Liver-First Versus Lung-First: A New Dilemma in Combined Organ Transplantation

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Abstract 1366
Agora 3

INTRODUCTION

Combined liver-lung transplantation (cLiLuTx) is a life-saving procedure for patients with dual organ failure. ***The classic sequence dictates LuTx priority over LiTx, due to the tolerable ischemic time, which is considered shorter for the lung than for the liver.*** *However, recent reports describe successful LuTx following longer cold ischemic times as well as safe extension of the cross clamp time with ex-vivo lung perfusion (EVLP). Therefore, an* ***inversed sequence -liver-first- may have several benefits.***

AIM

To create a *theoretical framework to* outweigh the potential benefits of a liver-first sequence

PATIENTS

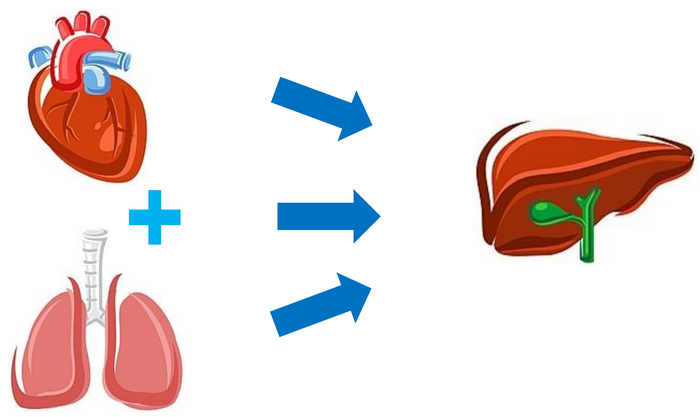
15 CLiThTx performed between **1/2000 and 12/2017**

N = 4 ´liver-first´

Surgical sequence

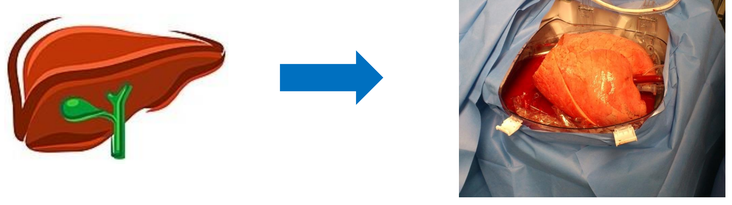
Classic
HEART/LUNG FIRST
Liver Second

STATIC, COLD preservation



NEW principle
LIVER FIRST
Lung (heart) second

Liver: COLD
Lung: EVLP*
OCS™, *Andover, USA



First case: drug-induced liver failure + COPD IV *(AJT 2014 Oct)*

DEMOGRAPHICS / INDICATIONS

Demographics

Age *(median-range)*	43 y *(17-63)*
Gender (M/F)	3/1

Indications

Liver indication	Pulmonary indication
Cystic fibrosis induced cirrhosis with portal hypertension (2)	Cystic fibrosis (2)
Epithelioid hemangioepithelioma	Epitheloid hemangioepithelioma
Tuberculostatics (Isoniazid) induced acute liver failure	COPD GOLD IV

CLINICAL OUTCOME *(m Follow-up: 3.2 year)*

Primary Graft Dysfunction at 72 hours:
Case 1: 2; Case 2: 1; Case 3: 0; Case 4: 0

Rejection	Liver	Lung
Early (<3 mo)	0	0
Late (>3 mo)	0	1* B2
Chronic	0	0
Graft loss	0	0

B2: moderate bronchial rejection, treated with steroids

Leuven ´LIVER-FIRST´ principle

If the native lungs can withstand the primary LiTx

1/ Immunological benefit: transplanted liver neutralizes donor specific HLA antibodies => ↓ rejection

2/ Liver surgery harms the native lungs instead of lung allografts => ↓ lung edema

3/ Liver IRI captured by native lungs instead of lung allografts => ↓ lung edema

4/ Restoration of coagulation status prior to LuTx => ↓ tranfusion during LuTx

5/ Avoids anhepatic phase and ↓ coagulation factors after LuTx => ↓ risk of thoracic bleeding

6/ Shorter liver cold ischemia time => ↓ biliary strictures

CONCLUSION

In our 4 cLiLuTx the sequence could safely be inversed -liver-first- with successful outcome. For every cLiLuTx the liver-first versus lung-first principle should be discussed in team, assessing the organ-specific disease severity.

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Ceulemans LJ et al. Transplant International 2016 and 2018