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Title: Reverse Needle Continuous Suture of the Pancreatic Duct to Jejunal Mucosal Pancreaticointestinal Anastomosis in Laparoscopic Pancreaticoduodenectomy

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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 **the interviews** here:

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

Current Protocol Length

Number of Steps: 11
Number of Shots: 16

Introduction

1.1. Basic and clinical research is conducted in the field of hepatobiliary and pancreatic surgery.

1.1.1. *2.3.1*

What advantage does your protocol offer compared to other techniques?

1.2. The new pancreaticointestinal anastomosis can reduce the difficulty of laparoscopic pancreaticointestinal anastomosis, decrease the incidence of grade B/C pancreatic fistula, and reduce the consumption of pancreaticointestinal anastomosis sutures.

1.2.1. *2.5.1*

How will your findings advance research in your field?

1.3. These findings will contribute to improving the quality and safety of pancreatic surgery.

1.3.1. *3.1.2*

Ethics Title Card

This research has been approved by the Ethics Committee at the Meizhou People's Hospital

Protocol

2. Laparoscopic Reverse Needle Continuous Suture of Pancreatic Duct for Jejunal Mucosal Pancreaticointestinal Anastomosis

Demonstrator: Yaoming Zhang

2.1. After resecting the required parts of the digestive tract, perform digestive reconstruction. Place an 8 French silicone tube as a pancreatic stent tube **[1]**. NOTE: The VO is edited for the deleted shot

~~2.1.1. WIDE: Yaoming Zhang standing in the operation theater.~~ NOTE: Not filmed

2.1.2. LAB MEDIA: 67454.MP4 00:00 – 00:07

2.2. Use a 4-0 *(4-oh)* Prolene reverse needle to suture the jejunal serous layer and the area above the pancreatic stump **[1]**. Then, perform a continuous suture of the jejunal muscle layer and the posterior part of the pancreatic stump **[2]**.

2.2.1. LAB MEDIA: 67454.MP4 00:08 – 00:20
2.2.2. LAB MEDIA: 67454.MP4 00:25 – 00:35

2.3. Next, suture the jejunal serous layer and the area below the pancreatic stump using a 4-0 Prolene reverse needle **[1]**.

2.3.1. LAB MEDIA: 67454.MP4 00:53 – 01:08

2.4. Tighten the continuous suture of the jejunal seromuscular layer and the posterior suture of the pancreatic stump **[1]**.

2.4.1. LAB MEDIA: 67454.MP4 01:14 – 01:19 *Video editor: Put a box on the right part of the video to show the forceps tightening the thread*

2.5. Now, cut open the jejunum with an incision size equivalent to the diameter of the pancreatic duct **[1]**.

2.5.1. LAB MEDIA: 67454.MP4 01:20 – 01:28

2.6. Use a 5-0 *(5-oh)* PDS II *(PDS-2)* reverse needle to suture the anterior and posterior walls of the small incision in the jejunum and the anterior and posterior walls of the pancreatic duct **[1]**. Then, perform a continuous suture of the posterior wall of the small

incision in the jejunum and the posterior wall of the pancreatic duct **[2]**.

2.6.1. LAB MEDIA: 67454.MP4 01:32 – 01:44

2.6.2. LAB MEDIA: 67454.MP4 02:35 – 02:50

2.7. Place an 8 French silicone tube as the pancreatic duct support tube, with approximately 5 centimeters of each tube inserted into the pancreatic duct and jejunum **[1]**.

2.7.1. LAB MEDIA: 67454.MP4 02:59 – 03:10

2.8. Next, perform a 5-0 PDS II continuous suture of the anterior wall of the small incision in the jejunum and the anterior wall of the pancreatic duct **[1]**.

2.8.1. LAB MEDIA: 67454.MP4 03:35 – 03:45 and 04:05-04:06

2.9. Knot the continuous suture line between the posterior wall of the small incision in the jejunum and the posterior wall of the pancreatic duct with the continuous suture line between the anterior wall of the small incision in the jejunum and the anterior wall of the pancreatic duct **[1]**.

2.9.1. LAB MEDIA: 67454.MP4 04:08 – 04:19

2.10. Then, with 4-0 Prolene filament, perform a continuous suture of the jejunal seromuscular layer **[1]** and the anterior part of the pancreatico-intestinal stump **[2]**.

2.10.1. LAB MEDIA: 67454.MP4 04:20 – 04:25

2.10.2. LAB MEDIA: 67454.MP4 05:15 – 05:24

2.11. Finally, knot the continuous suture line between the jejunal serous layer and the posterior part of the pancreatic stump **[1]** with the continuous suture line between the jejunal serous layer and the anterior part of the pancreatic stump to complete the pancreaticointestinal anastomosis **[2]**.

2.11.1. LAB MEDIA: 67454.MP4 05:25 – 05:35

2.11.2. LAB MEDIA: 67454.MP4 05:36 – 05:41

Results

3. Results

3.1. The reverse needle continuous suture group had a shorter average operative time of around 357.50 minutes **[1]** compared to approximately 388.28 minutes in the Blumgart group **[2]**.

3.1.1. LAB MEDIA: Table 2. *Video editor: Highlight the row "Mean operative time" for "reverse needle continuous suture group "*

3.1.2. LAB MEDIA: Table 2. *Video editor: Highlight the row "Mean operative time" for "Blumgart group"*

3.2. The reverse needle continuous suture group required significantly fewer sutures, with a median of 2 lines, compared to 5.87 lines in the Blumgart group **[1]**.

3.2.1. LAB MEDIA: Table 2. *Video editor: Highlight the row "Suture consumption of pancreaticojejunostomy" for "reverse needle continuous suture group* "

3.2.2. LAB MEDIA: Table 2. *Video editor: Highlight the row "Suture consumption of pancreaticojejunostomy" for "Blumgart group*"

3.3. The average intraoperative blood loss was lower in the reverse needle continuous suture group at around 160 milliliters **[1]**, compared to approximately 211.52 milliliters in the Blumgart group **[2]**.

3.3.1. LAB MEDIA: Table 2. *Video editor: Highlight the row "Average intraoperative bleeding volume" for "reverse needle continuous suture group* ".

3.3.2. LAB MEDIA: Table 2. *Video editor: Highlight the row "Average intraoperative bleeding volume" for "Blumgart group*"

3.4. The incidence of grade B-C pancreatic fistula and postoperative abdominal infection was significantly lower in the reverse needle continuous suture group **[1]** compared to the Blumgart group **[2]**.

3.4.1. LAB MEDIA: Table 3. *Video editor: Highlight the 9.4% and 9.4% in rows "Postoperative grade B/C pancreatic fistula" and "Postoperative abdominal infection" for "reverse needle continuous suture group* "

3.4.2. LAB MEDIA: Table 3. *Video editor: Highlight the 28.3% and 30.4% values in rows*

"Postoperative grade B/C pancreatic fistula" and "Postoperative abdominal infection" for "Blumgart group"

3.5. The reverse needle continuous suture group had a significantly shorter average duration for abdominal drainage tube removal and hospital stay after surgery **[1]**.

3.5.1. LAB MEDIA: Table 2. *Video editor: Highlight the rows referring to "The average time for removing the drainage tube" and "Average length of hospital stay after surgery" for the column "reverse needle continuous suture group "*

1. **Jejunal**
   - IPA: /dʒəˈdʒuːnəl/
   - Phonetic spelling: juh-JOO-nuhl
2. **Seromuscular**
   - IPA: /ˌsɛroʊˈmʌskjələr/
   - Phonetic spelling: seh-roh-MUS-kyuh-ler
3. **Anastomosis**
   - Pronunciation link: https://www.merriam-webster.com/dictionary/anastomosis
   - IPA: /ˌænəˈstɒməsɪs/
   - Phonetic spelling: an-uh-STOM-uh-sis
4. **Prolene**
   - Pronunciation link: No confirmed link found
   - IPA: /ˈproʊˌliːn/
   - Phonetic spelling: PROH-leen
5. **Pancreatic**
   - Pronunciation link: https://www.merriam-webster.com/dictionary/pancreatic
   - IPA: /ˌpæŋkriˈætɪk/
   - Phonetic spelling: pang-kree-AT-ik
6. **PDS II** *(as a suture material name)*
   - IPA: /piː-di-ɛs tuː/
   - Phonetic spelling: PEE-DEE-ESS TOO