

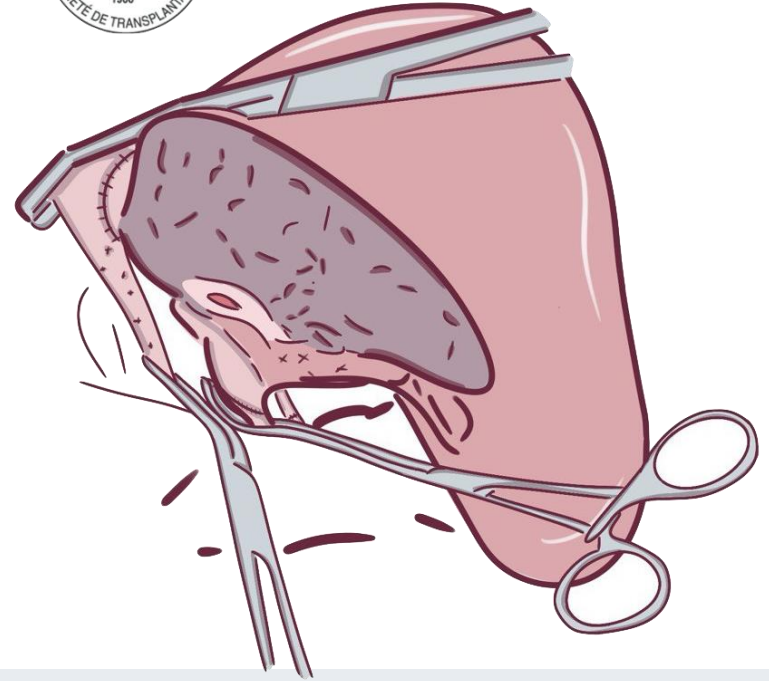


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+ Virtual October 21-23

Portal inflow modulation in pediatric partial liver transplantation

Insights from a prospective study

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Conflict of Interest

The authors declare no conflicts of interest

Introduction

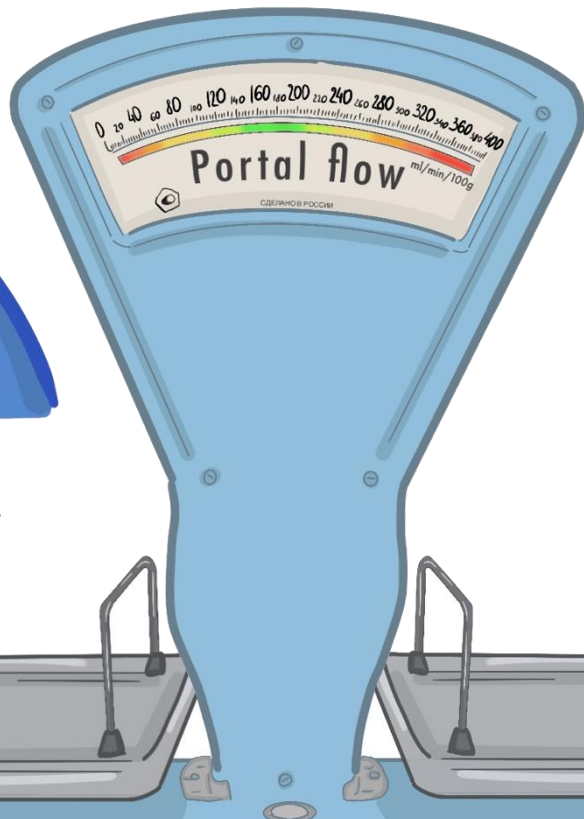
Portal perfusion is a critical element of graft function and complication prevention in pediatric liver transplant recipients

From "Small-for-Size" to "Small-for-Flow" Syndrome
With early identification, it can be managed intraoperatively using portal modulation techniques

Volume of effective parenchyma:
Quality of parenchyma (steatosis)
Graft volume (>0.8)
Quality of outflow (all veins are drained)
CVP:
Hydratation
Cadiac Problems
Artificial Ventilation

Outflow

Optimal PF within
90 ← ml/min/100g → 210



Portal flow (PF) is balance between the Inflow and Outflow

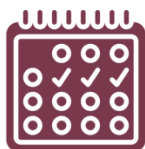
Portal hyperperfusion is measured by portal venous pressure (PVP) or transit time flow measurement (TTFM)

BUT the measurement is often indirect and not standardized

Inflow

↑↑ Increased PVP/PF:
Severe Portal Hypertension
↓↓ Decreased PVP/PF:
Porto-systemic shunts (flow deviation)
Technical problems (kinking, twisting, narrowing etc)

Patients and methods



Jul '23 – Apr '24 (n = 27)

Period



7,5 | 5,3 - 23

Body weight, kg
median | range

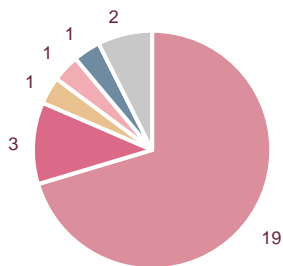


10 | 6 - 87

Age, mo
median | range



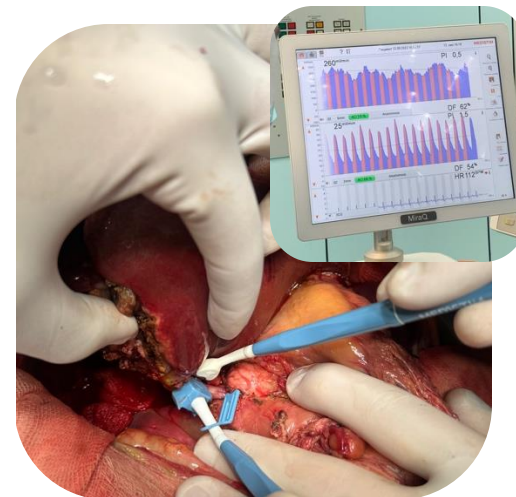
LDLT | 26
(96.3%)



- Biliary Atresia
- Biliary Hypoplasia
- Alagile
- PSC
- CTLN1
- UESLD

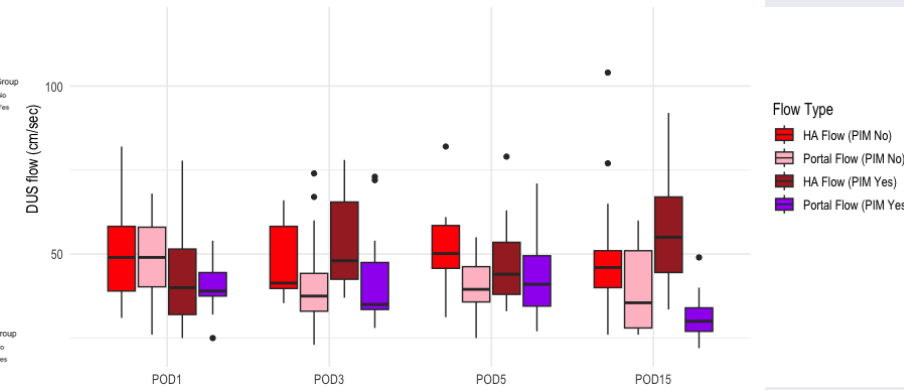
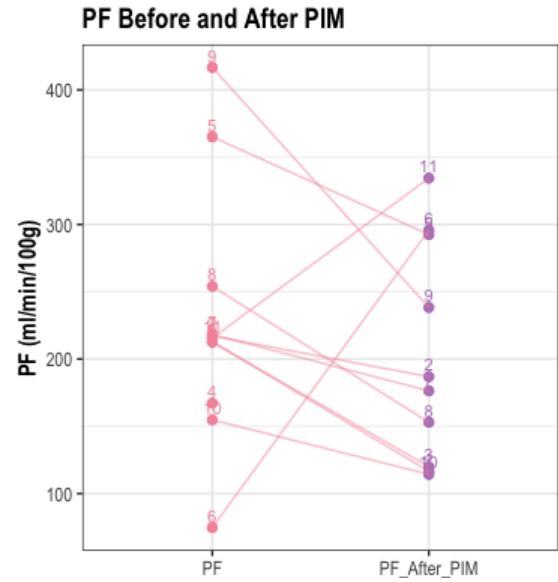
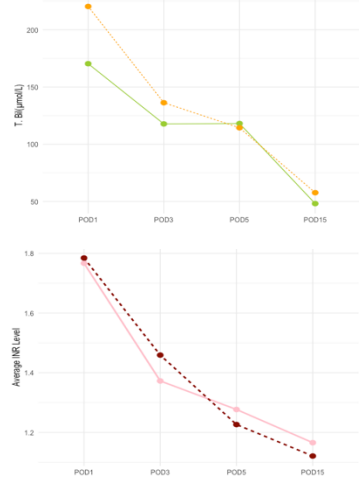
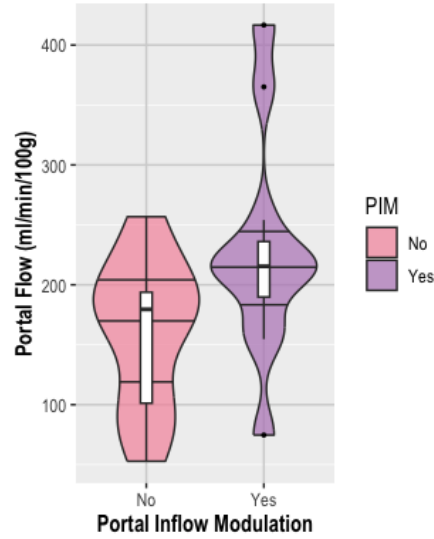
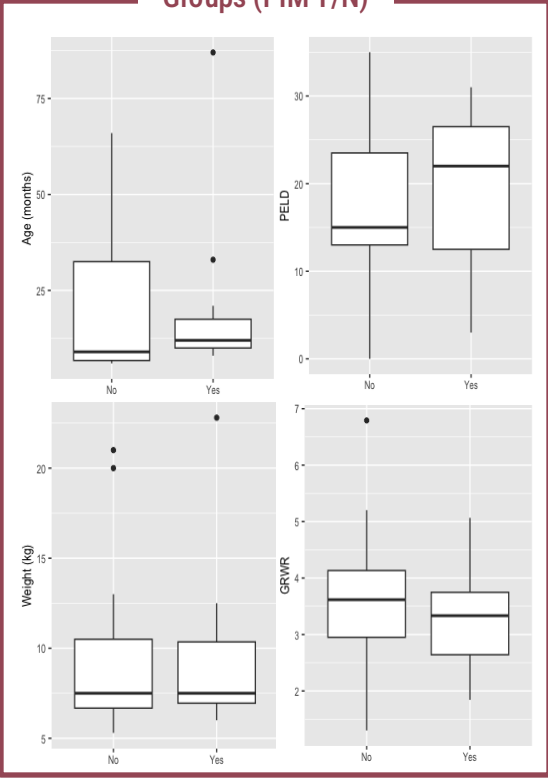
PIM indication:
PF via TTFM > 210 ml/min/100g
PIM Type:
Splenic Artery Ligation (SAL)
OR
Splenuctomy (SE)

Transit Time Flow
Measurement
MEDISTIM MiraQ®



Results

Groups (PIM Y/N)



Conclusion

Critical Role of Portal Perfusion: Portal perfusion is essential for the success of liver transplants in pediatric patients, as improper portal blood flow can lead to complications like graft dysfunction and portal hypertension. This study emphasizes the importance of maintaining optimal portal flow between 90 and 210 ml/min/100g of graft weight.

PIM Techniques: Portal inflow modulation, through techniques such as Splenic Artery Ligation (SAL) or splenectomy (SE), is necessary in cases where portal flow exceeds the safe threshold (210 ml/min/100g). This intervention effectively reduces the risk of graft hyperperfusion, which can otherwise lead to complications such as impairment of arterial graft perfusion.

Intraoperative Monitoring: The study demonstrates the value of intraoperative tools like Transit Time Flow Measurement (TTFM) and Doppler ultrasonography (DUS). These methods provide real-time data on portal and arterial flow, allowing surgeons to make informed decisions about PIM during the procedure, which is crucial for successful outcomes.

Impact of High Portal Flow: Patients with a portal flow greater than 210 ml/min/100g showed significantly lower arterial graft flow, underscoring the importance of monitoring portal inflow to prevent negative outcomes. PIM effectively reduced portal flow from an average of 217 ml/min/100g to 200.3 ml/min/100g, demonstrating its effectiveness.

Need for Further Research: Future studies could focus on the standardization of PIM protocols and the exploration of additional factors that influence portal flow dynamics in this vulnerable patient group.