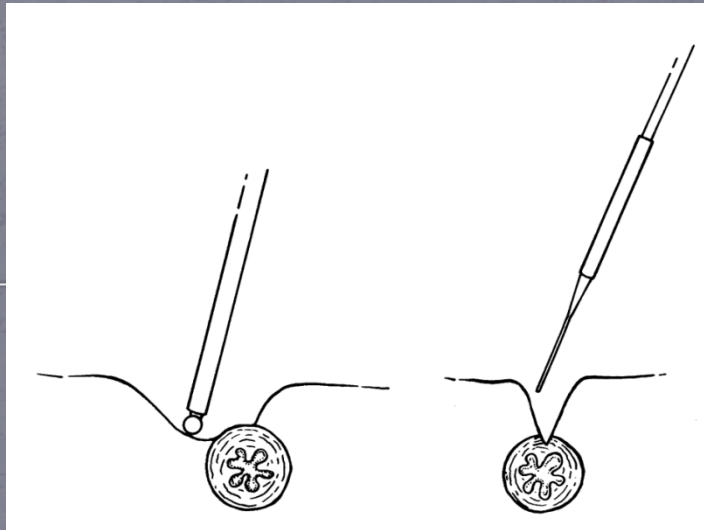


# PERITONECTOMY



Luis D. Carcorze Soto, MD

PGY-3

# Outline:

- Peritoneal Surface Malignancies
- Peritoneum
- Patient Selection
- Operative Technique
- HIPEC
- EPIC

# Peritoneal Surface Malignancies:

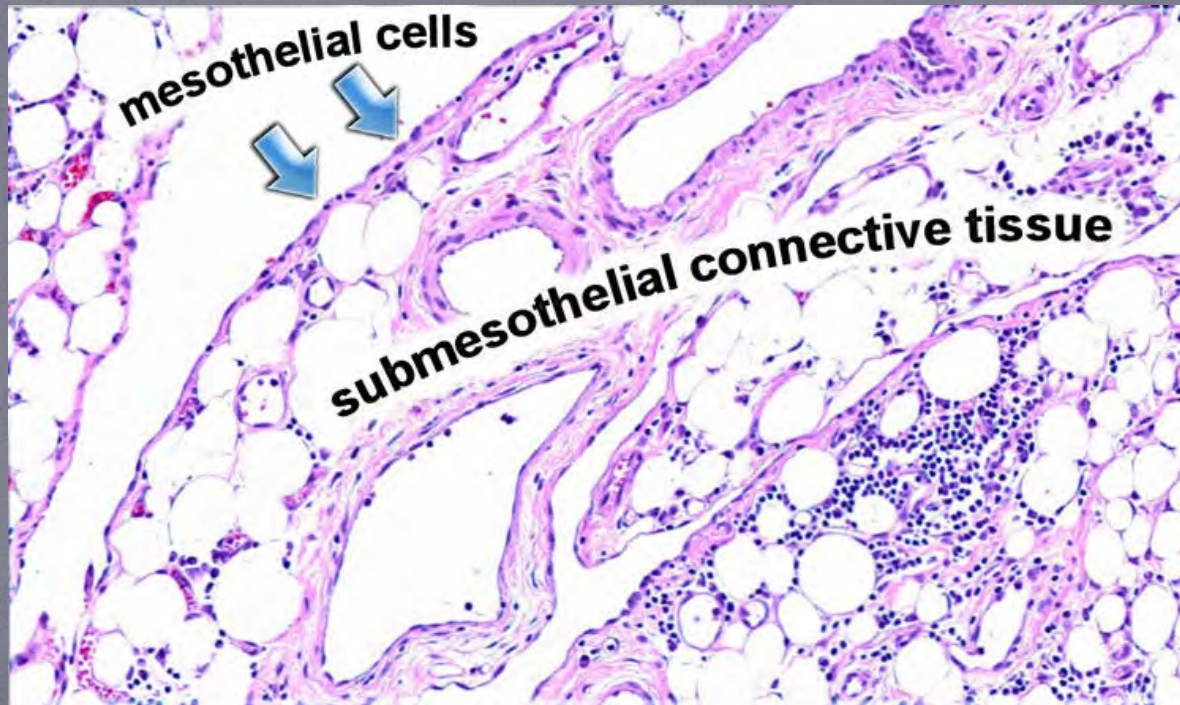
- Primary:
  - Primary Peritoneal Carcinoma
  - Malignant Peritoneal Mesothelioma
- Metastatic:
  - Appendiceal
  - Colorectal
  - Gastric
  - Pancreatic
  - Ovarian

# Incidence by Primary Site:

Type of Malignancy	Estimated Annual Incidence in U.S.	Estimated Annual Incidence of Peritoneal Involvement
Primary peritoneal cancer	1000	1000
Malignant peritoneal mesothelioma	400	400
Appendiceal cancer	1500	1350
Colorectal cancer	146,970	31,000
Gastric cancer	21,130	10,000
Ovarian cancer	21,550	18,000
Pancreatic cancer	42,470	2500
Endometrial cancer	42,160	1500

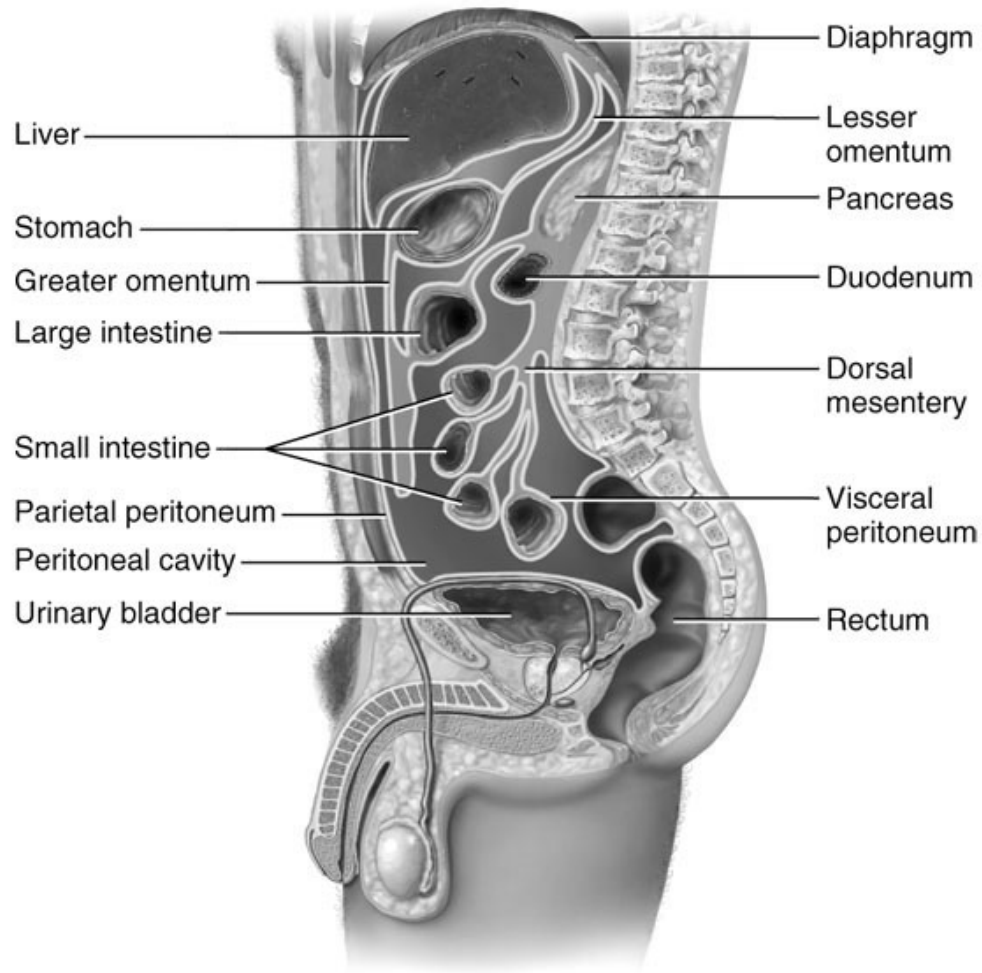
# Peritoneum:

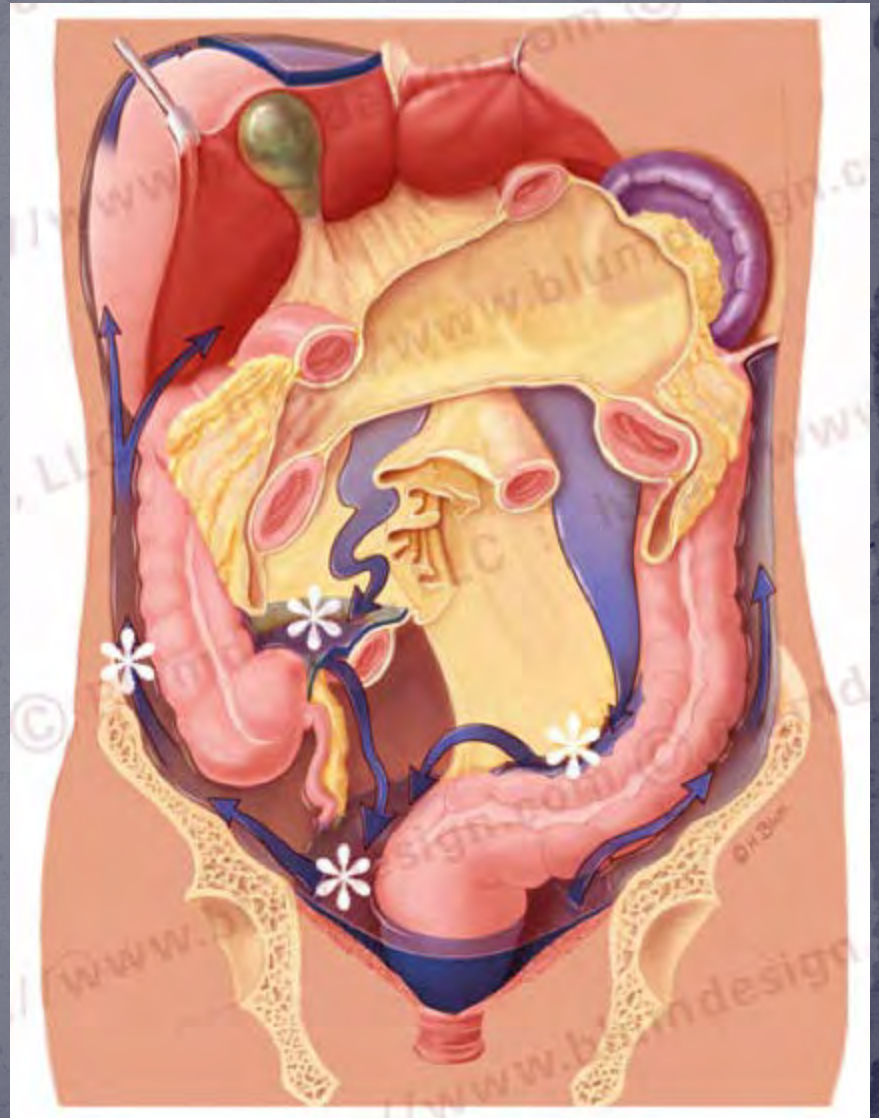
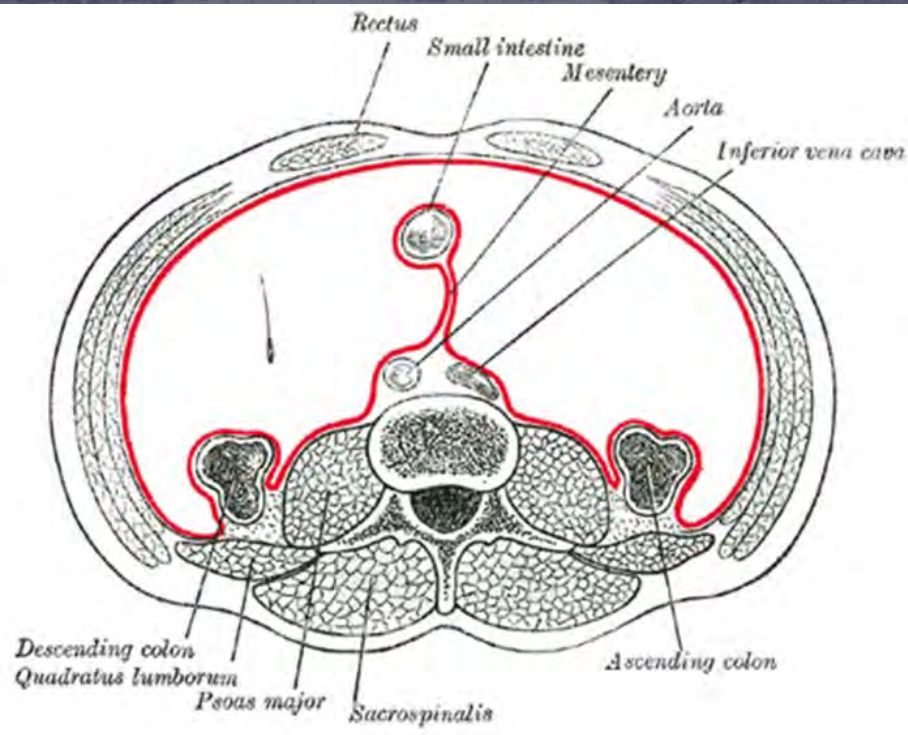
- Serosal membrane
- Single layer of flat mesothelial cells supported by submesothelial connective tissue.



# Peritoneum:

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# Major Areas of Involvement:

- Right upper quadrant and porta hepatis
- Omentum, spleen, and lesser sac
- Left upper quadrant and stomach
- Colon and colic gutters
- Small bowel and mesentery
- Pelvic peritoneum and pelvic organs



# Patient Selection:

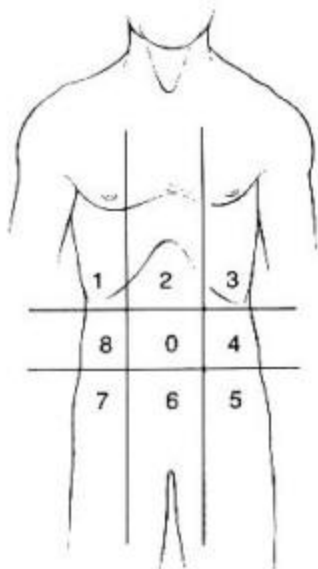
- Age
- Comorbidities
- Type of Malignancy
- Extent of Disease

# Patient Selection:

Disease or Condition	Example	Accepted	Under Investigation
Noninvasive peritoneal carcinomatosis, any volume	Pseudomyxoma peritonei	X	
Malignant peritoneal mesothelioma (MPM), any volume	MPM	X	
Invasive cancer, low volume	Colorectal cancer	X	
Gastrointestinal cancer with positive cytology or perforation	Gastric cancer		X
Recurrent ovarian cancer unresponsive to systemic chemotherapy	Recurrent ovarian cancer		X
Gastrointestinal cancer with invasion of adjacent organs or positive margins	Colorectal cancer		X
Ovarian cancer, initial diagnosis of stage IIIB or IIIC	Ovarian cancer		X
Malignant ascites (for palliation)	Pancreatic cancer	X	
Noninvasive sarcomatosis, any volume	Recurrent retroperitoneal fibrosarcoma	X	

# Extent of Disease

## Peritoneal Cancer Index



### Regions

- 0 Central
- 1 Right Upper
- 2 Epigastrium
- 3 Left Upper
- 4 Left Flank
- 5 Left Lower
- 6 Pelvis
- 7 Right Lower
- 8 Right Flank
  
- 9 Upper Jejunum
- 10 Lower Jejunum
- 11 Upper Ileum
- 12 Lower Ileum

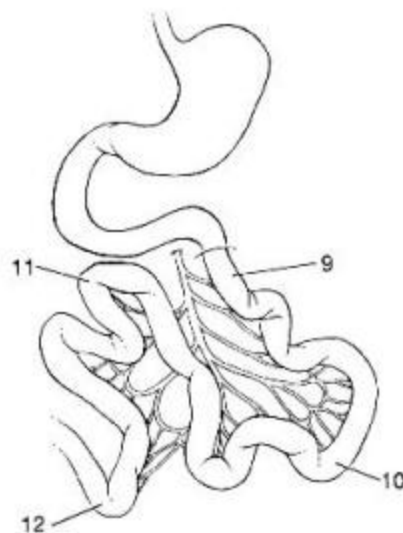
### Lesion Size

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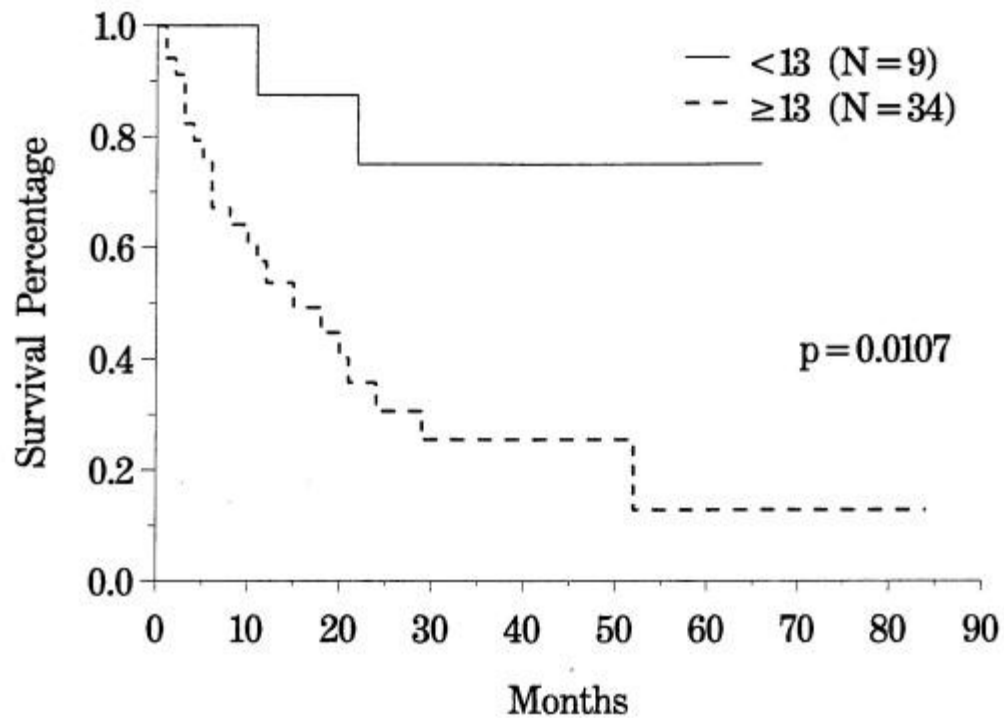
### Lesion Size Score

- LS 0 No tumor seen
- LS 1 Tumor up to 0.5 cm
- LS 2 Tumor up to 5.0 cm
- LS 3 Tumor > 5.0 cm or confluence

**PCI**

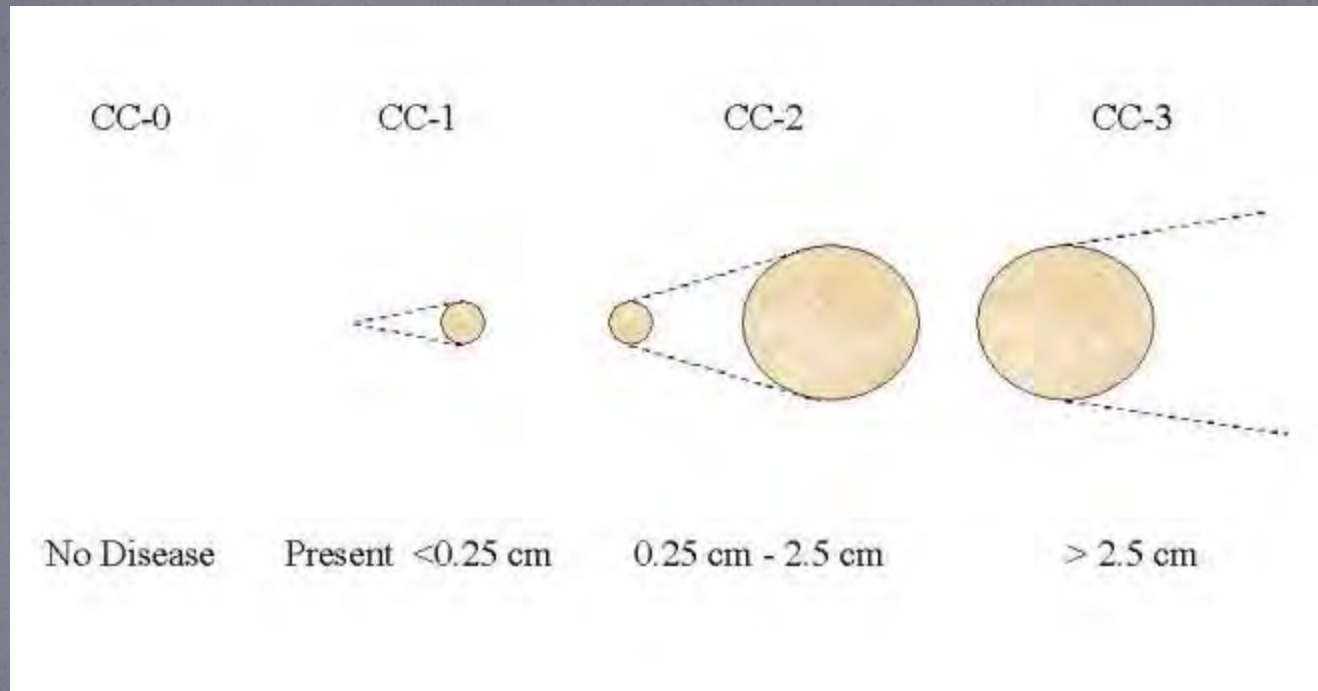


# Extent of Disease:



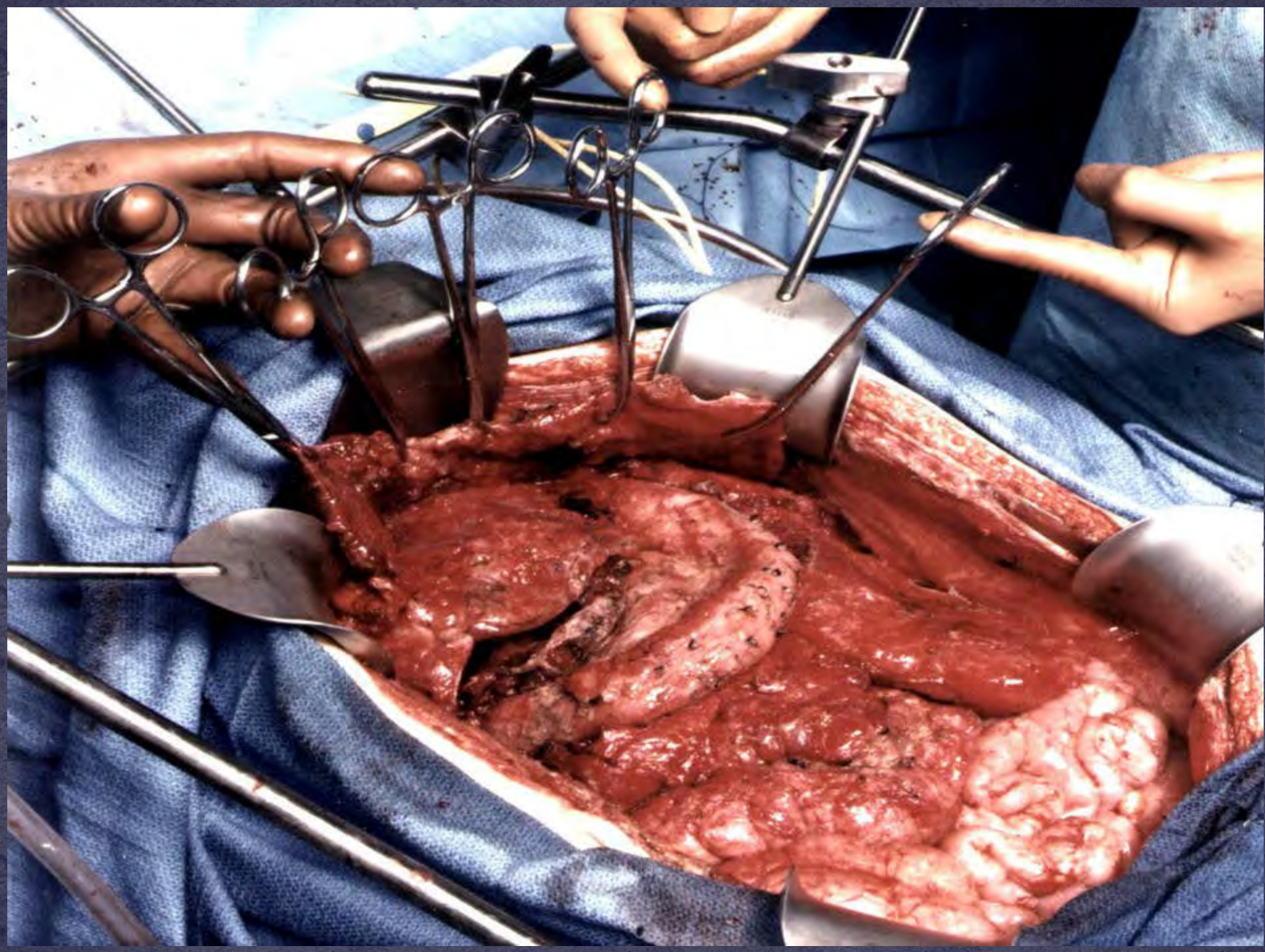
# Cytoreductive Surgery:

- Remove all visible disease
- Remove Affected Peritoneum



# Cytoreductive Surgery:

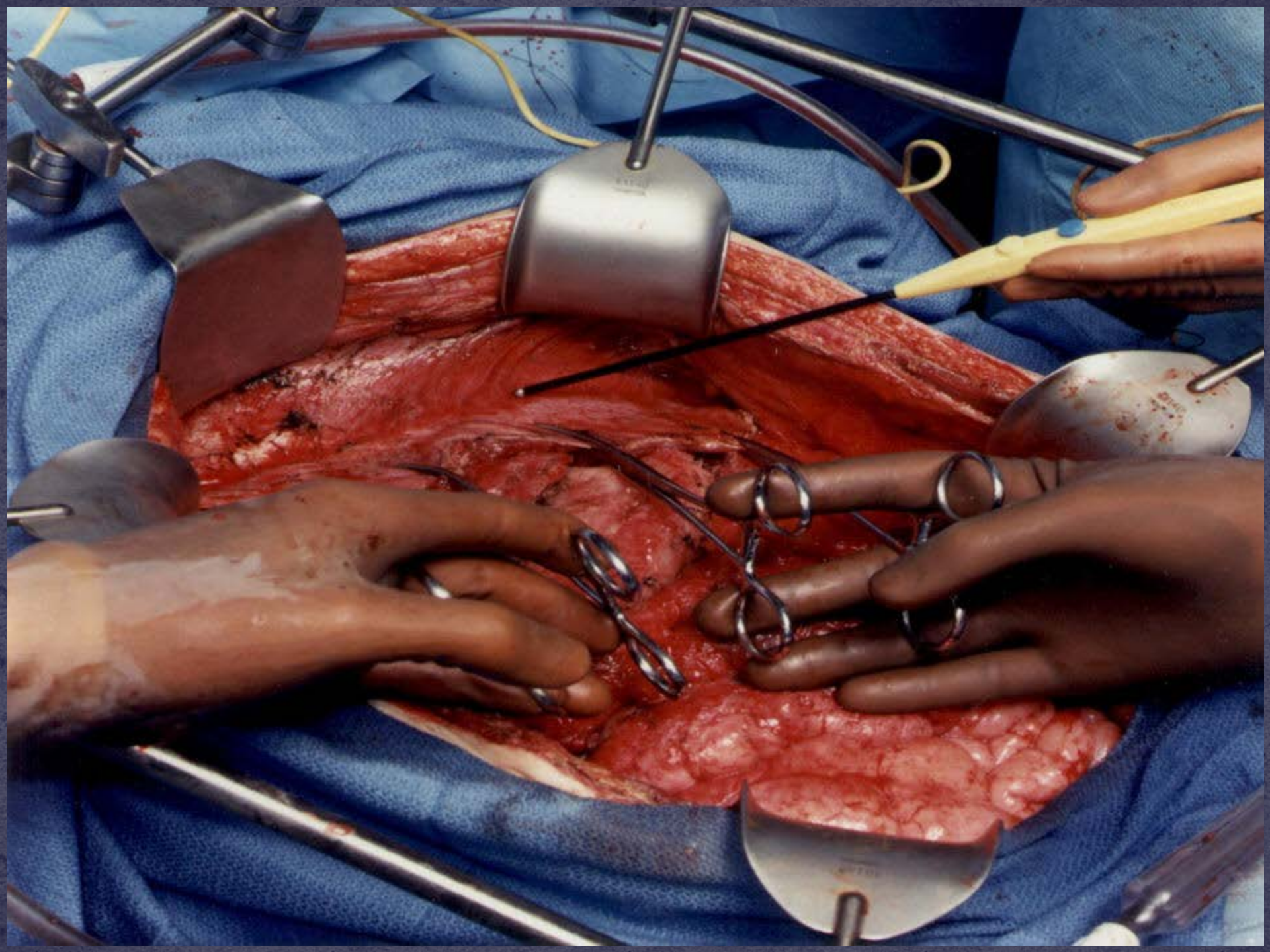
- **1. Greater omentectomy and splenectomy**
- 2. Left subdiaphragmatic peritonectomy
- 3. Right subdiaphragmatic peritonectomy
- 4. Lesser omentectomy and cholecystectomy with stripping of the omental bursa
- 5. Complete pelvic peritonectomy
- 6. Partial or complete gastrectomy

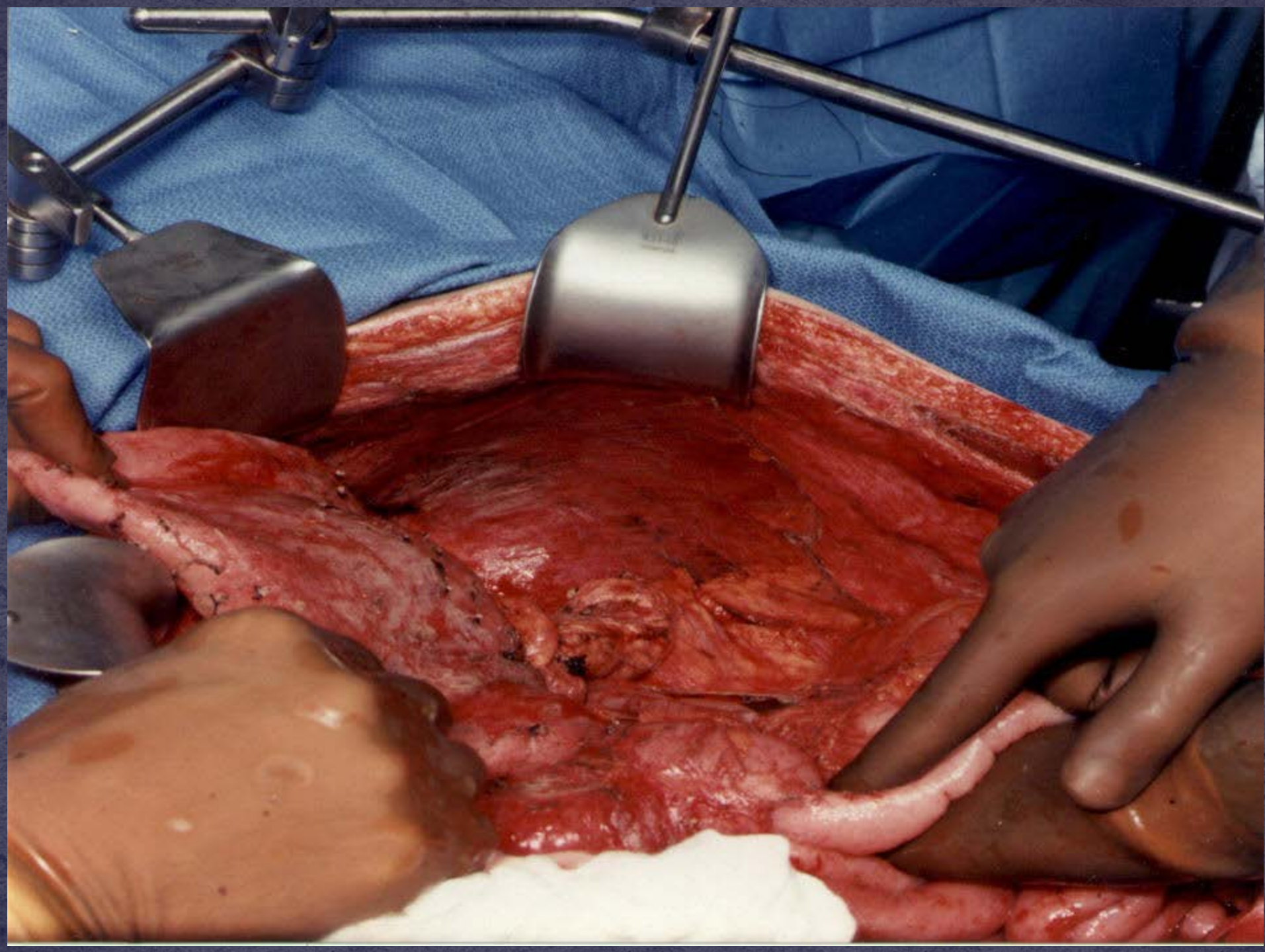


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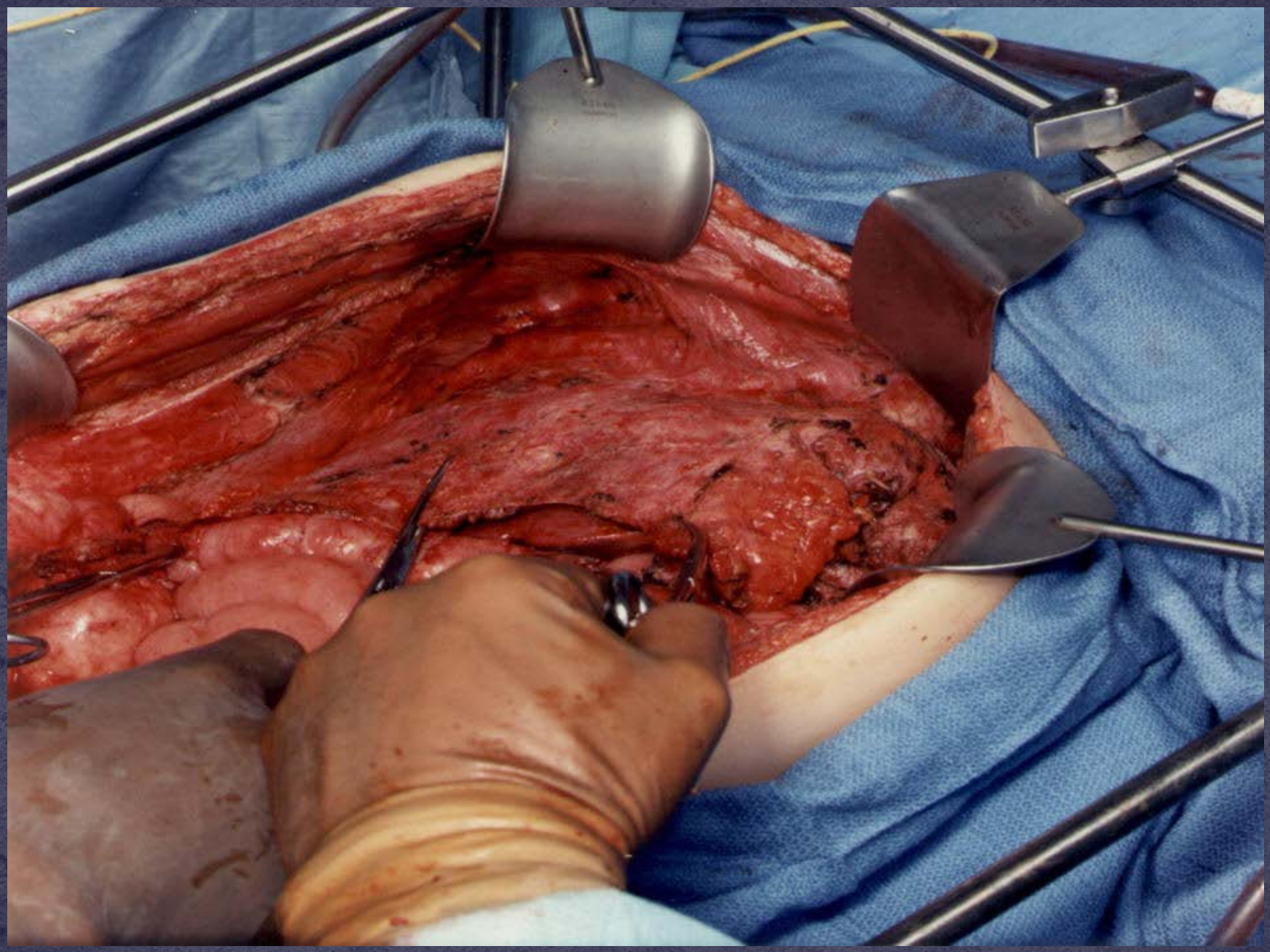


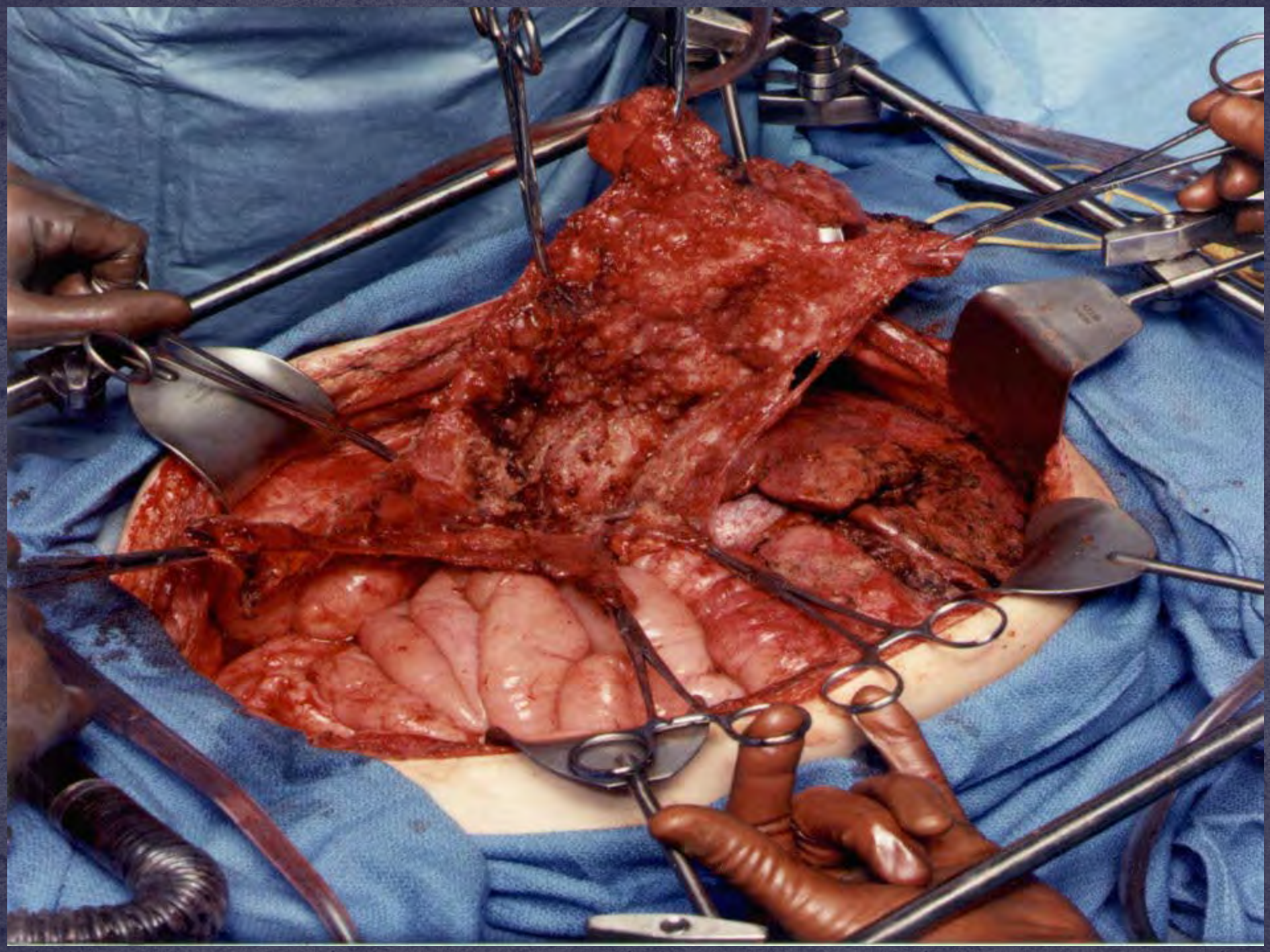


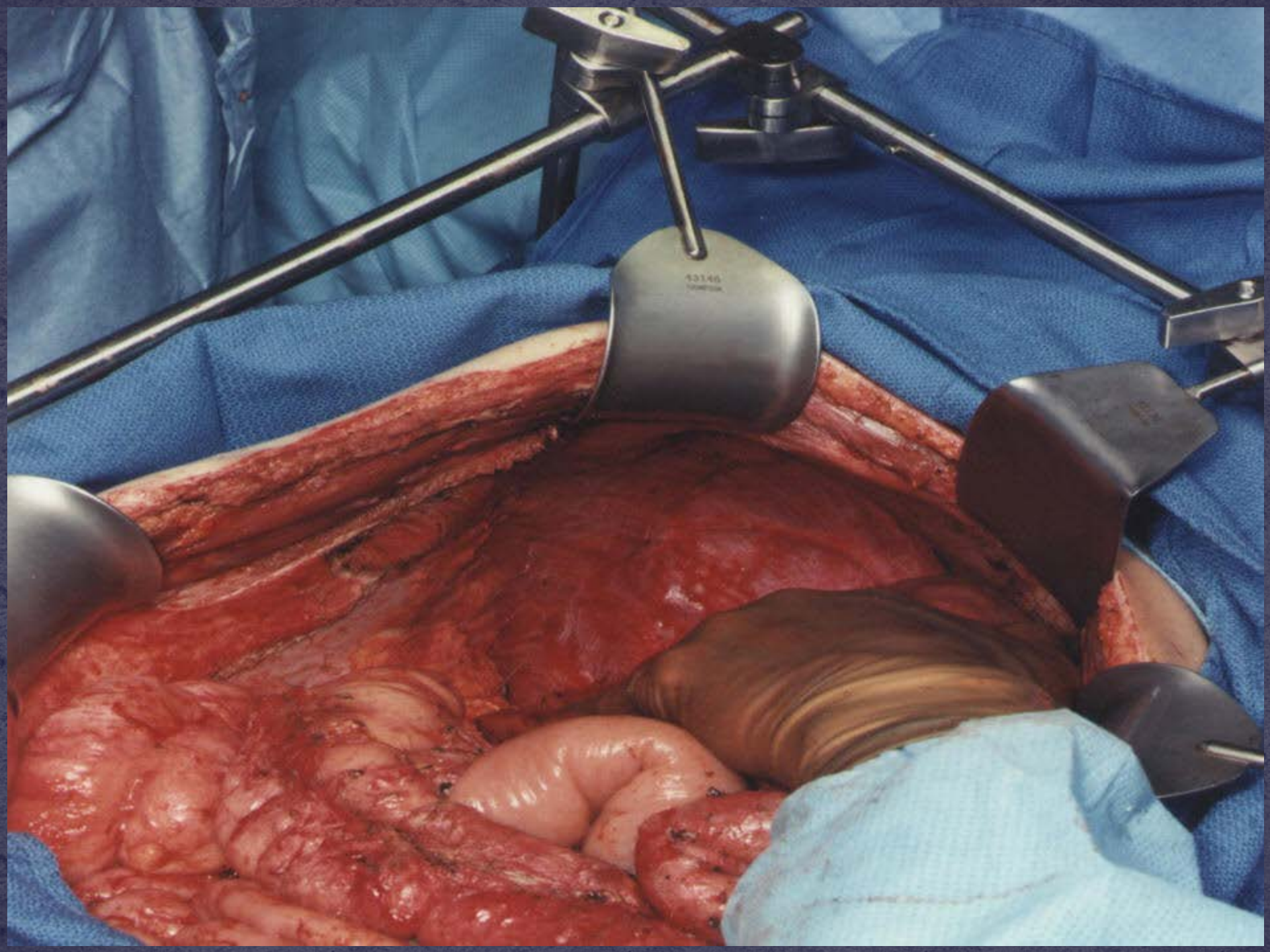


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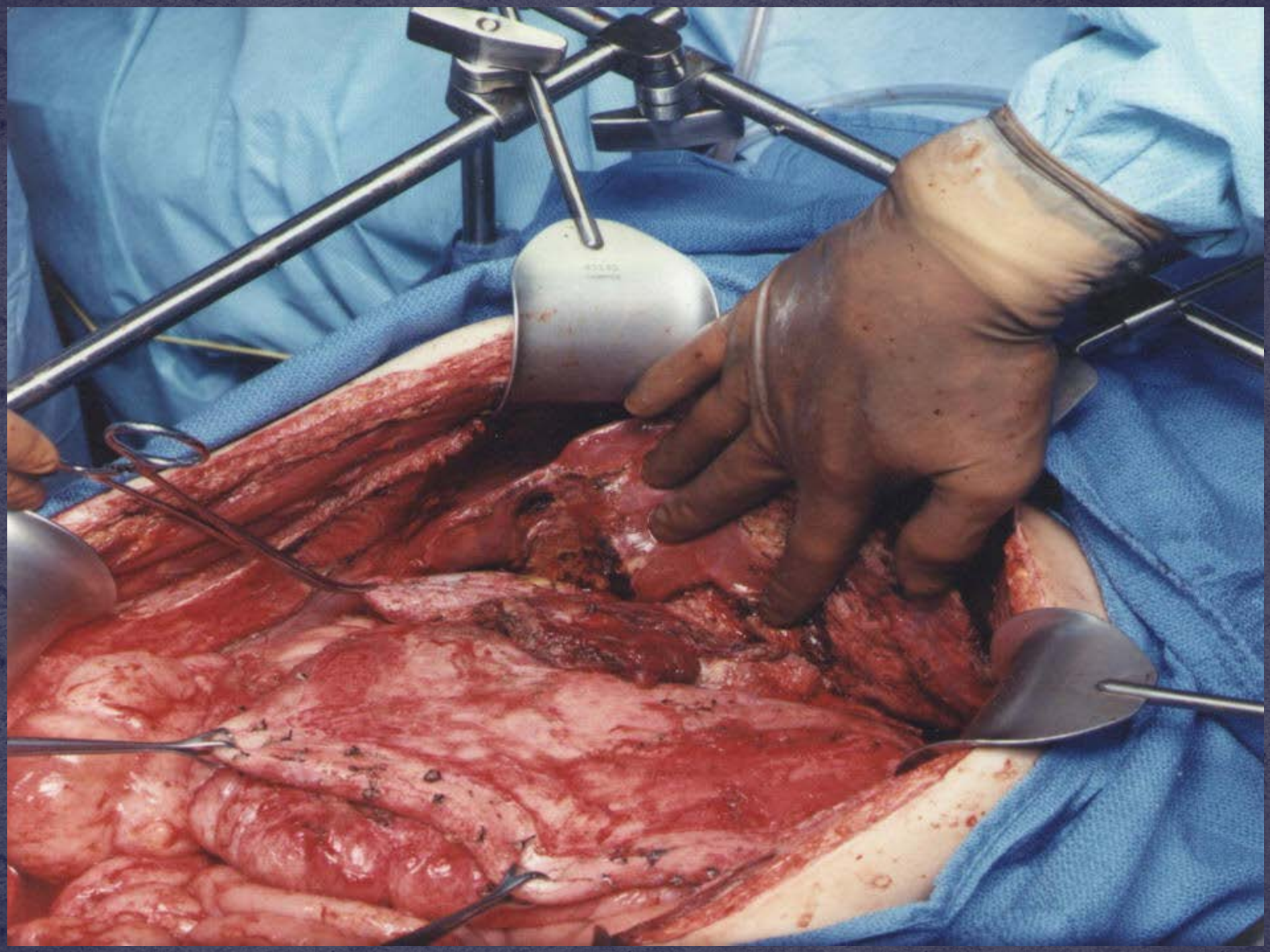




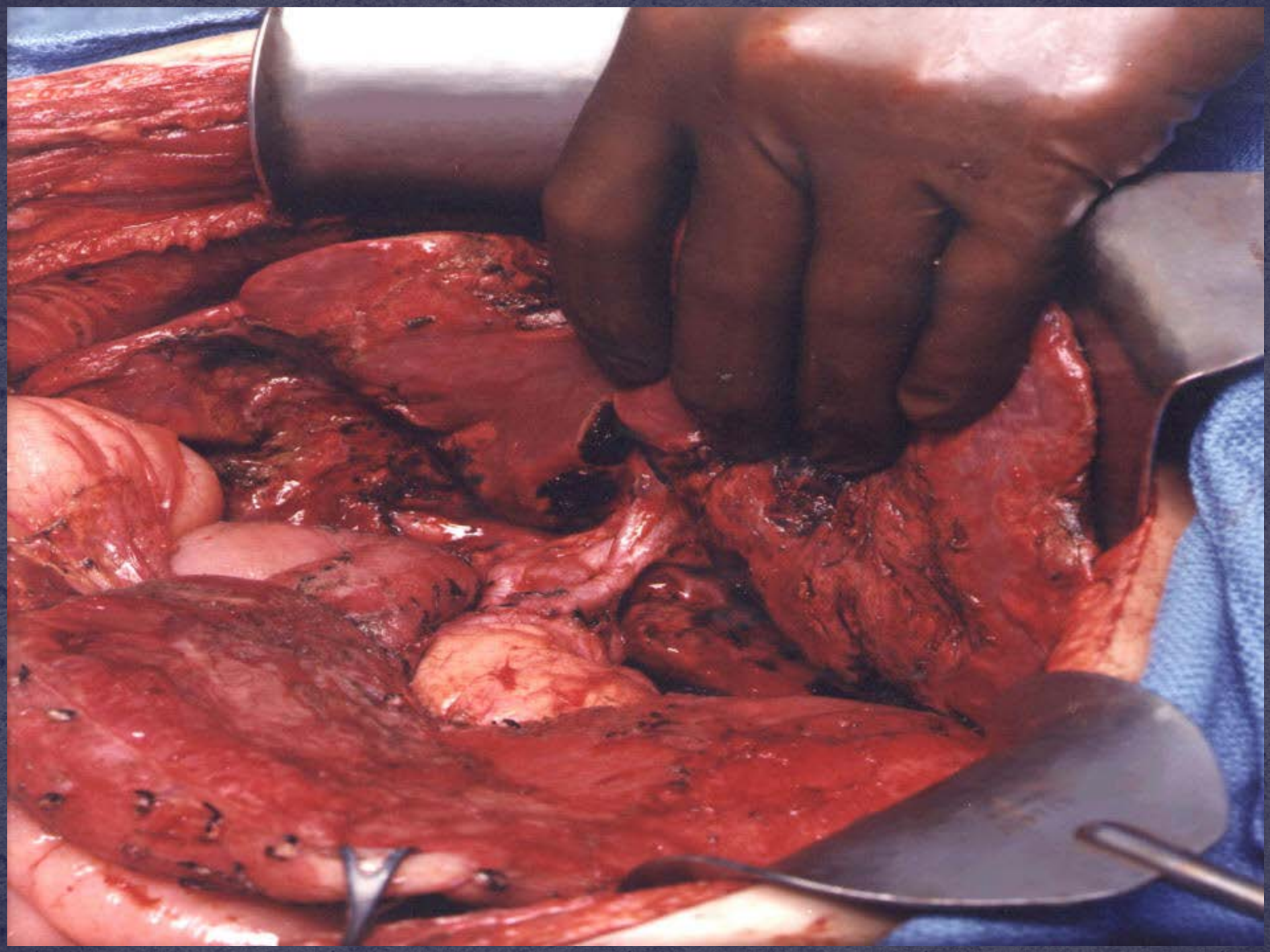


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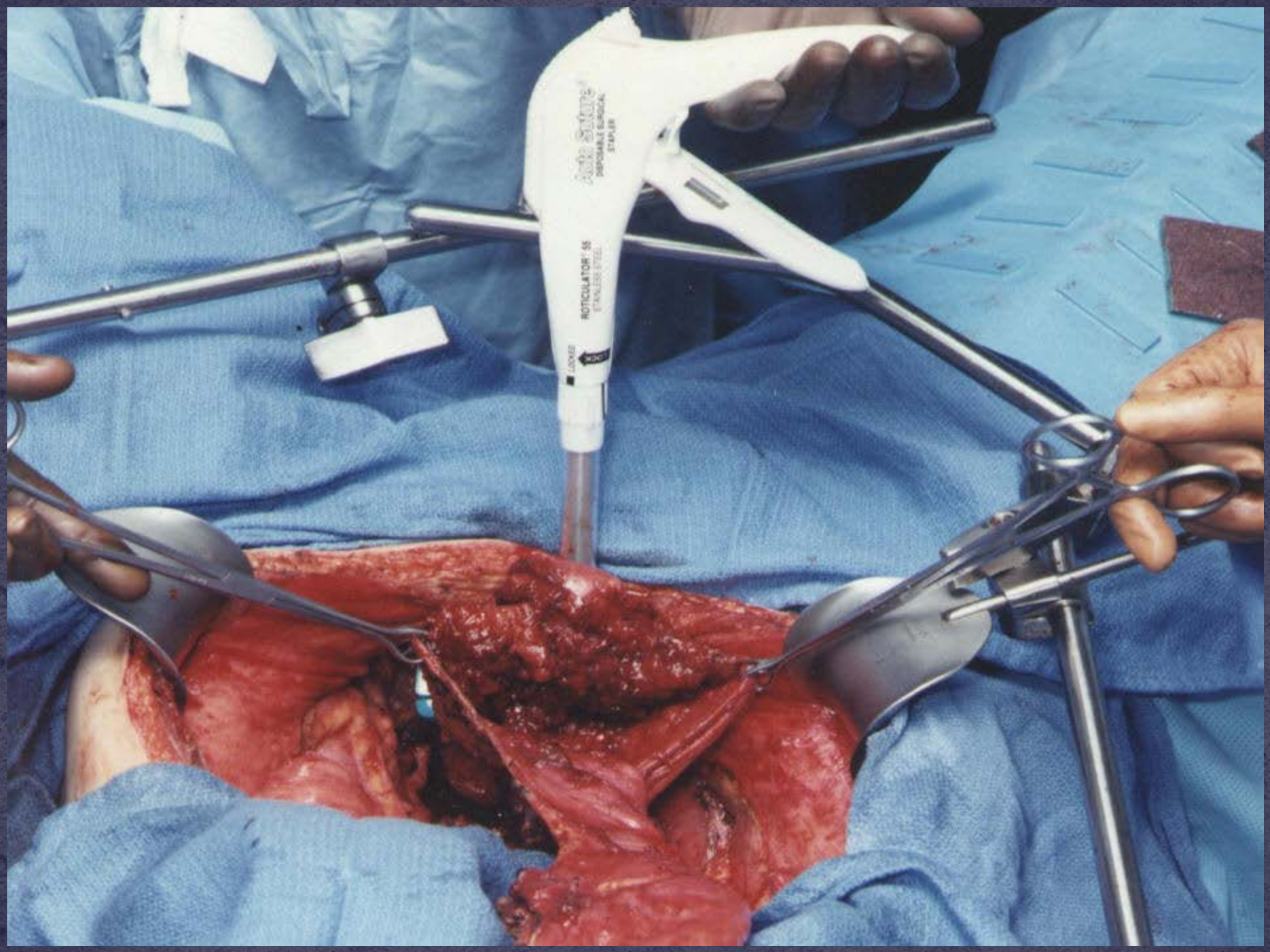


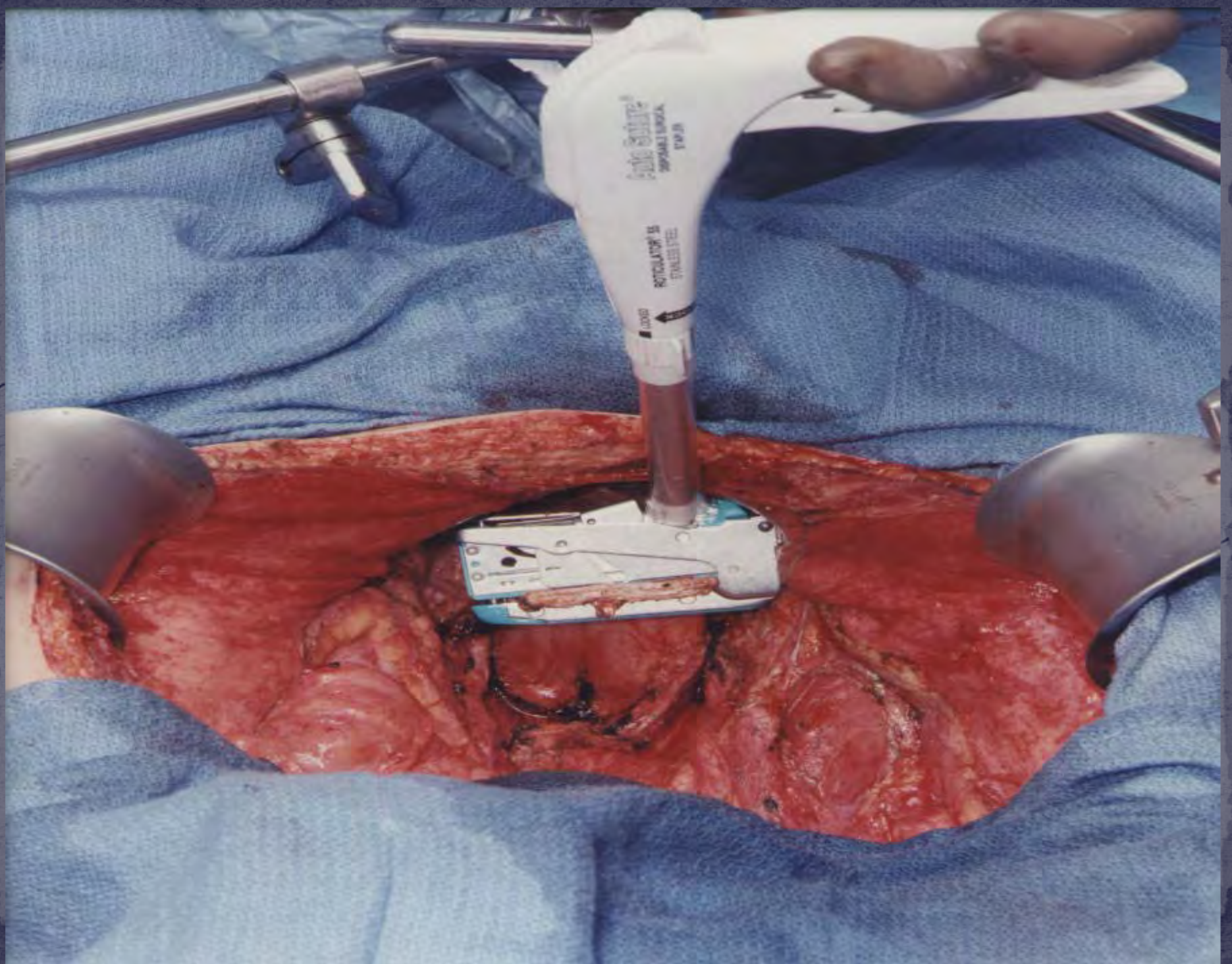




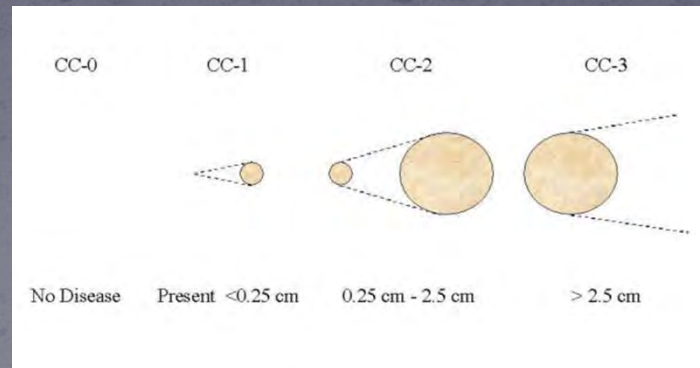
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# HIPEC:



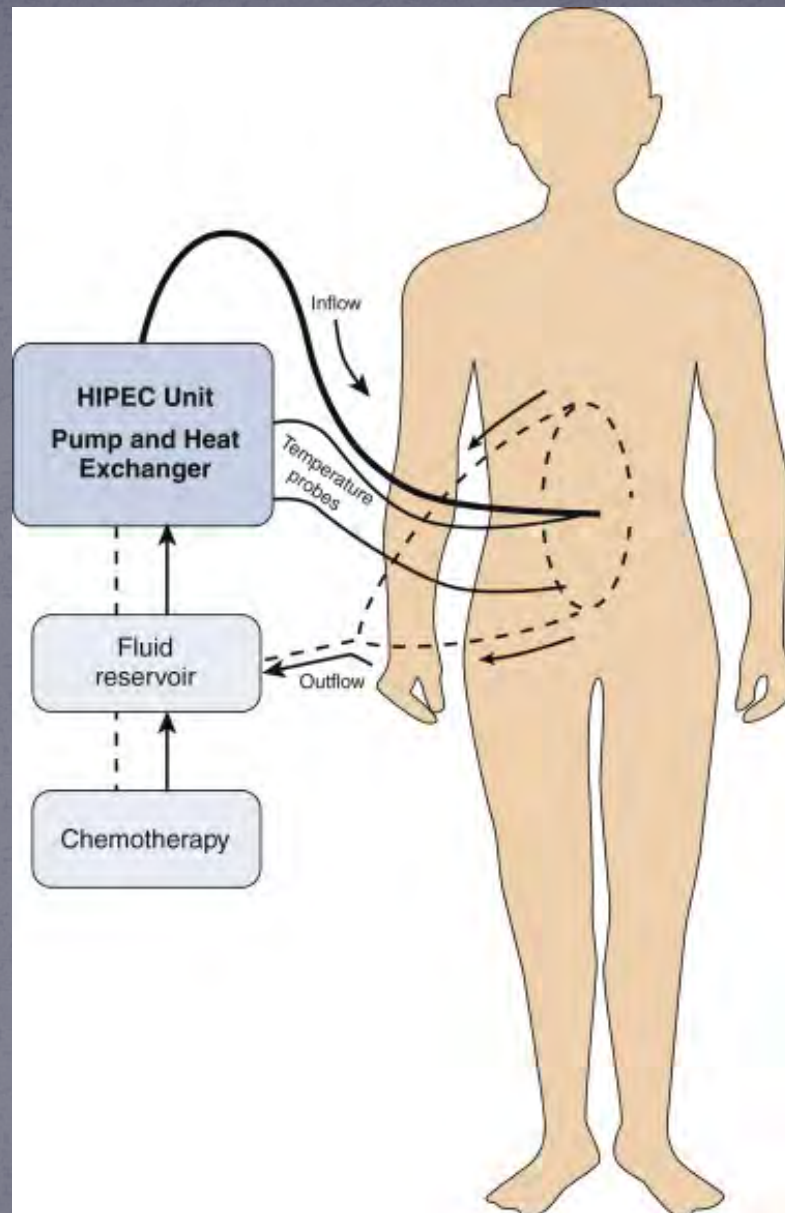
- **Hyperthermic IntraPERitoneal Chemotherapy**

## Why Hyperthermic?

- Heat increases drug penetration into tissue.
- Heat increases the cytotoxicity of selected chemotherapy agents.
- Heat has anti-tumor effects by itself.
- Intraoperative chemotherapy allows manual distribution of drug and heat uniformly to all surfaces of the abdomen and pelvis.
- Renal toxicities of chemotherapy can be avoided by careful monitoring of urine output during chemotherapy perfusion.
- Nausea and vomiting are avoided because the patient is under general anesthesia.
- The time that elapses during the heated perfusion allows a normalization of many functional parameters (temperature, blood clotting, hemodynamics, etc.).

# EPIC and HIPEC

- Both Prolonged Survival, Disease free time.
- Under investigation
- HIPEC vs EPIC vs HIPEC and EPIC



Why was this Patient a good candidate  
for Cytoreductive surgery?



# Prognostic Features of 51 Colorectal and 130 Appendiceal Cancer Patients with Peritoneal Carcinomatosis Treated by Cytoreductive Surgery and Intreperitoneal Chemotherapy

Annals of Surgery

Paul H. Sugarbaker, and Kathleen Jablonski

From the Washington Cancer Institute, Washington Hospital Center,  
and Medlantic Research Institute

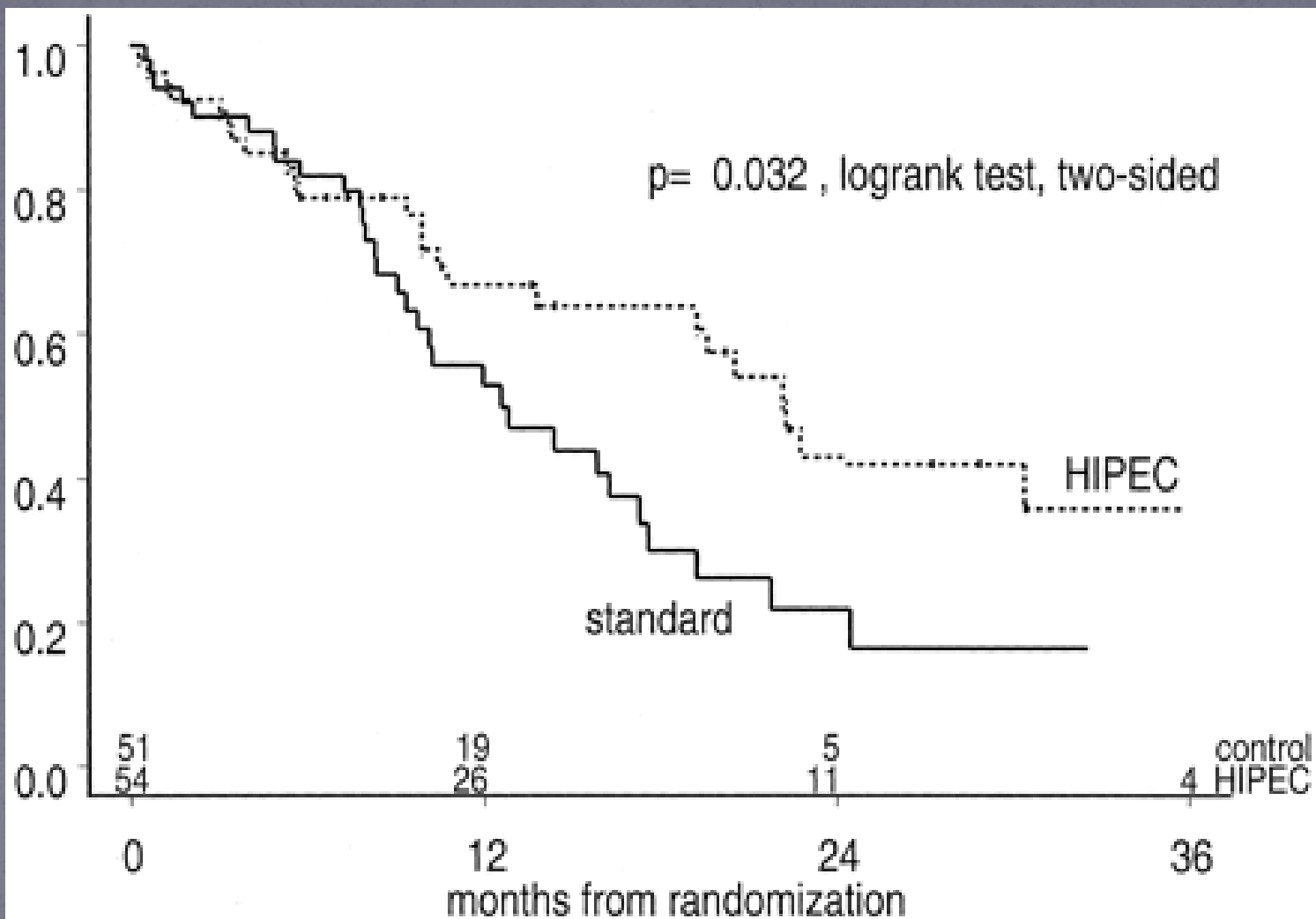
# Prognostic Features:

- Appendix vs Colon
- Grade
- Complete vs Incomplete Cytoreduction
- Lymph Node Metastasis

Prognostic Feature	3-year Survival	P-value
Appendix	73%	0.0001
Colon	36%	
Grade 1	81%	0.003
Other Grade	41%	
Complete	82%	0.0001
Incomplete	20%	
Met Positive	70%	0.0001
Mets Negative	37%	
Volume Mod	75%	0.0001
Volume Large	20%	

# Randomized Trial of Cytoreduction and Hyperthermic Intraperitoneal Chemotherapy versus Systemic Chemotherapy and Palliative Surgery in Patient with Carcinomatosis of Colorectal Cancer

Vic J. Verwaal, 2003 Journal of Clinical Oncology, Department of Surgery  
Biometric and Gastroenterology Netherlands Cancer Institute



# Review:

- **Randomized Study between 1998-2001, 105 patients**
- Cytoreduction followed by HIPEC significantly reduced the risk of dying ( hazard ratio, 0.55; 95% CI, .32 to 0.95; log rank P= 0.032)
- Median Surgical in the standard group was 12.6 months and in the experimental group 22.4 months