ISHLT JOURNAL WATCH

Siavosh Saatee, MD
Northwestern University, Feinberg School of Medicine, USA

Ashley V Fritz, DO
EDITOR
ISHLT.ORG

Incidence, risk factors, and sequelae of dysphagia mediated aspiration following lung transplantation

Dallal-York, Justine et al. | *J Heart Lung Transplant* Aug 2022;41(8):1095-1103. | doi:10.1016/j.healun.2022.05.001

STUDY HIGHLIGHTS

Objective: Evaluation of dysphagia profiles before and after lung transplantation and to examine predictors and health-related outcomes of aspiration in individuals undergoing lung transplantation.

Methods: This is a Single-center retrospective study of postoperative videofluoroscopic swallowing study between 2017 and 2020 in lung transplanted patients. The validated penetration aspiration scale indexed swallowing safety and clinical outcomes were extracted from electronic medical records.

Results: Of those who underwent both a pre- and postoperative swallowing exam (n = 170), preoperatively 83% demonstrated safe swallowing and 17% unsafe swallowing. Following lung transplantation, 16% demonstrated safe swallowing and 84% demonstrated unsafe swallowing (39% penetration, 45% aspiration). Independent predictors of postoperative aspiration were V-V ECMO and reintubation ($p < .05$). Compared to non-aspirators, aspirators demonstrated higher odds of being discharged to a dependent care setting, ($p < .05$). Aspirators spent significantly longer NPO ($p < .001$).

Conclusions: Pre-existing dysphagia was low in this cohort of patients undergoing lung transplantation, however increased approximately 5-fold following lung transplantation and was associated with increased morbidity.

CENTRAL FIGURE

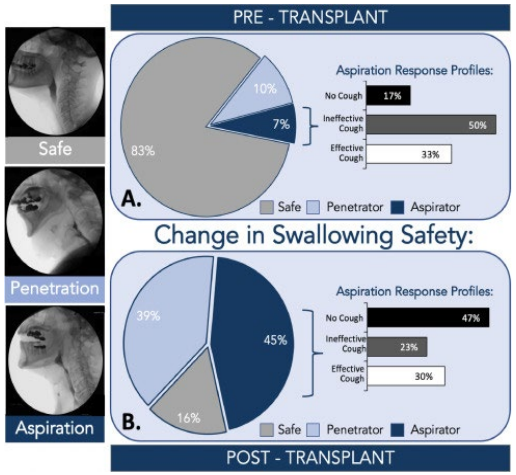

Figure 2. Comparison of swallowing safety profiles before (A) and after (B) lung transplantation in the 170 patients who underwent radiographic procedures at both times points. Representative examples of each safety classification are provided.

REVIEWER'S COMMENTS

- Dysphagia and aspiration are one of the challenging aspects of post lung transplantation care with potential impacts on post op morbidity and CLAD.
- 5-fold increase in unsafe swallowing post operatively, highlights the impact of surgery as a significant contributing factor, specially in ECLS bridged candidates.
- Development of postoperative aspiration was associated with adverse outcomes, such as longer NPO and dependent care at discharge.
- Future studies should focus on developing nerve preservation techniques, and minimizing the peripheral nerve compression injuries (smaller endobronchial tube size and reintubation attempts)

LIMITATIONS

- The limitations of this study include its retrospective and single-center design
- High incidence of post operative dysphagia and aspiration may be center specific and therefore future studies are needed to validate this finding.
- Post operative swallow study has been performed once. It is difficult to attribute the frequency of re intubation as a cause but rather a manifestation of aspiration itself. Routine swallow study, immediately after each extubation can document the chronological phase of developing dysphagia/aspiration.

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Sachin Mehta, MD
Duke University Medical Center, Durham NC, USA

Ashley V Fritz, DO
EDITOR
ISHLT.ORG

Hemodynamic and Clinical Performance of Hearts Donated after Circulatory Death

D. D'Alessandro *et al.* | *J American College of Cardiology* Oct 2022 | https://www.jacc.org/doi/10.1016/j.jacc.2022.07.024

STUDY HIGHLIGHTS

Objective: Heart transplantation remains gold standard for end-stage heart failure. Organ demand still outpaces organ supply. Utilization of hearts donated after circulatory death (DCD) has potential to expand number of available donor hearts by 30%. This study described hemodynamic and clinical profiles of DCD hearts in comparison to standard of care hearts (SOC) donated after breath death (DBD).

Methods: Single-center retrospective cohort study compared DCD and DBD heart transplant recipients by right heart catheterization measurements, inotrope scores, echocardiograms, and clinical outcomes.

Results: 47 DCD and 166 SOC hearts transplanted between April 2016 and February 2022. Median time to transplant for DCD hearts shorter (17 days) compared to SOC hearts (70 days). Right heart function notably impaired in DCD compared to SOC recipients 1-week post-transplant, but similar between groups by 3 weeks post-transplant. Mortality similar at both 30 days and 1-year post-transplant.

Conclusion: DCD heart transplantation associated with less waiting time, transient RV dysfunction that improves by week 3, and similar mortality to DBD recipients.

CENTRAL FIGURE

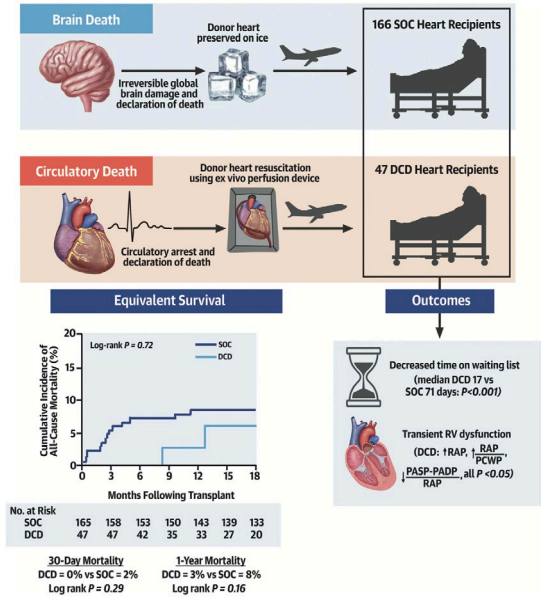

Figure 1: 47 DCD heart transplant recipients were analyzed and compared to 166 standard of care recipients. DCD recipients spend less time on the wait list, demonstrate transient RV dysfunction, and have equivalent survival compared to SOC recipients.

REVIEWER'S COMMENTS

- DCD transplantation using the Transmedics Organ Care System appears safe and effective compared with current DBD system.
- Rates of severe primary graft dysfunction appear higher in DCD recipients, however this incidence declined over time suggesting better perioperative management and clinical judgement can improve this outcome.
- While time from consent to transplant was much lower in DCD recipients compared to DBD recipients, as this field grows, the waiting times will likely increase.

LIMITATIONS

- Limited generalizability given its single-center retrospective design as well as small sample size of DCD transplants.
- Right heart dysfunction only characterized by single right heart catheterization values performed weekly instead of continuous hemodynamic variables present through a Swan-Ganz catheter.
- Power of study is limited, and statistical tests for the subgroup analyses can only be used for descriptive purposes.

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Rebecca Klingbeil, DNP, CRNA
Mayo Clinic, Jacksonville, FL USA

Ashley V Fritz, DO
EDITOR
ISHLT.ORG

Effect of Propofol versus Sevoflurane Anesthesia on Acute Kidney Injury after Lung Transplantation Surgery: A Prospective Randomized Controlled Trial

Y. Song et al. | *Journal of Clinical Medicine* Nov 2022 | https://doi.org/10.3390/jcm11226862

STUDY HIGHLIGHTS

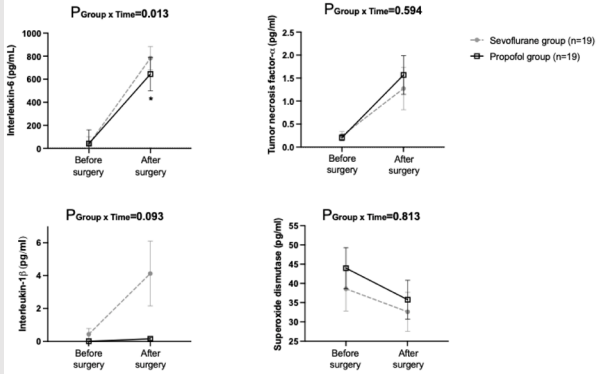
Objective: To compare the effects of sevoflurane versus propofol anesthesia on the occurrence of acute kidney injury (AKI) following lung transplant (Ltx) surgery

Methods: In this single center, prospective, randomized controlled trial, authors sought to compare the effects of sevoflurane and propofol anesthesia on AKI following lung transplant surgery. Between 2014 and 2016, 59 adults were randomized to either maintenance of general anesthesia with sevoflurane or continuous propofol infusion. The primary outcome assessed was acute kidney injury and by the assessment of blood biomarkers of AKI. The blood biomarkers assessed were serum interleukin (IL)-1β, IL-6, tumor necrosis factor-α, and superoxide dismutase, neutrophil gelatinase-associated lipocalin (NGAL) and cystatin C levels.

Results: 11 patients (38%) had an incidence of post-operative AKI according to the AKIN criteria in the sevoflurane group compared with 4 patients (13%) in the propofol group (p = 0.030). Additionally, authors reported the NGAL levels were significantly lower in the propofol group immediately, and 24 and 48 hours after surgery as compared to the sevoflurane group. Notably, no patients in the propofol group developed stage II or III AKI, compared with four patients in the sevoflurane group. The authors reported no statistically significant differences in post-operative morbidity, hospital length of stay, incidence of primary graft dysfunction (PGD) grade 3, or mortality at 1, 3, and 5 years.

Conclusion: Total intravenous anesthesia with propofol for Ltx surgery reduced AKI incidence, compared with that attained with sevoflurane anesthesia.

CENTRAL FIGURE



PGroup x Time = p-value of the group and time interaction obtained by the linear mixed model

Blood serum inflammatory cytokines and antioxidant enzymes IL-1β, IL-6, (TNF)-α, and superoxide dismutase (SOD) were assessed in 19 patients from each group immediately before and after surgery. Serum IL-6 levels significantly lower (p=0.013) in propofol group immediately post-surgery.

REVIEWER'S COMMENTS

- The organ protective effects of both anesthetic agents are well established.
- This is the 1st study to investigate if either anesthetic method is superior in reducing the incidence of (AKI) for primary lung transplantation.
- The authors note the differing mechanism of action (MoA) in ischemia reperfusion injury in liver versus lung tx (macrophage activation during IVC clamping vs explosive cytokine-regulated inflammatory reaction, respectively), as a possible explanation of conflicting results in the literature. Lower blood IL-6 levels in the propofol group indicated propofol's stronger anti-inflammatory properties.
- Propofol anesthesia did not demonstrate improved survival rates in this study.

LIMITATIONS

- This study was a single-center design with a relatively small sample size
- Although both anesthetic agents were dosed within clinically relevant ranges, it is not known if higher Sevoflurane would produce different results
- Midazolam was used as an induction agent only in Sevoflurane group and could be a confounder
- Several confounding variables may influence the protective efficacies of anesthetic agents