



Innovations in Robotic surgery for Gynecologic cancer

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DECLARATION OF INTERESTS

Nothing to declare

How Has Gynecologic Cancer Surgery Changed?

Evolution of Surgery

The Journey to Minimally Invasive and Intelligent Surgery

Open



- Large incision
- Direct visualization
- Longer recovery

1980년대

Traditional Open Surgery
Foundation of Modern Surgery

Laparoscopy



- Small incisions
- Camera-assisted visualization
- Faster recovery

1990년대~2000년대 초반

Minimally Invasive Surgery
Less Pain, Less Trauma

Robot



- 3D HD visualization
- Wristed instruments
- Enhanced precision & control

2005년 이후

Robotic Surgery
Precision, Dexterity, and Innovation

Robotic Surgery in Korea

- 인튜이티브 집계 결과 우리나라에서는 2025년에만 약 8만 5000건의 로봇수술이 이뤄졌다.
- 산부인과 비중이 36%로 가장 높고 비뇨의학과 27%, 일반외과(대장암·위암 등) 22%, 두경부외과 12%, 흉부외과 3% 순이었다.

'다빈치' 로봇 도입 20년...국내 200대 설치, 누적 수술 37만 건

건강·생활 | 입력 2025-07-14 14:58:57 | 수정 2025-07-14 14:58:57 | 이금숙 기자 | 0개



INTUITIVE

"Patient First, Always"

최소침습 수술을 위한
인튜이티브 코리아의 20년¹⁻⁸



숫자로 본 국내 로봇 수술¹⁰



숫자로 본 로봇수술의 임상적 가치⁹



인튜이티브의 사회공헌 활동

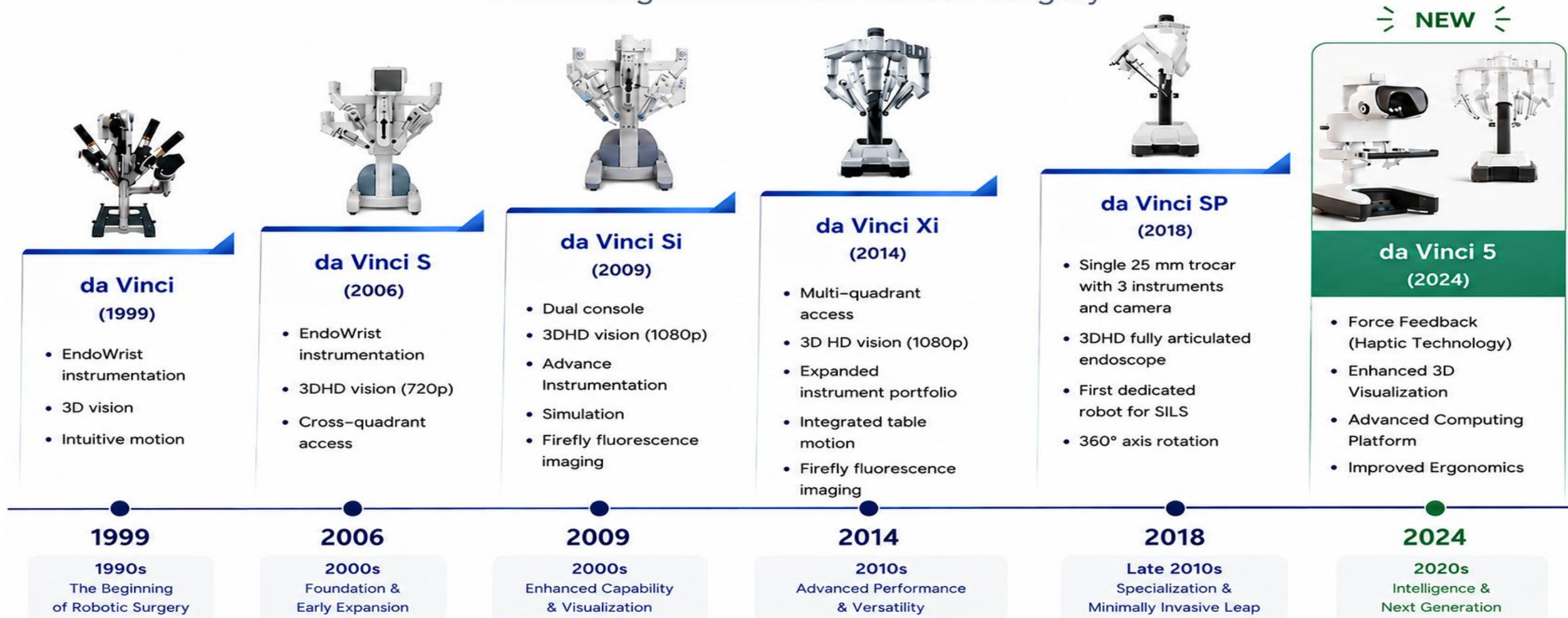


[사진=인튜이티브서지컬코리아]

Robotic Platform Evolution

Evolution of da Vinci Surgical System

Advancing Innovation in Robotic Surgery



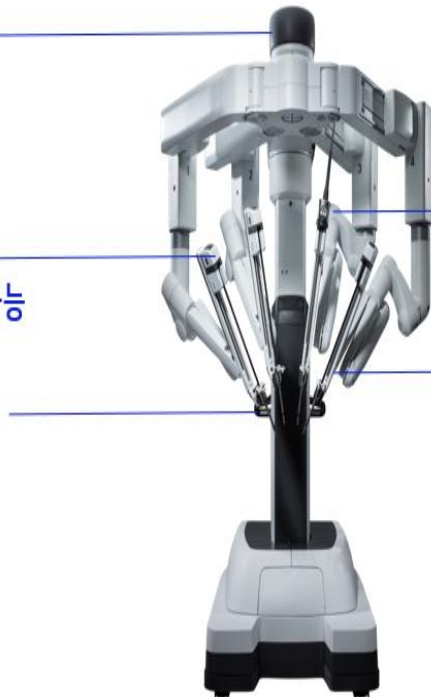
Davinci Xi system

세부 특징점

봄에서 내려오는 4개의 로봇 팔
→ 복강 내 어느곳으로도 접근 가능

4개 팔 모두 카메라 장착 가능
→ 수술 중 카메라 및 기구 위치 변경 가능

수술 준비과정인 도킹 간소화
→ 용이해진 수술 준비 과정

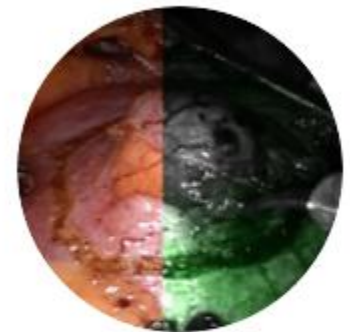


광원 손실 최소화 & 초고화질 3D 영상
→ 수술 부위 더 선명하게 확인 가능

더 얇아진 로봇 팔
→ 수술 중 팔끼리 충돌 가능성 감소



EndoWrist
Vessel Sealer



Firefly® Technology

Davinci SP system

Control more through narrow spaces with a flexible da Vinci camera.



Xi



30° down



0°



30° up

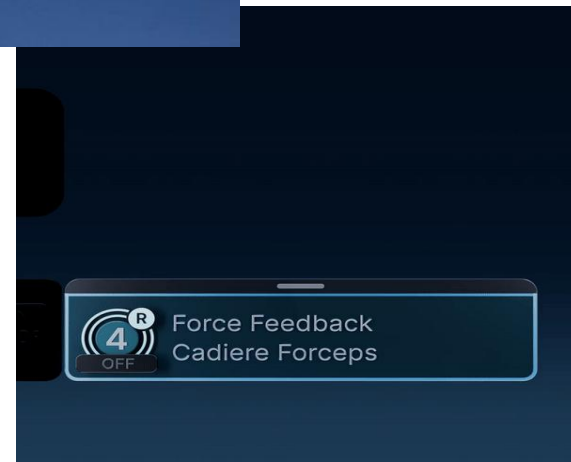


SP



*Compared to da Vinci Xi system. Data on file.
INTUITIVE

Davinci DV5 system



Advanced Energy

항목	Vessel Sealer Expanded(VSE)	SynchroSeal	Vessel Sealer Curved(VSC)
Jaw	Straight	Curved	Slim curved
Seal 가능 혈관	7 mm	5 mm	7 mm
박리 능력	○	◎	◎
큰 혈관 처리	◎	○	◎
좁은 공간 접근	○	◎	◎

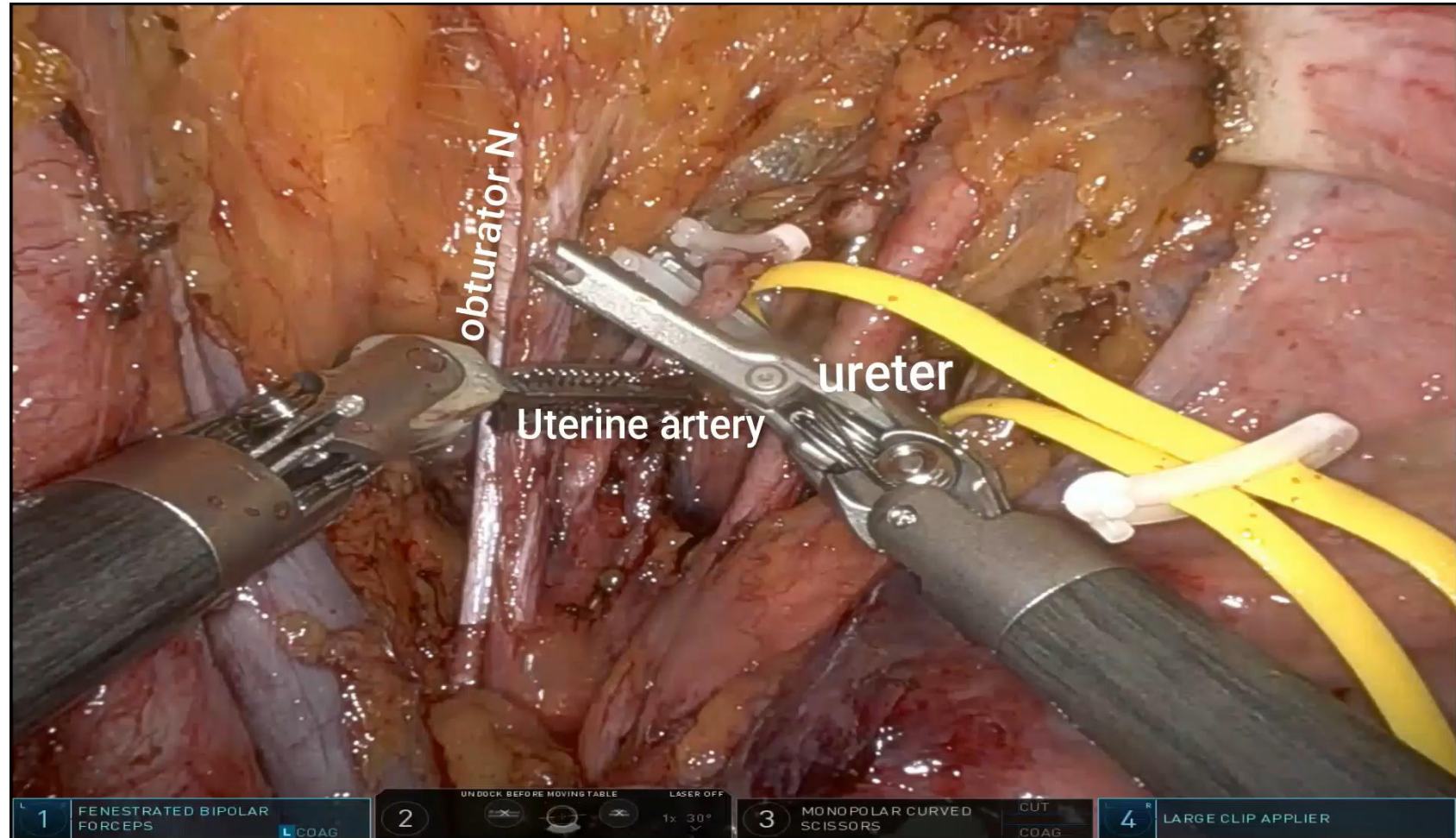


Precision Surgery

- Better visualization
 - magnified 3D visualization
 - Close-up, Better depth perception
- Wristed instruments
 - Human wrist-like movement (7 Degrees of Freedom)
- Motion scaling
 - Large hand movement
→ Tiny instrument movement
- Tremor elimination
 - Stable and precise dissection

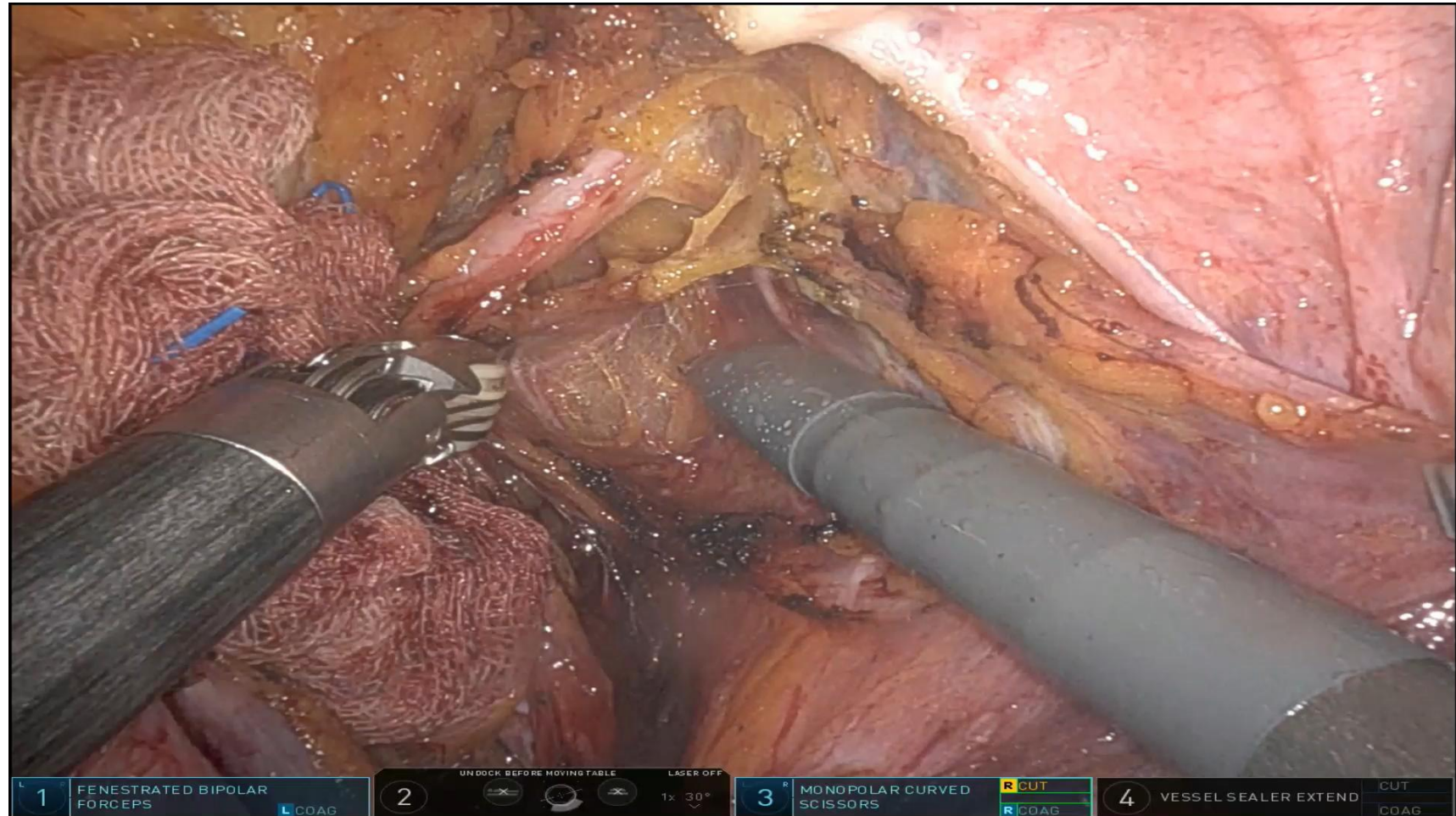
Precision Surgery

- Radical hysterectomy
 - ✓ Ureter dissection



Precision Surgery

- Radical hysterectomy
 - ✓ Nerve sparing



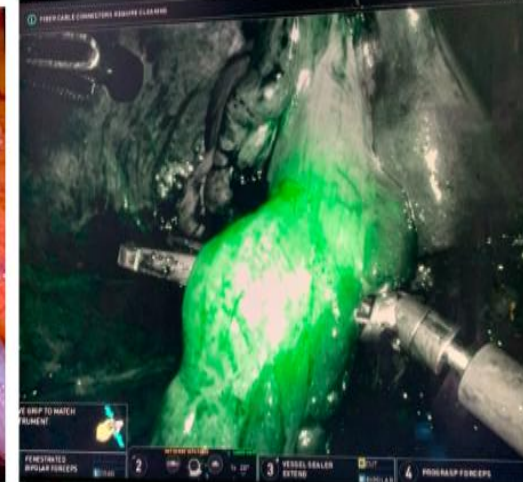
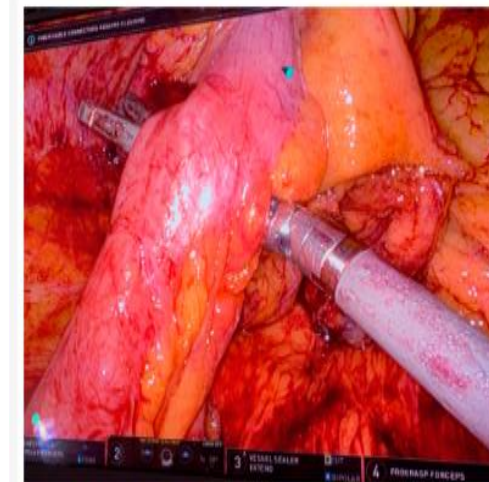
Fluorescence Surgery

Firefly fluorescence imaging

- ICG(Indocyanine Green)
- real-time, image-guided identification of key landmarks
- uses near-infrared technology.
- Turn on Firefly mode when the surgeon need it, with full control.
- Sentinel node, perfusion, ureter



Siddighi S, et al. Am J Obstet Gynecol. 2014.



Sentinel Node

- Early EM ca, Early Cervical ca : Standard of care
- High risk EM ca
; Increasing evidence , on going RCT (KGOG2029/SELYE)

PRINCIPLES OF EVALUATION AND SURGICAL STAGING WHEN SLN MAPPING IS USED

Figure 1: Common cervical injection sites for mapping uterine cancer^a



Figure 2: Most common location of SLNs (blue, arrow) following a cervical injection^a

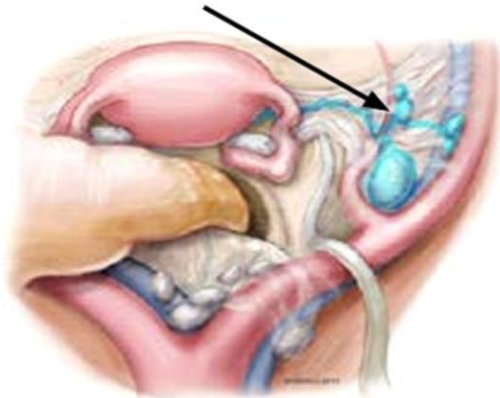
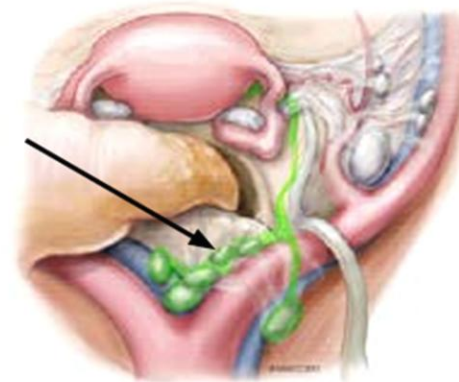
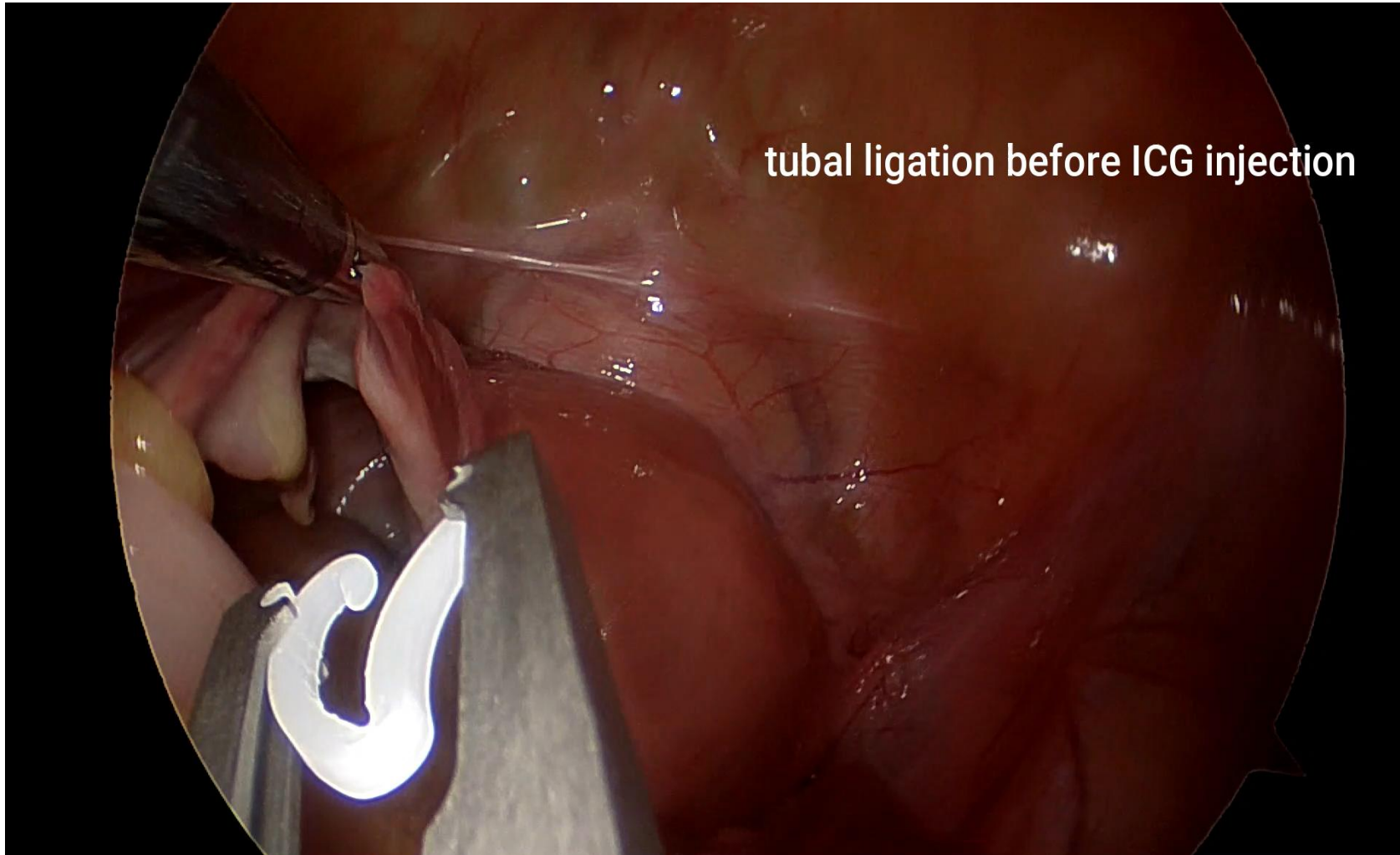


Figure 3: Less common location of SLNs (green, arrow) usually seen when lymphatic trunks are not crossing over the umbilical ligament but following the mesoreuter cephalad to common iliac and presacral region^a



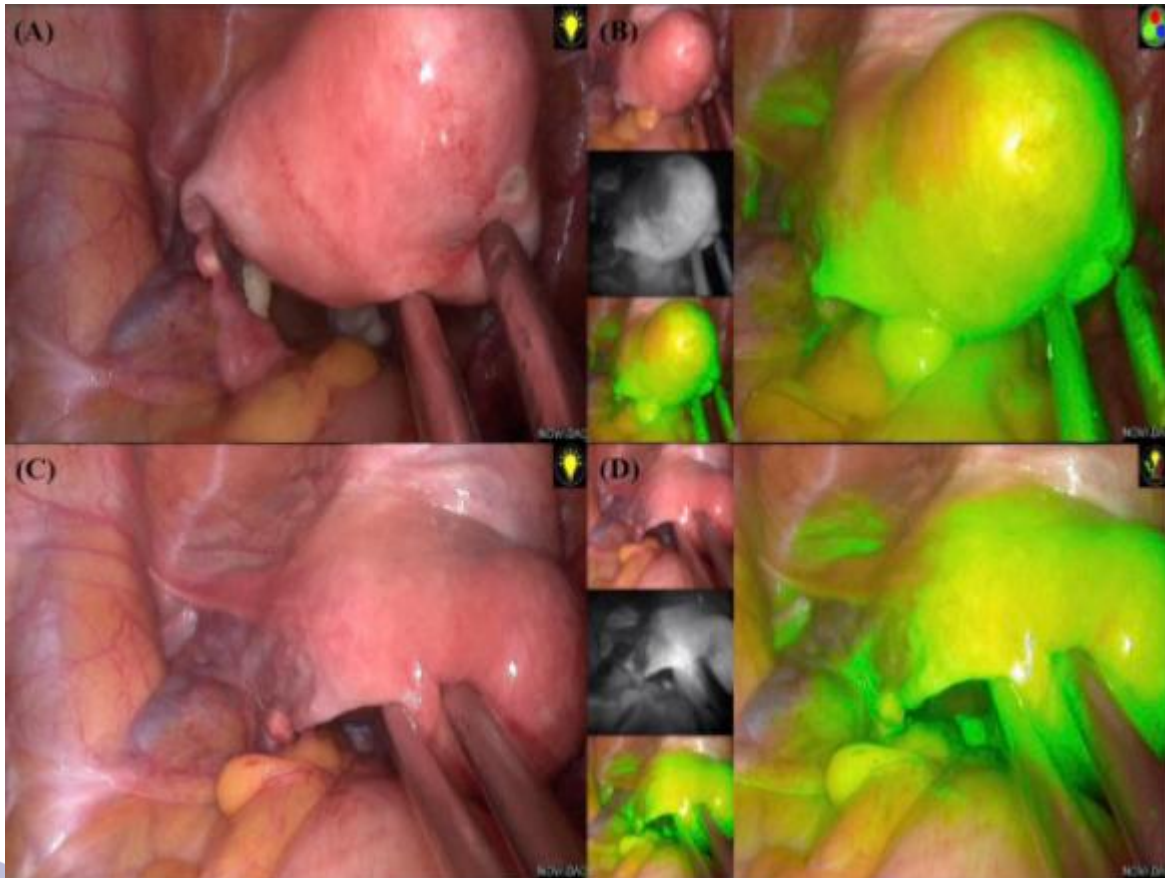
Sentinel Node

- Endometrial ca, clinical stage IA2, G1
- Davinci SP TH, BSO, pelvic sentinel mapping



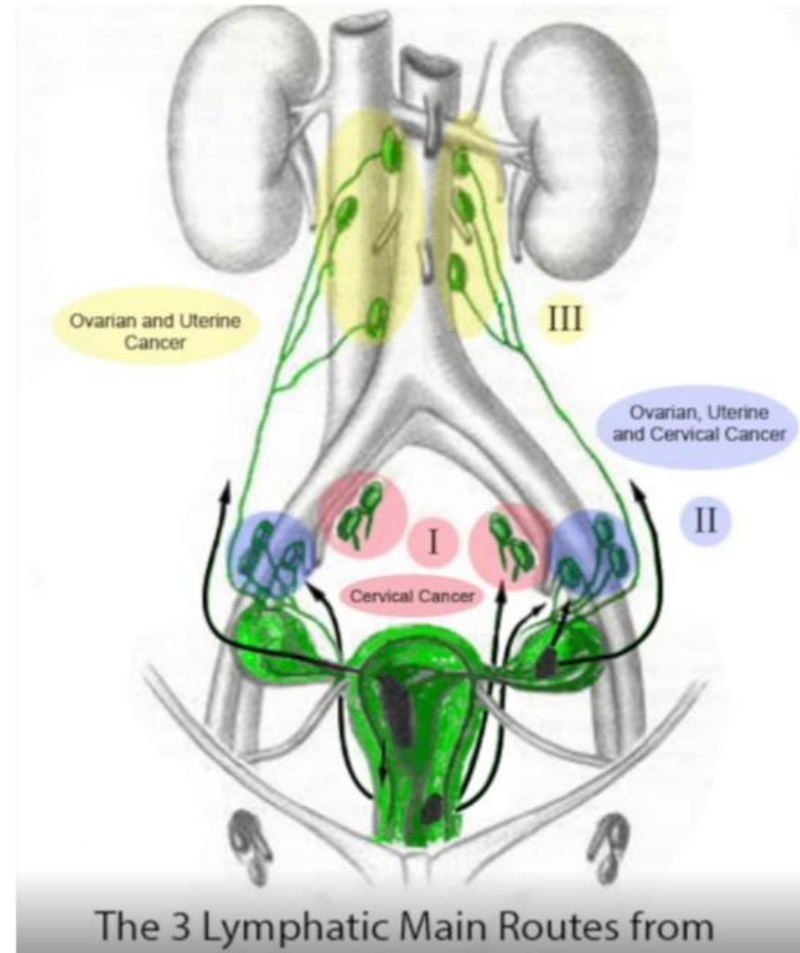
Sentinel Node

- Fundal / Dual ICG Injection
-> paraaortic LN mapping for High risk EM ca



Eoh KJ, et al. Surg Oncol. 2018. PMID: 30217312

Modified from Reiffenstuhl and Höckel



Kimmig R et al. Best Pract Res Clin Obstet Gynaecol . 2024 Jun;94:102483.

Digital Surgery

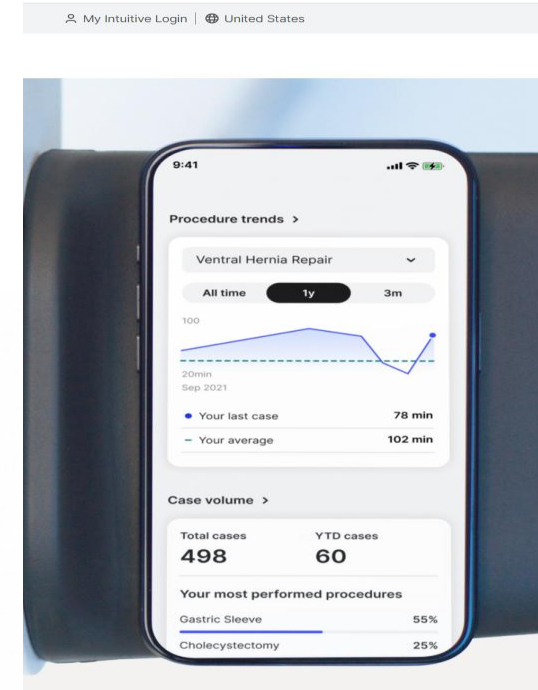
My Intuitive™

Digital Surgery

Turning data into insights for better outcomes

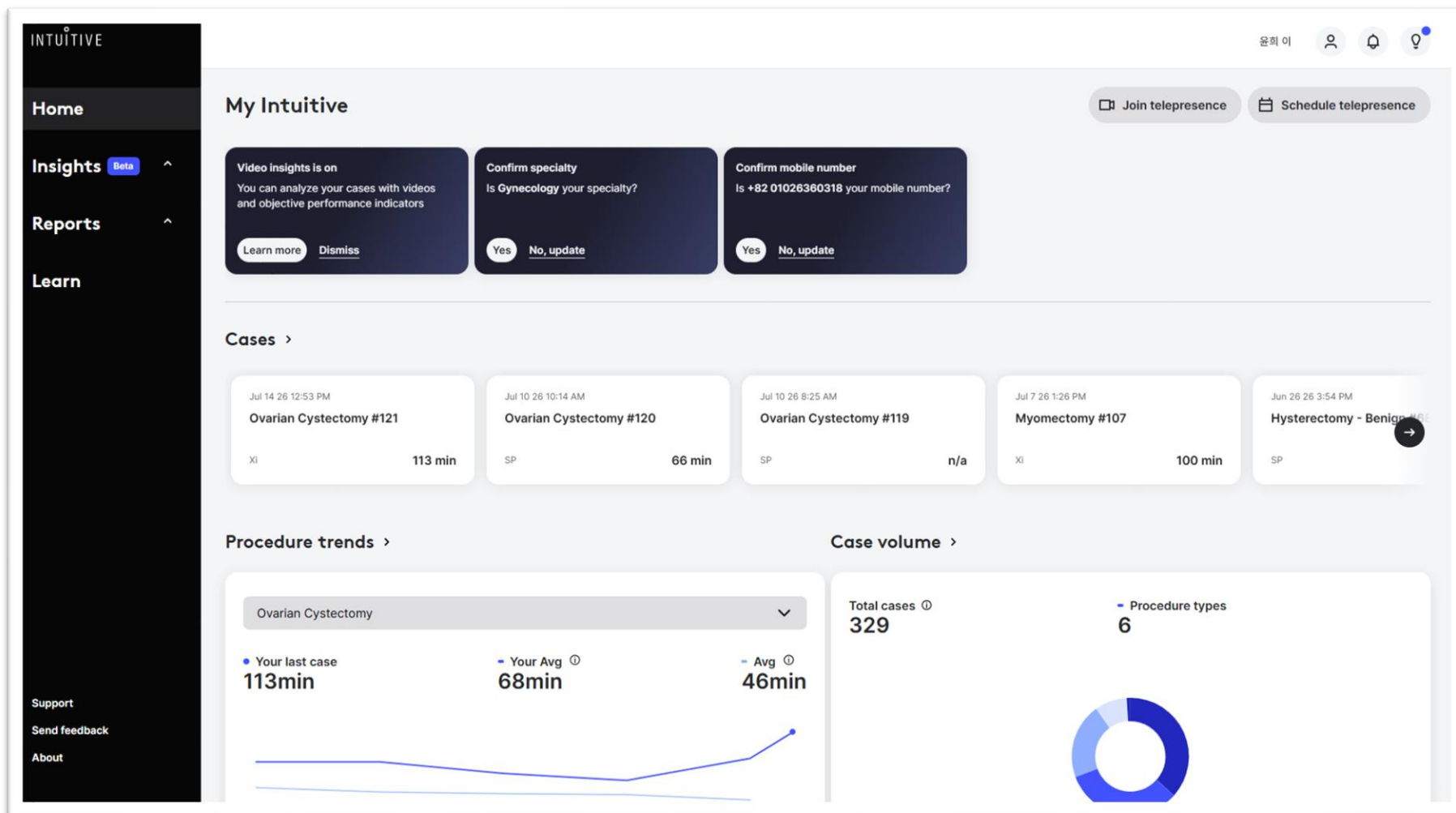


⌚ Less Manual Work ↓ | 💡 More Insights ↑ | 👥 Better Outcomes ↑



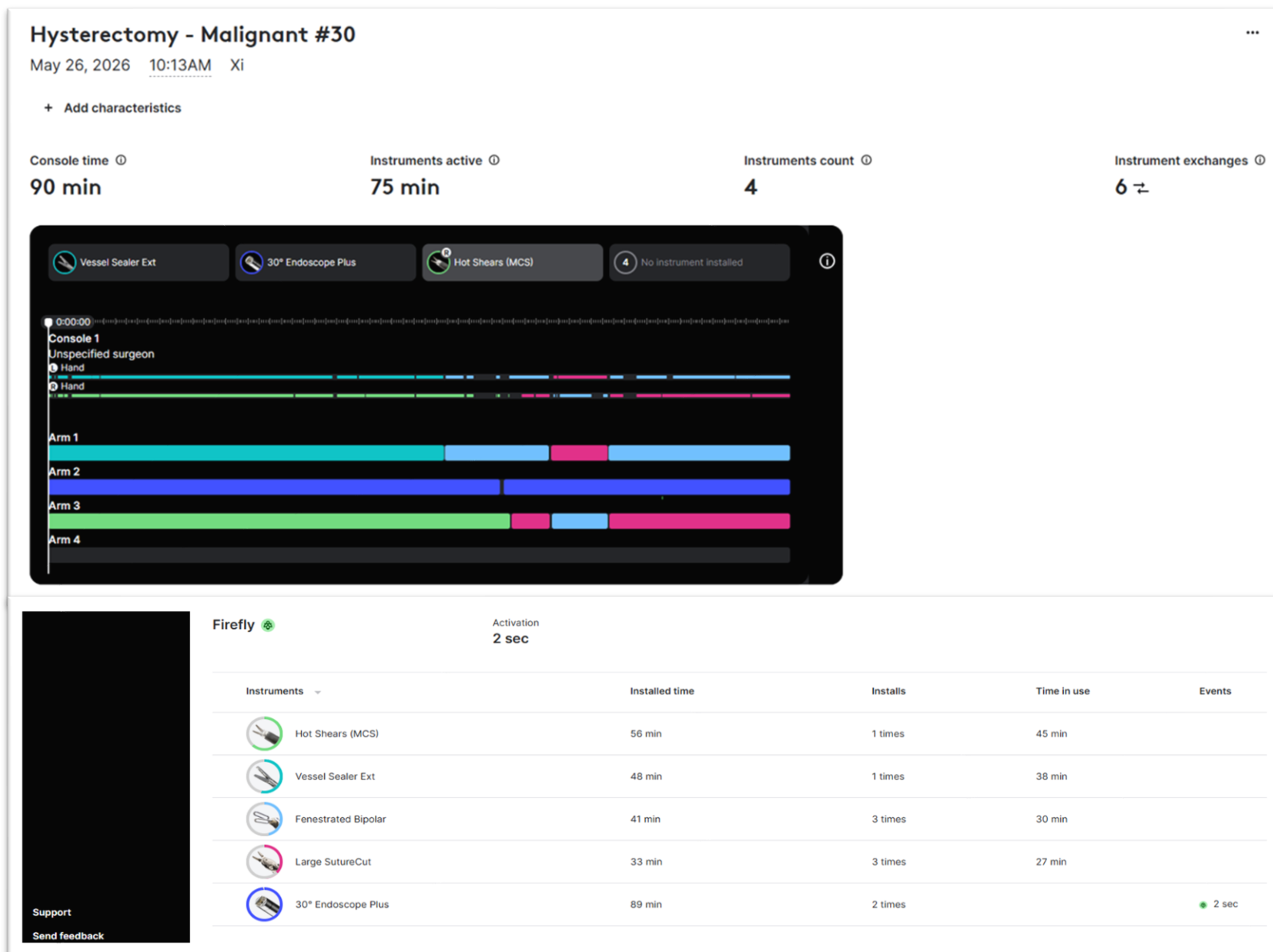
Digital Surgery

My Intuitive™



Digital Surgery

My Intuitive™



The Future



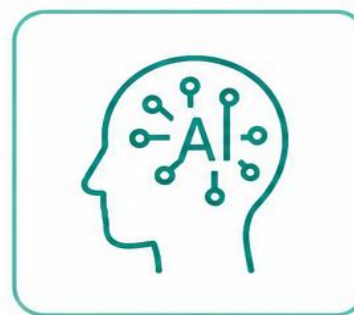
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Robot



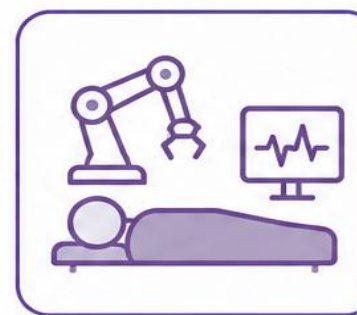
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Digital Robot



3

AI Robot



4

Intelligent
Surgery

Take-home Messages

Past 	
	Better visualization
	Better dexterity
	Smaller incisions

Present 	
	Precision
	Fluorescence
	Digital surgery

Future 	
	Artificial intelligence
	Real-time decision support
	Intelligent robotic surgery

Korean Society of
Gynecologic Oncology



2026년 대한부인종양학회 하계학술대회 제20차 젊은의사 워크숍 제9차 분과전문의 연수강좌 제1차 부인종양간호사 연수강좌 & 카데바 워크숍

일자 2026년 8월 8일(토) - 9일(일)

장소 위례 밀리토피아 마린 호텔 / 가톨릭대학교 응용해부연구소



대한부인종양학회
Korean Society of Gynecologic Oncology