Results: In total, 10,375 patients were identified (COPD, n=6,113; IFP, n=4,262). Bilateral transplantation was more common in IFP (52% vs. 47%, p<0.001), and these lungs tended to be smaller (pTLC ratio 1.05 vs. 1.17, p<0.001). Within the COPD group, 1.0% of lungs were under-sized, and 29.5% were over-sized, compared to 3.1% and 10.6% in IFP, respectively. Both groups exhibited increased survival with bilateral transplantation (p<0.001), but sizing had no effect on survival (p>0.199). The incidence of BOS (COPD, 12.2%; IFP 8.3%) and median time to BOS-related death (COPD 1,050; IFP 1,346 days) were independent of size mismatch. Subset analysis of oversized double lung transplant in IFP and undersized single lung transplant in COPD also showed no effect on overall or BOS-related mortality. Analyses using height for evaluating size mismatch yielded similar results.

Conclusions: In this study, significant donor-reipient size mismatch did not result in poorer overall or BOS-related mortality. These results suggest that acceptable outcomes can be achieved even in the setting of significant size mismatch, affording considerable flexibility in donor selection and increasing organ utilization.

The Importance of Repeated Measurements To Assess Transplant Suitability in Clinical Ex Vivo Lung Perfusion (EVLP)

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Purpose: Normothermic acellular EVLP is a safe and feasible option to evaluate and recondition marginal donor lungs. A ΔPo2 of 350 mmHg between venous and arterial solution is used as a cutoff value for acceptability. The validity of oxygenation values obtained in an acellular perfusion solution remain however unclear.

Methods and Materials: An analysis of our prospective clinical EVLP database since 3/2010 was performed to compare oxygenation values during clinical EVLP to values obtained in the brain dead donor as well as differences in functional parameters between accepted and rejected lungs assessed during EVLP.

Results: From 3/2010-10/2012 20 EVLPs were performed (15 lungs transplanted, 5 rejected). The first pO2 (FiO2=1.0) in the venous solution was significantly higher in both, accepted lungs (median: 429 mmHg, range 258-523) and rejected lungs (median: 471 mmHg, range 304-474) compared to the respective last donor blood gases (median accepted 215 mmHg, range 133-330, p<0.001; median rejected 240mmHg, range 216-271, p<0.01). During EVLP pO2 as well as its deviation from the first recorded value were significantly higher in accepted lung compared to rejected lungs (median 440.8 vs. 355.7 p=0.009; +27.3 vs. -33.5 p=0.042). This was also observed for ΔPo2 (353.9 mmHg vs. 272.3 mmHg, p=0.045; +79.97 vs. -55.71 p=0.011). Additionally peak AWP and its increase during EVLP were significantly higher in rejected lungs (median: 12.5 vs. 14 cmH2O p<0.001; +0.3 vs. -1.0 cmH2O p=0.008). Lung compliance was significantly better and increased significantly in accepted lungs (median 81.1 vs. 72.1, p=0.015; +11 vs. -3.18; p=0.001).

Conclusions: Oxygenation values obtained during EVLP are not directly comparable to donor values. pO2, AWP, compliance as well as AWP showed a significantly different development in accepted lungs compared to rejected lungs. These findings underline that the decision for transplant suitability during EVLP should not be based on a single assessment but the trend in all functional parameter should be taken into account.

Patients Expectations and Experiences of Rehabilitation after Lung Transplantation

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Purpose: Exercise rehabilitation is commonly undertaken before & after lung transplant, but little is known about the patient experience of this treatment. This qualitative study explored patients expectations & attitudes to a supervised exercise rehabilitation program following lung transplant.

Methods and Materials: Patients undertook 2 semi-structured interviews, one before commencement of rehabilitation & one at the conclusion of rehabilitation. Interviews were digitally recorded & line iterative thematic analysis of the transcribed interviews was completed. Open coding followed by axial coding was used to develop major themes & subthemes based on grounded theory. Quotations were extracted from the transcripts to support the data for each theme.

Results: 18 adults(7 males)with median age of 52 took part in an outpatient exercise program (average attendance of 26 sessions). Four major themes were common to both pre & post rehabilitation: 1) hopes of returning to normal life, including resuming family roles, performing everyday activities & return to leisure or sporting activities; 2) importance of rehabilitation as the mechanism for how this transformation occurred; 3) the benefits of exercising in a group & 4)
the limitations of rehabilitation that were imposed by co-morbidities either existing pretransplant or occurring as a postoperative sequelae. A minor theme before rehabilitation was taking responsibility for regaining fitness, whereas the post rehabilitation minor themes were attainment of goals & a changed perspective on exercise.

Conclusions: Post transplant exercise rehabilitation was perceived as a highly valuable tool that assisted patients to attain their goals of returning to normal life. Group exercise was motivational, offered peer support & was advantageous to assist patients to achieve their desired physical performance level.

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Preliminary Results: Both High and Low Literacy Lung Transplant Patients Have Difficulty Adhering to and Interpreting Home Spirometry


Purpose: Given the complexity of the lung transplant (LT) medical regimen, health literacy (HL) may significantly impact post-transplant outcomes. We present preliminary results regarding the ability of LT patients to understand and adhere with the medical regimen after LT.

Methods and Materials: We performed a mixed-methods study of LT patients. Subjects completed structured assessments and were sampled for qualitative interviews based on level of HL (Test of Functional HL in Adults) and self-reported medical adherence (Health Habits Assessment). Qualitative interviews included open-ended questions regarding facilitators and barriers to adherence.

Results: A total of 73 patients have been enrolled (response rate: 67%). Median (IQR) age was 61 (46, 68). Most participants were female (50%) and white (88%). Prevalence (95% CI) of low HL was 23% (14, 35). Patients with low and adequate HL reported not understanding the purpose of home spirometry (89% vs. 76%, ns) and not adhering to home spirometry monitoring (55% vs. 35%, ns) respectively. Both low and adequate HL subjects reported difficulty interpreting home spirometry values and few knew to call their coordinator with a 10% FEV1 drop. For example, when asked, “How do you decide when to call the nurse coordinator about your spirometer measurements?” a low HL subject responded: “I didn’t really realize that this spirometer would be telling you about the possibility of rejecting.” A subject with adequate HL said, “I think if it’s below, what is it...4? You’re in a range...and if you go too high or too low you call. I think my range was 4 to 5.”

Conclusions: More than 20% of LT patients had low HL. Both low and adequate HL patients had difficulty performing and understanding their home spirometry measurement. The results of this study demonstrate that better education regarding spirometry may be an important intervention to improve outcomes for all LT patients. We are currently underpowered to detect a difference between HL groups but continue to enroll patients in this study.

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Neurodevelopment Outcomes Following Heart Transplant

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Purpose: Neurodevelopmental (ND) delay is described in pediatric heart transplant (HTx) recipients with limited attention to motor outcomes. This study examined ND outcomes in a cohort of young recipients.

Methods and Materials: Single centre review of ND assessments at ages 1, 2 and 4 yrs included: Alberta Infant Motor Scales (AIMS), Peabody Developmental Motor Scales (PDMS-II), Beery-Buktenica Developmental test of Visual Motor Integration (VMI) and Ages and Stages Questionnaire (ASQ).

Results: Fourteen children assessed at ages 1, 2 or 4 yrs were 10.6±1.5, 15.0±4.4 and 37.7±15.2 mos post-Tx. Diagnoses included congenital heart disease (8) and cardiomyopathy (6). Average gestational age (GA) was 38.0±2.6 weeks and birth weight (BW) was 3.2±0.6 kgs. Neurologic complications included seizures (2), stroke (2) and intracranial hemorrhage (2). Three of 4 children had AIMS scores < the 5th percentile. PDMS-II scores are shown in Table 1. VMI percentile scores were 37.0±53.0% (Median=39, Range:0.7-82). In univariate analysis higher no. of post-Tx admissions (adm) were associated with lower gross (EST: -2.726(1.358) points/adm, p=0.04), fine (EST: -5.661(2.084) points/adm, p=0.01) and total (EST: -4.858(1.967) points/adm, p=0.01) motor scores. Lower BW was associated with lower gross motor scores (EST: -1.30 (0.7 point/100g, p=0.06). Mechanical support (EST: -28.657(9.046) points, p=0.001) and lower GA (EST: -4.077(0.778) points/wks, p=0.001) were associated with lower VMI scores. There were no associations with underlying diagnosis. ASQ results were consistent with standardized assessments.

Table 1. PDMS-II Results by Age

<table>
<thead>
<tr>
<th>Age (yrs)</th>
<th>Gross Motor</th>
<th>Fine Motor</th>
<th>Total Motor</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>25.7±17.0</td>
<td>41.4±34.6</td>
<td>36.7±27.1</td>
</tr>
<tr>
<td>2</td>
<td>6.3±4.7</td>
<td>16.0±11.0</td>
<td>7.0±8.5</td>
</tr>
<tr>
<td>4</td>
<td>14.2±15.4</td>
<td>13.8±16.2</td>
<td>10.6±15.9</td>
</tr>
</tbody>
</table>

Conclusions: Delayed gross and fine motor skill acquisition is common in young heart transplant recipients with a majority meeting criteria for referral for intervention. Further study is warranted to examine long-term implications at school age.