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Title: Laparoscopic Choledochal Cyst Excision and Roux-en-Y Choledochojejunostomy in Adults

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Author Questionnaire

1. We have marked your project as author-provided footage, meaning you film the video yourself and provide JoVE with the footage to edit. JoVE will not send the videographer. Please confirm that this is correct.

√ Correct

2. Microscopy: Does your protocol require the use of a dissecting or stereomicroscope for performing a complex dissection, microinjection technique, or something similar? **NO**

3. Software: Does the part of your protocol being filmed include step-by-step descriptions of software usage? **NO**

4. Proposed filming date: To help JoVE process and publish your video in a timely manner, please indicate the proposed date that your group will film here: 01/05/2025

When you are ready to submit your video files, please contact our China Location Producer, Yuan Yue.

Current Protocol Length

Number of Steps: 09
Number of Shots: 15

Introduction

AUTHORS: Please note that introductory statements are restricted to 30 words. Some statements have been edited for brevity

NOTE to VO: Please record interview statements

1.1. Choledochal cysts in adults are rare, with few reports on laparoscopic surgery. This video demonstrates the laparoscopic procedure for Type I choledochal cysts, providing a valuable reference for readers.

1.1.1. INTERVIEW: Named Talent says the statement above in an interview-style shot, looking slightly off-camera. *Suggested B.roll:2.2*

What advantage does your protocol offer compared to other techniques?

1.2. The preferred treatment for choledochal cysts is complete excision with choledochojejunostomy. Laparoscopic surgery is increasingly favored over open surgery for its smaller incisions, quicker recovery, and reduced postoperative pain.

1.2.1. INTERVIEW: Named Talent says the statement above in an interview-style shot, looking slightly off-camera. *Suggested B roll: 2.4.2*

What research questions will your laboratory focus on in the future?

1.3. Type I choledochal cysts are the most prevalent, while Types II to V also occur, each exhibiting distinct levels of complexity. In severe cases, liver transplantation may be necessary. Minimally invasive treatments are being developed for all types.

1.3.1. INTERVIEW: Named Talent says the statement above in an interview-style shot, looking slightly off-camera. *Suggested B roll: 2.9*

Ethics Title Card

This research has been approved by the Ethics Committee at Shenzhen People's Hospital, Second Medical College of Jinan University. Written informed consent was obtained from the patients for this study and the subsequent surgery

Protocol

NOTE: The protocol section was drafted from available footage

2. Comprehensive Laparoscopic Management of Choledochal Cysts with Biliary Reconstruction

Demonstrator: Tianchong Wu

2.1. To begin, perform abdominal ultrasound for the initial assessment of the patients **[1]**. If ultrasound shows choledochal cysts, confirm with abdominal CT *(C-T)* and MRCP *(M-R-C-P)* **[2-TXT]**.
- 2.1.1. FILE: MRCP1.mp4 00:00-00:04
- 2.1.2. FILE: MRCP2.mp4 00:00-00:04 **TXT: MRCP: Magnetic Resonance Cholangiopancreatography**

2.2. Using laparoscopic instruments, perform complete dissection of structures within Calot's triangle. Clamp and sever the cystic artery and cystic duct **[1]**. Then, remove the gallbladder entirely from the liver **[2]**.
- 2.2.1. FILE: 01.mp4 07:12 – 07:42, 08:50 – 09:00
- 2.2.2. FILE: 01.mp4 15:20 – 15:36

2.3. Clamp and cut the round hepatic ligament. Suspend it from the anterior abdominal wall. Then lift the liver upward to fully visualize the surgical site **[1]**.
- 2.3.1. FILE: 01.mp4 19:00 – 19:20, 21:07 – 21:40
  Video Editor: Please speed up the video

2.4. Begin dissecting on the right side of the hepatoduodenal ligament to avoid damaging vessels. After exposing the common bile duct, free it from the left side to protect hepatic veins and arteries **[1]**. Continue dissecting the cyst distally towards the hepatic and pancreatic sides until it resembles a normal duct **[2]**.
- 2.4.1. FILE: 02.MP4 11:13 – 11:27, 16:32 – 16:42
- 2.4.2. FILE: 03.MP4 06:25 – 06:50

2.5. Next, clamp the common bile duct approximately 3 centimeters inferior to the choledochal cyst. Then transect the common bile duct just above the clamp **[1]**.
- 2.5.1. FILE: 03.MP4 07:10 – 07:40

2.6. Identify two avascular regions in the transverse colonic mesentery and gastrocolic ligament. Use an ultrasonic scalpel to make two 3-centimeter-wide openings at the identified sites to create channels for the afferent loop **[1]**.

2.6.1. FILE: 03.MP4 27:10 – 27:30

2.7. Then separate the cyst from the common bile duct. Send the excised specimen for pathological evaluation **[1]**.
2.7.1. FILE: 04.MP4 14:13 – 14:31

2.8. Incise the jejunum approximately 10 centimeters distal to the Treitz ligament **[1]**. Elevate the transected lower limb through the transverse colonic mesentery and gastrocolic ligament to the common bile duct. Make a 1.5-centimeter incision at the jejunum with an ultrasonic scalpel and perform an end-to-side anastomosis to the common bile duct using two 5-0 Polydioxanone sutures **[2]**. Close the posterior and anterior walls of the anastomosis sequentially **[3]**.
2.8.1. FILE: 04.MP4 24:20 – 24:50
2.8.2. FILE: 05.MP4 00:42 – 01:01, 01:21 – 01:32, 01:44 – 02:01, 03:30 – 03:44, 05:33 – 05:40, 14:57 – 15:30, 17:33 – 18:03, 25:25 – 26:00
2.8.3. FILE: 06.MP4 05:40 – 05:48, 06:15 – 06:18

2.9. Perform a side-to-side jejunojejunostomy between the jejunum located 40 centimeters distal to the jejunojejunal anastomotic stoma and the transected upper limb using a linear cutting stapler **[1]**. Then reinforce the anastomosis with 4-0 Polydioxanone sutures to prevent leakage **[2]**.
2.9.1. FILE: 06.MP4 22:19 – 22:29, 22:34 – 22:42, 27:20 – 27:31
2.9.2. FILE: 06.MP4 03:25 – 03:39, 20:00 – 20:11

Results

3. Representative Results

3.1. The upper abdominal CT on the sixth postoperative day showed signs of good postoperative recovery with no fluid accumulation or abnormalities **[1]**.
3.1.1. LAB MEDIA: Figure 4.

3.2. The operation lasted 290 minutes with about 100 milliliters of blood loss **[1]**. The patient experienced no postoperative complications or discomfort and was discharged in stable condition on the ninth day **[2]**.
3.2.1. LAB MEDIA: Table 1 *Video Editor: Please highlight rows "Duration of surgery" and " Blood loss"*
3.2.2. LAB MEDIA: Table 1 *Video Editor: Please highlight rows "Day of discharge"*

1. Choledochal cyst
Pronunciation link (HowToPronounce.com): https://www.howtopronounce.com/choledochal-cyst How To Pronounce+15How To Pronounce+15YouTube+15
IPA: /ˌkoʊ.ləˈdɑːkəl sɪst/
Phonetic spelling: koh-luh-DAH-kul sist

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2. Calot's triangle (also known as Cystohepatic triangle)
Pronunciation link (HowToPronounce.com): https://www.howtopronounce.com/triangle-of-calot TheFreeDictionary.comForvo.com+7How To Pronounce+7YouTube+7
IPA: /kəˈloʊz ˈtraɪˌæŋ·gəl/
Phonetic spelling: kuh-LOHZ TRY-ang-gul

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3. Hepatoduodenal ligament
Pronunciation link (PronounceOnline.com): https://pronounceonline.com/word/hepatoduodenal/ How To Pronounce+2Definitions+2How To Pronounce+2pronouncekiwi.com+8How To Pronounce+8How To Pronounce+8YouTube+9pronounceonline.com+9medical-dictionary.thefreedictionary.com+9
IPA: /ˌhɛp.ə.toʊˌduː.əˈdiː.nəl ˈlɪgəmənt/
Phonetic spelling: hep-uh-toh-doo-uh-DEE-nuhl LIH-guh-mənt