



Gynäkologie & Geburtshilfe

Christian Gall
Frauenklinik
Tübingen

MIC-Modul 04/2019

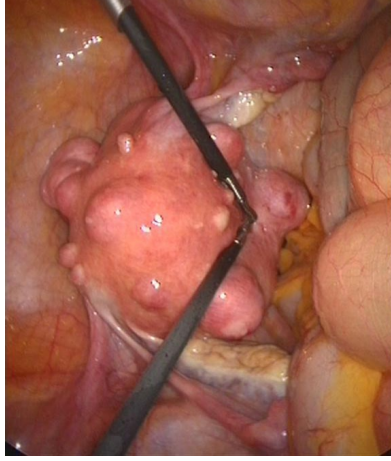
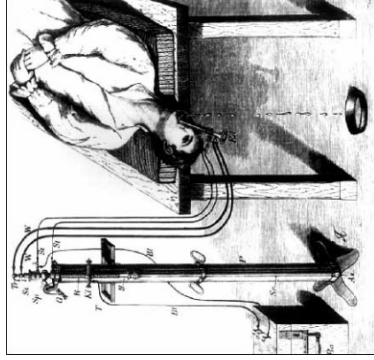


Operative Gynäkologie:

past

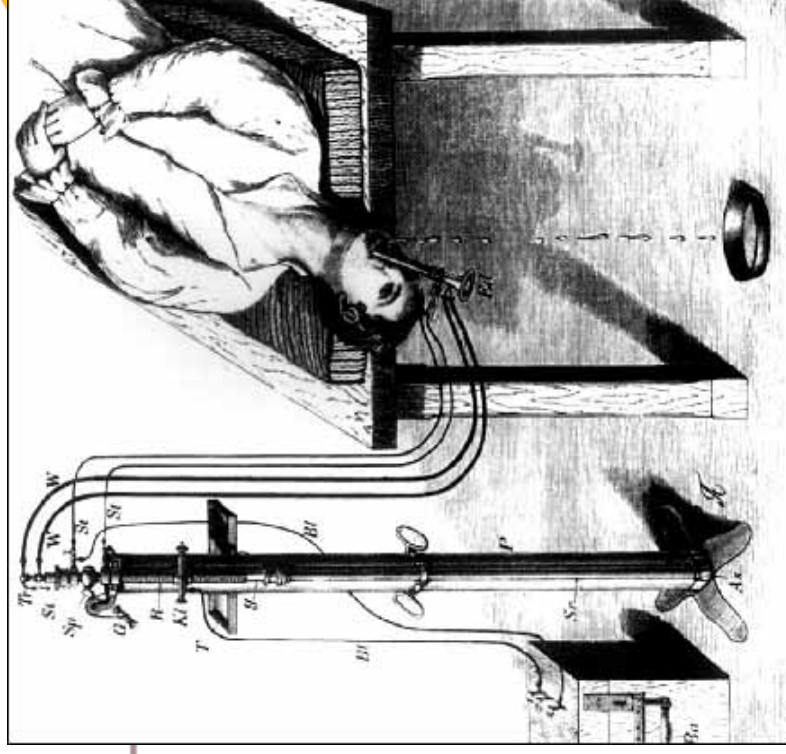
~~these~~ days

~~future~~





endoscopy / laparoscopy



Minimal-invasive Chirurgie in der Gynäkologie

(„ im Wandel der Zeit “)



Changes in operative therapy !

Gynecological Department Uni. Tübingen



70

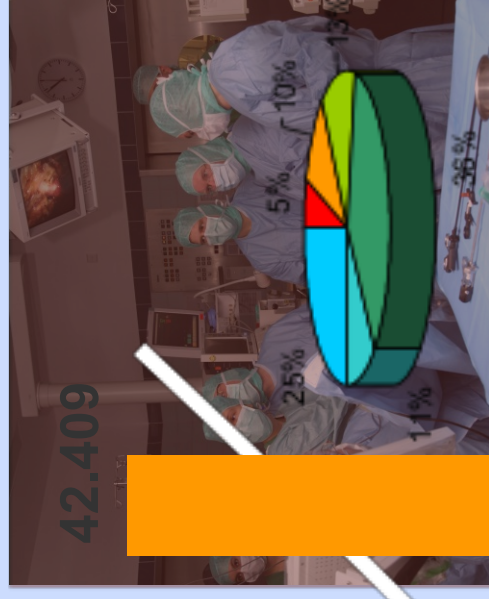
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1870 - 1890 Prof. v. Säxinger



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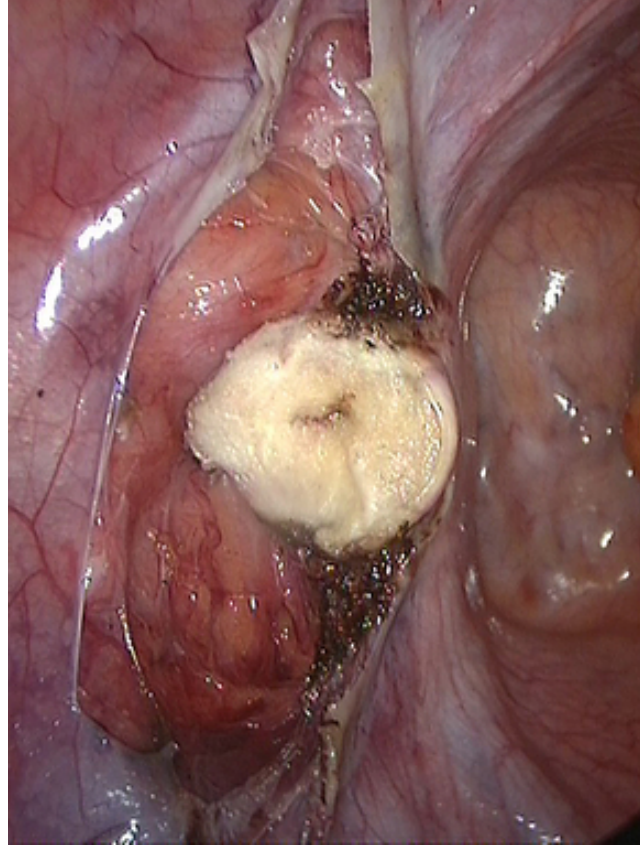
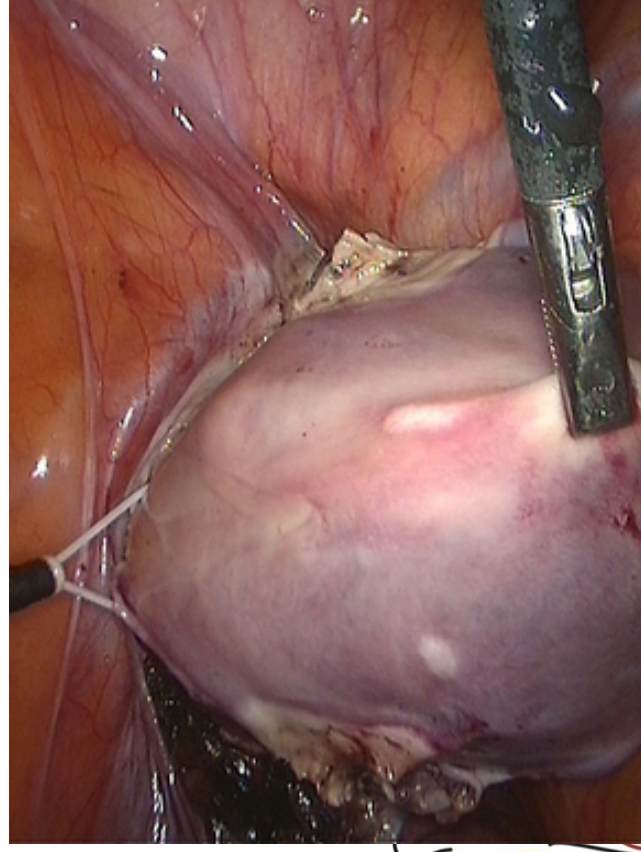
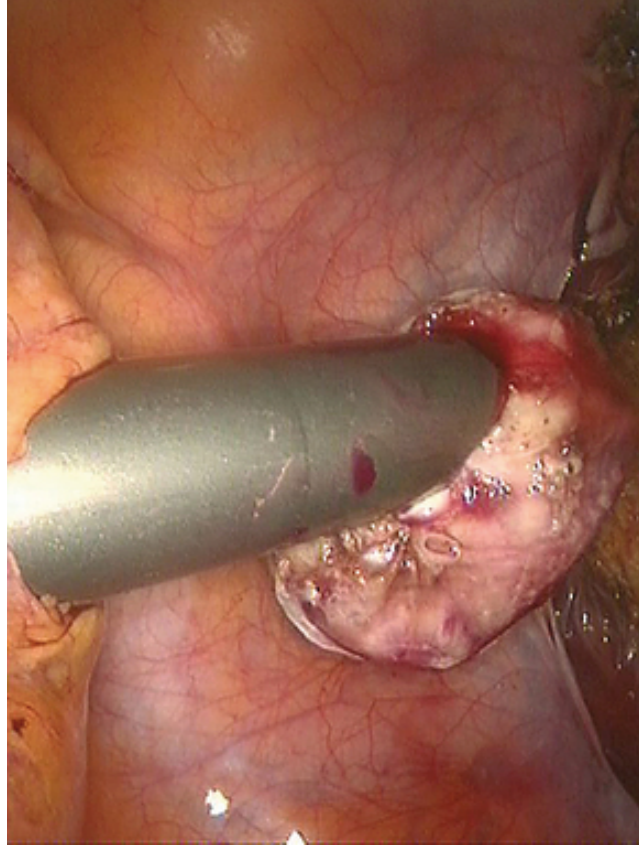
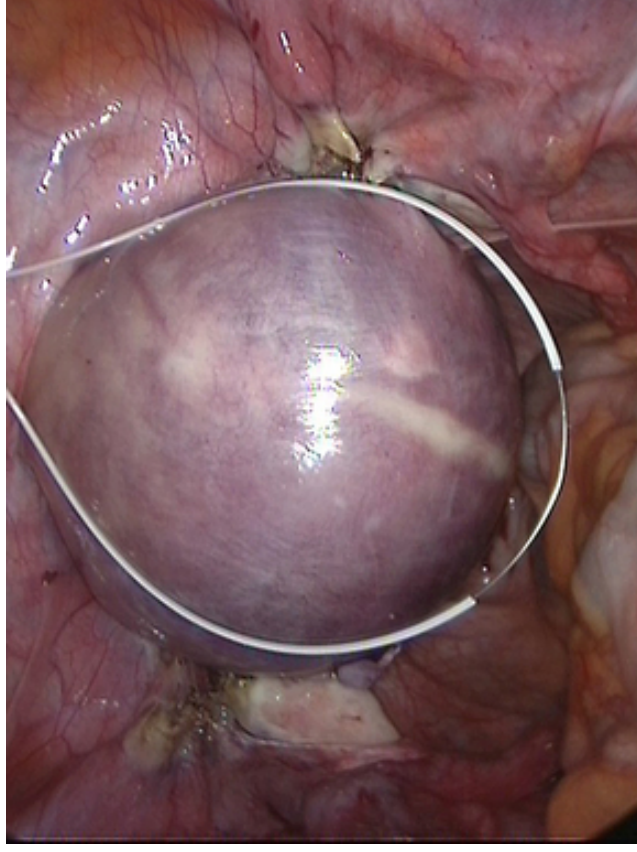
1897 - 1904 Prof.
Döderlein



42.409

1998 - 2008 Prof.
Wallwiener

Hysterektomie



Laparoskopie in der Gynäkologie

Vorteile:

- minimales Trauma im Bereich der Bauchdecke
- > schnellere postop. Erholung
- > weniger postop. Komplikationen (Thrombose)

- weniger postop. Verwachsungen
- schnellere Operationen
- anatomisch präzisere, exakte Operationen
- > weniger Blutverlust
- > Schonung von Nerven im kleinen Becken
- bessere (Vergrößerung) Darstellung des OP-Gebietes



Laparoskopie in der Gynäkologie

Nachteile:

- höheres Verletzungsrisiko (Gefäße/Darm etc.)
- 2 D - Darstellung
- direktes Tasten des Gewebes nicht möglich
- Kosten
- u.U. anfällige Technik / Zeitaufwand
- höhere Kreislaufbelastung



Laparoskopie in der Gynäkologie

- Zyste / Adhäsiolyse / Abstriche
- Diagnostik
- Sterilität (Chromopertubation)
- Ovarial-PE (Kryokonservierung)
- Endometriose
- Adnexektomie / Dermoidzysten
- Eileiterschwangerschaft / Sterilisation
- Myome
- Kolpo-Sakropexie
- Neovagina (MRKH-Syndrom)

HE (szHE / totale / radikale HE)
pelvine – / paraortale LNE (+ Sentinel-LK)



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Laparoskopie in der Gynäkologie

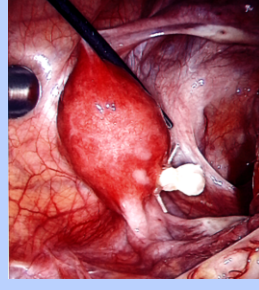
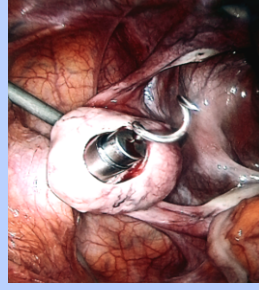
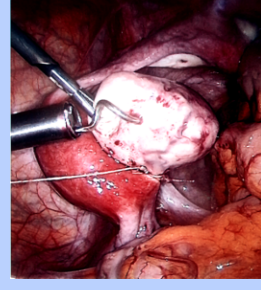
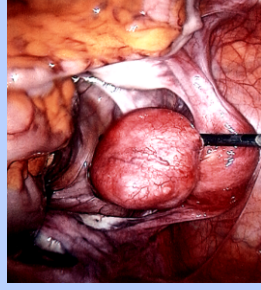
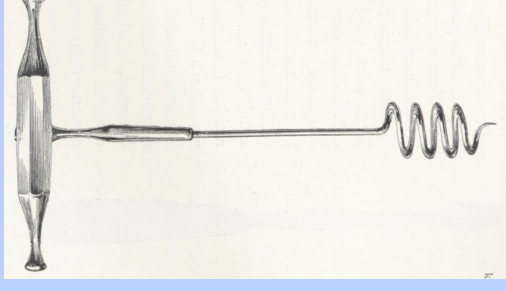
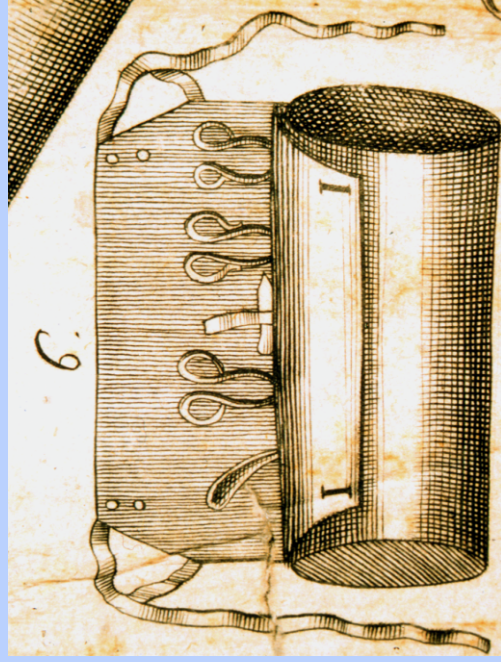
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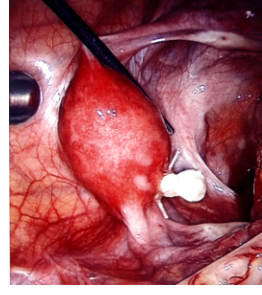
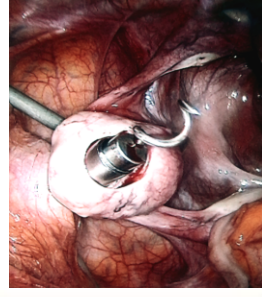
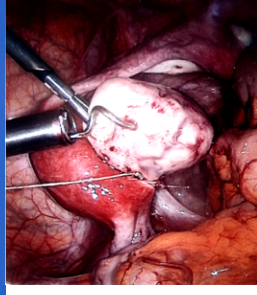
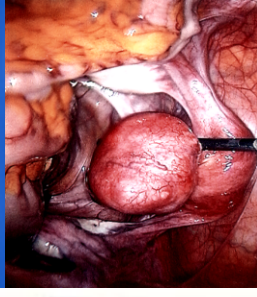
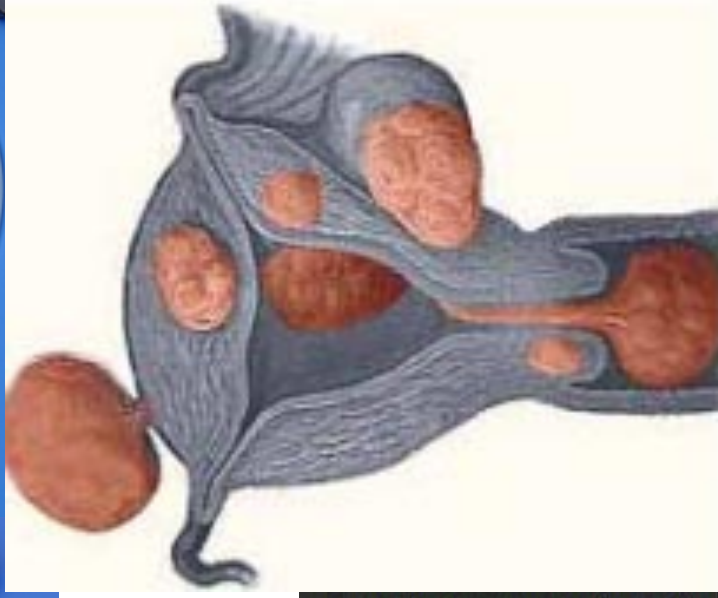
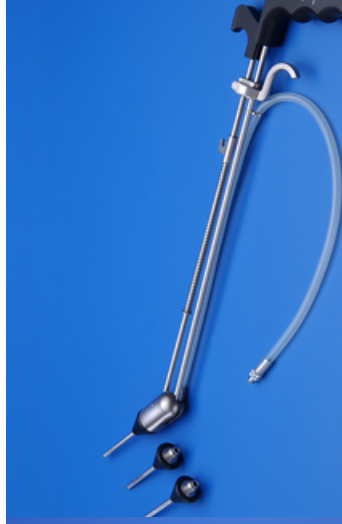


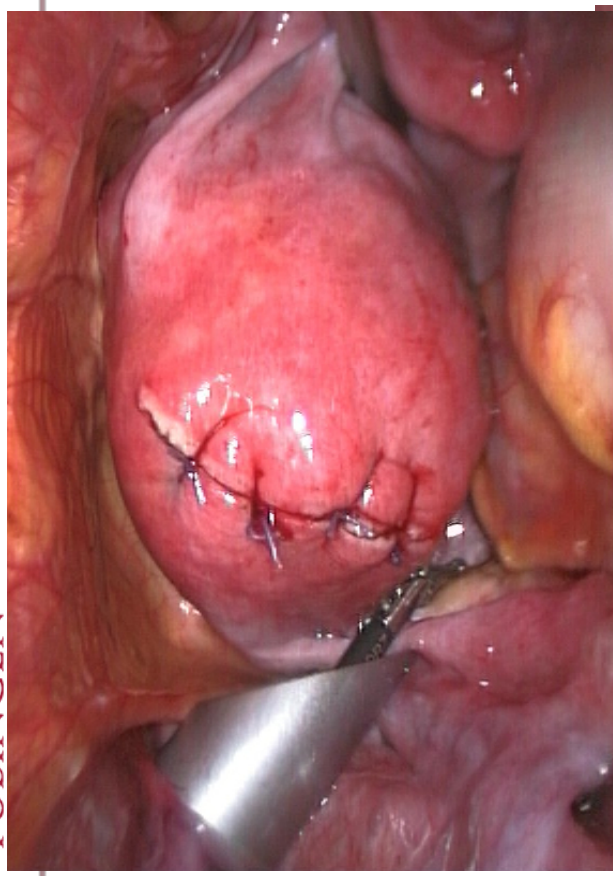
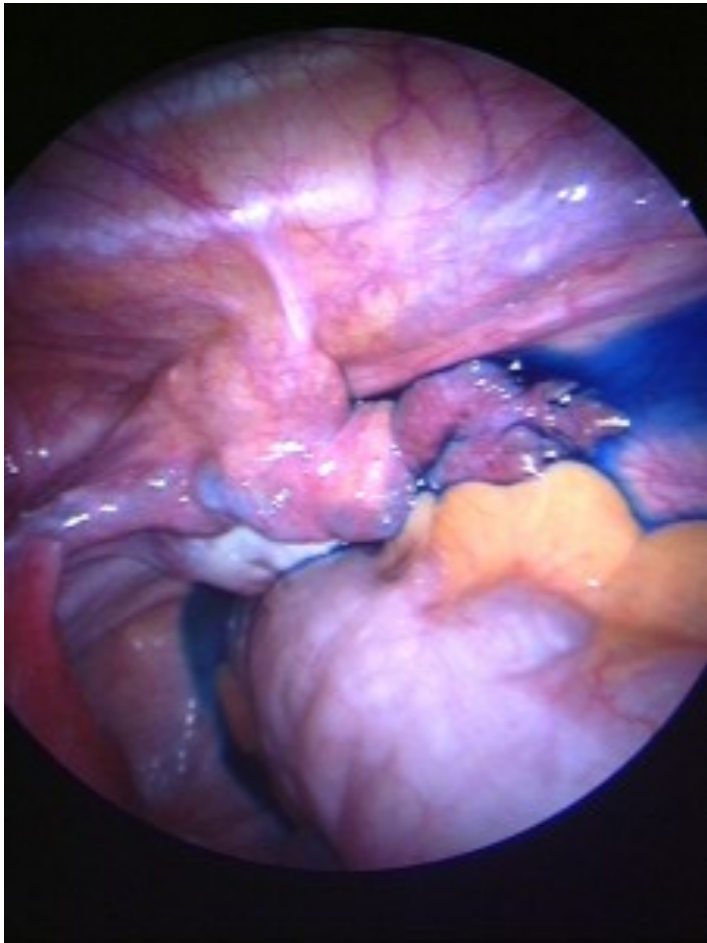


Myomentfernung



Gebärmutter erhaltende Operationen





Laparoskopie heute

Ist-Zustand



Entwicklung

- komplexes Instrumentarium
- technisches Equipment
- zentrale Steuerung
- Effizienz (Kosten - Zeit)
- Personal

- Dokumentation
- 3D
- Telemedizin
- intraop. Integration von US / CT
- Schulung des Personals
- Sicherheit / Standardisierung



Grenzen / Limitationen der konventionelle Laparoskopie

- y eingeschränkte Beweglichkeit der Instrument
- y eingeschränktes Gesichtsfeld
- y kein Tastsinn
- y unnatürliche Position des Operators
- y 2 –Dimensionale Darstellung der Organe / Strukturen



Laparoscopic surgery in gynaecology: quo vadis?



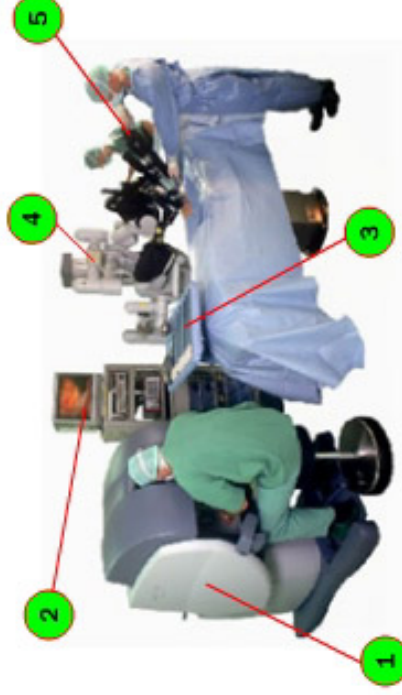
Da Vinci Components



Control Console

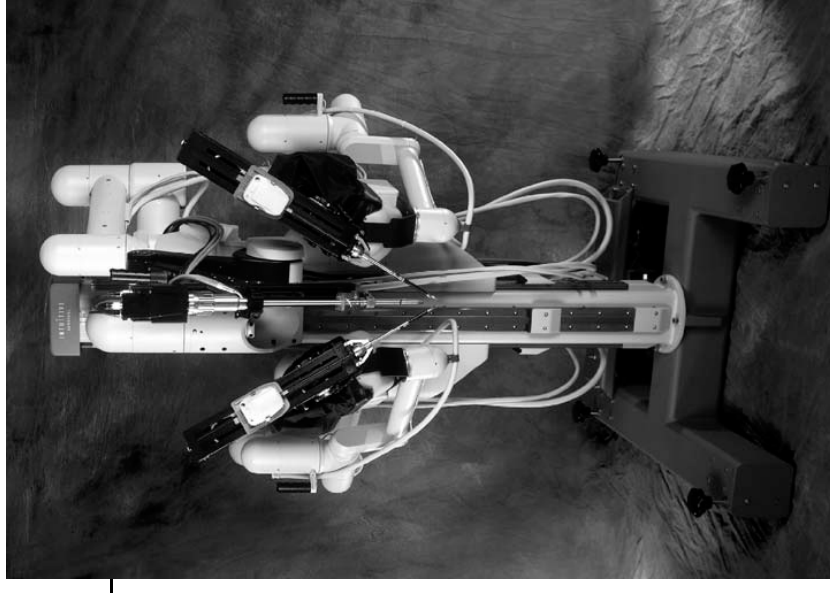


**Master
Controller**



- 1 Surgeon Console
- 2 Image Processing Equipment
- 3 Endowrist Instruments
- 4 Surgical Arm Cart
- 5 Hi-Resolution 3-D Endoscope

© 2000 How Stuff Works
Photo courtesy of Intuitive Surgical

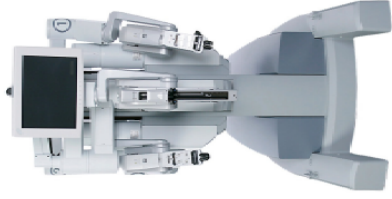


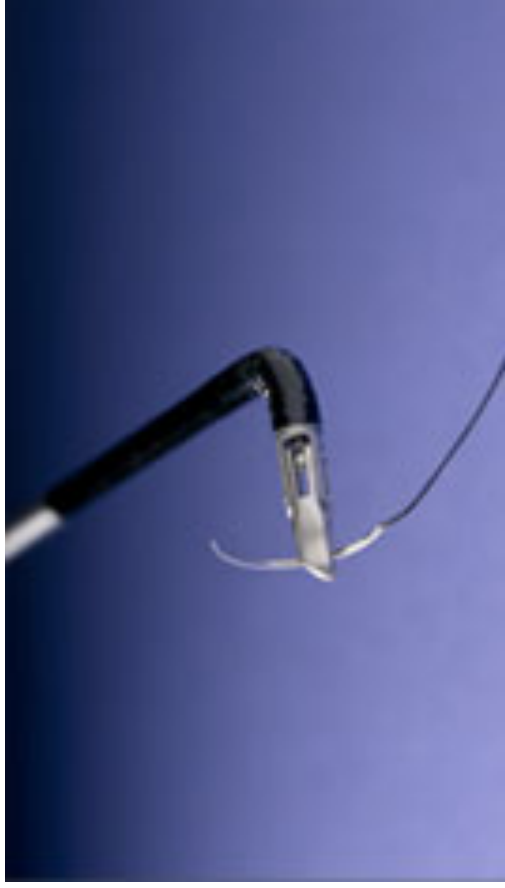
Robot Cart



Indikationen:

Hysterektomie
Myomentfernung
tubal reanastomosis
Sakrocolpopexie

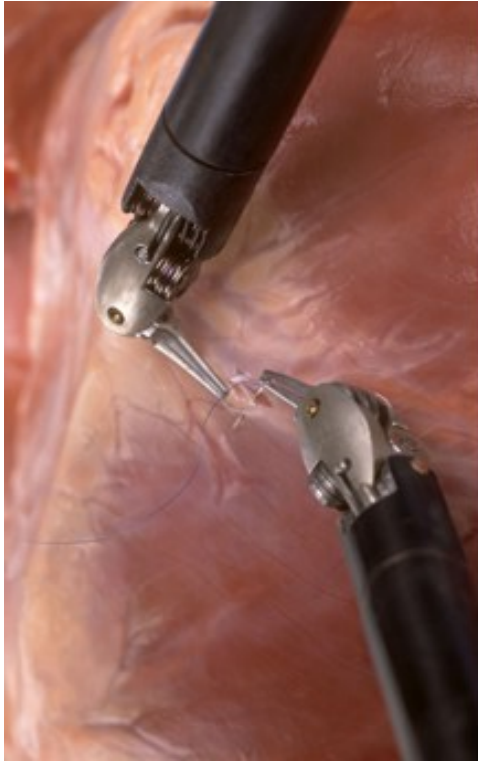




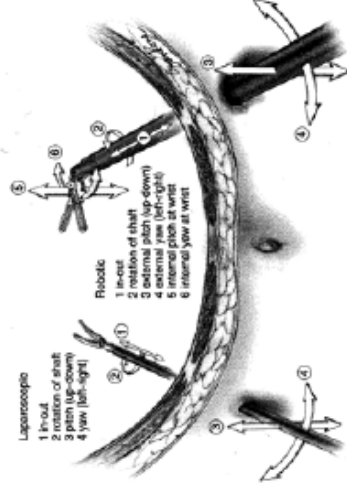
Robot-Assisted Laparoscopy

Optical system and robotic arms with highly-specialized instruments connected to a computer-driven mechanism that is controlled by a surgeon

Surgeon's hands and fingers direct the surgery and the movements are translated by the computer to precise movements of the microsurgical instruments inside the patient's body



6 degrees of movement



daVinci Robotor - Nachteile

- Kosten
 - \$1.4 Millio. Anschaffungskosten
 - \$120,000 jährliche Kosten (Wartung, Materialkosten)
 - Einmalinstrumente \$2000/OP
 - Fallpauschalen - DRG
- Lange Lernkurve
- Personal –intensive Eingriffe
- OP Dauer länger -> Kosten
- OP Vorbereitung / - Aufbau Zeit



SPIDER® Surgical System

DELIVERING THE PROMISE
OF FLEXIBLE LAPAROSCOPY





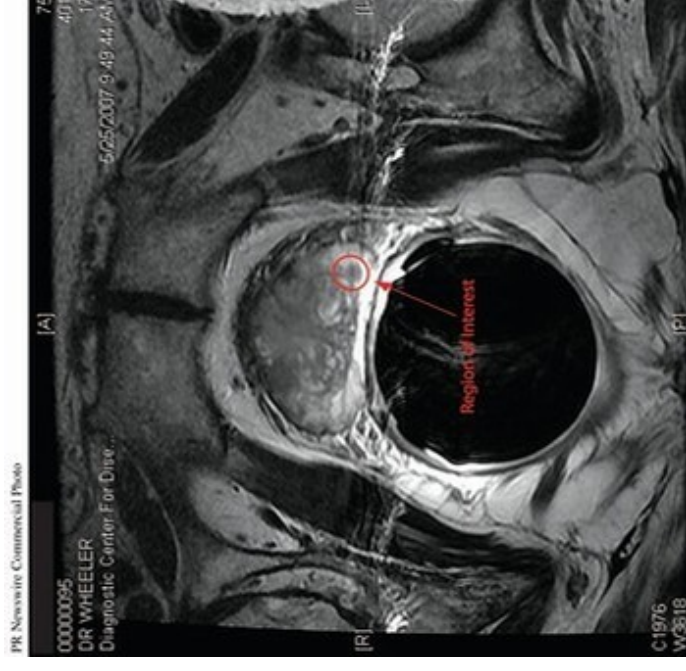
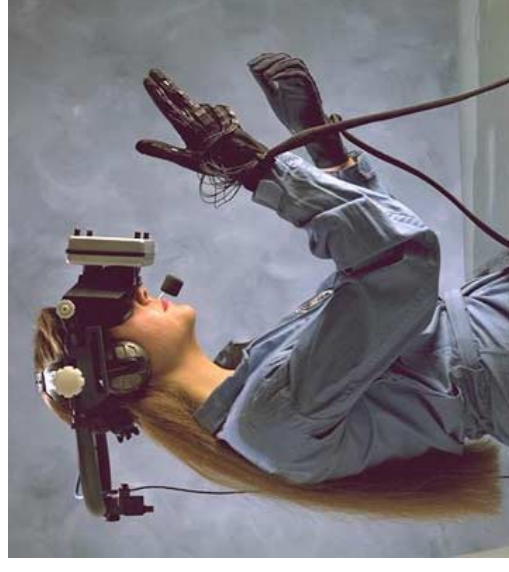
Vorteile und Nachteile

TABLE 1. Advantages and Disadvantages of Conventional Laparoscopic Surgery Versus Robot-Assisted Surgery

	Conventional Laparoscopic surgery	Robot-assisted surgery
Advantages	Well-developed technology Affordable and ubiquitous Proven efficacy	3-D visualization Improved dexterity Seven degrees of freedom Elimination of fulcrum effect Elimination of physiologic tremors Ability to scale motions Micro-anastomoses possible Tele-surgery Ergonomic position
Disadvantages	Loss of touch sensation Loss of 3-D visualization Compromised dexterity Limited degrees of motion The fulcrum effect Amplification of physiologic tremors	Absence of touch sensation Very expensive High start-up cost May require extra staff to operate New technology Unproven benefit



- Do the “virtual operation” the night before
- Able to rewind and re-do
- Burn to a disc
- Robot performs “pre-planned” surgery

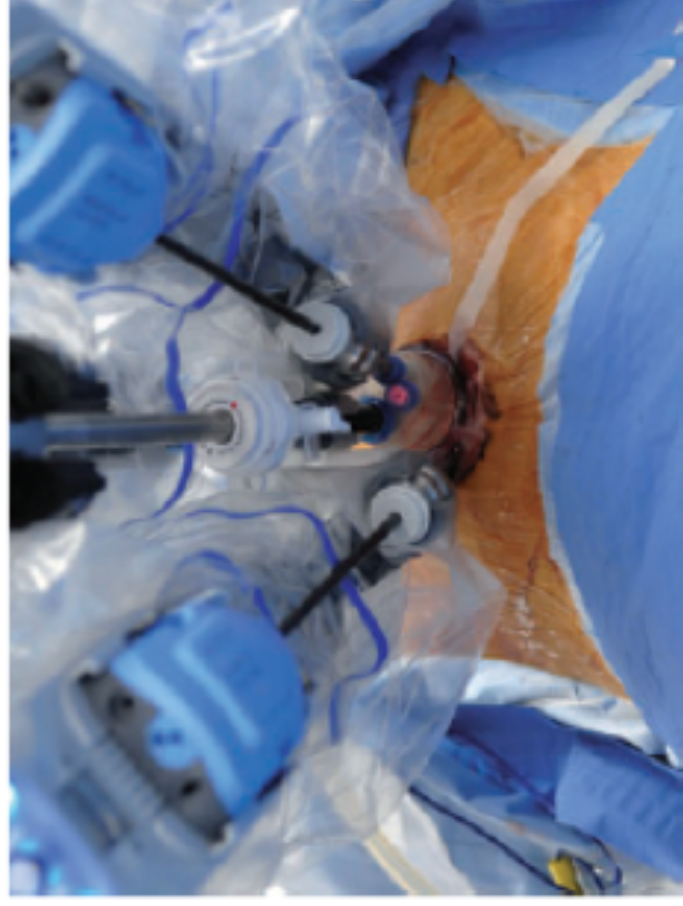
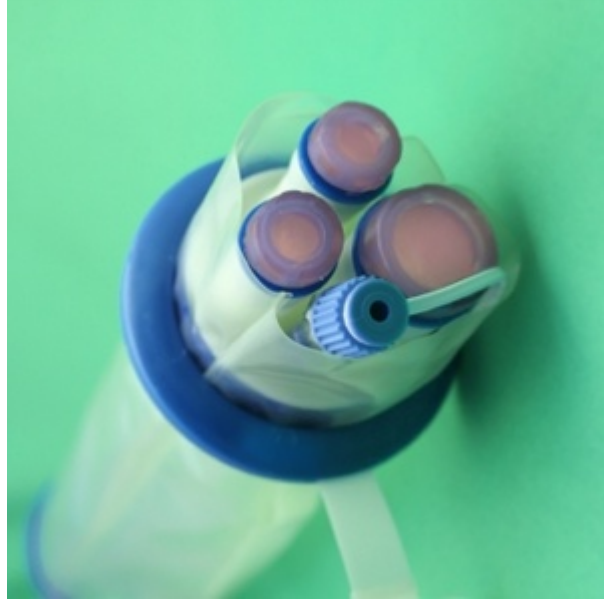


Robotic single-port transumbilical surgery in humans: initial report

Jihad H. Kaouk, Raj K. Goel, Georges-Pascal Haber, Sebastien Crouzet and Robert J. Stein

Section of Laparoscopic and Robotic Surgery, Glickman Urologic and Kidney Institute, Cleveland Clinic, Cleveland, OH, USA

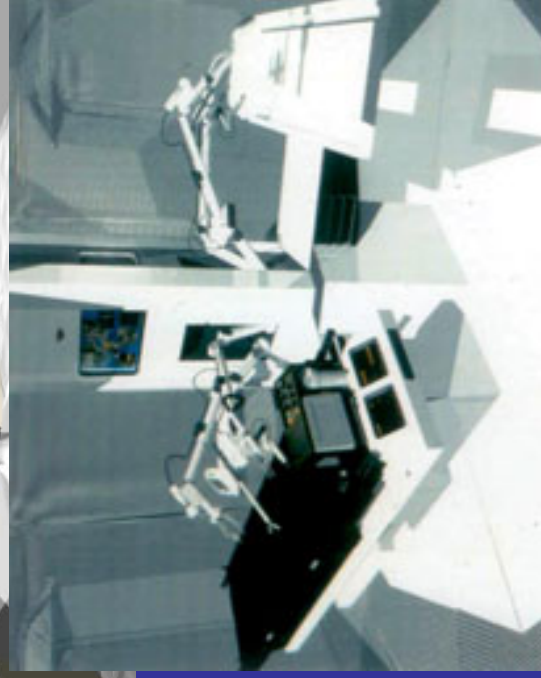
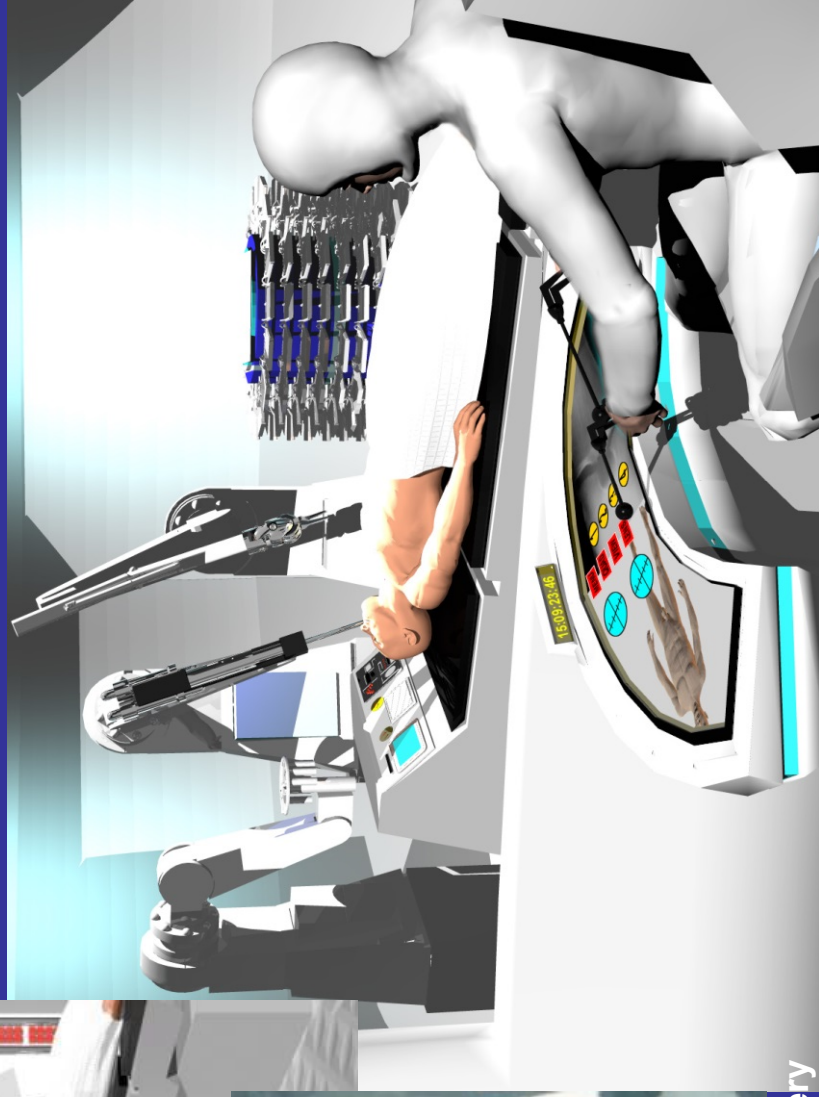
Accepted for publication 6 June 2008



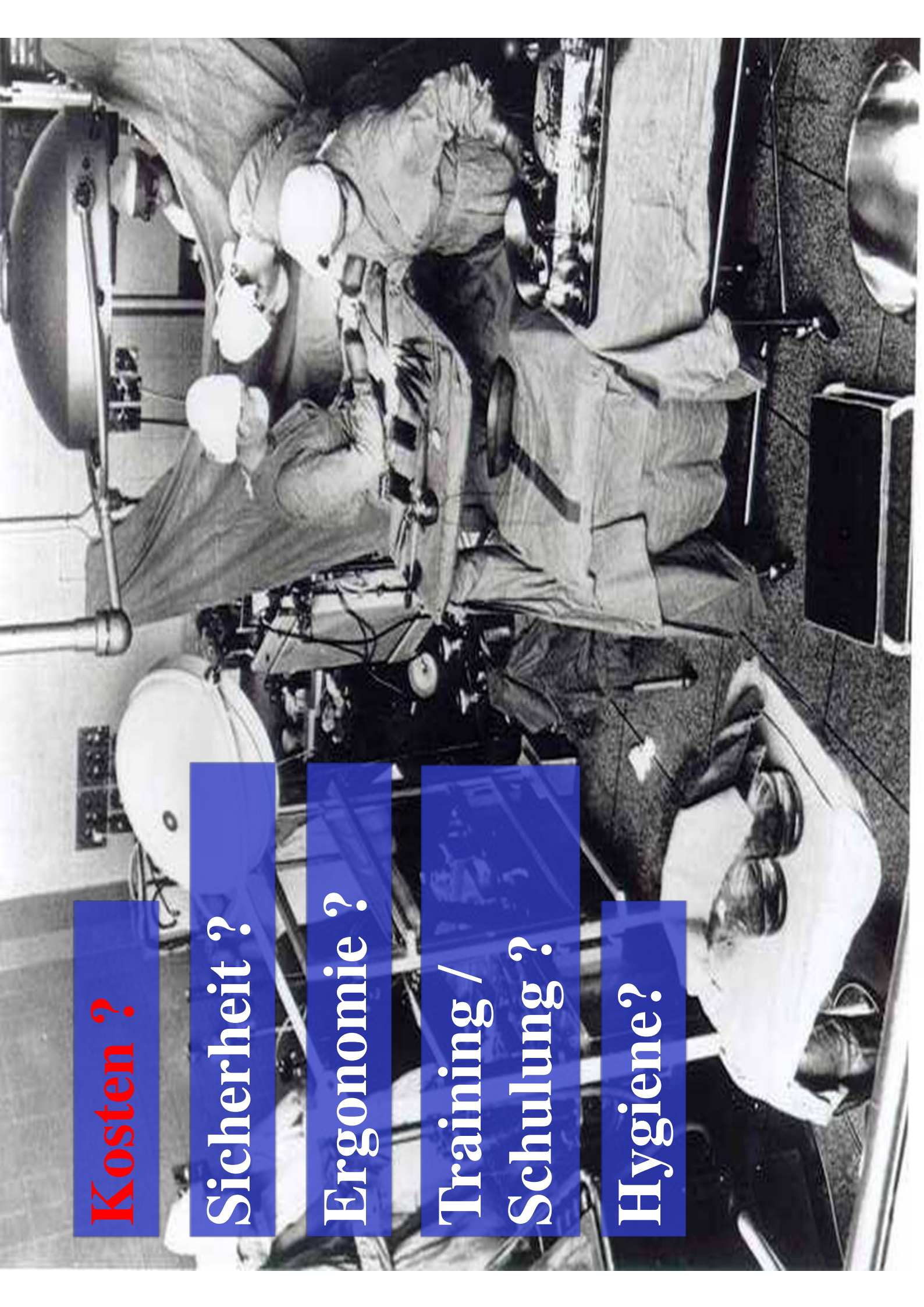
Robotic Surgery in Urology
The Past, Present, and
Future

Lance Hampton, MD

The Operating Room of the Future



© Richard M. Satava, MD FACS Professor of Surgery
University of Washington School of Medicine



Kosten ?

Sicherheit ?

Ergonomie ?

**Training /
Schulung ?**

Hygiene?



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★ Performing your original search, *Psychological And physical stress in surgeons operating in a standard or modern operating room*, in PubMed will retrieve [342 records](#).

[Surg Laparosc Endosc Percutan Tech.](#) 2010 Aug;20(4):237-42.

Psychological and physical stress in surgeons operating in a standard or modern operating room.

[Klein M, Andersen LP, Alamilli M, Gögenur I, Rosenberg J.](#)

Department of Surgical Gastroenterology, Herlev Hospital, University of Copenhagen, Herlev Ringvej, Herlev, Denmark. madsklein@hotmail.com

Abstract

PURPOSE: There have been no studies examining the effect of optimized ergonomic and technical environment on the psychological and physiological stress of the surgeon. The aim of this study was to examine whether optimized ergonomics and technical aids within a modern operating room (OR) affect psychological and physiological stress in experienced laparoscopic surgeons.

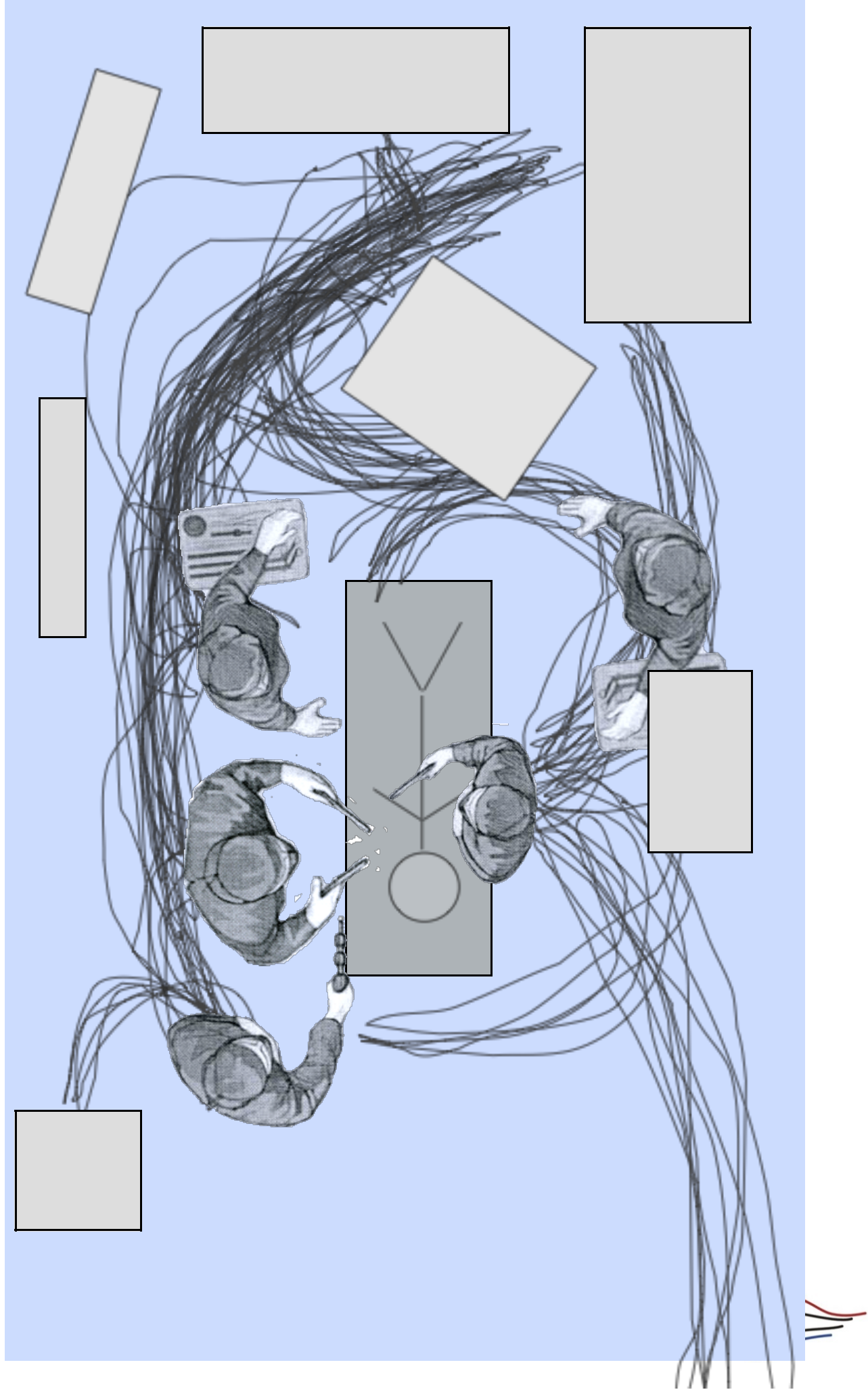
METHODS: This was a prospective case-controlled study including 10 experienced surgeons. Surgery was performed in 2 different ORs: a standard room and a modern room (OR1-suite, Karl Storz). The surgeons filled out questionnaires concerning physical and psychological wellbeing before and after surgery and had their heart rate variability registered during surgery.

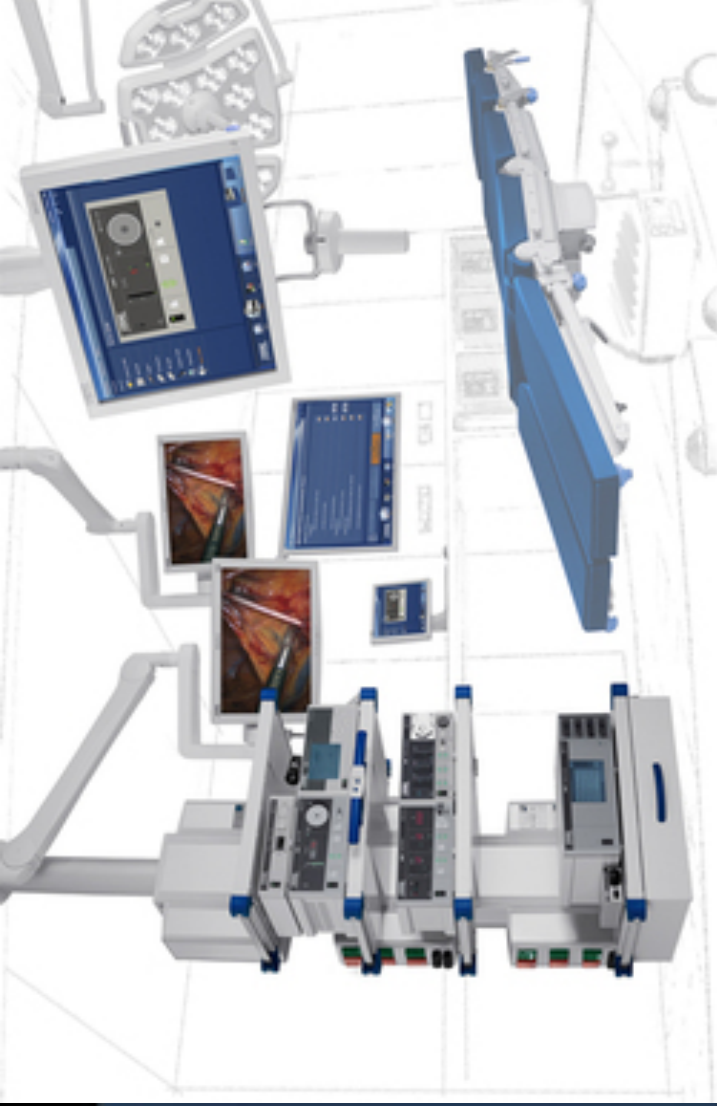
RESULTS: Preoperative to postoperative physical strain and pain measurements revealed a systematic difference with 14 of 15 parameters favoring the modern OR. Two of these parameters reached statistical significance. We did not find any significant differences in the subjective parameters of surgeon satisfaction or the measured heart rate variability parameters.

CONCLUSIONS: Physical strain on the surgeon was reduced when performing laparoscopic cholecystectomy in a modern OR compared with a standard room.

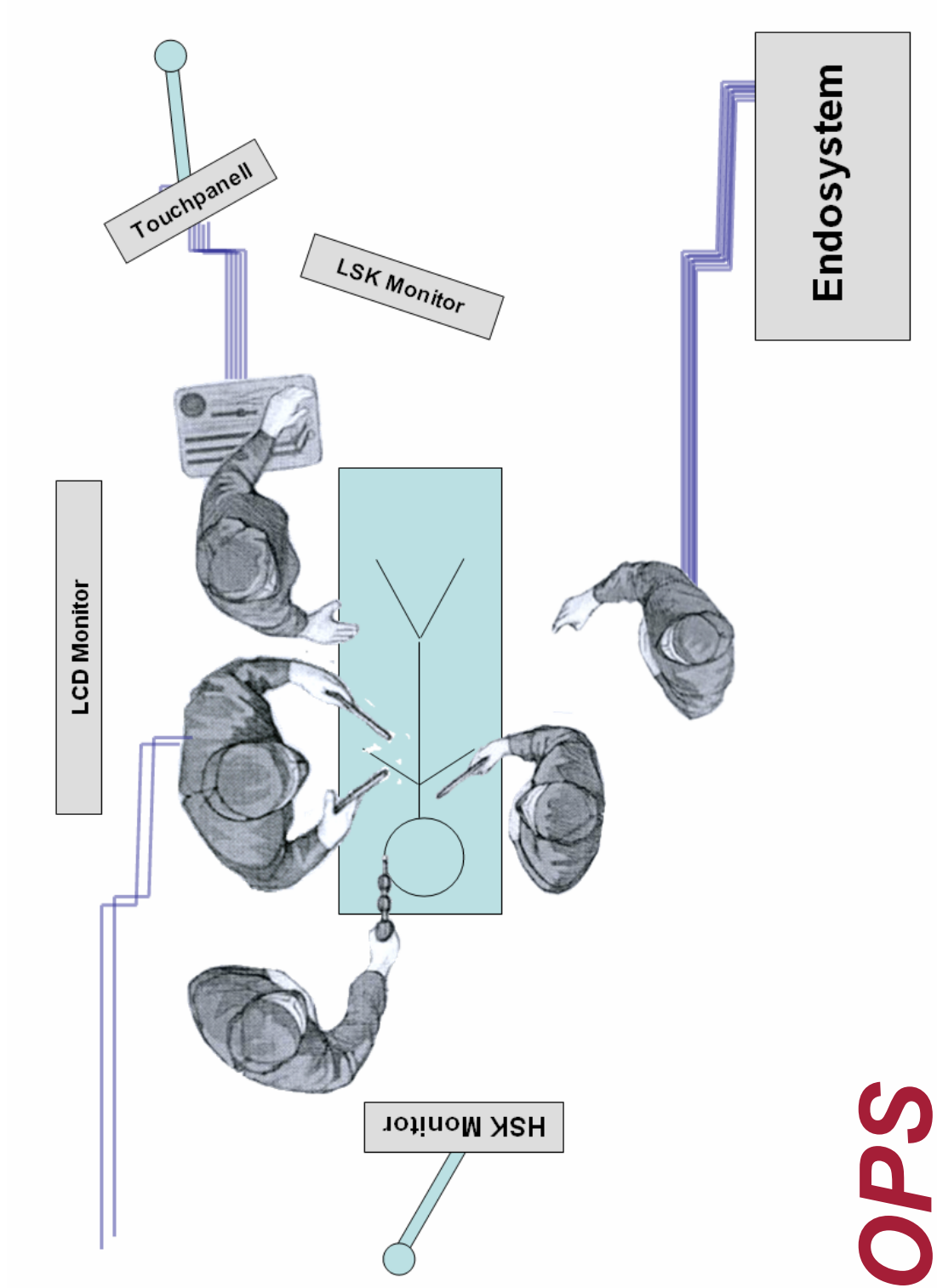


— Prozess- Analyse: Konventioneller OP ohne IOPS —





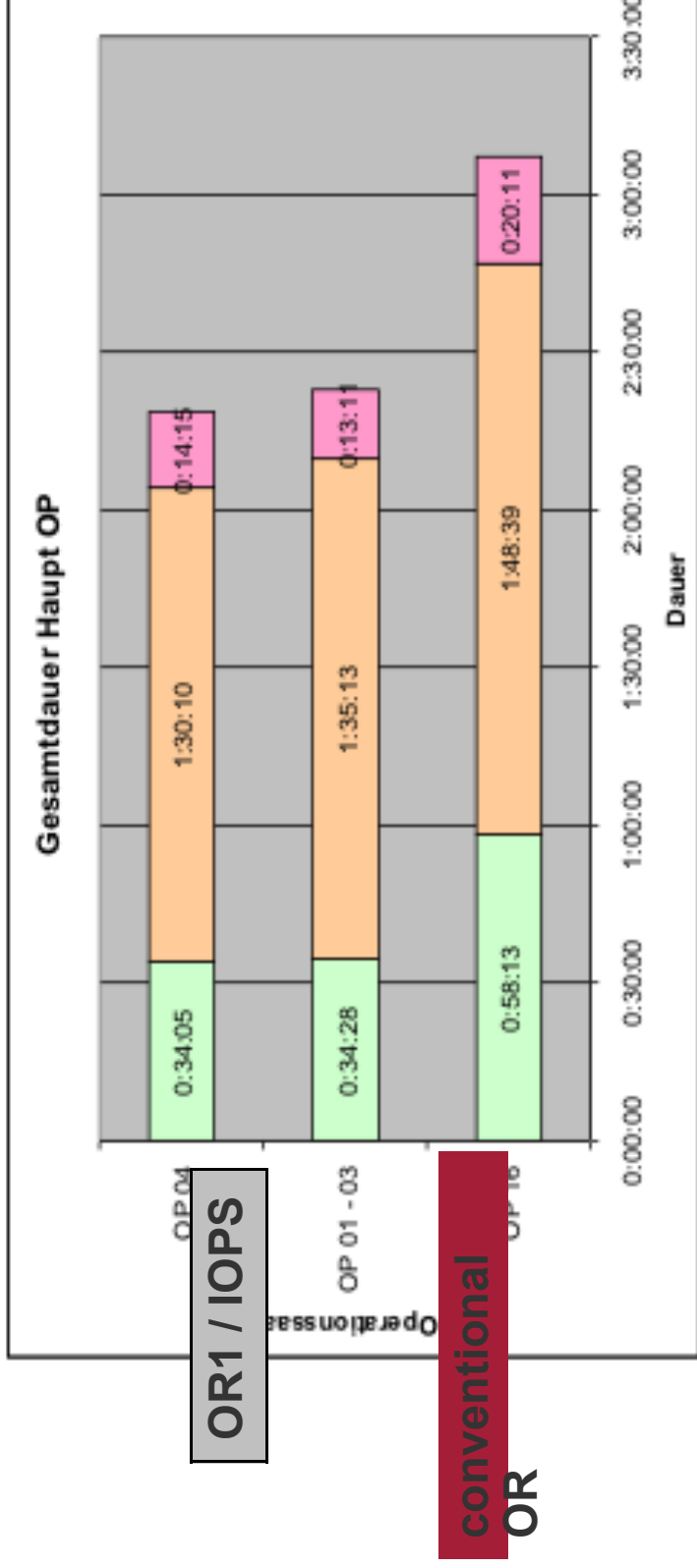
Prozess- Analyse: OR1 mit IOPS



IOPS
*Integrated operation
systems*

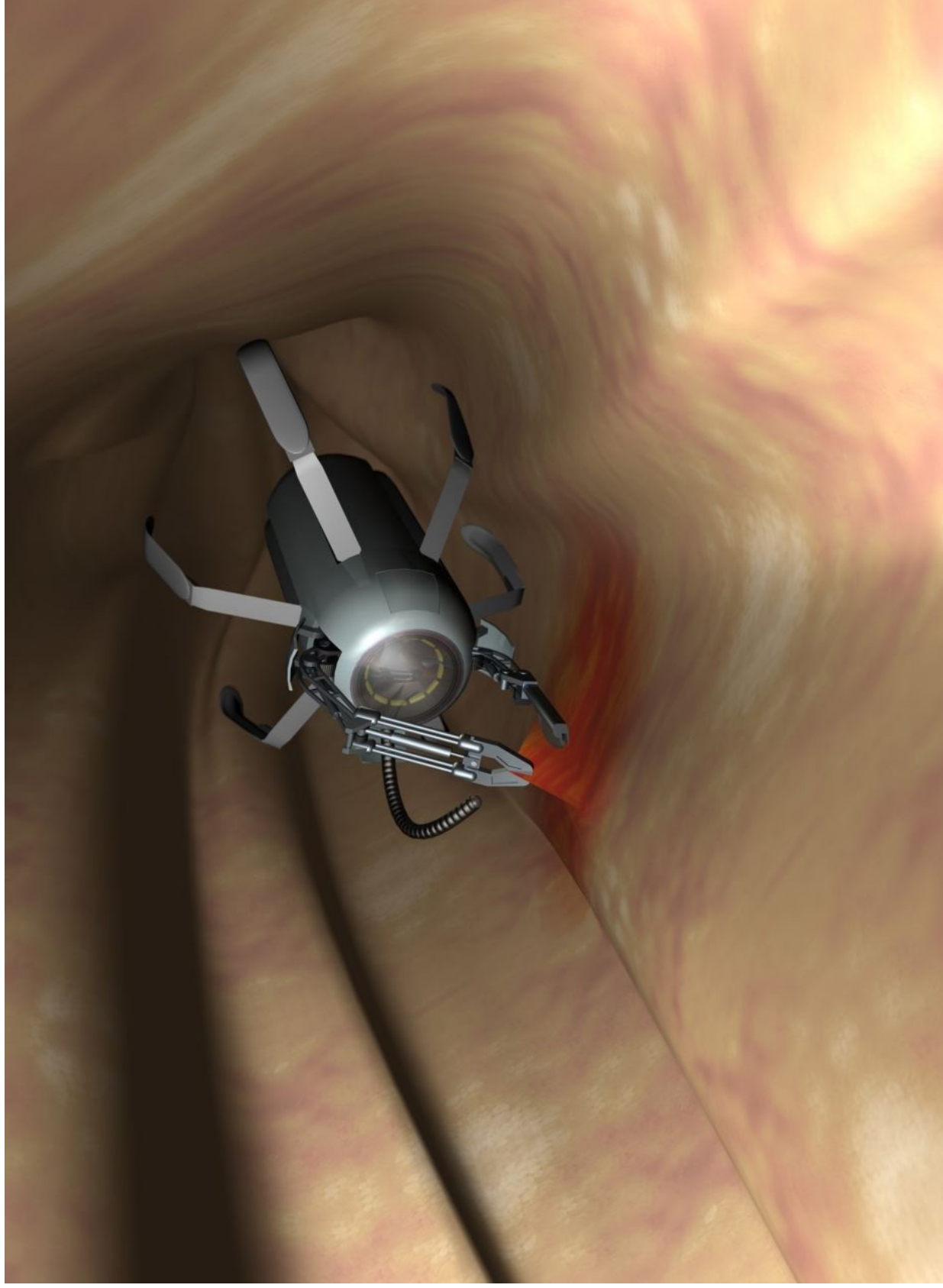
Dauer der Operation

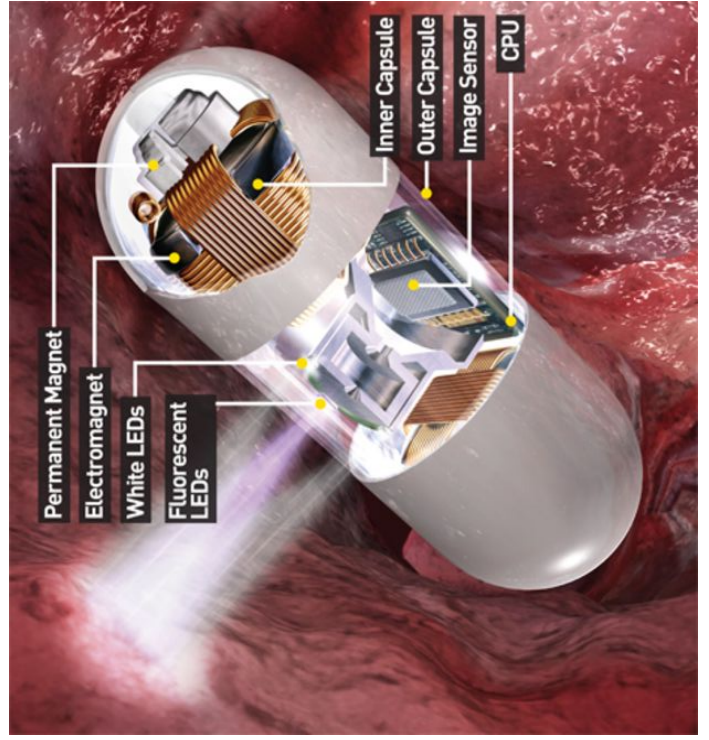
Comparison between OR1 (+ IOPS) and conventional OR

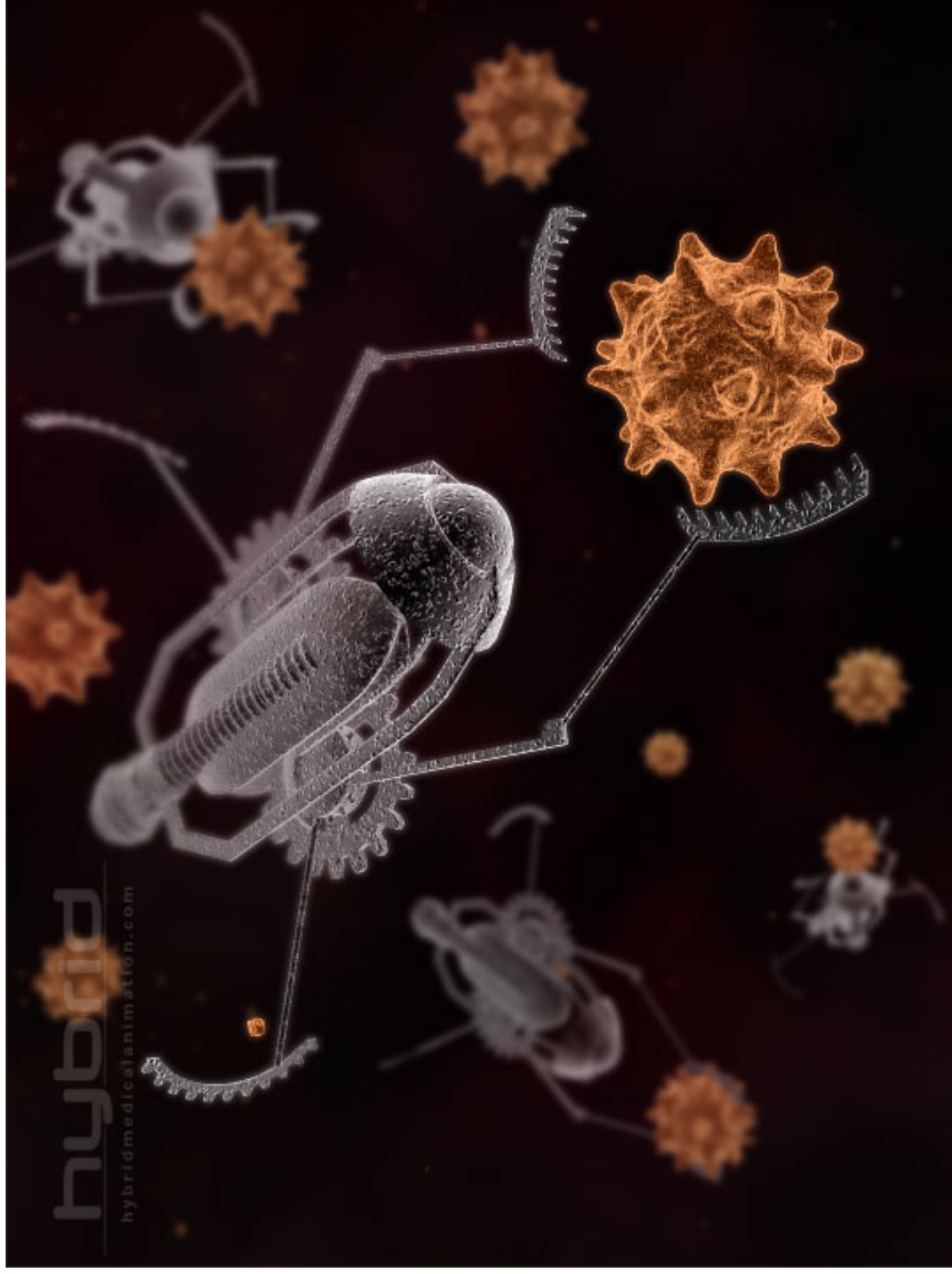


- reduced patient intra-operative flow-time,
- reduced wait-time
- reduced cut-suture-time
- reduced room set-up time









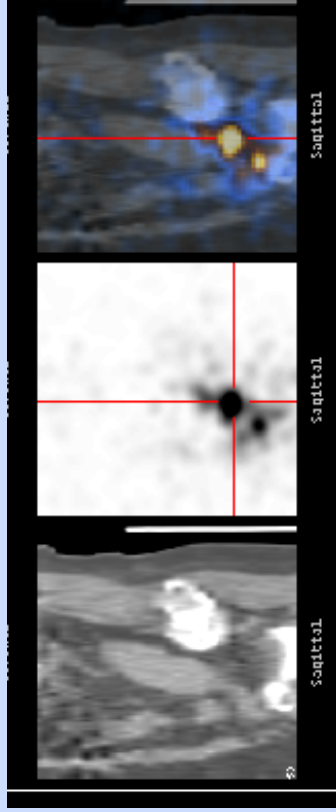


Sentinel-Lymphknoten Endometriumkarzinom

Tag 1

Hysteroskopische
Tc-Markierung

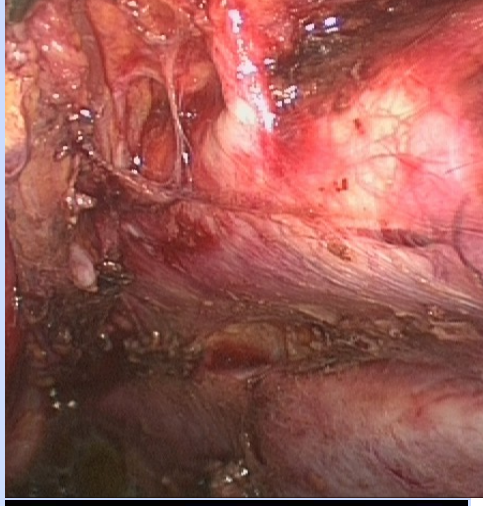
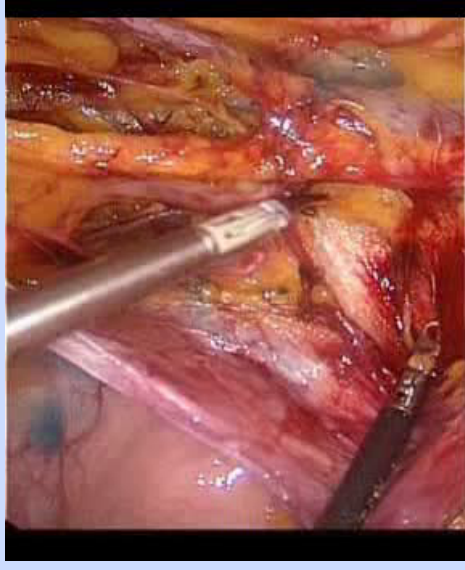
Bildgebung



Tag 2

Laparoskopische
Hysterektomie

LSK (pelv. / paraaortal)



Laparoskopisch assistierte radikale vaginale Hysterektomie



LSK ist der konventionellen Laparotomie

überlegen:

Ø Größere onkologische Radikalität
(mehr Lymphknoten)

Ø Gewebe schonende Präparation

Ø Niedrigere Komplikationsrate

Ø Niedrigerer Blutverlust

Ø Kürzerer Klinikaufenthalt

(Kosteneffizienz)

Ø Weniger Komplikationen bei:

Diabetes, Adipositas, Polymorbidität

Operative laparoskopische Gynäkologie

• Der Motor der INNOVATIONEN

• Das moderne Spektrum

• Minimales Trauma – endoskopischer Zugang

• Vaginaler Zugang – minimalst invasiv

• Maximale Radikalität – endoskopischer Zugang

• Sentinel?

• Operative Gynäkologie: QUO VADIS ? Robotic ?

