



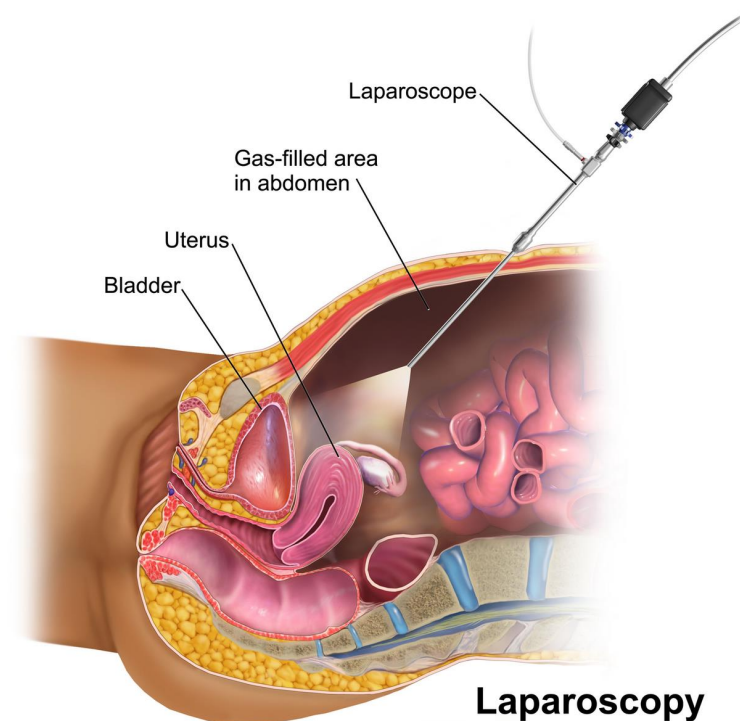
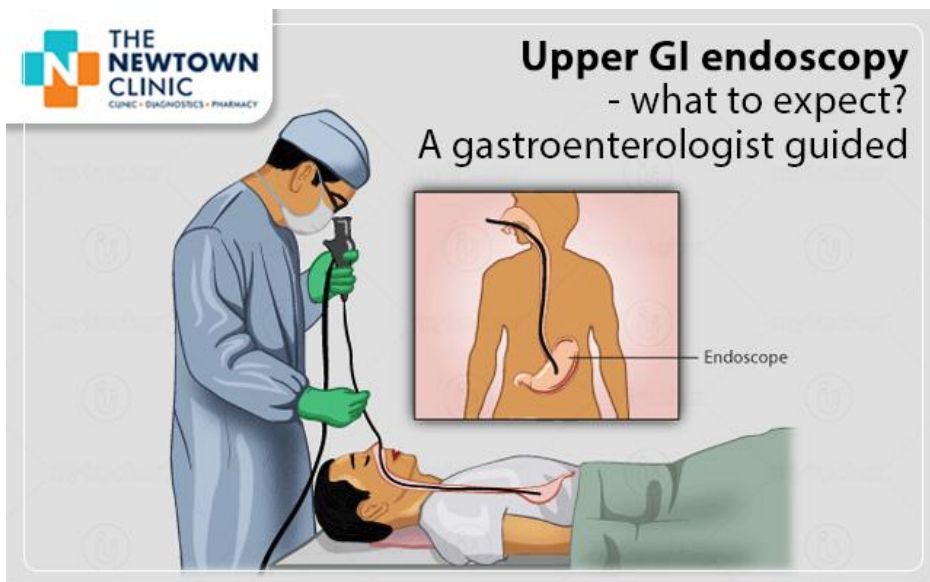
DÁVÁME INOVACÍM ŽIVOT



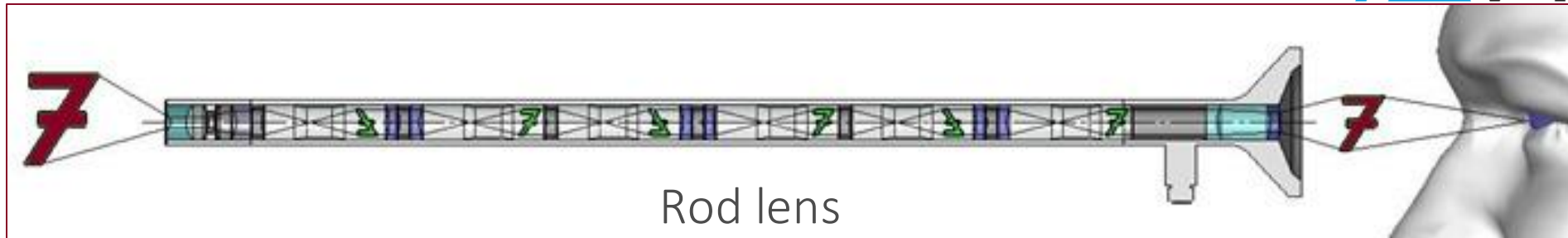
Endoskopie a laparoskopie v ČR 1990 – 2030

Laparoskopie vs. endoskopie

- Přístup přes malé řezy do dutiny břišní
- Přístup přes přirozené tělní otvory



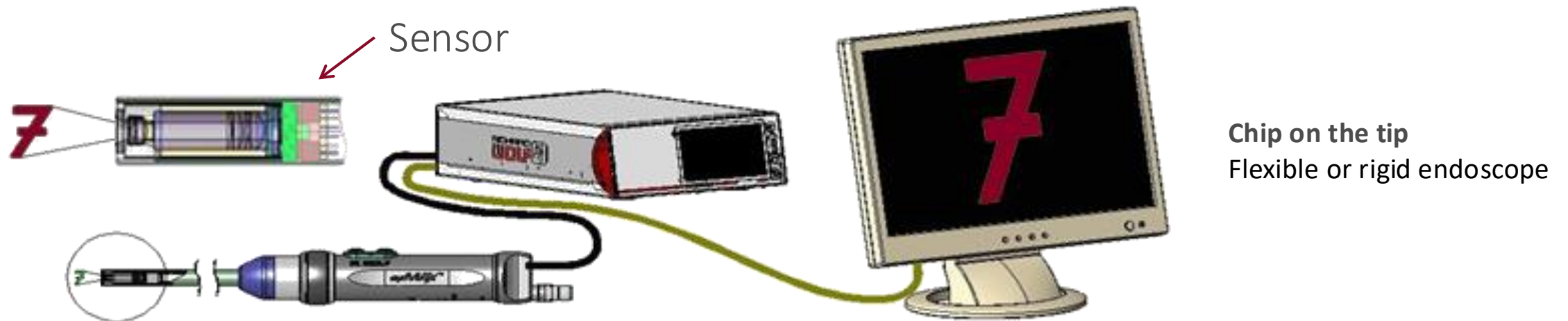
Rigidní vs. flexibilní



**Rigid rod lens
endoscope**

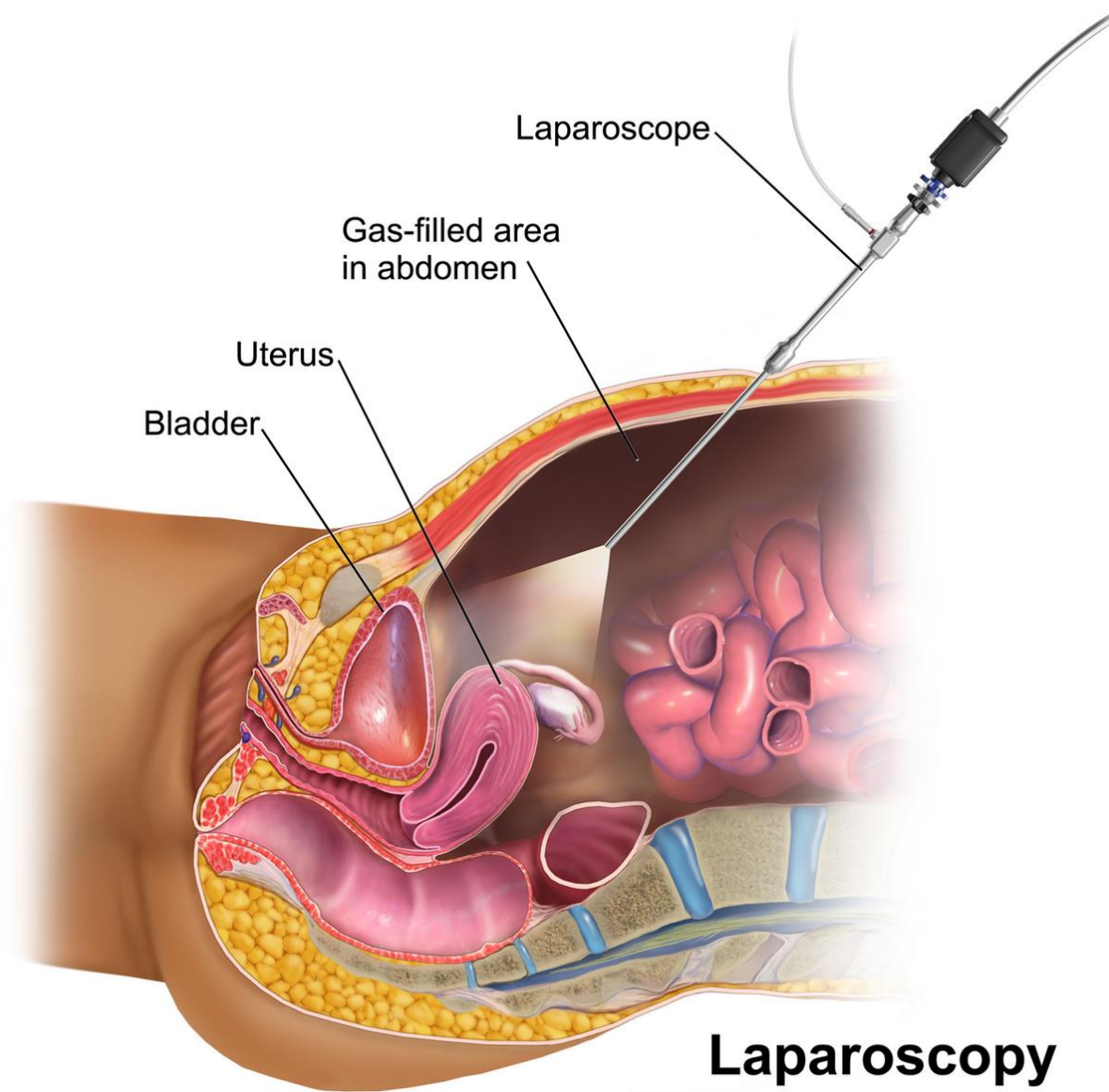


**Flexible fibre
endoscope**



Laparoskopie





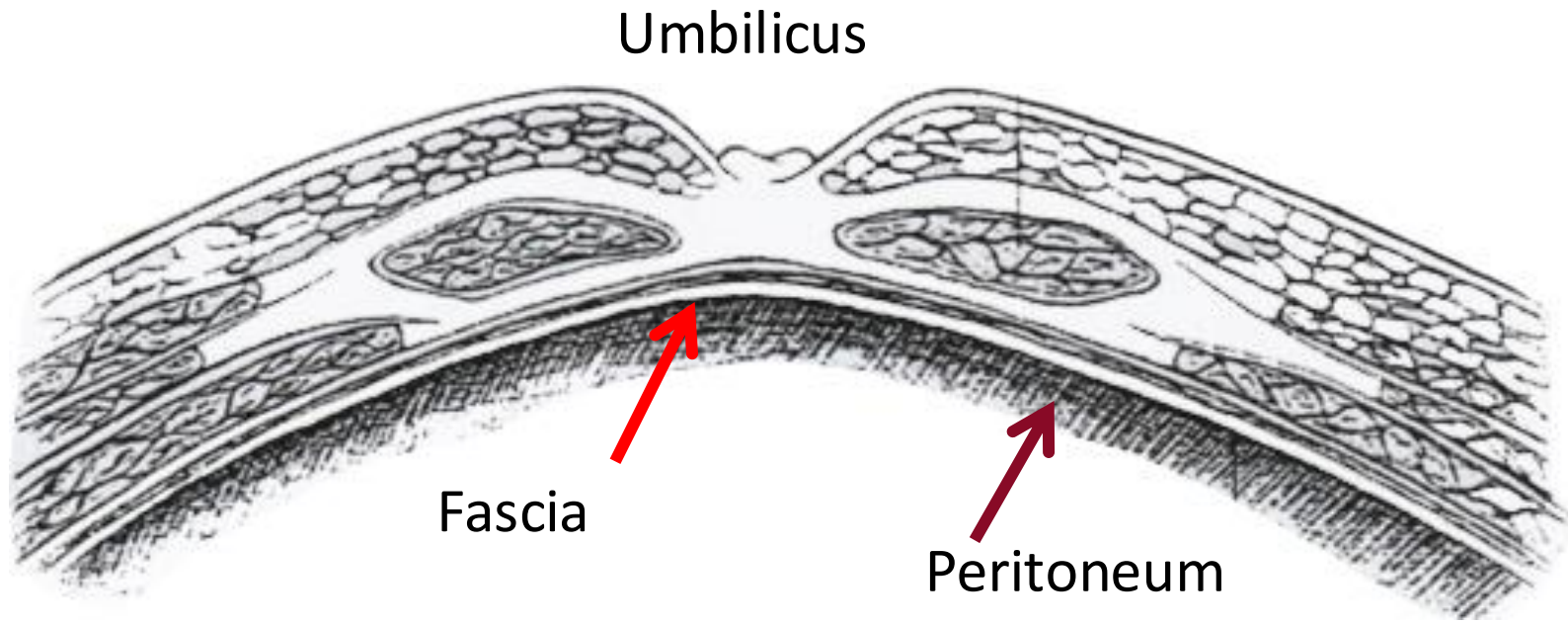
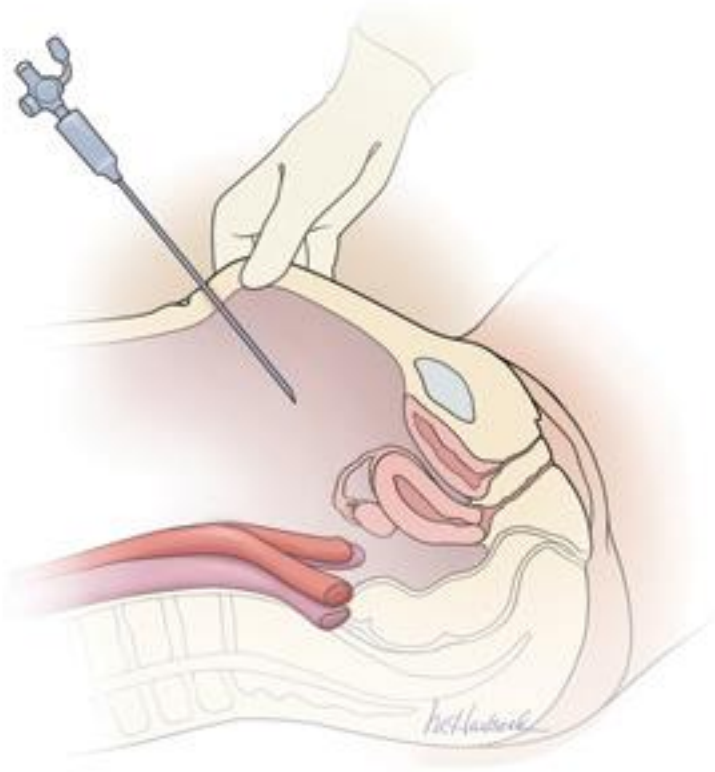
Laparoscopy



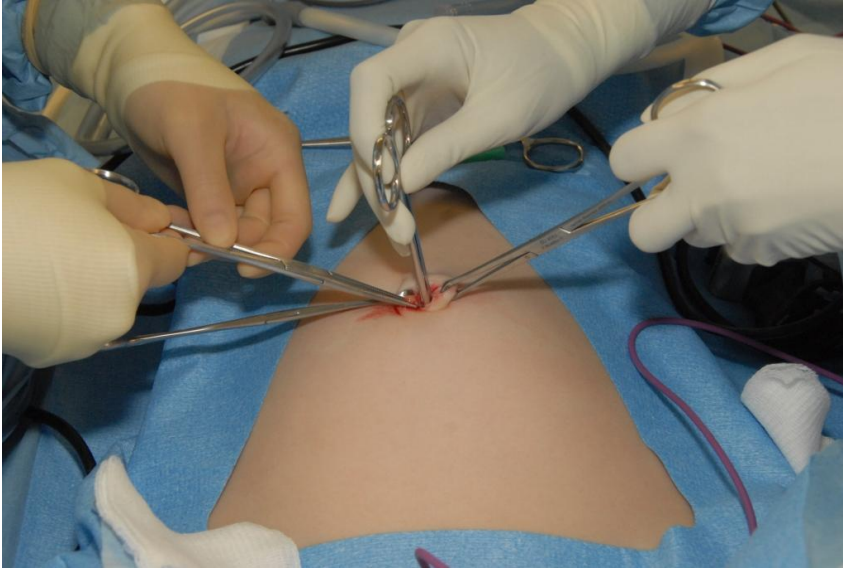


Primary Incision

The primary incision is usually at the umbilicus which is the thinnest point.



Mini-laparotomy



■ Alternative to Veress needle



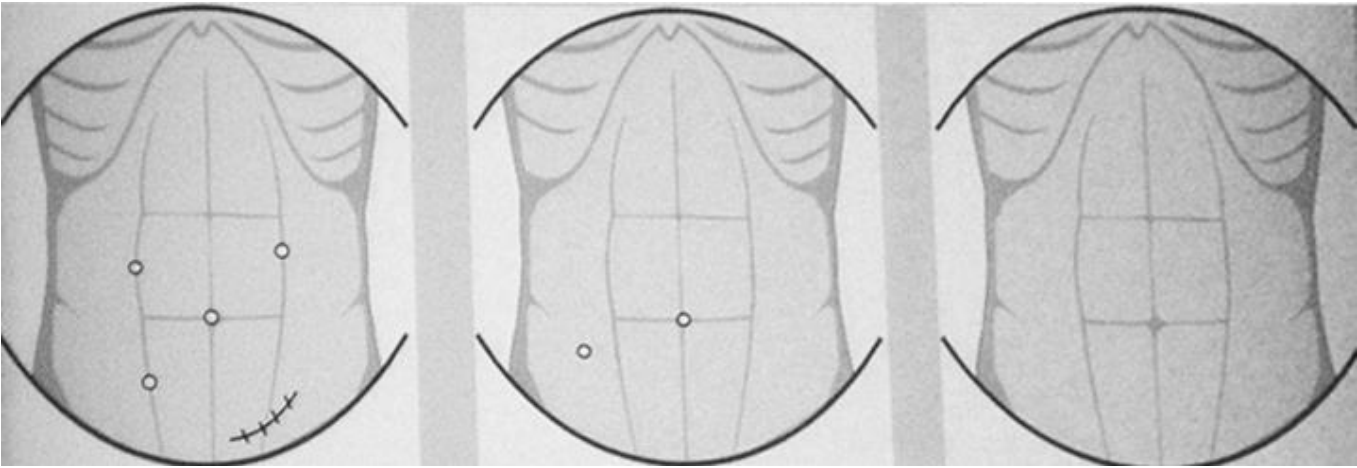
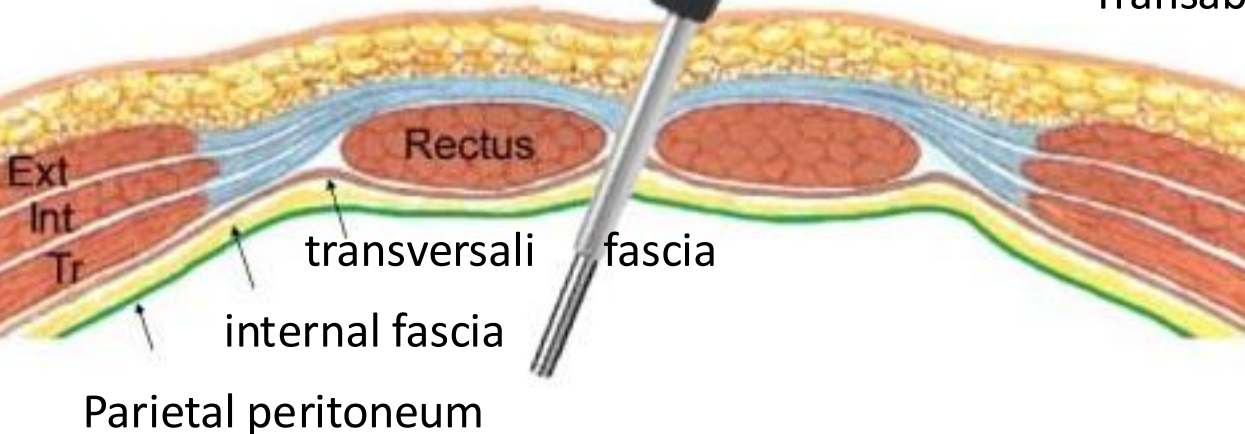
Creating the access



- Placing Veress needle
- Connect insufflator
- Replace Veress needle by trocar

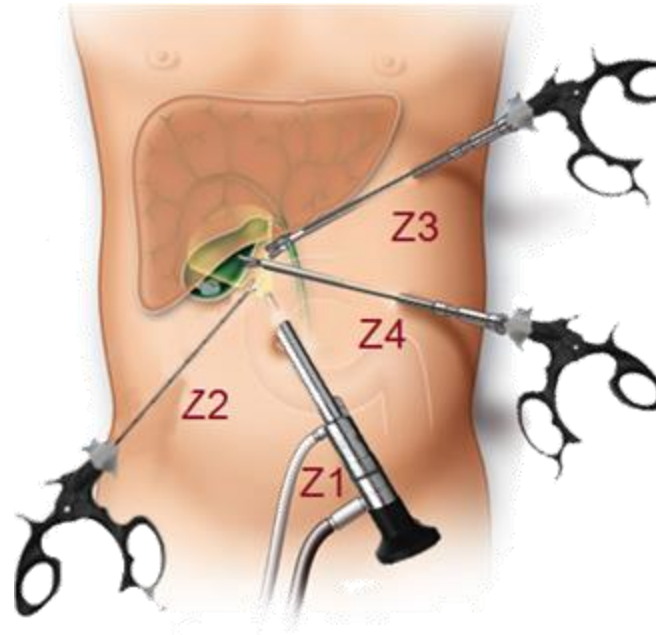
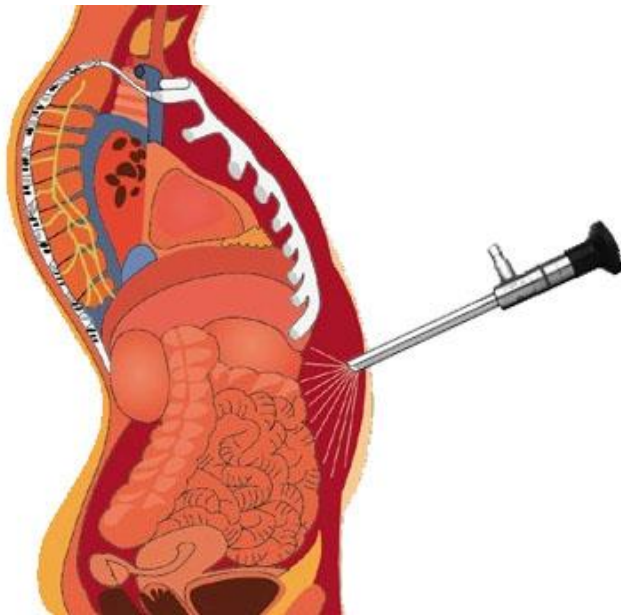
Approaches

External, internal and transversus muscles

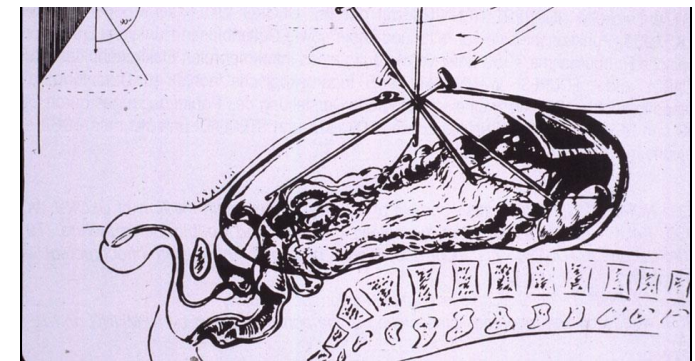
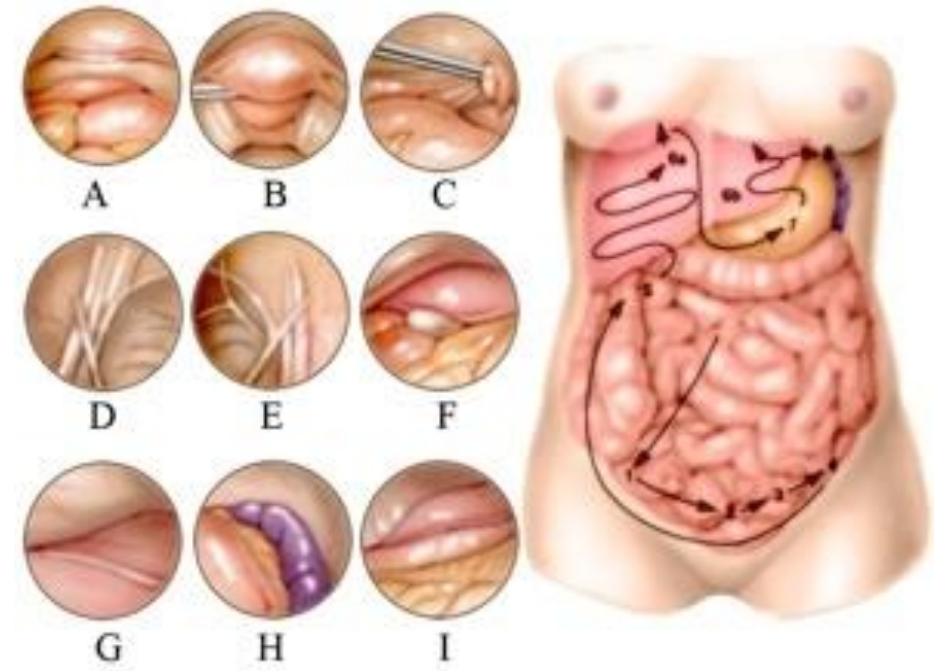


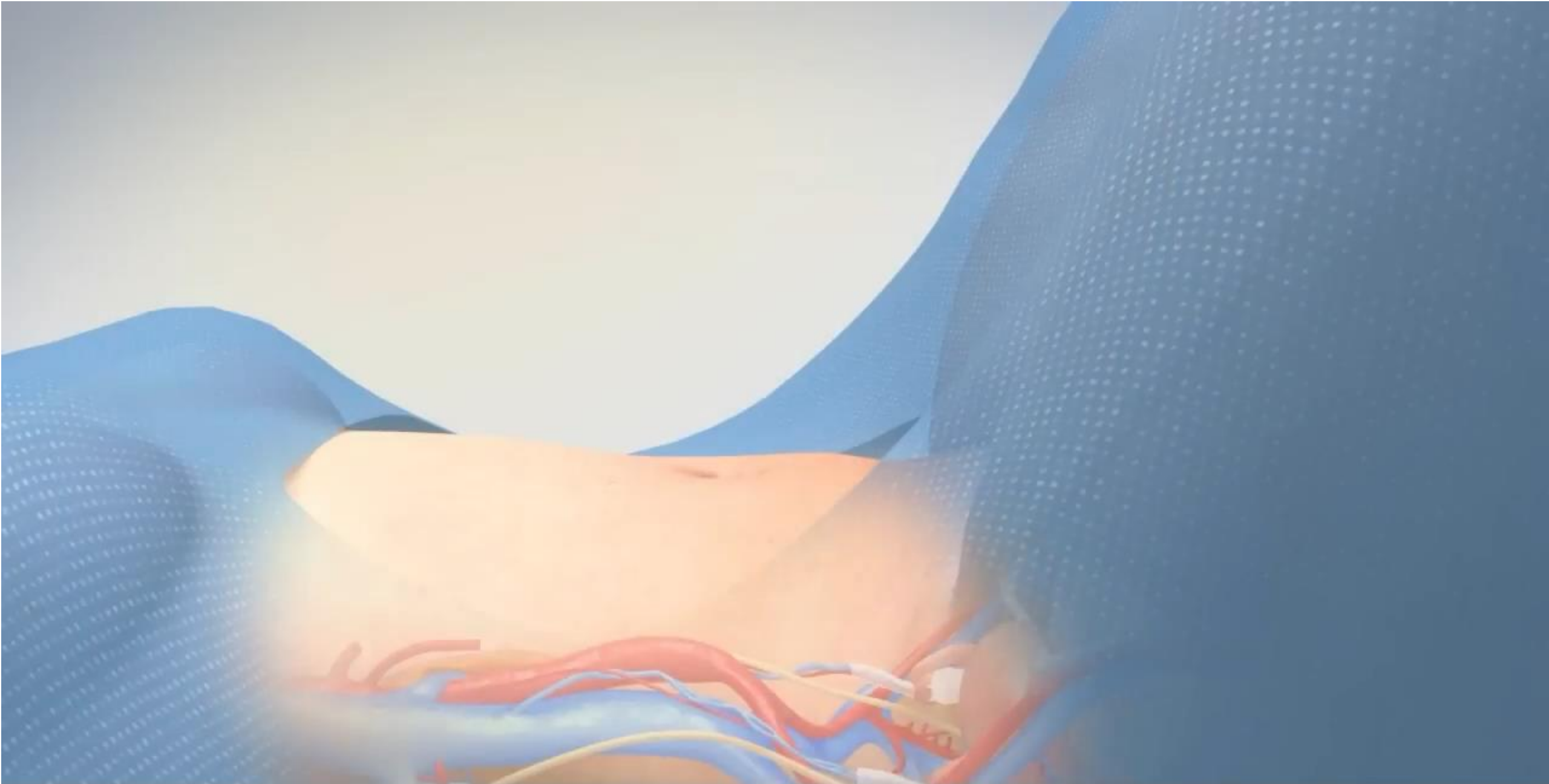
Transabdominal *Transanal today* *Transanal future*

- The abdomen is distended with CO² insufflated
- By using a Veress needle : “primary filling” 10-15 mm Hg



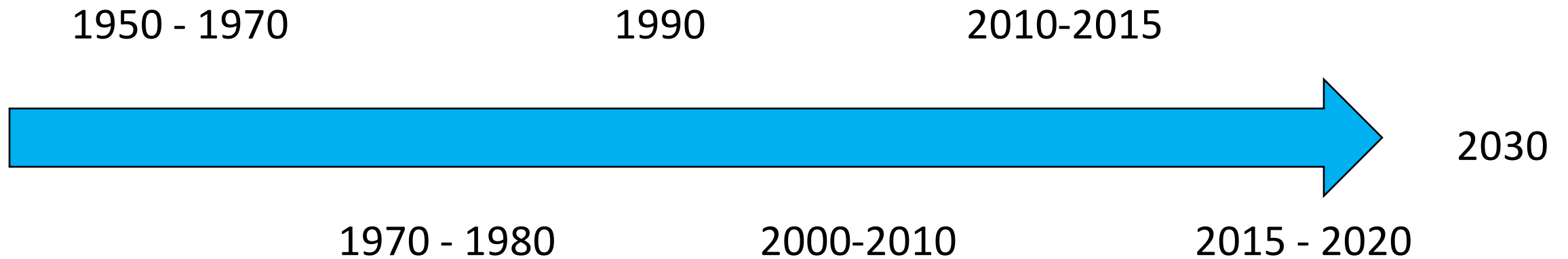
Laparoscopic tour





the Veress needle is inserted at a 45-degree angle.

Vývoj v ČR



1950–1970

Začátky (50.–70. léta)

- Rigidní ezofagoskopy a bronchoskopy.
- Zdrojem světla byly žárovky nebo přenos světla přes tyčová vlákna.



1970 – 1980

Nástup flexibilní endoskopie a laparoskopie (70.–80. léta)



- S příchodem optických vláken (fiberoptika) začala moderní éra endoskopie.
- První laparoskopie v gynekologii
- Nebylo standardizované insuflační médium CO₂ (oxid uhličitý).

1989-90

Po roce 1989 – otevření trhu a boom technologií (90. léta)



Rigidní endoskopie a laparoskopie



Flexibilní endoskopie



Po roce 1989 – otevření trhu a boom technologií (90. léta)



Sametová revoluce kompletně změnila situaci:

- Dostupnost německých a japonských systémů (Olympus, Fujinon, Pentax).
- Rozvoj gastroenterologie, pneumologie i ORL endoskopie.
- Zavádění terapeutických metod:
 - polypektomie,
 - ligace varixů,
 - stenty,
 - endoskopická hemostáza.

2000-2013

2000 – 2013

Laparoskopie se stává standardem v mnoha oborech:

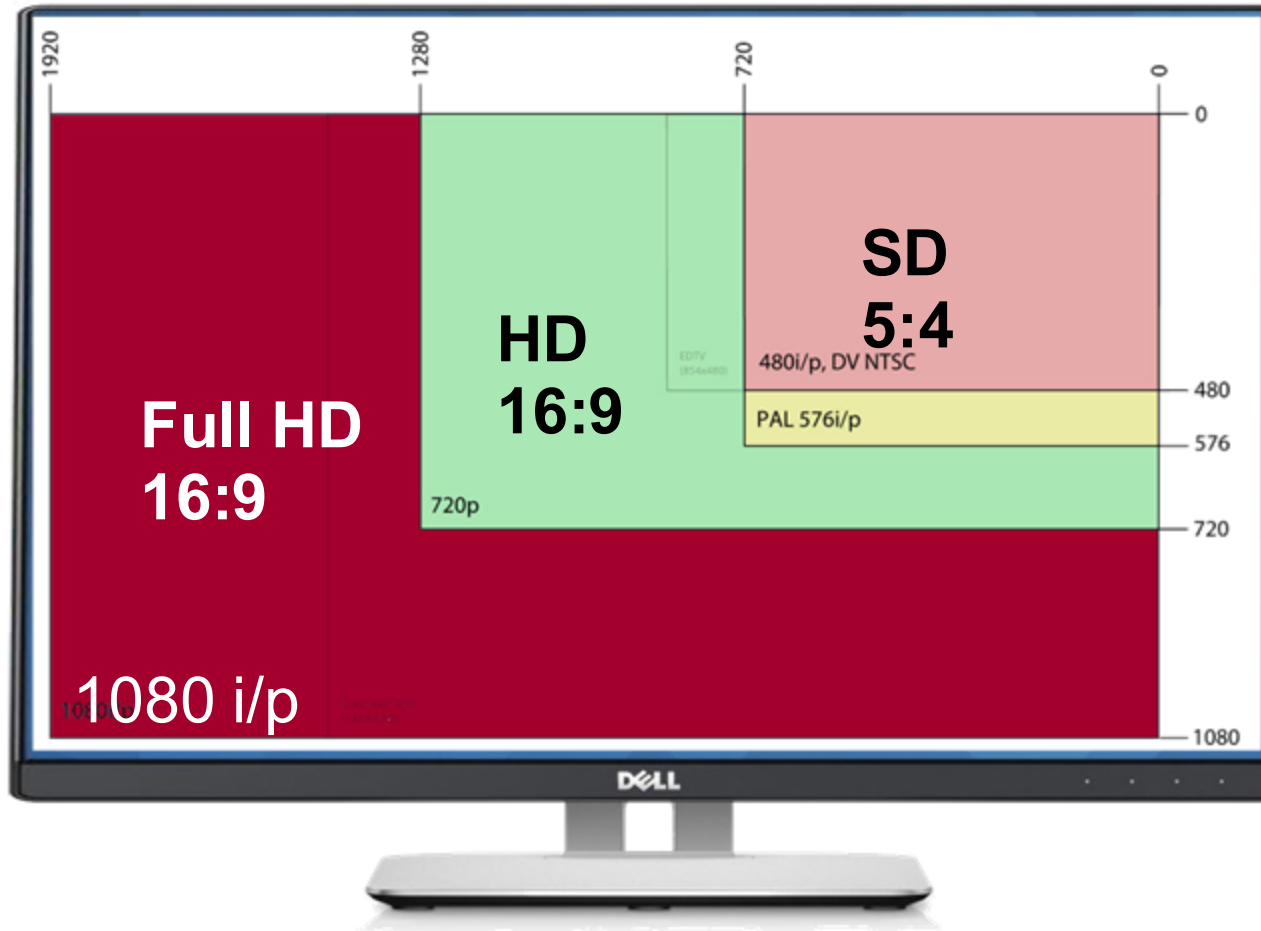
- gynekologie,
- bariatrie,
- kolorektální chirurgie

Technologický vývoj:

- Rozlišení
- Technologie čipů

Video formats

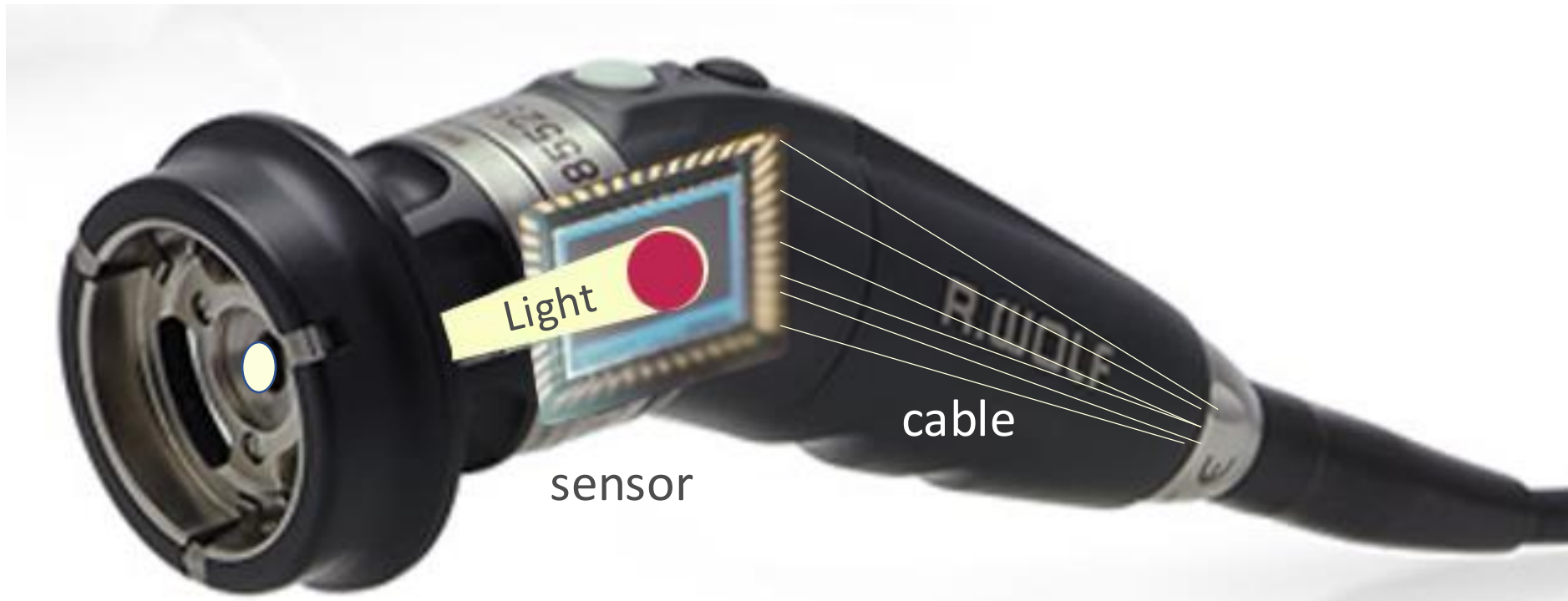
HD, Full HD, SD



4 k - 4096 × 2160
Ultra HD - 3840 x 2160

17:9 or 16:9 format

1 CCD Camera



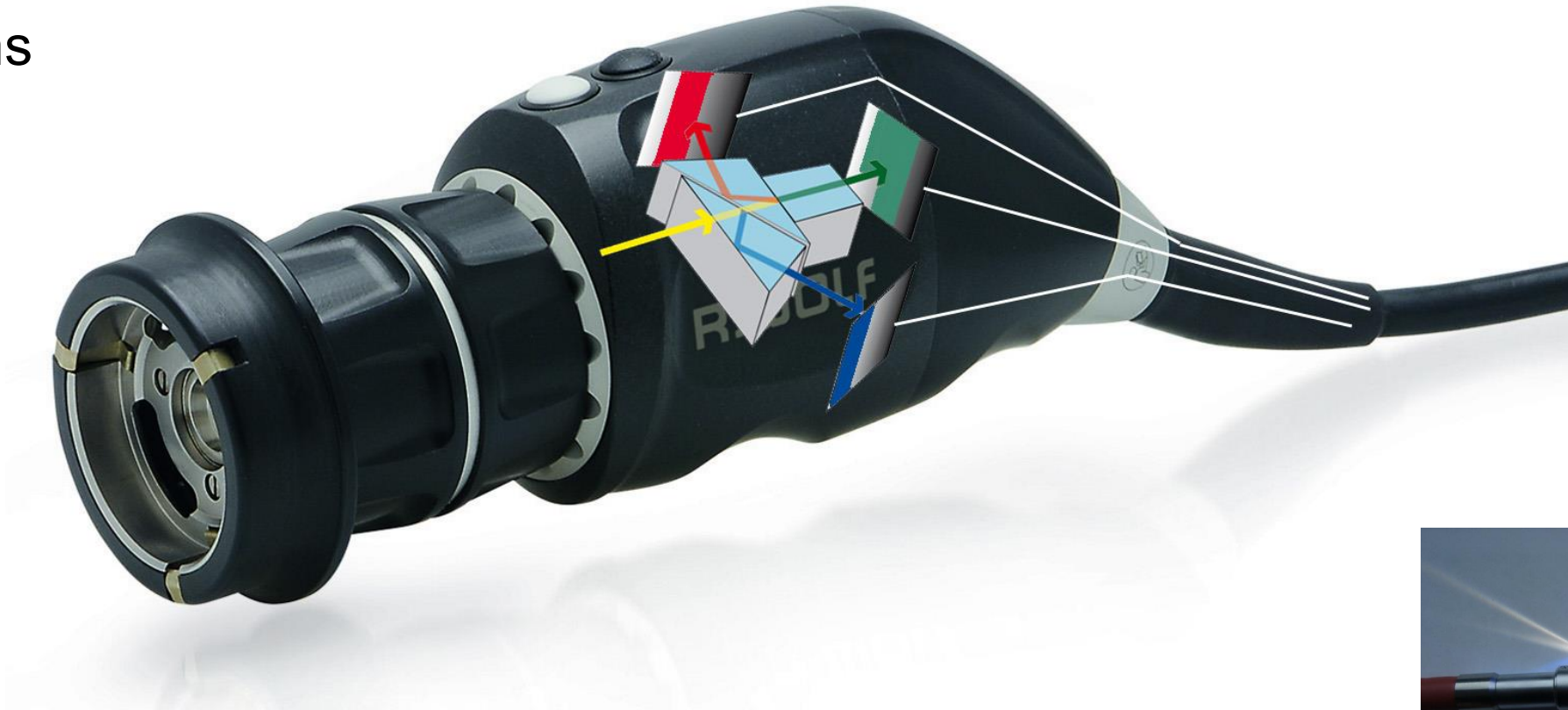
coupler

Resolution 1 Chip Camera up to **1920 x1080 Pixel**

3 Chip Camera

3 Sensors – CCDs, CMOS

3 Prisms



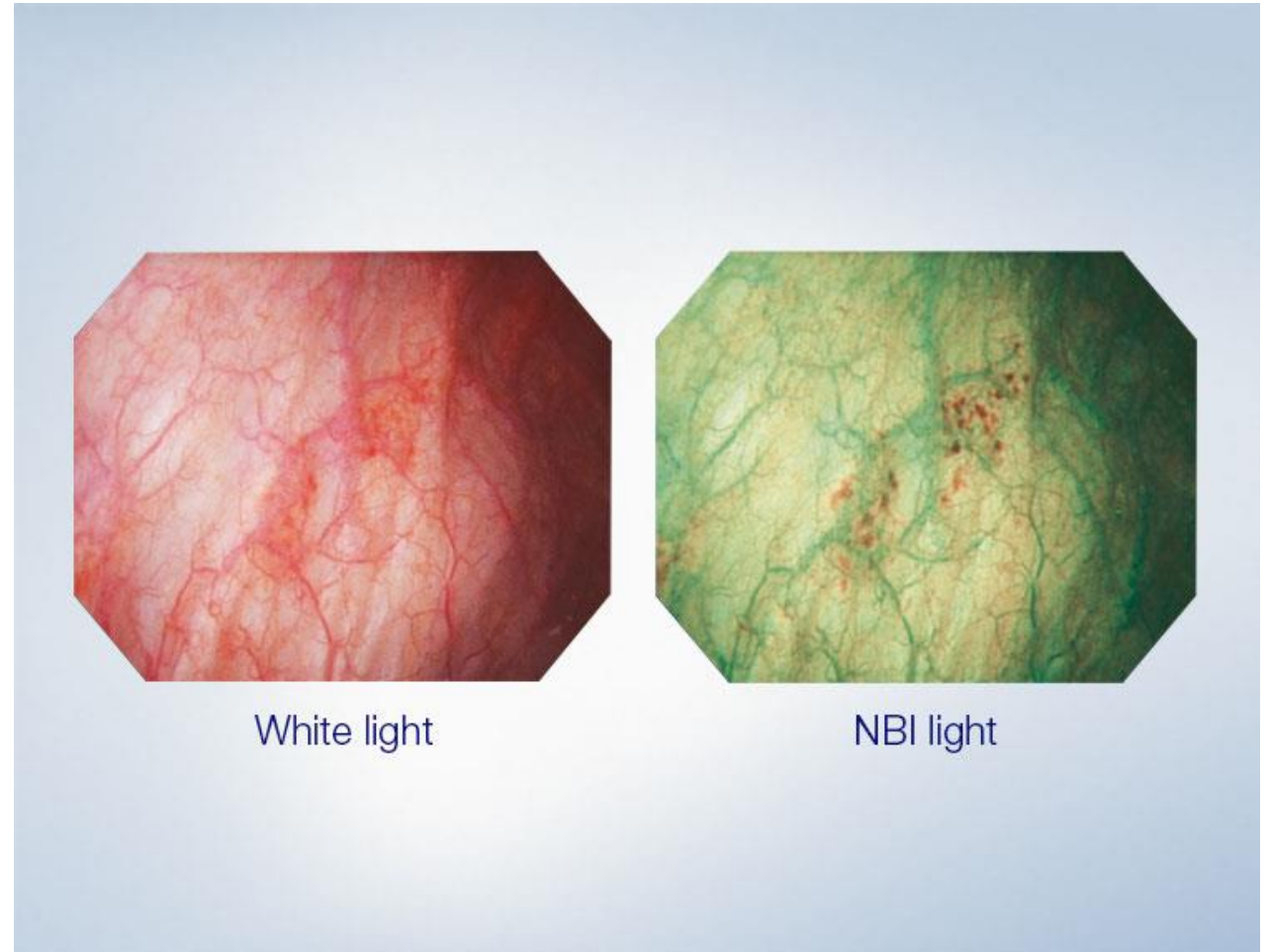
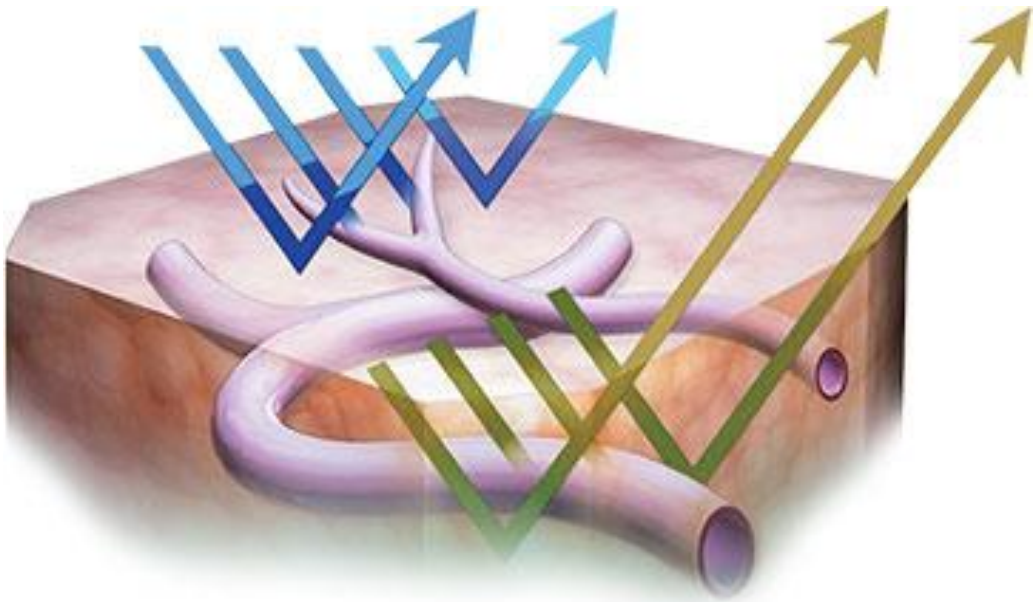
Polychromatic (white) light

Resolution up to **1920 x 1080 (1200) Pixel**



2010 – 2015

2010-2015 nové zobrazovací metody a FullHD 3D

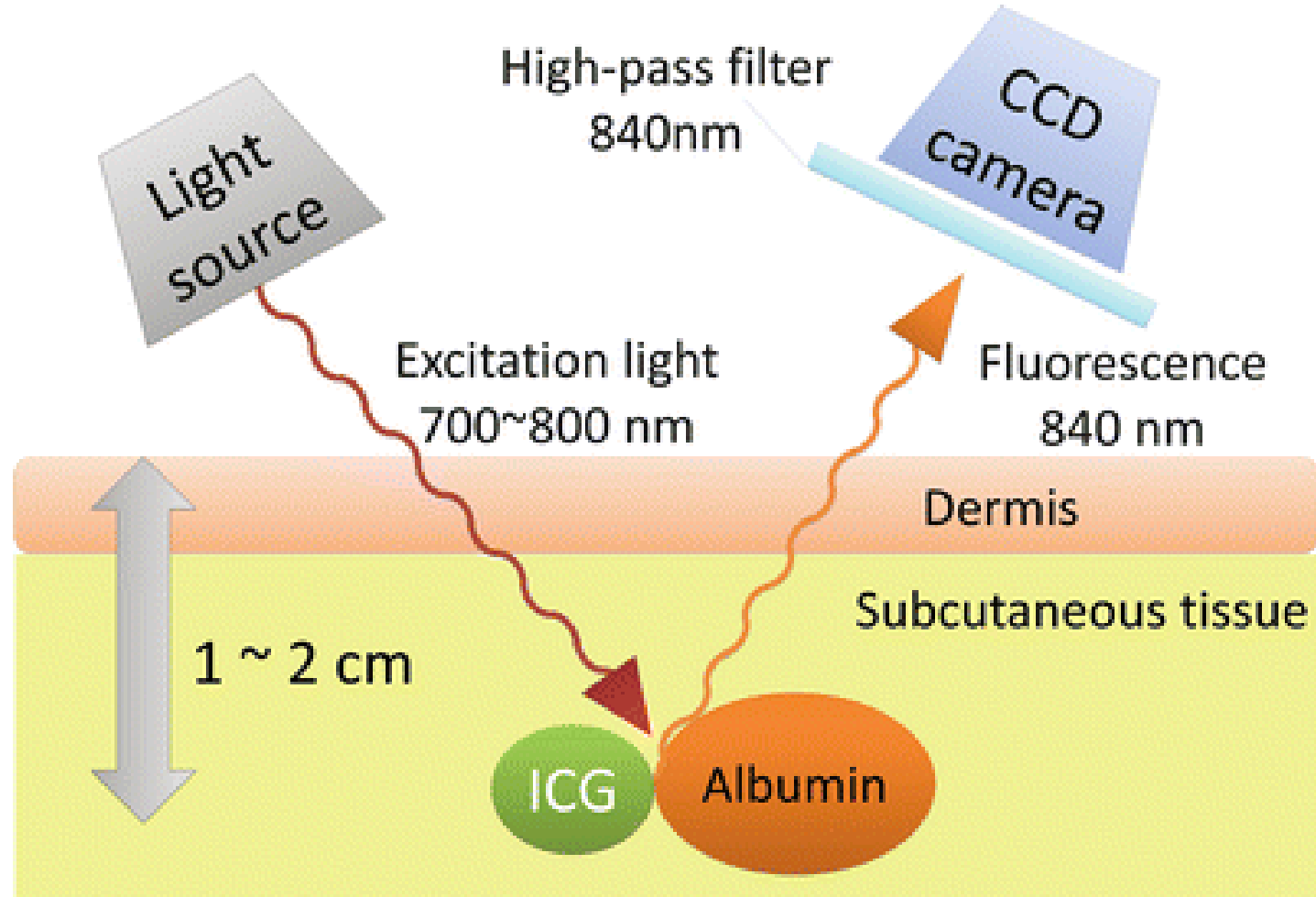


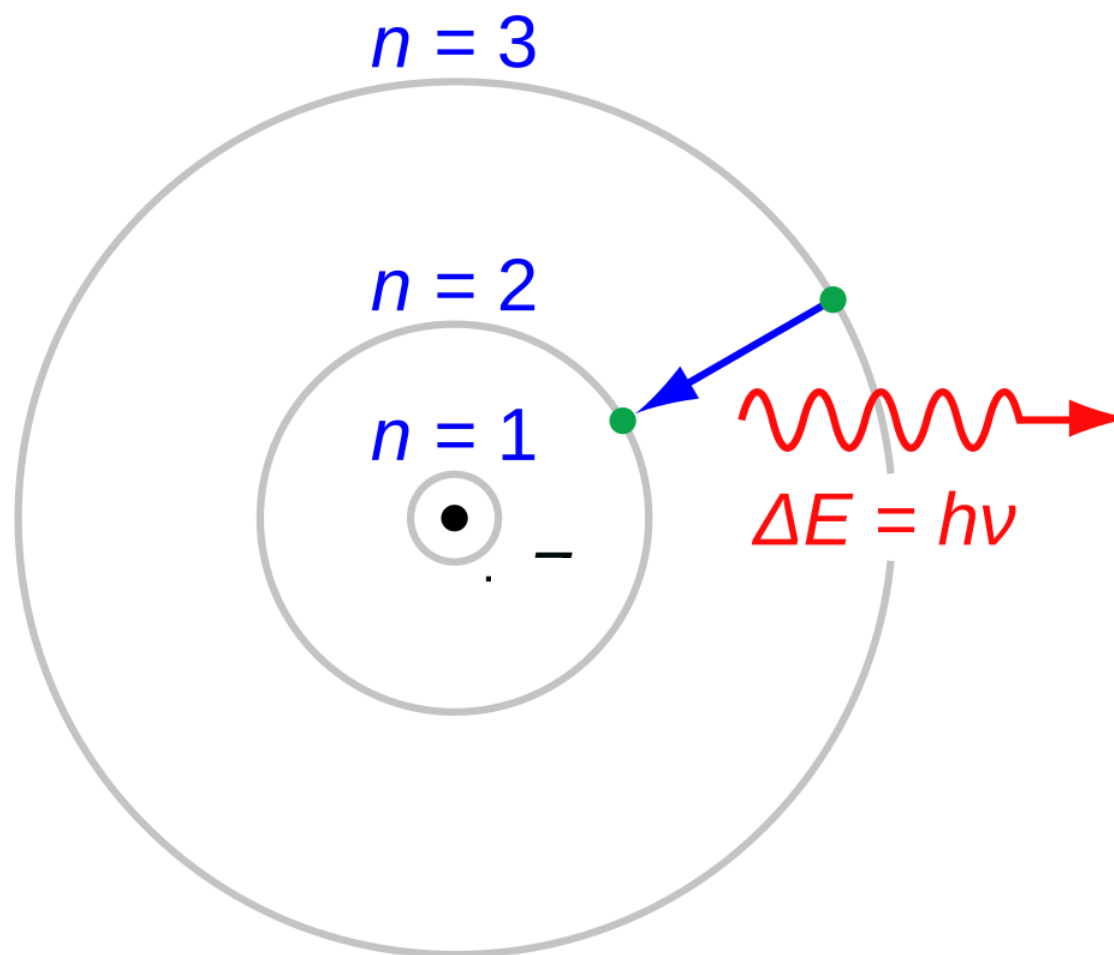
2010-2015 nové zobrazovací metody a FullHD 3D



2015 - 2020

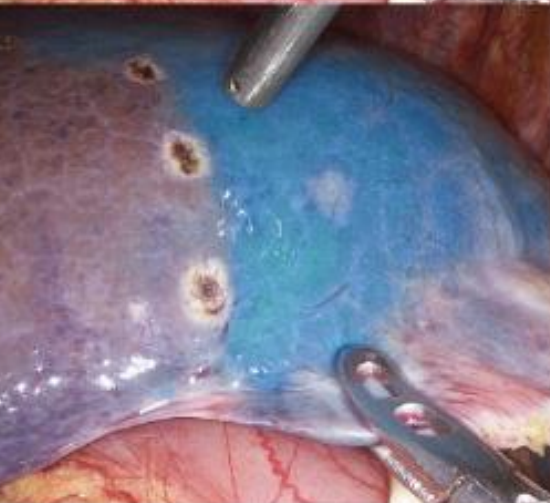
2015-2020 4K a fluorescence





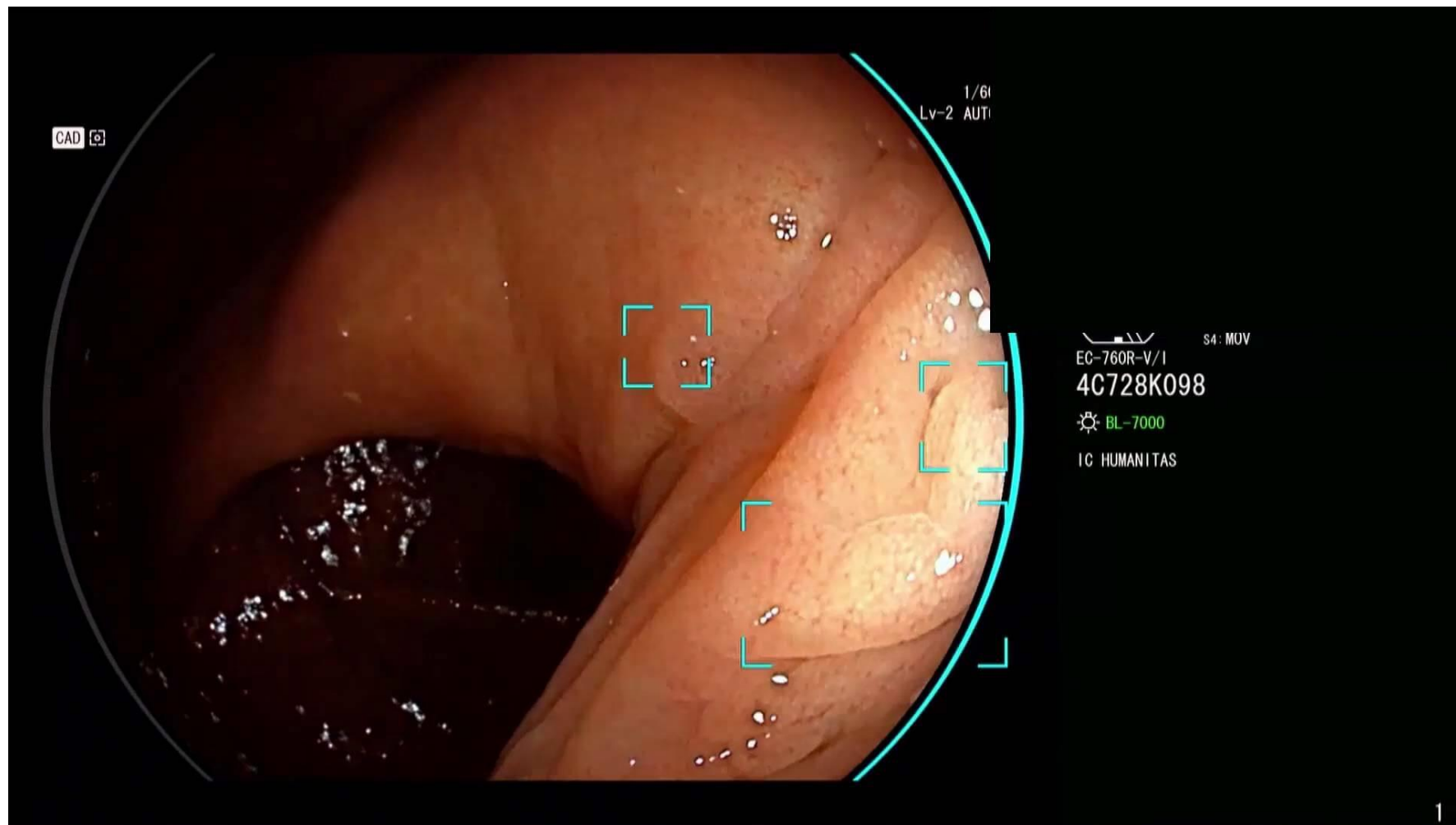




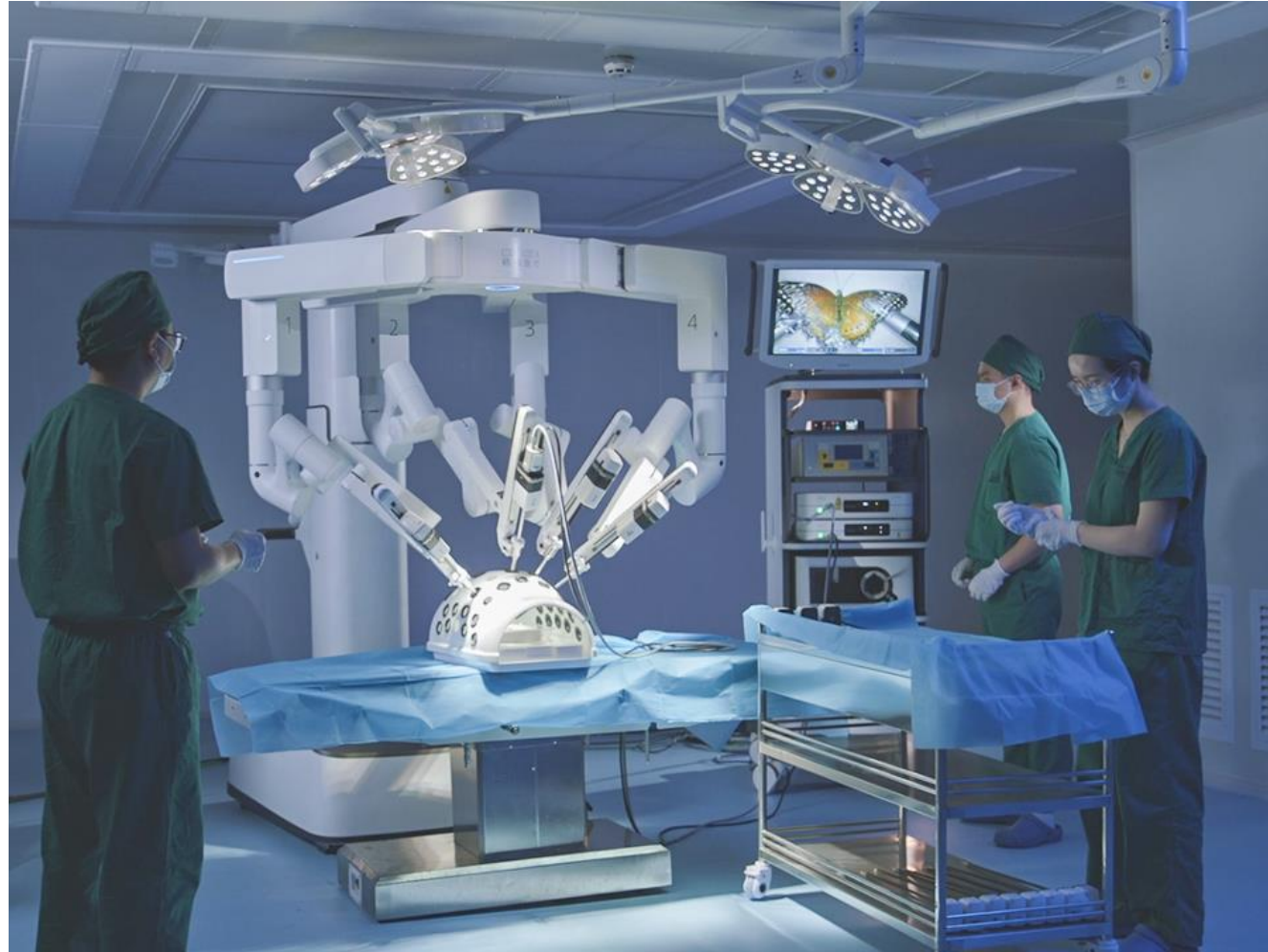


2020 –
2025

2020 – 2025 AI a 4K 3D



2030 a dál?



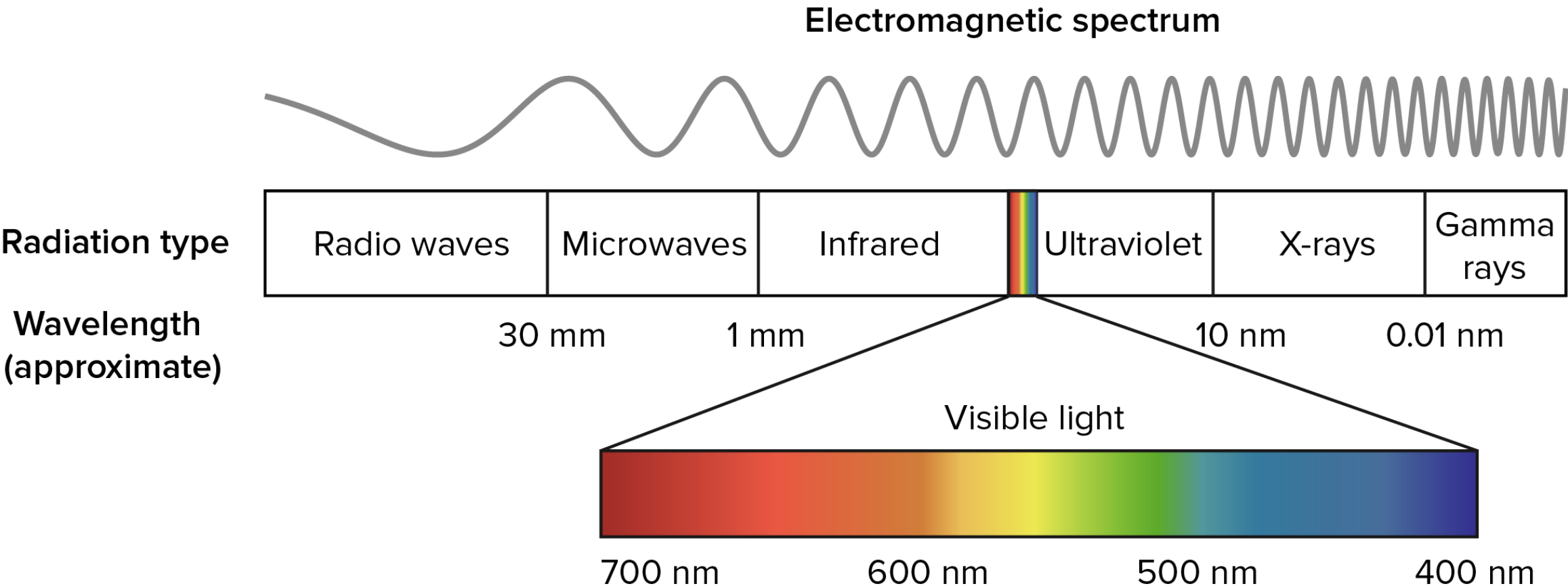
A



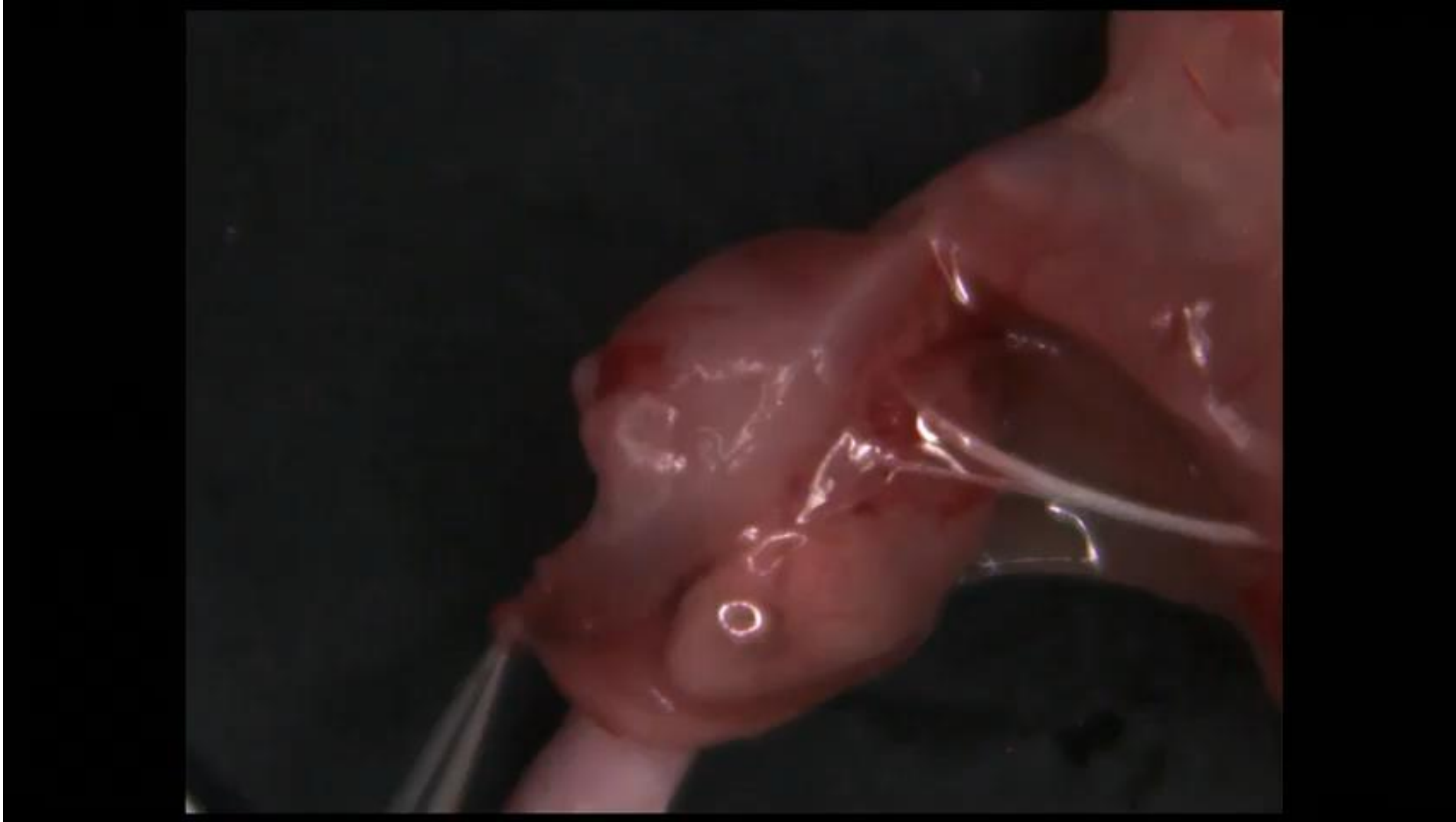
B



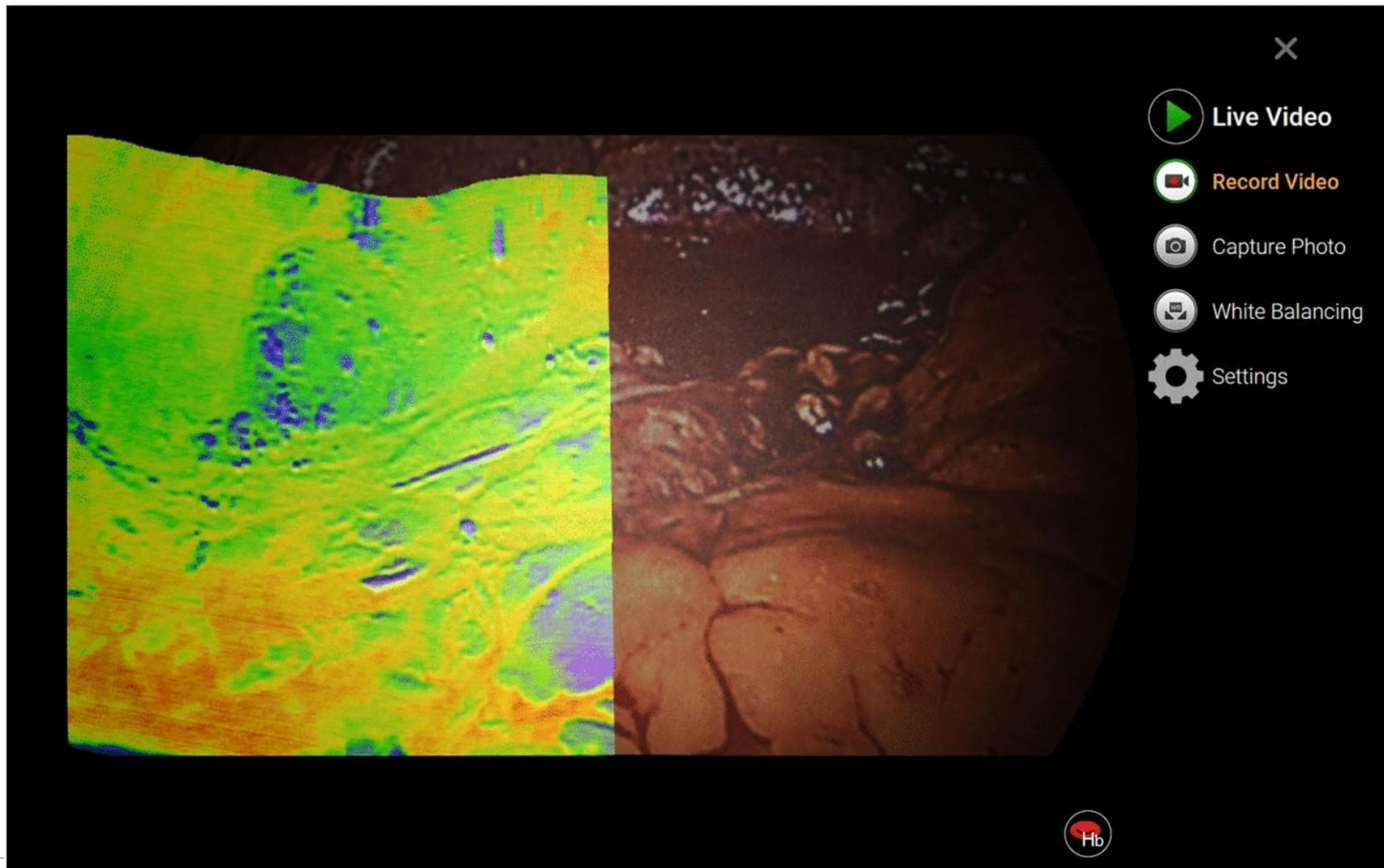




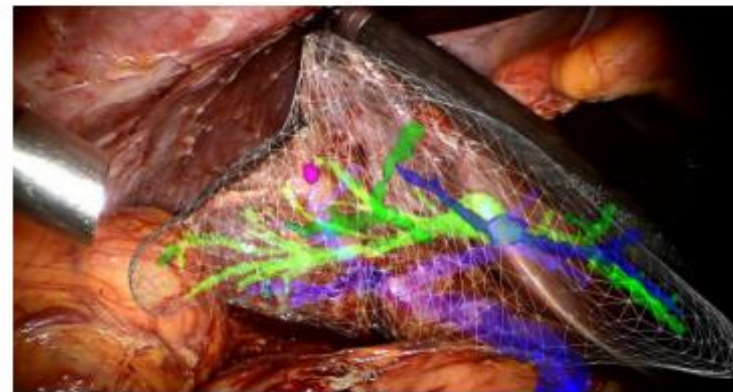
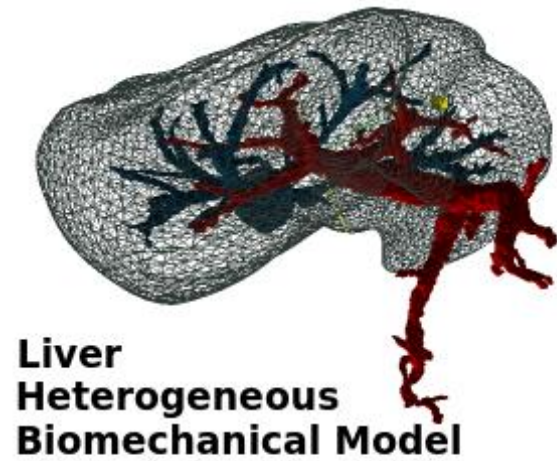
2030 Multi-fluorescence



2030 Multi-spektrální obraz



2030 Navigace pomocí virtuálních modelů



Dotazy?