

# INPLASY PROTOCOL

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**Review Stage at time of this submission:** Data analysis.

**Conflicts of interest:**  
None declared.

## Systematic review of the impact of sarcopenia on the future liver remnant growth after portal vein embolization and ALPPS

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**Review question / Objective:** Does sarcopenia affect the future liver remnant growth after portal vein embolization/ligation (thus affect the subsequent hepatectomy in patients with liver cancers)?

**Condition being studied:** Portal vein embolization (PVE) and Associating Liver Partition and Portal vein Ligation for Staged hepatectomy (ALPPS) are two commonly used procedures for hypertrophy of the remaining liver before major liver resection in patients with liver cancer. However, around 30% patients who undergo PVE cannot proceed to liver resection due to insufficient liver growth. Many factors may affect liver growth after PVE. This study evaluates the clinical variables affecting liver growth after portal vein embolization/ligation in patients with liver cancers.

**INPLASY registration number:** This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 10 August 2022 and was last updated on 10 August 2022 (registration number INPLASY202280038).

### INTRODUCTION

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resection due to insufficient liver growth. Many factors may affect liver growth after PVE. This study evaluates the clinical variables affecting liver growth after portal vein embolization/ligation in patients with liver cancers.

## METHODS

**Search strategy:** The key words for the literature search included “sarcopenia” and “portal vein embolization/ligation”, “portal vein occlusion” and “associating liver partition and portal vein ligation for staged hepatectomy (ALPPS)”.

**Participant or population:** Patients with liver cancer underwent PVE or ALPPS.

**Intervention:** Sarcopenia.

**Comparator:** Non-sarcopenia.

**Study designs to be included:** retrospective or prospective cohort or case-control studies.

**Eligibility criteria:** 1) observational or interventional studies; 2) patients undergoing PVE/portal vein ligation or ALPPS for liver growth before liver resection; 3) liver growth as the main outcome or one of the outcomes; 4) at least one index for sarcopenia or body composition assessment involved.

**Information sources:** PubMed/MEDLINE, Embase, Web of Science and the Cochrane Library; as of 5 July, 2022; English publications only.

**Main outcome(s):** Kinetic growth rate (KGR) and degree of hypertrophy (DH) of the future liver remnant.

**Additional outcome(s):** Resectability rate of the patients; other independent risk factors for a poor liver growth after PVE/PVL.

**Quality assessment / Risk of bias analysis:** The NewcastleOttawa Quality Rating Scale (NOS) will be adopted to evaluate the risk of bias of the included studies. Two reviewers will assess the quality of

literature independently and the disagreement will be resolved by a senior researcher.

**Strategy of data synthesis:** This study will not synthesize the data as the number of the included studies is limited and the outcomes are varying (only five studies included). It is hard to pool the results. That is to say, only systematic review has been performed. We presented our data in detail in the tables.

**Subgroup analysis:** Not applicable for subgroup analysis.

**Sensitivity analysis:** Not applicable for sensitivity analysis.

**Language restriction:** English.

**Country(ies) involved:** Sweden.

**Keywords:** sarcopenia, liver growth, portal vein embolization, portal vein ligation, ALPPS, colorectal liver metastasis.

**Dissemination plans:** This study will be submitted to and published in a peer-reviewed academic journal.

### Contributions of each author:

Author 1 - Qiang Wang - conceptualization, manuscript draft.

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