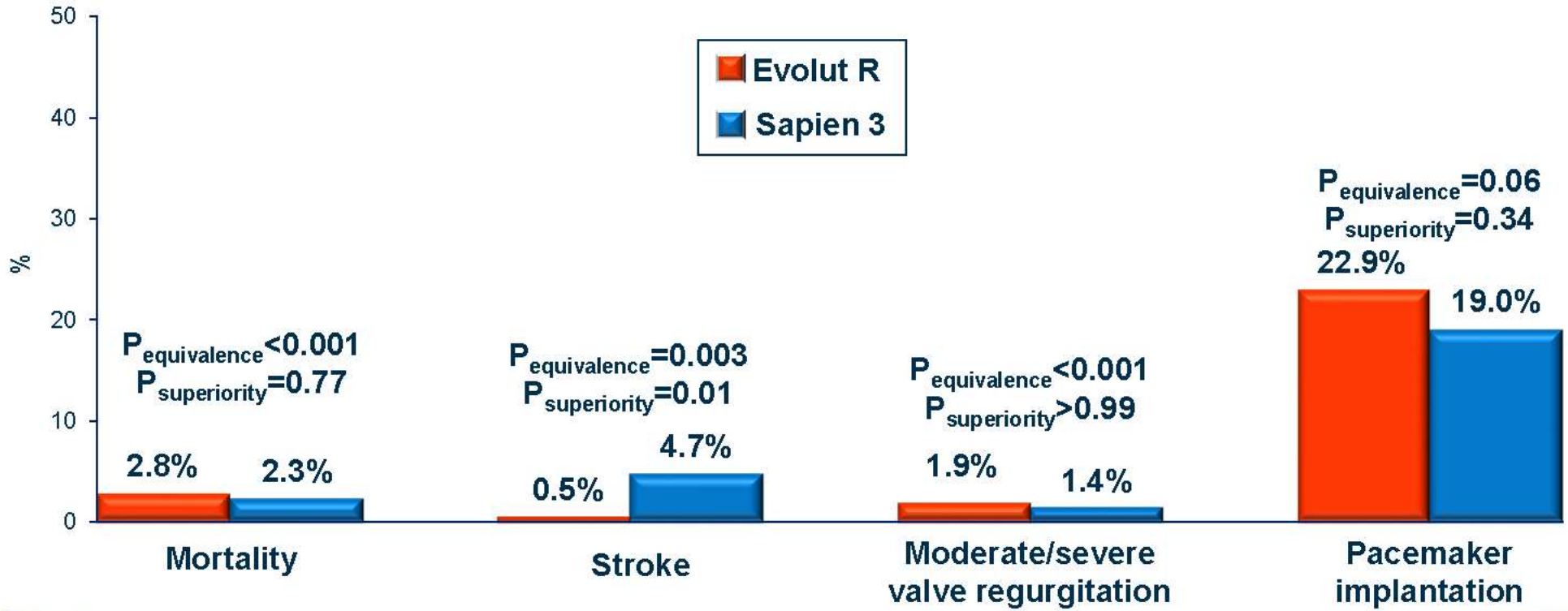
Zkušenosti kardiocentra FN Hradec Králové (k 1.3.19)

- Exitus letalis	3x (0.94%)
- do 30 dnů	2x (1,58%)
- akutní verze na chir. náhradu	2x
- akutní chir. revize	1x
- chir . revize, bypass v třísle	4x
- stentgraft a. ill	2x
- valve- in -valve	3x
- pv. regurgitace > 2	4x

Endpoints – Valve Strategy

SOLVE-TAVI

Individual components primary endpoint



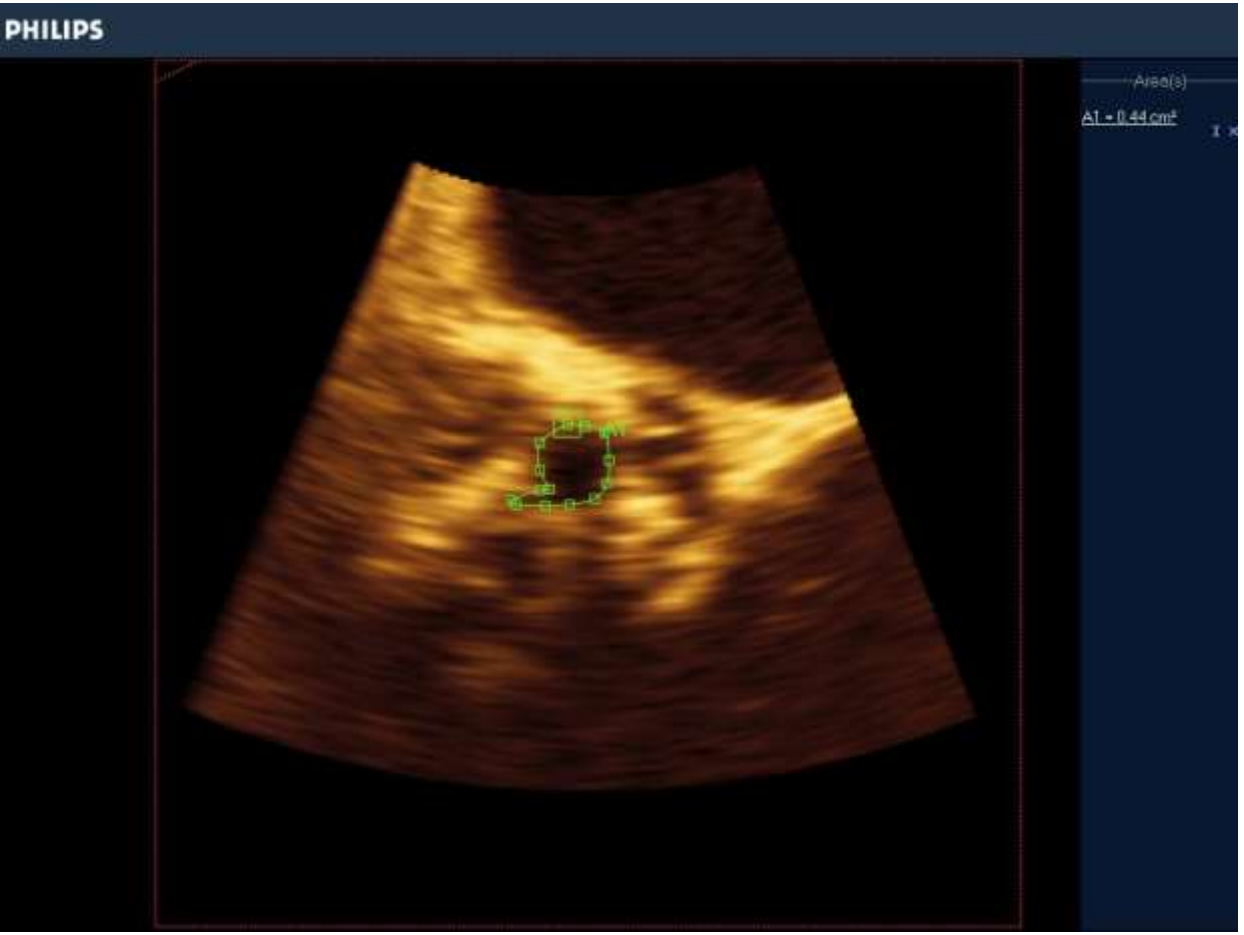
TAVI – technika, výkon

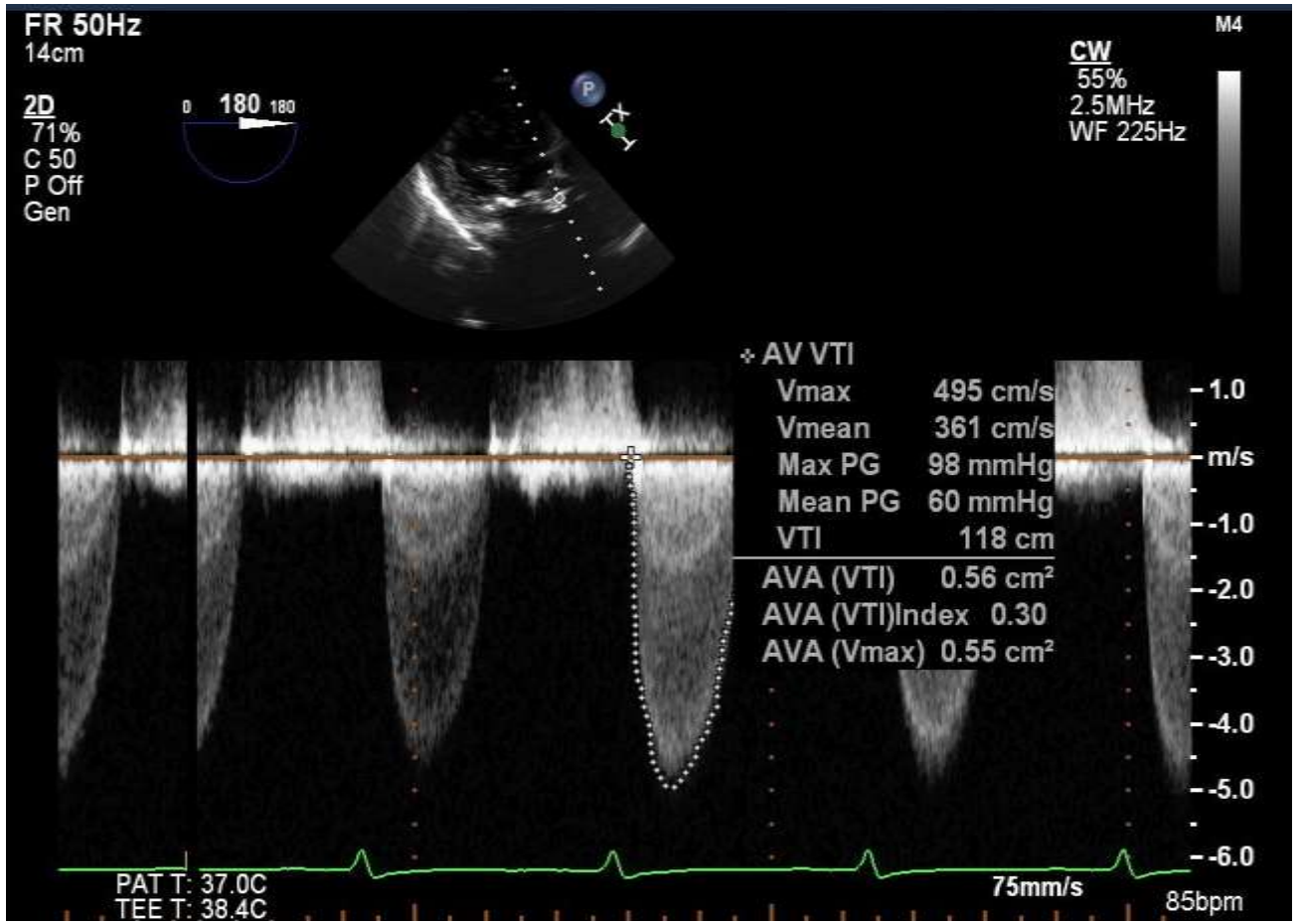
Katétrová chlopeň - valve in valve

- Ao, Mi a Tr pozice
- valva in ring v Mi pozici

TAVI – technika, výkon

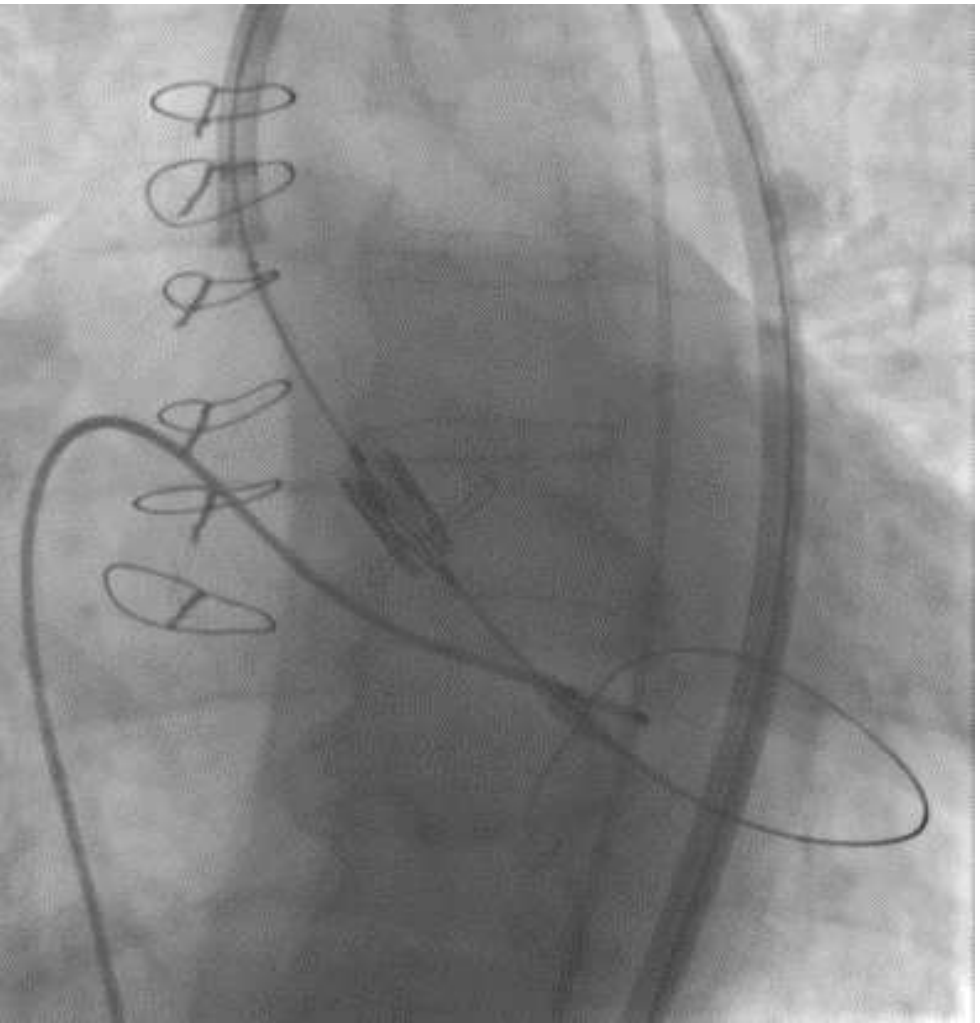
Degenerovaná Bioprotéza v Ao pozici

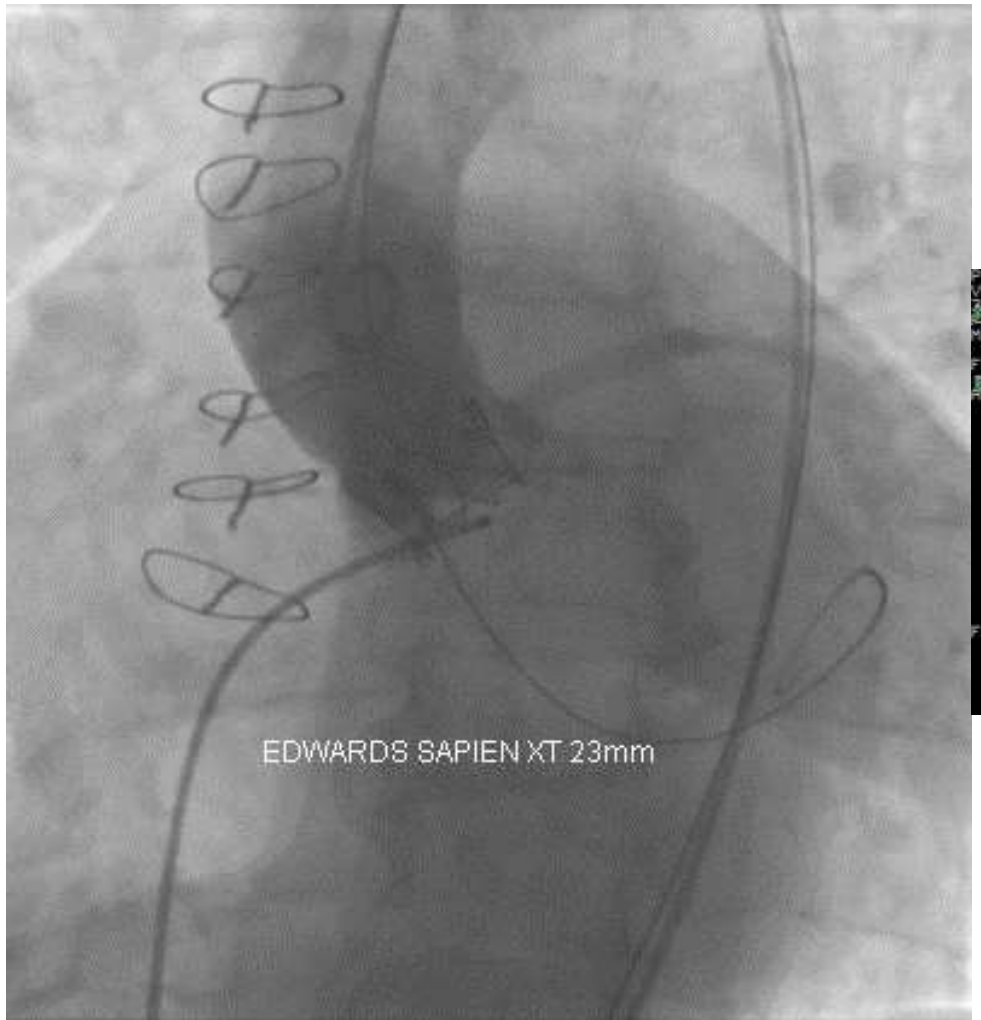


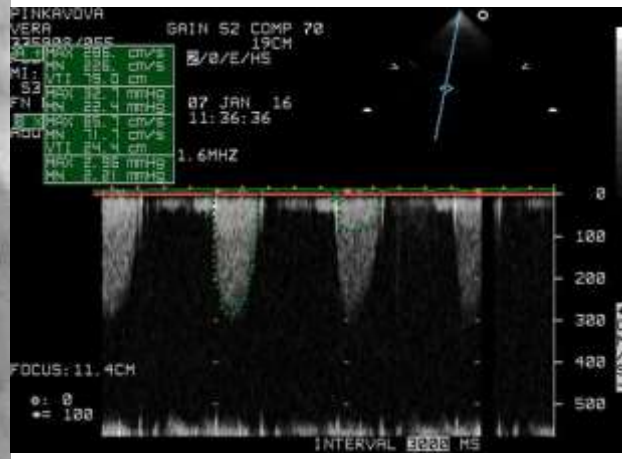


TAVI – technika, výkon

Valvi in valve v Ao pozici

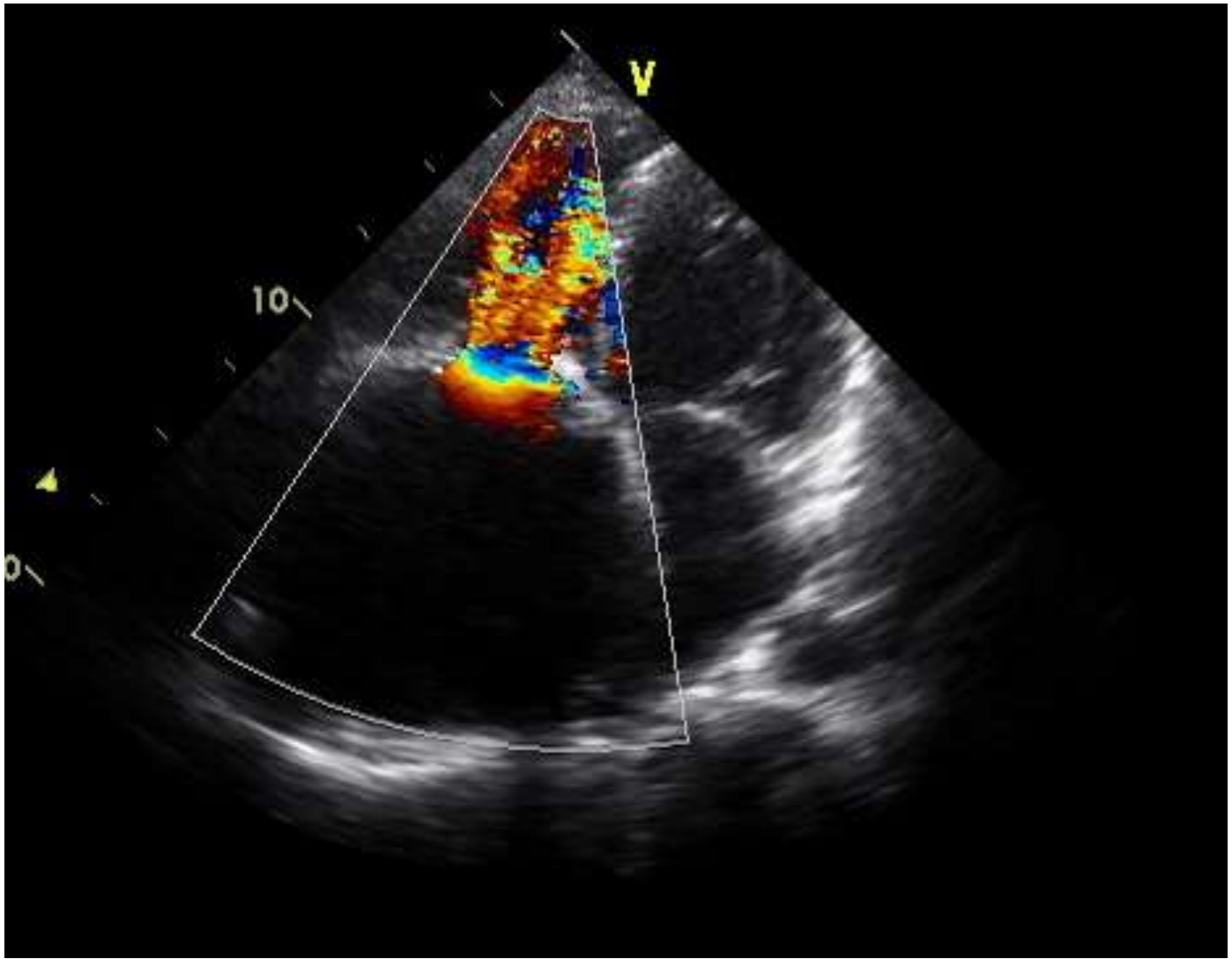


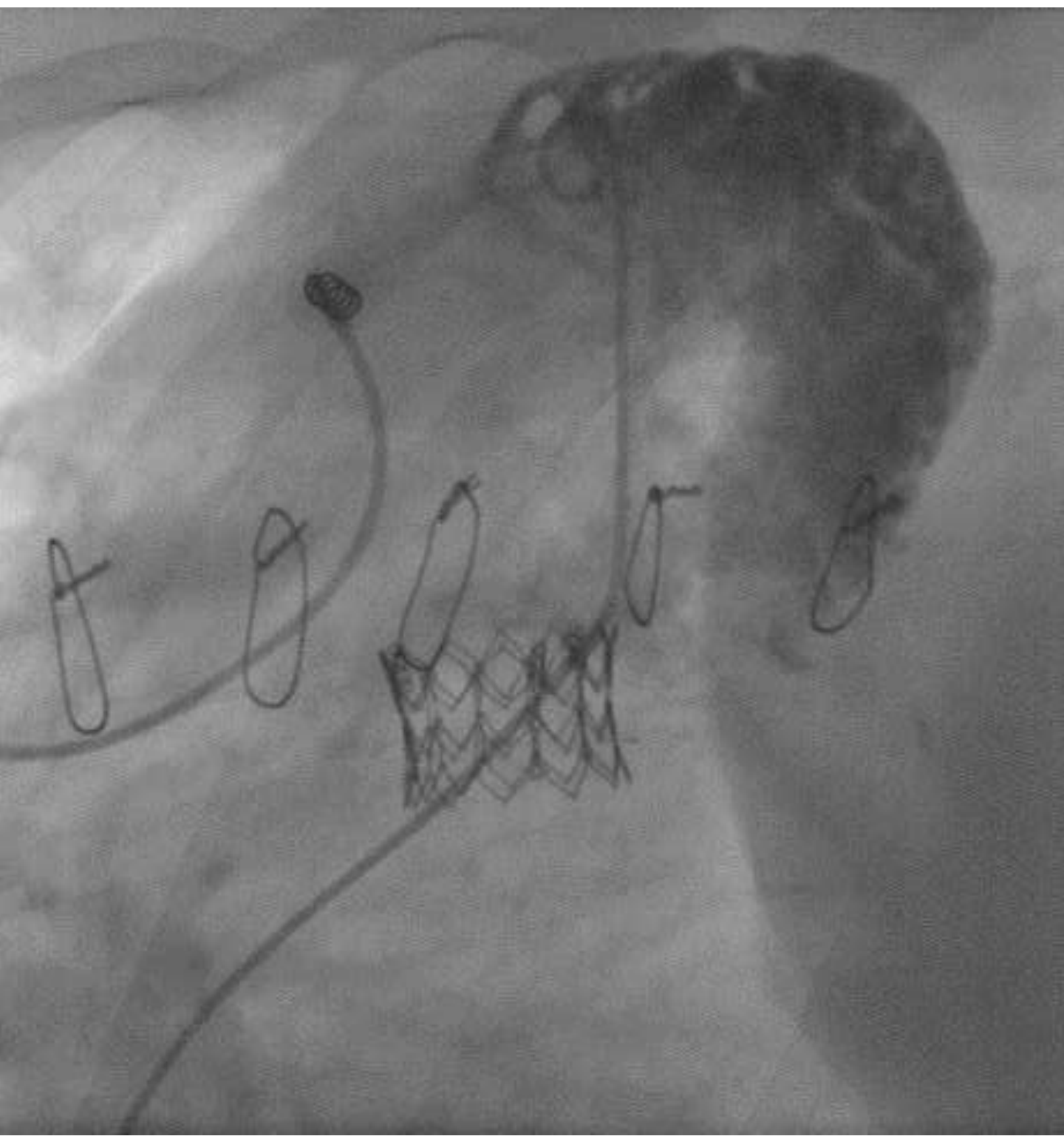




TAVI – technika, výkon

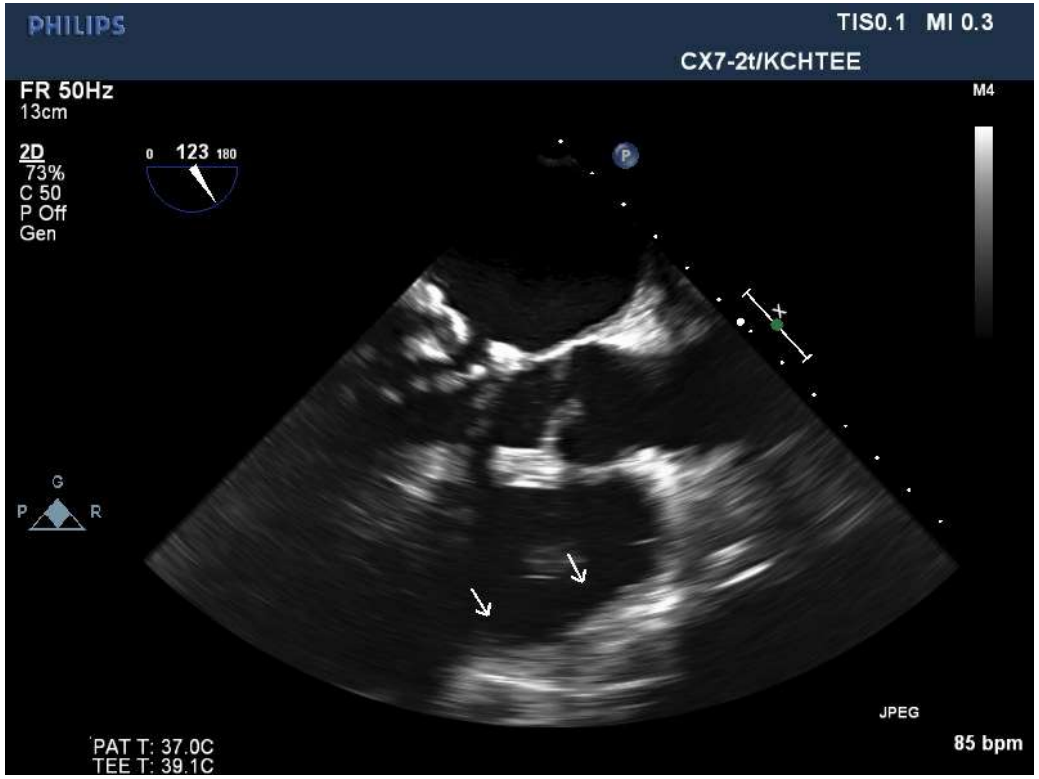
Degenerovaná bioprotéza v Tr. pozici

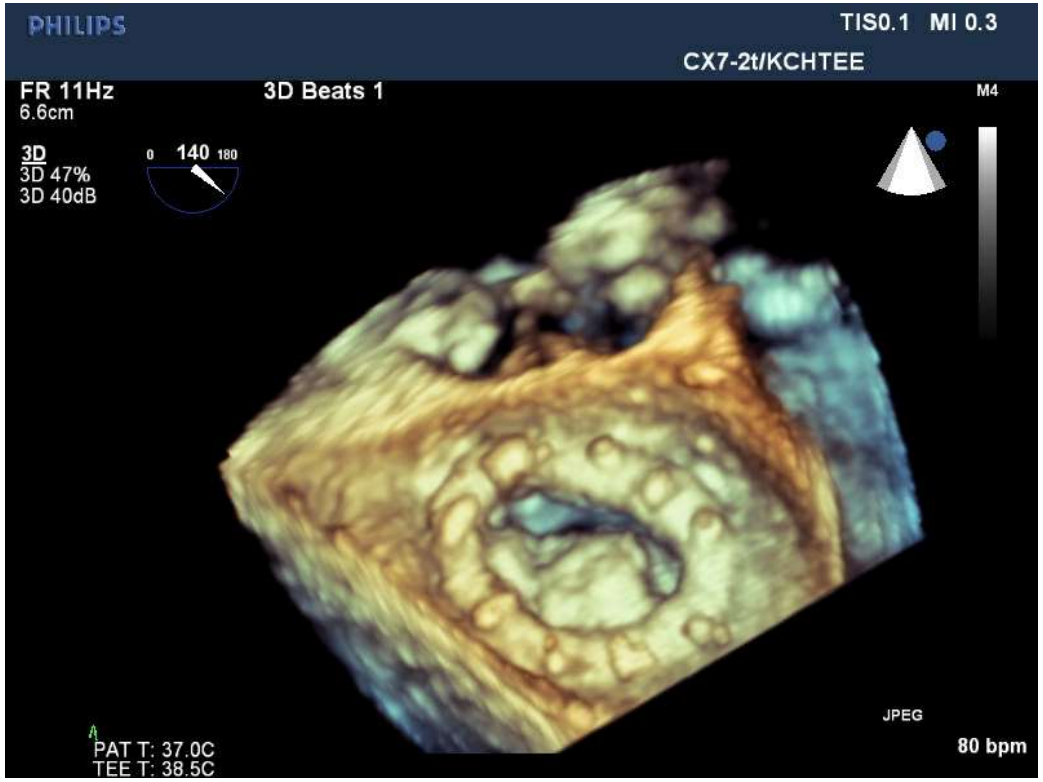




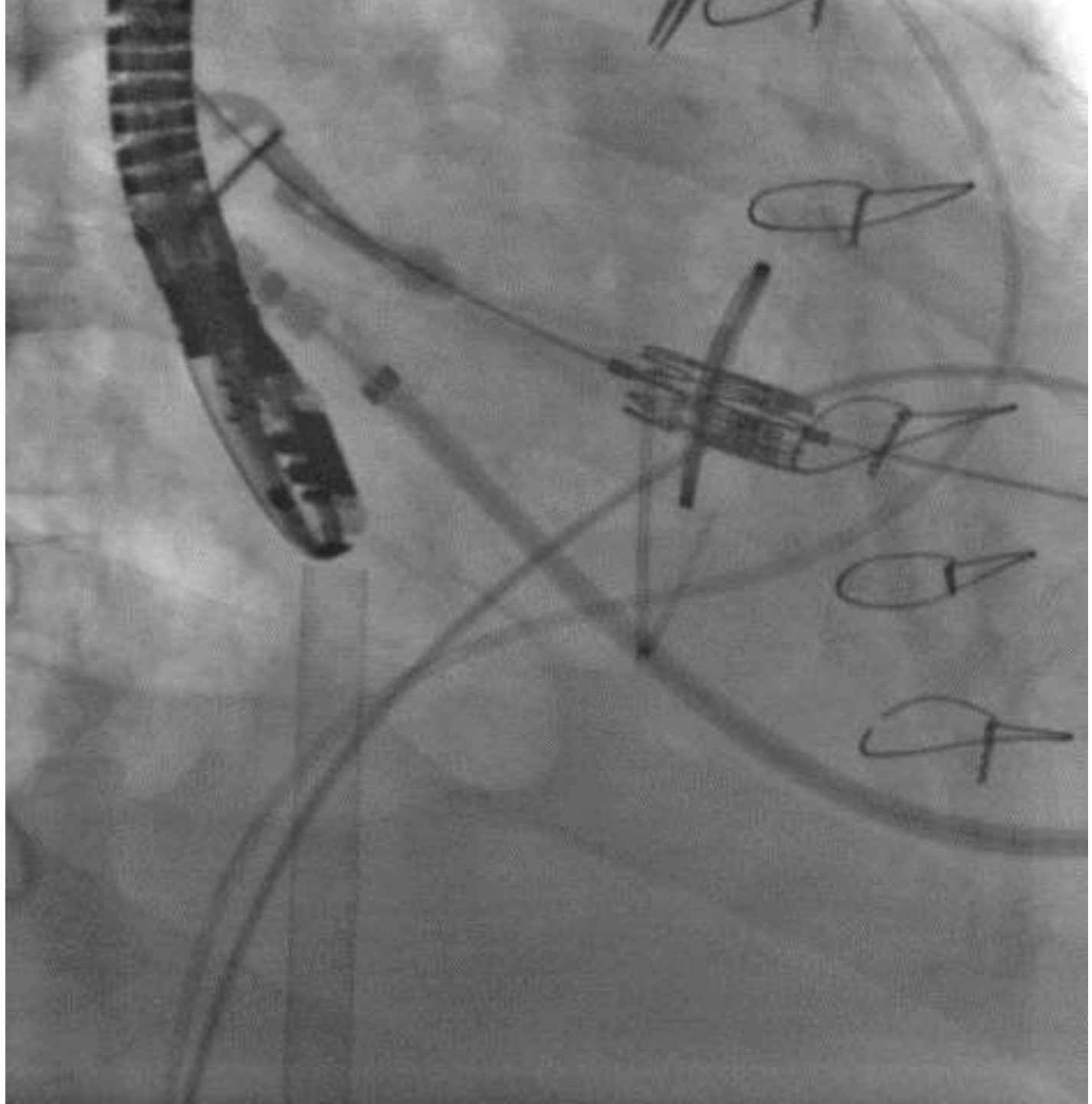
TAVI – technika, výkon

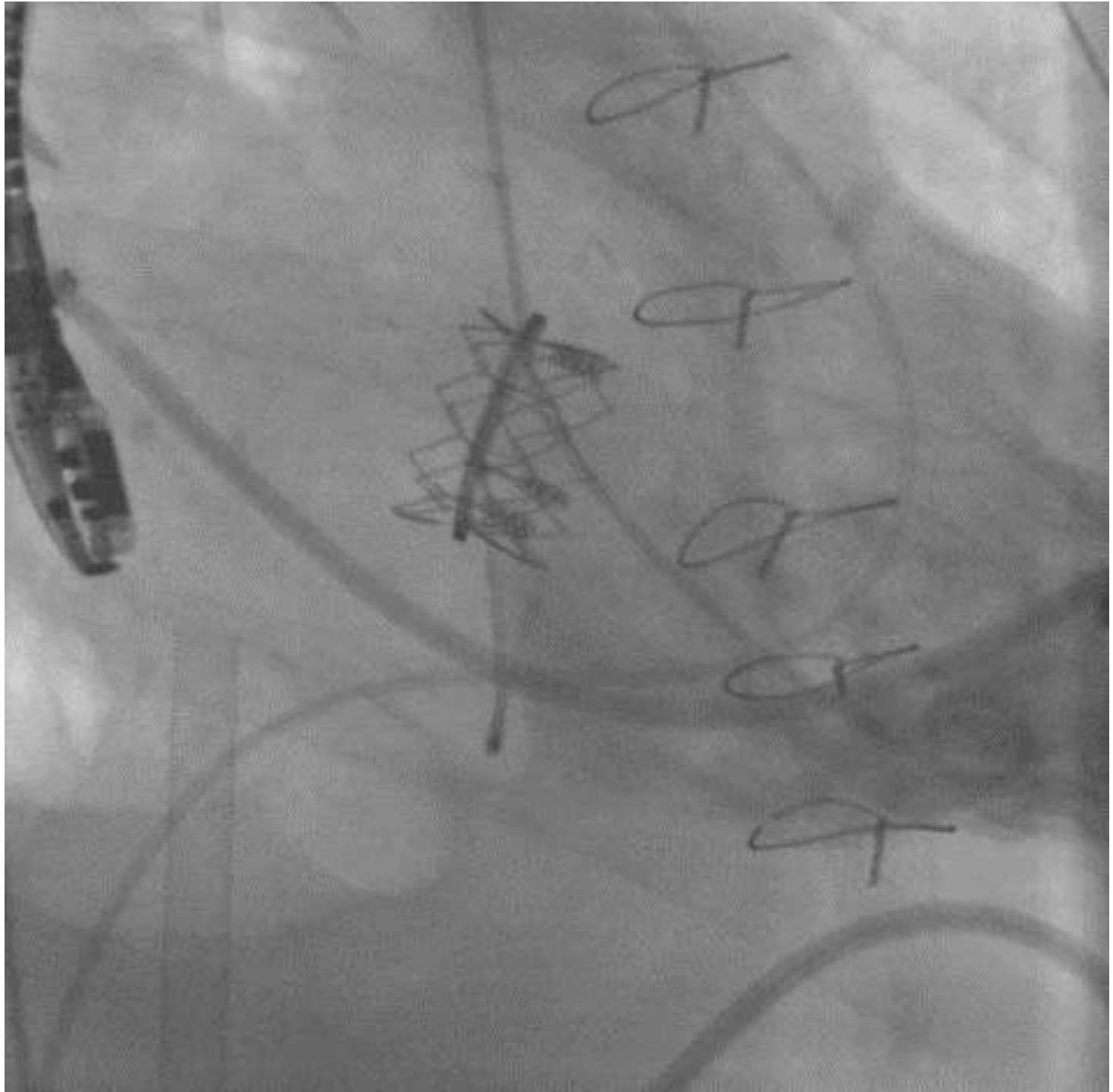
Degenerovaná Mi chlopeň, Mi ring





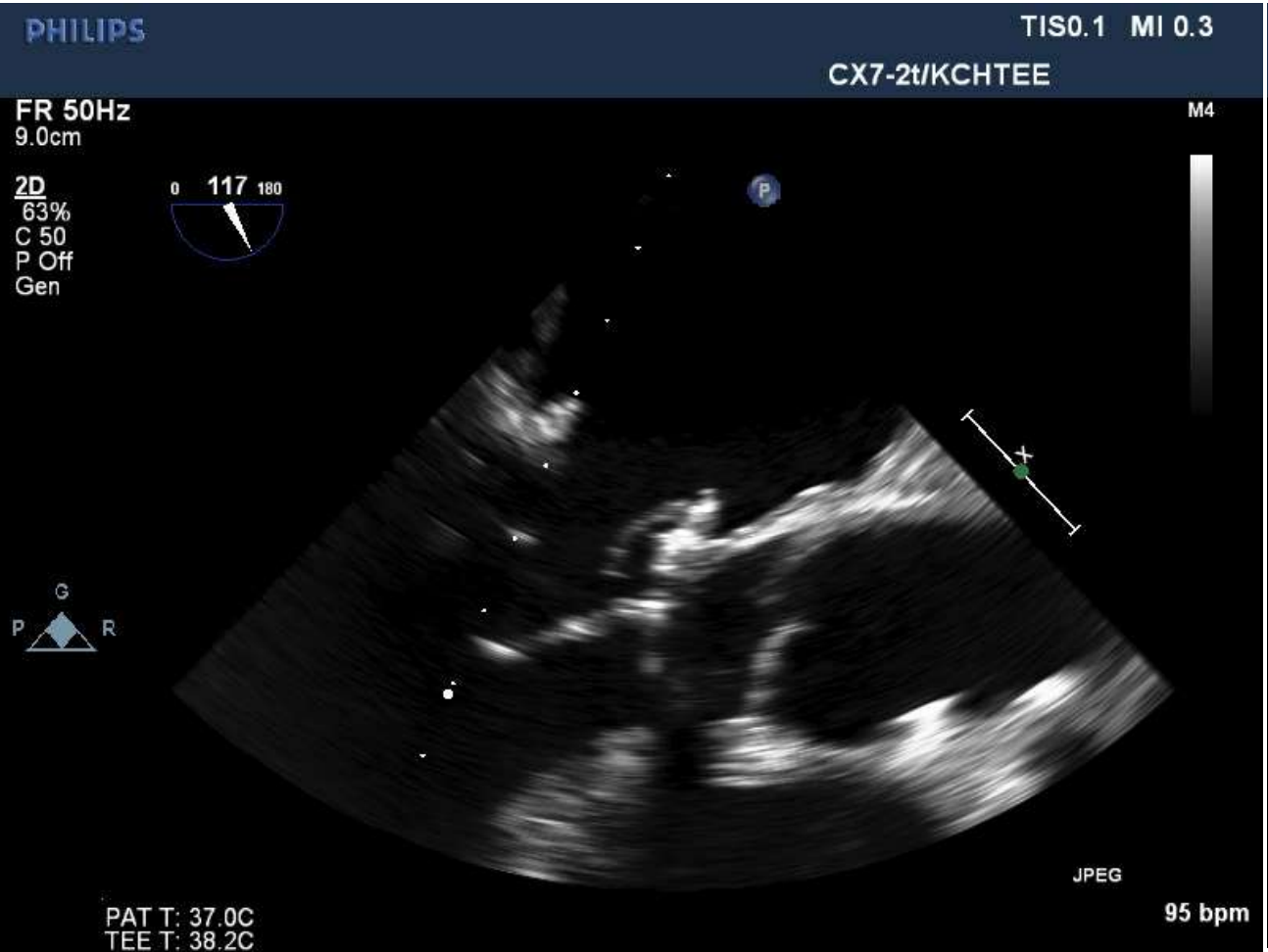
MPR: 1,14cm^2 (0,5cm^2/m^2) PG: 22/10 mmHg

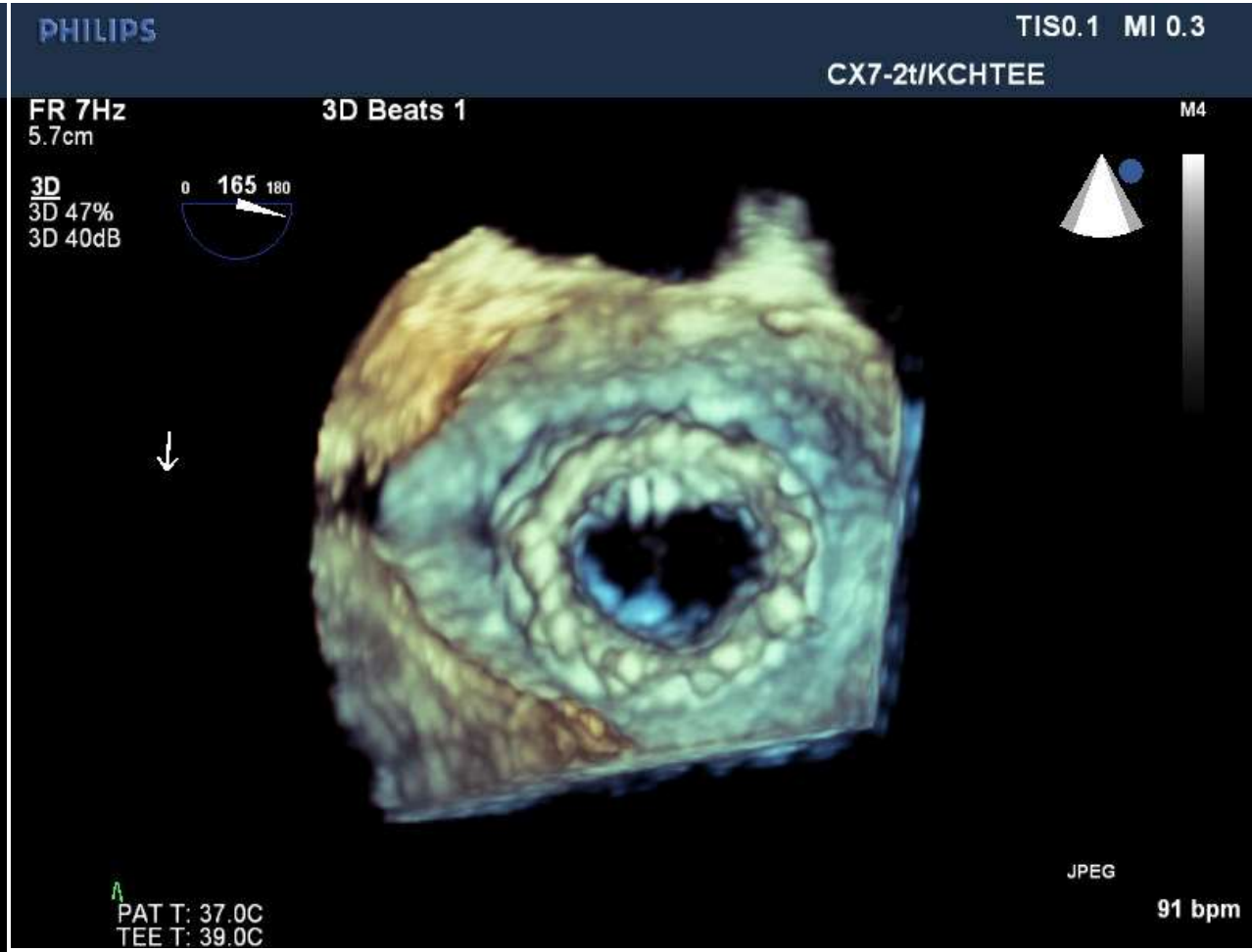




TAVI – technika, výkon

Valve – in – valve v Mi. pozici





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Podmínky úspěšné implantace katétrové chlopně

- *správná klinická indikace*
- *přesná předoperační vyšetření*
  - *UZ vyšetření – morfologie chlopně, Ca, asc. Ao (TEE,3D)*
  - *CT vyšetření - morfologie chlopně, Ca, asc. Ao a přístupových tepeny*
- *dostatečná katetrizační praxe*
- *rutinní zvládnutí použité technologie*

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Děkuji za pozornost