

## [OS1-83] Factors Associated With Prolonged Postoperative Mechanical Ventilation in Pediatric Liver Transplant Recipients

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**Introduction:** Pediatric liver transplants are one of the most successful solid organ transplantation with greater than 80% long-term survival rates (1). Growing evidence suggests that early extubation following liver transplant may be beneficial (2). However, some children require a prolonged course of mechanical ventilation. In general, prolonged mechanical ventilation (PMV) is associated with higher morbidity and mortality, as well as, considerable hospital charges (3). Despite the dire consequences associated with PMV following liver transplant, the risk factors associated with this complication have not been comprehensively characterized in the pediatric population. Therefore, the objectives of the present investigation were to determine the rate and risk factors for PMV in children who underwent primary liver transplantation at an US tertiary children's hospital. We are not aware of any previous study on PMV among US children undergoing liver transplantation.

**Methods:** This was a single-institution retrospective review of pediatric liver transplant. PMV was defined as postoperative ventilator days > 3 (the 75th percentile for the study subjects). Perioperative characteristics were compared between the PMV and non-PMV groups. All reported p-values were based on two-sided tests.

**Results:** Thirty-nine patients aged 5 months to 17 years who underwent cadaveric liver transplant were included in the analysis. There were 13 (33.3%) infants, 9 (23.1%) preschool and 17 (43.6%) older children. Overall, 12 (30.8%) patients required PMV. There was no significant difference between the groups with regards to age, ASA status and gender. On average, children who required PMV had higher preoperative ALT than the non-PMV group ( $p = 0.02$ ). Duration of surgery was about 78min longer in the PMV compared to the non-PMV group ( $459.0 \pm 73.8$ min vs.  $519.0 \pm 111.5$ min,  $p = 0.01$ ). Furthermore, patients who received intraoperative cryoprecipitate had significantly higher odds of requiring postoperative PMV (OR = 1.2, 95% CI = 1.1 – 1.55;  $p = 0.02$ ). Other types of blood product administration were not significantly associated with PMV in this cohort (Table 1).

**Conclusion:** We present data for the first time which indicates that children undergoing primary liver transplant are at higher risk for postoperative PMV if they have high preoperative serum ALT, require prolonged surgery or administration of cryoprecipitate. Other mechanisms underlying PMV following liver transplant in children deserve further elucidation.

### References

1. Ng V et al. *Pediatrics* 122: e1128-e1135, 2008.
2. O'Meara et al. *Transplantation* 80:959-963, 2005.
3. Stricker K et al *Acta Anaesthesiol Scand.* 47:508, 2003.

Table 1. Patient characteristics stratified according to PMV status

	Prolonged mechanical ventilation		p value
	Yes (N = 12)	No-PMV (N = 27)	
Age (months)	4.9 (3.3)	7.2 (6.1)	0.27
Weight (kg)	20.09 (18.5)	28.45(22.6)	0.28
<i>Preoperative labs</i>			
Sodium (mEq/L)	157.9(38.0)	216.3(93.5)	0.05
Albumin	3.25 (0.6)	3.53 (0.5)	0.17
ALT	481.45 (150.6)	150.62 (140.9)	0.023
AST	217.7(65)	122.7(24.1)	0.06
Alk phos	716.0(403)	565.9(428)	0.32
BUN	10.45(5.4)	11.42(5.4)	
Creatinine	0.41(0.3)	0.42(0.2)	0.91
Surgery time (min)	459.0(73.8)	381.5(97.7)	0.01
Anesthesia time (min)	589.2(99)	519.0(111.6)	0.06
<i>Blood product used (%)</i>			
PRBC	44.4	66.7	0.20
FFP	25.9	50.0	0.09
Cryoprecipitate	16.7	0.0	0.02
Platelets	25.0	11.1	0.26

**Note:** values are mean (SD) unless otherwise stated. Abbreviations: No-PMV = No prolonged mechanical ventilation; PRBC = packed red blood cells; BUN = blood urea nitrogen, FFP = fresh frozen plasma