The Cleveland Clinic Lung and Heart-Lung Transplantation Program

Specialty Services Symposium
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Lung Transplantation History

23,317 Lung Tx

1990  Living Donor Transplantation

1983  Single lung transplant success

1981  1st heart lung transplant success

1963  CYA

1947 Demikhov canine lung tx
Lung Transplantation

• Generally accepted therapy for end stage lung disease that is refractory to any further medical or surgical therapy.
ADULT LUNG TRANSPLANTATION: Indications for Single Lung Transplants

**Other includes:**
- Sarcoidosis: 2.1%
- Bronchiectasis: 0.4%
- Congenital Heart Disease: 0.2%
- LAM: 0.7%
- OB (non-ReTx): 0.6%
- Miscellaneous: 5.4%
ADULT LUNG TRANSPLANTATION: Indications for Bilateral/Double Lung Transplants

*Other includes:
- Sarcoidosis: 2.8%
- Bronchiectasis: 5.1%
- Congenital Heart Disease: 1.4%
- LAM: 1.2%
- OB (non-ReTx): 1.1%
- Miscellaneous: 5.6%
Lung Transplantation: QOL or Survival Benefit

- Lung transplantation offers improvement in QOL for all disease states

- Survival benefit has only been shown in certain disease states
  - Cystic fibrosis
  - Pulmonary fibrosis
  - Pulmonary HTN*
• Yet, unlike all other solid organ transplants, lung transplantation is considered palliative not curative and long term survival is limited.

Double lung: 1/2-life = 5.9 Years; Conditional 1/2-life = 8.6 Years
Single lung: 1/2-life = 4.4 Years; Conditional 1/2-life = 6.3 Years
All lungs: 1/2-life = 5.0 Years; Conditional 1/2-life = 7.1 Years

J Heart Lung Transplant 2007;26: 782-795
Risk Factors for 1 Year Mortality
Center volume

Relative Risk of 1 Year Mortality

Center Volume (cases per year)

p < 0.0001

ISHLT 2007
J Heart Lung Transplant 2007;26: 782-795
The Cleveland Clinic Lung Transplantation Program

- In 2007 - 2\textsuperscript{nd} largest center by volume in the US
  - Total 72 transplants (lung, heart-lung (3) and liver-lung transplant)
  - Included the first liver-lung transplant in Ohio
  - Included 233 evaluations
  - 372 patients being followed after transplant (10 heart-lung patients)

- From 2004-2007 The Cleveland Clinic has maintained high volume status and better survival outcomes compared to national statistics
The Cleveland Clinic Lung Transplantation Program

• Keys to our success
  – Institutional support and dedication to the program
  – TEAMWORK !!
  – Experience – almost 2 decades of experience
    • Rapid triage of referrals and patient appointments
    • Streamlined testing and rapid listing
    • Short waitlist times to transplantation
    • Transplantation of “difficult” or high risk cases
    • Highly experienced team to deal with complications
    • 24/7 access to physician care for all our transplant patients
Lung and Heart Lung Transplant Physician Team

- **One of the most experienced in the world**
- Multidisciplinary Team – spans the CC Health Care System
- **Surgical Team – Cardiothoracic and Thoracic Transplant Team**
  - Dr. Gosta Pettersson MD PhD *
  - Dr. Nicholas Smedira MD
  - Dr. Sudish Murthy MD PhD
  - Dr. David P. Mason MD
- **Medical Team – Pulmonary Transplant Team**
  - Dr. Atul C. Mehta MBBS *
  - Dr. Marie M. Budev DO MPH
  - Dr. Omar Minai MD
  - Dr. Jeffery Chapman MD
  - Dr. Thomas Olbrych MD
- **Transplant Medical Team**
  - Cardiac – Medical and Surgical Transplant Team – Adult and Pediatric
  - Infectious Disease Transplant Team – Adult and Pediatric
  - Nephrology Transplant Team
  - GI Transplant Team / Hepatology Transplant Team
  - Metabolic Bone Disease Team
  - ENT Transplant Team
  - Immunology Transplant Team – Dr. Diane Pidwell PhD
  - Neurocognitive and Psychiatric Transplant Team – Dr. Kathy Coffman MD
Lung and Heart Lung Team
“The Real Team”

- Transplant social work team – provide screening and support pre and post transplant
- Transplant financial team
- Lung Transplant pre and post-op coordinators assigned to each patient
- Nutritionist
- Lung transplant pharmacist
- Lung transplant research team
Timeline to Listing

• Each referral reviewed by MD within 48 hours of actual referral from community physician
• “Introduction/Welcome” call by pre-transplant coordinator within 48 hours of referral
• Welcome packet sent to patient within 72 hours of referral
• First appointment with medical team, coordinators, social work with basic testing with 2-3 weeks of initial phone contact
• Depending on patient’s medical status
  – Rapid evaluation and testing over a 4 day outpatient stay with listing within 4-6 week period
  – Staged evaluation over months if not within the transplant window
Waitlist for Transplantation

- One of the shortest time periods to await an organ leading to one of lowest numbers of patients that die on our list
  - Average wait time of IPF / CF 30 - 90 days
  - Aggressive donor management
  - Aggressive support of the recipient pre transplant (bridge therapy – transplantation of the intubated patient and now recently from ECMO support)
  - Patients can live within 1,000 miles radius of the Clinic while on the waiting list
Hospital Stay

- **Specialized Thoracic ICU**
  - 2 day LOS for most lung transplant patients

- **Specialized Transplant Nursing Floor**
  - SLTX average stay 7-9 days
  - DLTX average stay 10-14 days
  - Discharged to Transplant Hospitality Floor Guest House for average 4 weeks
    - seen OPD clinic weekly for education, routine care and support
  - After 4 weeks – discharge home for routine follow up every 8-12 weeks
Education of the Patient

• Pre Transplantation
  – Financial Education
  – Transplant Education
    • Care Partner education and support group
    • Series of support groups
    • Video tapes
    • Social Work one on one sessions
    • Coordinator one on one sessions

• Post Transplantation
  – Coordinator one on one sessions daily
  – Diabetic, medicine, and exercise sessions
  – Educational videos
  – OPD – pharmacist, nutritionist, and coordinator sessions

• Intervention Team
  – Social Work
  – Financial
  – Psychiatric team
Unique Aspects of the Lung Transplant Program

• Surgical / Medical Expertise
  – High risk patient
    • Older patient
    • Multi-organ transplant (heart lung, liver lung, lung liver kidney)
    • Combined procedures including bypass (1-3 vessel involvement), valve replacement or repair
    • Previous chest surgery (LVRS, VATS, or pleurodesis)
    • Patients with other comorbidities (previous malignancy, other transplants)
    • Patients with antibody issues
    • Offer dual listing with other centers
  – Re-transplant experience
    • Outcomes similar to first time transplants
  – Innovative surgical practices
    • Bronchial Artery Revascularization (BAR)
RESULTS: Bronchial Arterial Revascularization
Our mission a few pictures say it all......
3 Months Post Double Lung Transplant
The Picture of Health
3 days Post Double Lung Transplant
2 weeks Post Transplant