

Elektroanatomické mapování s použitím katetru OPTRELL™, iniciační zkušenosti jednoho centra

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Kardiologická klinika Fakultní nemocnice Královské Vinohrady a 3. LF
UK



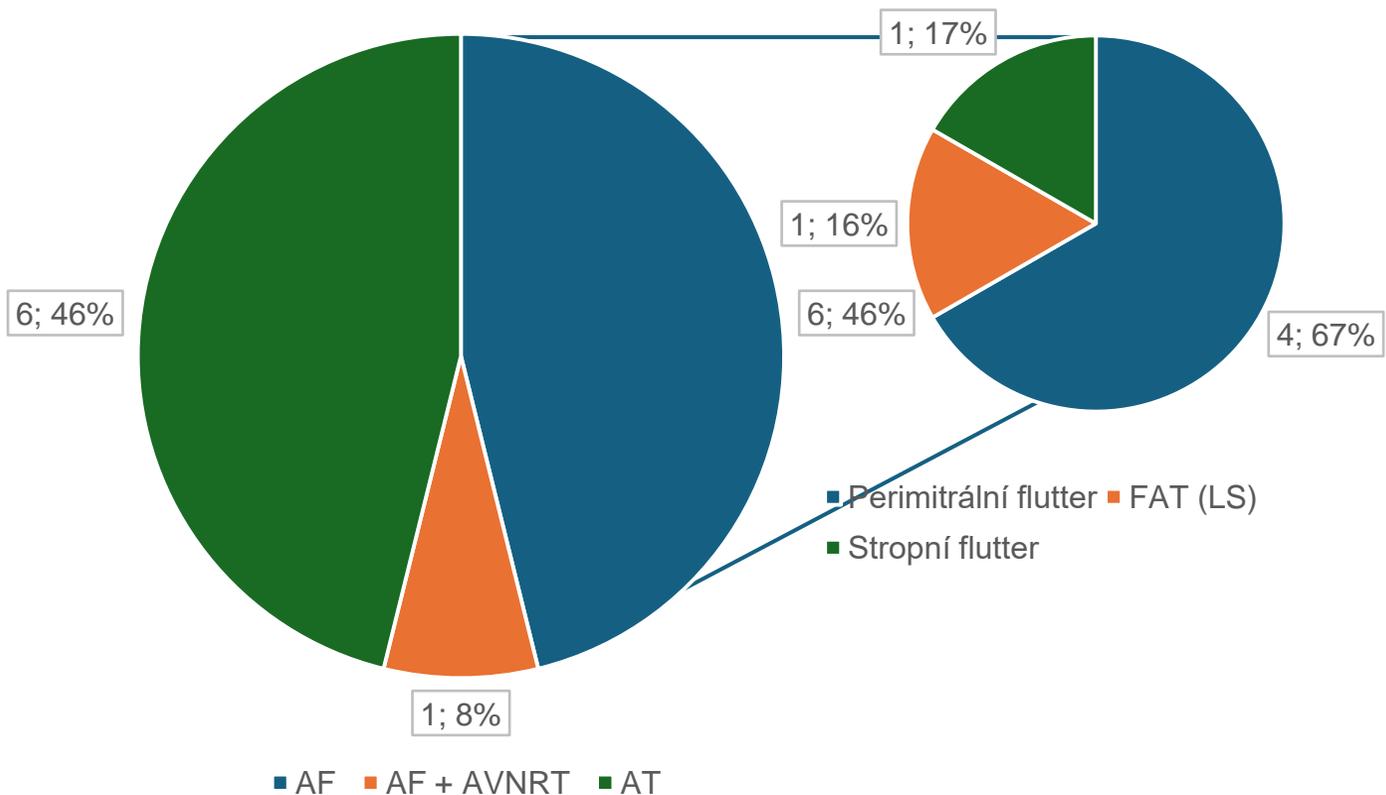
Charakteristika souboru

| | Celkem No. 24 | Komorové ablace No. 11 | Síňové ablace No. 13 |
|----------------------|--------------------------|-----------------------------------|---------------------------------|
| Věk (roky) | 71.3 (\pm 9.3) | 66.9 (\pm 11.3) | 75.1 (\pm 4.9) |
| Ženy | 6 (25.0%) | 1 (9.1%) | 5 (38.5%) |
| Čas skiaskopie (min) | 4.0 (\pm 2.8) | 3.3 (\pm 1.9) | 4.6 (\pm 3.3) |
| Počet bodů EA mapy | 2943.2 (\pm 2336.0) | 2499.2 (\pm 2025.4) | 3318.8 (\pm 2589.8) |
| Trvání zákroku (min) | 128.3 (\pm 39.8) | 127.7 (\pm 40.5) | 128.8 (\pm 40.8) |

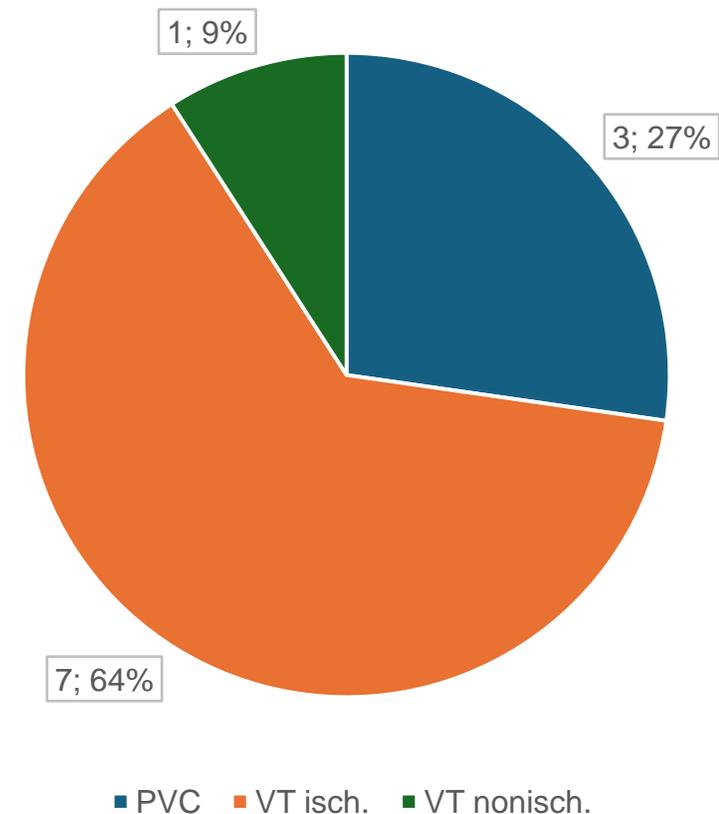


Charakteristika souboru

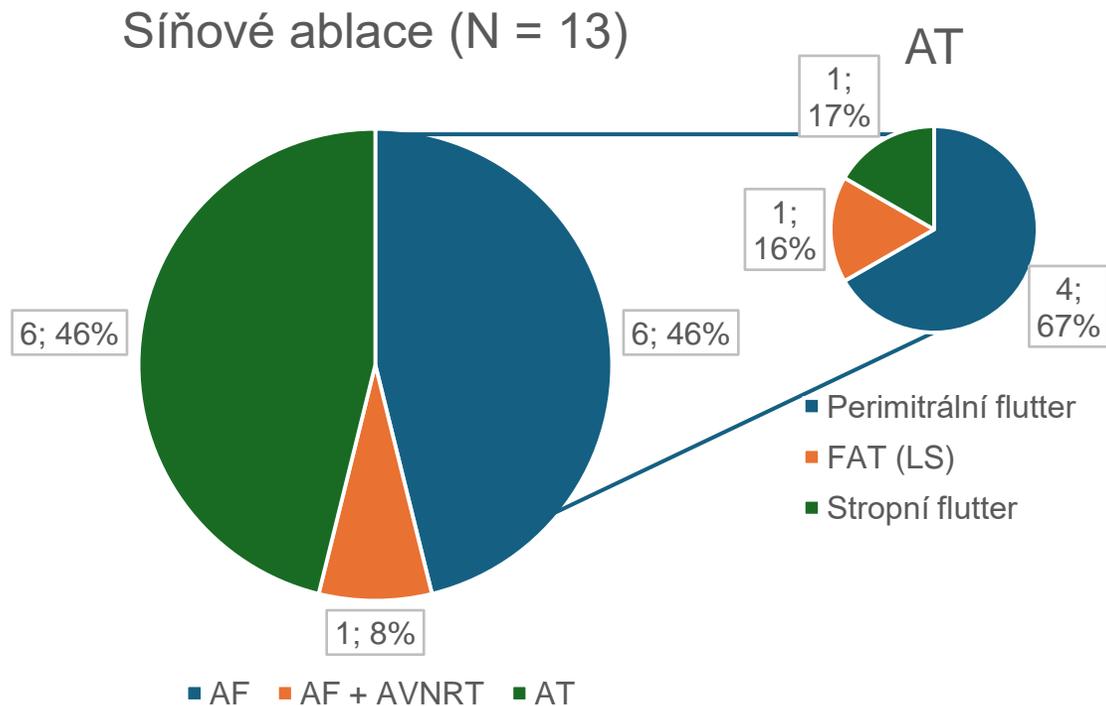
Síňové ablace (N = 13)



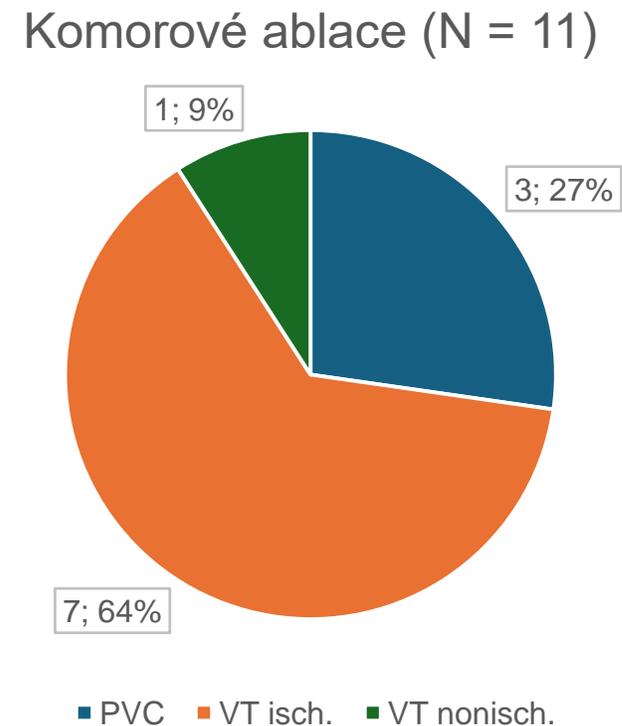
Komorové ablace (N = 11)



Charakteristika souboru

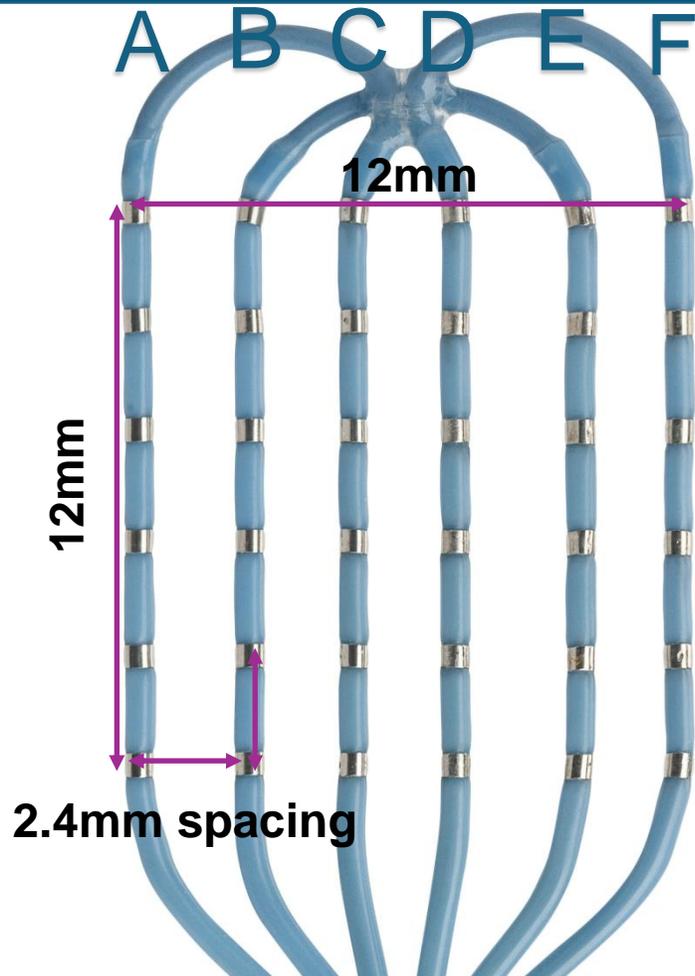


AT: terminace + následná noninducibilita
v 5 (83%) případech

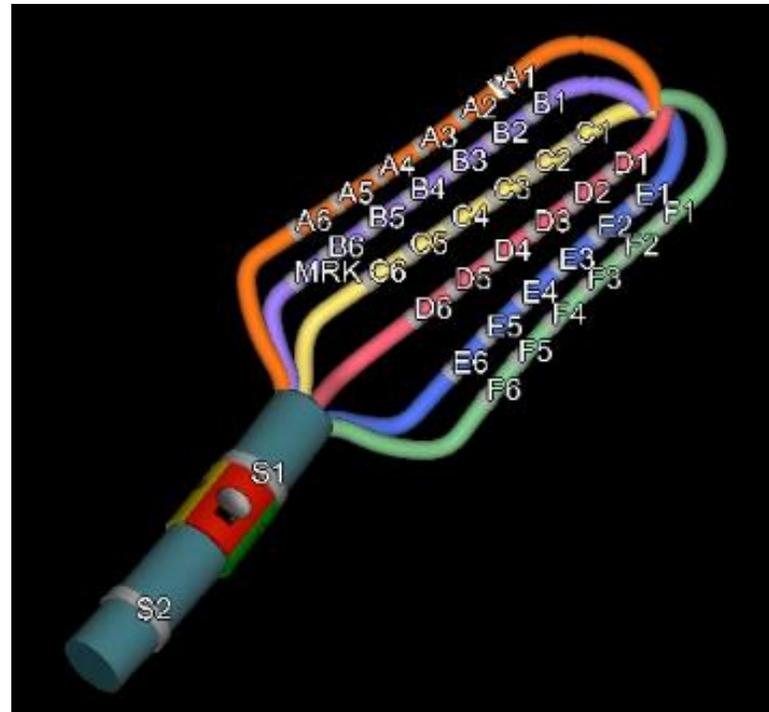


VT: 2 x ablace při VT, 6x substrátově
Noninducibilita na konci ve všech případech

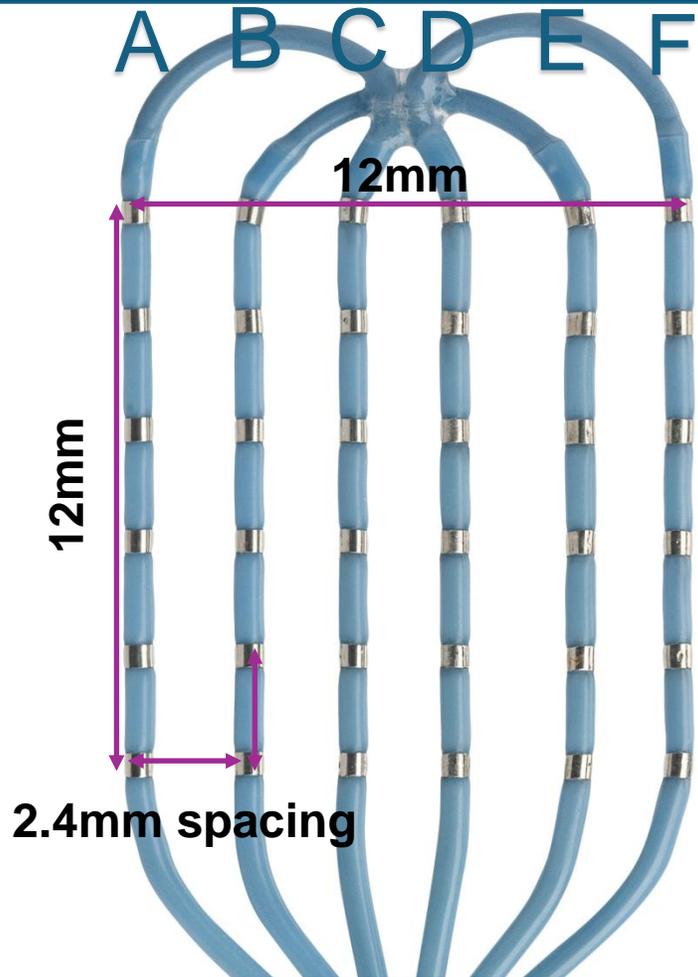
OPTRELL™



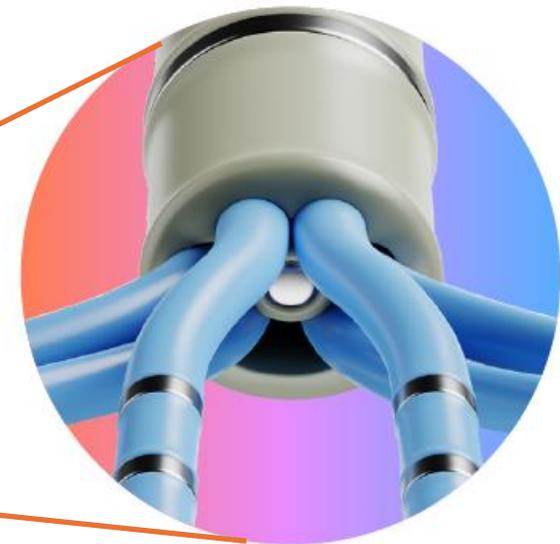
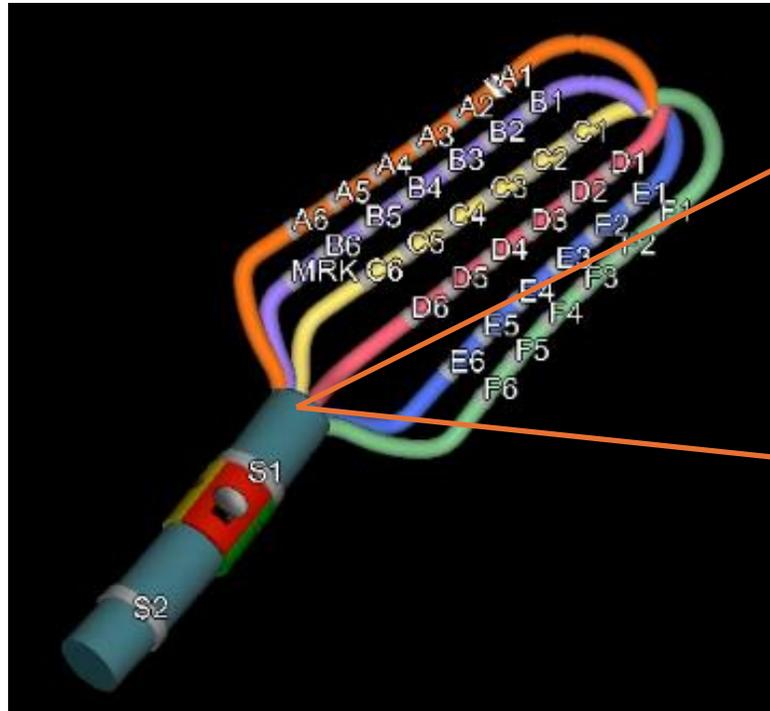
Shaft 8Fr, spline 2 Fr
36 elektrod (délka elektrody = 0,46mm)
Max. pokrytá oblast = 1,44cm²



OPTRELL™



Shaft 8Fr, spline 2 Fr
36 elektrod (délka elektrody = 0,46mm)
Max. pokrytá oblast = 1,44cm²



Unipolární elektroda
(TRUEref)

-> Redukce unipolárních far-
field signálů



Muž, 83 let
Referován k RFA pro AT
(dosud bez ablace)

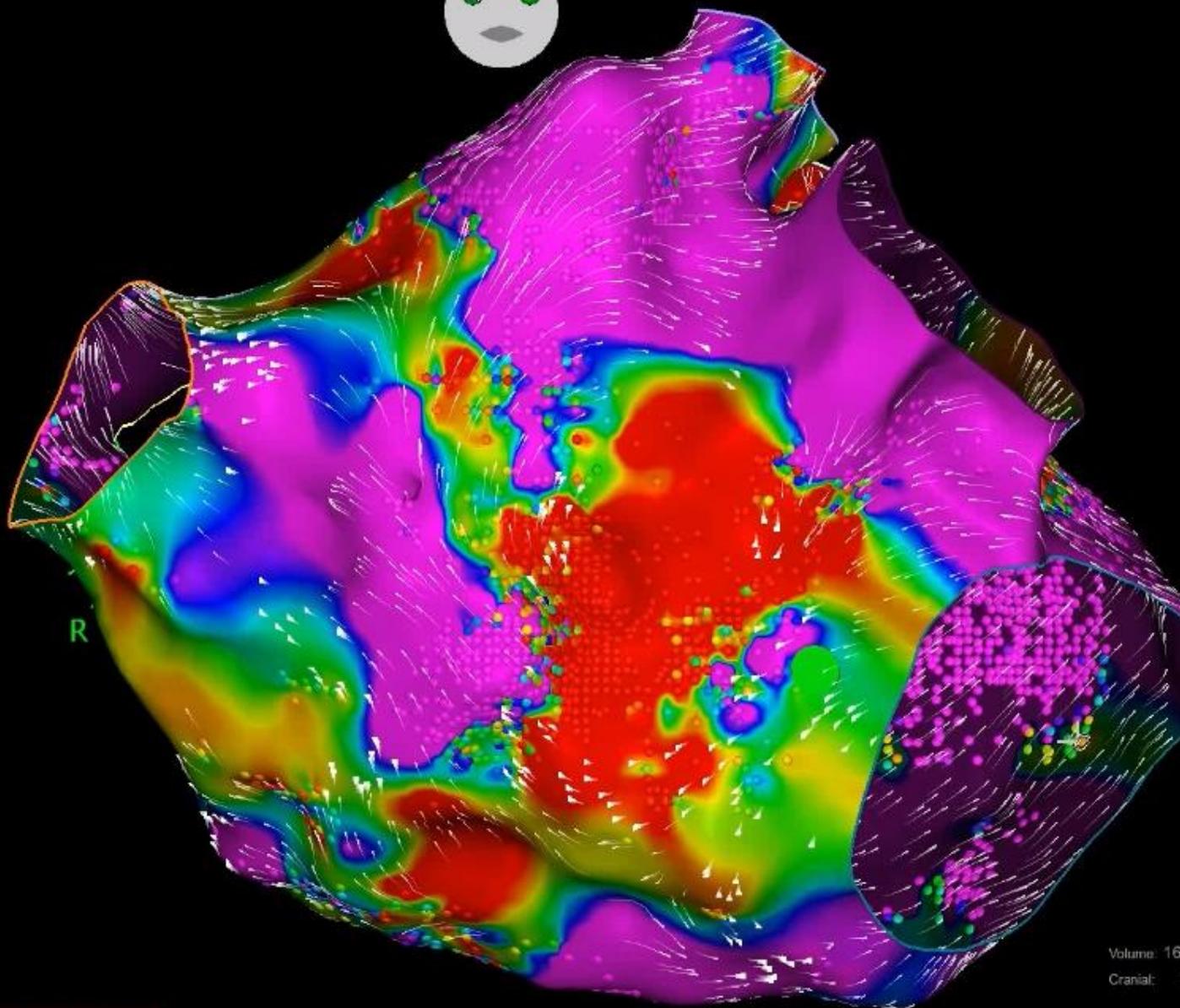
11:02:19.097 25.08.2025



0.15 mV



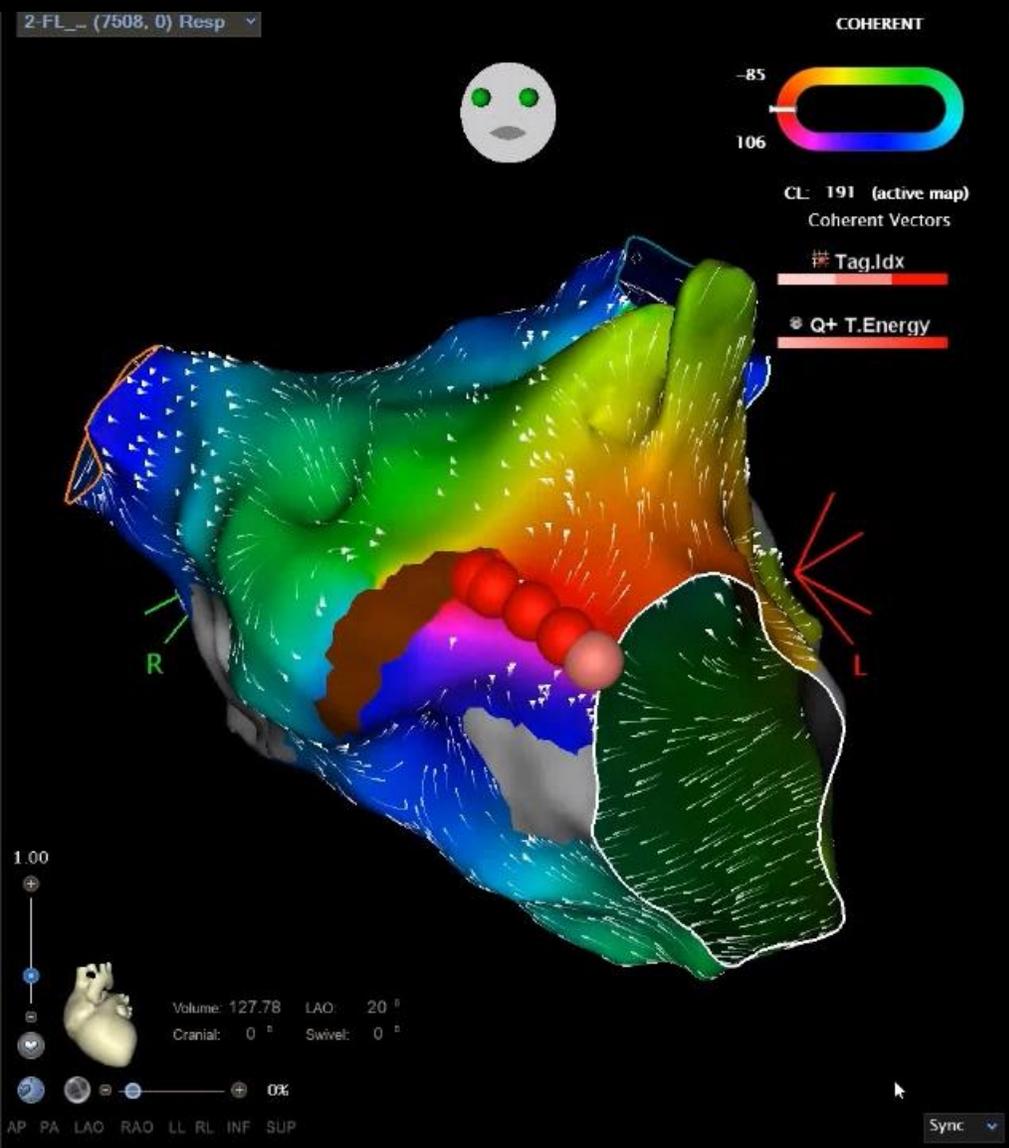
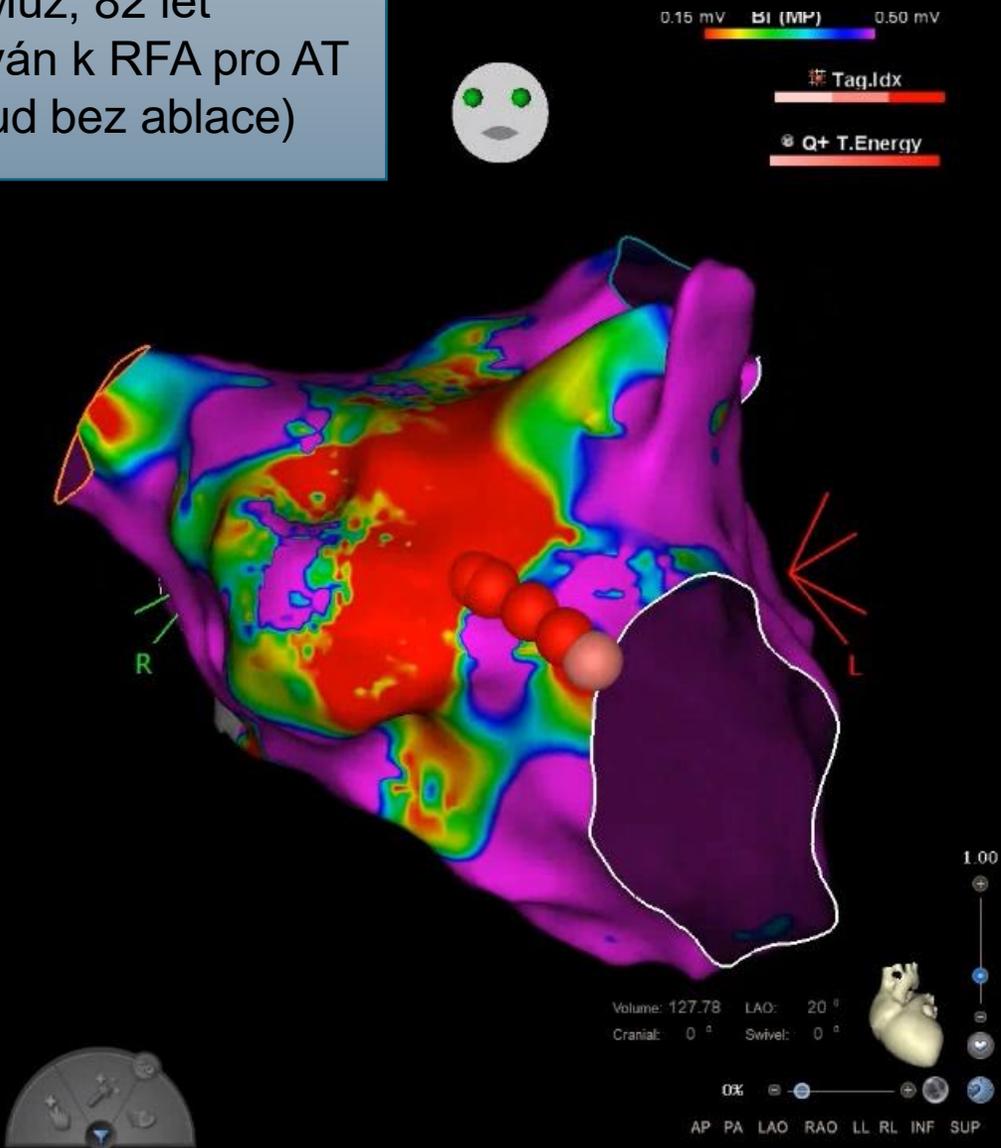
Cc



Volume: 165.76

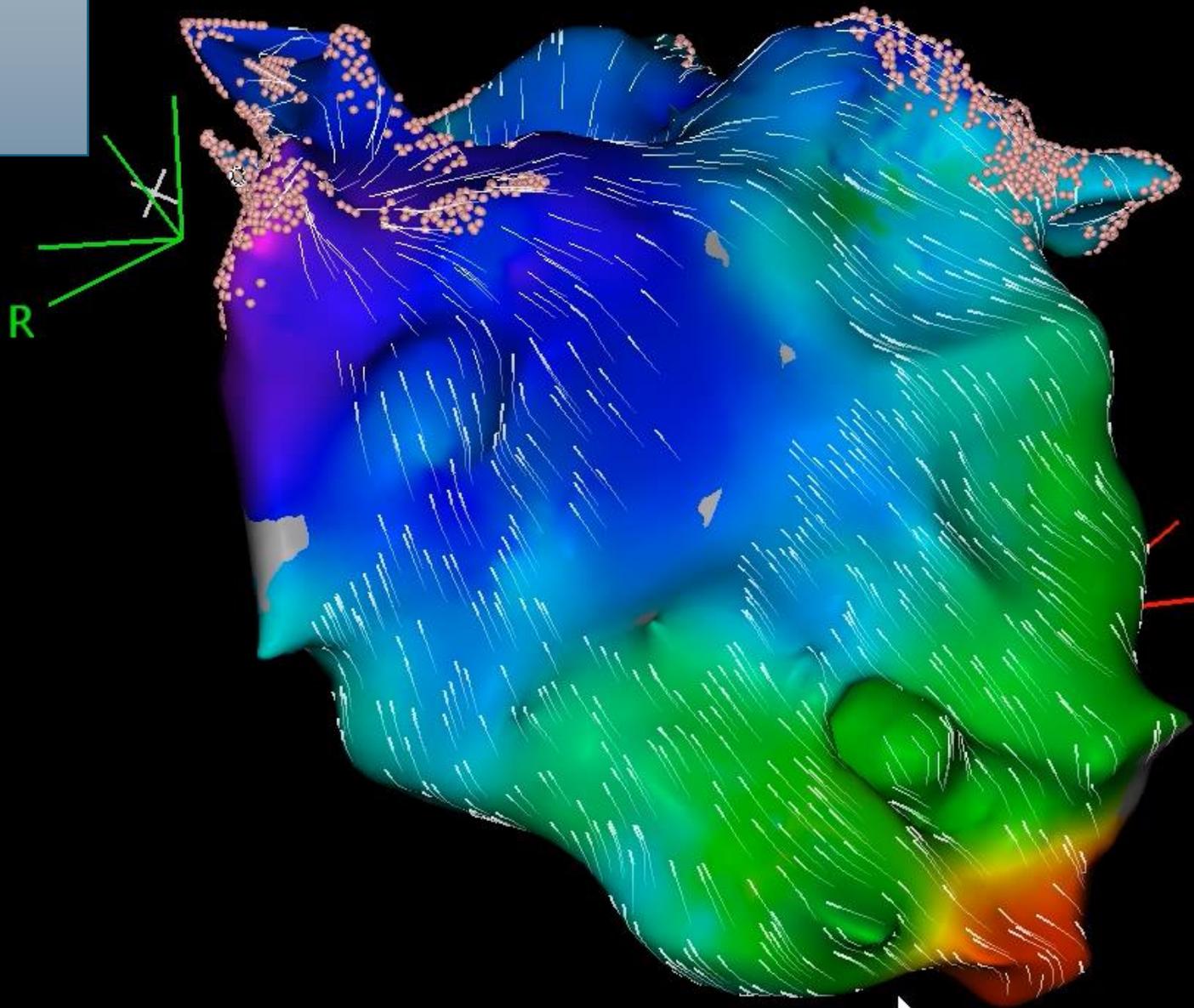
Cranial: 0 °

Muž, 82 let
Referován k RFA pro AT
(dosud bez ablace)

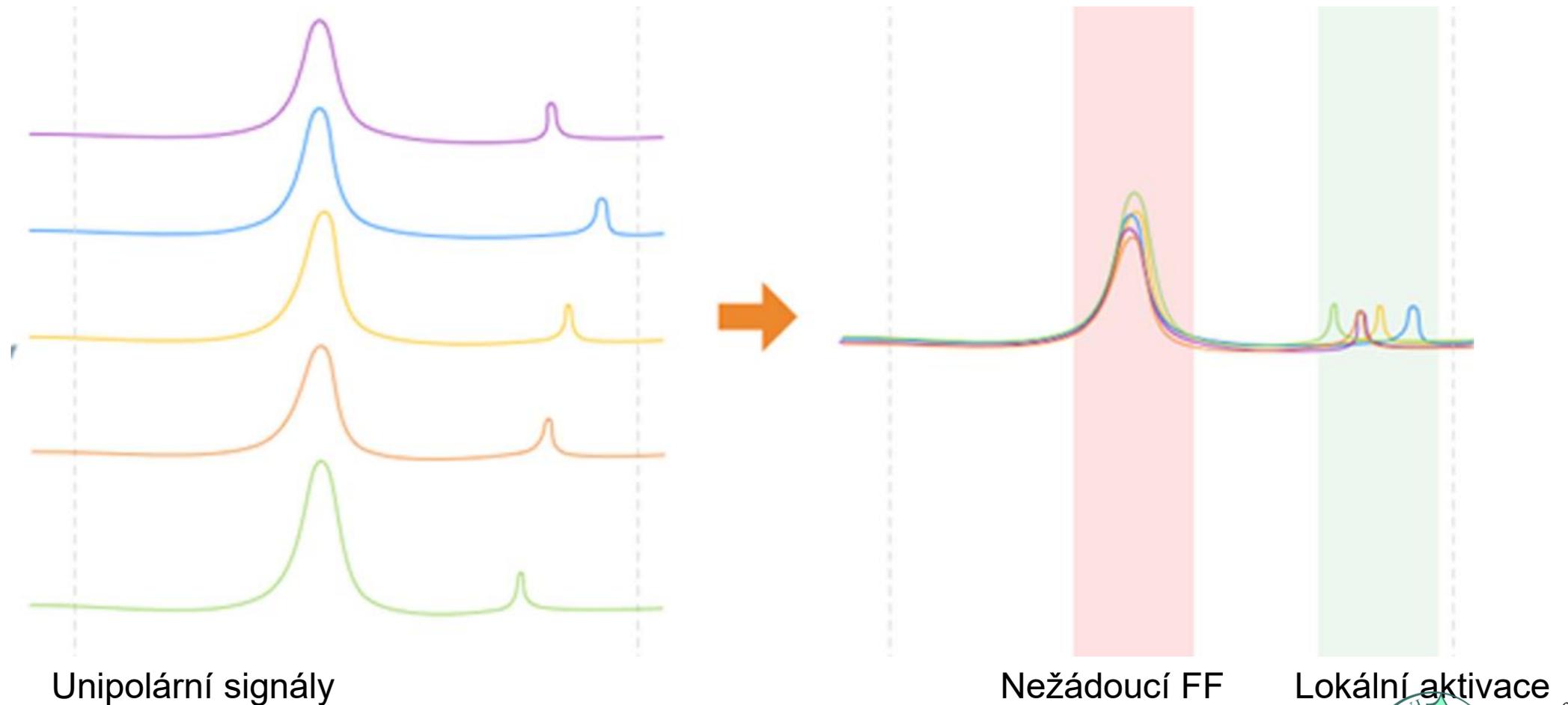


14:59:12.090 04.09.2025

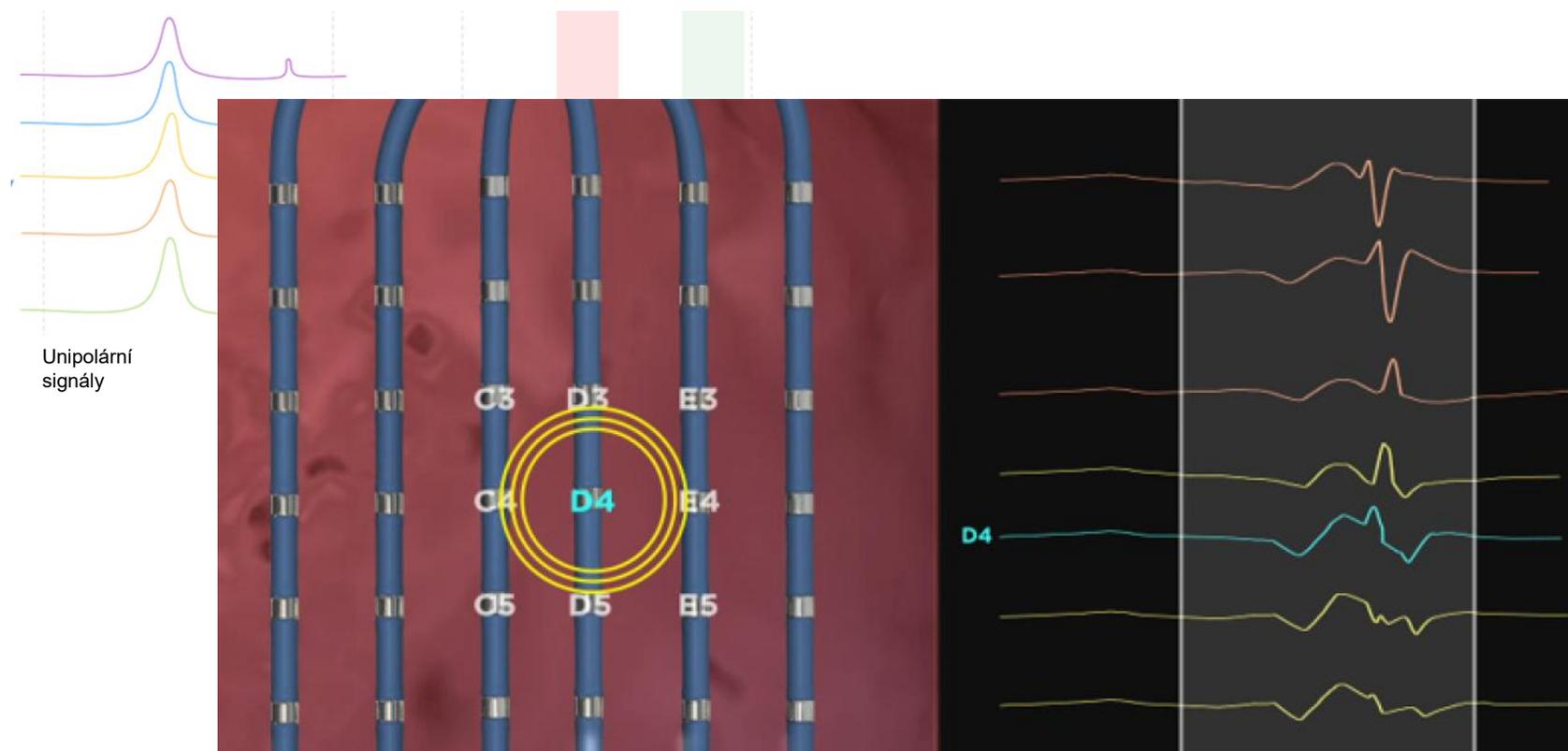
Žena, 74 let
Parox FiS
FAT po PVI



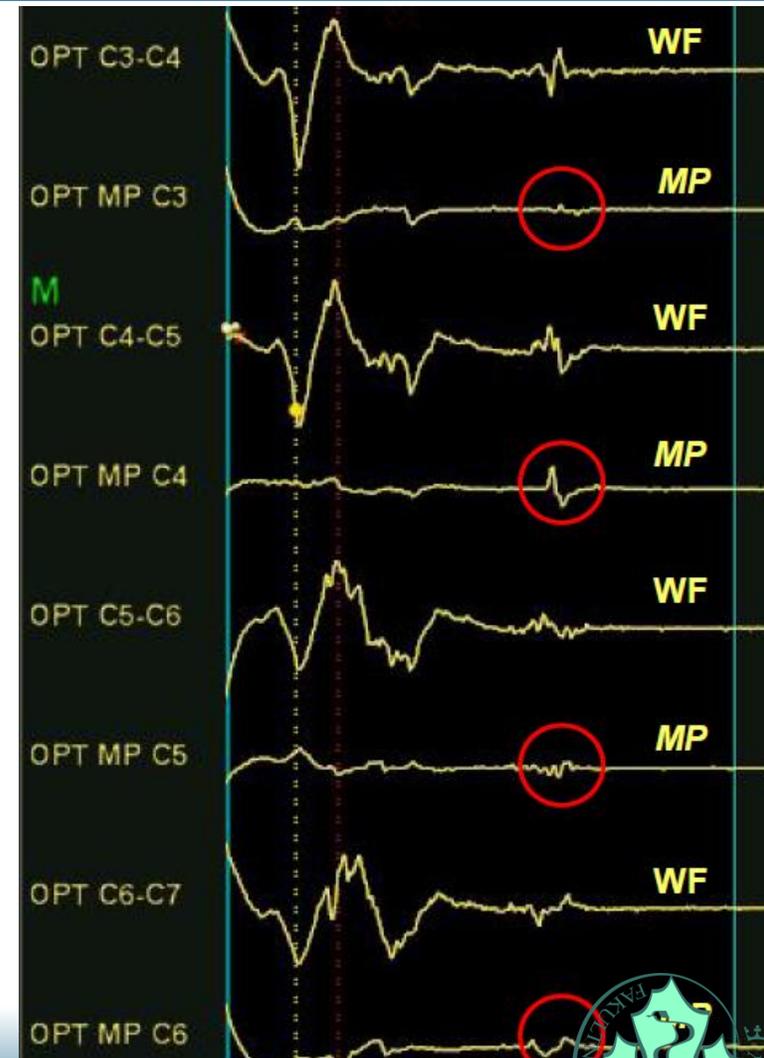
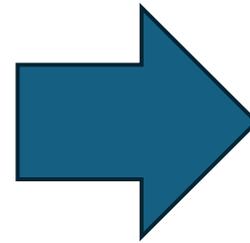
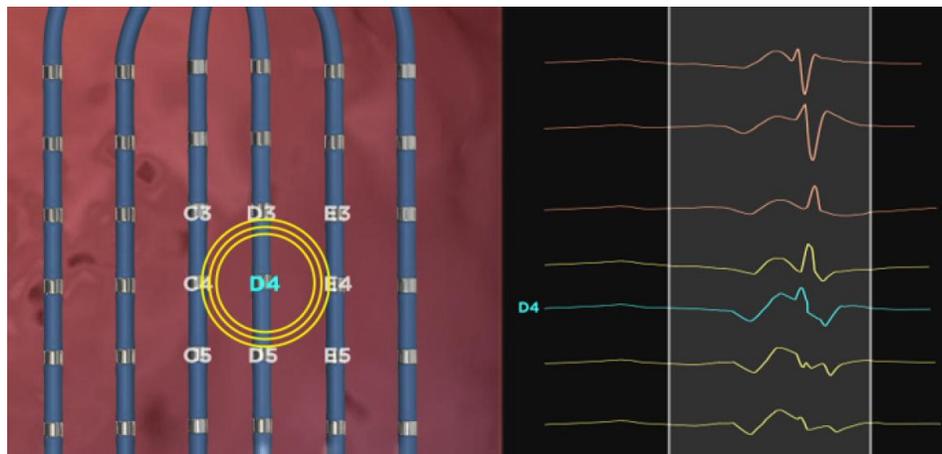
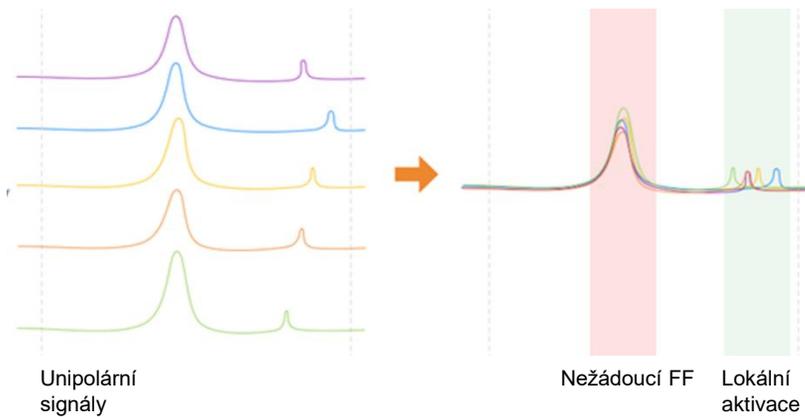
Multipolární mapování



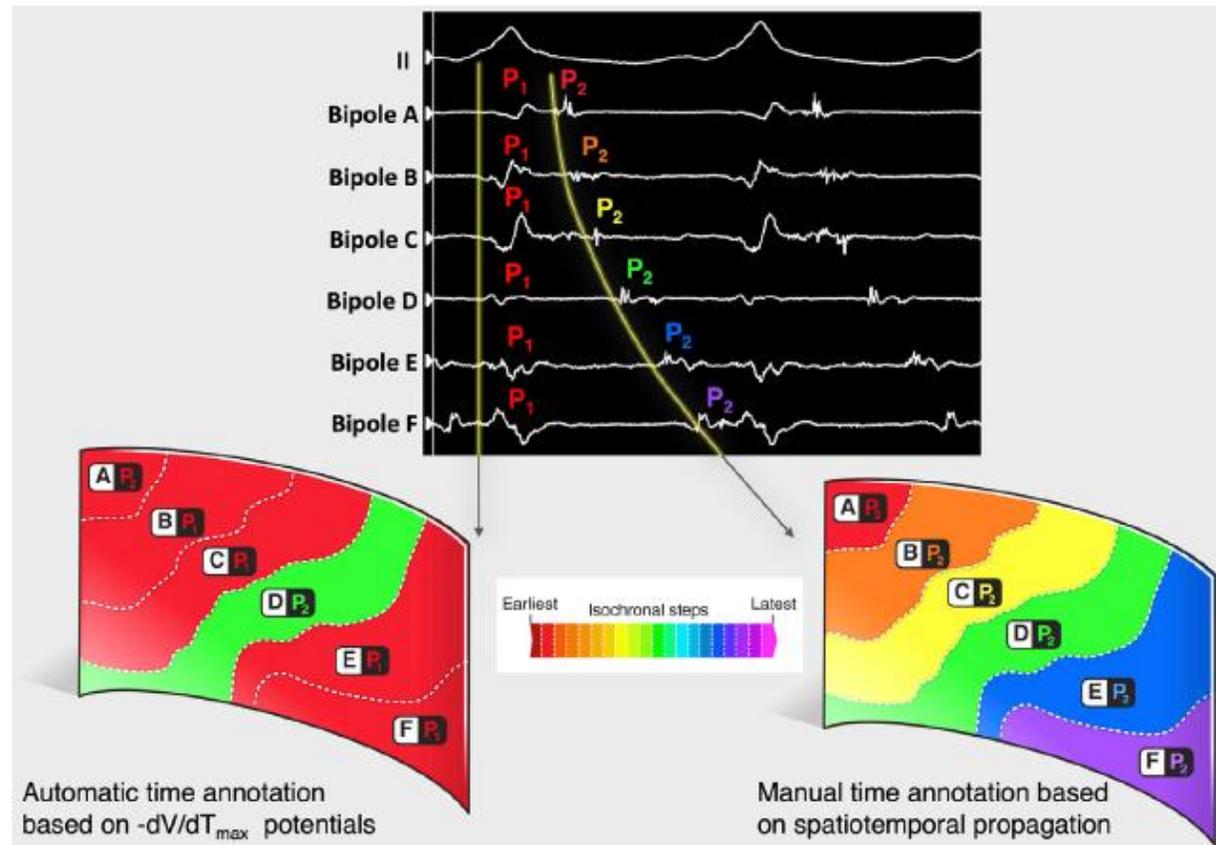
Multipolární mapování



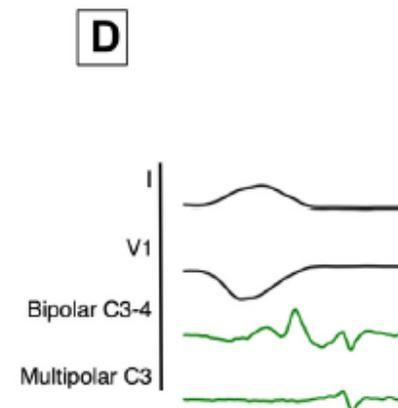
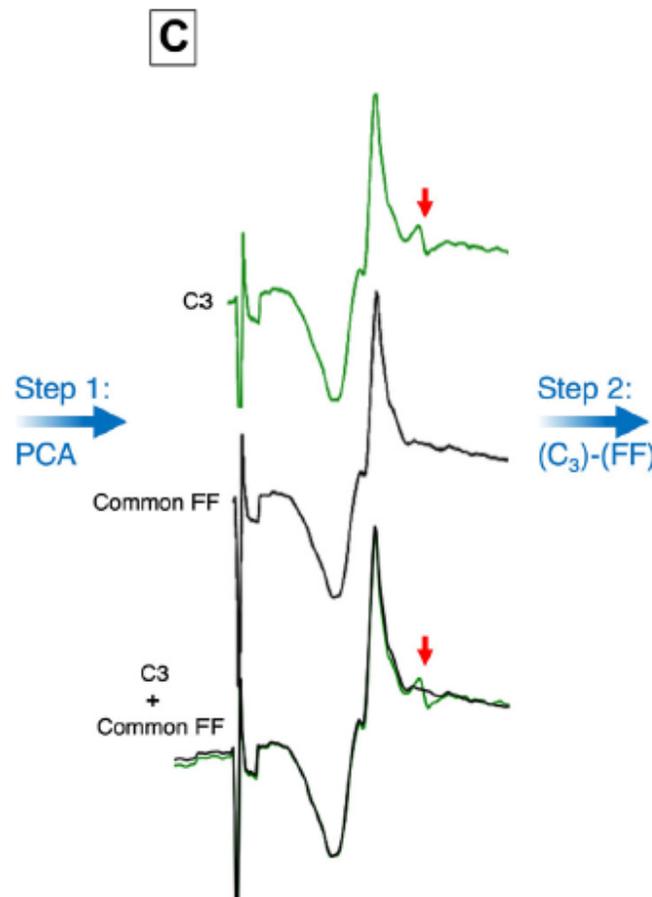
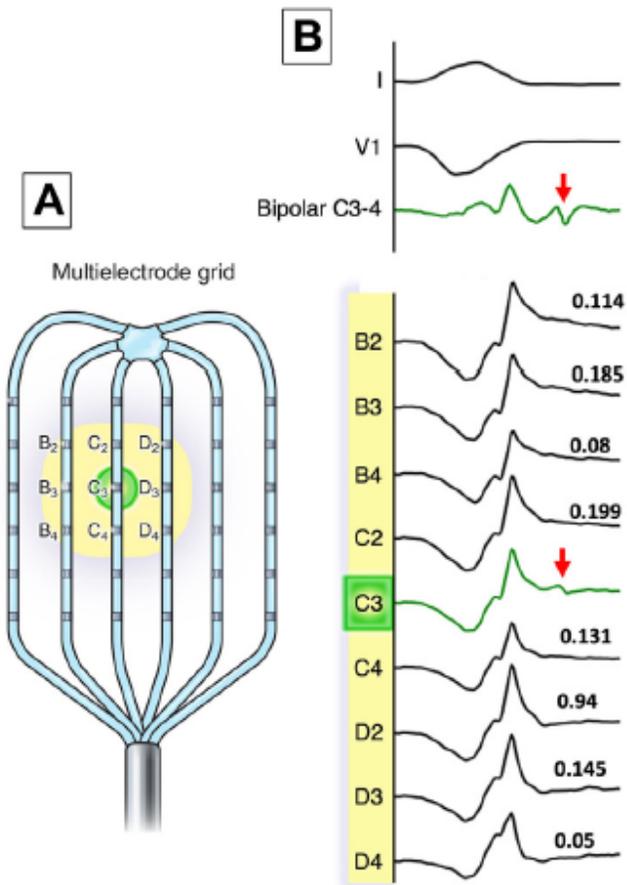
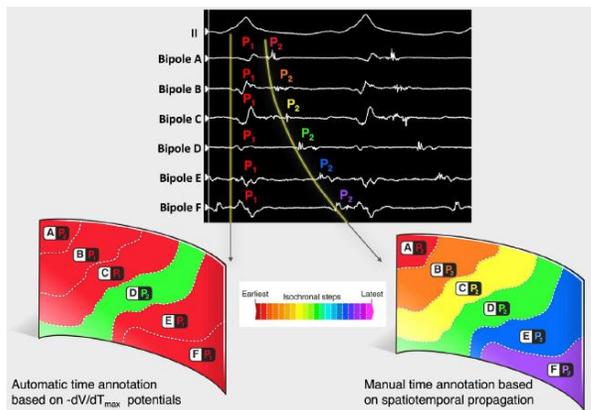
Multipolární mapování



Multipolární mapování



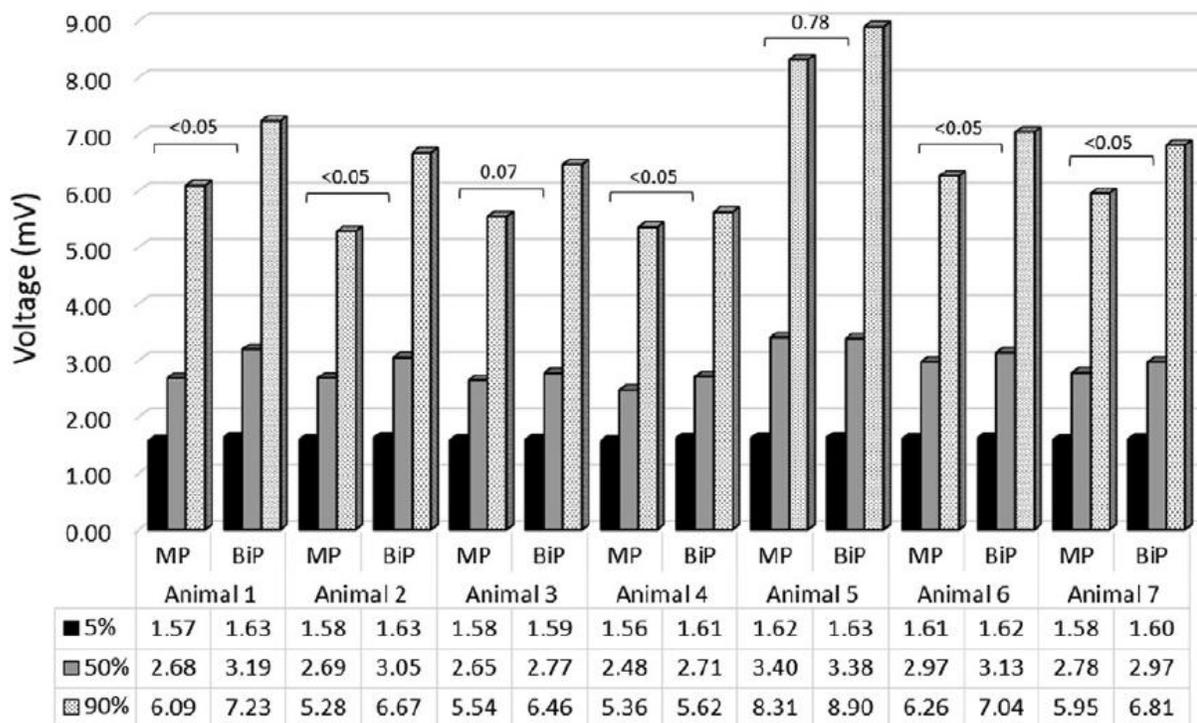
Multipolární mapování



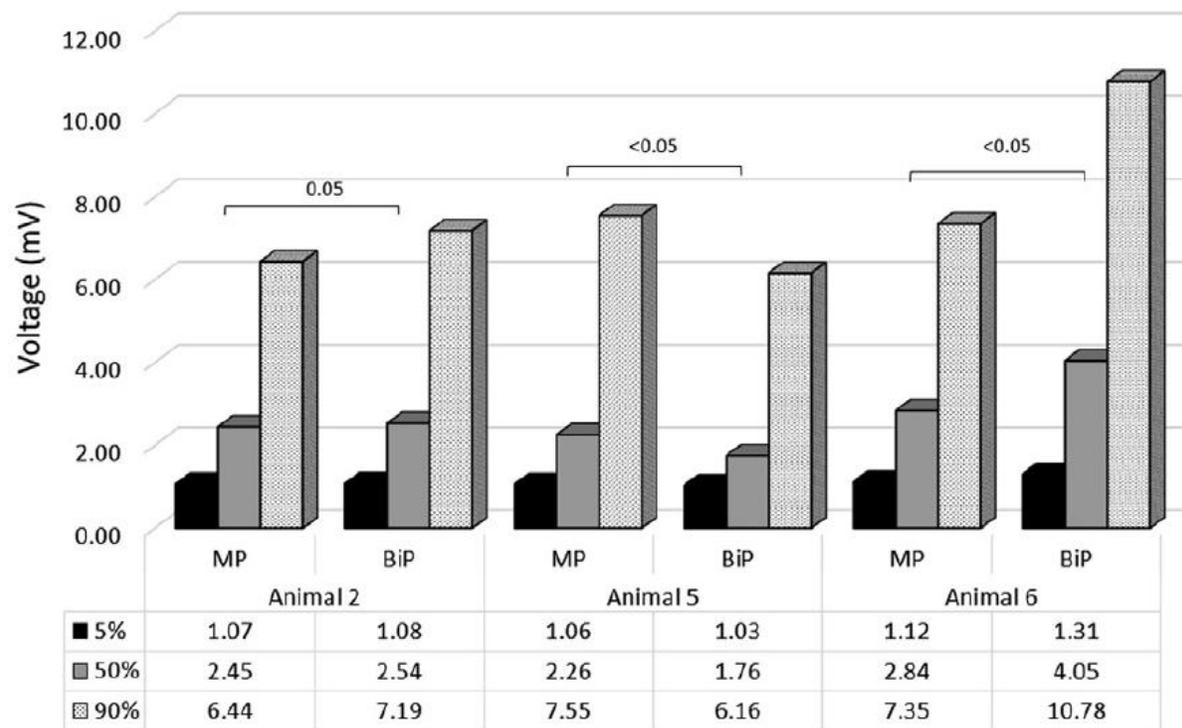
PCA = Principal Component Analysis

Multipolární mapování

Endocardial Voltage Distribution

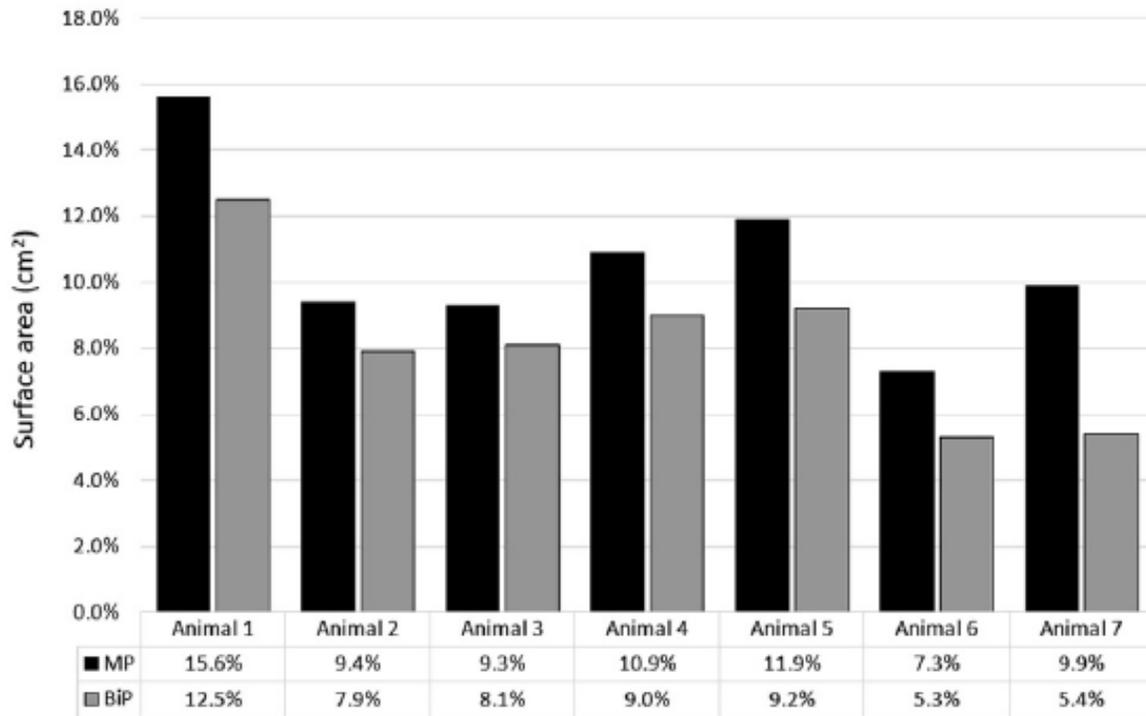


Epicardial Voltage Distribution

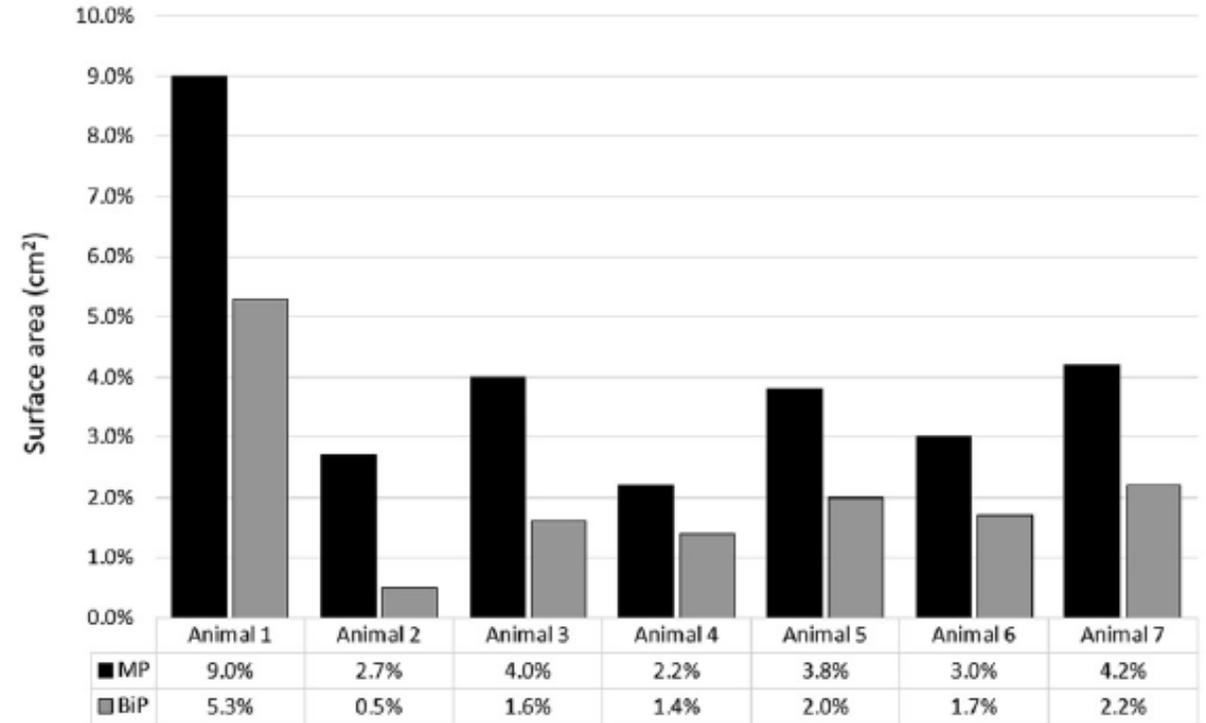


Multipolární mapování

Low Voltage (<1.5Mv)

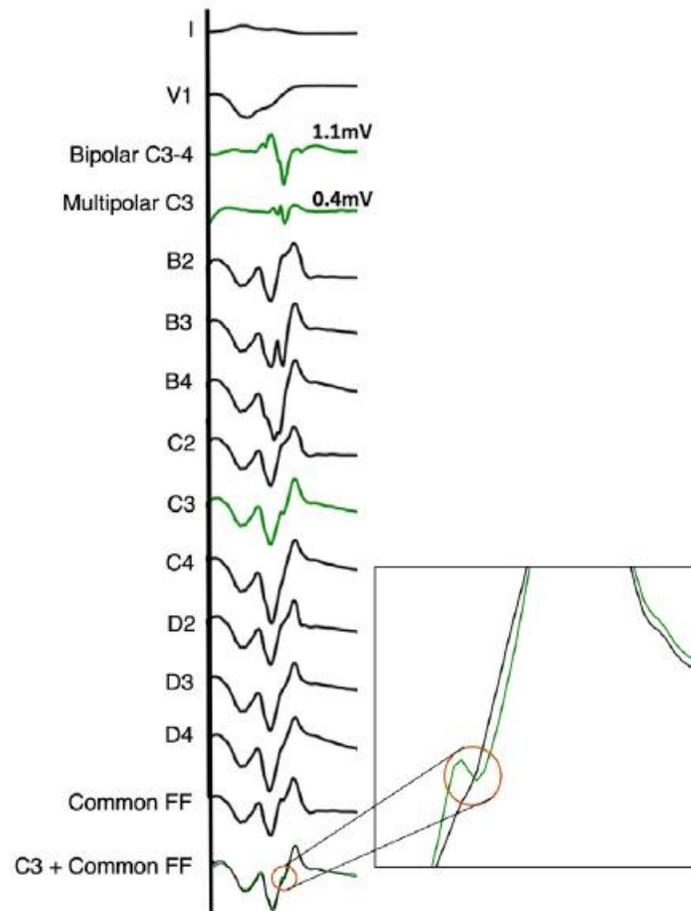
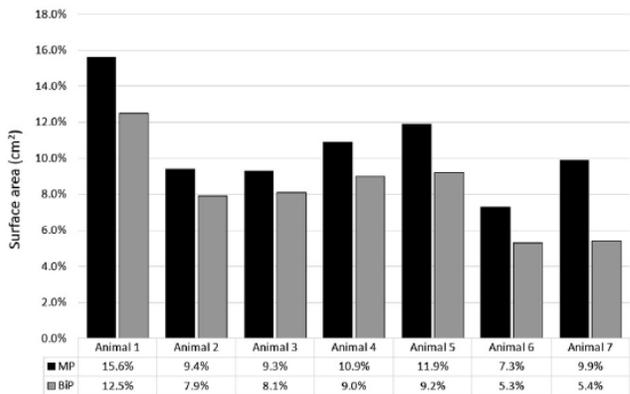


Very Low Voltage (<0.5Mv)

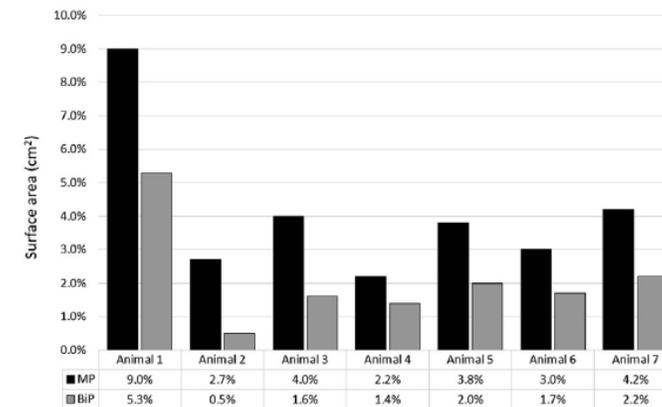


Multipolární mapování

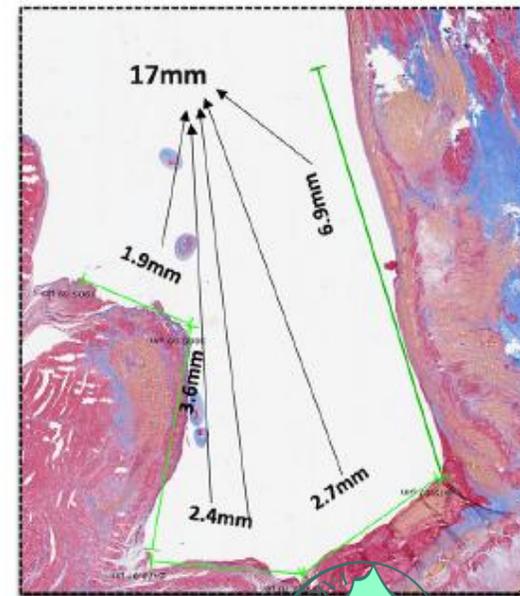
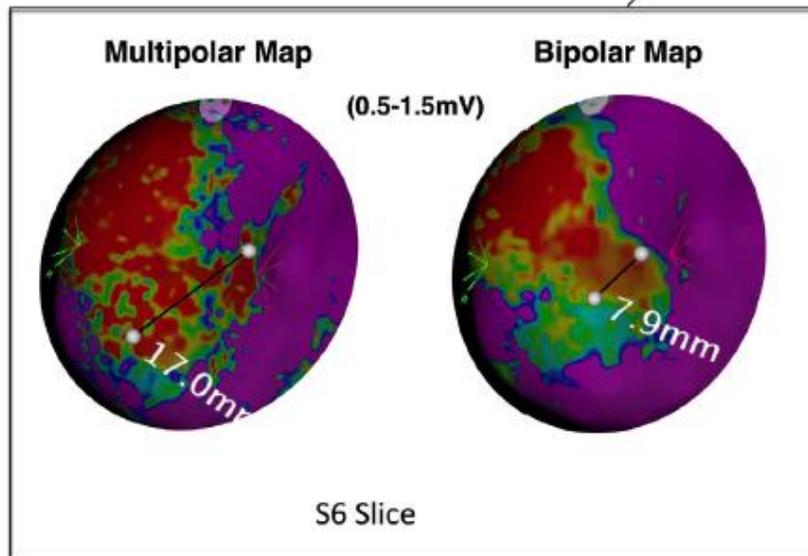
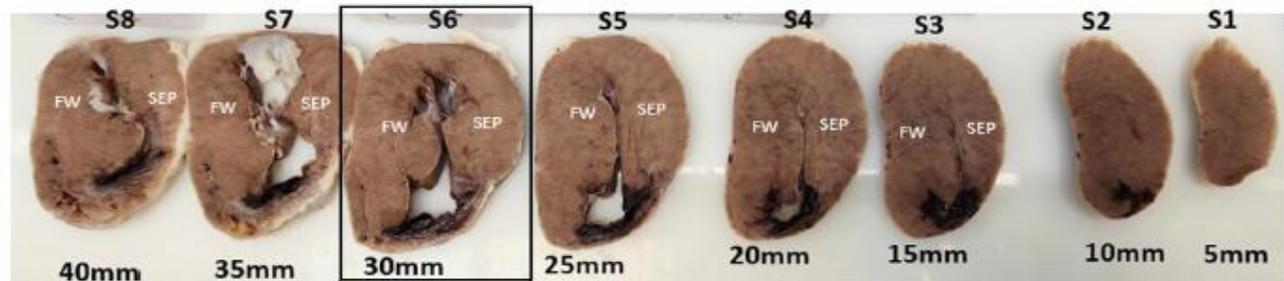
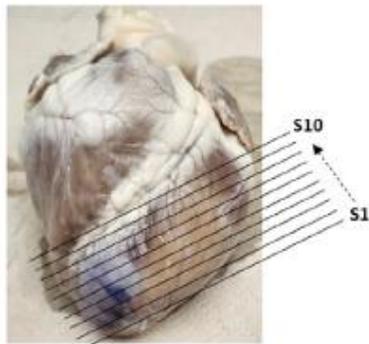
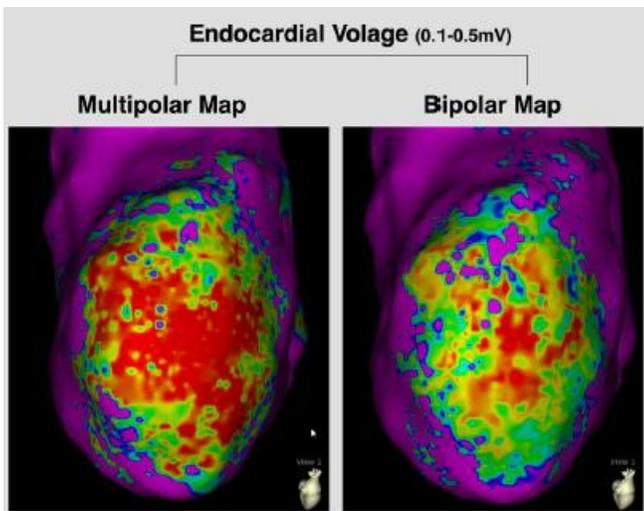
Low Voltage (<1.5Mv)



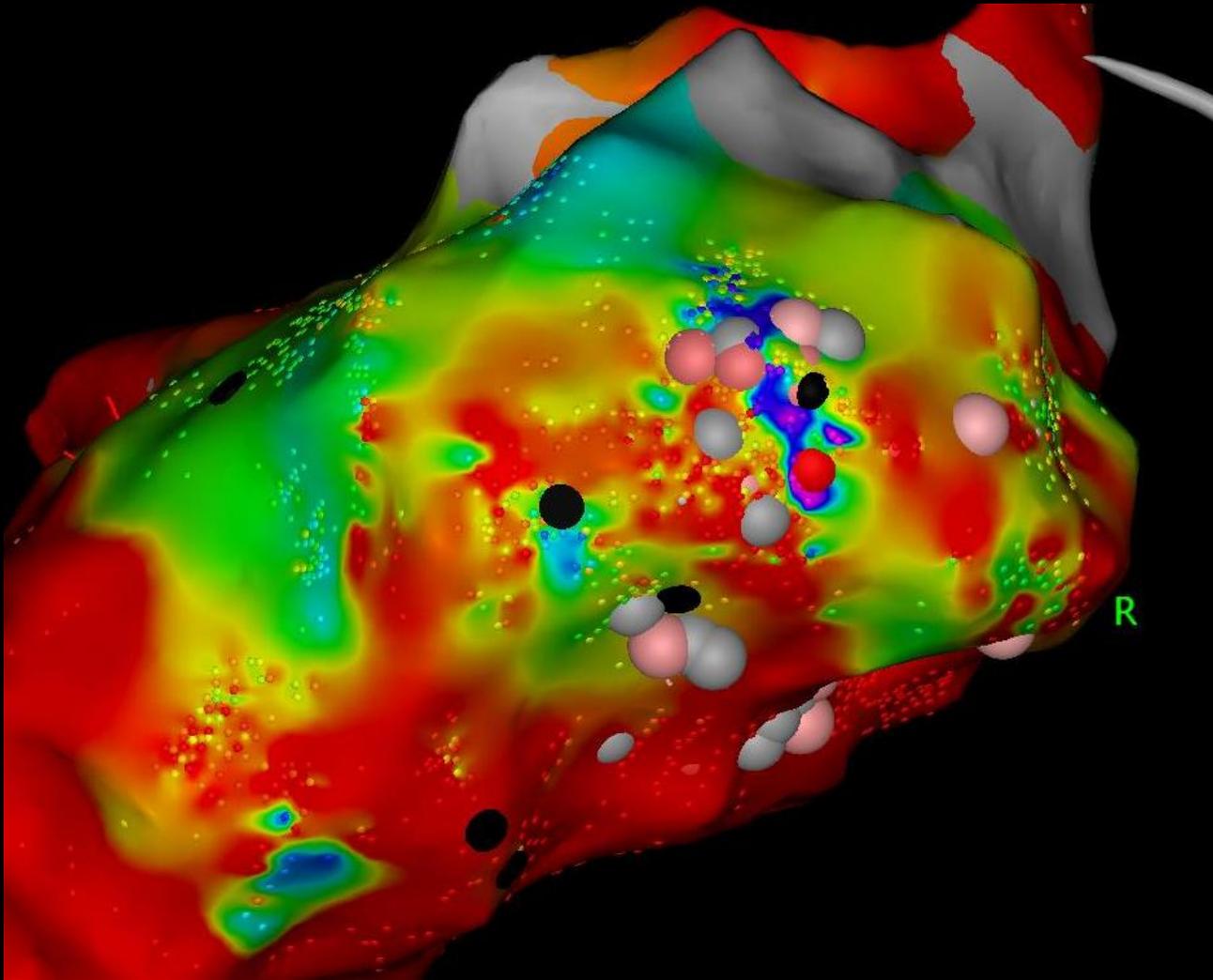
Very Low Voltage (<0.5Mv)



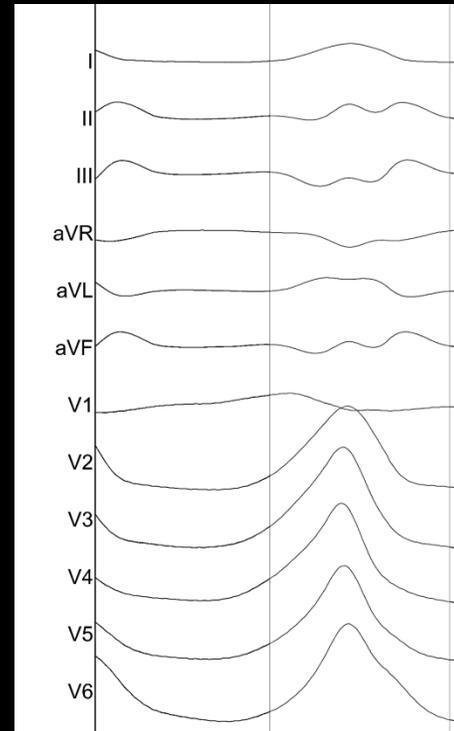
Multipolární mapování



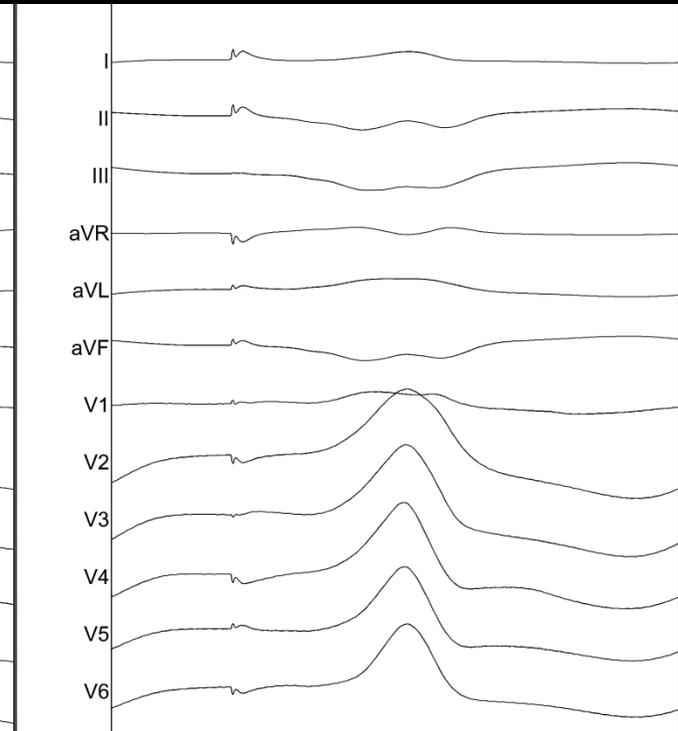
Muž, 72 let
Po IM posterolaterálně
EF LK 30%

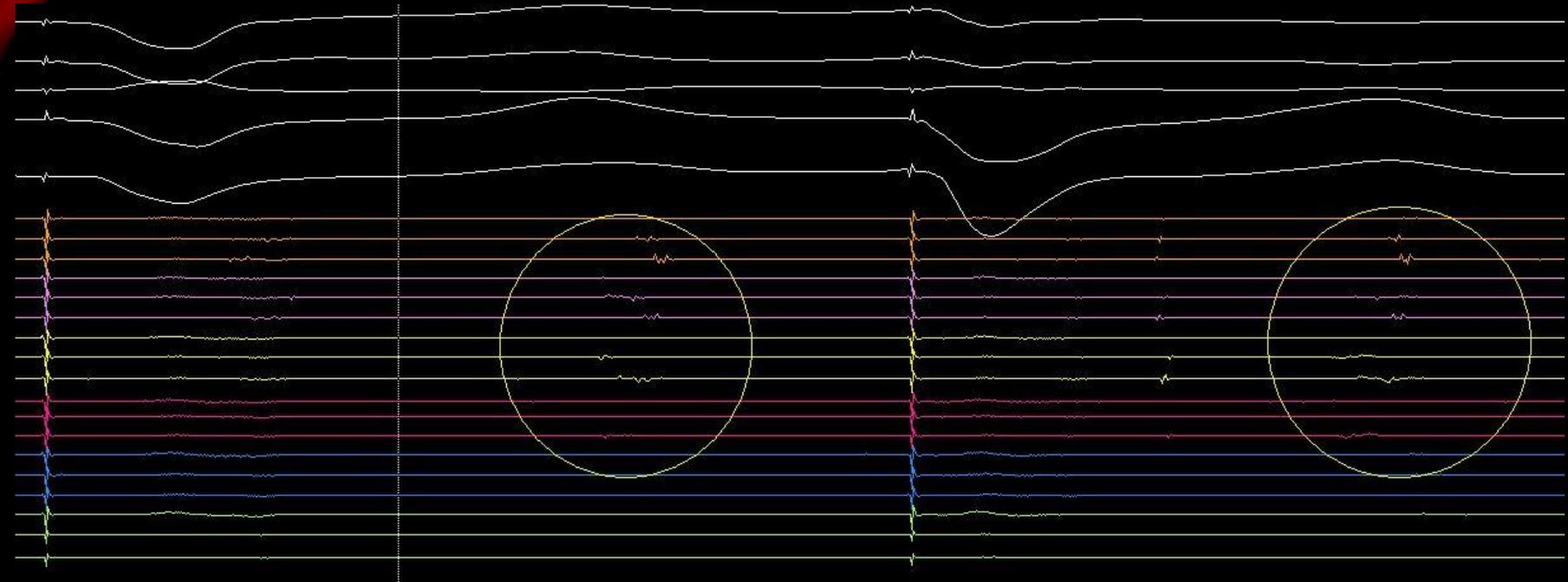
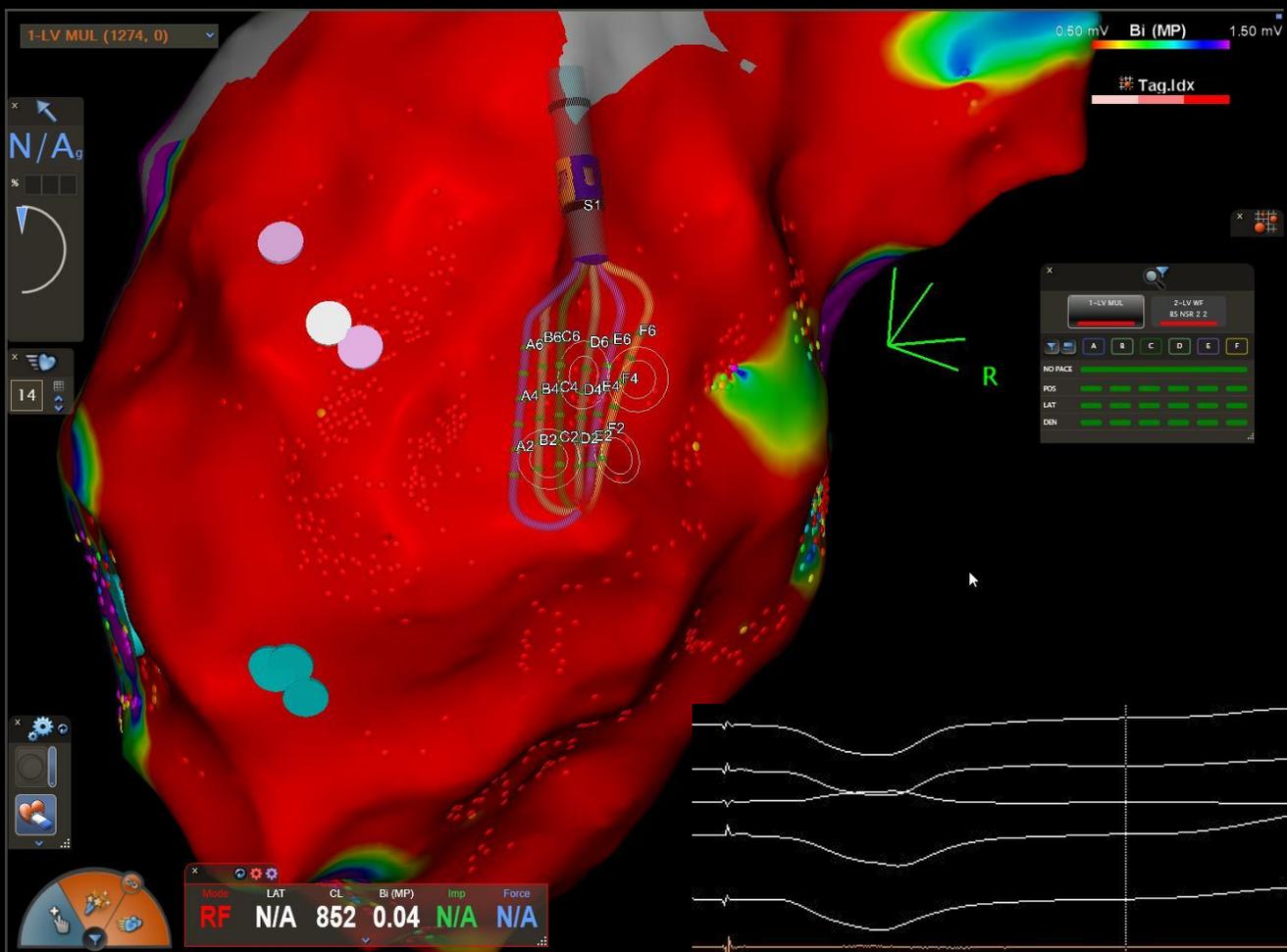


Clinical

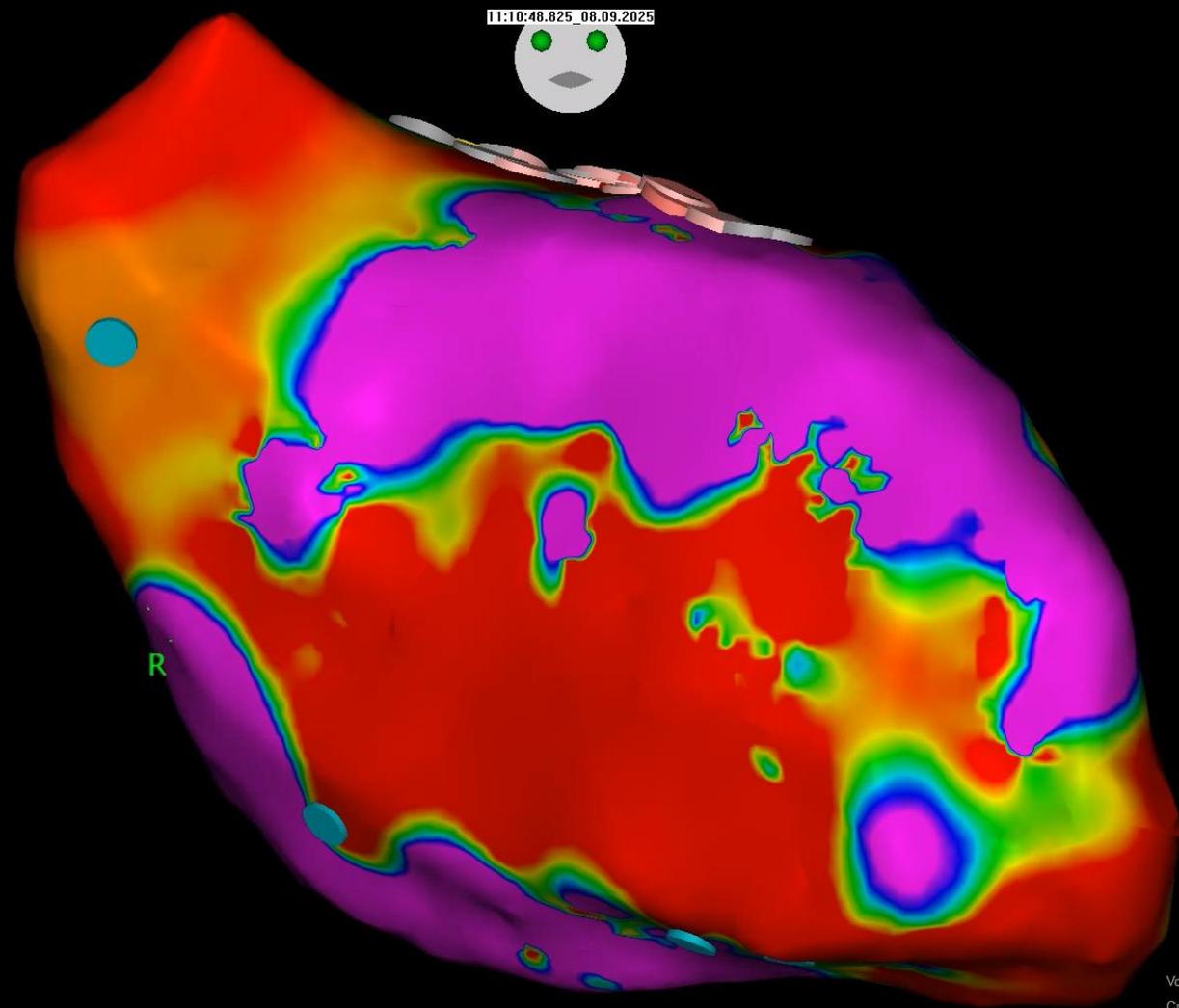
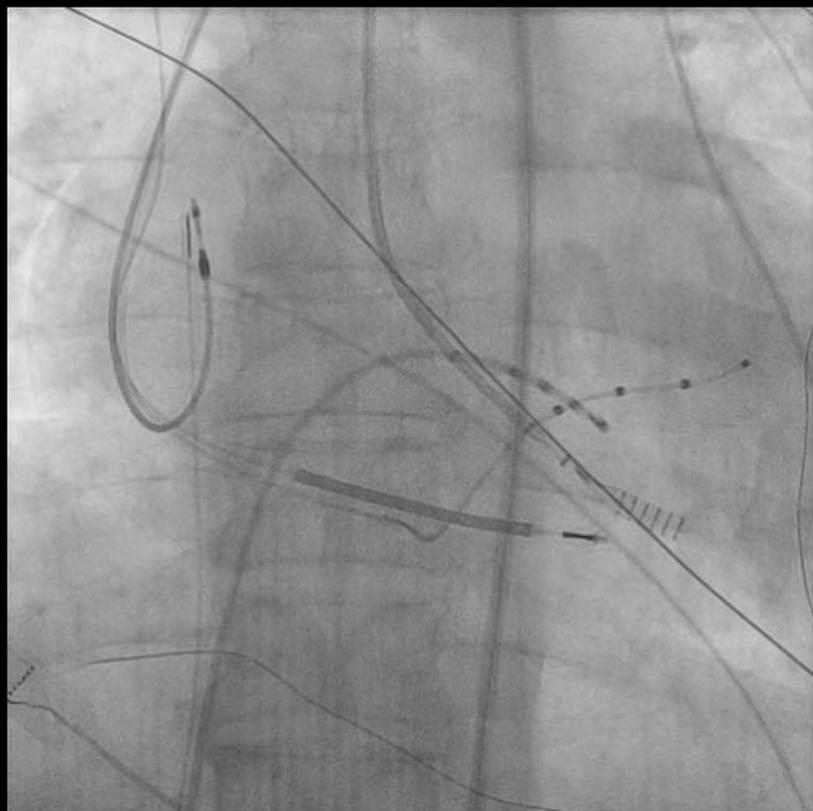


Pacemapping



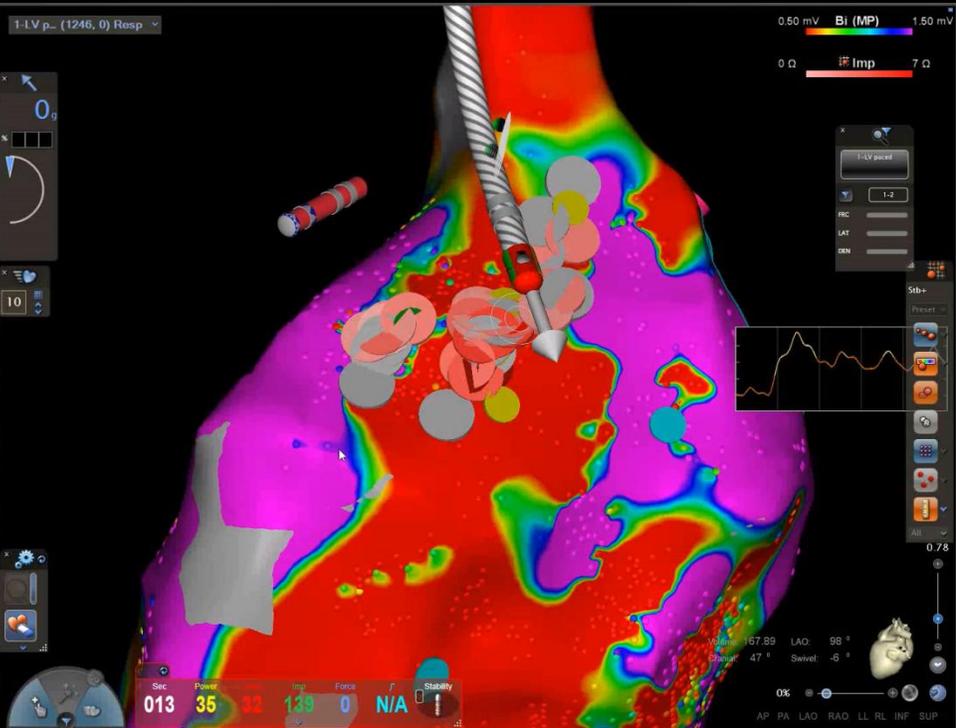


Muž, 47 let, NIKMP, LVEF 30%
Referován k RFA pro VT
Již po 2x RFA
MRI před 4 lety s LGE intramyokardiálně v
oblasti IVS



CL Bi (MP) Imp Force

Volume: 156.5
Cranial: 0



| N/A | N/A | Loc | N/A | N/A | N/A | N/A | N/A |
|------------|----------|--------------|----------|---------|-----------|--------------|-----|
| CL | LAT (ms) | Bi (MP) (mV) | µBi (mV) | Imp (Ω) | Force (g) | Complex (ms) | |
| 200 mm/sec | | | | | | | |

| | Bi (MP) | Elect. | CL | F... | Tag | Type | Time | Comment |
|----|---------|-----------|-----|------|-----|------|----------|---------|
| 20 | 4.19 | OPT MP A3 | 756 | N/A | | | 08:58:46 | |
| 21 | 2.26 | OPT MP A4 | 756 | N/A | | | 08:58:46 | |
| 22 | 0.16 | OPT MP C5 | 756 | N/A | | | 08:58:46 | |
| 23 | 7.52 | OPT MP A4 | 785 | N/A | | | 08:58:47 | |
| 24 | 0.98 | OPT MP C5 | 785 | N/A | | | 08:58:47 | |
| 25 | 1.05 | OPT MP C6 | 785 | N/A | | | 08:58:47 | |
| 26 | 9.82 | OPT MP A1 | 746 | N/A | | | 08:58:48 | |
| 27 | 11.08 | OPT MP A3 | 746 | N/A | | | 08:58:48 | |
| 28 | 10.55 | OPT MP A1 | 753 | N/A | | | 08:58:49 | |
| 29 | 10.27 | OPT MP A3 | 753 | N/A | | | 08:58:49 | |
| 30 | 5.06 | OPT MP A3 | 696 | N/A | | | 08:58:51 | |
| 32 | 5.4 | OPT MP A6 | 696 | N/A | | | 08:58:51 | |
| 33 | 6.9 | OPT MP A1 | 756 | N/A | | | 08:58:52 | |
| 34 | 3.41 | OPT MP A3 | 756 | N/A | | | 08:58:52 | |



| | Bi | Elect. | CL | F... | Tag | Type | Time | Comment |
|---|------|-----------|-----|------|-----|------|----------|---------|
| 1 | 4.12 | OPT MP A3 | 758 | N/A | | | 08:58:33 | |
| 2 | 4.1 | OPT MP A4 | 758 | N/A | | | 08:58:33 | |

Specifika manipulace v levé komoře

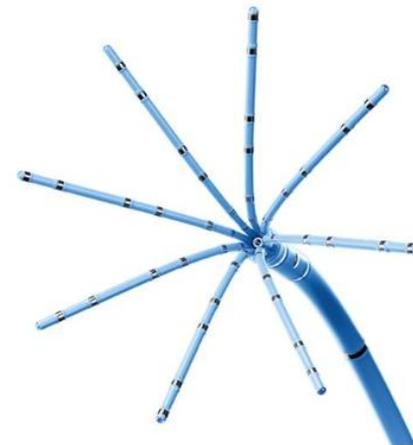
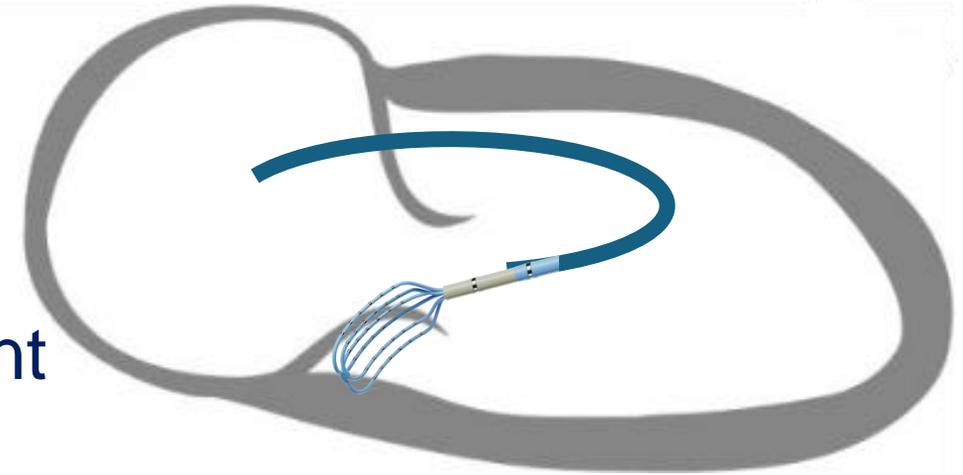
Obtížněji mapovatelné bazální segmenty



Při retrográdním přístupu popsán entrapment v subvalvulárním aparátu Mi chlopně



Méně ektopie indukované manipulací v porovnání s jinými multipolárními mapovacími katetry



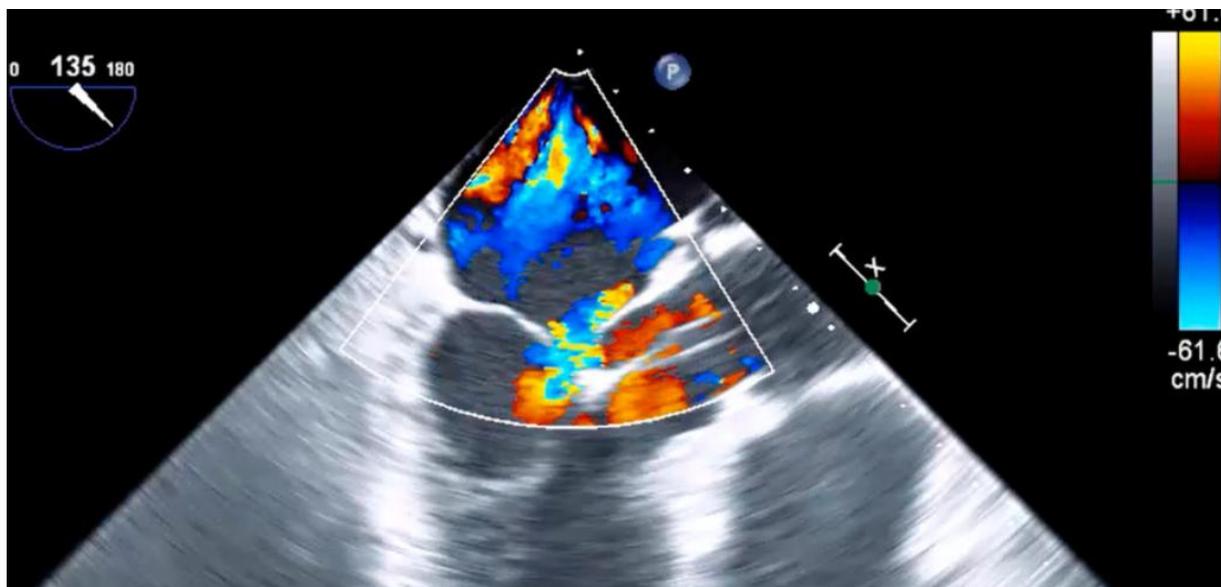
Riziko entrapmentu

1 reportovaný případ (HRS 2024)

ABSTRACT ONLY · Volume 21, Issue 5, Supplement , S316-S317, May 2024

PO-02-027 DEER STUCK IN A FENCE; ENTRAPMENT OF HIGH-DENSITY GRID MAPPING CATHETER (OPTRELL™) IN MITRAL SUBVALVULAR APPARATUS

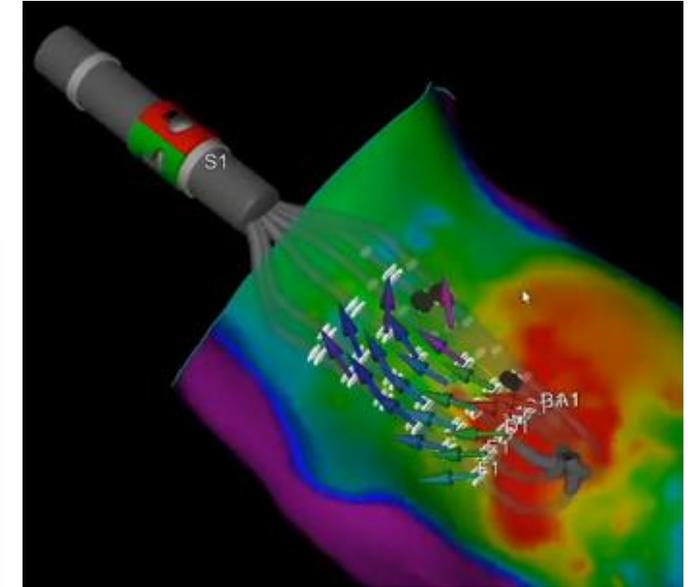
[Usman Bhatti](#) · [Ethan Hacker](#) · [Jonathan M. Burnett](#) · [Sunny S. Po](#)



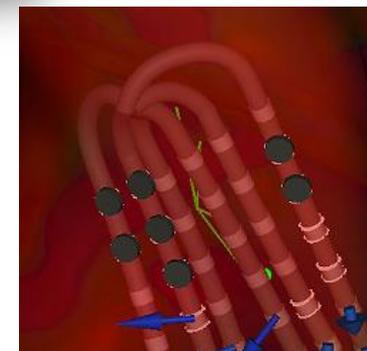
Vektory lokální rychlosti

- Směr
- Rychlost
 - delší šipky značí vyšší rychlost vedení
- Časnost
 - Barvy vektorů reprezentují časnost v rámci signálů aktuálně snímaných katetrem
- Oblast denzní jizvy
 - Šedé disky, zobrazující se pouze při kontaktu (TPI)

Pomalé



Rychlé



2-2-PR... (522, 0) Resp

-85 ms LAT 81 ms

Tag.Idx

252 J Q+ T.Energy 333 J



Navigation controls including a 3D coordinate system (x, y, z) and a zoom slider set to 1g.

Tool palette with 17 icons for various surgical instruments and tools.

Settings and configuration icons for the simulation environment.

3D navigation controls including a hand icon for rotation and a mouse icon for zooming.

| Mode | LAT | CL | Bi (MP) | Imp | Force |
|------|-----|-----|---------|-----|-------|
| RF | N/A | 500 | 0.04 | N/A | 1 |

2-2-PREDLIN_izol...
 Stb+
 CDAF
 A B C D E F
 CL
 TPI
 POS
 LAT
 DEN

0.75
 All

Volume: 133.01 RAO: 11°
 Cranial: 7° Swivel: -16°

0% [Slider]

AP PA LAO RAO LL RL INF SUP

Závěrem



Výhody OPTRELL™ mapovacího katetru

1. Využití při mapování síňových i komorových arytmií
2. Multipolární mapování = kvalitnější diskriminace near-field signálů
3. Vizualizace informací on-line v EA mapě (směr aktivace, rychlost)
4. Nízké riziko indukce ektopie (komorové) při manipulaci v srdeční dutině



Nevýhody:

1. Obtížnější manipulace v určitých situacích (bazální segmenty LV)
2. Riziko entrapmentu

