Pre-operative Portal vein embolization: Indications and patient selection

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Disclosure

Speaker name: HOCQUELET Arnaud

I have the following potential conflicts of interest to report:

☐ Consulting
☐ Employment in industry
☐ Stockholder of a healthcare company
☐ Owner of a healthcare company
☐ Other(s)

I do not have any potential conflict of interest
Introduction

- Surgical resection of hepatic tumors is often the only curative option
- in primary and secondary liver tumors
- the disease of many patients is considered unresectable because of an insufficient future remnant liver (FRL)
• PVE INDICATION
  • Increase the FRL before resection
  • Increase surgical margins
  • Improve post-operative liver function

Quality improvement for PVE Denys A CVIR 2010 33(3):452-456
Patient Selection

3 corner-stone of PVE

Type of intervention
Patient Selection

3 corner-stone of PVE

Type of intervention

- Tumor board-talk with your surgeon
- Depend on the planning of the surgery:
  - Amount of liver to be resected /Function of the parenchyma (cirrhosis, chemotherapy...)
  - Margin requires (cholangiocarcinoma, metastasis)
  - Complexity of surgery (prolonged liver ischemia period by vessel clamping)
Patient Selection

Type of intervention

3 corner-stone of PVE

Futur Remnant Liver%
Patient Selection

- Major liver resection with insufficient FRL%:
  - $\text{FRL}\% = \frac{\text{FRL}}{\text{whole functional liver volume (tumor excluded)}}$
  - $>30\%$ for healthy liver, $40\%$ for others
Patient Selection

- How to assess FRL%?
- Contrast-enhanced CT-scan (with hepatic vein visible)
- Segmentation (automatic, semi-automatic or hand-free..)
Patient Selection

- A very small left lobe (under 10%) should not be considered a contraindication.
- There is a correlation between small initial size of the FLR and high degree of hypertrophy [Denys et al 2004, Hocquelet et al 2018].
Patient Selection

- Type of intervention
  - Volume is not function
- 3 corner-stone of PVE
  - Futur Remnant Liver%
  - Alert signs
- Futur Remnant liver Function
  - Chemotherapy? (IA oxaliplatin)
  - Sign of Portal hypertension (without cirrhosis/SOS)
  - cirrhosis
Patient Selection

_type of intervention_

- **3 corner-stone of PVE**
- **Futur Remnant Liver %**
- **Futur Remnant liver Function**

_type of intervention_

- **Volume is not function**
- **Hepatobiliary Scintigraphy**

_quantitative assessment of liver function_

- **Cheap and fast**

_Function >2.69 ml/min/kg for the FRL_
Type of intervention

Volume is not function

Post-PVE

Pre-intervention

Futur Remnant Liver%

Futur Remnant liver Function

Post-ALPPS

Hepatobiliary scintigraphy to evaluate liver function in associating liver partition and portal vein ligation for staged hepatectomy: Liver volume overestimates liver function

Little or no association ($r = 0.27$) was found between the measured liver volume and function determined with...
Conclusion

• PVE Indication:
  – Improve surgery quality (margins etc)
  – Improve post-operative outcome (avoid liver failure)
  – Bring to curative treatment unresectable patient
Conclusion

• Patient selection:
  – Talk with your Surgeon
  – CT-Scan=> Liver Volume
  – Hepatobiliary scintigraphy=>Liver Function

  – And... no contraindication.... Portal hypertension (blocked to free hepatic vein pressure gradient >12 mmHg), PT and platelet count<50
Thank you

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