

**M U N I
M E D**

**Gynekologicko - porodnická klinika
Lékařské fakulty MU a FN Brno
head of the department:
doc. MUDr. Vít Weinberger, Ph.D**

**FAKULTNÍ
NEMOCNICE
BRNO**

Surgery in gynecology

Eliška Gazárková

Obstetrics and Gynecology

Introduction

Why?

- acute life-saving surgery / planned operation
- relief of symptoms (pain, bleeding, discomfort, incontinence, ..)
- treatment of infertility
- oncological indications

Introduction

Classification by approach:

- Abdominal
- Vaginal
- Endoscopic
- Small interventions (Outpatient / one-day surgery)

- Obstetrics

Introduction

Indication

- proper gynecological examination (incl. anamnesis, objective examination, ultrasound, CT, MR, others)
 - goal setting (talking to the patient!!!, what we / patient expect?, what we can offer?)
- ➡ need for surgery? ➡ choosing the right approach = correct indication ➡ successful operation

Introduction

Preoperative management

- pre-op examination (lab, internal, ARO, others if needed)
- preparation
 - Treatment of infections vag, uro, focuses
 - Bowel preparation (diet, enema, laxative)
 - Prevention of trombembolism, ATB prophylaxis
 - Securing the urinary tract (stent)
 - Timing (after menzes)
- multidisciplinary approach (urologist, surgeon)

Introduction

Perioperative management

- Premedication (anxiolytics, hypnotics, ATB), iv line, catheterization
- Position
 - horizontal (abdominal surgery)
 - gynecological position = hip flexion, adduction (laparoscopy, small interventions, vaginal surgery)
 - Trendelenburg = head down (laparoscopy)
- Anesthesia – general, spinal, local, analgesia
- Preparation of the operating field (desinfection, sterile cover)



Introduction

Desinfection

- Ribs – upper third of the thighs
- external genitalia, vagina (diluted solution)



Vaginal surgery

- Small diagnostic-therapeutic procedures
- Resection operations
- Urogynecological operations
- Vaginal hysterectomy
- Operations of outer genitalia and perineum
- Operations of vaginal introitus area
- Operations of vagina
- Operations of cervix
- Operations of uterus

Small interventions

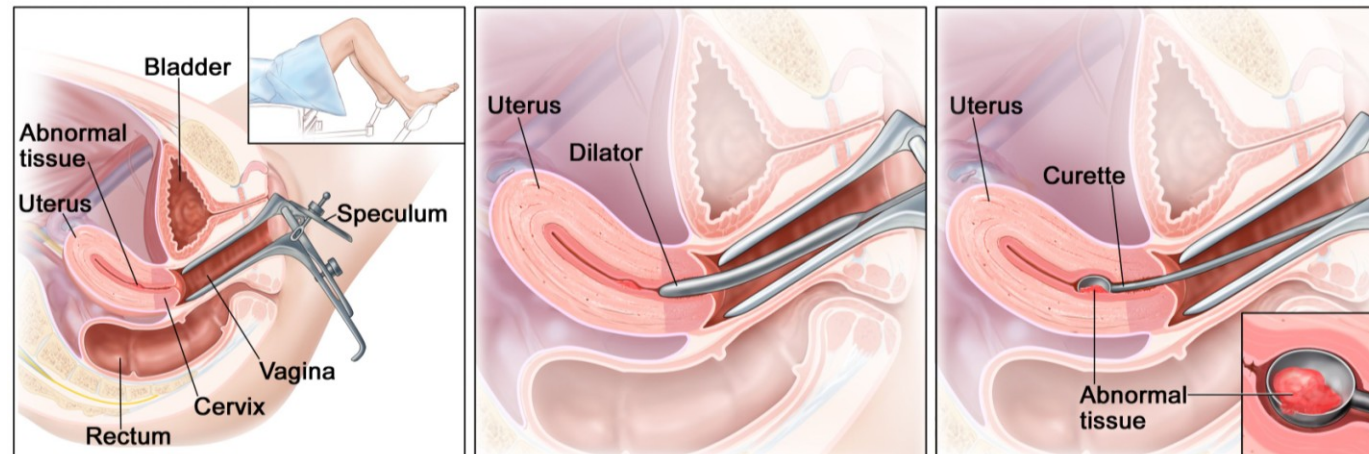
(Outpatient / one-day surgery)

- Diagnostic (visualization, biopsy, puncture)
- Therapeutic
- Excision (vulva, vagina, cervix = conization)
- Uterine abrasion (curettage)
- Uetrine revision
- Puncture of the cyst vaginally
- Hysteroscopy (diagnostic + surgical)

Small interventions (Outpatient / one-day surgery)

- **Uterine abrasion (curettage)**

- endometrial biopsy of the cervix and uterine cavity separately
- histological verification + treatment of bleeding
- Dilatation of cervix is needed
- I: hypermenorrhoea, menometrorrhagia, postmenopausal bleeding/spotting, suspected ultrasound image (high endometrium)



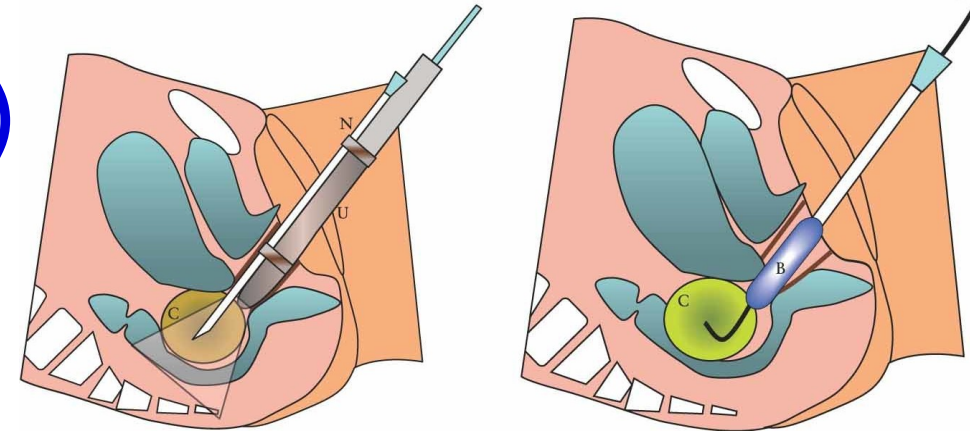
Small interventions (Outpatient / one-day surgery)

- **Uterine revision (surgical abortion)**
 - Procedure to remove residual tissue after incomplete spontaneous abortion or missed abortion (surgical abortion procedure)
 - Dilatation of cervix is often needed
 - Ultrasound control
 - curette, vacuum-aspiration curette
 - I: residues after abortion, missed abortion, anembryomola, residues after delivery, patient's wish to terminate the pregnancy (12th g.w.)

Small interventions (Outpatient / one-day surgery)

- **Puncture of the cyst vaginally**

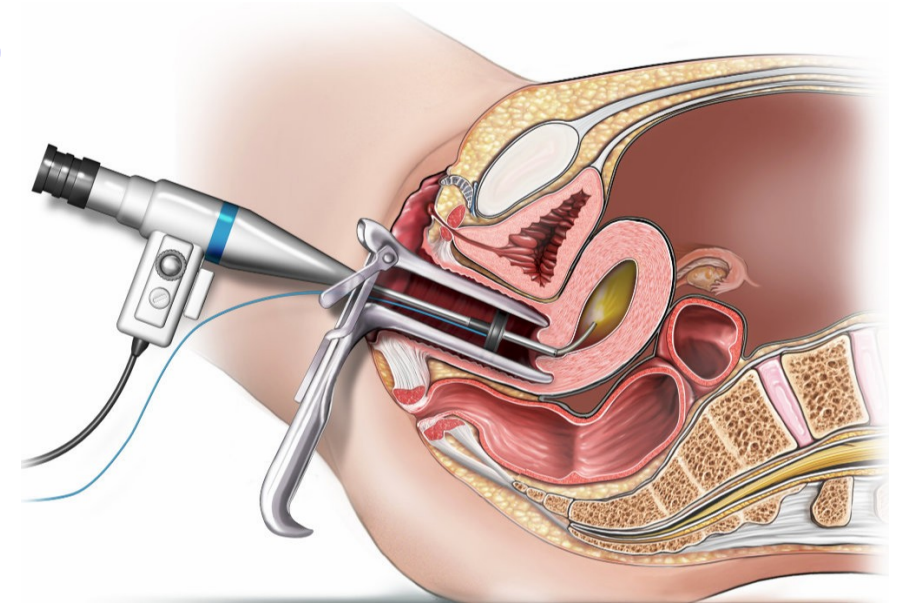
- Procedure to aspirate the contents of the cyst (ovarian) vaginally
- Ultrasound navigation
- Diagnostics – cytology (malignant cells?)
- Therapy – immediate relief of symptoms, minimally invasive, but often relapse! (main and permanent solution is surgery - removal of the cyst)
- I: symptomatology – (pain, discomfort, incontinence, urinary retention, ..)
 - acute relief (no/minimal preparation) x a patient who cannot undergo surgery
 - suspected malignancy



Small interventions (Outpatient / one-day surgery)

- **Hysteroscopy**

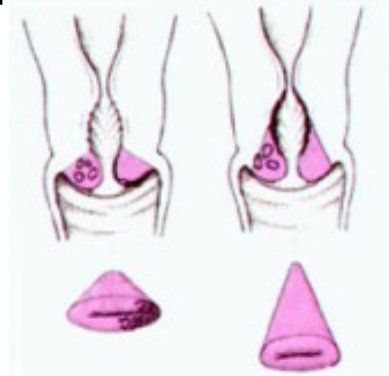
- Endoscopic procedure that allows to look inside uterine cavity in order to diagnose and treat
- Hysteroscope
 - device (thin, lighted tube) that is inserted inside of the uterus
 - rigid / flexible, outer diameter 3 - 9 mm
 - optical cable + channel for instruments (loop, curette, needle)
 - distention media – fluid, (gas)
- targeted biopsy, disruption of adhesions, resection of septum, polyps, fibroids, removal of foreign bodies (IUD) **under visual control**
- I: sterility, infertility, abnormal uterine bleeding, suspect ultrasound findings, uterine polyps



Small interventions (Outpatient / one-day surgery)

- **Conization**

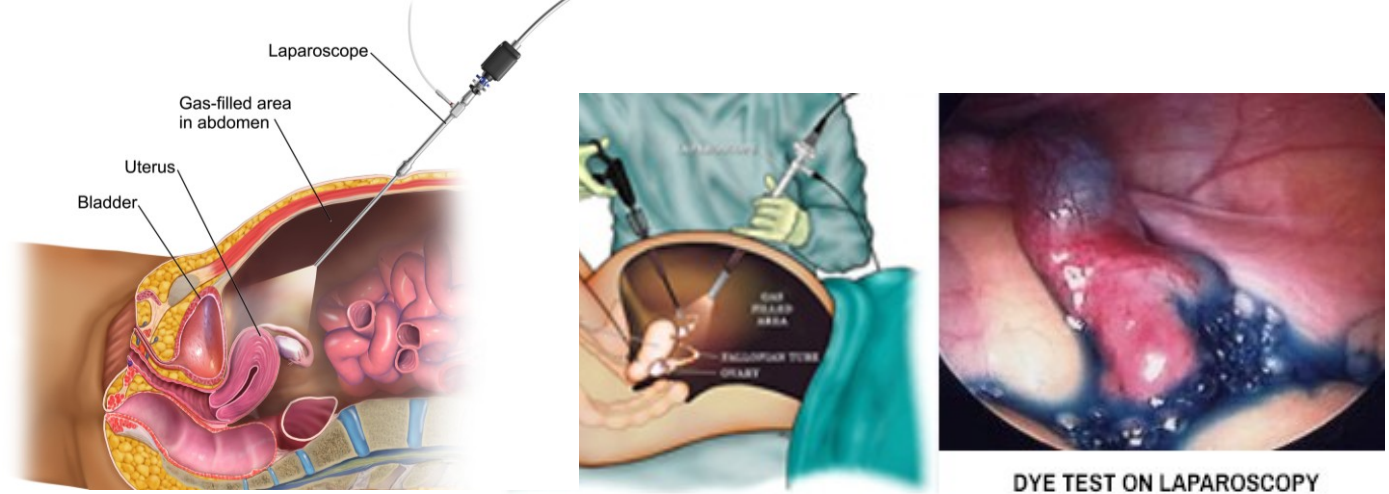
- Diagnostic + therapeutic procedure
- conus shape resection of cervix
- „cold knife“ conisation (scalpel), electrocoagulation loop / needle, laser conisation (CO2)
- I: prekancerosis (CIN)
- (trachelectomy – fertility sparing, therapy cervical Ca. "high radical conisation")



Urogynecological vaginal operations

- urinary incontinence surgery
 - TVT, implants, artificial sfincter
- Vaginal plastics
 - operations of descents and prolapse

Laparoscopy



- endoscopic method, access and view of the abdominal wall, minimal disruption of the abdominal wall
- Diagnostic (visualization, biopsy) / Therapeutic
- Planned / urgent
- DGL (diagnostic laparocopy), ovarian / fallopian tube surgery, uterine surgery, hysterectomy
- minimally invasive, short hospital admission and reconvalescence
- infraumbilical incision – insuflation of CO₂ (Verres needle, cca 3,5l) + port with optics
- Instrumental ports

Laparoscopy

Indication

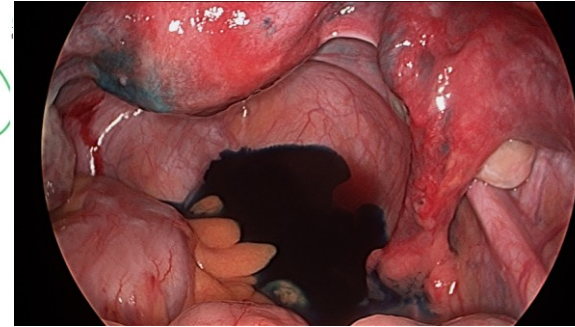
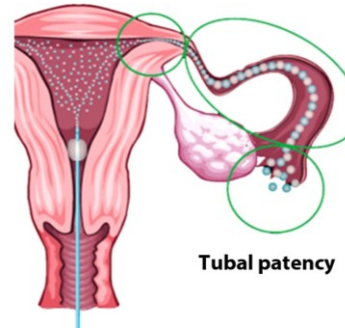
DGL

planned

- Sterility – chromopertubation (dye test), uterus and ovary shape
- Chronic pelvic pain (adhesions, chronic inflammation, endometriosis, ..)
- Pathological structures in small pelvis (onko)

urgent

- acute pain and/or haemoperitoneum (adnexal torsion, cyst rupture, ectopic pregnancy, ..)
- uterine wall perforation (during curettage, HSK)



Laparoscopy

Indication

Ovarian / fallopian tube surgery

- cysts – *exstirpation, resection*
- inflammation – adnextumor, pyosalpinx; suspicious findings, ectopic gravidity, torsion, hydrosalpinx, endometriosis, onko-prophylaxis, sterilization – *salpingectomy, ovaectomy, adnexectomy (uni/bilateral)*

Uterine surgery

- Fibroids – symptomatic, infertility – *enucleation*; endometriosis, adenomyosis, congenital malformations – *metroplasty*

Hysterectomy (LAVH / TLH)

- Abnormal uterine bleeding, gynecological malignancy, large myomatosis, endometriosis, descensus, onko-prophylaxis

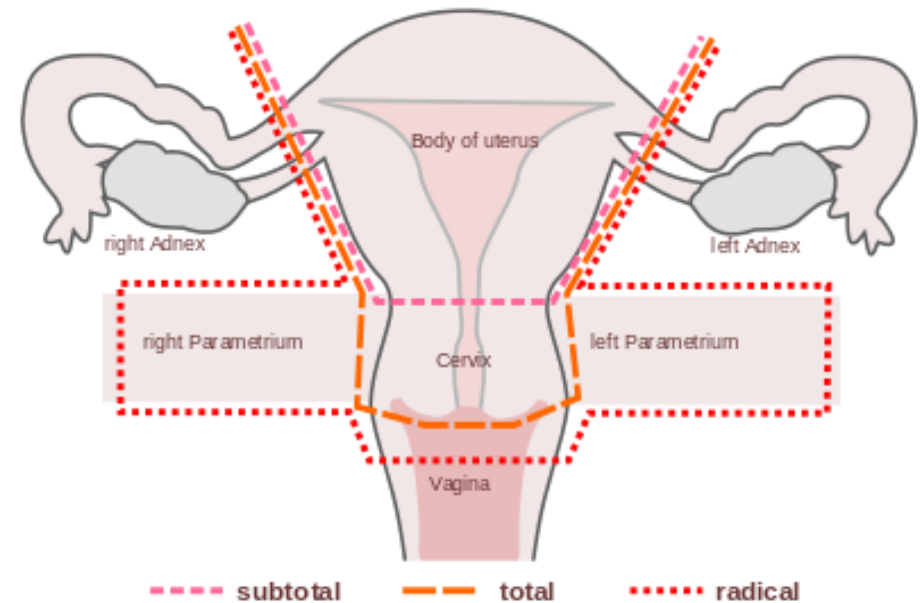
Laparotomy

- **Therapeutic** / Diagnostic (visualization, biopsy) – probatory laparotomy (onco)
- **Planned** / urgent
- similar indications as laparoscopy + oncosurgery (radical procedures, lymphadenectomy)
- **Suprapubical – Pfannenstiel incision**
 - Esthetic, time consuming, limited access to abdomen
- **Infraumbilical – lower middle**
 - Umbilicus – symphysis, good access to abdomen
 - Large tumors, oncological surgery, emergency surgery



Hysterectomy

- Simplex (just the uterus)
- With salpingectomy (usually)
- With adnexectomy (ovarectomy) (postmenopausal patient)
- Radical (+ removal of parametria, lymphadenectomy)
 - In case of malignancy
- Partial (supracervical) – rarely
- I: abnormal uterine bleeding, gynecological malignancy, myomatosis, endometriosis, descensus, onko-prophylaxis



Hysterectomy

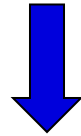
- Vaginal (if uterine descensus/prolaps)
 - can be performed under spinal anesthesia
 - early mobilization, rapid recovery
 - bad adnexal and abdomen visibility, bleeding
- LAVH / TLH
 - laparoscopically assisted vaginal hysterectomy – vaginal stump suture vaginally
 - total laparoscopic hysterectomy – vaginal stump suture laparoscopically
- Abdominal

Complications gynecological operations

- Infection - of surgical wound, vaginal stump, urinary
- Bleeding / haematoma - intraabdominal, vaginal
- Dehiscence
- Urological problems - incontinence, urinary tract injuries
- Hernia in a scar
- GIT injury, perforation
- Trombosis

Thank you for your attention!

Appendix ;)



Laparoscopy

Laparoscopy – operative

Surgical spectrum equal to laparotomy

➤ **planned**

- sterility - adhesiolysis, tubal neostomy (MCH-LSK), SE, myomektomy, drilling of ovaries
- endometriosis - extirpation of cysts, adhesiolysis
- Extirpation of benign tumors (suspicious Ca - tomy)
- UVP sec. Burch
- Vecchietti s vaginal neoplasty

➤ **urgent**

- Acute pain – cyst extirpation, adnexal detorsion
- GEU - SE, eventually more conservative operations
- Uterus perforation – coagulation or suture

Laparoscopy – operative

Laparoscopic lymphadenectomy

- Variety of operations in oncogynaecology
 - renaissance of radical vaginal hysterectomy
 - Additional to radical trachelectomy when Ca cerv. uteri
 - Stage T1a2 and wish to stay fertile
- **LAVH (LSK asisted vaginal hysterectomy)**
 - Variety of LSK surgery part – up to total LSK HYE
 - Release of imobile uterus – otherwise vaginaly unoperable
 - Choice of AE of vaginaly unavailable ovaries
 - Findings correlation and conversion to laparotomy
- controversion – by hand assisted LSK operations

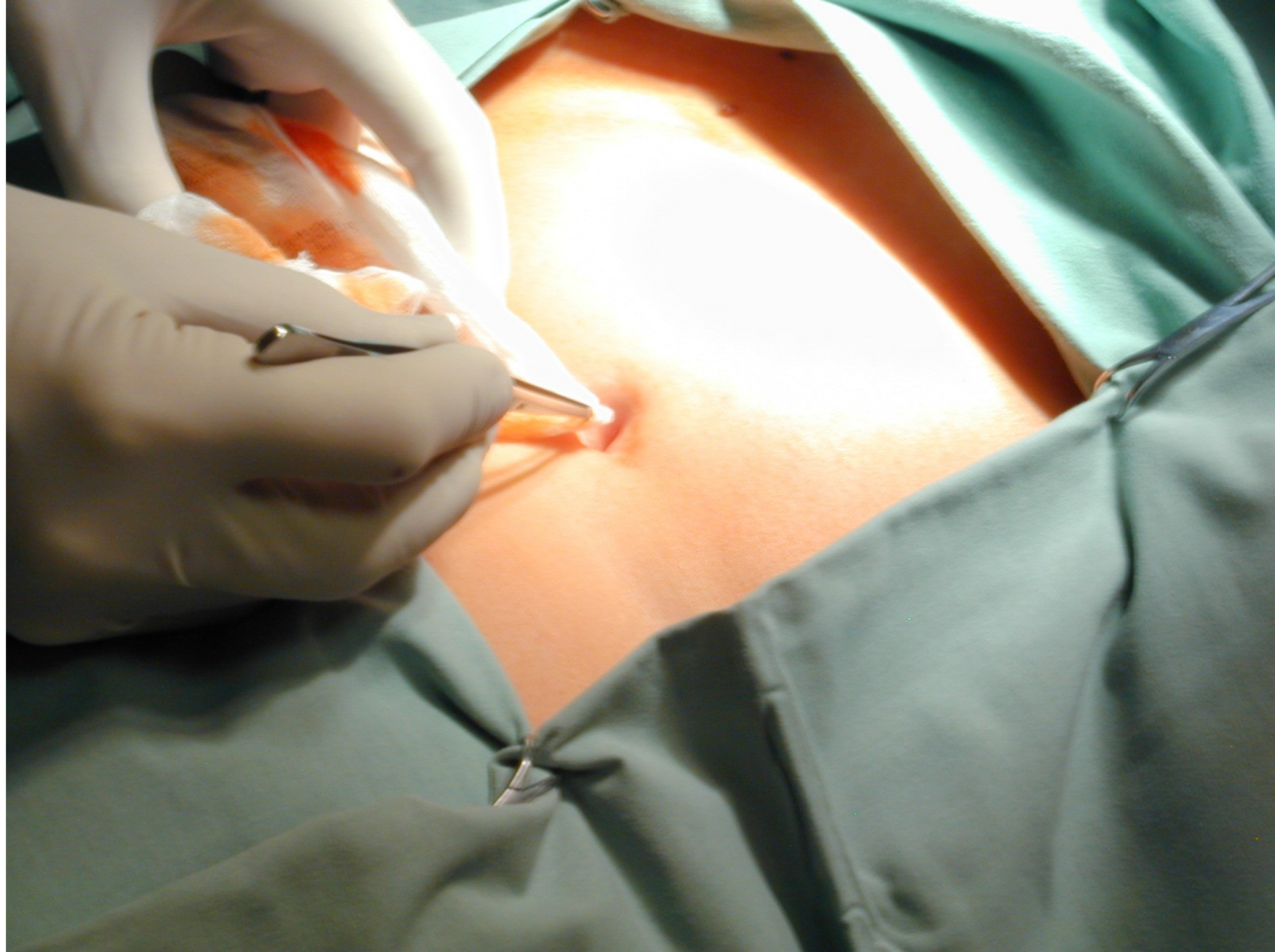
Laparoscopy – instruments

- Veress needle
- Trocars (preferably with optics)
- Probe
- Forceps - variety (atraumatic etc.)
- Scissors (several types)
- Coagulation - bipolar, monopolar (CAVE!!)
- Aquapurator
- Staplers (clips)
- Extracorporeal sutures

Laparoscopy – complications (7 %)

- Peroperative (unsufficient pre-op, mistakes)
 - perforation - GIT, bladder
 - Urether dissection
 - Bleeding (insertion of ports, during surgery)
 - CAVE monopolar coagulation !!!
 - Anaesthesia compression
- Post-operative
 - bleeding, trauma, infection
 - Anaesthesia, internal medicine
- Late complications
 - Adhesions, fistula, necrosis, hernia, infections, MTS





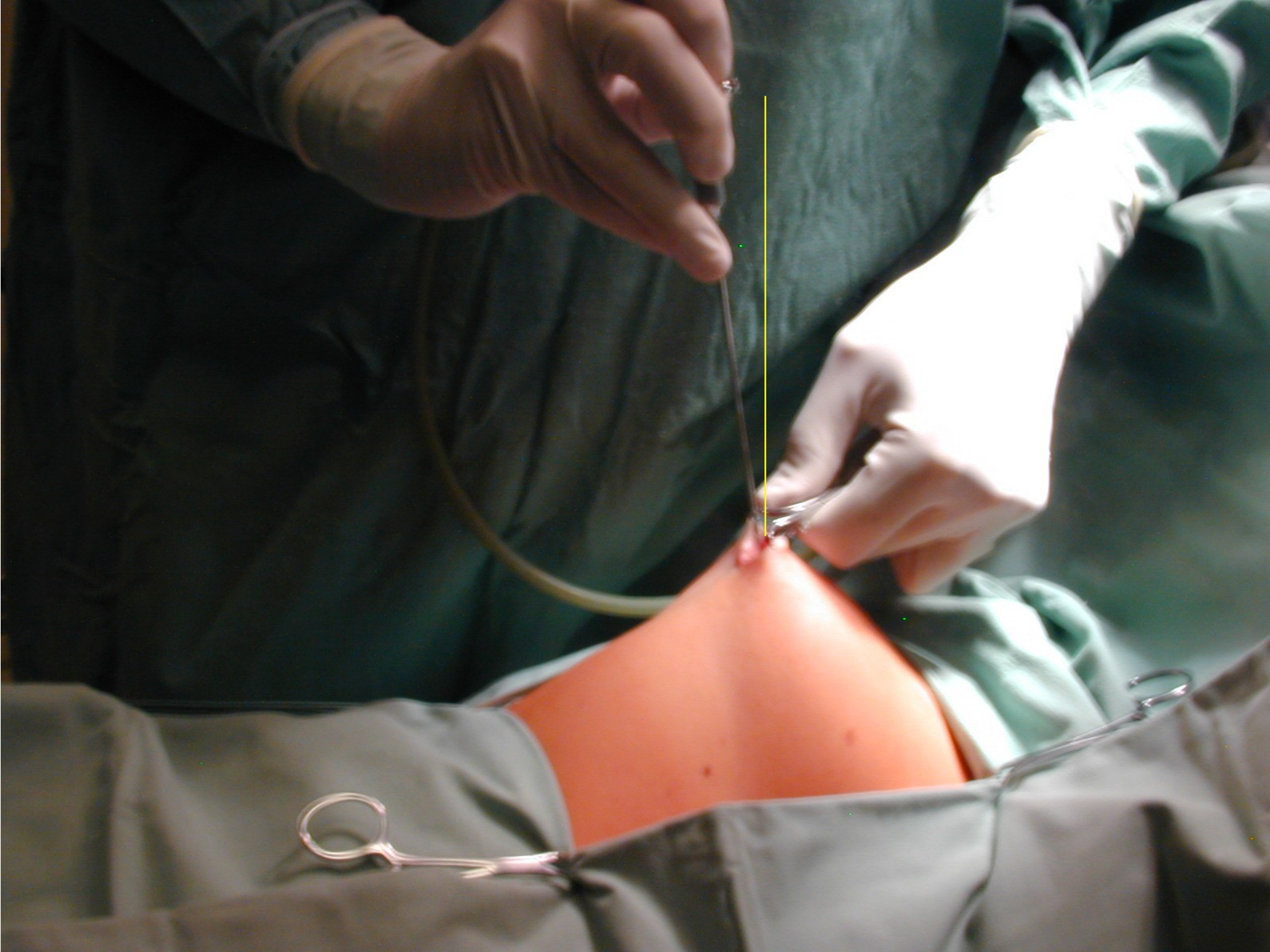














OLYMPUS UHI-2 WARNING EXCESSIVE PRESSURE TUBE OBSTRUCTED

POWER GAS SUPPLY PRESSURE FLOW RATE VOLUME

PRELIF 13 0 HIGH 34 2 06

mmHg L/min L

OFF ON RESET

START STOP INSUFFLATION SUCTION

v.c. 1112822

OLYMPUS OTV-S6 v.c. 7126423

CAMERA CONNECTOR MENU EXPOSURE LEVEL WHITE BALANCE GAIN

MIN. MAX. HIGH 2.2 HD

OFF ON POWER

v.c. 7114483

OLYMPUS LV-S

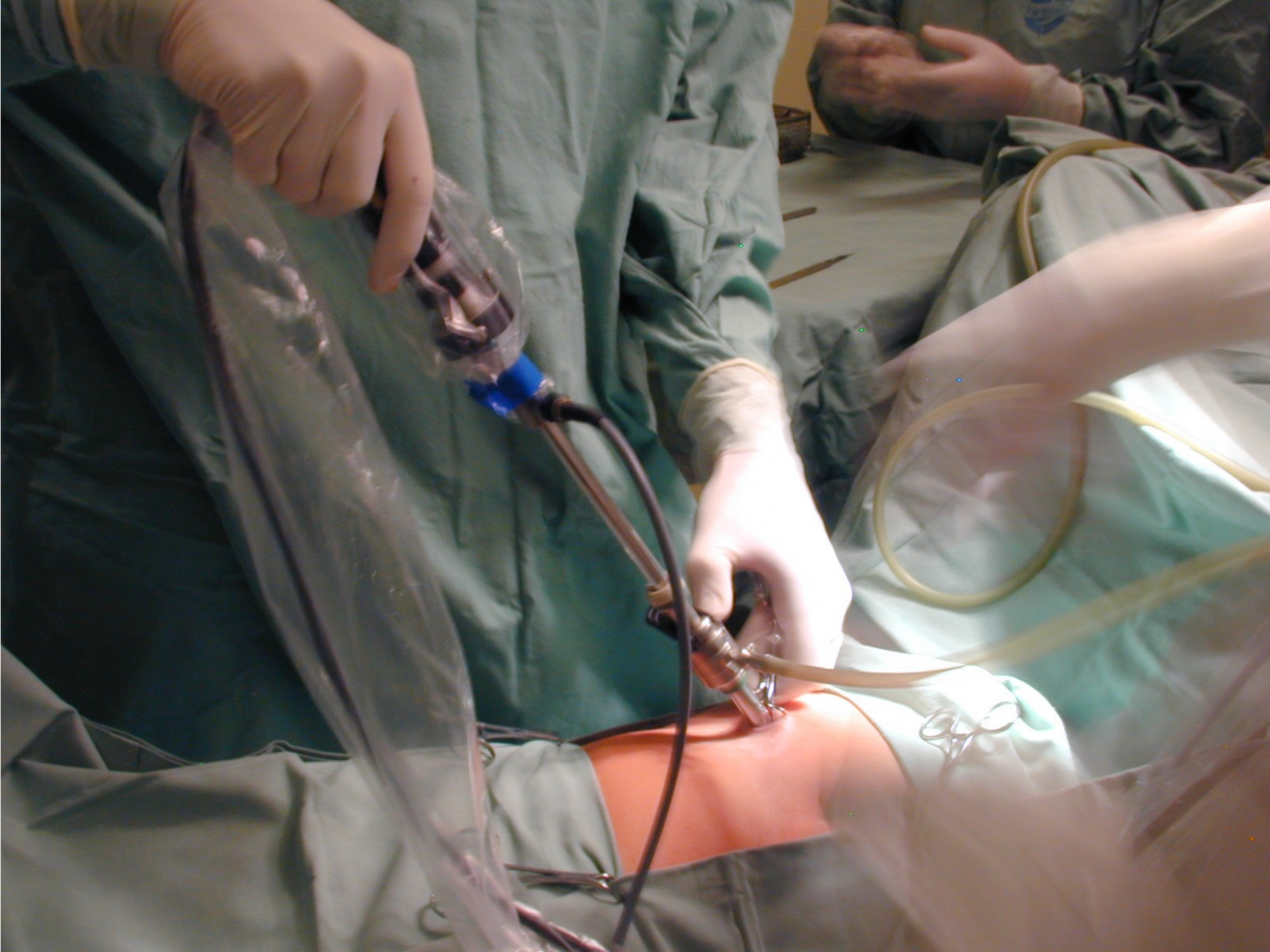
OUTPUT BRIGHTNESS INTENSITY SPARE LAMP

UTO - 5 4 3 2 1 HIGH

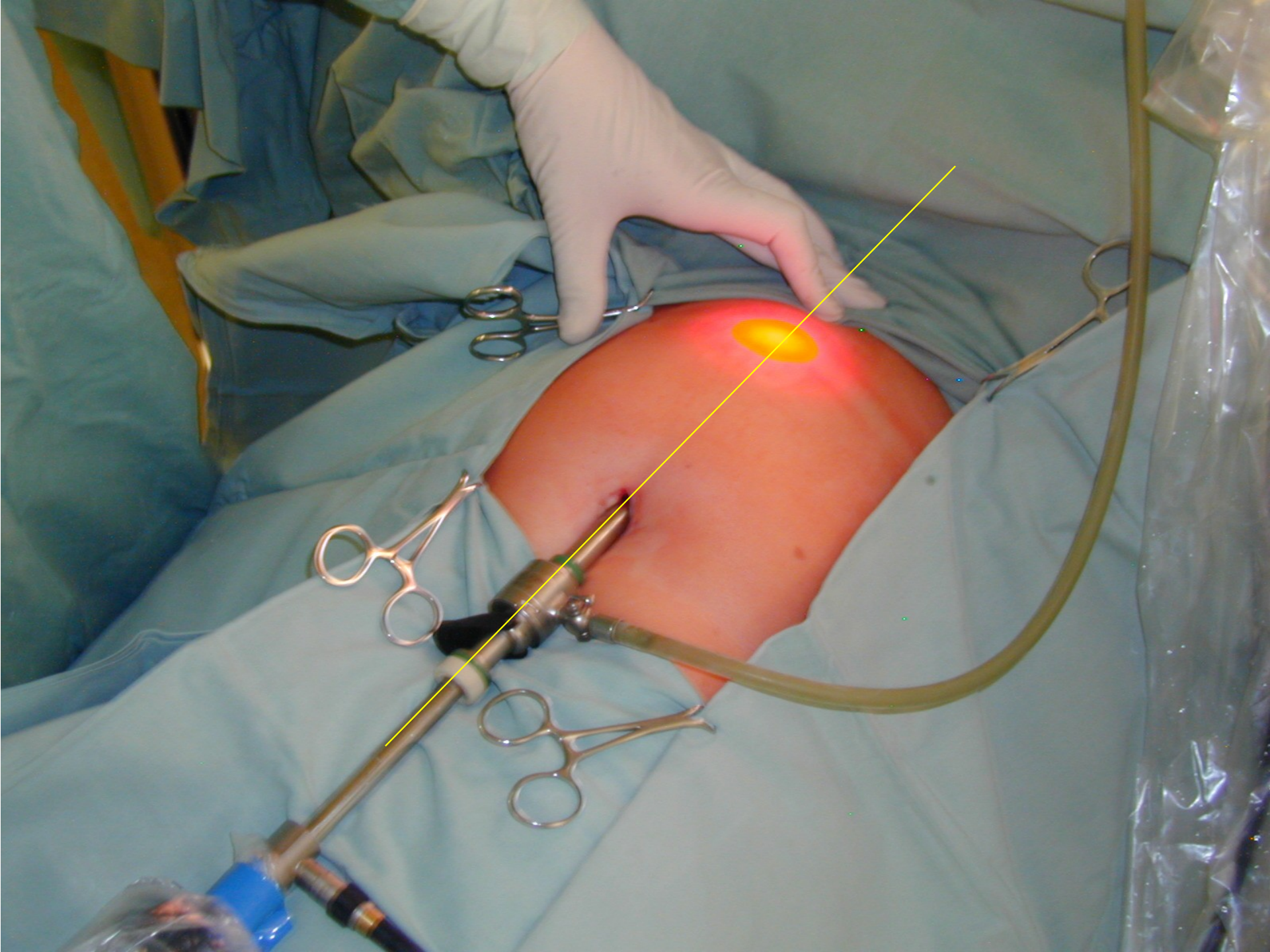
MIN. MAX.









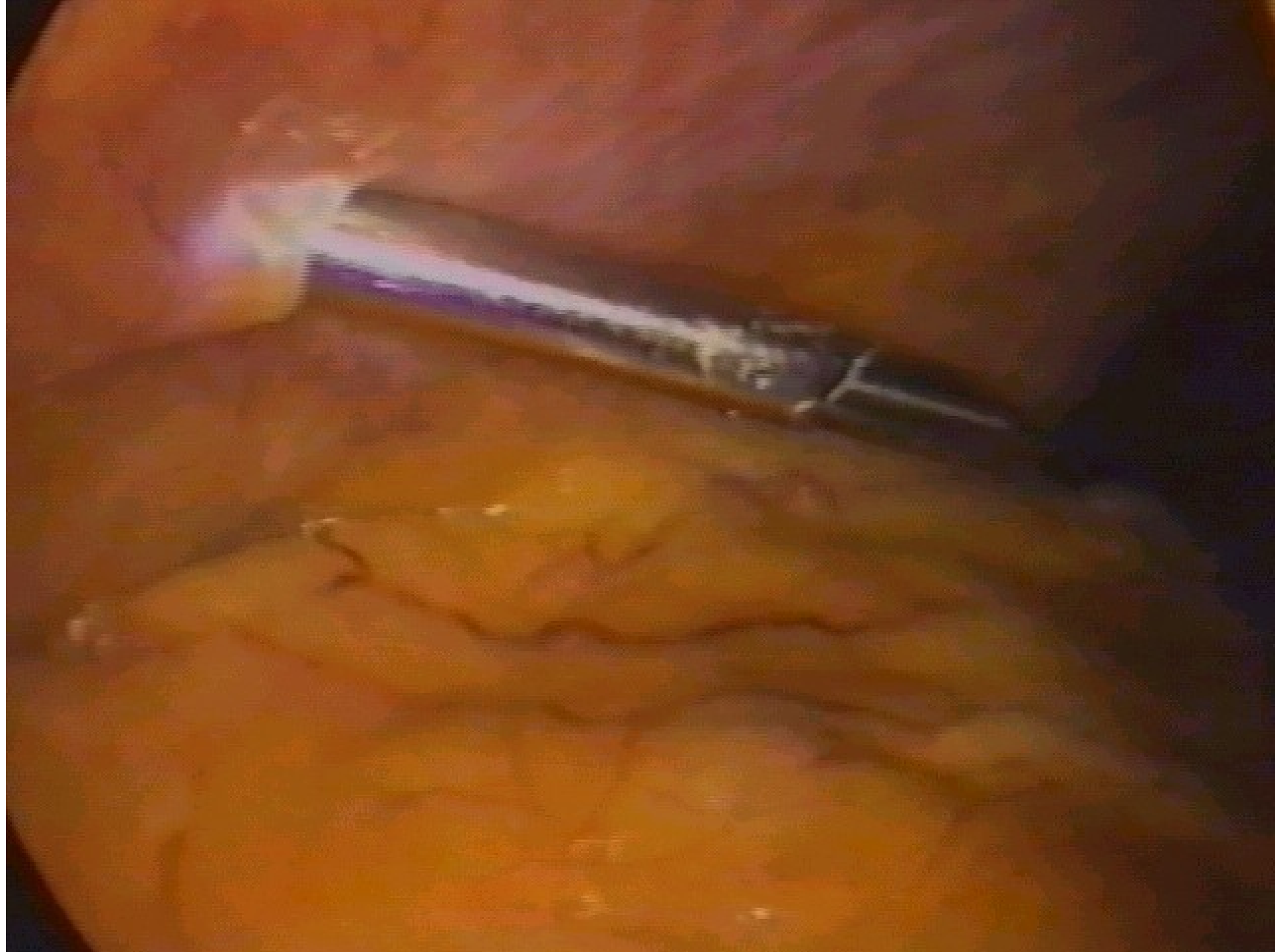
















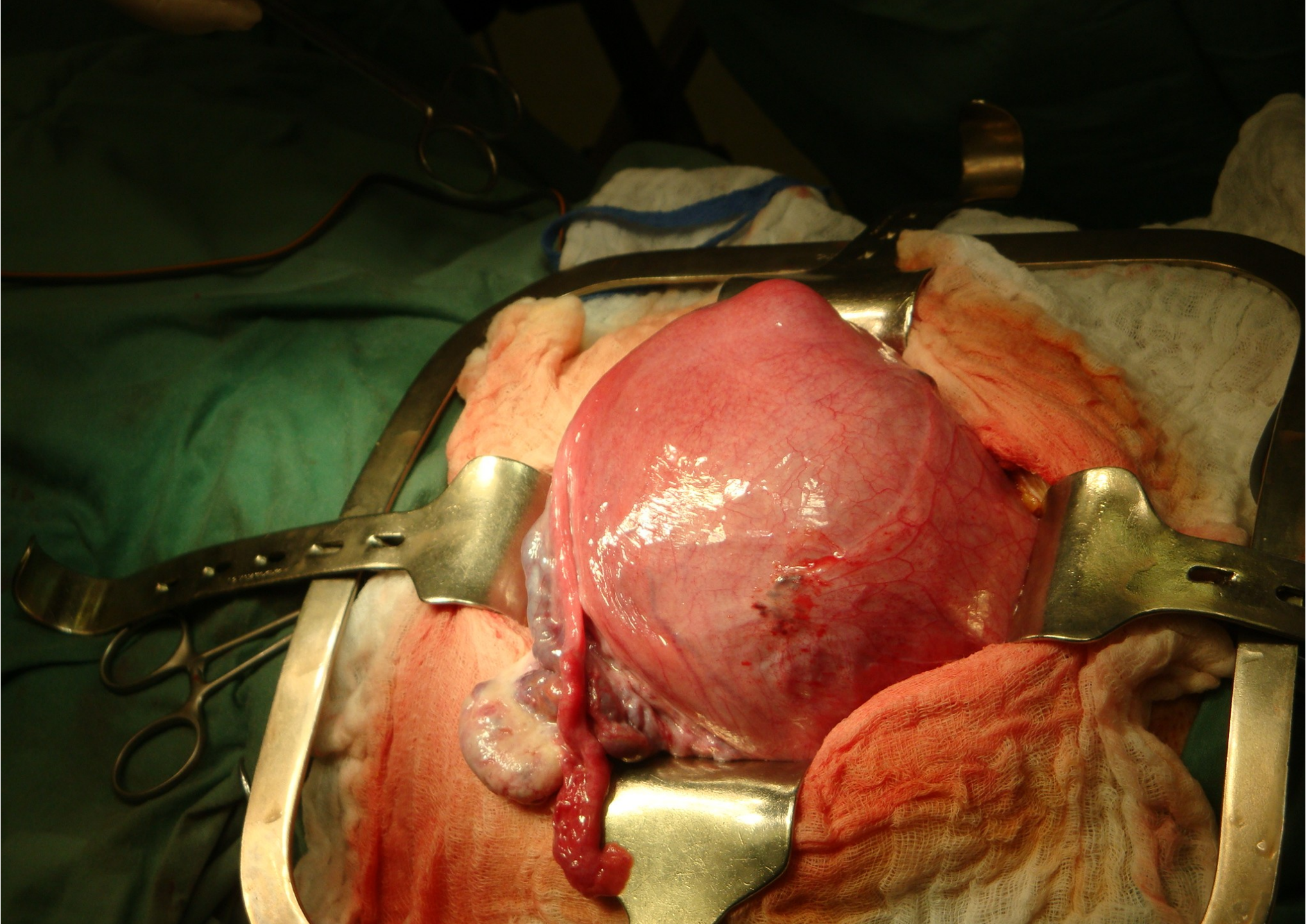




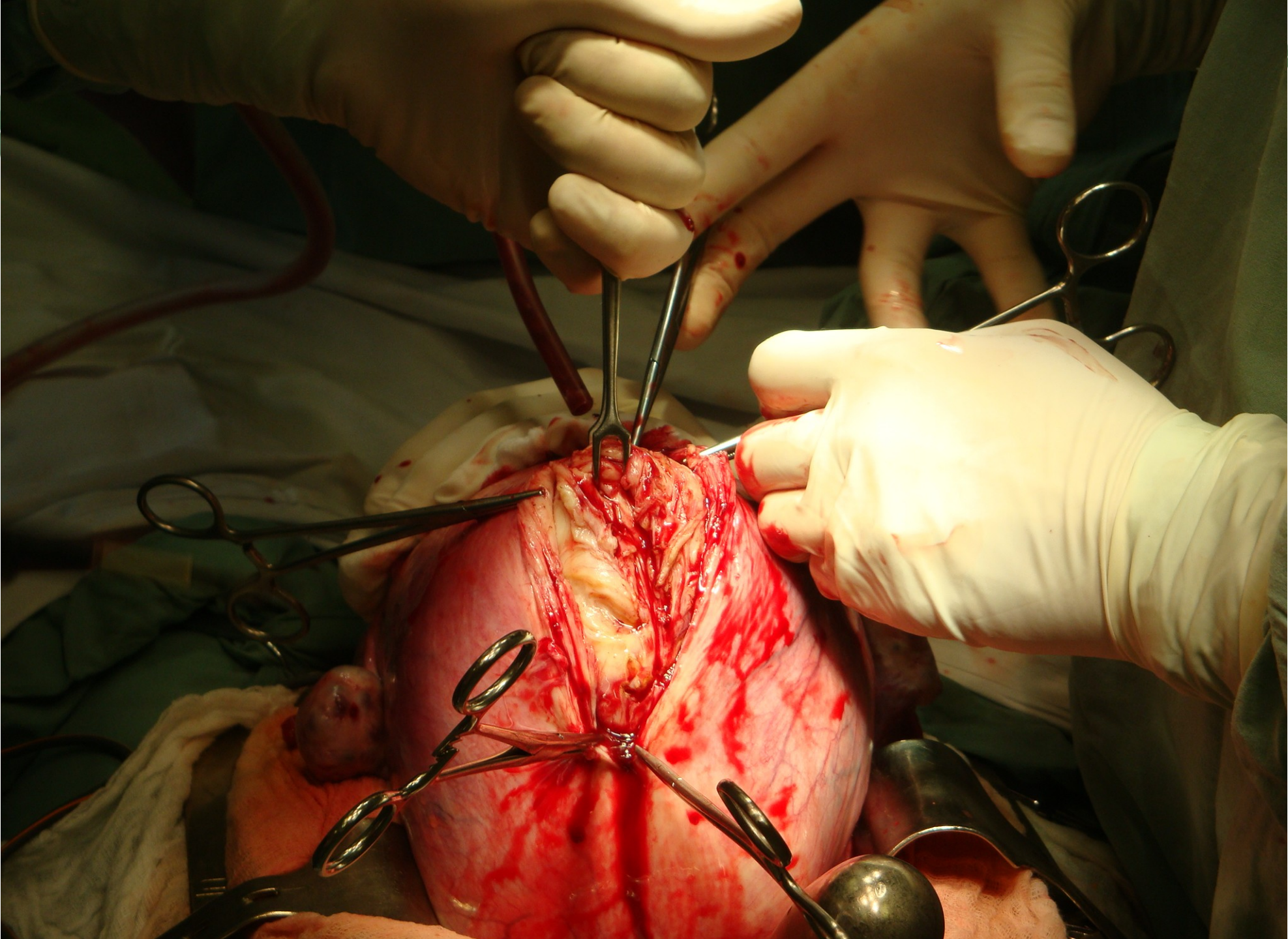
Momectomy

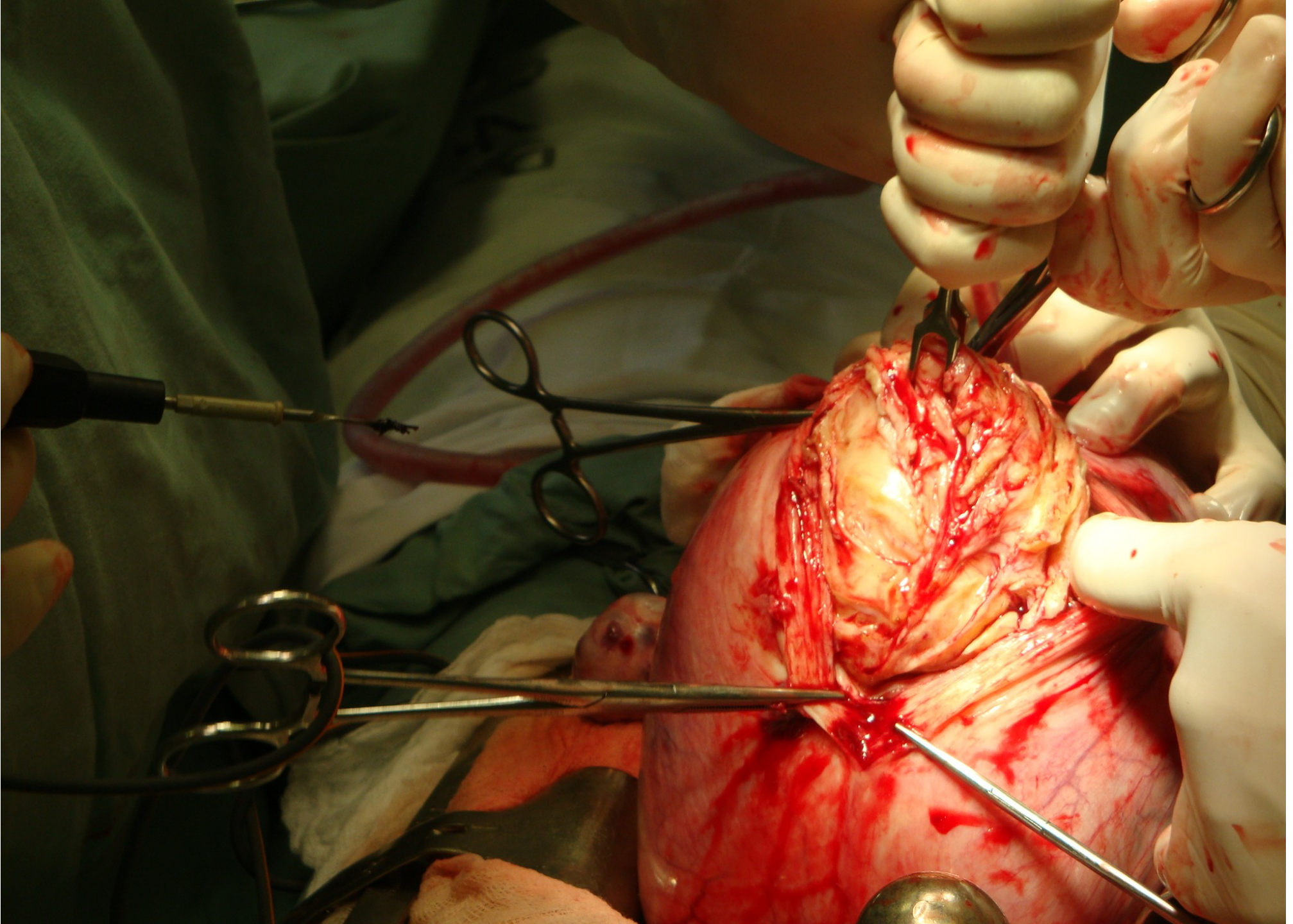


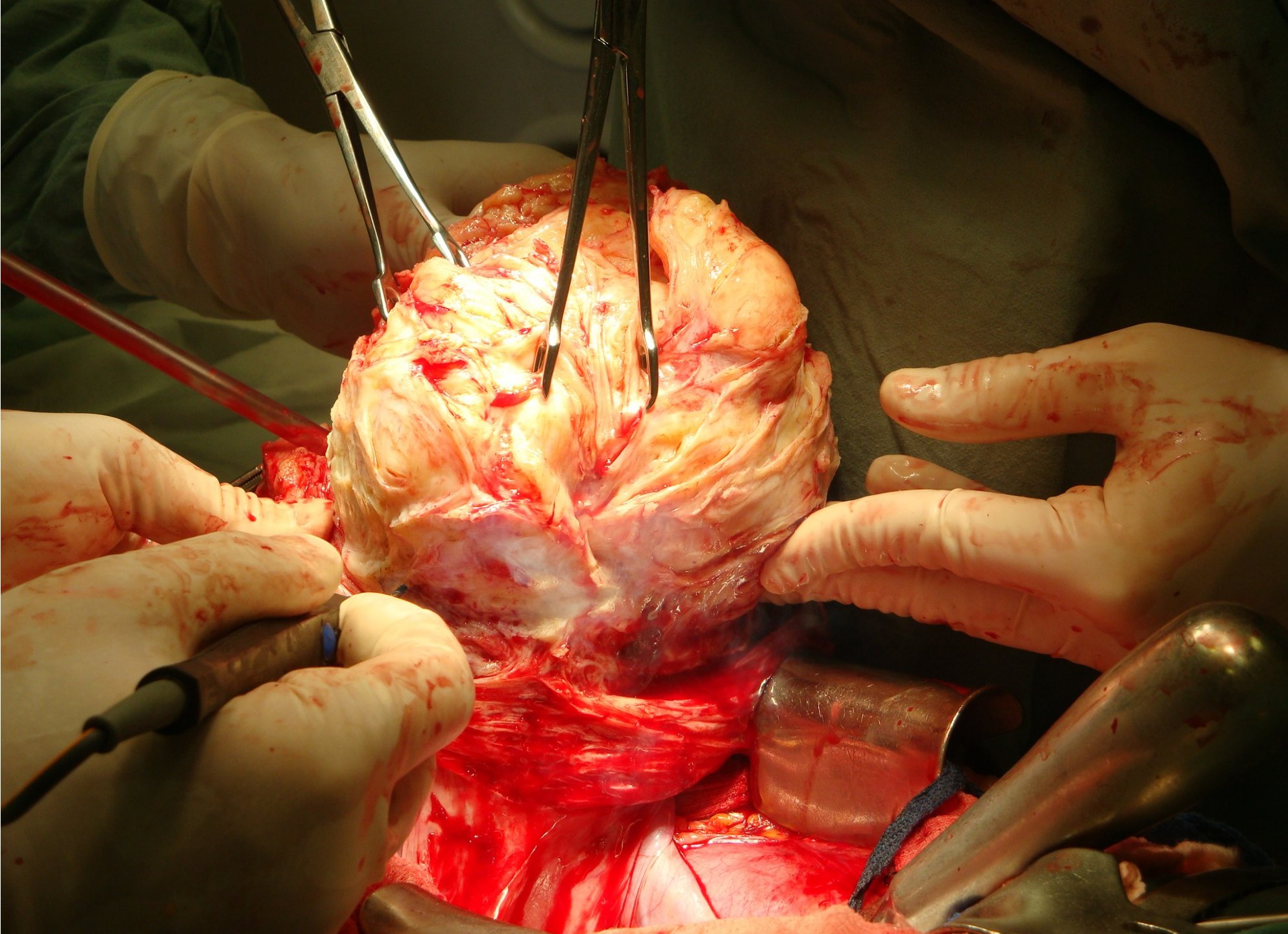


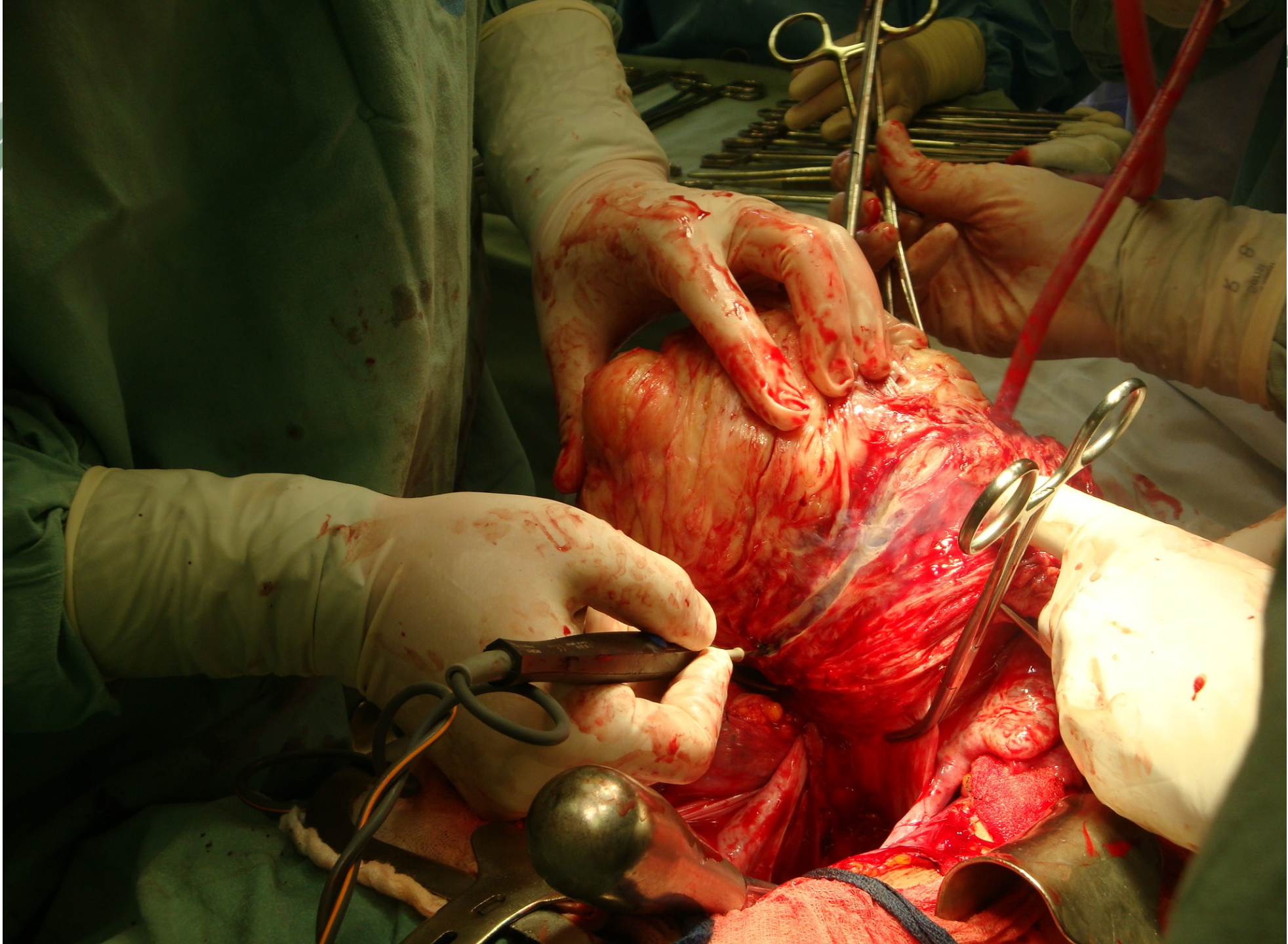




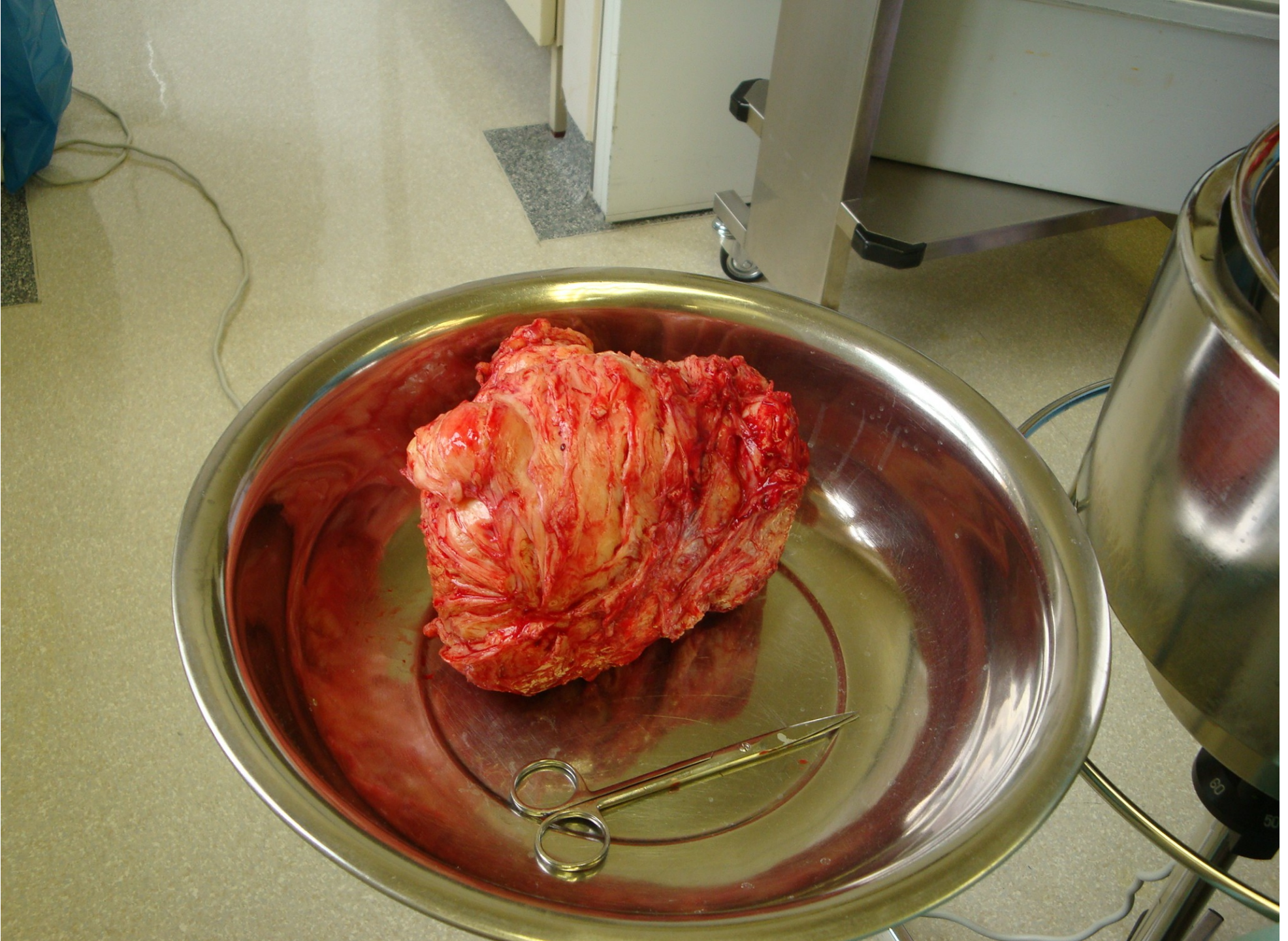


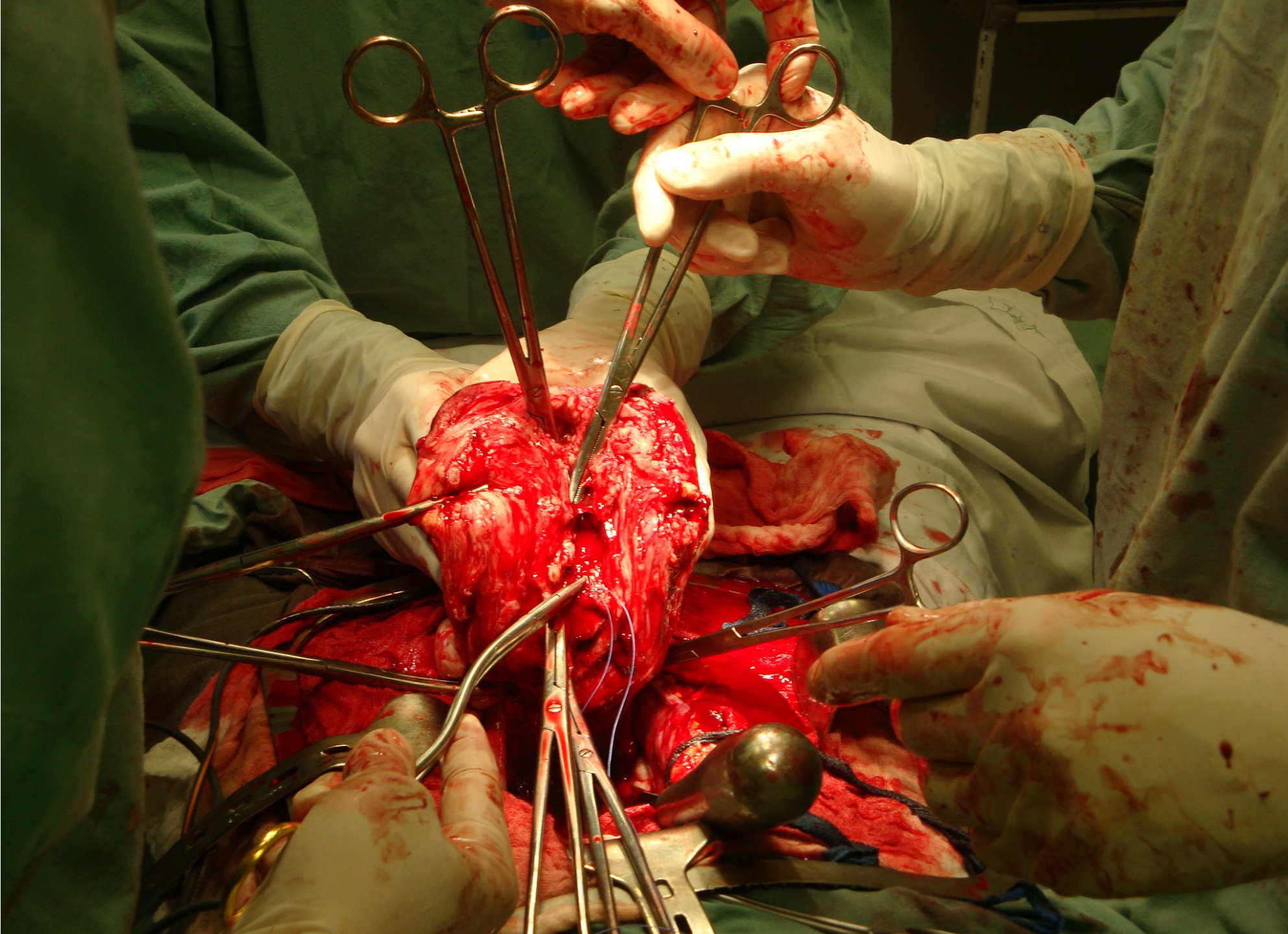








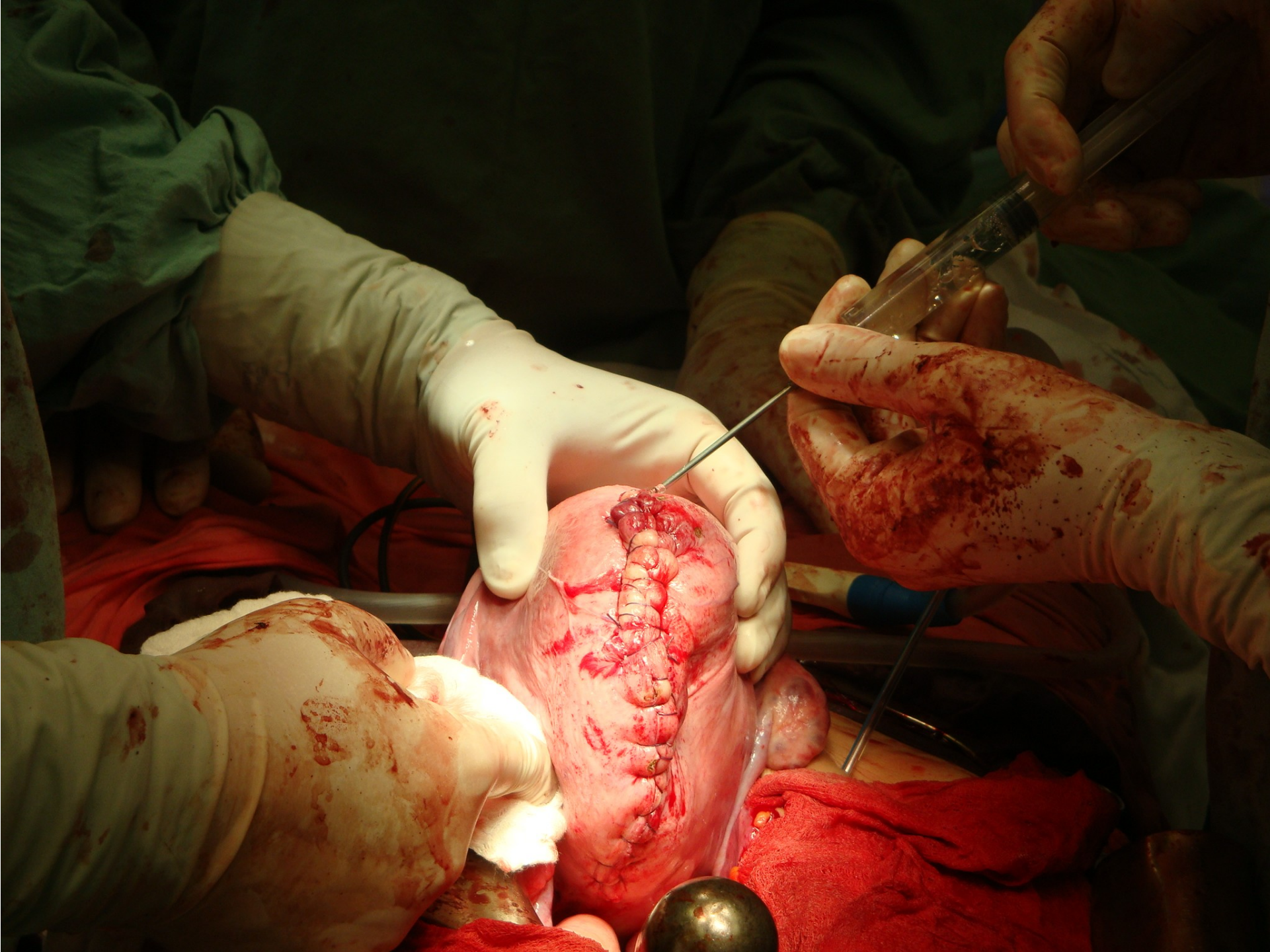












Abdominal gynaecol. operations

Urogynaecological operations

(Abdominal gynaecol. operations, indications & types of operations)

- Urine stress incontinence
- Descens or hypermobility of uretrovesical junction

- **urethrovesicopexis (UVP) sec. Burch**
 - Golden standard for operative solution of incontinence
 - Preparation of Retzi space
 - Tightening of urethrovesical junction toward lig. iliopectineum Cooperi
 - 80-90% succes

Uterine descensus and deviations operation

(Abdominal gynaecol. operations, indications & types of operations)

- Today – abdominal approach rare, preferably vaginal approach
- Operation of uterine retroversion – rare indication
- **ventrosuspension** sec. Dolérisse
 - If retroversion – fixation of lig. Rotundum to fascia of muscoli recti abdominis
 - **Shortening of lig. Rotundum** sec. Baldy & Webster

Surgery of vaginal prolaps after hysterectomy

(Abdominal gynaecol. operations, indications & types of operations)

- Vaginal prolapse - possible hysterectomy complication
- Prolaps often associated with cysto - rekto - enterocele
- Possibility of vaginal approach

➤ **Ventrofixation of vaginal pouch**

- Suturing to fascia of musculi recti abdominis
- Possibility to combine with reduction of Douglas pouch sec. Moschowitz

➤ **Sacropexy of vaginal pouch**

- Fixation to presacral periosteum, physiological vaginal inclination

Oncogynaecological operations

(Abdominal gynaecol. operations, indications & types of operations)

- **explorative laparotomie ()**
- **Ca corporis uteri – operate**
 - **radical hysterectomy gr. I (sec. Te Linde) + AE bilat.**
+ omentectomy + LNE + APPE
 - obesity, polymorbidity – limits of operation
- **Ca cervicis uteri – operate up to stage IIa included**
 - **radical hysterectomy gr. III (sec. Wertheim) + LNE**
 - adnexa ???
- **Ca ovarii - maximal debulking surgery**
 - **radical hysterectomy gr. I + AE bilat. + omentectomy + LNE**
+ APPE
 - **IDS, ESO**

Complications of abdominal operations

➔ Infection

- Operation wound - hematoma, abscess, dehiscence, eventually evisceration - High risk in obese women
- Abdominal cavity – risk of infection from vagina, bowel injury
 - peritonitis, inter intestinal loops absces, ileus, fistula
- **ATB prophylaxis** preoperatively, vaginal disinfection, operative technique
 - ATB: prefer cefalosporins I. generation (or PNC) + Metronidazole

➔ Haemorage

- In abdominal cavity, in operation wound (horizontal incision)
- Vessel damage, tumors, coagulopathy, heparinisation, DIC
 - Haemorrhagic shock
- Operation technique, bleeding stopping, drainage
 - If vessel damage - cooperation with surgeon (vascular surgeon)

Complications of abdominal operations

➤ **Urological troubles**

- catheterisation, damage to urether or bladder
 - fistula - ureterovaginal, vesicovaginal (after radical surgery)
 - Stress incontinence (after radical surgery)
- pre & post-op ATB th., urine derivation (suprapubic drainage)
- Pre-op preparation - IVU, urether catheterisation

➤ **Wound hernia** – often in lower midline laparotomy

➤ **Lymfocysts** - 1-25% after radical surgery with LNE

➤ **TEN** – oncological patients, pregnancy, obesity

- pre-op preparation
- operation technique
- Post-op treatment

Instruments and sutures (Abdominal gynaecol. operations)

Instruments similar to surgical

➔ Retractors:

- Framed – squared
- automatic, Horálek s (for minilaparotomy)

➔ Needle holder: preferred Boseman (also long variations)

➔ Pliers: Museaux, „edged“ pean, „american“

➔ Sutures: economical limits vs. preferred

- Silon, Vicryl, Safil, Ethibond, skin – intradermal suture with straight needle

Vaginal operations

Desinfection

(Vaginal gynaecol. operations)

- ➔ Carefull desinfection
 - Treatment for coplitis before surgery
 - Control of desinfection concentration!!!
(mucous membranes)
- ➔ Betadine 10%
 - Iodine solution - diluted
 - For skin also undiluted
- ➔ Octenisept – alcohol solution without iodine

Operations of outer genitalia & perineum

(Vaginal gynaecol. operations, indications & types of surgery)

- **Fistula operations**
 - perineovaginal and perineorectal
 - For bad healing (suture) of perineum – episiotomy, etc.
- **Operations of congenital diseases of genitalia**
 - Variety of anomalies
 - Co-operation with surgeon, urologist, plastic, etc.
- **Injuries of vulva**
 - Laceration - contusion, covered injury - hematoma

Operations of vaginal introitus area

(Vaginal gynaecol. operations, indications & types of surgery)

- Hymenal asymetry
 - Hymenal atresia, rupture and bleeding after defloration
- Stenosis of vaginal introitus
 - Suture of episiotomy, plastic operations of vagina
- Pseudocysts, absces of Bartholin gland
 - **Incision and dreinage**
 - **marsupialisation**
 - **exstirpation** (or chemical extirpation - Lapis infern.)

Operations of vagina

(Vaginal gynaecol. operations, indications & types of surgery)

- Benign tumors of vagina and vaginal adenosis
- Injury - coitus, foreign body
- Precancerose and carcinoma
 - Operatively curable only few tumors
 - radical **colpectomy** – difficult to perform
- Operations of vaginal congenital diseases
 - **Resection of vaginal septum**
 - Operation therapy of vaginal agenesis - sy Rokitanski - Küster
 - **Vecchietti s operation** – nowadays most common
 - Combination of vaginal surgery and laparoscopy

Operations of vagina

(Vaginal gynaecol. operations, indications & types of surgery)

- Operations of vaginal wall descensus (and uterus)
 - **kolporrhaphy anterior**
 - **kolpoperineoplastic** with suture of levators ani
- Operations of vaginal prolaps
(enterocele, elythrocele, Frioriepy s prolaps)
 - **vaginofixation sec. Amreich (I,II) - Richter**
 - Fixation of vagina to sacrospinal or sacrotuberal lig.
- Paliative operations of vaginal prolaps
 - **semikolpokleisis sec. Labhardt**
 - **kolpokleisis sec. Kahr**
 - Elderly women operations (vita sexualis non vult)

Operations of cervix

(Vaginal gynaecol. operations, indications & types of surgery)

- **Conisation** – diagnostic-therapeutic procedure
 - Conus shape resection of cervix
- Prekancerosis (CIN, CIS) – most common indication
 - „cold knife“ conisation
 - **LEEP, LLETZ, SWETZ** (if not a carcinoma)
 - **laser conisation** (CO₂)
- Cervix deformation - delivery
 - **tracheloplastics** – sec. Emmeta
- „Microinvasive“ cervical Ca - trachelektomy
 - „high“ radical conisation (if family planning)

Operations of uterus

(Vaginal gynaecol. operations, indications & types of surgery)

- Vaginal hysterectomy (or LAVH)
 - previous indications (adnexal mass, uterus Ca) - abandoned
 - Decrease of abdominal operations, today renaissance
 - Departments with „vaginal“ school - domination
 - Today's indications – similar to abdominal hysterectomy
 - Typical for uterus descens or cysto-rectocele
 - Radical surgery (sec. Schauty) if carcinoma - rare
 - advant: spinal anaest., mobilisation, food intake, healing process
 - disadvant: bad adnexal and abdomen visibility, bleeding
- Other uterus operations - myomectomy

Complications

(Vaginal gynaecol. operations)

➤ Infections

- Rather rare than in abdominal oper. (obesity not a case)
 - Infected haematome
- Risk of bowel injury – necessity to treat
- **ATB prophylaxis** pre-op, vaginal disinfection, operation technique
 - ATB: cefalosporin I. gen (or PNC) + Metronidazol

➤ Bleeding

- Low visibility of abdominal cavity, venous plexus
- Vessel injury, koagulopathy, heparinisation, DIC
 - Haemorrhagic shock
- Operation technique, stop of bleeding, drainage

Complications

(Vaginal gynaecol. operations)

➤ **Urologic troubles**

- catheterisation, damage to urether or bladder
- fistula - ureterovaginal, vesicovaginal
- Deterioration or urine incontinence development, urine retention
 - incontinence after correction of prolapse – ofter paradox
- Pre-op and post-op ATB therapy
- Suture of bladder injury, long term urine derivation (suprapubic, minicathetr)

➤ **Trombembolic disease** – lower risk vs abdominals

- Pre-op. preparation, op. technique, post-op treatment

➤ **Decrease in size of vagina, genital deformation**

Instruments and sutures

(Vaginal gynaecol. operations)

➤ Mirrors

- Anterior and posterior, lateral, Breisky mirrors

➤ Pliers

- American one tooth forceps, „sondoamerican“
- Solid „edge“ pean forceps

➤ Medications

- Remestyp – vasopresor
 - Beware of post-treatment bleeding

➤ Sutures

- Often only silon and slowly resorbable Vicryl

Hysteroscopy

Hysteroscopy

➤ Types of anaesthesia

- paracervical block – diagnostic – one day surgery
- analgo-sedation
- asleep – operational hysteroscopy

➤ Complications and risks

- Fluid overload syndrome (1- 5%)
 - Movement of distentional medium into main stream (intravasation), hemodilution
 - hyponatremia, vomitus, cerebral edema, edema, circulation failure
- Infection (2- 4%)
- Perforation (1- 3,7%)
- Bleeding (0,4 - 5%)

Hysteroscopy

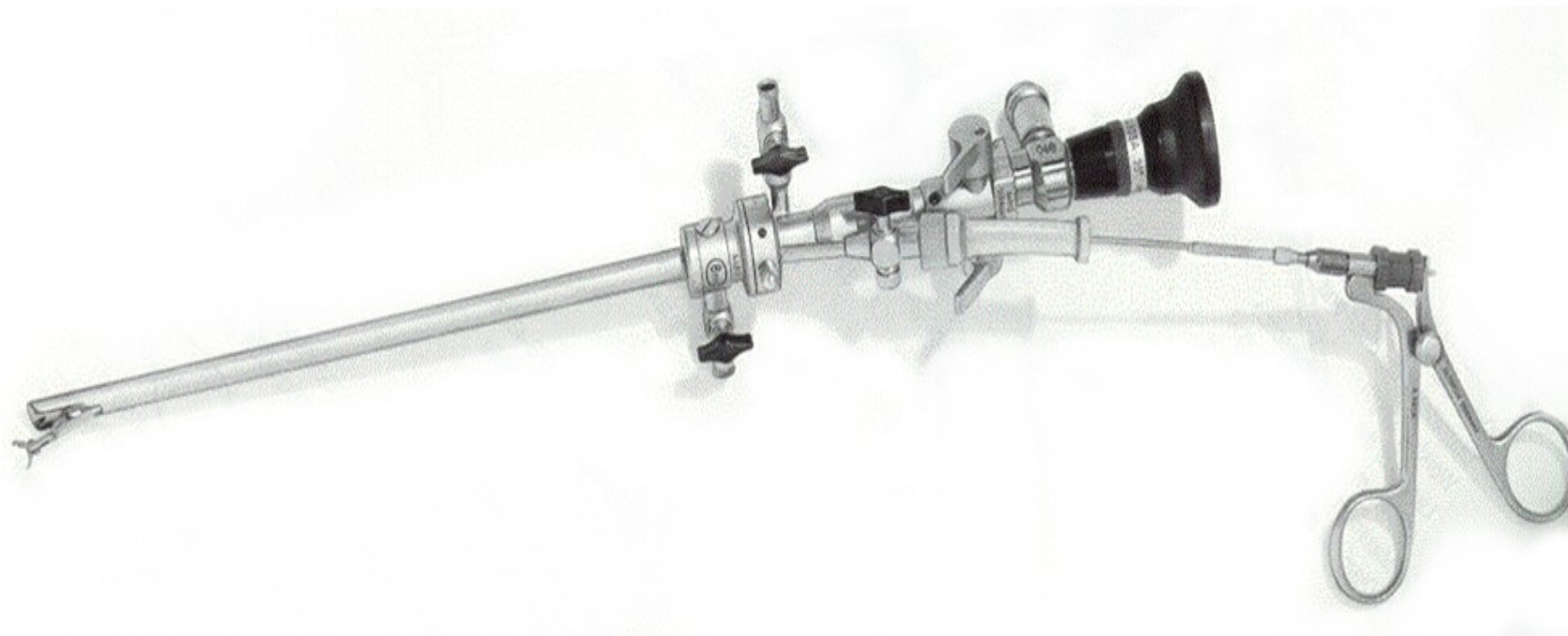
➤ Diagnostic procedures

- sterility (within IVF), infertility - SLL after septum resection
 - vizualisation HSG suspicious findings
- relapse of abnormal uterine bleeding
- Suspicious findings of endometrium on USG (TMX)
 - Follow up of endometrial hyperplasia

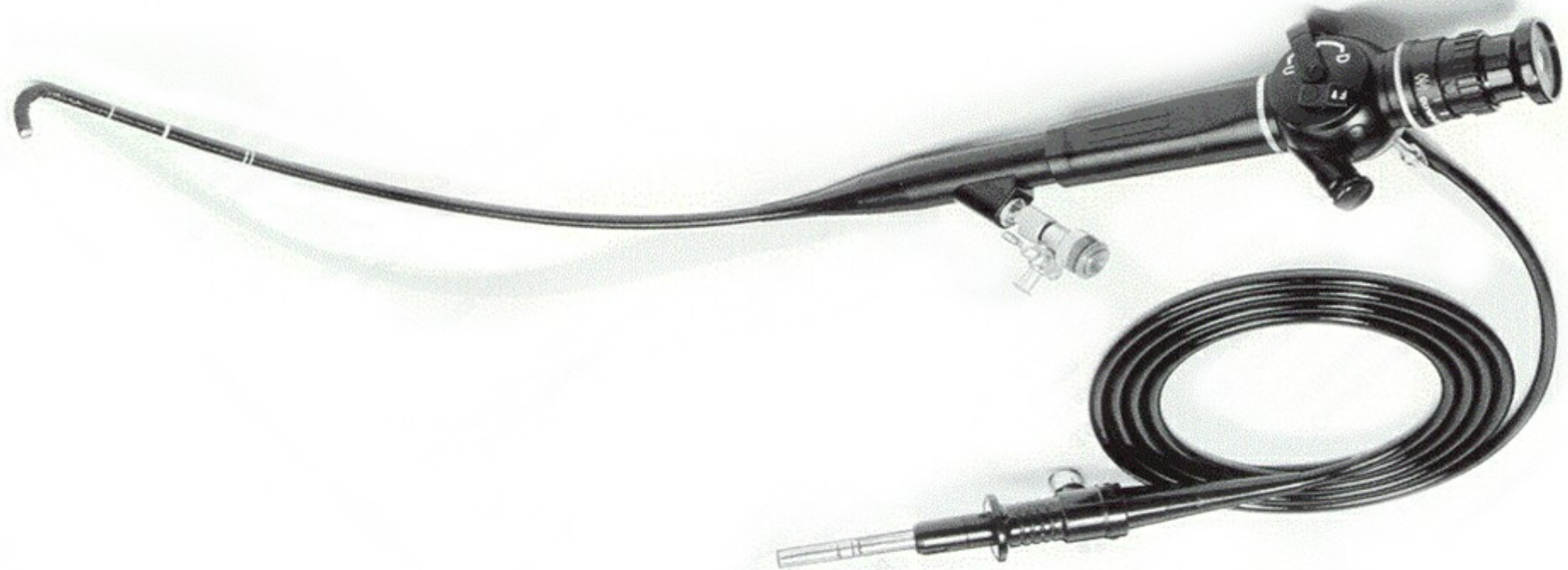
➤ Operational procedures

- Guided biopsy of suspicious lessions
- Intrauterine adhesiolysis, septal resection, polyps and fibroids resection
- resection and endometrial ablation
- IUD part removal
- Transcervical sterilisation

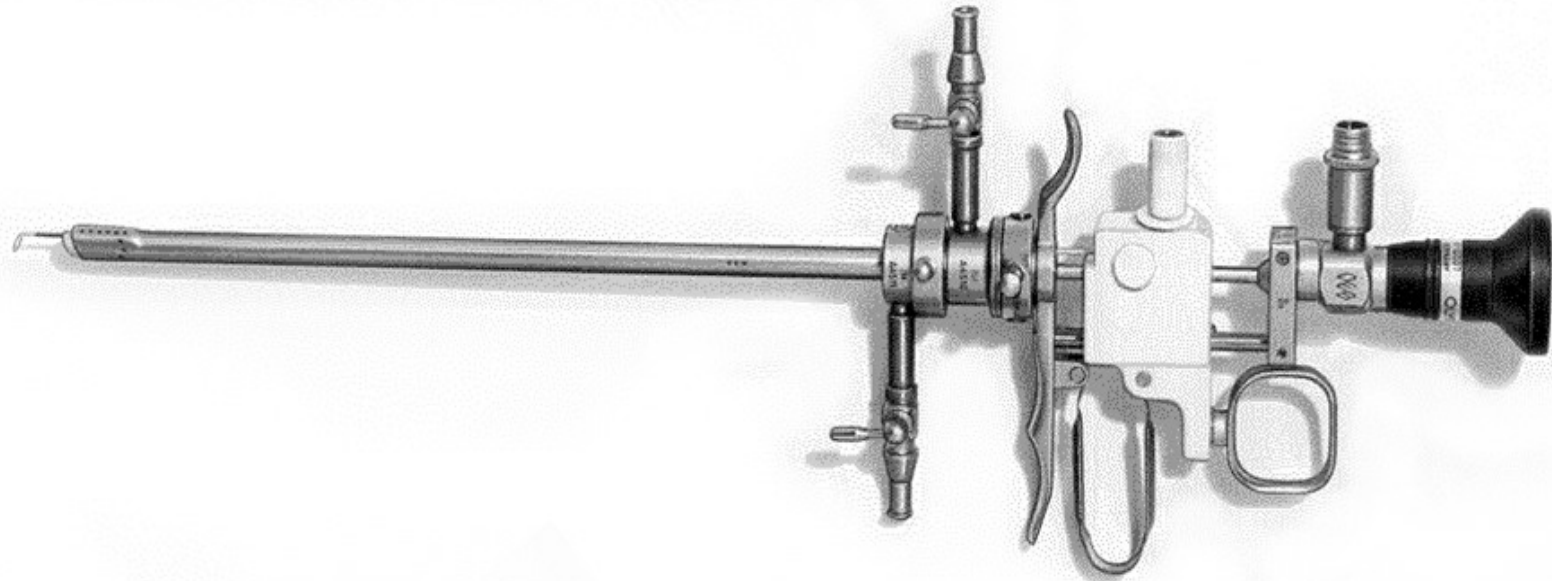
Rigid diagnostic hysteroscope



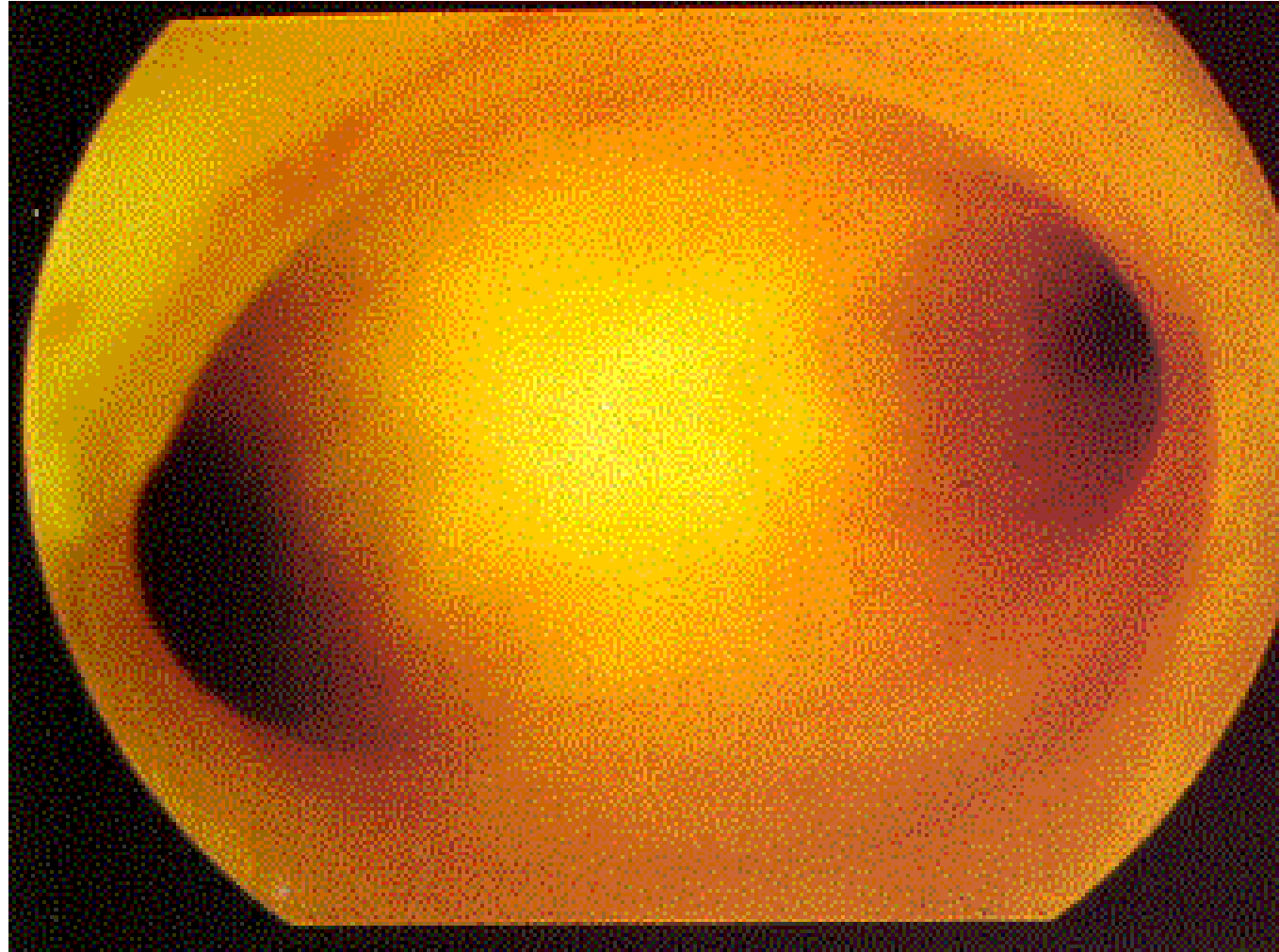
Flexible diagnostic hysteroscope



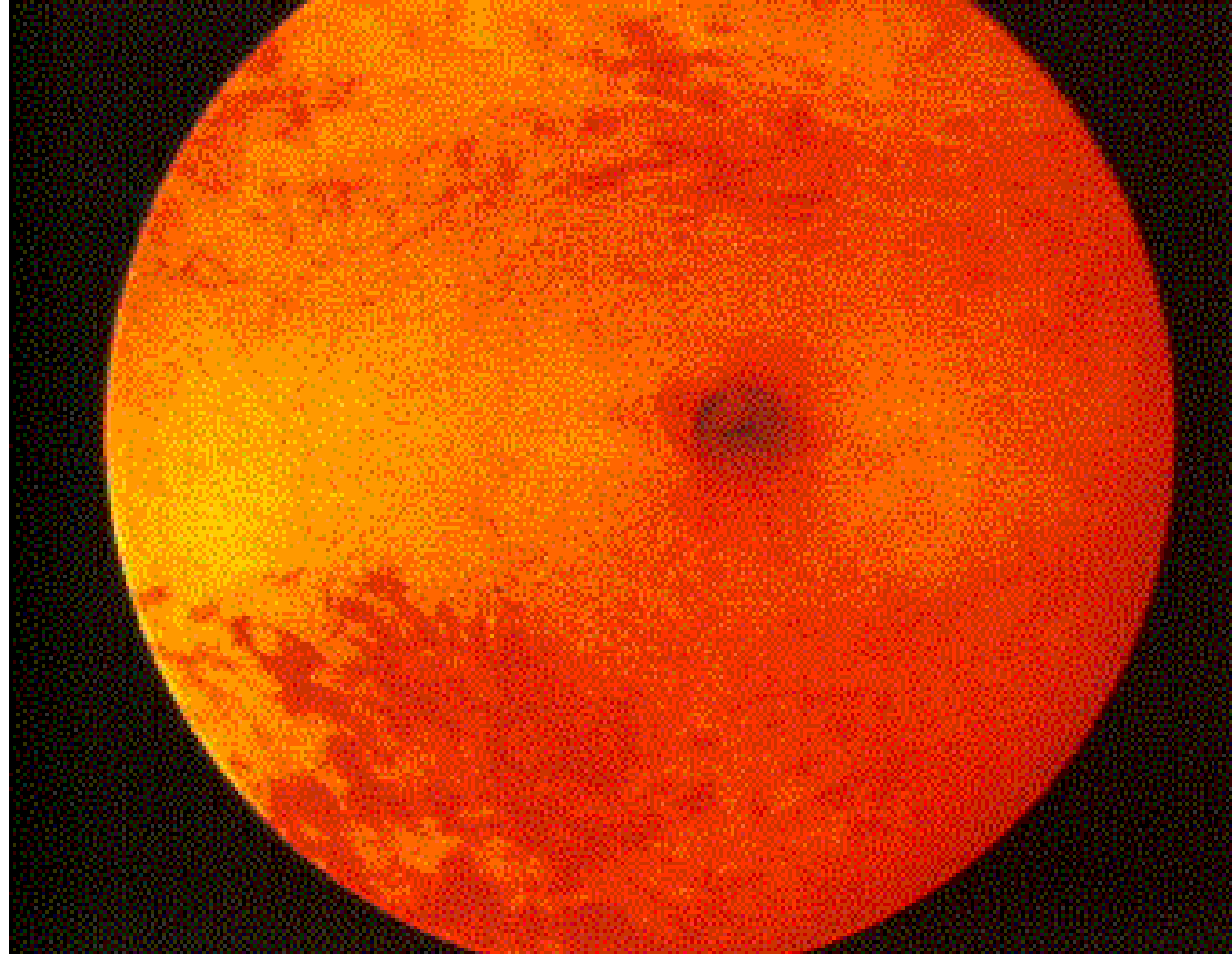
Operative resectoscope



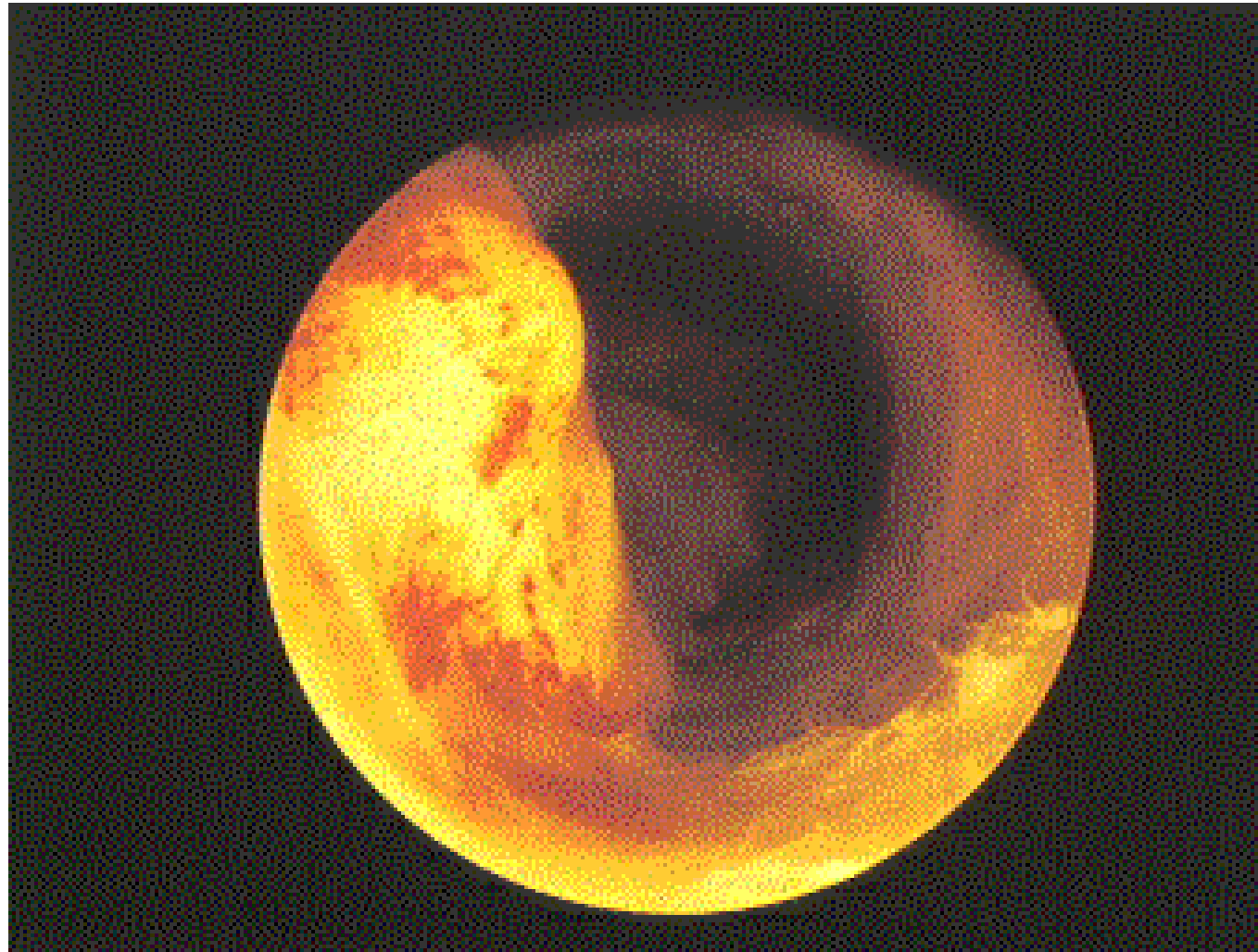
Normal hysteroscopic findings



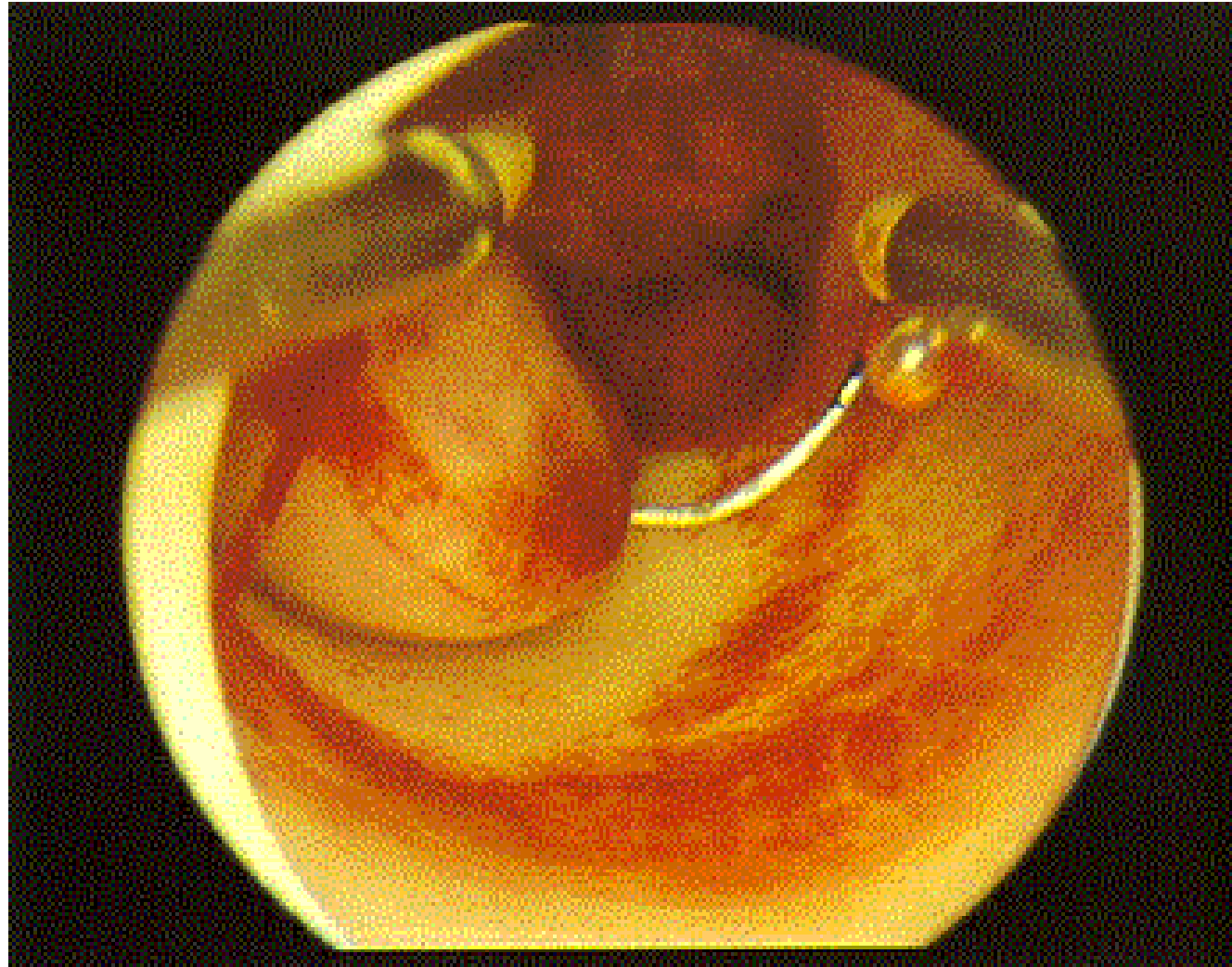
Normal tubal entrance



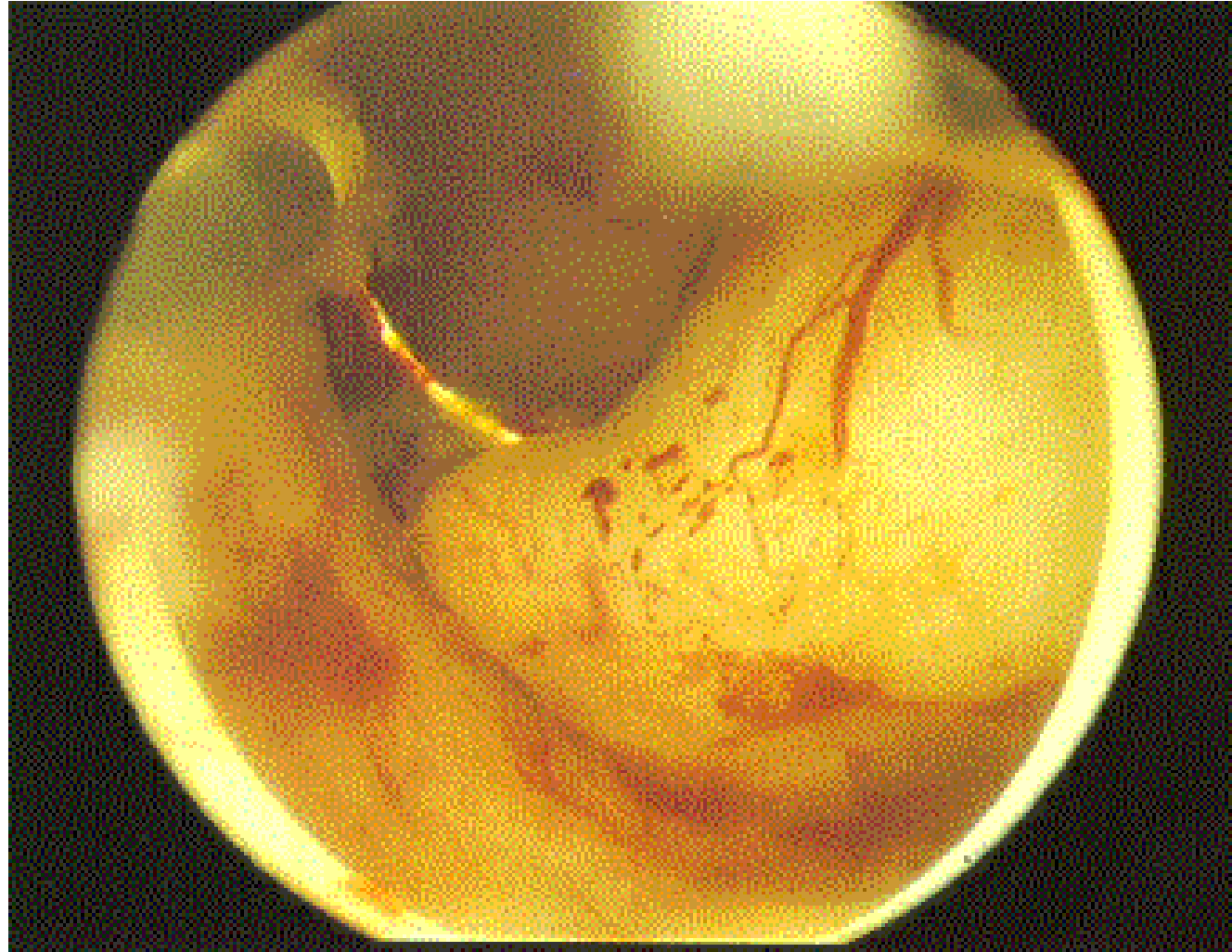
Submucose fibroid



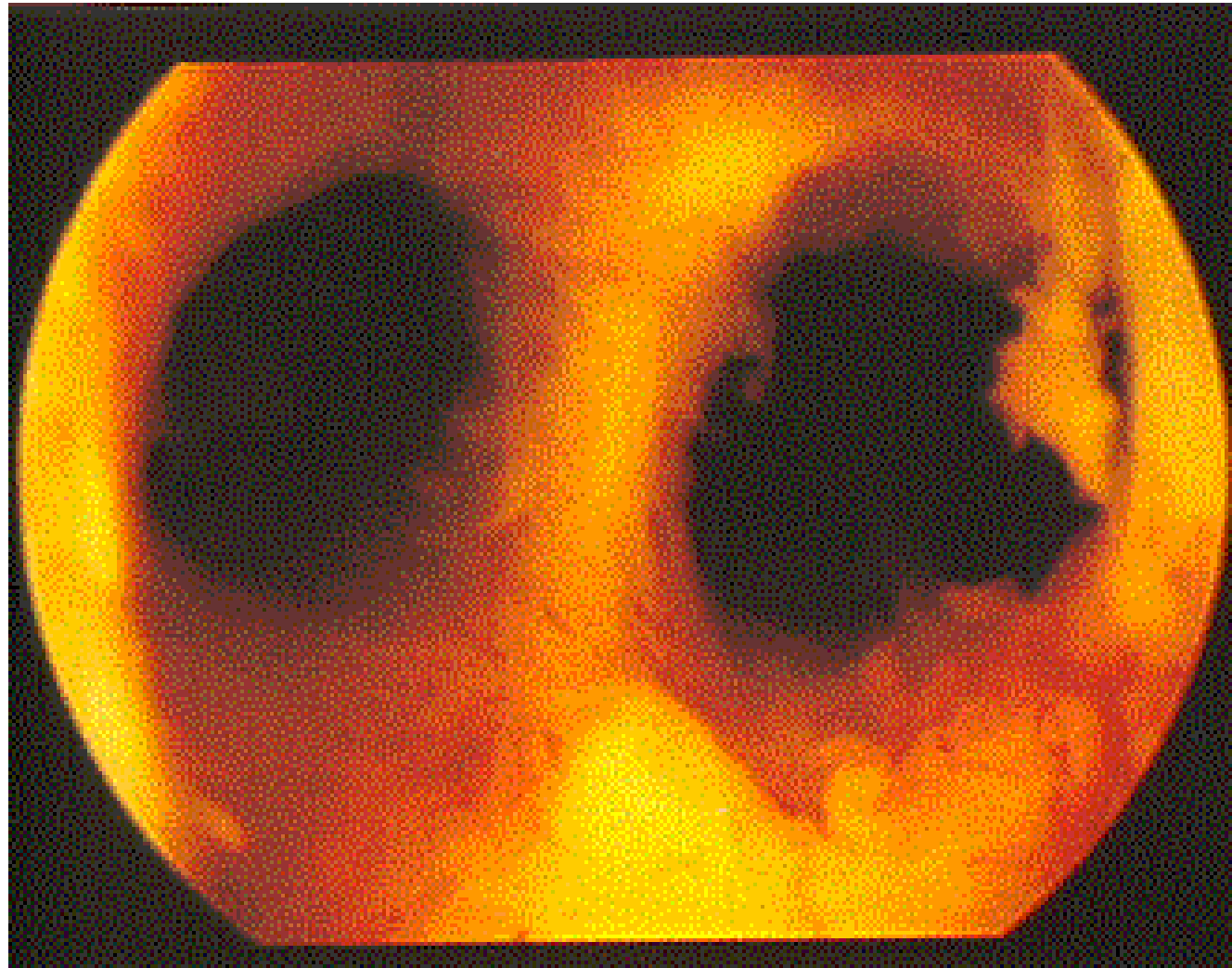
Resection of submucose fibroid



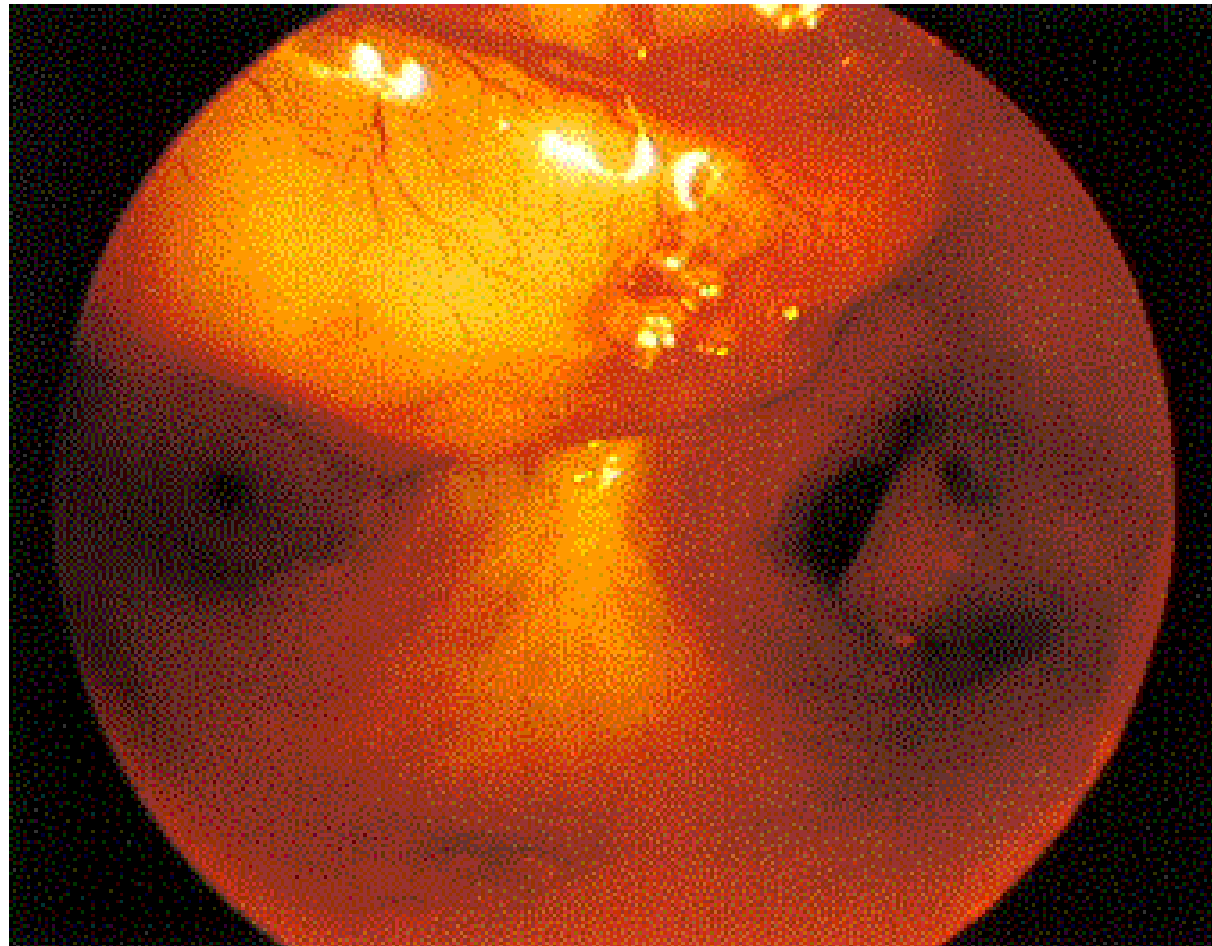
Resection of submucose fibroid



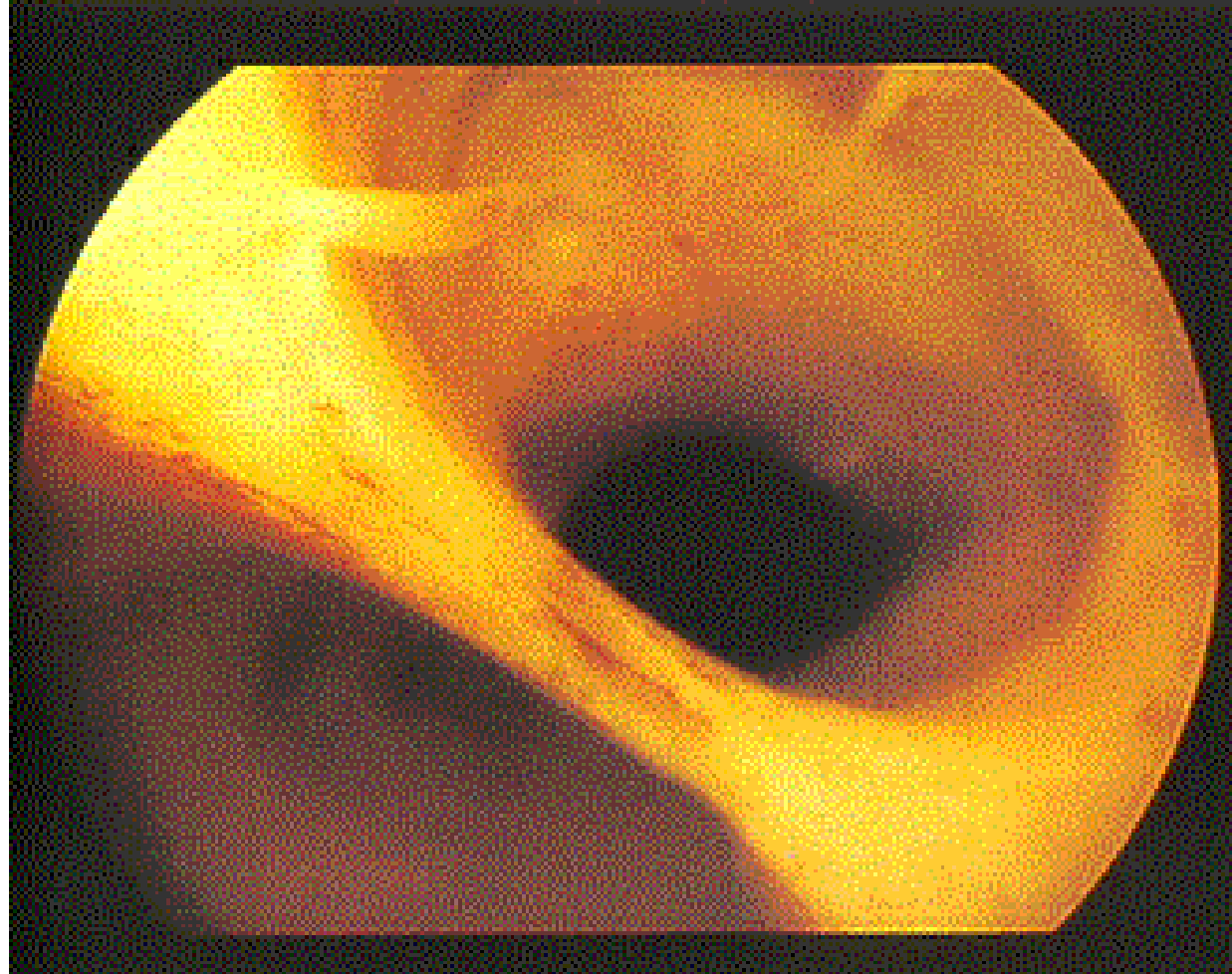
Uterine septum



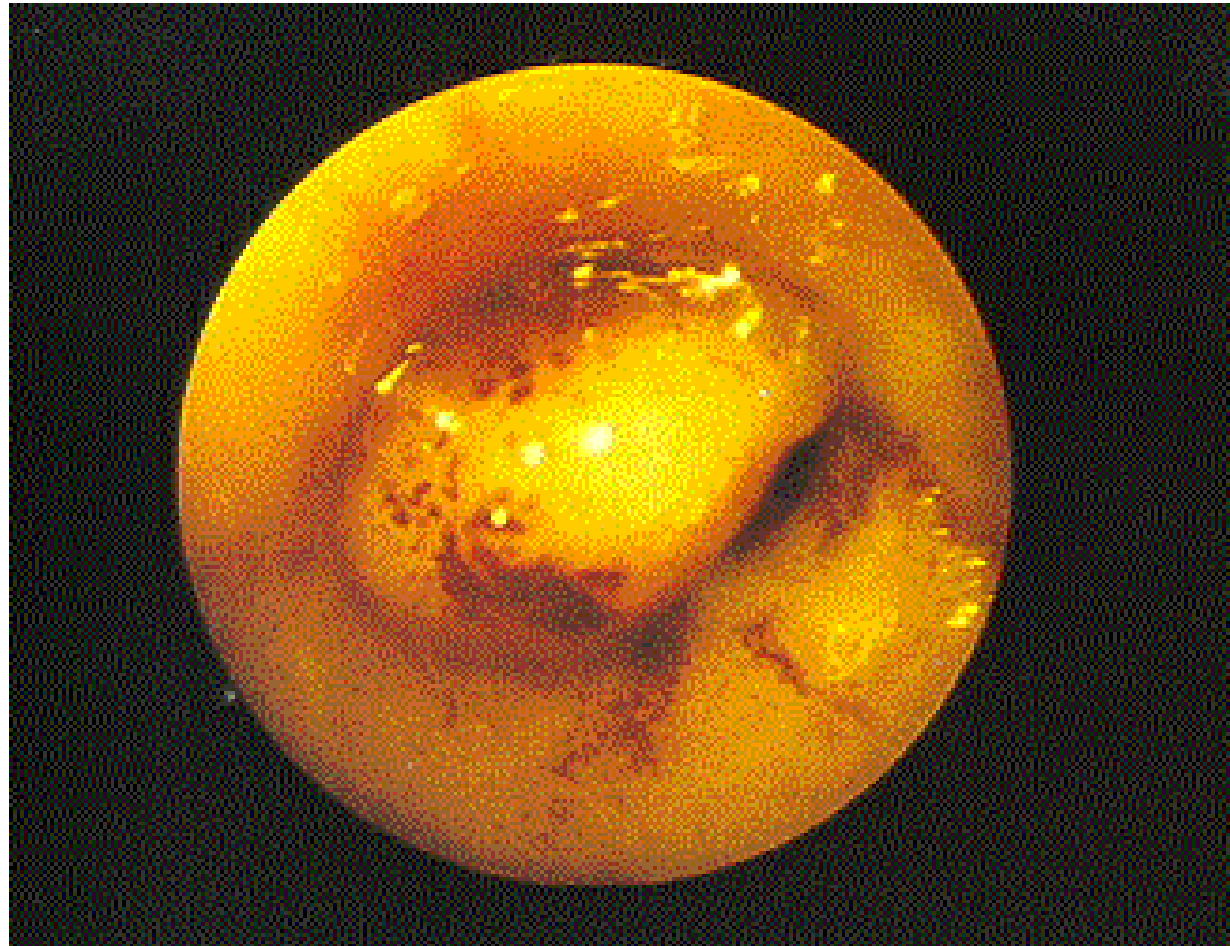
Endometrial polyp in the area of uterine septum



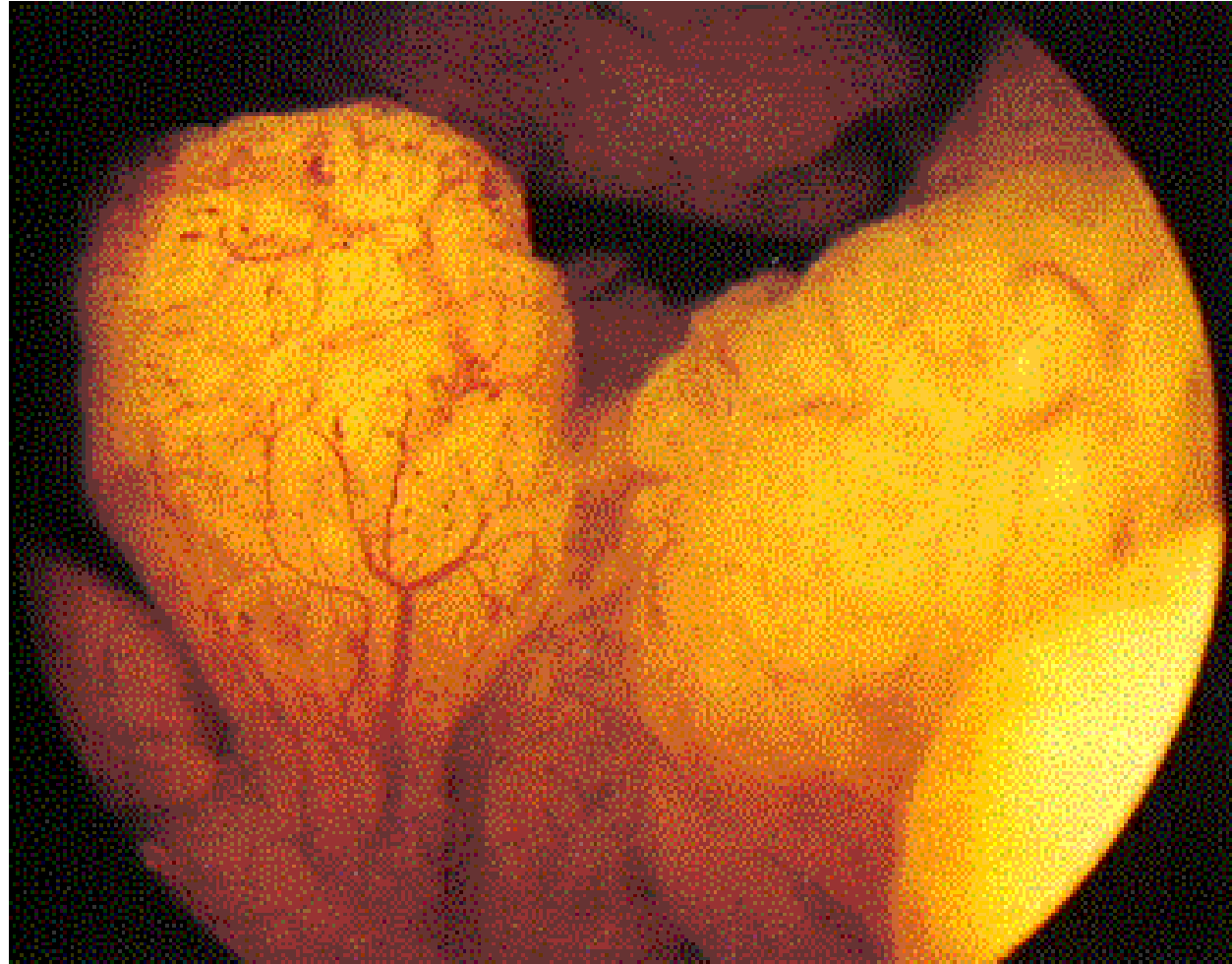
Intracervical adhesion



Endometrial polyp



Endometrial carcinoma



Da Vinci – robotic surgery



Da Vinci – Console

- ➔ 3D view
- ➔ Ergonomic operational position – also for long lasting operations (sitting)
- ➔ Single surgeon procedure
- ➔ Gentle hand motorics console response
- ➔ Setting of motorics