

# **The Risks of Living Lung Donation**

Prepared for the  
Canadian Council for Donation and Transplantation  
by:

Dale Lien, MD  
Lung Transplant Program,  
University of Alberta, Edmonton

and

John Mullen, MD  
Lung Transplant Program,  
University of Alberta, Edmonton

2006

Living donor lung transplantation represents a relatively new option in treating potential recipients with end stage lung disease. The first reported successes were in the early 1990's and the current world wide experience is in the range of 250 recipients in total. The current accepted practice is that each recipient receives two lower lobes, one from each of two live donors. The requirement for two donors for each recipient means that the potential donor morbidity is doubled for each procedure. At the present time, living donor transplantation is usually considered an option only when there is a high probability of recipient mortality because of no suitable deceased donor.

### **A. Immediate surgical risks**

To date there are no reports of perioperative mortality among living lung donors. The immediate and long term surgical risks are those of an elective lower lobectomy. The usual initial hospitalization for an uncomplicated case is 4 to 10 days. Some of the potential intraoperative complications include cardiac arrhythmias, hemorrhage, the need to sacrifice the middle lobe because of anatomical difficulties, phrenic nerve injury, and blood transfusion. Short term complications may include infection, pain, hemorrhage, pleural effusion, pneumonia, empyema, bronchopleural fistula with prolonged air leaks, airway dehiscence or stricture, pericarditis, arrhythmias, pulmonary embolism, chylothorax, and a potential need for reoperation. A small percentage of lobectomy patients may require readmission because of further complications including pneumothorax, infection, pericarditis, pulmonary embolism, pneumonias, bronchopleural fistula, pleural effusion, hemoptysis and cardiac events. The available reports indicate that these types of significant complications have occurred in 4 to 5 % of donors.

### **B. Long term medical risks.**

Long term health risks include chronic incisional pain, chronic airways disease, the risk of recurrent infections, and chronic dyspnea. Available data indicates that donors lose between 10 to 20% of their pre-donation lung function as measured by pulmonary function testing. This usually does not have a significant impact on everyday activities but potentially may be important if the donor later develops lung disease.

### **C. Psychological risks.**

There has little quantified data on the psychological outcomes of living lung donors. Follow-up is often incomplete because of expense, distance from the transplant center, and willingness of the donor to participate. Death of the recipient further exacerbates this problem. Most work in this area has been in living donors of other types of organs.

### **D. Financial risks.**

Potential donors must take time off work for assessment, surgery and recovery. In addition travel and accommodation costs must be born by the donor. Time off from work following surgery will vary depending on complications and occupation. It is generally recommended that patients take 6 to 12 weeks off work after thoracotomy. Loss of income

may be substantially higher if complications arise. The impact of lost income will be greater if the donor is the only income earner in the family.

### **References**

1. Bowdish ME, Barr ML, Starnes VA. Living lobar transplantation. *Chest Surg Clin N Am* 2003;13(3):505-524.
2. Bowdish ME, Barr ML, Cshenkel FA, et al. A decade of living lobar lung transplantation: perioperative complications after 253 donor lobectomies. *Am J Transplant* 2004; 4 (8):1283-1288.
3. Battafarano RJ, Anderson RC, Meyers BF, et al. Perioperative complications after living donor lobectomy. *J Thorac Cardiovasc Surg* 2000; 120(5):909-915.