



EVALUATION OF  
THE FUNCTION AND  
THE HEMODYNAMIC STRESS OF  
THE FUTURE LIVER  
REMNANT VOLUME  
IN ALPPS PROCEDURE

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Associating liver partition and portal vein ligation for staged hepatectomy (ALPPS) can extend resectability of liver malignancies due to its capacity to prompt faster regeneration of the future liver remnant (FLR). However, this technique is characterized by a higher morbidity and mortality given an increased incidence of post-hepatectomy liver failure (PHLF) ranging from 7 to 30%. During the last years, several experiences suggested that liver volume could overestimate liver function eventually leading to a higher risk of PHLF after extended hepatectomy. To better understand the relationship between volume and function we have evaluated the hemodynamic stress (HD) induced by ALPPS procedure on volume gain and the FLR function by the hepatobiliary scintigraphy (HBS) with technetium 99m-mebrofenin. Finally, we have focused on long-term oncological outcomes after ALPPS for colorectal liver metastases (CRLM) and intrahepatic cholangiocarcinoma (ICC). Two multicentric European experiences are discussed to evaluate mid and long-term oncological results.

We firstly studied the HD and its relationships with liver regeneration. We noticed that patients with higher HD stress defined as portal vein pressure > 20 mmHg and hepatic to portal vein gradient > 15 mmHg are showing less regeneration and function.

Moreover, at ALPPS inter-stage, volume regeneration overestimates liver function with higher risk of PHLF after ALPPS-2. A pre-operative safe cut-off for FLR function was identified at 2.7%/min/m<sup>2</sup>, reducing the risk of PHLF after ALPPS-2. The pre-operative evaluation of the FLR by HBS and a careful evaluation of the HD stress may increase the safety of ALPPS eventually reducing the incidence of PHLF.

ALPPS in selected patients suffering of CRLM appears to be one of the best indications leading to favorable long-term outcomes. Moreover, initial appealing results are also reported for single isolated ICC.

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## EDUCATION AND TRAINING

- **Doctor of Medicine:** Sant'Andrea University Hospital, Sapienza University of Rome, Italy
- **Specialist in General Surgery:** Sant'Andrea University Hospital, Sapienza University of Rome, Italy
- **Clinical and Research Fellowship:** UZ Gent University Hospital, Belgium

## FORMATIVE COURSES

- 2 Hands-on courses on Minimally Invasive Surgery, 2 Hands-on courses on General Surgery, 2 Hands-on courses on Hepatobiliary Surgery.

## AWARDS, GRANTS AND SCHOLARSHIPS

- 3 Travel Grants, 4 Best Presentation Awards and 2 Financial Grants for Young researchers.

## SCIENTIFIC ACTIVITY

- 74 Abstract with 40 Oral and Video Presentations at National and International Meetings
- 48 Publications in national and International journals
- 3 Chapters on national and International Surgical books

- **H-Index: 13 Total citations: 693**  
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