



# Difficult Gallbladder

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*Manilchuk, Andrei MD, MS, FACS*  
*OSU Department of Surgery*



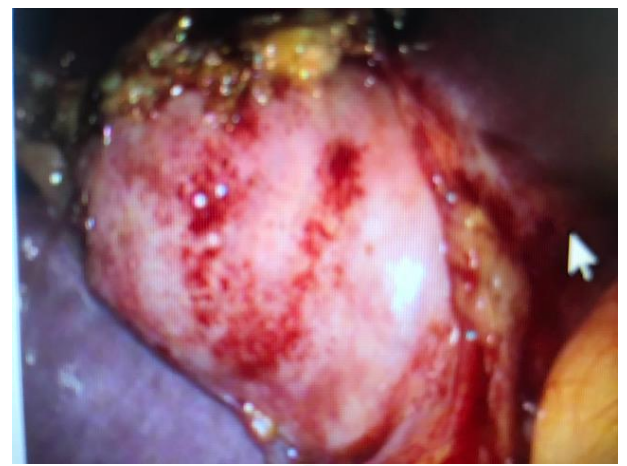
THE OHIO STATE  
UNIVERSITY  
WEXNER MEDICAL CENTER

# The History

- First cholecystectomy- Carl Langenbuch 1882
- First iatrogenic bile duct injury described by Sprengel 1891
- First laparoscopic cholecystectomy- Dr. Muhe 1985

# 750,000 cholecystectomies

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1. Most of cholecystectomies done for biliary colic
2. “ Difficult Gallbladder” associated with increased surgical risk, compared with standard cholecystectomy
3. Difficult, obscure anatomy due to inflammation, Mirizzi
4. Difficult exposure: obesity, adhesions/ previous upper abdominal surgeries
5. Difficult hemostasis : PHTN/ cirrhosis/ portal cavernoma

# Serious complications 2.6 %

- Bleeding 0.11 - 1.97 %,
- Intraabdominal abscess 0.14 - 0.3 %,
- bile leak 0.3 - 0.9 %
- biliary injury 0.26 - 0.6 %,
- bowel injury 0.14 - 0.35 %

# Non-biliary complications- bleeding

- 2<sup>nd</sup> Most frequent cause of mortality after anesthesia-related death
- Intraoperative
  - Vascular injury
  - Slippage of clips off cystic artery
  - Liver bed, MHV radicals
- Postoperative
  - Trocar site
- Contributing factors:
  - Acute cholecystitis,
  - Cirrhosis / PHTN
  - Abnormal anatomy

# Risk factors

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1. Obesity
2. Previous upper abdominal surgery
3. Age,
4. Male gender
5. Concerning Imaging

# Inflammation

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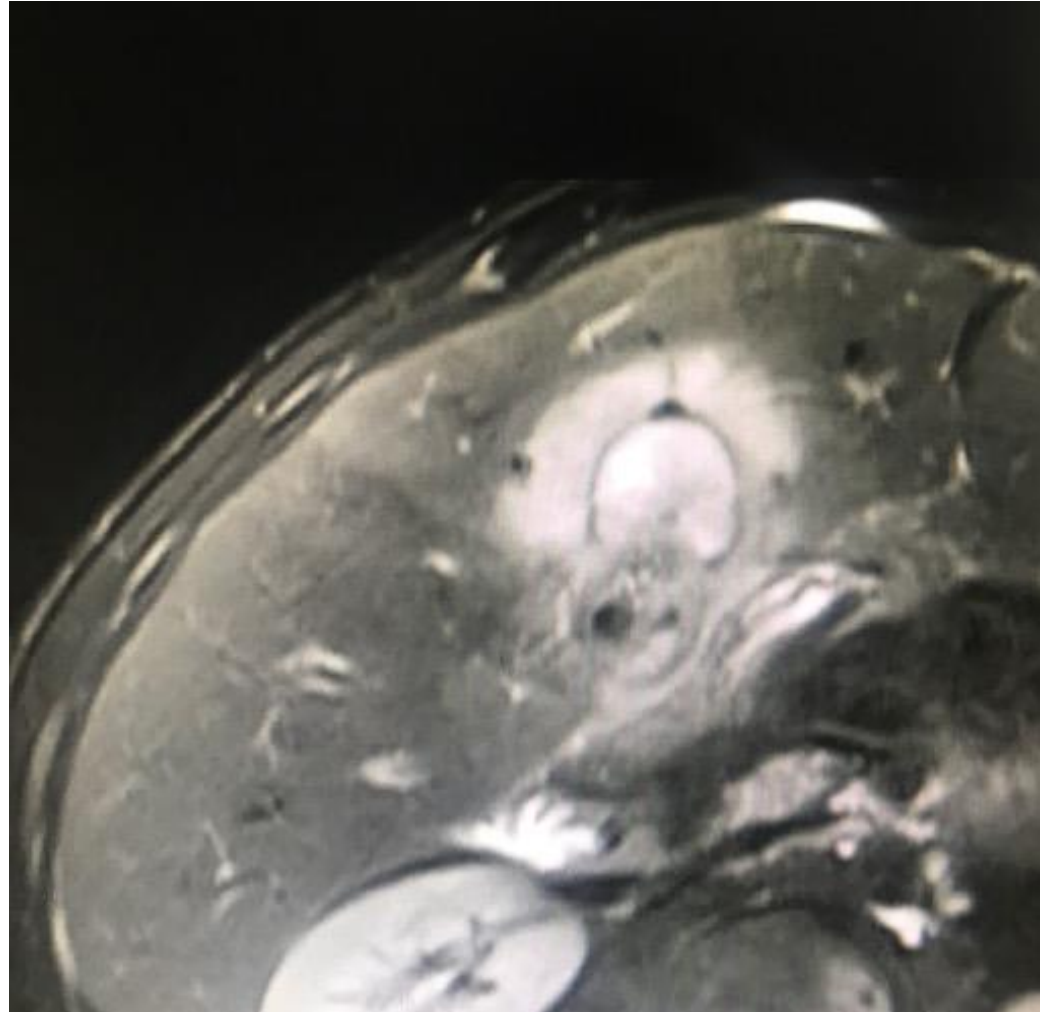
Acute cholecystitis( Thick wall)

Chronic cholecystitis ( contracted GB)

Multicenter NTC 00447304 study: 618 patient s

Early vs delayed cholecystectomy:

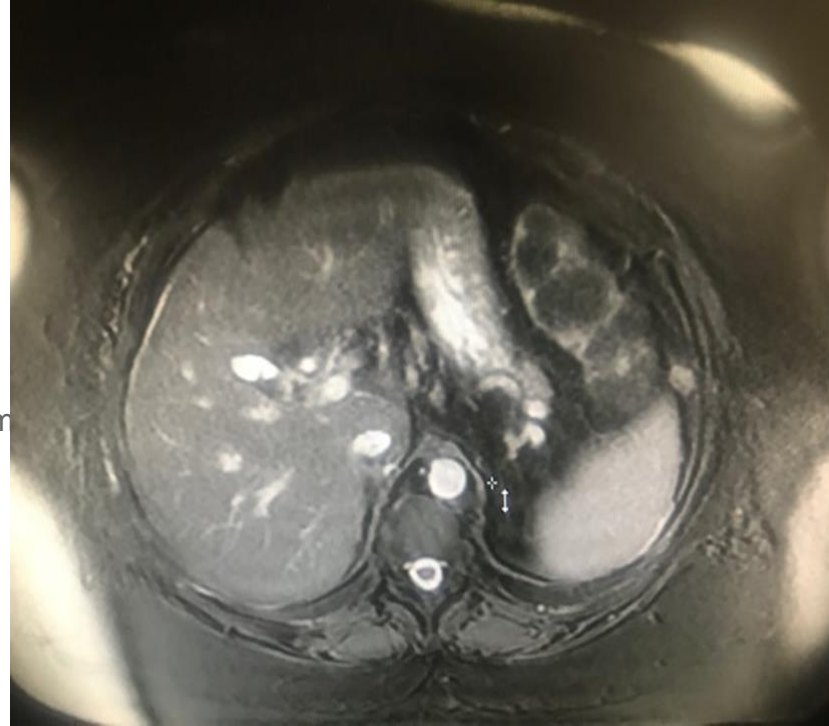
Lower morbidity, cost and conversion rate  
in the first group



# Morbid obesity

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1. BMI > 50 -risk of life-threatening complications
2. 1200 calorie diet to reduce bulky fatty liver
3. Difficulties of trocar placement. Place ports higher!
4. "Intrahepatic gallbladder"- mobilize gallbladder neck/ infundibulum
5. Bulky omentum- use additional ports





# Previous Upper Abdominal Surgeries

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1. Most common RYGB
2. Most difficult- previous large ventral hernia repair with underlay mesh
3. Use alternative port placement away from difficult zone.
4. Adhesiolysis, just enough for port placement and exposure
5. Limited energy use in proximity to colon and duodenum.
6. Low threshold to convert from MIS to Open

# Mirizzi syndrome

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1. Rare : 0.06-2.7 percent
2. Preoperative imaging- MRCP
3. Impacted stone in the neck + BD dilatation and elevated LFTs
4. Conversion to open rate 41%
5. Need for more surgeries 6%
6. Cholangiogram/ US

# Cirrhosis and Portal Hypertension

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1. Portal hypertension
2. Cavernoma
3. Child C- mortality 50-83 %
4. Ascites is a risk even for cholecystostomy tube
5. Partial/ subtotal cholecystectomy
6. Blood products.
7. Advanced Energy devices.



# Intraoperative management

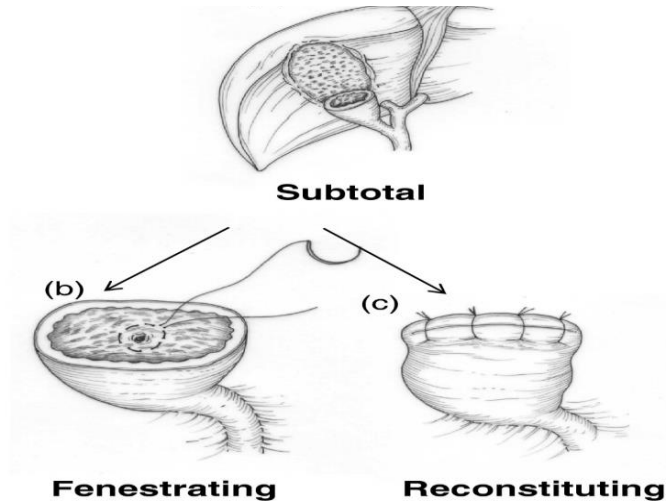
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1. Conversion to open
2. Top-down cholecystectomy
3. Intraoperative cholangiogram
4. Intraoperative US
5. Fluorescent imaging
6. CVS- critical view of safety

# Sages Safe Cholecystectomy program

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1. Recognize anatomy
2. Difficult- use alternative
  - Drain
  - Cholecystostomy
  - Subtotal cholecystectomy



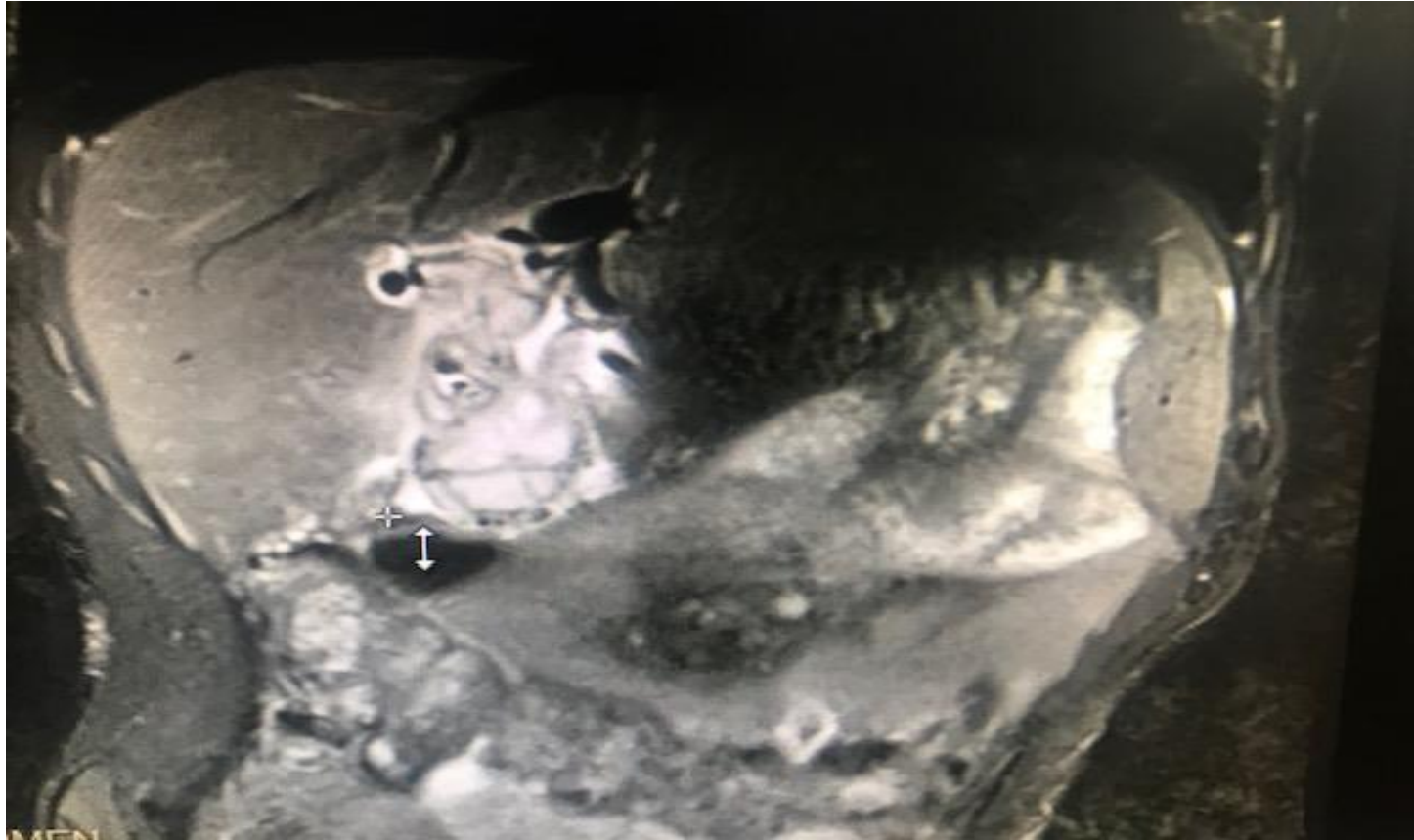
# Symptomatic cholelithiasis after subtotal cholecystectomy

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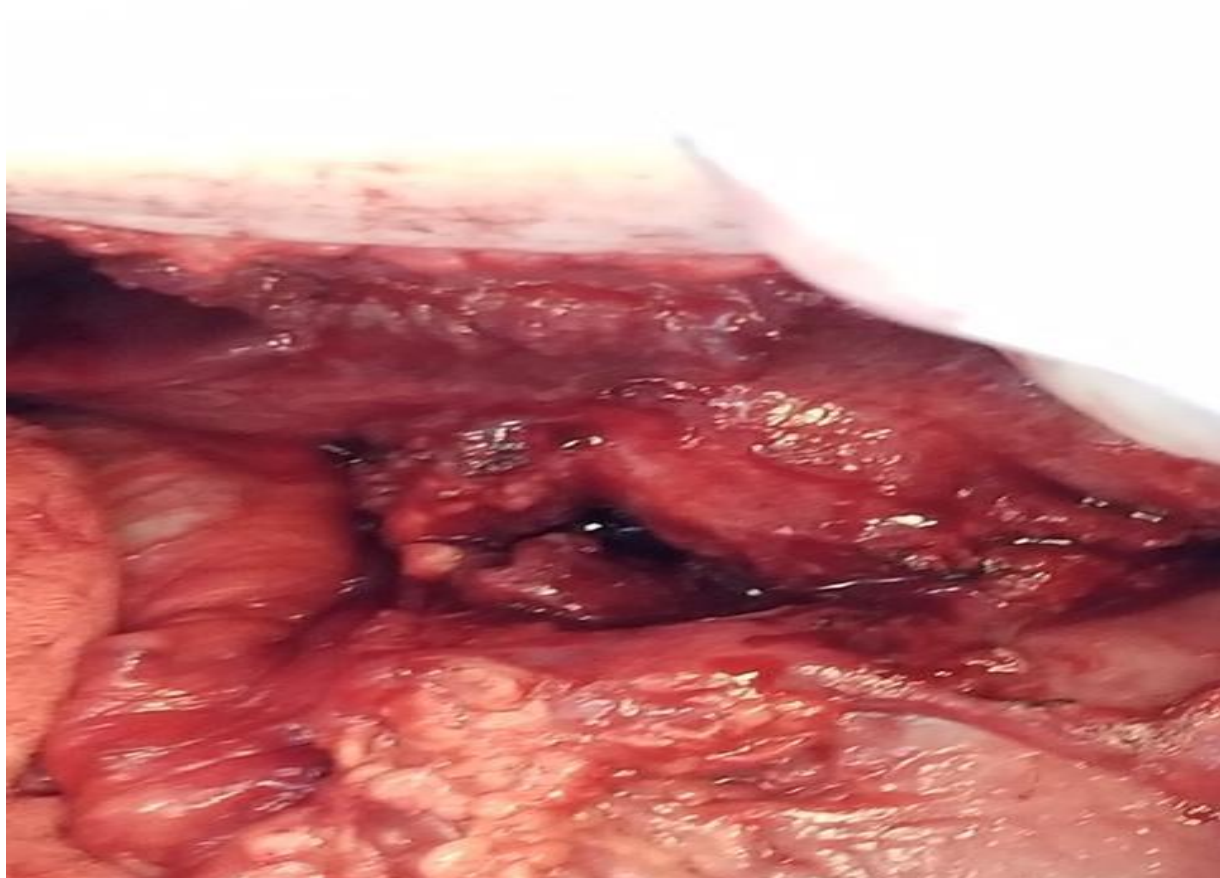
# Chronic gangrenous cholecystitis

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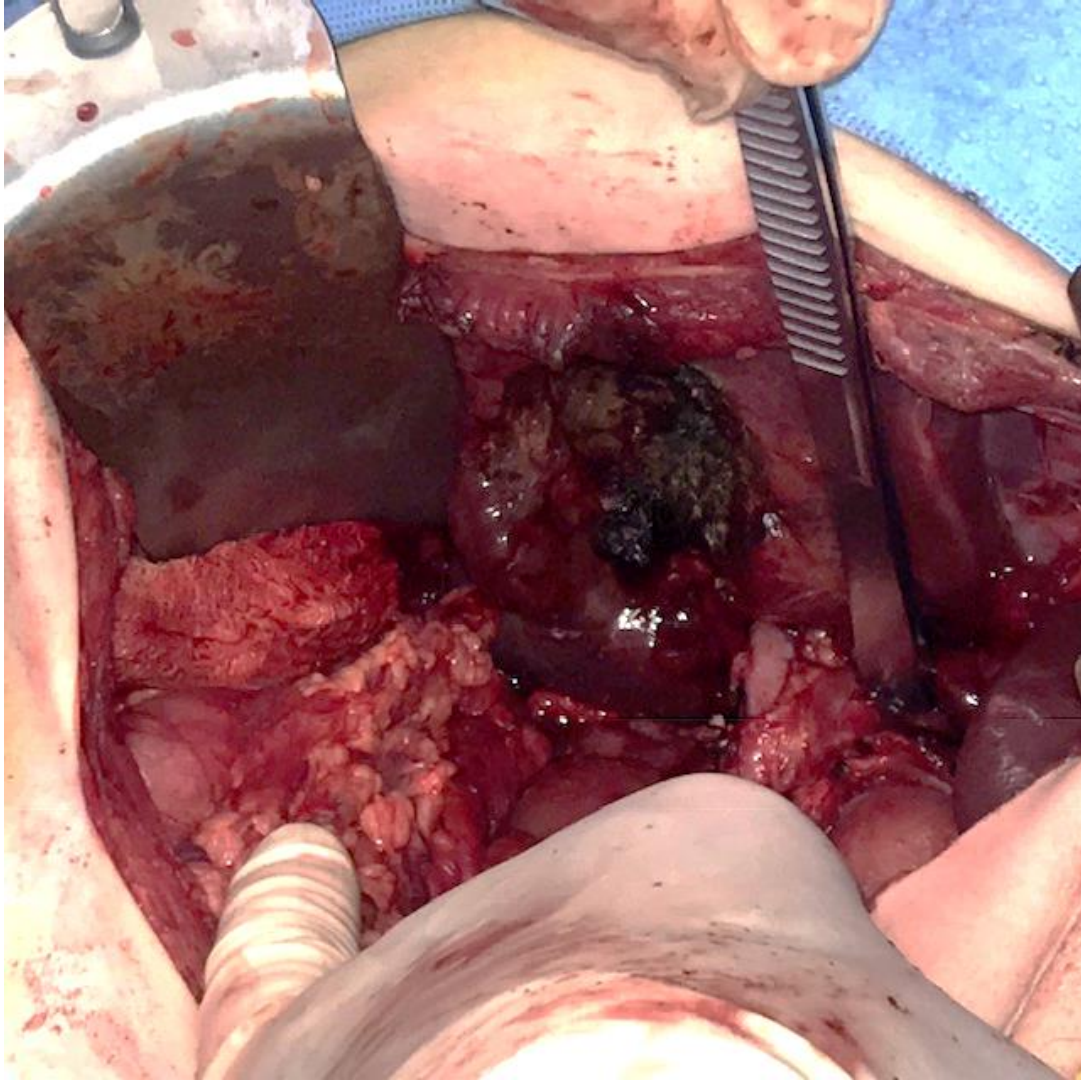


# Chronic gangrenous cholecystitis

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# Thank you! Questions?

- [Andrei.Manilchuk@osumc.edu](mailto:Andrei.Manilchuk@osumc.edu)