Laparoscopic versus open resection according to complexity He.R.Co.LES group

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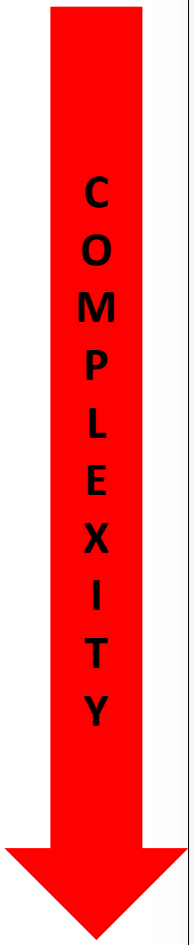
Introduction

Cornerstones in the development of laparoscopic liver surgery

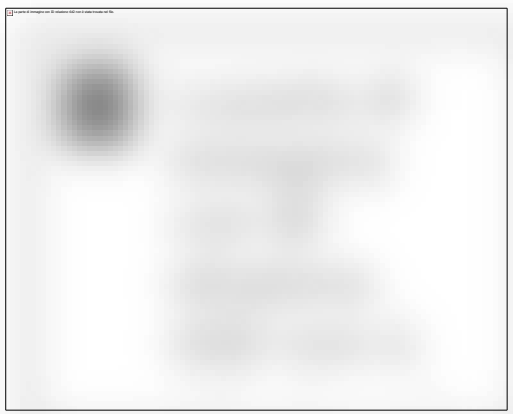
A journey long 35 years

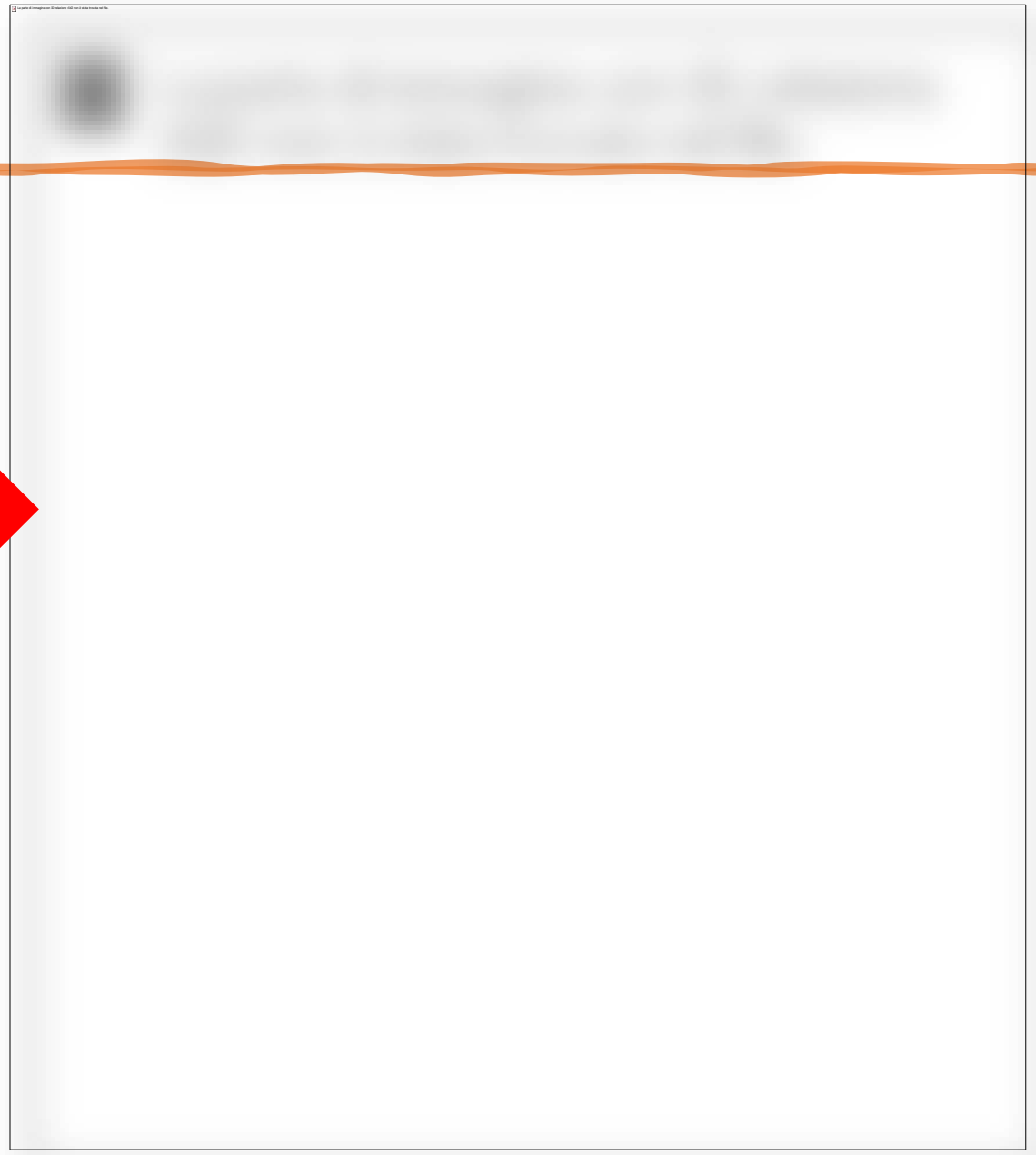
Introduction

The long journey through complexity……



Introduction





Year by year increase of laparoscopic liver procedures

Introduction

MALS in HCC

HCC account for approximately 30% of laparoscopic hepatectomies performed worldwide

Introduction

HCC is a good indication for laparoscopic approach even due to the presence of cirrhosis

Introduction

MALS show it’s superiority or non inferiority in HCC setting compared to OLR

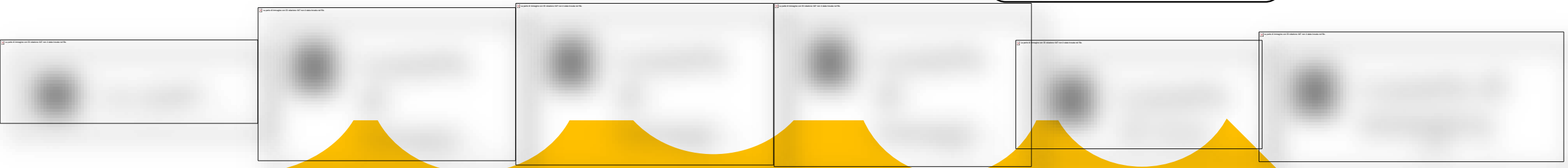
Laparoscopic approach cover all the spectrum of liver resection for hcc

Advantage
Less blood loss
Diminished POA
Shorter LOS
Similar oncological outcomes

elderly

Left lobectomy

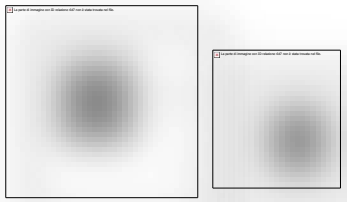
Postero-superior segments



huge

Major hepatectomy

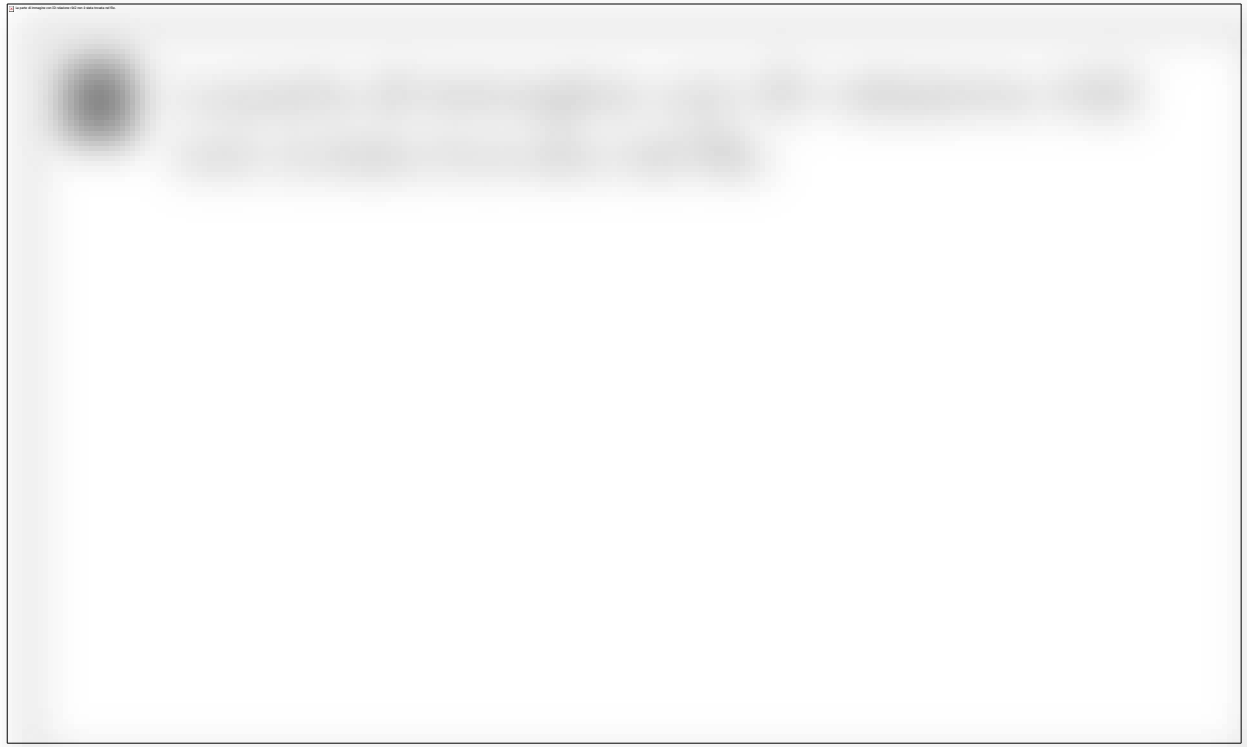
Child B

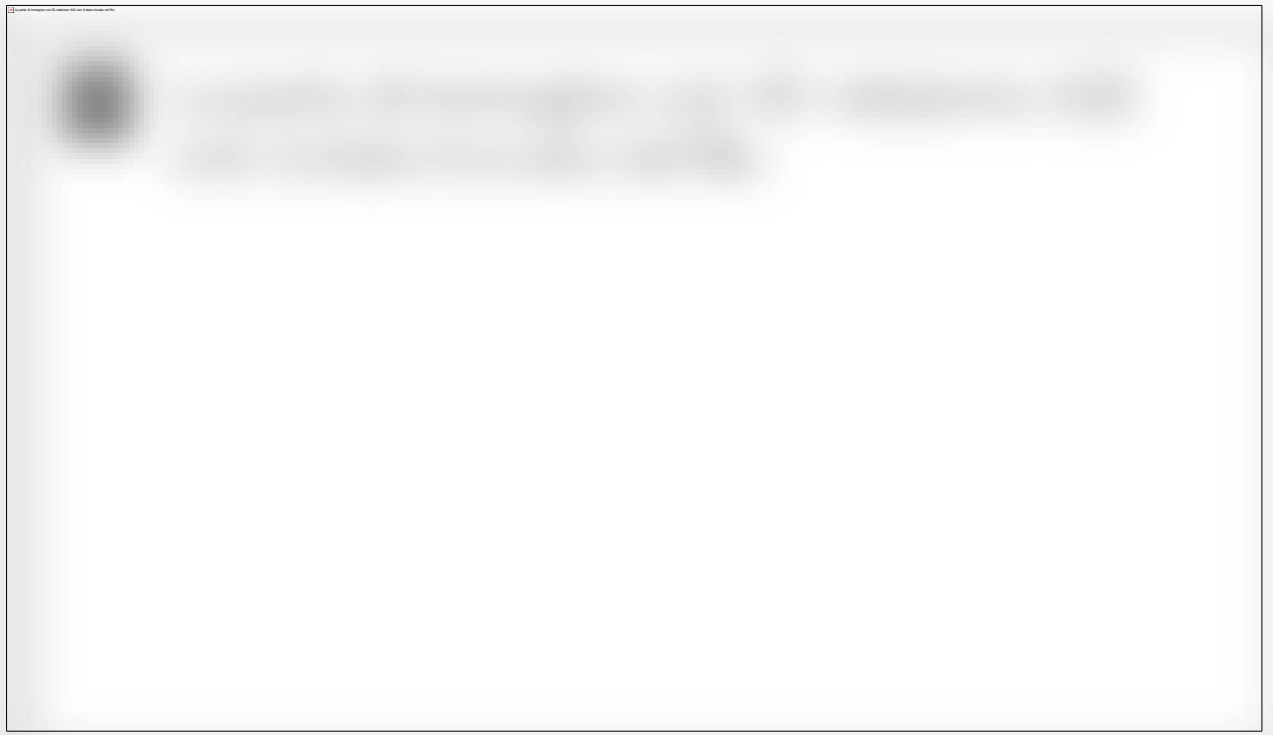


complexity

Introduction

Robust data regarding the advantages of MALS





Introduction

Does MALS have an effect on long-term survival of patients with HCC?

introduction

MALS Is hierarchically superior to OLR because improves outcome and increase the indications

Introduction

Some concerns…

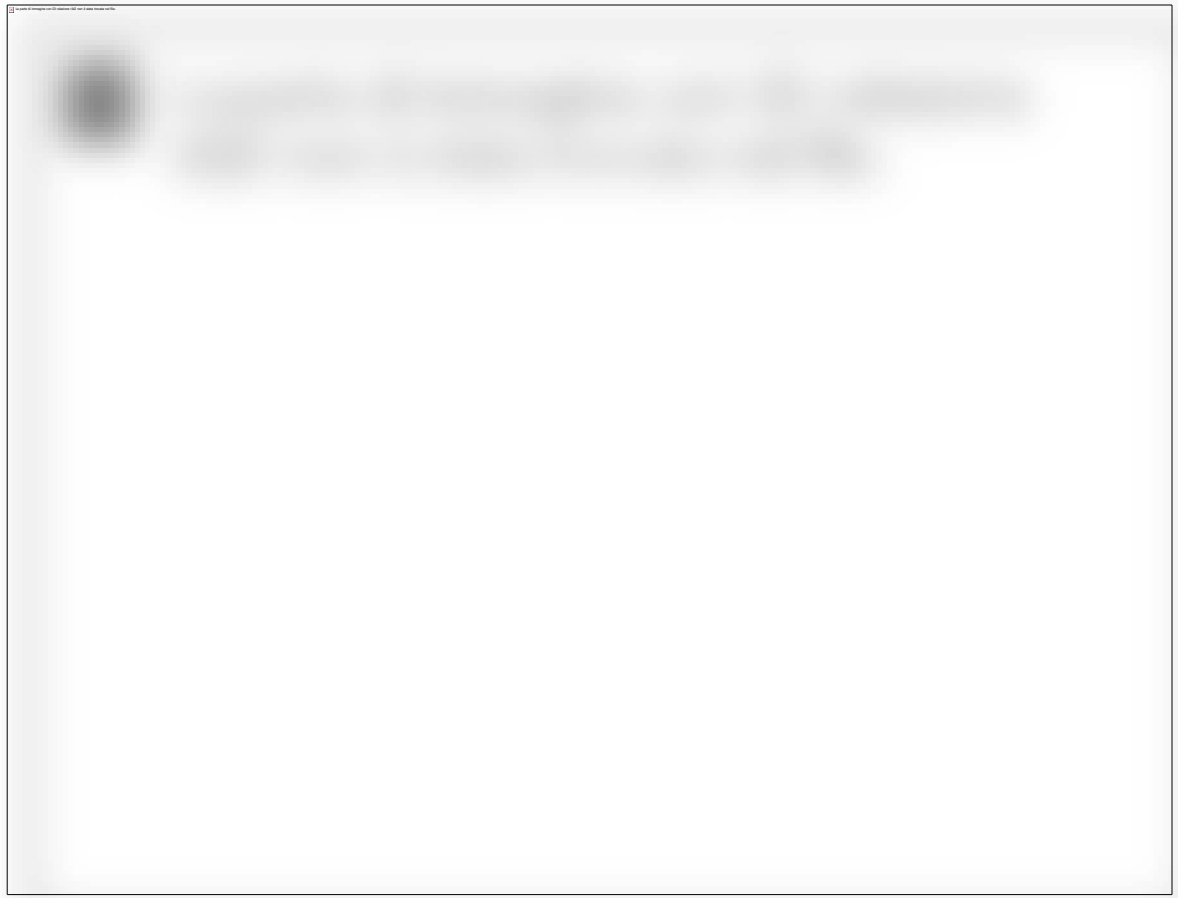
Most of the experience arise from **retrospective studies** and **third-referral centers** which introduce high degree of bias when compared to **real-life scenario**

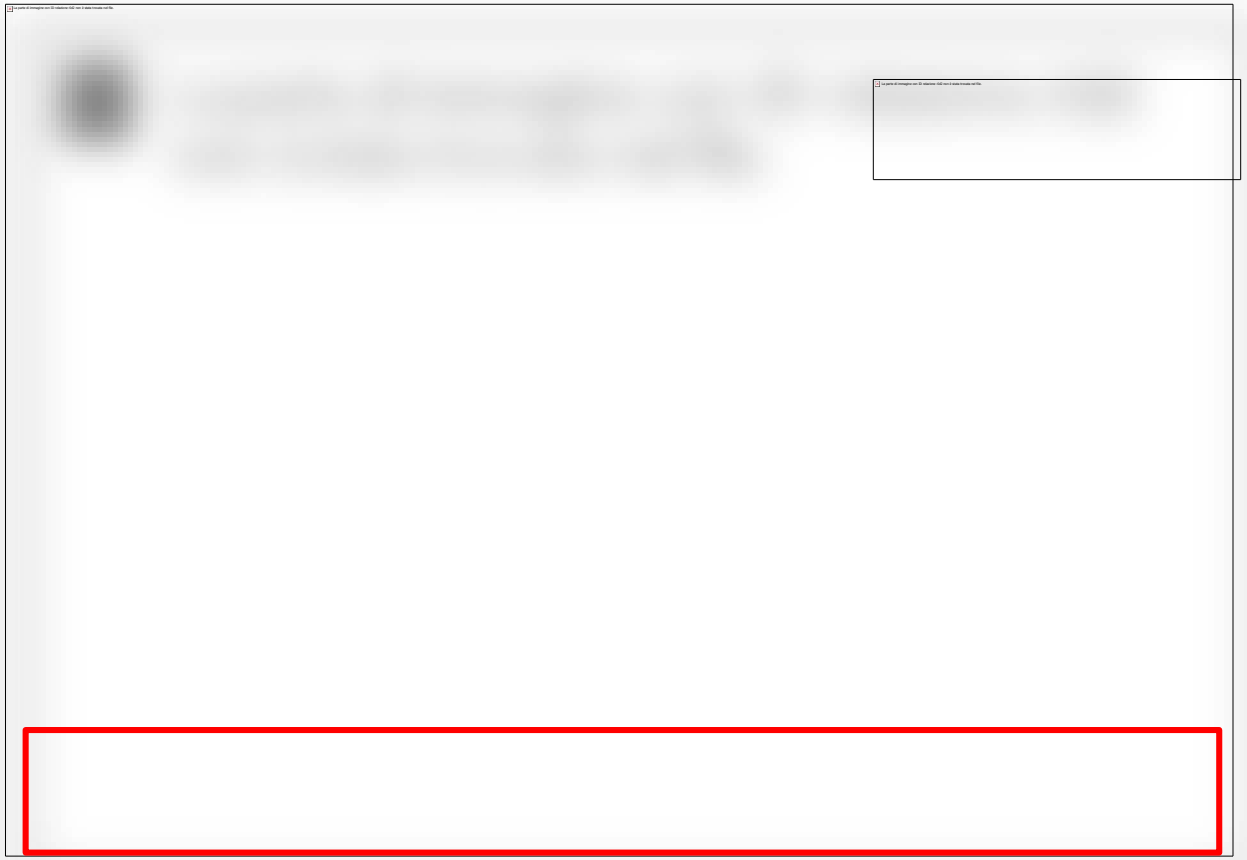
Most of the studies made **comparison regardless of the surgical complexity**, avoiding a strict evaluation of MALS on different types of liver resections.

Introduction

So…..advantages of MALS are equal for every kind of surgery?

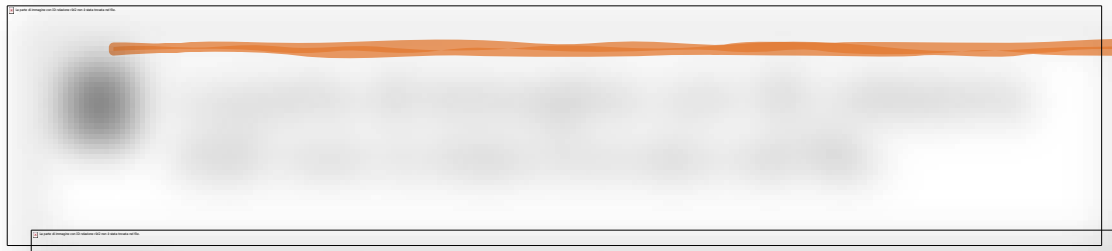
Regardless of indication the advantages of MALS correlate to the difficulty of resection

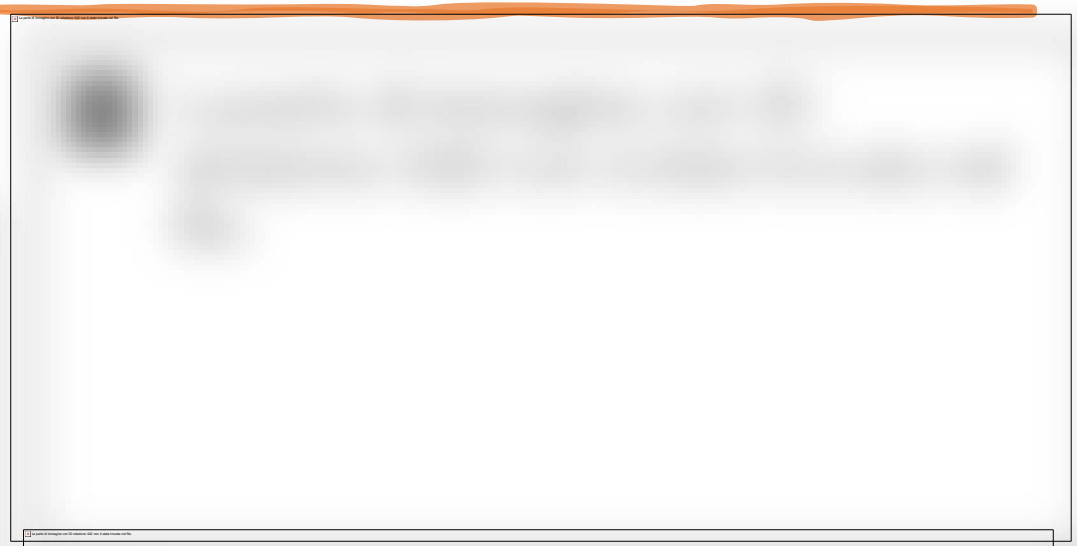


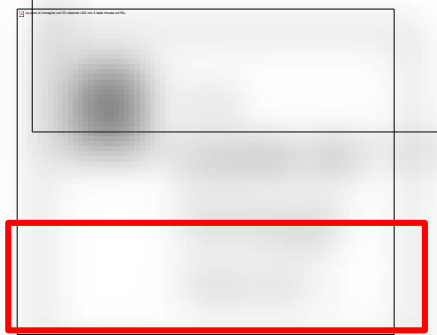


Introduction

The higher the complexity The higher the benefit of MALS

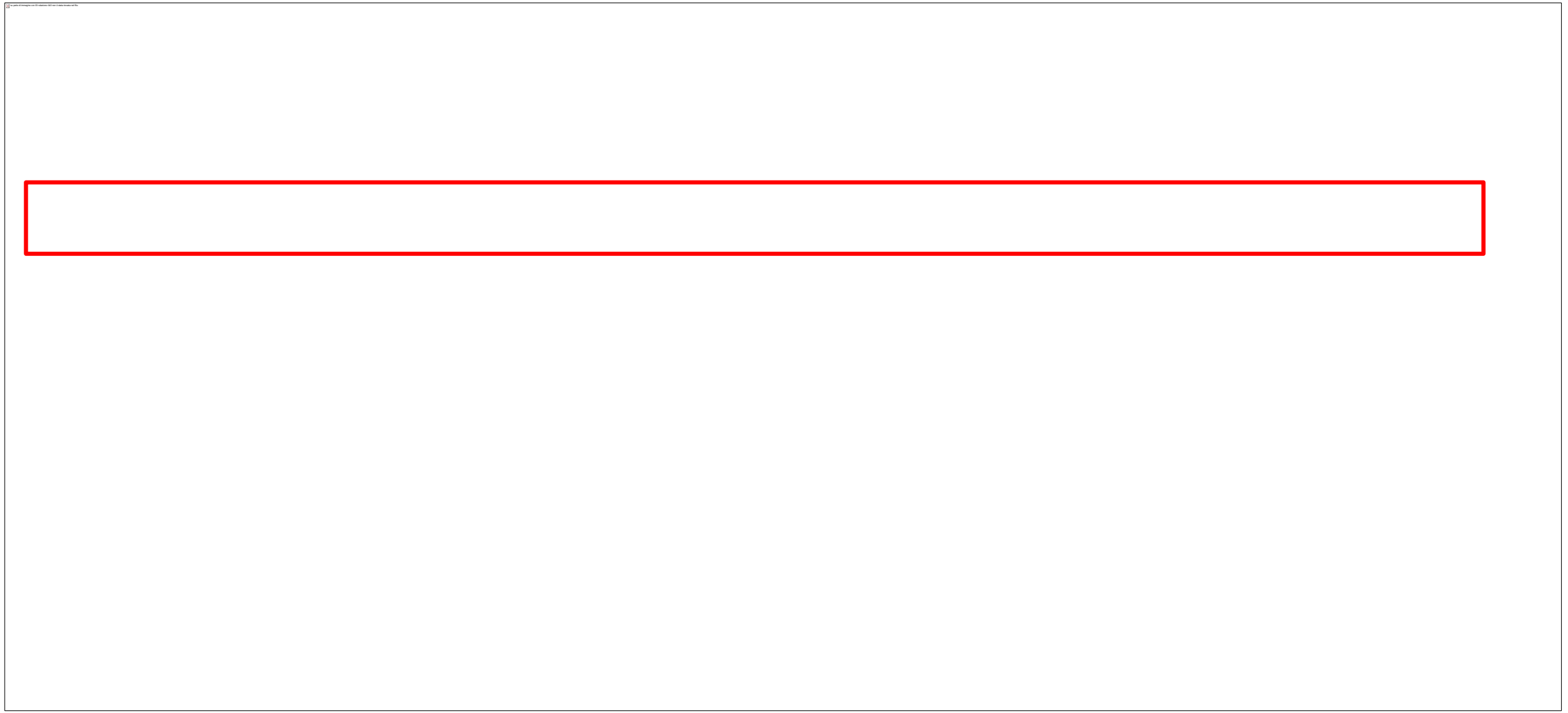






Introduction

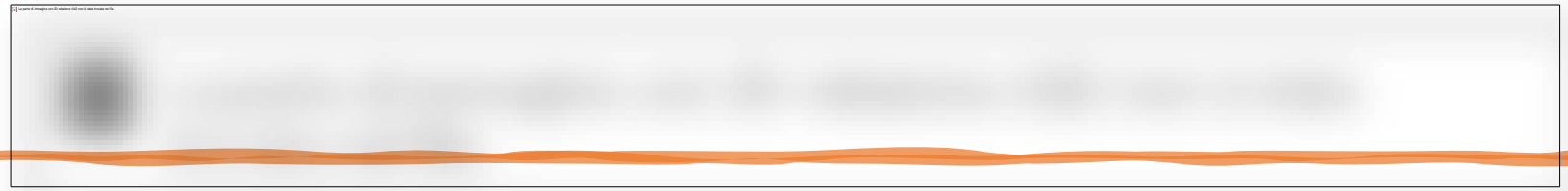
The higher the burden of the tumor The higher the advantages of MALS

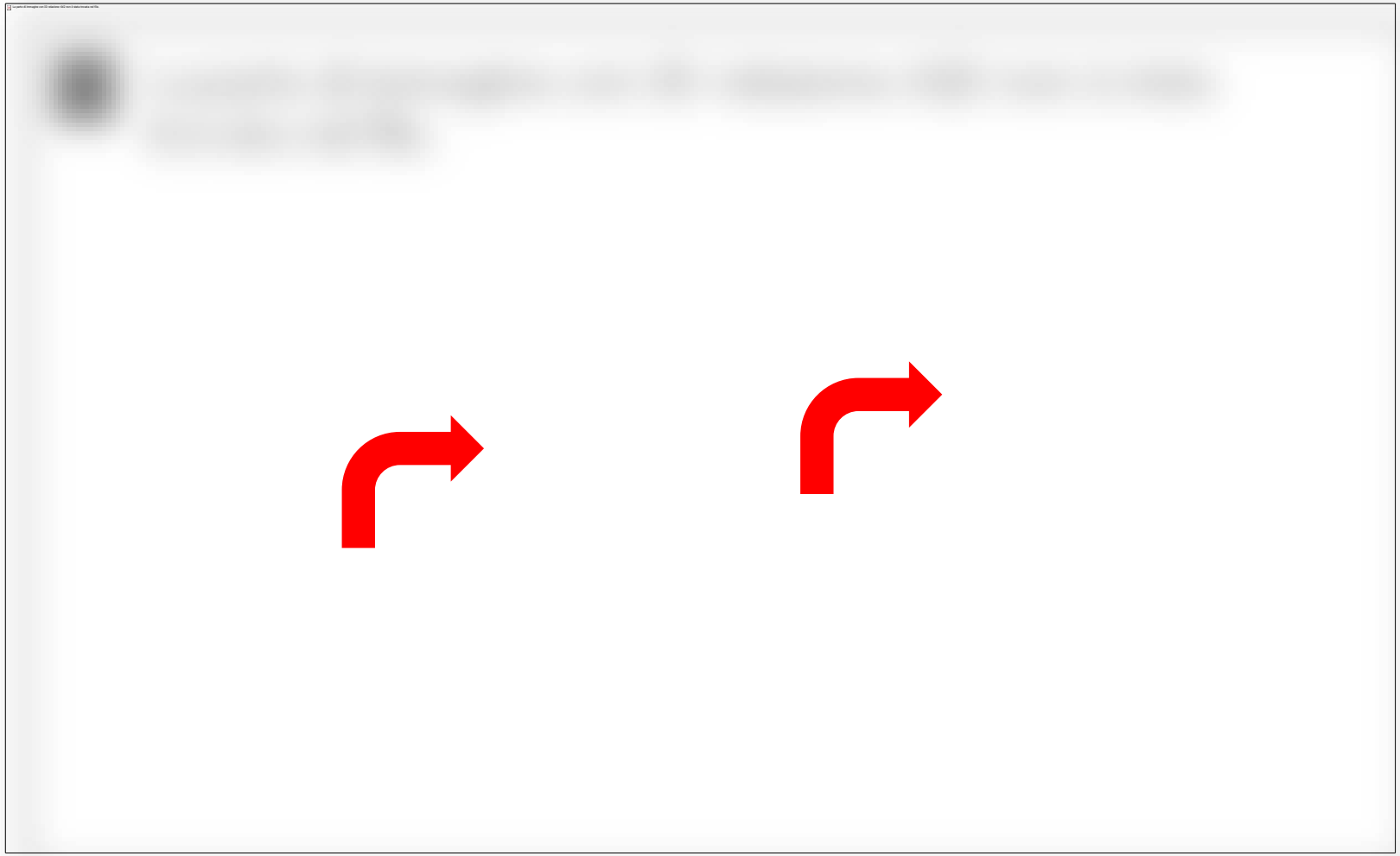


Introduction

Has been demonstrated that morbidity is related to complexity

introduction





The delta complication between MALS and OLR increase when complexity increase

Methods

The Italian HCC Surgical Register

methods

Multicentric national
(36 Italian Centers) real-life study on resection for HCC

The map of Hercoles

Data collected prospectively
Centers with
Low, Medium , high
Volume of liver resection
No restriction on annually treated patients.

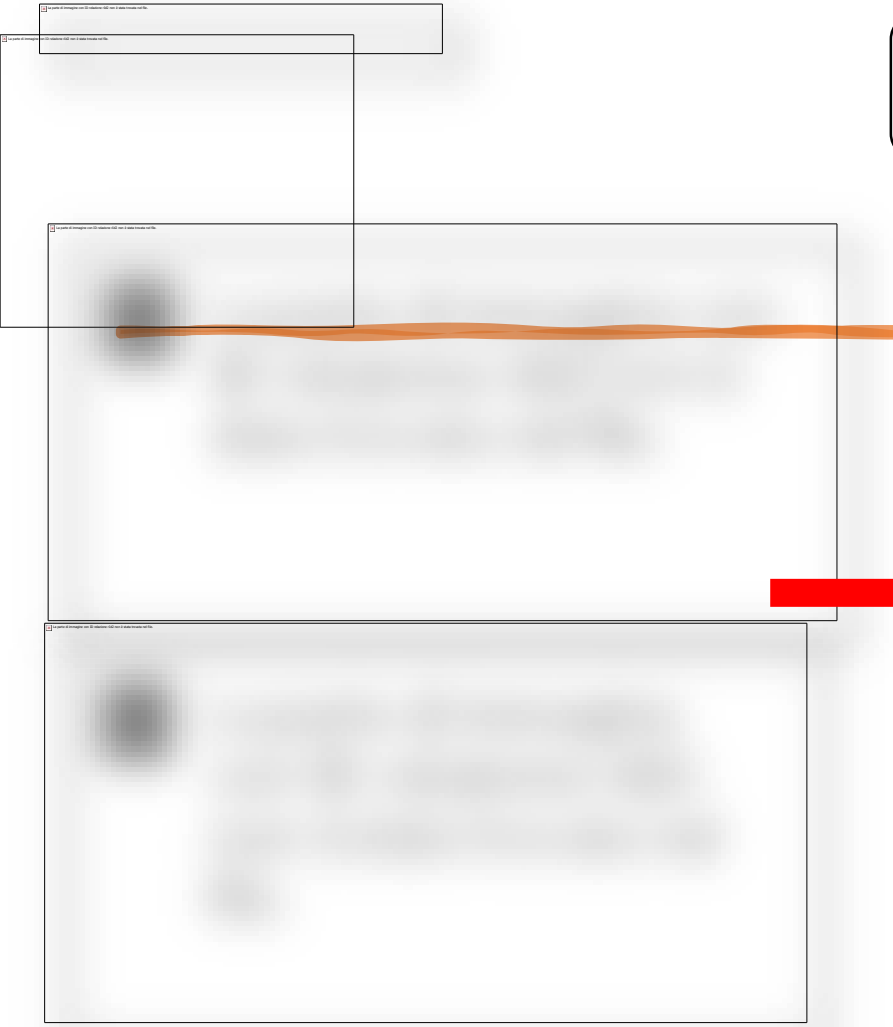
170 variables covering comorbidities, underlying liver function, radiological and intraoperative findings
Postoperative course, histological assesment and follow up

methods

To overcome the limits of literature's studies we conduct an in-depth analysis of a national real-life multicenter cohort of patients who have undergone liver resection for HCC

The study aims to compare perioperative outcomes (overall complication, major complication, POA) of MALS and OLR, in a specific setting (HCC) with stratification according to the surgical complexity (Kawaguchi)

methods



All case were collected on an intention-to-treat basis without restriction according to center volume or learning curve

4738 resezioni per HCC

33.7% MALS
1596

66.3% Open
3142

Patients were stratified according to the complexity fo the procedure (Kawaguchi)

CP1	low
CP2	intermediate
CP3	high

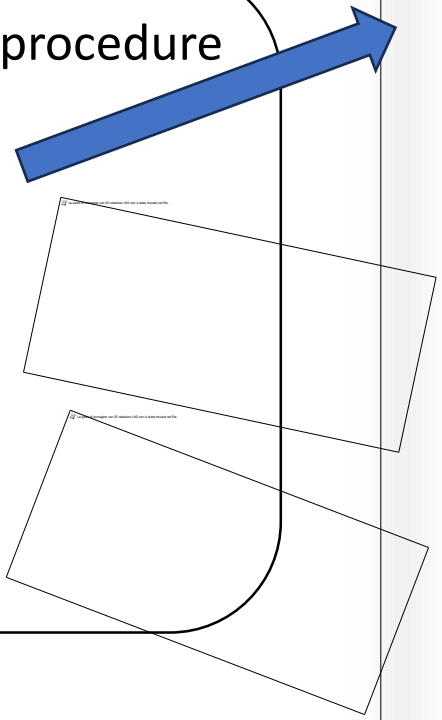
methods

Patients were **stratified according to the complexity** of the procedure

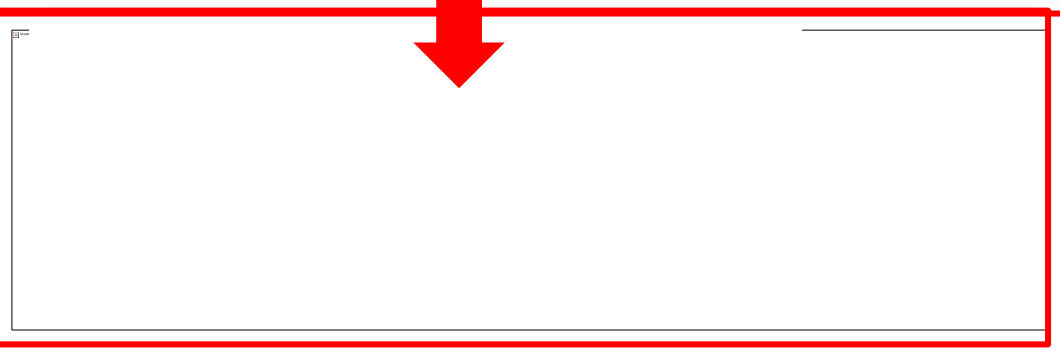
CP1 low (wedge/left lateral sectionectomy

CP2 intermediate (AL segmentectomy/LH)

CP3 high (PS segmentectomy, RH, ERH, ELH , RPS, CH

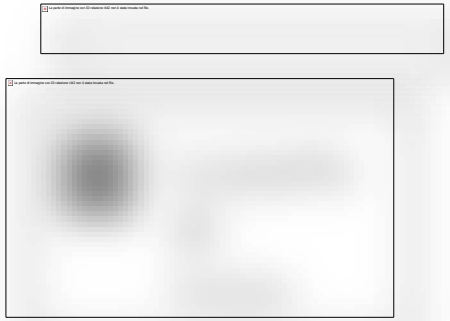


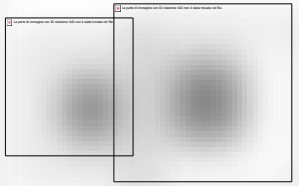
methods

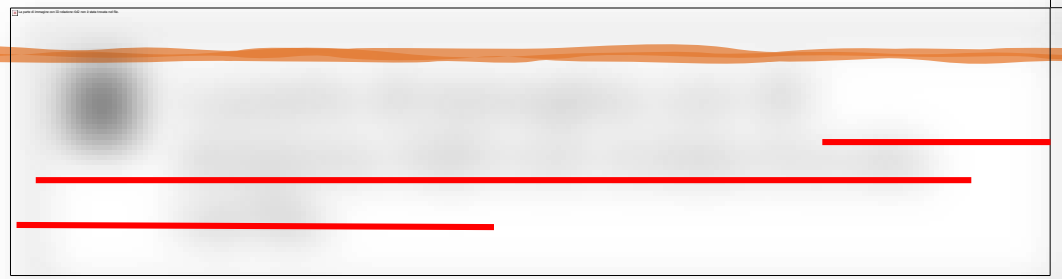


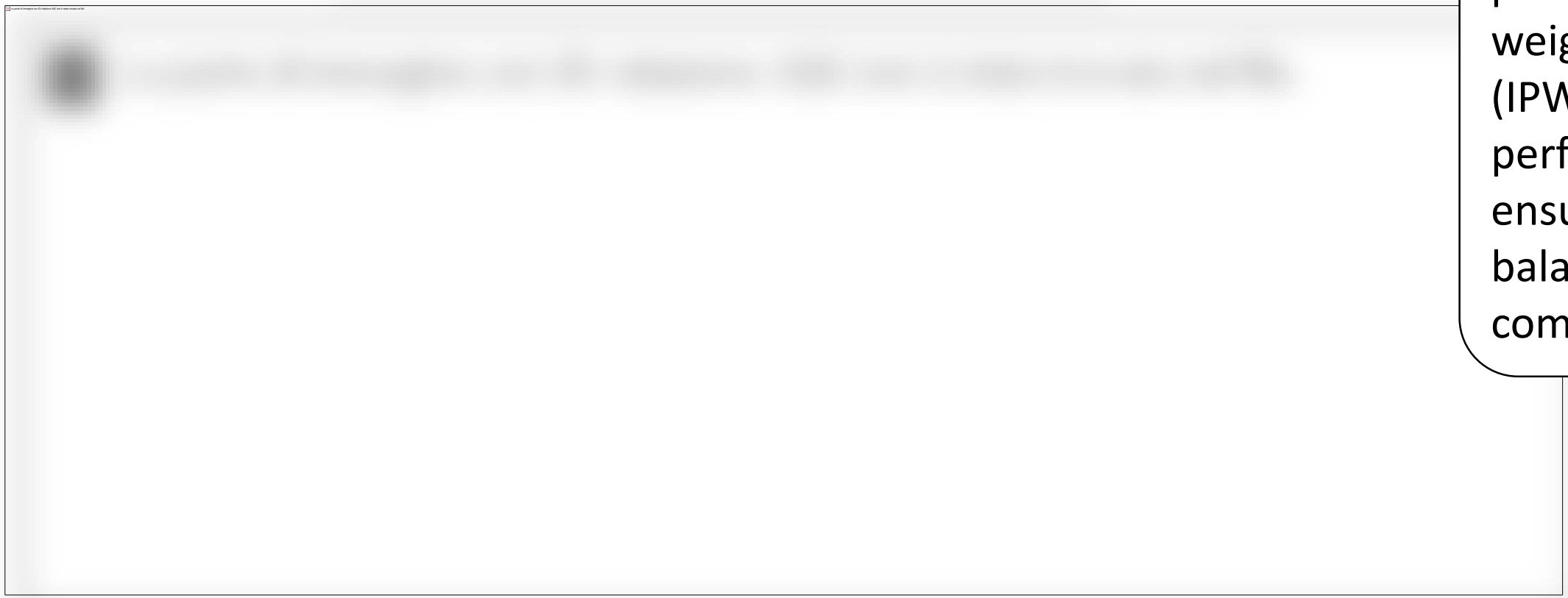
CP1	low	2522 (53.2%)
CP2	intermediate	974 (20.6%)
CP3	high	1242 (26.2%)

methods









An inverse probability weighting (IPW) was performed to ensure balanced comparisons

results

More of studies don't take in account the procedure's complexity

Multicentric studies are based on third-referral centers

Most of the studies adopt a PSM to reduce the risk of selection bias
MALS = easier procedures → Matched with easier OLR = reduction of cohort complexity caused by PSM

Cohort divided according to procedure's complexity

Real world scenarios not only referral centers, no case-load restriction

Inverse probability treatment weighting to create populations with similar characteristics

First report of a real world measurement of the outcomes after MALS vs OLR
among the largest series available in literature about HCC

results

CP1 MALS was associated with reduced POA and MC

CP2 MALS was associated with MC but not with POA

CP3 MALS was associated with increase MC

	CP1 (Wedge + LLS)	CP2 Al segments + LH	CP3 PS segments + RH
Overall compl			
Major compl			
POA			

Low-volume centers had significantly higher MC after CP2 and CP3 procedures than medium and high volume centers

conclusions

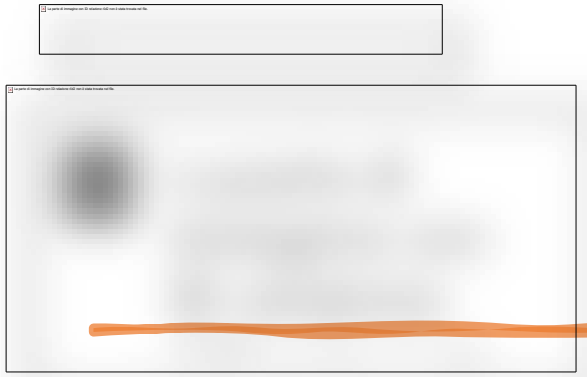
MALS was independently associated with a reduced rate of overall complications regardless of the surgical complexity

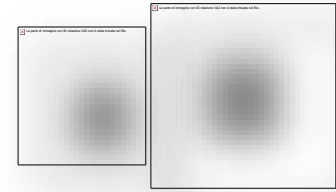
MALS was a protective factor from POA only in case of CP1 procedures

MALS for CP3 procedures was associated with an higher risk of major complications, but having surgery in a high or medium volume center reduce this risk more than MALS itself increases it

Major compl

conclusions





Peculiar results of the study

Reduction of rate of complication is well established with MALS

In our study MALS is protective factor for major complication in CP1 and CP2 groups but is a significant risk factor in CP3 in a real-world scenario (risk of conversion, prolonged ischemic time, operative time, control of bleeding). Multicentric studies are based on third-referral centers

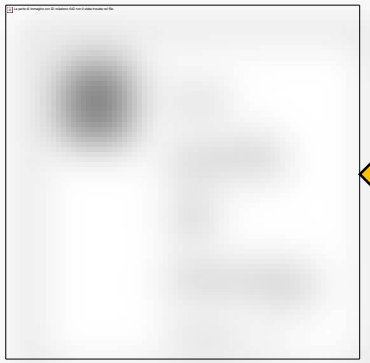
MALS was superior in reducing the risk of postoperative liver decompensation, such as POA, only in the low difficult group CP1 (reduce need for mobilization and lymphadenectomy and major trend in performing wedge resection) and not in CP2 and CP3 (other factor become more relevant such as underlying liver disease, tumor characteristics..)

conclusions

MALS is currently the preferred approach to patients who need surgery for HCC with proven better results compared to open surgery

The study offer a comprehensive perspective on the impact of MALS in treating HCC

The findings underscore the limitation of MALS in most complex resections, which need skilled center with high volumes



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