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VO₂ slope >35 was associated with significantly lower median ICU-free days (23 vs 26.5 days; $p < 0.01$) and a higher odds of postoperative morbidity (OR=5.64, 95% CI=1.75-18.16; $p < 0.01$). Multiple regression analysis showed VE/VO₂ slope >35 is independently associated with lower ICU-free days ($p < 0.01$) and postoperative morbidity ($p = 0.02$) when controlled for age, sex, ethnicity, diagnosis, peak VO₂, cardiac index, PVR, and creatinine. No other factor independently predicted ICU-free days or postoperative mortality.

Conclusion: VE/VO₂ slope >35 is independently associated with lower postoperative morbidity following HTX even after controlling for peak VO₂ and right heart catheter parameters.

(1061)

A Prospective Randomized Trial Comparing Stroke Volume Measurements by Esophageal Doppler and Pulse-Contour Analysis During a Fluid Resuscitation Protocol in Brain-Dead Organ Donors

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Purpose: Maximizing stroke volume (SV) is the optimal method of fluid resuscitation. Both the esophageal doppler (EDM) and pulse contour analysis (PCA) are validated methods of measuring SV in critical patients, but neither have not been well-studied in the brain-dead (BD) donor. We have previously published our fluid resuscitation protocol in BD donors demonstrating a significant reduction in time on vasopressors from 16 hours in the control group to 2.9 hours in the protocol group. We performed a prospective randomized trial comparing the effectiveness of the EDM and PCA in this fluid resuscitation protocol in BD donors.

Methods: Between April 2018 and March 2019, all brain-dead organ donors requiring a vasopressor in our organ recovery center were eligible for the study. The donor was randomized to either the EDM or PCA group, and the SV was measured every 30 minutes for 4 hours. A 500 ml bolus of normal saline (NS) was infused over 30 minutes at the start of the study. If the SV increased by 10%, the NS bolus was repeated. If the SV did not increase by 10%, no fluid was given for 30 min. If the SV then decreased by 10% after receiving no fluid, then the NS bolus was repeated. The vasopressors were weaned every 10 minutes if the MAP was greater than 65 mm Hg. Vasopressin was only used to control polyuria from diabetes insipidus and not for BP support. All donors received 300 mg IV hydrocortisone and no thyroxine.

Results: 64 donors were eligible for the study, and 32 donors were randomly assigned to each group. The baseline characteristics of both groups were well-matched for 23 criteria (expected total organs recovered, 3.00 ± 1.33 vs 3.28 ± 1.41 , $p = 0.41$, using the 2017 SRTR calculator). There was no significant difference between the EDM and PCA in the amount of fluid given over 4 hours (mean 1984 ml ± 875 vs 1891 ml ± 948 , $p = 0.68$), the time on vasopressors (mean 188 min ± 75 vs 165 min ± 89 , $p = .28$), or percent donors off vasopressors in 4 hours (37.5% vs 40.6%, $p = 0.80$). The difference in number of organs recovered per donor between the EDM and PCA was not significant (3.22 ± 1.26 vs 3.56 ± 1.74 , $p = 0.34$).

Conclusion: The EDM and the PCA were equally effective in measuring the SV in the BD donor during fluid resuscitation and demonstrated clinical equipoise in weaning vasopressors, volume of fluid infused, and organs transplanted.

(1062)

Volume Replacement Strategy with Albumin 5% and Bedside Coagulopathy Management Improves Cardiopulmonary Stability by Decreasing Norepinephrine Dosage and by Increasing P/F Ratio in Patients Undergoing Lung Transplantation (Preliminary Results)

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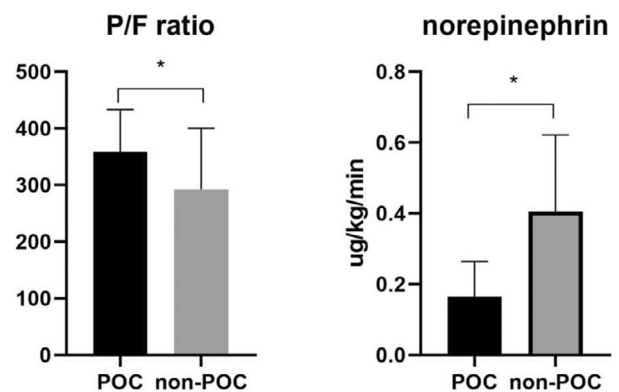
Purpose: Lung transplantation is a very demanding procedure often accompanied by circulatory instability, bleeding, and postoperative development of primary graft dysfunction. Circulatory instability is treated with a combination of fluid and vasopressor support. 5% Albumin appears to be

a very promising volume replacement. The use of bedside methods such as thromboelastometry (ROTEM), platelet function analyzer (PFA 200), and aggregometer (Multiplate) seems very promising to correct coagulopathy and reduce bleeding symptoms during lung transplantation.

Methods: Patients undergoing lung transplantation were divided into two groups. 1. POC (Point Of Care) group - 5% albumin was used almost exclusively as a volume replacement, and bedside methods (ROTEM, PFA, Multiplate) were used to correct coagulopathy. 2. nonPOC group - volume replacement and correction of coagulopathy were solved according to the clinical experience of the anesthesiologist.

Results: The total number of analyzed patients is 46. In the POC group, there was a significant decrease in vasopressor support of noradrenaline ($p < 0.05$) and a significant improvement in the P/F ratio ($p < 0.05$). The results are shown in Figures I. and II.

Conclusion: The perioperative approach using 5% albumin volume replacement in combination with bedside methods for diagnosis and correction of coagulopathy contributes to improved circulatory stability (the lower dose of noradrenaline) and also helps to improve lung graft function (better P / F ratio) during and after lung transplantation. The current preliminary results seem to be promising in this area and we will continue in this study in the future.



(1063)

Mesenchymal Stem Cell Therapy for Patients with Post COVID ARDS on ECMO Referred for Lung Transplantation - Single Center Experience from India

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Purpose: India experienced a devastating second wave of the covid 19 pandemic triggered by the delta variant, which peaked in end of April and early May 2021 with average daily new cases hitting 300,000 to 400,000 and daily death toll reaching 3000 to 3500. ECMO emerged as an option for severe post covid ARDS and was offered in many centers across India for patients who were worsening despite full ventilatory support and prone positioning. A small minority of these patients who showed no improvement despite several weeks on ECMO were referred for lung transplantation to our center. Out of the 63 ECMO pts we received for Lung Transplantation 5 patients received Mesenchymal Stem Cell (MSC) infusion over and above standard treatment after getting necessary clearance from hospital Ethics committee and consent from patients' family

Methods: We conducted a case control study on critically ill post covid ARDS patients on ECMO referred for lung transplantation to our center. 5 patients received 2 million umbilical cord derived MSCs/kgwt infused over 30 minutes, for 3 doses on days 0, 3 and 6 and was compared to other local ECMO patients (control group; n=58). The primary outcome was safety and secondary outcome was all cause mortality.

Results: All 5 patients tolerated MSC infusions well with no side effects observed. Out of the 5 patients who received MSC infusions 3 pts (60%)

recovered and were weaned off ECMO successfully. 1 pt (20%) did not improve and expired, 1 pt (20%) did not recover and underwent successful lung transplantation and was discharged home. In the ECMO control group, 15 patients (26%) recovered without transplant, 23 pts (40%) underwent successful lung transplantation and 20 pts (34%) expired.

Conclusion: MSC IV infusion is safe and well tolerated without side effects in covid ARDS pts on ECMO. The efficacy of MSC in repairing the covid destroyed lung should be further evaluated in large randomised controlled studies.

(1064)

Incidence, Outcomes and Predictors of Early Postoperative Vasoplegia in Lung Transplantation: Experience from a 6-Year Period

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Purpose: Postoperative complications contribute to graft dysfunction, non-pulmonary morbidity, increased mortality and a ripple effect on long-term outcomes. We hypothesized vasoplegia plays a central role in postoperative adverse events and development of multiple organ dysfunction.

Methods: Perioperative data of 279 lung transplant (LTx) recipients operated between 2015-2020 was retrospectively curated by our institutional Informatics Team using a Clinical Data Warehouse. Vasoplegia was defined according to Tsiouris et al., and acute kidney injury (AKI) to KDIGO criteria.

Results: Vasoplegia affected 116 (41.6%) patients with 36 (31.0%) having mild, 64 (55.2%) moderate, and 16 (13.8%) severe vasoplegia. Vasoplegia was associated with higher incidence of any AKI (78.5% vs 65%, p 0.015) and vasoplegic patients were more likely to develop AKI stage III (52.6%) when compared to AKI stage I (16.4%, p 0.036) or no AKI (21.5%, p < 0.001). The need for renal replacement therapy doubled (47.4% vs 24.5%, p < 0.001) in the vasoplegic group. Vasoplegic patients had higher incidence of delayed chest closure (18.4% vs 9.2%, p 0.025), needed longer ventilation duration (70 [32-368] vs 34 [19-105] hours, p < 0.001) and increased ICU length of stay (12.9 [5-30] vs 6.8 [3-20] days, p < 0.001). Their 30-day mortality was 11.2% compared to 5.5% in patients with no vasoplegia (p 0.082). One-year mortality was also increased (20.7% vs 11.7%, p 0.039) and severe vasoplegia represented a hazard (HR 2.60, 95% CI 1.14-5.94, p 0.023) for long-term survival (p 0.037). Vasoplegic patients showed increased inflammatory markers at 72 hours, including white blood cells (p 0.037), neutrophils (p 0.042) and C-reactive protein (CRP, p 0.010). Multivariate regression analysis identified preoperative bilirubin as a predictor of vasoplegia (p 0.008). Underlying infectious lung disease (p 0.041), preoperative pulmonary artery systolic pressure (p 0.036), pre-LTx glomerular filtration rate (p 0.035) and CRP (p 0.040) were identified as predictors of vasoplegia severity. **Conclusion:** Vasoplegia is a common and critical condition after LTx in its entire spectrum. It has a tremendous impact on perioperative and longer-term clinical outcomes. Preoperative status as well as procedural factors and inflammatory response are major determinants of vasoplegia.

(1065)

Evaluation of Diaphragmatic Function After Lung Transplantation (DIATRIBE)

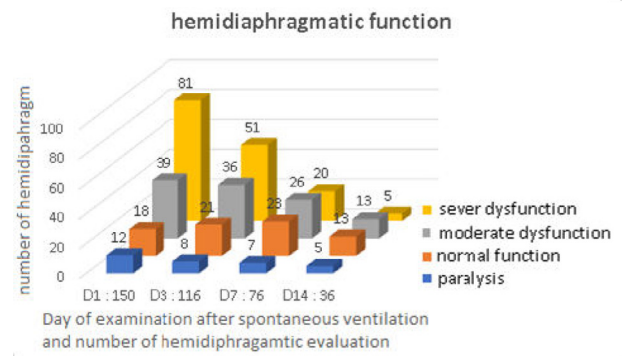
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Purpose: Diaphragmatic function may be altered after lung transplant. Use of ultrasound examination may allow to easily studied the diaphragmatic dysfunction. The aim of this study was to investigate the incidence of diaphragmatic dysfunction and its course during the ICU stay.

Methods: Patients who were admitted in cardiothoracic intensive care unit after lung transplant between January 2019 and January 2021 were prospectively evaluated by ultrasound at the first day of spontaneous ventilation under pressure support (day (D) 1). Ultrasound measurements including diaphragmatic excursion (Ex) and diaphragmatic thickening fraction (DTF) were measured during a forced inspiration on each hemidiaphragm and repeated at D3, D7 and D14. Hemidiaphragm function was classified into four different stages. Normal function: Ex \geq 25 mm and DTF \geq 40%, moderate dysfunction: Ex $<$ 25 mm or DTF $<$ 40%, severe dysfunction: Ex $<$ 25mm and DTF $<$ 40%, or paralysis Ex \leq 0 and DTF \leq 0. Patients were then classified into two groups: global normal diaphragmatic function defined by at least one hemidiaphragm with normal function and global diaphragmatic dysfunction.

Results: 75 patients were included in our study for a total of 189 diaphragmatic ultrasounds performed. Evaluations at D1 were realized after 3 days (1-6) of mechanical ventilation. Incidence of dysfunction and recovery of each hemidiaphragm during ICU stay were presented in figure. At D1, 14 patients (19%) had normal global diaphragmatic function and 61 (81%) had global dysfunction. 56% of dysfunction recovered 7 days after initial evaluation. Factors associated with the presence of dysfunction in univariate analysis were duration of surgery (p =0.03), intraoperative transfusion (p =0.02) and the presence of a chest tube (p <0.001).

Conclusion: Diaphragmatic dysfunction, evaluated by ultrasound is a very frequent complication after lung transplant. Diaphragmatic dysfunction improves during the first week of spontaneous ventilation.



(1066)

The Effects of Early Postoperative Nutrition Support on Enhanced Recovery After Lung Transplantation

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Purpose: There is currently no established guideline for nutritional management after lung transplantation (LT). Therefore, we have developed and introduced a protocol on early post-transplant nutrition, and verified the effectiveness of the protocol in improving nutrition-related outcomes.

Methods: Among 50 consecutive patients \geq 18 years undergoing LT (7 from living donors) from January 2019 to April 2021 in our institution, the protocol had been applied in 22 patients since March 2020. The goal of our protocol was to start enteral nutrition or central parenteral nutrition