Journal of Visualized Experiments

Video Article: "Colonial Wig" pancreaticojejunostomy

--Manuscript Draft--

Article Type:	Invited Methods Article - JoVE Produced Video
Manuscript Number:	JoVE58142R2
Full Title:	Video Article: "Colonial Wig" pancreaticojejunostomy
Keywords:	Pancreaticojejunostomy; pancreatic leak; Whipple; postoperative pancreatic fistula; colonial wig; pancreatectomy; fistula risk score; anastomosis; novel surgical technique
Corresponding Author:	Steven Clark Cunningham, MD Saint Agnes Hospital Baltimore, MD UNITED STATES
Corresponding Author's Institution:	Saint Agnes Hospital
Corresponding Author E-Mail:	steven.clark.cunningham@gmail.com
Order of Authors:	Naeem Goussous
	Steven Clark Cunningham, MD
Additional Information:	
Question	**Response**
Please indicate whether this article will be Standard Access or Open Access.	Standard Access (US$2,400)
Please indicate the **full address** at which this article will be **filmed**.	Operating Room, Saint Agnes Hospital, 900 Caton Ave, Baltimore, MD, 21229

TITLE:
Colonial Wig Pancreaticojejunostomy

AUTHORS & AFFILIATIONS:
Naeem Goussous, Steven C Cunningham
Department of General surgery, Saint Agnes Hospital, Baltimore, MD

Corresponding author:
Steven C Cunninghan (steven.cunningham@ascension.org)

Email Address of the Co-author:
Naeem Goussous (n_goussous@hotmail.com)

KEYWORDS:
Pancreaticojejunostomy, pancreatic leak, Whipple, postoperative pancreatic fistula, colonial wig, pancreatectomy, fistula risk score, anastomosis, novel surgical technique

SUMMARY:
We describe a new technique for pancreaticojejunostomy reconstruction after pancreaticoduodenectomy that is associated with a very low rate of postoperative pancreatic fistula.

ABSTRACT:
Postoperative pancreatic fistula (POPF) is one of the most problematic complications after pancreaticoduodenectomy (PD). We describe a series of 48 pancreatic-head resections from our institution, in which we compare a new technique to create the pancreaticojejunostomy (PJ) reconstruction with standard techniques. The goal is to achieve a lower rate of POPF. This new PJ is termed the "Colonial Wig" (CW) PJ due to the novel appearance of the jejunum wrapping around the pancreas, resembling a colonial wig wrapping around the head of a colonial Whig, like George Washington. In our consecutive series, 22 cases were performed using the new CW technique to perform the PJ and were compared to 26 traditional PDs with traditional reconstruction. There was an incidence of clinically relevant POPF of 0% in the CW group, compared to 15% in 26 conventional PJs. Our proposed CW PJ reconstruction is believed to be associated with a lower the incidence of POPF following PD.

INTRODUCTION:
Postoperative pancreatic fistula (POPF) is described as the Achilles' heel of pancreaticoduodenectomy (PD) with an incidence rate ranging between 4-36%[1-3]. The goal of the presently described method of pancreaticojejunostomy (PJ), termed the "Colonial Wig" (CW), is to lower the rate of POPF following PD.

The morbidity of POPF is variable and it can range from being asymptomatic (Grade A, or clinically insignificant biochemical leak) to being symptomatic, causing deviation in the postoperative

management, requiring percutaneous, endoscopic or angiographic interventions (Grade B) or requiring operative interventions, causing organ failure or death (Grade C)[4]. Multiple risk factors have been described that increase the risk of POPF, including soft pancreatic texture, small diameter of pancreatic duct, and increased intraoperative blood loss. A validated 10-points based system has been described to predict the risk of POPF in patients undergoing PD[5,6]. To reduce the incidence and mitigate the severity of POPF, several PJ reconstruction techniques have been described in the literature with a variable POPF incidence and severity. In this paper, we describe a novel PJ reconstructive technique, the CW PJ, which has the advantage of combining what we assess to be the best aspects of the best and most common techniques of the PJ.

PROTOCOL:

This study was approved by the Ethics Committee (Institutional Review Board) of Saint Agnes Hospital (No. 2016-020).

1. Preparations

1.1. Preoperatively, have patients receive 5,000 units of heparin subcutaneously for deep venous thrombosis prophylaxis, and give antibiotics per the hospital's surgical care improvement project (SCIP) policy, which includes 2 g of cefazolin and 500 mg of metronidazole.

1.2. Place an epidural as discussed with the anesthesia team for optimal postoperative pain control and to achieve enhanced recovery after surgery.

1.3. Intraoperatively, perform a classic or pylorus-preserving PD in a standard fashion.[7]

2. Transection of the Pancreatic Neck

2.1. Prior to transection of the pancreatic neck, place four full-thickness, transpancreatic, 3-0 silk, stay sutures on the superior and inferior edges of the pancreas and then divide the pancreatic neck between these stay sutures. Place a Crile clamp on each of the silk sutures.

2.2. Proceed to completion of the PD resection in standard fashion.

3. Preparing the Jejunum and Pancreas for Anastomosis

3.1. After removal of the specimen, dissect the posterior surface of the pancreas free from the retroperitoneum for several centimeters.

3.2. Bring the stapled end of the jejunum into position in preparation for anastomosis.

4. Suture Placement:

Note: The following sutures are placed in the following order to create the anastomosis (as shown in **Figure 1**).

4.1. **Two 3-0 silk CW sutures (cw)**

4.1.1. For each of these, take a full-thickness bite through the pancreas a few centimeters from the cut surface, one at the superior border and one at the inferior border of the pancreas, each passing through a generous seromuscular bite of jejunum, as shown in **Figure 1**. The bites through the jejunum should be approximately 6 cm from each other (to allow for 2 cm of jejunum on either side of the jejunotomy, which is typically 2 cm long, but will vary with the thickness of the pancreatic neck).

4.1.2. Leave these sutures untied, as they will later join the inferior border of the pancreas to the antimesenteric border of the proximal jejunum, and the superior border to the more distal antimesenteric border of the jejunum, wrapping the jejunum around the sides of the pancreatic remnant covering the corners of the anastomosis and giving the final appearance of a colonial wig (**Figure 1**).

4.2. **Two 3-0 glycolide/Lactide copolymer (or polyglactin) U-sutures (u)**

4.2.1. Place these stitches with a straight(ened) needle. Traveling anterior to posterior, take a full-thickness bite through the anterior portion of the jejunotomy, then a full thickness bite through the pancreas, about 1 cm from the cut surface, and then a full-thickness bite through the posterior wall of the jejunotomy.

4.2.2. Now the needle is at the bottom of the "U," so turn 180 degrees and reverse the path, travelling posterior-to-anterior, taking a full-thickness bite through the posterior jejunum, then pancreas, then anterior wall of the jejunum (**Figure 1A**, **1B**). These U-stitches are used to compress the small ducts (similar to the Blumgart anastomosis[11]) and to keep the pancreas securely invaginated in the jejunotomy (similar to the "dunking PJ" anastomosis[8]).

4.2.3. Place a metallic probe (*e.g.* Garrett dilator) in the pancreatic duct while taking the pancreatic bites close to the main pancreatic duct, to make sure that the stitch does not go through the duct. Each of these should encompass most of the width of pancreatic parenchyma on either side of the main pancreatic duct.

4.3. **Two silk 3-0 stay sutures (s)**

4.3.1. Attach a French eye needle to the previously placed stay stitches on the pancreatic remnant, and take a full-thickness bite, in-to-out, through the jejunum 1 cm away from the jejunotomy. The purpose of these stitches is to secure the invagination of the corners of the pancreatic remnant deep into the jejunotomy.

4.3.2. After placing stitches #1-3, pull taut on the s and u stitches to invaginate the pancreatic remnant into the jejunotomy, then proceed with tying them in the following order: u then s then cw (**Figure 1C**, **1D**). The jejunum should now look much like a colonial wig fitted snugly around

the sides of a colonial Whig's head.

4.4. **Several interrupted 3-0 silk sutures provide a final outer-layer (o)**

4.4.1. Place these stitches very closely together in a vertical fashion between the anterior border of the pancreatic remnant and the cut edge of the jejunum to hermetically seal the redundant cuff of jejunum remaining after tying the u sutures to pancreatic capsule (**Figure 1**). Two of these stitches may be placed posteriorly as well, typically in a horizontal fashion, either now or prior to placing the sutures in steps 3.1-3.3 above.

5. Placement of omental wrap

5.1. Wrap the PJ anastomosis with a harvested tongue of healthy omentum. Place two 19-F round, fluted (eg, Blake) drains near, but not touching, the anastomosis (the omental flap serves in part to protect the PJ from the drains).

5.2. Perform the remainder of the reconstruction, viz, the hepaticojejunostomy and the gastro- or duodenojejunostomy, as previously described.[7]

6. Optional adjuncts

6.1. In cases with high-risk features, such as soft pancreas parenchyma, consider decompressing the bilopancreatic limb, *e.g.*, with the creation of a Braun enteroenterostomy between the afferent and efferent limbs of the gastro- or duodenojejunostomy and the administration of somatostatin analogues.

7. Postoperative management

7.1. Postoperatively, extubate the patient once stable from a hemodynamic and respiratory standpoint. Admit patients to the intensive care unit for overnight close monitoring.

7.2. Initiate enteric feeds via an intraoperatively placed nasojejunal tube immediately postoperatively at a rate of 10 mL/h and advance to goal once there is evidence of return of bowel function. If starting somatostatin analogues intraoperatively, continue postoperatively.

7.3. For high-risk cases, use pasireotide at 900 µg twice daily for a week. For medium-risk cases and some low-risk cases, use octreotide at 100 µg three times daily until the day of discharge.

7.4. Check serum and drain amylase daily to evaluate for the presence of POPF. Remove drains on postoperative day #3, depending on the amylase level.

REPRESENTATIVE RESULTS:

Perioperative data are found in our original publication on this procedure[9]. Briefly, the POPF rate for the first 26 (control) PDs was 27%. There were 3 (12%) grade-A (clinically insignificant) fistulas,

4 (15%) grade-B, and 0 grade-C fistulas. This clinical relevant POPF (CR-POPF) rate (grade B + grade C) was 15%. In the next 22 CW PJs, however, the CR-POPF rate was 0 (P=0.052, by Chi-square test) among eligible cases. There was one grade-A POPF in the CW group (5%, **Table 1**).

The lower POPF rate in the CW group was not due to the presence of lower-risk glands in the CW group (**Table 2**). Similarly, the two groups were similar regarding important parameters such as gland texture, pancreatic duct diameter, distribution of pathologies, and estimated blood loss.

FIGURE AND TABLE LEGENDS:

Figure 1: Schematic of suture placement. A: The U sutures (u) are used to secure the invagination of the pancreatic remnant in the jejunotomy, while the stay sutures (s), which were placed before division of the pancreatic neck, are used to secure the corners of the remnant pancreas. **B-D**: "Colonial Wig" sutures (cw) are used to bury the corners of the pancreaticojejunostomy under the jejunal serosa, which makes the jejunum resemble a traditional Colonial wig, which covers the tops of the ears like the jejunum covers, protects, and seals the corners of the PJ. Finally, the outer-layer sutures (o) are placed to provide a more hermetic anastomosis (**D**). This figure has been reproduced from our original publication on this procedure[9].

Table 1: Comparison of conventional PD and CWPJ cases by occurrence and grade of POPF. PD: pancreaticoduodenectomy; CWPJ: "Colonial Wig" pancreaticojejunostomy; POPF: postoperative pancreatic fistula; ISGPS: International Study Group of Pancreatic Surgery.

Table 2: Comparison of conventional PD and CWPJ cases by FRS parameter shows that the groups were similar regarding other known risk factors for POPF. *Two cases were missing data for gland texture. Two deaths early in the postoperative period were excluded since they precluded assessment of POPF. PD: pancreaticoduodenectomy; CWPJ: "Colonial Wig" pancreaticojejunostomy; FRS: fistula risk score; POPF: postoperative pancreatic fistula; PDAC: pancreatic ductal adenocarcinoma.

DISCUSSION:

There are many descriptions of novel PJs reported in the literature. It is true that the more ways that exist to perform a given task, the less likely there is a single perfect way to do it. This is accurate for PJ reconstruction as well. Each of the multiple different PJ techniques reported reports a low incidence of POPF. Nevertheless, POPF continues to be considered the "Achilles heel" of PD and more work is therefore needed to find a better way to construct this anastomosis.

Our current design for PJ reconstruction developed after studying widely used anastomoses and evaluating the likely technical sources of failure of the PJ anastomosis, such as leaks from the small ducts on the cut surface of the pancreatic neck, from the corners of the PJ anastomosis, and from the suture lines on the anterior and posterior surfaces of the PJ.

Failure to address these potential leak points likely increases the risk of POPF. In two of the most

widely used PJ reconstruction methods, Cameron's duct-to-mucosa invaginating PJ and the Blumgart's PJ, some compression of the small ducts on the pancreatic cut surface is provided, but these techniques do not provide hermetic sealing of the corners of the anastomosis. This is provided by the cw sutures in the CW anastomosis. Our reconstruction also addresses the potential for leak from small ducts on the cut surface of the pancreatic by further compressing the parenchyma using the U-stitches, which further decreases the leak risk by also serving to deeply invaginate the pancreas within the jejunotomy. The s sutures ensure that the corners of the pancreatic remnant, which are prone to slip out to the jejunotomy, instead stay securely fixed within the jejunum. The o sutures provide further protection by providing a hermitic coverage of the anterior and posterior aspect of the PJ.

To mitigate the risk of POPF even further, the anastomosis is treated with several adjunctive measures. First, the PJ is wrapped with a vascularized omental pedicle, which was used universally when available. Second, in high-risk patients a Braun enteroenterostomy was created between the afferent and efferent loop to decompress the pancreaticobiliary limb. Finally, as described above, somotostatin analogues are selectively used. Our low incidence of leak could be explained by the combination of all these measures, as well as by reduced tension across the anastomosis owing to the effect of the cw sutures and outer (o) silk sutures.

Future applications of this technique may include comparison to other techniques in prospective randomized trials.

In conclusion, the existence of many PJ anastomotic techniques suggests none is ideal for all surgeons. Therefore, the best technique for now may be the one most familiar to the surgeon. However, this novel "Colonial Wig" anastomosis is easy to learn and may be a safe and effective way to lower POPF rates after PD.

ACKNOWLEDGMENTS:

We thank Anne M Sill, MSHS, GME Research Coordinator and Department Statistician for careful review of the statistics, and acknowledge Xihua Yang, MD, Pouya Aghajafari, MD, and Shirali T Patel, MD, for their contributions as co-authors on the original paper reporting this technique[9].

DISCLOSURES:

The authors have nothing to disclose.

REFERENCES:

1. DeOliveira M.L., *et al.* Assessment of complications after pancreatic surgery: A novel grading system applied to 633 patients undergoing pancreaticoduodenectomy. *Annals of Surgery* **244**, 931 –939, (2006).
2. Grobmyer S.R., Kooby D., Blumgart L.H., Hochwald S.N. Novel pancreaticojejunostomy with a low rate of anastomotic failure-related complications. *Journal of the American College of Surgeons* **210**, 54 – 59, 10.1016/j.jamcollsurg.2009.09.020 (2010).
3. Fuji T, *et al.* Modified Blumgart anastomosis for pancreaticojejunostomy: Technical

improvement in matched historical control study. *Journal of Gastrointestinal Surgery* **18**, 1108 – 1115, 10.1007/s11605-014-2523-3 (2014).
4. Bassi C., Marchegiani G, Dervenis C, *et al.* The 2016 update of the international study group (ISGPS) definition and grading of postoperative pancreatic fistula: 11 years after. *Surgery* **161**, 584 – 591(2016).
5. Callery M.P., Pratt W.B., Kent T.S., Chaikof E.L., Vollmer C.M. Jr. A prospectively validated clinical risk score accurately predicts pancreatic fistula after pancreatoduodenectomy. *Journal of the American College of Surgeons* **216**, 1 – 14, 10.1016/j.jamcollsurg.2012.09.002 (2013).
6. Miller B.C., *et al.* A multi-institutional external validation of the fistula risk score for pancreatoduodenectomy. *Journal of Gastrointestinal Surgery* **18**, 172 – 179, 10.1007/s11605-013-2337-8 (2014).
7. Goussous N., Patel S.T., Cunningham S.C. Bile-Duct Cancer. In: Cameron JL, Cameron A, eds. *Current Surgical Therapy, 12th ed.* New York: Mosby/Elsevier (2016).
8. Cho A., *et al.* Performing simple and safe dunking pancreaticojejunostomy using mattress sutures in pure laparoscopic pancreaticoduodenectomy. *Surgical Endoscopy* **28**, 315 – 318, 10.1007/s00464-013-3156-4 (2014).
9. Yang X., Aghajafari P., Goussous N., Patel S.T., Cunningham S.C. The "Colonial Wig" pancreaticojejunostomy: zero leaks with a novel technique for reconstruction after pancreaticoduodenectomy. *Hepatobiliary and Pancreatic Disease International* **16** (5), 545 – 551, 10.1016/S1499-3872(17)60053-5 (2017).
10. Cameron J.L., Sandone C. *Atlas of Gastrointestinal Surgery, Vol 2/Edition 2*. Singapore PMPH-USA, Limited (2014).
11. Grobmyer S.R., Kooby D., Blumgart L.H., Hochwald S.N. Novel pancreaticojejunostomy with a low rate of anastomotic failure-related complications. *Journal of the American College of Surgeons* **210** (1), 54 – 59, 10.1016/j.jamcollsurg.2009.09.020 (2010).

Figure

Click here to download Figure Figure for JoVE without E and F.tif

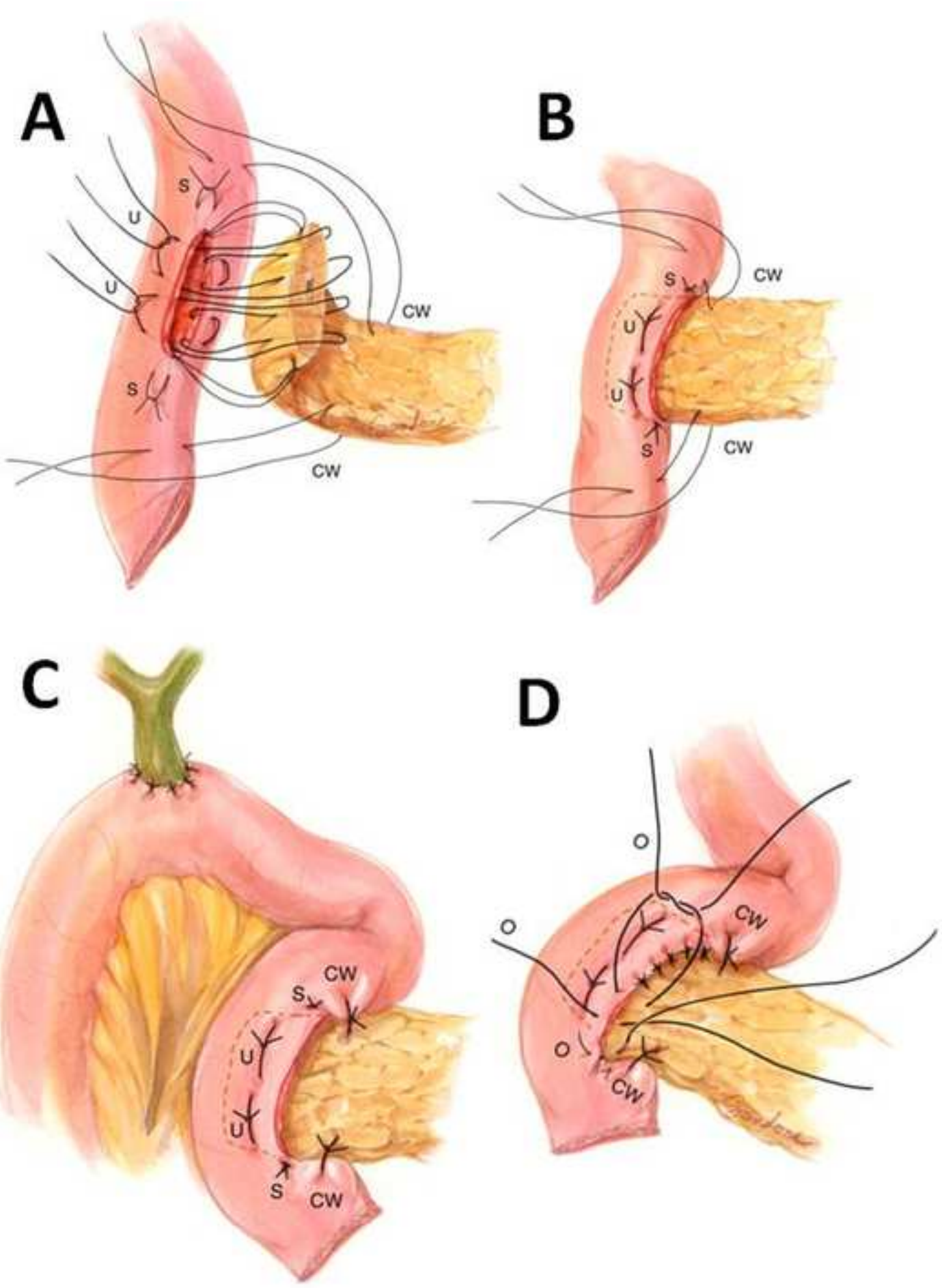

Table 1

ISGPS grade	Conventional PD	CWPJ
None	19 (73%)	19 (95%)
A	3 (12%)	1 (5%)
B	4 (15%)	0
C	0	0

Table 2

FRS parameter	Conventional PD	CWPJ	P value
Soft pancreas texture (n)	14/24* (58%)	10/20 (50%)	0.58
Pancreatic duct diameter (mm)	3±2.3	4±2.5	0.28
PDAC/pancreatitis (n)	12/26 (46%)	10/20 (50%)	0.8
Estimated blood loss (mL)	500±539	500±316	0.33

Table of Materials

Click here to download Table of Materials Materials table 062818.xlsx

Name	Company	Catalog number
French eye needle, tapered	Anchor Products Co Inc, Addison, IL	1861-2dc
Garrett dilator	Medline, Northfield, IL	MDS2040030
Octreotide	Sagent, Schaumburg, IL	2055879
Pasireotide	Curascript SD, Grove City , OH	246492

jove JOURNAL OF VISUALIZED EXPERIMENTS
1 Alewife Center #200
Cambridge, MA 02140
tel. 617.945.9051
www.jove.com

ARTICLE AND VIDEO LICENSE AGREEMENT

Title of Article:	Video Article: The Colonial Wig Pancreaticojejunostomy
Author(s):	Naeem Goussous, Steven C Cunningham

Item 1: The Author elects to have the Materials be made available (as described at http://www.jove.com/publish) via:

[X] Standard Access [] Open Access

Item 2: Please select one of the following items:

[X] The Author is **NOT** a United States government employee.
[] The Author is a United States government employee and the Materials were prepared in the course of his or her duties as a United States government employee.
[] The Author is a United States government employee but the Materials were NOT prepared in the course of his or her duties as a United States government employee.

ARTICLE AND VIDEO LICENSE AGREEMENT

1 **Defined Terms.** As used in this Article and Video License Agreement, the following terms shall have the following meanings: "**Agreement**" means this Article and Video License Agreement; "**Article**" means the article specified on the last page of this Agreement, including any associated materials such as texts, figures, tables, artwork, abstracts, or summaries contained therein; "**Author**" means the author who is a signatory to this Agreement; "**Collective Work**" means a work, such as a periodical issue, anthology or encyclopedia, in which the Materials in their entirety in unmodified form, along with a number of other contributions, constituting separate and independent works in themselves, are assembled into a collective whole; "**CRC License**" means the Creative Commons Attribution-Non Commercial-No Derivs 3.0 Unported Agreement, the terms and conditions of which can be found at: http://creativecommons.org/licenses/by-nc-nd/3.0/legalcode; "**Derivative Work**" means a work based upon the Materials or upon the Materials and other pre-existing works, such as a translation, musical arrangement, dramatization, fictionalization, motion picture version, sound recording, art reproduction, abridgment, condensation, or any other form in which the Materials may be recast, transformed, or adapted; "**Institution**" means the institution, listed on the last page of this Agreement, by which the Author was employed at the time of the creation of the Materials; "**JoVE**" means MyJove Corporation, a Massachusetts corporation and the publisher of The Journal of Visualized Experiments; "**Materials**" means the Article and / or the Video; "**Parties**" means the Author and JoVE; "**Video**" means any video(s) made by the Author, alone or in conjunction with any other parties, or by JoVE or its affiliates or agents, individually or in collaboration with the Author or any other parties, incorporating all or any portion of the Article, and in which the Author may or may not appear.

2 **Background.** The Author, who is the author of the Article, in order to ensure the dissemination and protection of the Article, desires to have the JoVE publish the Article and create and transmit videos based on the Article. In furtherance of such goals, the Parties desire to memorialize in this Agreement the respective rights of each Party in and to the Article and the Video.

3 **Grant of Rights in Article.** In consideration of JoVE agreeing to publish the Article, the Author hereby grants to JoVE, subject to **Sections 4** and **7** below, the exclusive, royalty-free, perpetual (for the full term of copyright in the Article, including any extensions thereto) license (a) to publish, reproduce, distribute, display and store the Article in all forms, formats and media whether now known or hereafter developed (including without limitation in print, digital and electronic form) throughout the world, (b) to translate the Article into other languages, create adaptations, summaries or extracts of the Article or other Derivative Works (including, without limitation, the Video) or Collective Works based on all or any portion of the Article and exercise all of the rights set forth in (a) above in such translations, adaptations, summaries, extracts, Derivative Works or Collective Works and(c) to license others to do any or all of the above. The foregoing rights may be exercised in all media and formats, whether now known or hereafter devised, and include the right to make such modifications as are technically necessary to exercise the rights in other media and formats. If the "Open Access" box has been checked in **Item 1** above, JoVE and the Author hereby grant to the public all such rights in the Article as provided in, but subject to all limitations and requirements set forth in, the CRC License.

4 **Retention of Rights in Article.** Notwithstanding the exclusive license granted to JoVE in **Section 3** above, the Author shall, with respect to the Article, retain the non-exclusive right to use all or part of the Article for the non-commercial purpose of giving lectures, presentations or teaching classes, and to post a copy of the Article on the Institution's website or the Author's personal website, in each case provided that a link to the Article on the JoVE website is provided and notice of JoVE's copyright in the Article is included. All non-copyright intellectual property rights in and to the Article, such as patent rights, shall remain with the Author.

5 **Grant of Rights in Video – Standard Access.** This **Section 5** applies if the "Standard Access" box has been checked in **Item 1** above or if no box has been checked in **Item 1** above. In consideration of JoVE agreeing to produce, display or otherwise assist with the Video, the Author hereby acknowledges and agrees that, Subject to **Section 7** below, JoVE is and shall be the sole and exclusive owner of all rights of any nature, including, without limitation, all copyrights, in and to the Video. To the extent that, by law, the Author is deemed, now or at any time in the future, to have any rights of any nature in or to the Video, the Author hereby disclaims all such rights and transfers all such rights to JoVE.

6 **Grant of Rights in Video – Open Access.** This **Section 6** applies only if the "Open Access" box has been checked in **Item 1** above. In consideration of JoVE agreeing to produce, display or otherwise assist with the Video, the Author hereby grants to JoVE, subject to **Section 7** below, the exclusive, royalty-free, perpetual (for the full term of copyright in the Article, including any extensions thereto) license (a) to publish, reproduce, distribute, display and store the Video in all forms, formats and media whether now known or hereafter developed (including without limitation in print, digital and electronic form) throughout the world, (b) to translate the Video into other languages, create adaptations, summaries or extracts of the Video or other Derivative Works or Collective Works based on all or any portion of the Video and exercise all of the rights set forth in (a) above in such translations, adaptations, summaries, extracts, Derivative Works or Collective Works and (c) to license others to do any or all of the above. The foregoing rights may be exercised in all media and formats, whether now known or hereafter devised, and include the right to make such modifications as are technically necessary to exercise the rights in other media and formats. For any Video to which this **Section 6** is applicable, JoVE and the Author hereby grant to the public all such rights in the Video as provided in, but subject to all limitations and requirements set forth in, the CRC License.

7 **Government Employees.** If the Author is a United States government employee and the Article was prepared in the course of his or her duties as a United States government employee, as indicated in **Item 2** above, and any of the licenses or grants granted by the Author hereunder exceed the scope of the 17 U.S.C. 403, then the rights granted hereunder shall be limited to the maximum rights permitted under such statute. In such case, all provisions contained herein that are not in conflict with such statute shall remain in full force and effect, and all provisions contained herein that do so conflict shall be deemed to be amended so as to provide to JoVE the maximum rights permissible within such statute.

8 **Protection of the Work.** The Author(s) authorize JoVE to take steps in the Author(s) name and on their behalf if JoVE believes some third party could be infringing or might infringe the copyright of either the Author's Article and/or Video.

9 **Likeness, Privacy, Personality.** The Author hereby grants JoVE the right to use the Author's name, voice, likeness, picture, photograph, image, biography and performance in any way, commercial or otherwise, in connection with the Materials and the sale, promotion and distribution thereof. The Author hereby waives any and all rights he or she may have, relating to his or her appearance in the Video or otherwise relating to the Materials, under all applicable privacy, likeness, personality or similar laws.

10 **Author Warranties.** The Author represents and warrants that the Article is original, that it has not been published, that the copyright interest is owned by the Author (or, if more than one author is listed at the beginning of this Agreement, by such authors collectively) and has not been assigned, licensed, or otherwise transferred to any other party. The Author represents and warrants that the author(s) listed at the top of this Agreement are the only authors of the Materials. If more than one author is listed at the top of this Agreement and if any such author has not entered into a separate Article and Video License Agreement with JoVE relating to the Materials, the Author represents and warrants that the Author has been authorized by each of the other such authors to execute this Agreement on his or her behalf and to bind him or her with respect to the terms of this Agreement as if each of them had been a party hereto as an Author. The Author warrants that the use, reproduction, distribution, public or private performance or display, and/or modification of all or any portion of the Materials does not and will not violate, infringe and/or misappropriate the patent, trademark, intellectual property or other rights of any third party. The Author represents and warrants that it has and will continue to comply with all government, institutional and other regulations, including, without limitation all institutional, laboratory, hospital, ethical, human and animal treatment, privacy, and all other rules, regulations, laws, procedures or guidelines, applicable to the Materials, and that all research involving human and animal subjects has been approved by the Author's relevant institutional review board.

11 **JoVE Discretion.** If the Author requests the assistance of JoVE in producing the Video in the Author's facility, the Author shall ensure that the presence of JoVE employees, agents or independent contractors is in accordance with the relevant regulations of the Author's institution. If more than one author is listed at the beginning of this Agreement, JoVE may, in its sole

1 Alewife Center #200
Cambridge, MA 02140
tel. 617.945.9051
www.jove.com

ARTICLE AND VIDEO LICENSE AGREEMENT

discretion, elect not take any action with respect to the Article until such time as it has received complete, executed Article and Video License Agreements from each such author. JoVE reserves the right, in its absolute and sole discretion and without giving any reason therefore, to accept or decline any work submitted to JoVE. JoVE and its employees, agents and independent contractors shall have full, unfettered access to the facilities of the Author or of the Author's institution as necessary to make the Video, whether actually published or not. JoVE has sole discretion as to the method of making and publishing the Materials, including, without limitation, to all decisions regarding editing, lighting, filming, timing of publication, if any, length, quality, content and the like.

12 **Indemnification.** The Author agrees to indemnify JoVE and/or its successors and assigns from and against any and all claims, costs, and expenses, including attorney's fees, arising out of any breach of any warranty or other representations contained herein. The Author further agrees to indemnify and hold harmless JoVE from and against any and all claims, costs, and expenses, including attorney's fees, resulting from the breach by the Author of any representation or warranty contained herein or from allegations or instances of violation of intellectual property rights, damage to the Author's or the Author's institution's facilities, fraud, libel, defamation, research, equipment, experiments, property damage, personal injury, violations of institutional, laboratory, hospital, ethical, human and animal treatment, privacy or other rules, regulations, laws, procedures or guidelines, liabilities and other losses or damages related in any way to the submission of work to JoVE, making of videos by JoVE, or publication in JoVE or elsewhere by JoVE. The Author shall be responsible for, and shall hold JoVE harmless from, damages caused by lack of sterilization, lack of cleanliness or by contamination due to the making of a video by JoVE its employees, agents or independent contractors. All sterilization, cleanliness or decontamination procedures shall be solely the responsibility of the Author and shall be undertaken at the Author's expense. All indemnifications provided herein shall include JoVE's attorney's fees and costs related to said losses or damages. Such indemnification and holding harmless shall include such losses or damages incurred by, or in connection with, acts or omissions of JoVE, its employees, agents or independent contractors.

13 **Fees.** To cover the cost incurred for publication, JoVE must receive payment before production and publication the Materials. Payment is due in 21 days of invoice. Should the Materials not be published due to an editorial or production decision, these funds will be returned to the Author. Withdrawal by the Author of any submitted Materials after final peer review approval will result in a US$1,200 fee to cover pre-production expenses incurred by JoVE. If payment is not received by the completion of filming, production and publication of the Materials will be suspended until payment is received.

14 **Transfer, Governing Law.** This Agreement may be assigned by JoVE and shall inure to the benefits of any of JoVE's successors and assignees. This Agreement shall be governed and construed by the internal laws of the Commonwealth of Massachusetts without giving effect to any conflict of law provision thereunder. This Agreement may be executed in counterparts, each of which shall be deemed an original, but all of which together shall be deemed to me one and the same agreement. A signed copy of this Agreement delivered by facsimile, e-mail or other means of electronic transmission shall be deemed to have the same legal effect as delivery of an original signed copy of this Agreement.

A signed copy of this document must be sent with all new submissions. Only one Agreement is required per submission.

CORRESPONDING AUTHOR

Name:	Steven Cunningham
Department:	Surgery
Institution:	Saint Agnes Hospital and Cancer Institute
Title:	Director of Pancreatic and Hepatobiliary Surgery
Signature:	
Date:	5-19-2018

Please submit a **signed** and **dated** copy of this license by one of the following three methods:

1. Upload an electronic version on the JoVE submission site
2. Fax the document to +1.866.381.2236
3. Mail the document to JoVE / Attn: JoVE Editorial / 1 Alewife Center #200 / Cambridge, MA 02140

SAINT AGNES HEALTHCARE

Steven C. Cunningham, MD, FACS
Director, Pancreatic and Hepatobiliary Surgery
Director, Research
Saint Agnes Hospital Center / Angelos Medical Pavilion
3407 Wilkens Avenue, Suite 410
Tel: 443-574-8500; Fax: 410-719-0094; Cell: 443-814-6773
Steven.cunningham@ascension.org

June 8, 2018

Ronald Myers, Ph.D.
Science Editor, JoVE
1 Alewife Center, Suite 200
Cambridge, MA 02140

RE: "Colonial Wig" Pancreaticojejunostomy

Dear Ron,

Respectfully submitted is our revised manuscript, "Video Article: The Colonial Wig Pancreaticojejunostomy."

We thank you your colleagues for your time and for further comments regarding additional revisions of our manuscript. Respectfully resubmitted is the second revision of our manuscript. All changes are marked in the revision. We have replied to each and every point below, our responses in ***bold, italic face, and underlined***, following the verbatim editorial and reviewer comments in quotation marks:

COMMENTS

Editorial comments:

1. "Unfortunately, there are a few sections of the manuscript that show significant overlap with previously published work. Please see the attached iThenticate report and revise the Discussion."
RESPONSE: Done.

2. "Please format the protocol in line with JoVE's instructions for authors (sections 1, 2, etc., with substeps as 1.1, 1.2 and so on). In particular, there should be a heading for each section of the protocol (which will be used as such in the video)."
RESPONSE: Done.

3. "Please include more explicit details (beyond a reference) about pre- and post-operative procedures (e.g., inclusion/exclusion criteria, anesthesia, recovery, pain treatment, etc.). These do not have to be in the video, but at least a few sentences are necessary in the published protocol"
RESPONSE: Done.

4. "Please upload the tables in separate files and as "Tables" (not the materials table; there will be a separate option in Editorial Manager)."
RESPONSE: OK, thank you.

5. "Figure 1: Unfortunately, we have decided panels E and F do not fit the journal's editorial standards and must be removed. We can highlight the shape in the video to help the audience understand the reference, though."
RESPONSE: OK. We still think that panels E and F should be in included, since without these panels the name of the anastomosis and references to it will not make as much sense to

readers and viewers, and since they provide a very memorable image, but of course we defer to your editorial decision.

6. "Table 2: What statistical test was used to produce the p-values."
RESPONSE: This information was added to the relevant parts of the MS and table legends.

7. "Please revise the table of the essential supplies, reagents, and equipment. The table should include the name, company, and catalog number of all relevant materials in separate columns in an xls/xlsx file."
RESPONSE: OK, thank you.

Please do not hesitate to contact me by phone, fax, or e-mail as per below regarding any issues. Your attention to our manuscript submission is greatly appreciated. I remain

Sincerely yours,

Steven C. Cunningham, MD, FACS
Director of Pancreatic and Hepatobiliary Surgery
Director of Research
Saint Agnes Hospital
900 Caton Avenue, MB 207
Baltimore, MD, 21229
Steven.Cunningham@ascension.org
443-574-8500 clinical office phone
667-234-8815 academic office phone
443-814-6773 cell
410-232-5011 pager
410-719-0094 fax

Nam Nguyen <nam.nguyen@jove.com>

Fwd: Permission to use published material

Kathleen Doyle <kathleen.doyle@jove.com> Thu, May 24, 2018 at 9:41 PM
To: Nam Nguyen <nam.nguyen@jove.com>

Hi Nam,

Forwarded is a permission request.

Best,
Katie

---------- Forwarded message ---------
From: Cunningham, Steven C. <Steven.Cunningham@ascension.org>
Date: Thu, May 24, 2018 at 9:37 PM
Subject: RE: Permission to use published material
To: bjb <hbpdint@126.com>
CC: Phillip Steindel <phillip.steindel@jove.com>, Peer Review <peerreview@jove.com>, Ronald Myers <ronald.myers@jove.com>

Dear Editor Lei:

Thank you kindly for the permission to reproduce the figure in JoVE.

Best regards,

Steve

From: bjb <hbpdint@126.com>
Sent: Thursday, May 24, 2018 9:34 PM
To: Cunningham, Steven C. <Steven.Cunningham@ascension.org>
Subject: Re: Permission to use published material

*** Attention: This is an external email. Use caution responding, opening attachments or clicking on links. ***

Dear Prof. Steven C. Cunningham,

Request for permission to reproduce copyright material

Entitled: The "Colonial Wig" Pancreaticojejunostomy: Zero Leaks with A Novel Technique for Reconstruction after Pancreaticoduodenectomy, by authors: Yang X, Aghajafari P, Goussous N, Patel ST , Cunningham SC (Hepatobiliary Pancreat Dis Int 2017;16(5):545-551)

HBPD INT gives the permission of Figure to be reproduced in JoVE, but please give credit to our journal.

Best regards.

Editor Lei

HBPD INT

PS. The impact factor of HBPD INT is 1.649 (2016 JCR).
****

Hepatobiliary & Pancreatic Diseases International (HBPD INT)
The First Affiliated Hospital, Zhejiang University School of Medicine,
79 Qingchun Road, Hangzhou 310003, China
Tel: 0086-571-87236559, 0086-571-87236600 Fax: 0086-571-87236559
Email: hbpdint@126.com or hbpdje@mail.hz.zj.cn
Website: www.hbpdint.com; OR http://www.sciencedirect.com/science/journal/14993872
Online submission: https://cn03.manuscriptcentral.com/hbpdint

> ----- Original Message -----
>
> From: Cunningham, Steven C.
>
> To: hbpdje@mail.hz.zj.cn ; hbpdje@zju.edu.cn
>
> Sent: Thursday, May 24, 2018 6:33 PM
>
> Subject: Re: Permission to use published material
>
> Good day! I am writing to inquire as to whether the below/attached request for permission was received by your office?
>
> Thank you kindly,
>
> Steve cunningham
>
> Steven Clark Cunningham, MD, FACS
>
> StevenClarkCunningham.net
>
> Sent from my mobile phone. Please excuse typos, etc.
>
> ---
>
> **From:** Cunningham, Steven C.
> **Sent:** Saturday, May 19, 2018 10:07:56 PM
> **To:** hbpdje@mail.hz.zj.cn; hbpdje@zju.edu.cn
> **Subject:** Permission to use published material
>
> Dear Editors,
>
> Publication in HBPD-INT of our article “Colonial Wig Pancreaticojejunostomy” has created interest and the journal JoVE has invited us to publish a video of the technique in their video journal. I am therefore writing to request permission to publish a modified version of the figure, and some of the text to accompany the video. Do you have a standard form for such a request?

Many kind thanks,

Steve

Steven Clark Cunningham, MD, FACS | Director of Pancreatic and Hepatobiliary Surgery | Director of Research | Saint Agnes Hospital and Cancer Institute | 900 Caton Avenue, MB 207 | Baltimore, MD, 21229 | 443-574-8500 clinical phone | 667-234-8815 academic phone | 410-719-0094 fax | 443-814-6773 cell | Steven.Cunningham@ascension.org | http://www.stevenclarkcunningham.net

CONFIDENTIALITY NOTICE:

This email message and any accompanying data or files is confidential and may contain privileged information intended only for the named recipient(s). If you are not the intended recipient(s), you are hereby notified that the dissemination, distribution, and or copying of this message is strictly prohibited. If you receive this message in error, or are not the named recipient(s), please notify the sender at the email address above, delete this email from your computer, and destroy any copies in any form immediately. Receipt by anyone other than the named recipient(s) is not a waiver of any attorney-client, work product, or other applicable privilege.

--
Kathleen Doyle
Peer Review Manager
JoVE
617.674.1888
Follow us: Facebook | Twitter | LinkedIn
About JoVE