

Submission ID #: 69326

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Title: Laparoscopic Anatomical Right Anterior Sectionectomy with a Hepatic Pedicle-First Approach: Technical Details and Representative Case Illustration

Authors and Affiliations:

Xun Chen*, Zhengwu Jiang*, Chuchu Tan*, Bo Yi, Zhijian Zhao, Wenliang Tan

Department of Hepatobiliary and Pancreatic Surgery, Medical Center of Digestive Disease, Zhuzhou Hospital Affiliated to Xiangya School of Medicine, Central South University, 412000 Zhuzhou, China.

*These authors contributed equally

Corresponding Authors:

Wenliang Tan

tanwenl@csu.edu.cn

Zhijian Zhao

13017137955@163.com

Email Addresses for All Authors:

Xun Chen

chenxun@csu.edu.cn

Zhengwu Jiang

724769043@qq.com

Chuchu Tan

1592353202@qq.com

Bo Yi

279310019@qq.com

Zhijian Zhao

13017137955@163.com

Wenliang Tan

tanwenl@csu.edu.cn

Zhijian Zhao

13017137955@163.com

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. Interview statements: Which interview statement filming option is the most appropriate for your group? **Please select one.**



Interview Statements are read by JoVE's voiceover talent.

Current Protocol Length

Number of Steps: 11

Number of Shots: 12

Introduction

NOTE to VO: Please record introductory and conclusion interview statements

INTRODUCTION:

1.1. This study presents a standardized protocol developed by our center for implementing the Glissonean pedicle-first approach, guided by Laennec's membrane and the "Gate" theory. Specifically, it investigates the feasibility, safety, and efficacy of laparoscopic right anterior sectionectomy performed via the hepatic pedicle-first technique, while elucidating the innovative elements that enable precise and reproducible resection.

NOTE: This statement can be divided into two separate interview statements. As follows:

1.1 This study presents a standardized protocol developed by our center for implementing the Glissonean pedicle-first approach, guided by Laennec's membrane and the "Gate" theory.

B-roll: LAB MEDIA: 69326(1) 16:30 – 16:45

What is the scope of this research?

1.2 This protocol evaluates the feasibility, safety, and efficacy of laparoscopic right anterior sectionectomy performed using the hepatic pedicle-first technique and describes the innovative elements that enable precise and reproducible resection.

B-roll: LAB MEDIA: 69326(1) 32:45 – 32:53

What are the current experimental challenges?

1.2. Current challenges in the procedure include intricate hepatic anatomy, maintaining segmental inflow and outflow, achieving intraoperative hemostasis and preventing bile leakage.

B-roll: LAB MEDIA: 69326(2) 16:00 – 16:05 and 16:48-16:55

CONCLUSION:

What advantage does this protocol offer compared to other techniques?

1.3. This protocol simplifies resection using Laennec's capsule and portal theory, simplifies the surgical process and removes the tumor-bearing portal venous drainage area to reduce the spread of liver cancer along portal veins.

B-roll: LAB MEDIA: 69326(4) 14:55 – 15:05

Ethics Title Card

This research has been approved by the Institutional Review Board at the Zhuzhou Hospital
Affiliated with Xiang Ya Medical College

Protocol

2. Hepatic Pedicle-First Right Anterior Sectionectomy

Demonstrator: Wenliang Tan

- 2.1. To begin, clearly expose Calot's triangle and carefully isolate the cystic artery and duct [1]. Remove the gallbladder routinely, then clip and cut the cystic artery and cystic duct [2].
 - 2.1.1. LAB MEDIA: 69326(1) 07:00 – 07:05
 - 2.1.2. LAB MEDIA: 69326(1) 07:49 – 07:58
- 2.2. Then, lower the hilar plate along the Laennec membrane plane to expose Gate IV (4) [1].
 - 2.2.1. LAB MEDIA: 69326(1) 16:30 – 16:45
- 2.3. After Gate V (5) is exposed, dissect the right anterior pedicle extrafascially [1].
 - 2.3.1. LAB MEDIA: 69326(1) 22:17 – 22:25
- 2.4. Next, ligate the anterior pedicle to establish an ischemic demarcation for the right anterior lobe [1].
 - 2.4.1. LAB MEDIA: 69326(1) 32:45 – 32:53
- 2.5. Mark the ischemic boundary on the liver surface [1].
 - 2.5.1. LAB MEDIA: 69326(2) 01:15 – 01:32
- 2.6. After exposing the middle hepatic vein trunk at point B, transect the V5v branch [1].
 - 2.6.1. LAB MEDIA: 69326(2) 16:00 – 16:05 and 16:48-16:55
- 2.7. Now, divide the anterior pedicle using a cutting stapler [1].
 - 2.7.1. LAB MEDIA: 69326(3) 11:50 – 12:00

2.8. Expose and transect the V8v branch [1].

2.8.1. LAB MEDIA: 69326(4) 01:55 – 02:03

2.9. Follow the trunk of the right hepatic vein from cephalad and caudad directions to handle the V8d branch [1].

2.9.1. LAB MEDIA: 69326(4) 05:55 – 06:10

2.10. Address the V5d branch to fully expose the trunk of the right hepatic vein and ensure a wide right tumor margin [1].

2.10.1. LAB MEDIA: 69326(4) 14:55 – 15:05

2.11. Finally, after resection, ensure the stump of the anterior pedicle and the trunk of the right hepatic vein are fully exposed [1].

2.11.1. LAB MEDIA: 69326(5) 11:34 – 11:45

Results

3. Results

- 3.1. The procedure lasted 150 minutes, with four intermittent Pringle maneuver occlusions totaling 70 minutes [1], and intraoperative blood loss was 50 milliliters [2].
 - 3.1.1. LAB MEDIA: Table 1. *Video editor: Highlight the cell "150 min" in the row "Operative time (min)"*
 - 3.1.2. LAB MEDIA: Table 1. *Video editor: Highlight the cell "50 mL" in the row "Intraoperative blood loss (mL)"*
- 3.2. A computed tomography scan on postoperative day 5 revealed no significant peritoneal effusion and showed no evidence of tumor recurrence or metastasis [1].
 - 3.2.1. LAB MEDIA: Figure 6C.
- 3.3. The patient was discharged on postoperative day 8 following progressive removal of drainage tubes and satisfactory recovery [1].
 - 3.3.1. LAB MEDIA: Table 1. *Video editor: Highlight the cell "6 days" in the row "Drain removed" and "8 days" in row "post-operative hospital stays"*
- 3.4. One month postoperatively, alpha-fetoprotein and protein induced by vitamin K absence or antagonist-II levels decreased to normal and remained normal thereafter [1].
 - 3.4.1. LAB MEDIA: Figure 6A-B. *Video editor: Highlight all the blue bars.*

- Calot's triangle

Pronunciation link: <https://www.merriam-webster.com/dictionary/Calot>

IPA: /kə'loo/

Phonetic Spelling: kuh-loh

- Cystic

Pronunciation link: <https://www.merriam-webster.com/dictionary/cystic>

IPA: /'sistɪk/

Phonetic Spelling: sis·tik

- Gallbladder

Pronunciation link: <https://www.merriam-webster.com/dictionary/gallbladder>

IPA: /'gɔ:l, blædər/

Phonetic Spelling: gawl·blad·der

- Hilar

Pronunciation link: <https://www.merriam-webster.com/dictionary/hilar>

IPA: /'haɪlər/

Phonetic Spelling: hy·lur

- Laennec

Pronunciation link: <https://www.merriam-webster.com/dictionary/Laennec>

IPA: /lə'nek/

Phonetic Spelling: luh·nek

- Extrafascially

Pronunciation link: No confirmed link found

IPA: /ˌɛkstrə'fæʃəli/

Phonetic Spelling: ek·struh·fash·uh·lee

- Ischemic

Pronunciation link: <https://www.merriam-webster.com/dictionary/ischemic>

IPA: /ɪ'ski:mɪk/

Phonetic Spelling: ih·skee·mik

- Demarcation

Pronunciation link: <https://www.merriam-webster.com/dictionary/demarcation>

IPA: /dɪ'ma:r'keɪʃən/

Phonetic Spelling: dee·maar·kay·shuhn

- Hepatic

Pronunciation link: <https://www.merriam-webster.com/dictionary/hepatic>

IPA: /hɪ'pætɪk/

Phonetic Spelling: huh·pat·ik

- Transect

Pronunciation link: <https://www.merriam-webster.com/dictionary/transect>

IPA: /træn'sekt/

Phonetic Spelling: tran·sekt

- **Ligate**

Pronunciation link: <https://www.merriam-webster.com/dictionary/ligate>

IPA: /'laɪ,geɪt/

Phonetic Spelling: ly·gayt

- **Cephalad**

Pronunciation link: <https://www.merriam-webster.com/dictionary/cephalad>

IPA: /'sefə,læd/

Phonetic Spelling: sef·uh·lad

- **Caudad**

Pronunciation link: <https://www.merriam-webster.com/dictionary/caudad>

IPA: /'kə:dæd/

Phonetic Spelling: kaw·dad

- **Pringle maneuver**

Pronunciation link: <https://www.merriam-webster.com/dictionary/Pringle>

IPA: /'prɪŋgəl/

Phonetic Spelling: prin·guhl

- **Peritoneal**

Pronunciation link: <https://www.merriam-webster.com/dictionary/peritoneal>

IPA: /ˌperɪtə'ni:əl/

Phonetic Spelling: peh·rih·tuh·nee·uhl

- **Effusion**

Pronunciation link: <https://www.merriam-webster.com/dictionary/effusion>

IPA: /ɪ'fju:ʒən/

Phonetic Spelling: ih·fyoo·zhuhn

- **Metastasis**

Pronunciation link: <https://www.merriam-webster.com/dictionary/metastasis>

IPA: /mə'tæstəsɪs/

Phonetic Spelling: muh·tas·tuh·sis

- **Computed tomography**

Pronunciation link: <https://www.merriam-webster.com/dictionary/tomography>

IPA: /tə'ma:g्रəfi/

Phonetic Spelling: tuh·maa·gruh·fee

- **Alpha-fetoprotein**

Pronunciation link: <https://www.merriam-webster.com/dictionary/alpha-fetoprotein>

IPA: /ælfə'fi:tou'prouti:n/

Phonetic Spelling: al·fuh fee·toh·proh·teen

