Submission ID #: 69322
Scriptwriter Name: Sulakshana Karkala
Project Page Link: https://review.jove.com/account/LAB MEDIA-uploader?src=21143258

Title: Laparoscopic Radical Gastrectomy for Remnant Gastric Cancer

Authors and Affiliations:
Wenchao Zhang[1*], Jinying Li[2*], Yating Zhao[1*], Leyang Xiang[1], Zilin Wang[1], Zhen Li[3], Mingrong Cao[1], Kangshou Liu[1], Youzhu Hu[1,3], Junjie Liang[1]

[1]Department of Hepatobiliary Surgery, The First Affiliated Hospital, Jinan University
[2]Department of Digestive Endoscopy, Department of Gastroenterology, The First Affiliated Hospital, Jinan University
[3]Department of General Surgery, The Affiliated Shunde Hospital, Jinan University

***These authors contributed equally to this work**

Corresponding Authors:
Kangshou Liu (lks1004@jnu.edu.cn)
Youzhu Hu (drhyz@hotmail.com)
Junjie Liang (jjliang@jnu.edu.cn)
Email Addresses for All Authors:
Wenchao Zhang (chao231007@stu.jnu.edu.cn)
Jinying Li (jyli1@jnu.edu.cn)
Yating Zhao (yating@stu2024.jnu.edu.cn)
Leyang Xiang (jnu_xly@hotmail.com)
Zilin Wang (zlwang@stu2024.jnu.edu.cn)
Zhen Li (Ailac205@126.com)
Mingrong Cao (tcaomr@jnu.edu.cn)
Kangshou Liu (lks1004@jnu.edu.cn)
Youzhu Hu (drhyz@hotmail.com)
Junjie Liang (jjliang@jnu.edu.cn)

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: **12/20/2025**

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

Current Protocol Length

Number of Steps: 08
Number of Shots: 11

Introduction

NOTE TO VO: Please record the introduction section

INTRODUCTION:

~~What is the scope of your research? What questions are you trying to answer?~~

1.1. ~~**Junjie Liang:**~~ The research outlines a practical operating procedure to guide surgeons and encourage wider adoption of laparoscopic surgery for remnant gastric cancer management.

1.1.1. *Suggested B.roll:2.2*

~~What are the current experimental challenges?~~

1.2. ~~**Wenchao Zhang:**~~ The current experimental challenges include demanding anatomical orientation and advanced laparoscopic skill to manage adhesions near the anastomosis, jejunal mesentery, and splenic hilum.

1.2.1. *Suggested B.roll:2.4*

CONCLUSION:

~~What research gap are you addressing with your protocol?~~

1.3. ~~**Youzhu Hu:**~~ This study aims to systematically introduce the experiences of Laparoscopic Radical Gastrectomy for Remnant Gastric Cancer and provide supplementary information for the existing research data.

1.3.1. *Suggested B.roll:3.2*

~~How will your findings advance research in your field?~~

1.4. ~~**Jinying Li:**~~ The findings aim to support broader use of Laparoscopic Radical Gastrectomy as Remnant Gastric Cancer cases rise, emphasizing expert surgeons, sound judgment, and high-volume specialized centers.

1.4.1. *Suggested B.roll:3.3*

~~What questions will future research focus on?~~

1.5. ~~**Yating Zhao:**~~ Future research will focus on larger clinical studies to validate outcomes and strengthen evidence beyond this technical demonstration.

1.5.1. *Suggested B.roll:3.5*

Ethics Title Card
This research has been approved by the Institutional Review Board (IRB) at The First Affiliated Hospital of Jinan University

Protocol

NOTE: Protocol scripted from Author Provided Footage

2. Adhesiolysis, Lymphadenectomy, and Roux-en-Y Reconstruction for Remnant Gastric Cancer

Demonstrator: Junjie Liang

2.1. To begin, conduct a thorough assessment of adhesions within the abdominal cavity and evaluate the presence of tumor implantation and infiltration of adjacent organs **[1]**. To avoid injury to the jejunal limb, pancreatic tail, mesocolon, and portal vein trunk, perform adhesiolysis using a combination of blunt and sharp dissection **[2]**.

2.1.1. LAB MEDIA: 69322-1.mpg 00:14 – 00:39

2.1.2. LAB MEDIA: 69322-1.mpg 02:30-02:41
69322-3.mpg 04:25 – 04:40

2.2. Tailor lymphadenectomy for remnant gastric cancer according to the prior surgical approach, tumor location, and initial reconstruction method **[1]**. Follow the standard D2+ *(D-Two-Plus)* radical surgery guidelines, with special attention to ectopic nodes around the celiac axis, splenic hilum, and jejunal mesentery **[2]**.

2.2.1. LAB MEDIA: 69322-15.mpg 00:06 – 00:20, 01:00 – 01:04

2.2.2. LAB MEDIA: 69322-18.mpg 02:40 – 03:05

2.3. Mobilize the cardia and at least 6 centimeters of the distal esophagus using an ultrasonic scalpel to ensure a safe and tension-free anastomosis, especially for tumors involving the cardia or distal esophagus **[1]**.

2.3.1. LAB MEDIA: 69322-24.mpg 00:02 – 00:25, 06:08 – 06:20

2.4. For cases with previous distal gastrectomy and Billroth II *(bill-roth-Two)* reconstruction, transect the jejunal input and output loops at the prior gastrojejunostomy with a linear stapler **[1]**.

2.4.1. LAB MEDIA: 69322-27.mpg 04:30 – 04:38, 05:50 – 06:11

2.5. When the tumor does not involve the cardia, perform a side-to-side esophagojejunostomy using a linear stapler before transecting the lower esophagus to prevent retraction into the thoracic cavity after transection **[1]**.

2.5.1. LAB MEDIA: 69322-31.mpg 00:20 – 00:27,04:10 – 04:25, 04:55 – 05:02

69322-32.mpg 02:48 – 02:53

69322-35.mpg 00:12 – 00:16

2.6. Perform a side-to-side jejunojejunostomy at the distal jejunum located 45 centimeters from the esophagoduodenal anastomosis **[1].**

2.6.1. LAB MEDIA: 69322-39.mpg 02:42 – 03:00

2.7. Place the resected specimen in a sterile retrieval bag **[1]**. Then irrigate the surgical field with sterile distilled water to ensure hemostasis and confirm the absence of gastric leakage **[2]**.

2.7.1. LAB MEDIA: 69322-48.mpg 00:45 – 00:55

2.7.2. LAB MEDIA: 69322-48.mpg 05:15 – 05:33

2.8. Place one or two drainage tubes near the left subphrenic space and around the jejunal anastomosis to facilitate postoperative monitoring **[1]**.

2.8.1. LAB MEDIA: 69322-49.mpg 02:00 – 02:16

Results

3. Results

3.1. All 5 male patients had previously undergone open distal gastrectomy with Billroth-II reconstruction for benign disease **[1]**, with a median time interval of 480 months between initial surgery and remnant gastric cancer diagnosis **[2]**. The median body mass index was 22.1 kilograms per square meter **[3]**.

3.1.1. LAB MEDIA: Table 1. *Video editor: Highlight the rows for "Male", "Benign", "Open", and "Billroth-II" under "Previous reconstruction"*

3.1.2. LAB MEDIA: Table 1. *Video editor: Highlight the row "Time interval (months)" showing "480 (300–696)"*

3.1.3. LAB MEDIA: Table 1. *Video editor: Highlight the row "BMI (kg/m²)" showing "22.1 (20.1–26.6)"*

3.2. Preoperative laboratory values showed a median white blood cell count of 7.16 x 10^9 per liter **[1]**, a median hemoglobin level of 10^5 grams per liter **[2]**, and a median platelet count of 230 x 10^9 per liter **[3]**. The median carcinoembryonic antigen level was 1.64 nanograms per milliliter **[4]**.

3.2.1. LAB MEDIA: Table 1. *Video editor: Highlight the row "WBC (×10^9/L)" showing "7.16 (2.21–9.81)"*

3.2.2. LAB MEDIA: Table 1. *Video editor: Highlight the row "HGB (g/L)" showing "105 (74–115)"*

3.2.3. LAB MEDIA: Table 1. *Video editor: Highlight the row "PLT (×10^9/L)" showing "230 (62–488)"*

3.2.4. LAB MEDIA: Table 1. *Video editor: Highlight the row "CEA (ng/mL)" showing "1.64 (0.73–14.66)"*

3.3. All patients underwent laparoscopic radical gastrectomy without conversion to open surgery with a median operation time of 380 minutes **[1]** and a median intraoperative blood loss of 100 milliliters **[2]**.

3.3.1. LAB MEDIA: Table 2. *Video editor: Highlight the row "Operation time (minutes)" showing "380 (264–660)"*

3.3.2. LAB MEDIA: Table 2. *Video editor: Highlight the row "Intraoperative blood loss (mL)" showing "100 (100–300)"*

3.4. One patient developed a postoperative pulmonary infection **[1]**, while no other

postoperative complications were observed **[2]**.

3.4.1. LAB MEDIA: Table 2. *Video editor: Highlight the row "Pulmonary infection" showing "1"*

3.4.2. LAB MEDIA: Table 2. Video editor: Highlight the rows for "Incision infection", "Abdominal infection", "Postoperative bleeding", "Ascites", and "Anastomotic leakage" all showing "0"

3.5. Pathologic T classification was T3 in 3 patients and T4 in 2 patients **[1]**. Lymph node classification showed N0 *(N-zero)* in 2 patients, N1 in 1 patient, and N3 in 2 patients **[2]**. All 5 patients were classified as M0, indicating no distant metastasis **[3]**. Tumor differentiation was moderate in 3 cases and poor in 2 cases **[4]**.

3.5.1. LAB MEDIA: Table 2. *Video editor: Highlight the rows "T3 – 3" and "T4 – 2" under "Pathologic T classification*

3.5.2. LAB MEDIA: Table 2. Video editor: Highlight the rows "N0 – 2", "N1 – 1", and "N3 – 2" under "Pathologic N classification"

3.5.3. LAB MEDIA: Table 2. *Video editor: Highlight the row "M0 – 5" under "Pathologic M classification"*

3.5.4. LAB MEDIA: Table 2. *Video editor: Highlight the rows "Moderate – 3" and "Poor – 2" under "Degree of differentiation"*

Pronunciation Guide:

- Laparoscopic
Pronunciation link: https://www.merriam-webster.com/dictionary/laparoscopic
IPA: /ˌlæp.ə.rəˈskɑː.pɪk/
Phonetic Spelling: lap-uh-ruh-SKAH-pik
- Radical
Pronunciation link: https://www.merriam-webster.com/dictionary/radical
IPA: /ˈræd.ɪ.kəl/
Phonetic Spelling: RAD-ih-kuhl
- Gastrectomy
Pronunciation link: https://www.merriam-webster.com/dictionary/gastrectomy
IPA: /gæˈstrɛk.tə.mi/
Phonetic Spelling: gas-TREK-tuh-mee
- Remnant
Pronunciation link: https://www.merriam-webster.com/dictionary/remnant
IPA: /ˈrɛm.nənt/
Phonetic Spelling: REM-nuhnt
- Adhesiolysis
Pronunciation link: https://www.merriam-webster.com/dictionary/adhesiolysis
IPA: /ədˌhiː.ʒiˈɑː.lə.sɪs/
Phonetic Spelling: uh-DHEE-zhee-AH-luh-sis
- Lymphadenectomy
Pronunciation link: https://www.merriam-webster.com/dictionary/lymphadenectomy
IPA: /ˌlɪmfˌæd.əˈnɛk.tə.mi/
Phonetic Spelling: limf-ad-uh-NEK-tuh-mee
- Roux-en-Y
Pronunciation link: https://www.merriam-webster.com/dictionary/Roux-en-Y
IPA: /ˌruː ɑːn ˈwaɪ/
Phonetic Spelling: roo-ahn-WYE
- Anastomosis
Pronunciation link: https://www.merriam-webster.com/dictionary/anastomosis
IPA: /əˌnæs.təˈmoʊ.sɪs/
Phonetic Spelling: uh-nas-tuh-MOH-sis
- Jejunal
Pronunciation link: https://www.merriam-webster.com/dictionary/jejunal
IPA: /dʒɪˈdʒuː.nəl/
Phonetic Spelling: jih-JOO-nuhl
- Mesentery
Pronunciation link: https://www.merriam-webster.com/dictionary/mesentery
IPA: /ˈmɛz.ənˌtɛr.i/
Phonetic Spelling: MEZ-uhn-ter-ee
- Splenic
Pronunciation link: https://www.merriam-webster.com/dictionary/splenic
IPA: /ˈspliː.nɪk/
Phonetic Spelling: SPLEE-nik

- Hilum

Pronunciation link: https://www.merriam-webster.com/dictionary/hilum
IPA: /ˈhaɪ.ləm/
Phonetic Spelling: HY-luhm

- Esophagojejunostomy

Pronunciation link: https://www.howtopronounce.com/esophagojejunostomy
IPA: /ɪˌsɑː.fə.goʊ.dʒɪˌdʒuː.nɑːˈstɑː.mi/
Phonetic Spelling: ih-SAH-fuh-goh-jih-JOO-nah-STAH-mee

- Billroth

Pronunciation link: https://www.merriam-webster.com/dictionary/Billroth
IPA: /ˈbɪl.rɔːθ/
Phonetic Spelling: BIL-rawth

- Ultrasonic

Pronunciation link: https://www.merriam-webster.com/dictionary/ultrasonic
IPA: /ˌʌl.trəˈsɑː.nɪk/
Phonetic Spelling: ul-truh-SON-ik

- Hemostasis

Pronunciation link: https://www.merriam-webster.com/dictionary/hemostasis
IPA: /ˌhiː.moʊˈsteɪ.sɪs/
Phonetic Spelling: hee-moh-STAY-sis

- Subphrenic

Pronunciation link: https://www.merriam-webster.com/dictionary/subphrenic
IPA: /sʌbˈfrɛn.ɪk/
Phonetic Spelling: sub-FREN-ik

- Carcinoembryonic

Pronunciation link: https://www.merriam-webster.com/dictionary/carcinoembryonic
IPA: /ˌkɑːr.sɪ.noʊˌɛm.briˈɑː.nɪk/
Phonetic Spelling: kar-sih-noh-em-bree-ON-ik

- Metastasis

Pronunciation link: https://www.merriam-webster.com/dictionary/metastasis
IPA: /məˈtæs.tə.sɪs/
Phonetic Spelling: muh-TAS-tuh-sis

- Laparotomy

Pronunciation link: https://www.merriam-webster.com/dictionary/laparotomy
IPA: /ˌlæp.əˈrɑː.tə.mi/
Phonetic Spelling: lap-uh-RAH-tuh-mee