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P-063

BILATERAL LUNG TRANSPLANTATION IN SEVERE CHEST ASYMMETRY: CASE SERIES FROM A SINGLE CENTER

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OBJECTIVES

Suppurative lung diseases leading to end-stage respiratory failure are typical indications for bilateral lung transplantation. Some cases may present severe chest asymmetry because of recurrent infections or previous surgical therapies, especially in patients with cystic fibrosis. To deal with this anatomical condition, the most used surgical options are single lung transplantation with contralateral pneumonectomy or bilateral transplantation with graft downsizing. The purpose of this study is to evaluate the treatment we practiced at our institution for this subset of patients and review surgical strategies and technical aspects reported by others.

METHODS

We reviewed the clinical data of patients with significant pleural cavities asymmetry who received bilateral lung transplantation at our center from 2017 to 2022. Clinical reports of all patients who underwent lung transplantation for end-stage suppurative lung disease in the same period were revised as control group.

RESULTS

During the study period, 74 patients underwent bilateral lung transplantation for suppurative disease; 7 of them presented severe thorax asymmetry. All patients in chest asymmetry group were extubated within the second postoperative day. Mean intensive care unit stay was 4 days. Postoperative radiological evaluation did not show clustering or atelectasis of graft implanted in the smaller hemithorax. No perioperative major complications were recorded, and the average length of hospital stay was 23 days. Peri-operative course appeared remarkably good and both short and long-term follow-up prove to be entirely similar to the reference population.

CONCLUSIONS

Bilateral lung transplantation in patients with severe chest asymmetry was feasible even without graft downsizing and could be considered as first option. In our experience, short- and medium-term results are not dissimilar to those obtained in patients without this serious problem of symmetry.



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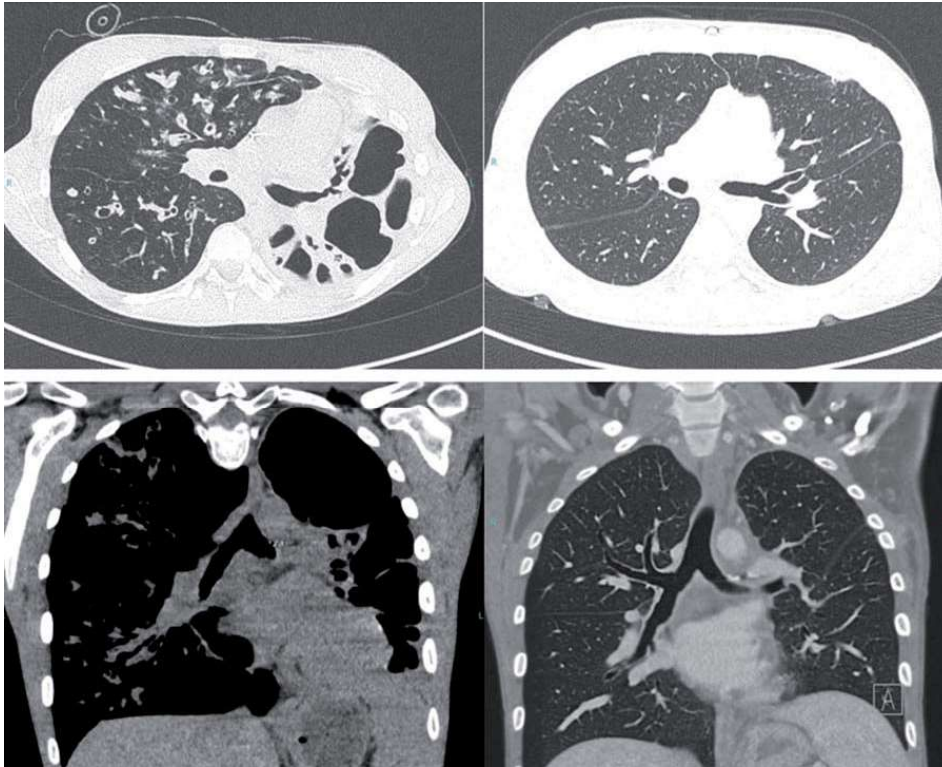
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ABSTRACTS

Disclosure: No significant relationships.

Keywords: Transplantation, Surgical Technique, Graft Reduction, Cystic Fibrosis.





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ABSTRACTS

Table 1. Morphometric parameters focusing on size match, setting information and operative characteristics of the seven patients with chest asymmetry

Case number	1	2	3	4	5	6	7
Age (D/R)	36/40	51/17	17/27	28/48	52/28	53/41	64/38
Weight (D/R)	63/55	60/47	70/53	60/57	65/35	47/65	59/70
Height (D/R)	160/162	150/156	190/175	182/172	150/152	165/165	170/170
D/R Height ratio	0,98	0,96	1,08	1,06	0,98	1	1
LAS	62,11	40,81	34,43	81,16	67,63	40,99	36,09
National Urgency Program	Yes	No	No	Yes	Yes	No	No
Type of Transplant	BiLuTx	BiLuTX	BiLuTX	BiLuTX	BiLuTX	BiLuTX	BiLuTX
Mediastinal Shift	Left	Right	Left	Right	Left	Right	Left
Type Of Incision	Clamshell	Clamshell	Clamshell	Clamshell	Clamshell	Clamshell	Clamshell
Skin-To-Skin Time, min.	568	460	497	554	667	536	559
First Lung Ischemia, min.	378	445	384	451	677	337	309
Second Lung Ischemia, min.	584	618	620	641	423	557	555
Intraoperative ECMO	VA	N	VA	VV	VA	N	N
Post-Op ECMO	VV	N	N	VV	N	N	N
Graft Volume Reduction	N	N	N	N	Wedge LUL	N	N



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Table 2. Transplantation features

	chest Asymmetry (n=7)	Control (n=67)
Recipient's Age, Mean (SD)	34.0 (9.7)	34 (16.0)
Female, N (%)	3 (42.9)	33 (49.3)
LAS (SD)	53.5 (15.8)	41.6 (9.1)
Pathology, N (%)		
Fi	6 (85.7)	63 (94.0)
Br	1 (14.3)	4 (6.0)
National Urgent List, N (%)	3 (42.9)	4 (6.0)
Donor's Age, Mean (SD)	34.0 (9.7)	40.3 (16.5)
Donation, N (%)		
DBD	7 (100.0)	57 (85.1)
DCD	0 (0.0)	10 (14.9)
Oto Score, Mean (SD)	4.7 (2.5)	2.5 (2.3)
Smoking History Yes, N (%)	2 (28.7)	12 (17.9)
Best PO2 at signaling, Mean (SD)	534.5 (57.6)	471.5 (88.1)
Ex Vivo Lung Perfusion (EVLV), N (%)	0 (0.0)	19 (28.4)
Surgical Incision, N (%)		
Clamshell	7 (100.0)	49 (73.1)
Bilateral Thoracotomy	0 (0.0)	18 (26.9)
ECMO Support, N (%)		
Pre-Operative VV	3 (42.9)	3 (4.5)
Intraoperative VA	4 (57.1)	34 (50.7)
Post-Operative	2 (28.7)	9 (13.4)
Volume Reduction Performed, N (%)	1 (14.3)	7 (10.4)
Wedge Resection, N (%)	1 (14.3)	3 (4.5)
Lobectomy, N (%)	0 (0.0)	4 (6.0)



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Table 3. Short and long-term outcomes

	chest Asymmetry (7)	Control (N=67)
PGD Grade \geq 2 within 72h, N (%)	2 (28.6)	14 (21.0)
Prolonged Weaning, N (%)	0 (0.0)	4 (6.0)
Wound Infection, N (%)	0 (0.0)	6 (9.0)
Pleural Effusion, N (%)	0 (0.0)	7 (10.4)
Pneumothorax, N (%)	3 (42.9)	3 (4.5)
Major Bleeding , N (%)	0 (0.0)	2 (3.0)
Mechanical Ventilation (days, Mean (SD))	1.1 (0.6)	1.5 (1.8)
ICU Stay (Day), Mean (SD)	3.9 (1.4)	3.7 (2.7)
Hospital Stay (Days), Mean (Sd)	21.9 (7.6)	24.9 (10.1)
Cardiac Events N (%)	1 (14.3)	8 (11.9)
90-day perioperative mortality, N (%)	0 (0.0)	3 (4.5)
1-year Overall Survival, N (%)	7 (100.0)	63 (94.0)
Re-Tx Number, N (%)	0 (0.0)	3 (4.5)
AR within the first year, N (%)	1 (14.3)	14 (21.1)
Positive TBB for rejection		
3 Months	0 (0.0)	3 (4.5)
6 Months	0 (0.0)	1 (1.5)
12 Months	1 (14.3)	3 (4.5)
CLAD		
N (%)	1 (14.3)	12 (17.9)
Time After Transplant (Months) Mean (SD)	23 (0.0)	19.3 (9.8)

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