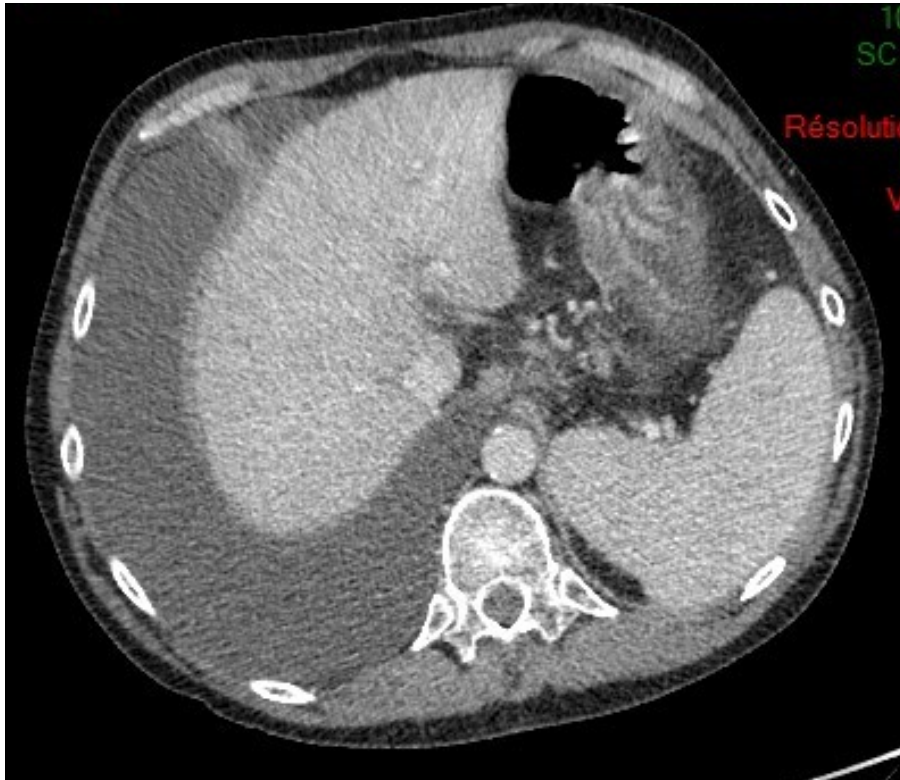


Mr C, 52 year-old

- HCV-related cirrhosis, DAA in 2016, SVR
- No comorbidity, no alcohol consumption, 1.8 m, 92 kg
- January 2017: ascites, diuretics, controlled ascites
- February: overt encephalopathy (Na 125 mM, stop diuretics)
- March 2017: overt encephalopathy (no precipitating event), rifaximin
- April 2017: overt encephalopathy (no precipitating event)

Mr C, 52 year-old

- August 2017
 - Refractory ascites, 10 L/week
 - No SBP



| | |
|------------|-------------------------|
| INR | 1.2 |
| Bilirubin | 34 μ M (2 mg/dL) |
| Creatinine | 100 μ M (1.1 mg/dL) |
| Na | 128 mM |
| Albumin | 22 g/L |

| | |
|-------------|-------------|
| AST | 52 UI/L |
| ALT | 85 UI/L |
| GGT | 180UI/L |
| PAL | 90 UI/L |
| α FP | 5 μ g/L |

How to manage?

Refractory ascites: therapeutic options

| Treatment | Advantages | Disadvantages |
|--------------|---|--|
| Paracentesis | Easy, effective No contra- indication | Frequently repeated bleeding, leakage, strangulation, PICD Palliative |
| TIPS | Effective (75%) Improvement of renal function, nutritional status, QOL | Failure, bleeding, encephalopathy Contra-indication: encephalopathy, liver insufficiency (MELD > 18) Palliative |
| LT | Definitive | Morbidity, mortality |

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M C, 52 year-old

- TIPS: no (3 episodes of encephalopathy, rifaximin)
- Evaluation for Liver Transplantation
 - Patients with refractory ascites should be evaluated for LT (III;1).

Pretransplant evaluation

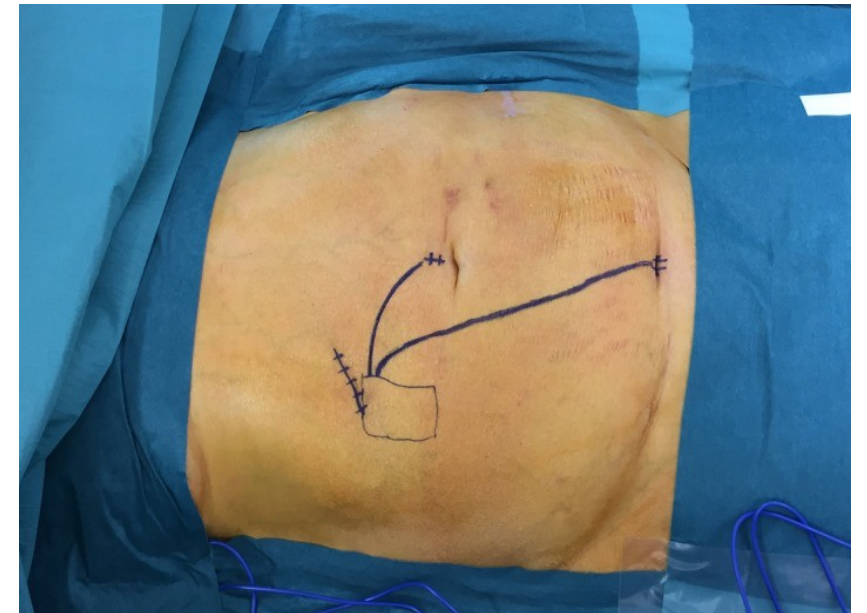
- Imaging: no HCC, no vascular abnormalities
- Cardiopulmonary evaluation
 - Normal lung CT-scan
 - Echocardiography: preserved ejection function, no systolic pulmonary hypertension
- Kidney evaluation
 - Normal urinary sediment, no proteinuria
 - Normal imaging
 - GFR (Iohexol clearance): 57 ml/min/1.73 m²

M C, listed for LT

- Blood group B (predicted waiting time over 1 year)
- Paracentesis /week (10 L)
- Any other option?
 - Alfapump[®] implantation in patients with refractory ascites not amenable to TIPS insertion is suggested in experienced centres. However, close patient monitoring is warranted because of the high risk of adverse events including renal dysfunction and technical difficulties (I;2).

Peritoneovesical pump (Alfapump®)

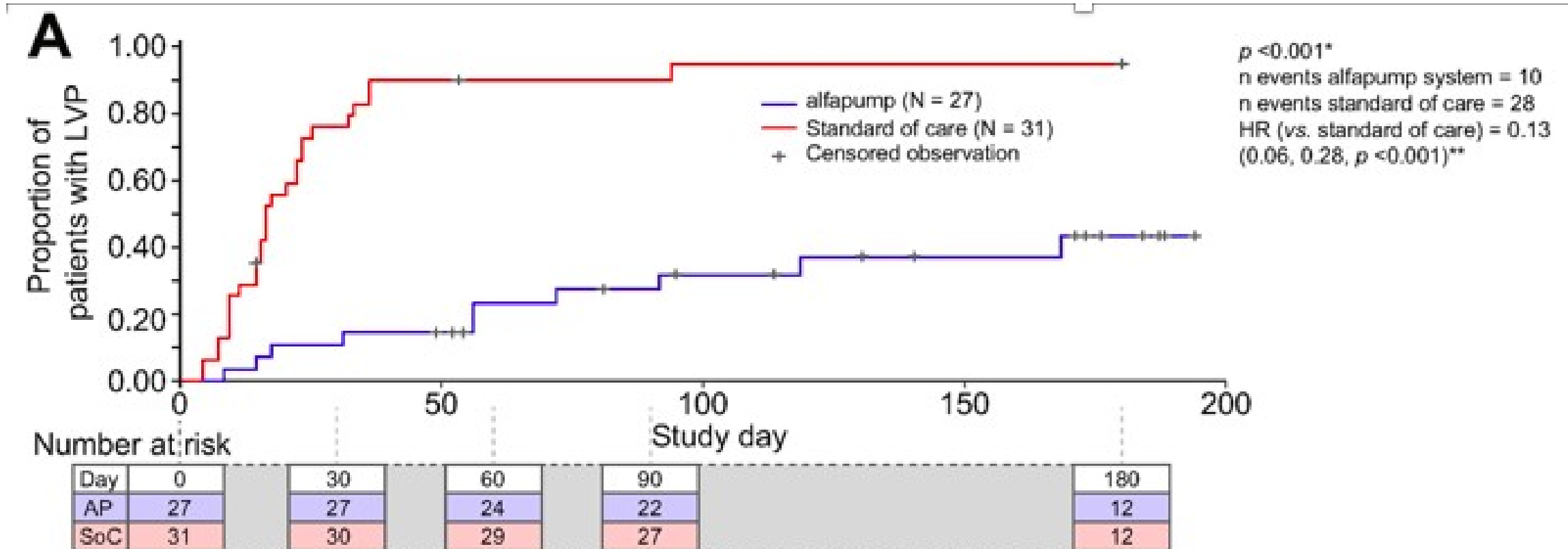
- A peritoneal catheter draining ascites
- A bladder catheter « pushing » ascites into the bladder
- Pump installed subcutaneously in the abdominal wall
- minimally invasive surgery, general anesthesia
- Mobilization of ascites via micturation
- Battery charged « wireless » 10' tid



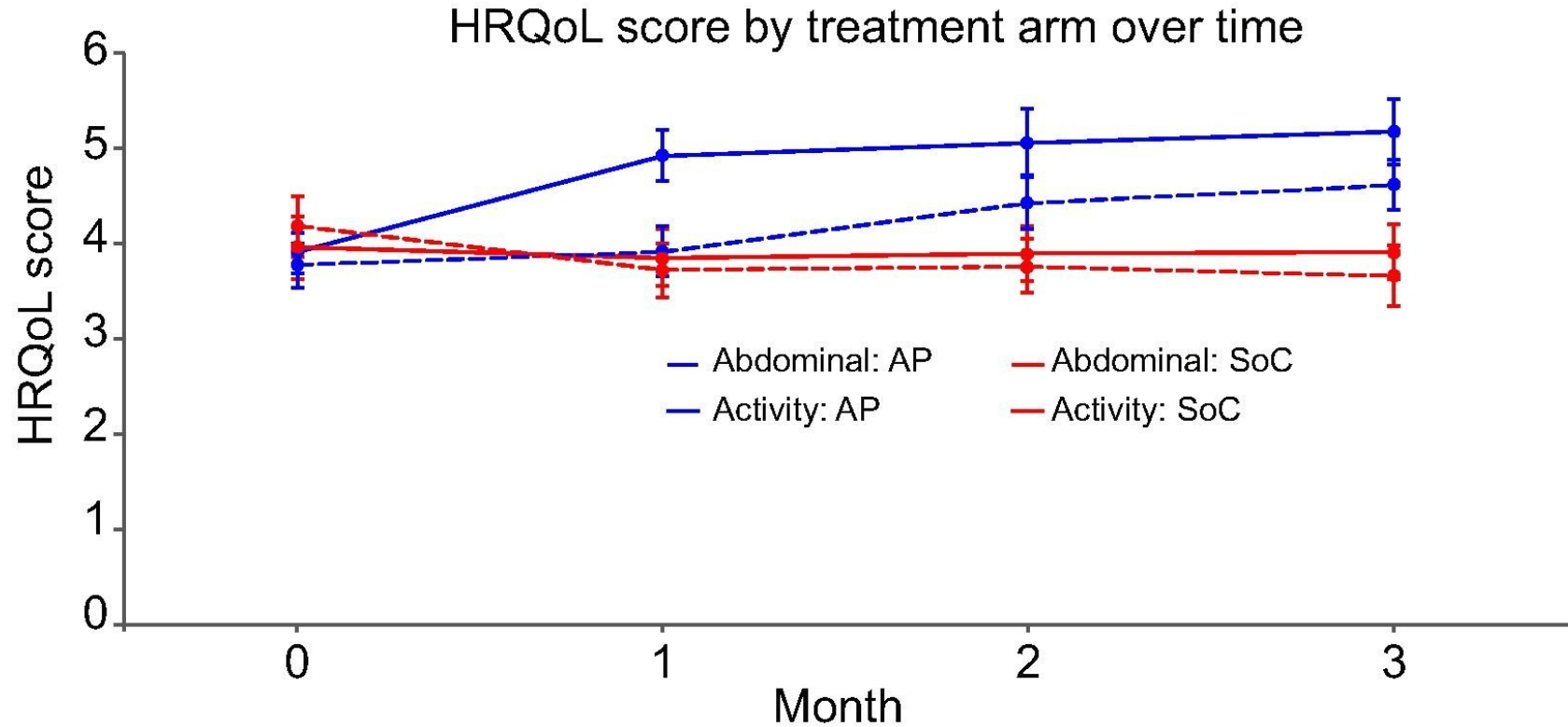
Alfapump vs. Paracentesis (not eligible for TIPS) Randomized Controlled Trial

| | Pump (n=27) | Paracentesis (n=31) | p |
|-------------------------|-------------|---------------------|----|
| Age (years) | 61 | 62 | ns |
| MELD | 12 | 11 | ns |
| Child B/C (%) | 82/11 | 77/16 | ns |
| Alcohol (%) | 74 | 68 | ns |
| Albumin (g/L) | 34 | 31 | ns |
| Prior SBP (%) | 26 | 23 | ns |
| Prior renal failure (%) | 41 | 20 | ns |

Less paracenteses in alfapump group



Better quality of life in alfapump group



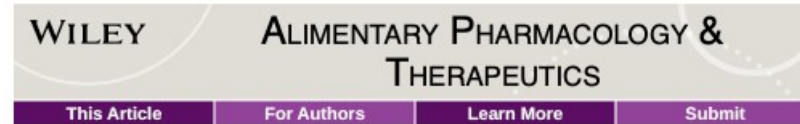
Number of patients completing survey for abdominal and activity

| Month | 0 | 1 | 2 | 3 |
|-------|----|----|----|----|
| AP | 27 | 26 | 22 | 22 |
| SoC | 31 | 29 | 29 | 27 |

Other results

- More adverse events in Alfapump group (early AKI, reversible, similar rate of infections)
- trend to improved nutritional status in the AP group compared with SoC ($p = 0.099$ at Day 30 and $p = 0.090$ at Day 90)

Real life data



Aliment Pharmacol Ther. 2017 Nov; 46(10): 981–991.
Published online 2017 Sep 21. doi: [10.1111/apt.14331](https://doi.org/10.1111/apt.14331)

PMCID: PMC5698811
PMID: [28940225](https://pubmed.ncbi.nlm.nih.gov/28940225/)

Treatment of refractory ascites with an automated low-flow ascites pump in patients with cirrhosis

G. Stirnimann,¹ T. Berg,² L. Spahr,³ S. Zeuzem,⁴ S. McPherson,⁵ F. Lammert,⁶ F. Storni,¹ V. Banz,¹ J. Babatz,⁷ V. Vargas,⁸ A. Geier,⁹ A. Stallmach,¹⁰ C. Engelmann,² C. Trepte,¹¹ J. Capel,¹¹ and A. De Gottardi¹



N=56

Age: 62 yrs

Alcohol cirrhosis 69%

Hx of renal dysfunction 46%

Hx of SBP: 39%

Hx of UTI: 16%

Child B/C: 64%/26%

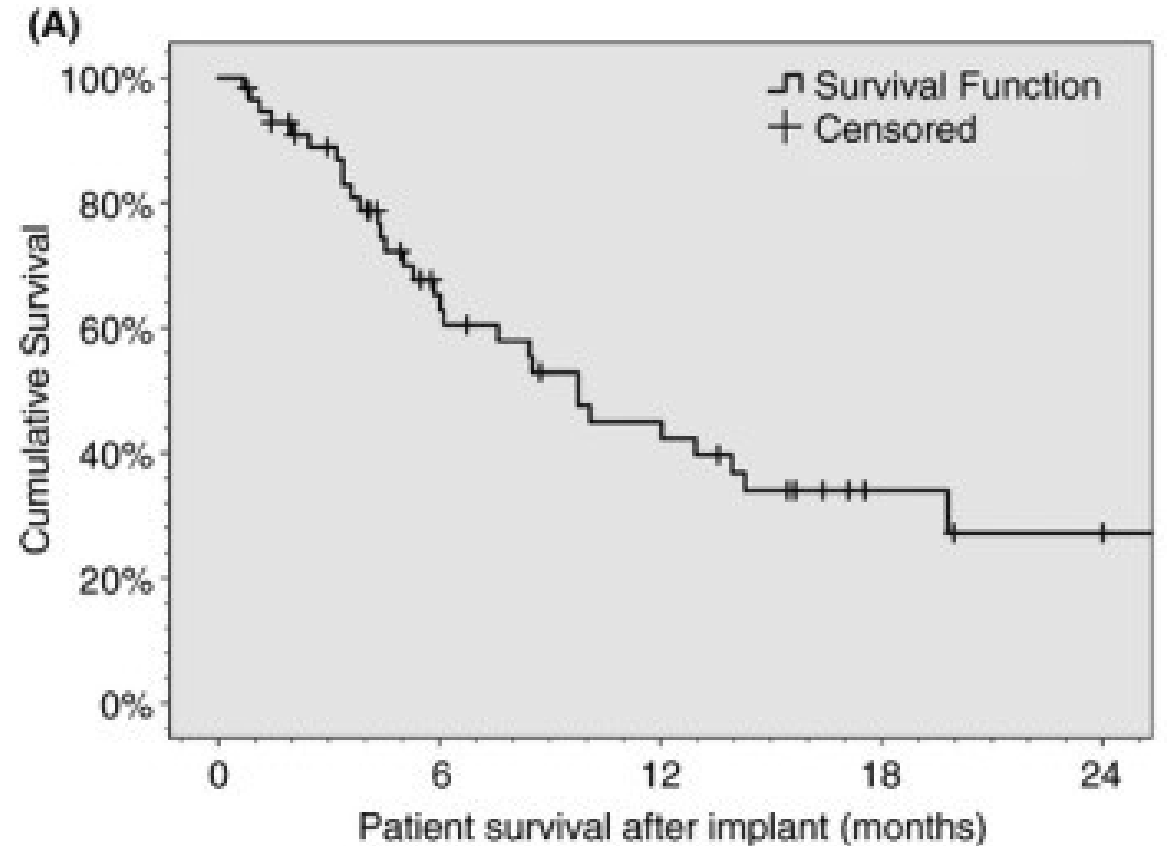
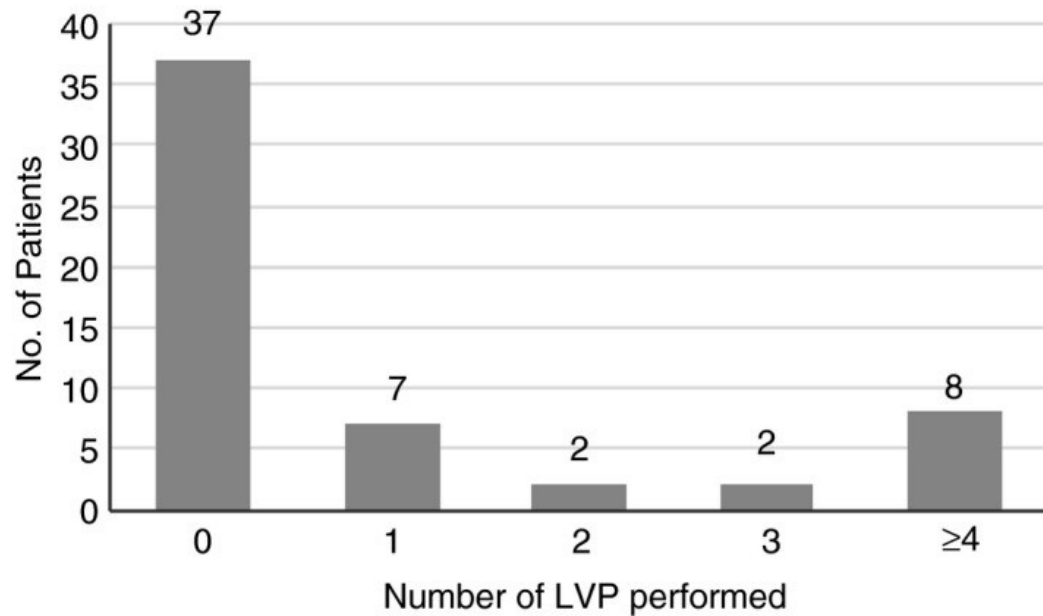
SCr: 111 $\mu\text{mol/L}$

Follow-up 24 months

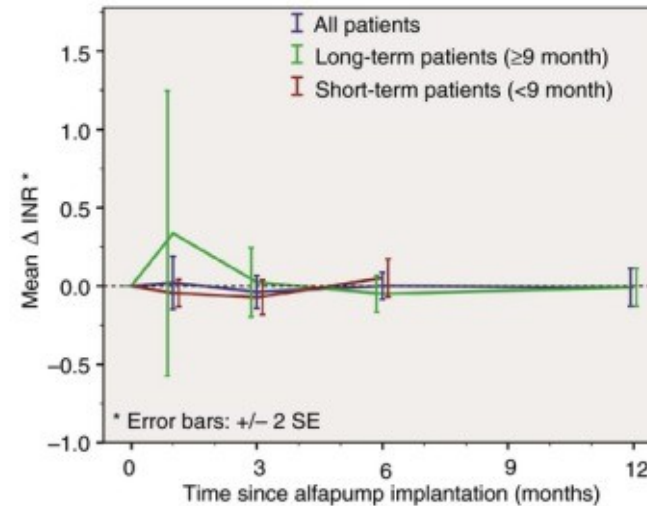
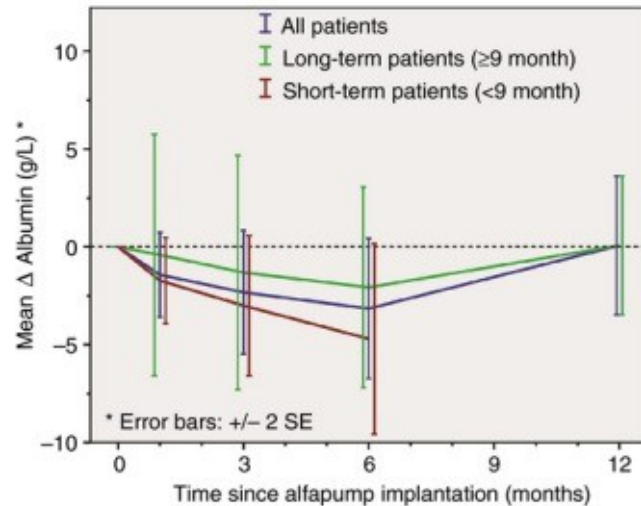
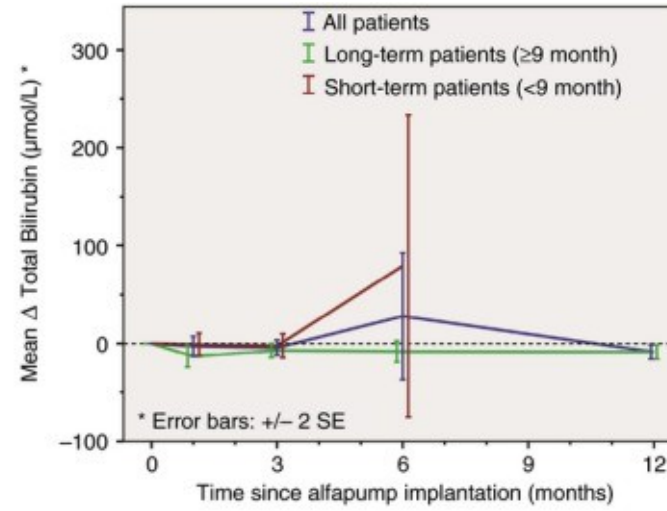
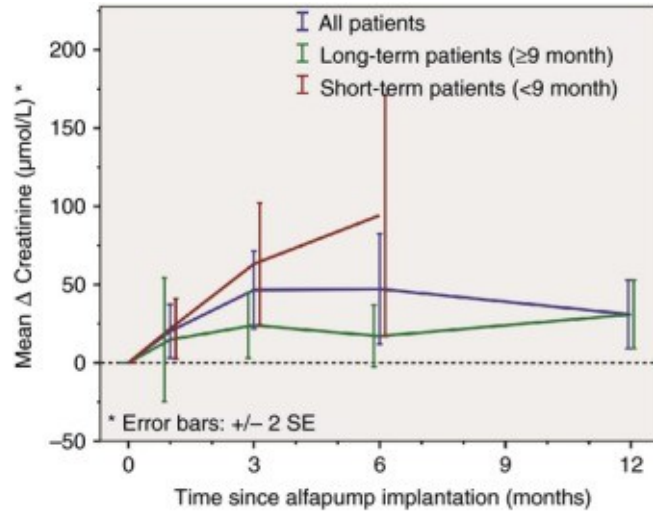
Results

- Volume of ascites drained : 28 L/patient/mo
- Pump explantation: n=27 (technical problems)
- Reintervention: n=13

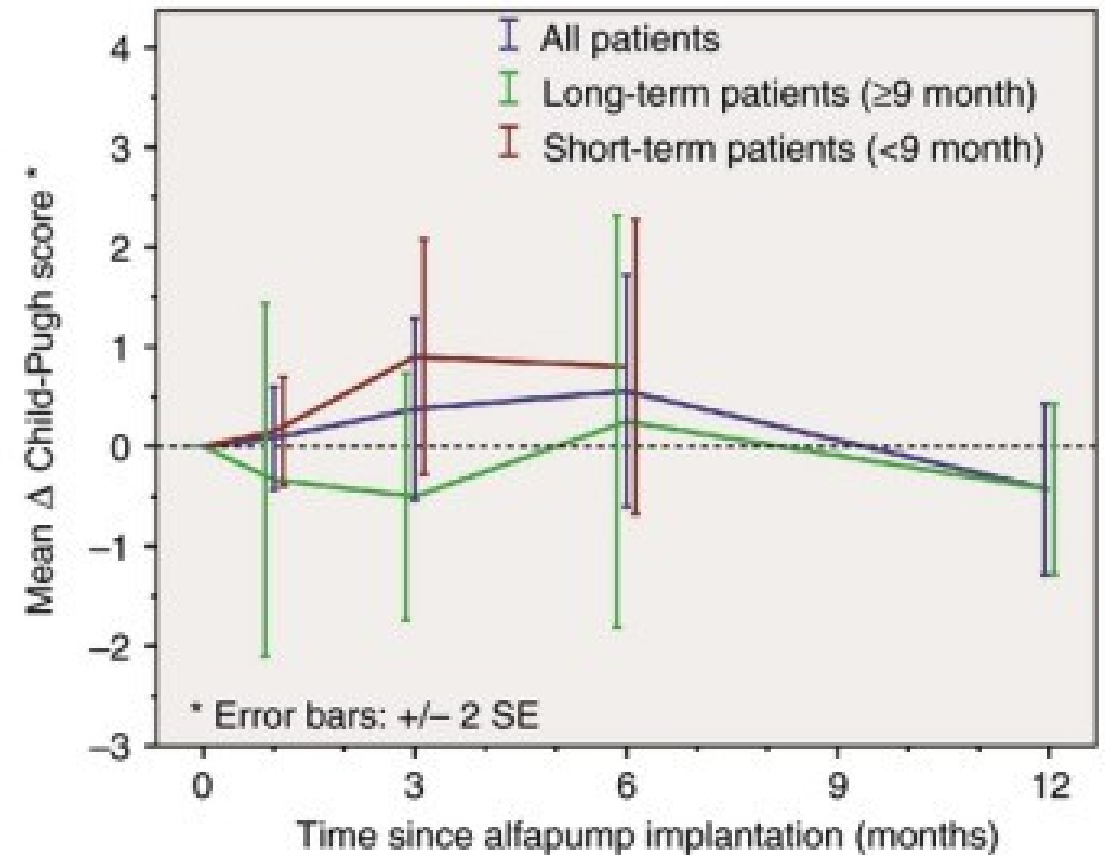
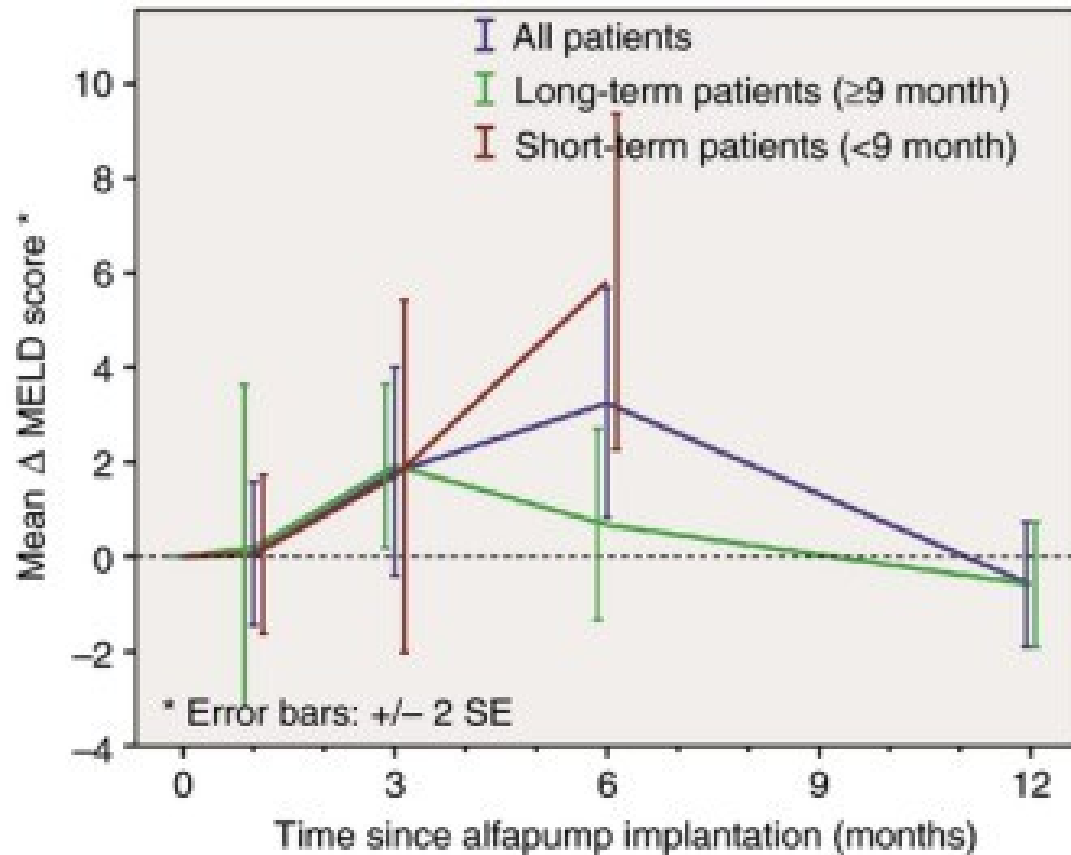
Results: control of ascites, overall survival



Biological tests over time

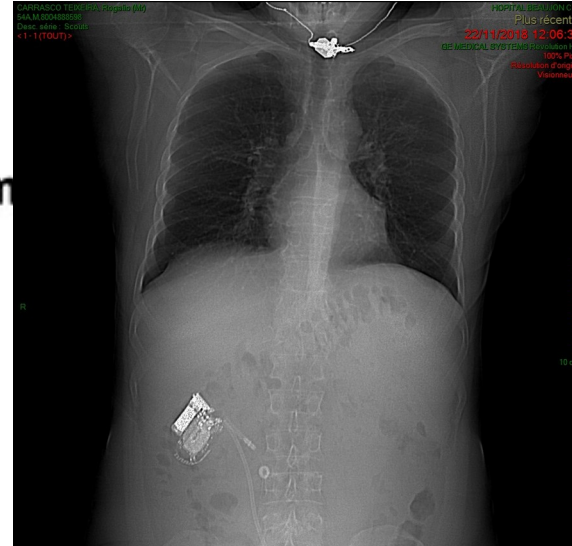


Liver function over time



Mr C

Pump serial no.: **6119**
Days since implant: **160**
Total volume of fluid removed: **149.4 liters**
Average daily volume of the last 7 complete days: **1042.9 m**



- LT on December 2018, pump removed
- No post LT complication

Take Home Messages

- Patients with refractory ascites should be evaluated for liver transplantation
- Alfapump may be proposed on waiting list
 - When TIPS is contra-indicated / ineffective
 - In Child B patients
 - Without urinary tract obstruction
 - In experienced center
- In the future, Alfapump may replace TIPS on waiting list