APPENDIX 1. SURVEY

INSTRUCTIONS

This global survey was conducted by *"International HPB / Pancreatic surgery association(s)"* and coordinated by **Hiroyuki Ishida, MD, PhD, Thomas F. Stoop, MD, Atsushi Oba, MD, PhD, Marc G. Besselink, MD, MSc, PhD, and Marco Del Chiaro, MD, PhD, FACS**.

The questions in this survey apply to your current practice for pancreatic neck and body cancer with portomesenteric venous invasion and **without arterial involvement** of celiac axis, common hepatic artery, and splenic artery.

Possible surgical approaches for this specific tumor are followings:

1. Pancreatoduodenectomy with portomesenteric venous resection;
2. Distal pancreatectomy with portomesenteric venous resection.
3. Total pancreatectomy with portomesenteric venous resection

Please select your choice based on your current practice for each case scenario.

This survey will take approximately 10 minutes. If you have already completed this survey through another association or study group, please do not fill in the survey again.

STUDY PROTOCOL

Section 1. General information

1. Have you performed pancreatectomy with portomesenteric venous resection (PVR) in the last 12 months?
   - Yes
   - No → end of survey

2. How many years have you been in practice since the completion of your surgical training?
   - …

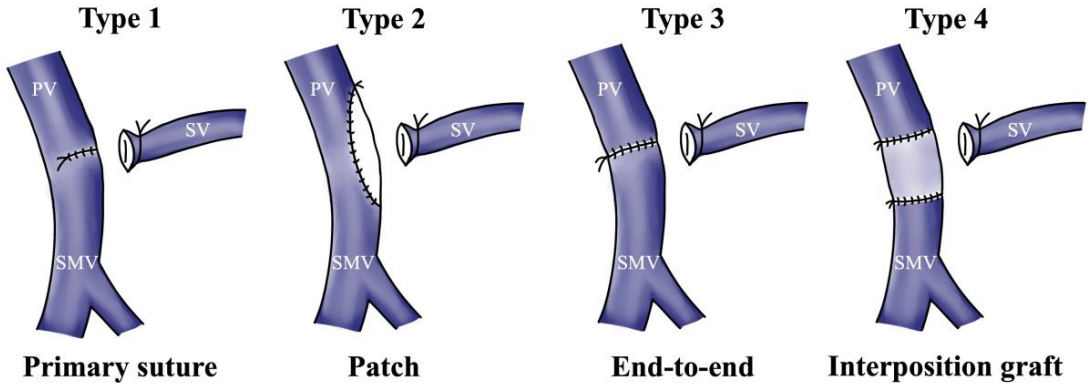
3. In which country do you work?
   - …

4. In what type of medical center do you work?
   - Academic center
   - Teaching center
   - Community center
   - Other

5. What is the annual number of pancreatectomy performed in your center, in average over the last 5 years?
   - < 20
   - 20 – 40
   - 41 – 80
   - 81 – 120
   - > 120

6. What is the annual number of distal pancreatectomy with PVR performed in your center, in average over the last 5 years?
   - 0
   - 1
   - 2 – 4
   - > 4

7. Have you ever encountered greater technical challenges when performing portomesenteric vein reconstruction in distal pancreatectomy with PVR compared to in pancreatoduodenectomy with PVR? In this survey, we apply the ISGPS types 1-4 for portomesenteric vein reconstruction in any pancreatectomy with PVR.
   - Yes, always
   - Yes, in case of ISGPS type 1-2
   - Yes, in case of ISGPS type 3-4
   - Never
   - Not applicable since I don't perform distal pancreatectomy with PVR



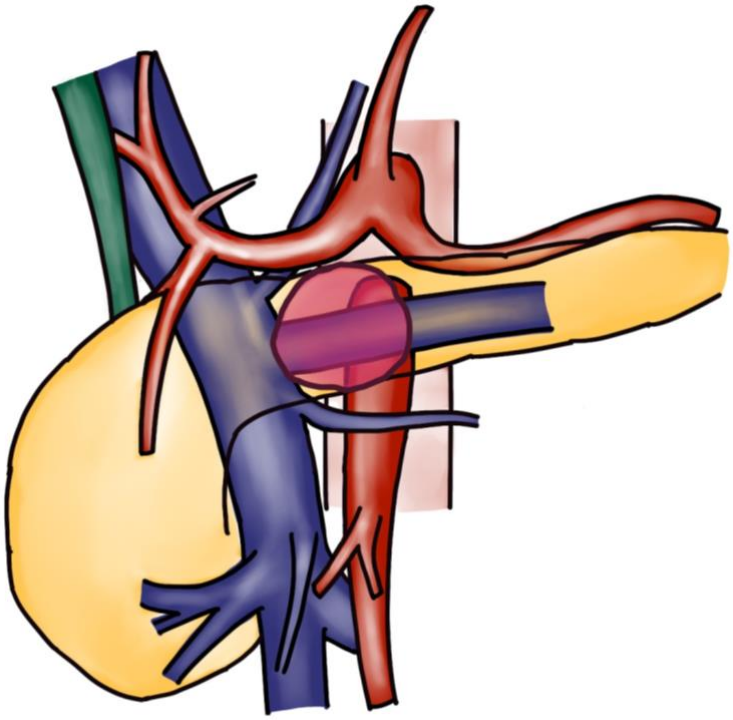
8. Which of the following statement(s) is consistent with your opinion for pancreatic cancer mainly located in the **pancreatic body** with portomesenteric vein invasion in which both pancreatoduodenectomy with PVR and distal pancreatectomy with PVR can be theoretically performed (**i.e., no involvement of the gastroduodenal artery and splenic artery**)? (multiple answers are possible)

   - Technical reason(s)
     - Distal pancreatectomy with PVR is selected whenever possible.
     - Pancreatoduodenectomy with PVR is selected whenever the tumor extends to the area of pancreatic neck (anterior to the portal vein).
     - The type of pancreatectomy (i.e., distal pancreatectomy vs. pancreatoduodenectomy) is selected based on the length of portomesenteric vein invasion.
     - The type of pancreatectomy (i.e., distal pancreatectomy vs. pancreatoduodenectomy) is selected based on the degree of portomesenteric vein invasion.

- Oncological reason(s)
  - Distal pancreatectomy with PVR is selected whenever a radical, margin-negative resection is deemed possible.
  - Pancreatoduodenectomy with PVR is selected whenever tumor extends to the area of pancreatic neck (anterior to the portal vein).
  - The type of pancreatectomy (i.e., distal pancreatectomy vs. pancreatoduodenectomy) is selected based on the lymph nodes area to be dissected.

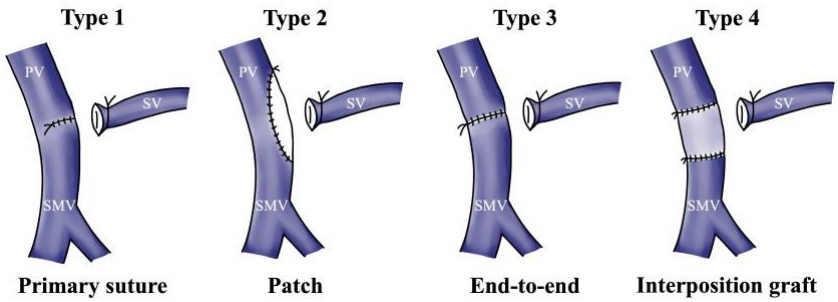
Section 2. Clinical scenario type A

Tumor involves the porto-mesenterico-splenic confluence with **<90 degrees**. The left gastric vein and the inferior mesenteric vein are not involved by the tumor. The length of portomesenteric venous invasion is **1 cm**.



9. Which procedure do you plan for this case?
   - Pancreatoduodenectomy with PVR
   - Distal pancreatectomy with PVR

10. What type of portomesenteric vein reconstruction do you perform (ISGPS types)?
    - Type 1: Primary suture
    - Type 2: Patch
    - Type 3: End-to-end
    - Type 4: Interposition graft



11. In case this patient had received neoadjuvant chemo(radio)therapy with good biological and radiological response but still venous contact, would this change your intraoperative management regarding the portomesenteric venous involvement compared to upfront surgery?
    - Yes
    - No

12. This question only appears when 'yes' from question 11 is selected. How would you change your management in such a patient after neoadjuvant therapy compared to upfront surgery? Please select the following management(s). (multiple answers are possible)
    - Dissecting along the portomesenteric vein as much as possible to shorten the length of PVR
    - Dissecting along the portomesenteric vein as much as possible with intraoperative tissue sampling for surgical margin assessment to shorten the length of PVR
    - Dissecting along the portomesenteric vein as much as possible with intraoperative tissue sampling for surgical margin assessment, eventually not performing PVR in case of negative frozen sections whereby venous divestment is sufficient
    - Performing with a lower threshold PVR ISGPS type 1-2 (tangential / wedge resection)
    - Performing with a lower threshold PVR ISGPS type 3-4 (segmental resection)
    - Other(s)

13. This question only appears when 'other(s)' from question 12 is selected. Please register your management below:

    …….

14. This question only appears when PD with PVR is selected as procedure. Do you reconstruct splenic vein?
    - Yes
    - No

15. Why did you choose your procedure (i.e., pancreatoduodenectomy with PVR vs. distal pancreatectomy with PVR)? Please select the following reason(s). (multiple answers are possible)
    - Technically easier pancreatic resection
    - Technically easier portomesenteric vein reconstruction
    - Securing a wider margin of the pancreatic transection margin
    - More adequate lymph nodes dissection
    - Lower risk of postoperative complications
    - Lower risk of postoperative pancreatic fistula

- Lower risk of postoperative portal vein thrombosis
- Other(s)

16. This question only appears when 'other(s)' from question 15 is selected. Are there other factors which influence your decision-making in this scenario (e.g., clinicopathological and treatment characteristics, technical details, etc.). Please register this/these factor(s) below:

……

17. In case this patient had tumor involvement of the common hepatic artery (CHA) requiring a CHA resection, does it influence your decision to perform either a distal pancreatectomy, pancreatoduodenectomy, or total pancreatectomy?
    - I would perform distal pancreatectomy with PVR + CHA resection without arterial reconstruction (modified Appleby procedure).
    - I would perform distal pancreatectomy with PVR + CHA resection with arterial reconstruction.
    - I would perform pancreatoduodenectomy with PVR + CHA resection with arterial reconstruction.
    - I would perform total pancreatectomy with PVR + CHA resection with arterial reconstruction.
    - Other(s)

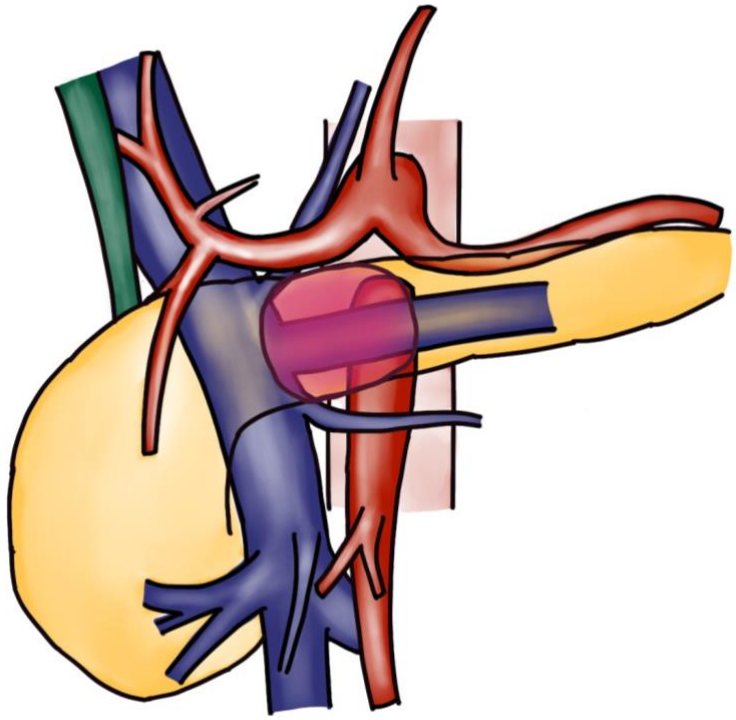
18. This question only appears when 'other(s)' from question 17 is selected. Please register your management below:

……

19. This question only appears in case of PD or TP in the previous question. Which factors influenced your decision to perform a pancreatoduodenectomy or total pancreatectomy? (multiple answers are possible)
    - Technically easier pancreatic resection
    - Lower/no risk of postoperative pancreatic fistula
    - Oncologically more radical resection

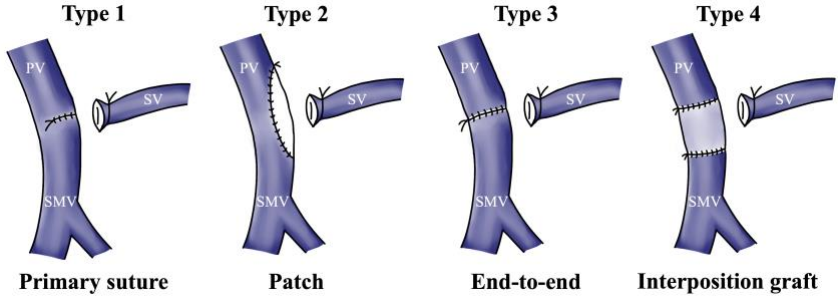
Section 3. Clinical scenario type B

Tumor involves the left side of portomesenteric venous axis for **<90 degrees** and extends to the level of the left gastric vein (LGV) and the inferior mesenteric vein (IMV). The length of portomesenteric venous invasion is **3 cm**. It is not possible to preserve both the LGV and IMV.



20. Which procedure do you plan for this case?
    - Pancreatoduodenectomy with PVR
    - Distal pancreatectomy with PVR

21. What type of portal vein reconstruction do you perform (ISGPS types)?
    - Type 1: Primary suture
    - Type 2: Patch
    - Type 3: End-to-end
    - Type 4: Interposition graft



22. In case this patient had received neoadjuvant chemo(radio)therapy with good biological and radiological response but still venous contact, would this change your intraoperative management regarding the portomesenteric venous involvement compared to upfront surgery?
    - Yes
    - No

23. This question only appears when 'yes' from question 22 is selected. How would you change your management in such a patient after neoadjuvant therapy compared to upfront surgery? Please select the following management(s). (multiple answers are possible)
    - Dissecting along the portomesenteric vein as much as possible to shorten the length of PVR
    - Dissecting along the portomesenteric vein as much as possible with intraoperative tissue sampling for surgical margin assessment to shorten the length of PVR
    - Dissecting along the portomesenteric vein as much as possible with intraoperative tissue sampling for surgical margin assessment, eventually not performing PVR in case of negative frozen sections whereby venous divestment is sufficient
    - Performing with a lower threshold PVR ISGPS type 1-2 (tangential / wedge resection)
    - Performing with a lower threshold PVR ISGPS type 3-4 (segmental resection)
    - Other(s)

24. This question only appears when 'other(s)' from question 23 is selected. Please register your management below:

    …….

25. This question only appears when PD with PVR is selected as procedure. Do you reconstruct splenic vein?
    - Yes
    - No

26. Why did you choose your procedure (i.e., pancreatoduodenectomy with PVR vs. distal pancreatectomy with PVR)? Please select the following reason(s). (multiple answers are possible)
    - Technically easier pancreatic resection
    - Technically easier portomesenteric vein reconstruction
    - Securing a wider margin of the pancreatic transection margin
    - More adequate lymph nodes dissection
    - Lower risk of postoperative complications
    - Lower risk of postoperative pancreatic fistula

- Lower risk of postoperative portal vein thrombosis
- Other(s)

27. This question only appears when 'other(s)' from question 26 is selected. Are there other factors which influence your decision-making in this scenario (e.g., clinicopathological and treatment characteristics, surgical technical details, etc.)? Please register this/these factor(s) below:

……

28. In case this patient had tumor involvement of the CHA requiring a CHA resection, does it influence your decision to perform either a distal pancreatectomy, pancreatoduodenectomy, or total pancreatectomy?
    - I would perform distal pancreatectomy with PVR + CHA resection without arterial reconstruction (modified Appleby procedure).
    - I would perform distal pancreatectomy with PVR + CHA resection with arterial reconstruction.
    - I would perform pancreatoduodenectomy with PVR + CHA resection with arterial reconstruction.
    - I would perform total pancreatectomy with PVR + CHA resection with arterial reconstruction.
    - Other(s)

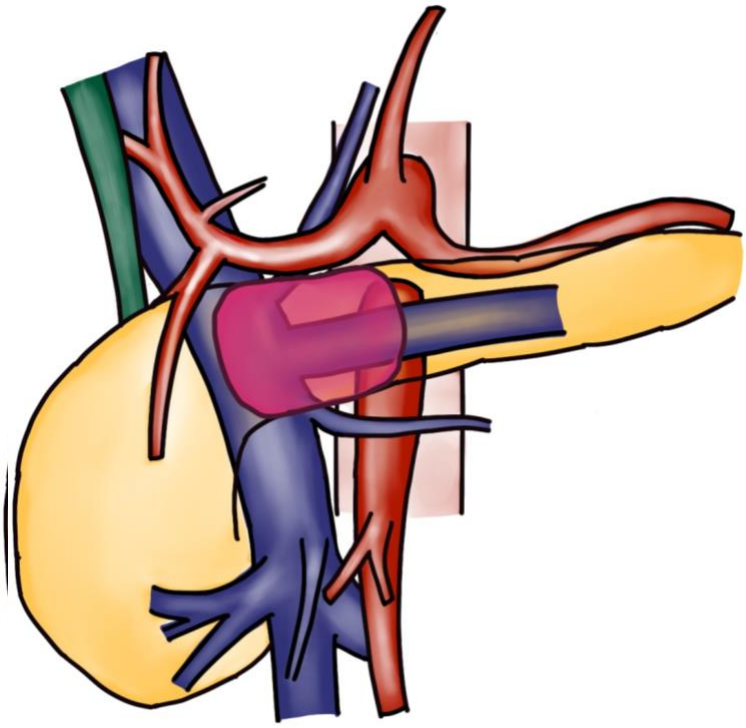
29. This question only appears when 'other(s)' from question 28 is selected. Please register your management below:

……

30. This question only appears in case of PD or TP in the previous question. Which factors influenced your decision to perform a pancreatoduodenectomy or total pancreatectomy? (multiple answers are possible)
    - Technically easier pancreatic resection
    - Lower risk/no of postoperative pancreatic fistula
    - Oncologically more radical resection

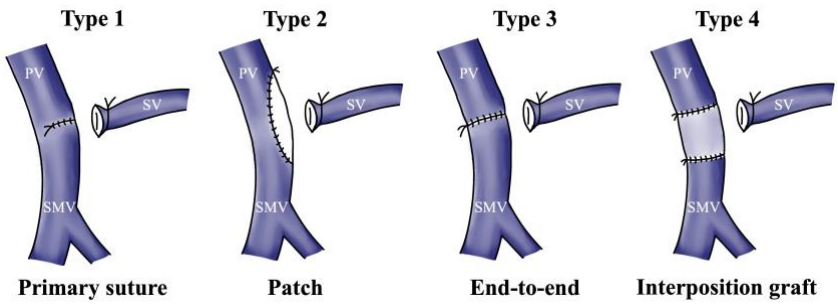
Section 4. Clinical scenario type C

Tumor involves the anterior and left side of portomesenteric venous axis with **90-180 degrees** and extends to the level of the left gastric vein and the inferior mesenteric vein. The length of portomesenteric venous invasion is **3 cm**. It is not possible to preserve both the LGV and IMV.



31. Which procedure do you plan for this case?
    - Pancreatoduodenectomy with PVR
    - Distal pancreatectomy with PVR
    - Total pancreatectomy with PVR

32. What type of portal vein reconstruction do you perform (ISGPS types)?
    - Type 1: Primary suture
    - Type 2: Patch
    - Type 3: End-to-end
    - Type 4: Interposition graft



33. In case this patient had received neoadjuvant chemo(radio)therapy with good biological and radiological response but still venous contact, would this change your intraoperative management regarding the portomesenteric venous involvement compared to upfront surgery?
    - Yes
    - No

34. This question only appears when 'yes' from question 33 is selected. How would you change your management in such a patient after neoadjuvant therapy compared to upfront surgery? Please select the following management(s). (multiple answers are possible)
    - Dissecting along the portomesenteric vein as much as possible to shorten the length of PVR
    - Dissecting along the portomesenteric vein as much as possible with intraoperative tissue sampling for surgical margin assessment to shorten the length of PVR
    - Dissecting along the portomesenteric vein as much as possible with intraoperative tissue sampling for surgical margin assessment, eventually not performing PVR in case of negative frozen sections whereby venous divestment is sufficient
    - Performing with a lower threshold PVR ISGPS type 1-2 (tangential / wedge resection)
    - Performing with a lower threshold PVR ISGPS type 3-4 (segmental resection)
    - Other(s)

35. This question only appears when 'other(s)' from question 34 is selected. Please register your management below:

    ……

36. This question only appears when PD with PVR is selected as procedure. Do you reconstruct splenic vein?
    - Yes
    - No

37. Why did you choose your procedure (i.e., total pancreatectomy with PVR vs. pancreatoduodenectomy with PVR or distal pancreatectomy with PVR)? Please select the following reason(s). (multiple answers are possible)
    - Technically easier pancreatic resection
    - Technically easier portomesenteric vein reconstruction
    - Securing a wider margin of the pancreatic transection margin
    - More adequate lymph nodes dissection
    - Lower risk of postoperative complications

- Lower risk of postoperative pancreatic fistula
- Lower risk of postoperative portal vein thrombosis
- Other(s)

38. This question only appears when 'other(s)' from question 37 is selected. Are there other factors which influence your decision-making in this scenario (e.g., clinicopathological and treatment characteristics, surgical technical details, etc.)? Please register this/these factor(s) below:

    …….

39. In case this patient had tumor involvement of the CHA requiring a CHA resection, does it influence your decision to perform either a distal pancreatectomy, pancreatoduodenectomy, or total pancreatectomy?
    - I would perform distal pancreatectomy with PVR + CHA resection without arterial reconstruction (modified Appleby procedure).
    - I would perform distal pancreatectomy with PVR + CHA resection with arterial reconstruction.
    - I would perform pancreatoduodenectomy with PVR + CHA resection with arterial reconstruction.
    - I would perform total pancreatectomy with PVR + CHA resection with arterial reconstruction.
    - Other(s)

40. This question only appears when 'other(s)' from question 39 is selected. Please register your management below:

    …….

41. This question only appears in case of PD or TP in the previous question. Which factors influenced your decision to perform a pancreatoduodenectomy or total pancreatectomy? (multiple answers are possible)
    - Technically easier pancreatic resection
    - Lower/no risk of postoperative pancreatic fistula
    - Oncologically more radical resection

Section 6. Comments

42. Thank you for completing this survey. Please feel free to add your comments, if any:

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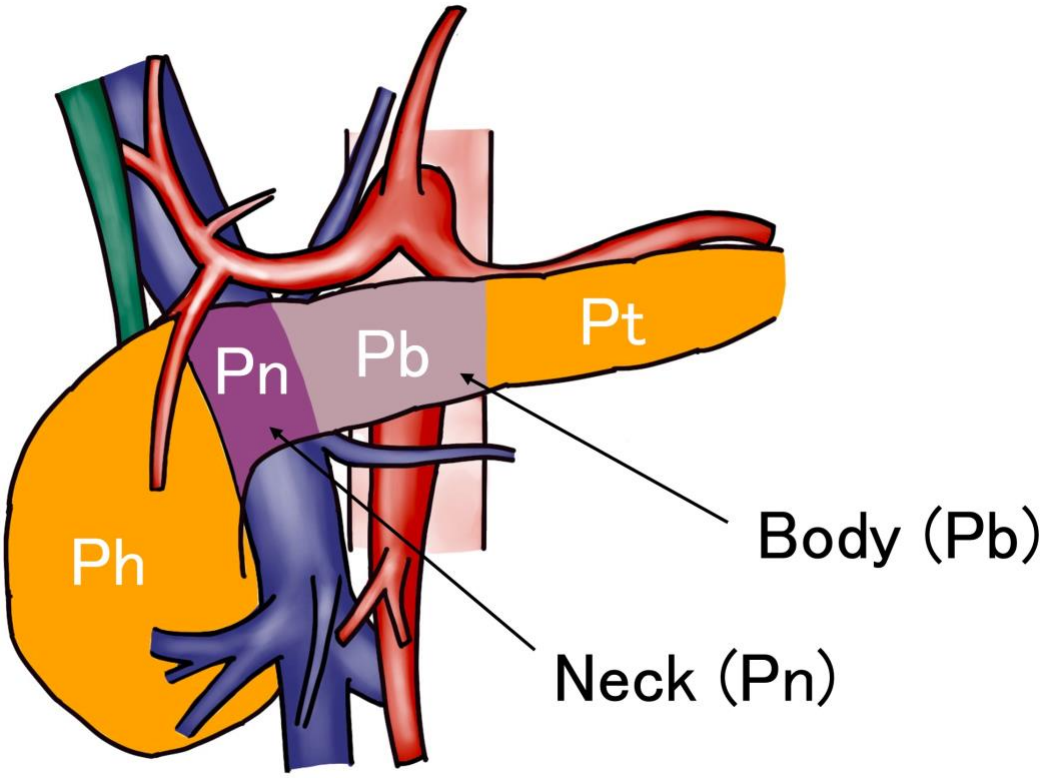
APPENDIX 2. DEFINITION OF THE PANCREAS



APPENDIX 3. TYPE OF PORTOMESENTERIC VENOUS RESECTION