



Double lung transplantation in patients with recent history of malignancy

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Abstract #
3271

INTRODUCTION

A recent history of malignancy, typically within five years, is considered a relative contraindication to double lung transplantation (DLT). However, the impact of prior cancer on transplant outcomes is poorly defined. We report prospective results from the DLT registry for lung-limited malignancies (DREAM) study (NCT05671887) cohort C evaluating DLT in patients with recent cancer history.

MATERIAL & METHODS

Patients with respiratory failure and a history of cancer in the last five years treated with DLT were identified between September 2021 and May 2026. All patients are enrolled in the DREAM study cohort C (NCT05671887). Standard staging confirmed absence of metastasis prior to DLT. Patients were followed up with computed tomography every 12 weeks.

RESULTS

- 24 patients underwent DLT (median age 67, range 29–77; 15 male, 9 female; 16 former smokers).
- Malignancy history included lung (n=15, stage IA–IIIB), prostate (n=3, stage IIC–IIIB), testis (n=3, stage IIIB-IIIC), bladder (n=1, stage I), breast (n=1, stage IA), and skin cancer (n=1, stage 3).
- Prior treatments included chemoradiotherapy (n=4), chemoradiotherapy plus immunotherapy (n=4), radiotherapy (n=6), and chemotherapy (n=7).
- The interval between last immunotherapy and DLT was 4 months (case #1), 27 months (case #3), 37 months (case #7), and 20 months (case #10).
- All patients required high-flow oxygen prior to DLT.
- Indications for DLT were interstitial lung disease (n=16), COPD (n=6), and mixed ILD/COPD (n=2).
- One patient developed hyperacute rejection; all were discharged without supplemental oxygen.
- The median overall survival after transplantation was 20 (0-63) months.
- 2 patients had new primary cancers post-transplant which were surgically resected (1 had pancreatic cancer, 1 had prostate cancer).
- 1 patient had recurrence of the lung cancer (subcarinal LN, poorly differentiated adenocarcinoma), with planned treatment with chemoradiation. Another patient had metastatic recurrence on right occipital lobe that was treated by craniotomy.
- 4 patients passed away at 6, 6, 0, and 9 months post-DLT (2 died of respiratory failure, 1 of cardiac arrest, and 1 of mucus plugging with lobar collapse, hypoxemic arrest, and hypoxic-ischemic brain injury).

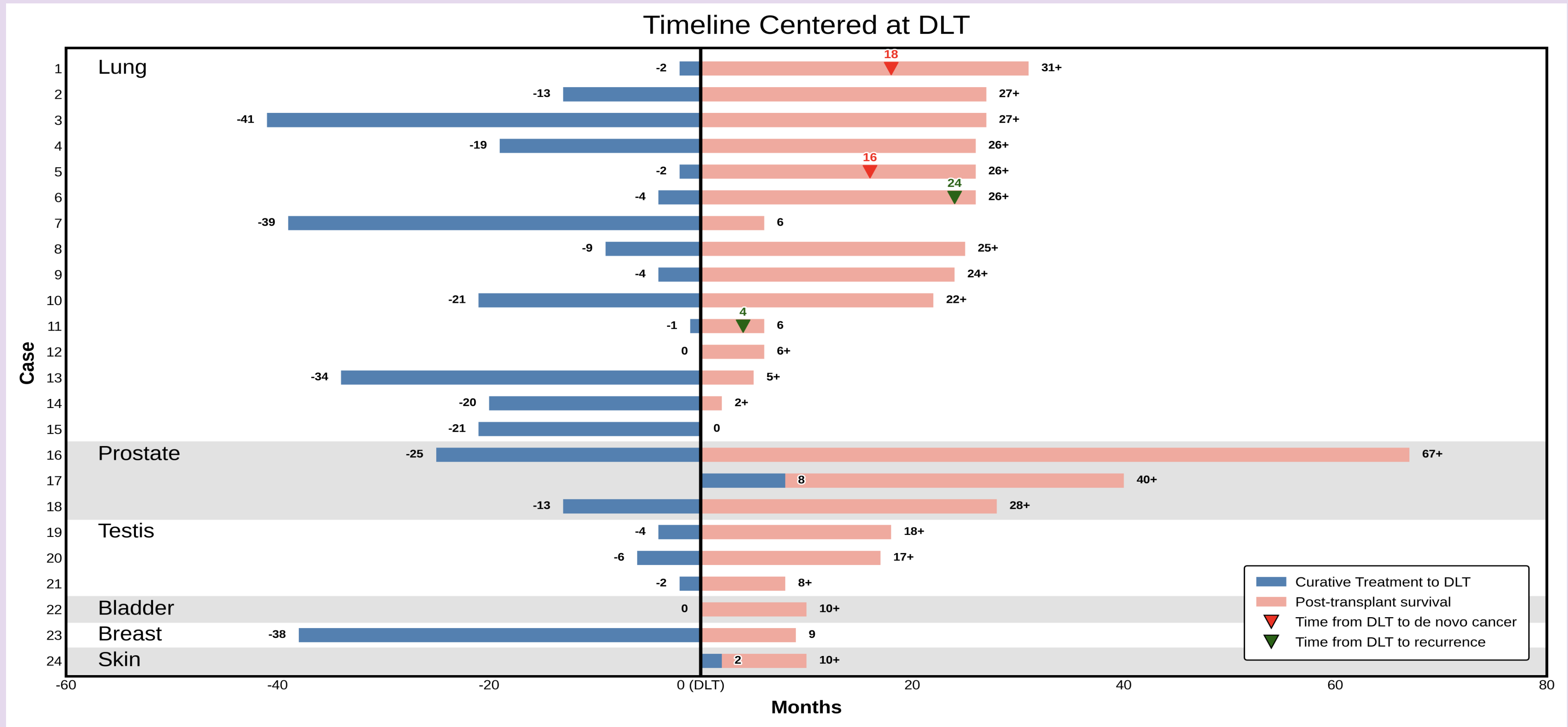
RESULTS

Table 1: Pathologic Characteristics

Case#	Age at DLT (Years)	Smoking Status	Waitlist Duration (Days)	Previous Cancer Diagnosis	Cancer Histology	Cancer Stage at Recent Curative Treatment	DLT Indication	Cancer Stage on Explant	Event (Cause of Death, New Cancer Type, etc.)
1	68	Former	12	Lung	Squamous cell carcinoma	3B	ILD (IO&RT induced PF)	ypT1aN0 s/p CCRT Right residual SCC <5%	New prostate adenocarcinoma
2	57	Former	61	Lung	Squamous cell carcinoma	1B	ILD	pT2aN0M0 s/p resection	-
3	61	Never	16	Lung	Squamous cell carcinoma	3B	CPFE	T0N0	-
4	74	Former	15	Lung	Adenocarcinoma	3A	ILD (IPF)	T0N0	-
5	64	Former	13	Lung	Squamous cell carcinoma	2B	ILD (IPF)	pT2aN1M0	New pancreatic cancer (Adenocarcinoma)
6	65	Former	78	Lung	Adenocarcinoma	1A	COPD	ypT1miN0	Recurrence (R occipital lobe)
7	71	Never	66	Lung	Poorly differentiated NSCLC	3B	ILD (Scleroderma)	T0N0	Death (Presumed cardiac origin)
8	66	Former	2	Lung	Mucinous adenocarcinoma	3B	ILD	ypT3pN0 s/p CRT 20% viable tumor	-
9	63	Former	8	Lung	Squamous cell carcinoma	1A	COPD	T0N0	-
10	65	Former	5	Lung	Squamous cell carcinoma	3B	COPD	pT0N0	-
11	66	Former	3	Lung	Adenocarcinoma	1A2	COPD	ypT3N0	Recurrence (subcarinal LN, poorly differentiated adenocarcinoma), Death
12	65	Former	4	Lung	Adenocarcinoma	2B	CPFE	pT1bpN1	-
13	64	Former	2	Lung	NSCLC (not biopsied)	1A2	COPD	ypT0N0	-
14	71	Former	2	Lung	Squamous cell carcinoma	1B	ILD	T0N0	-
15	68	Never	14	Lung	Adenocarcinoma	3A	ILD	T1N0	Death (post-transplant pulmonary complication)
16	63	Never	24	Prostate	Adenocarcinoma	3B	ILD (COVID-19 Fibrosis)	T0N0	-
17	61	Former	3	Prostate	Prostate cancer	2C	ILD	T0N0	-
18	59	Former	44	Prostate	Adenocarcinoma	3B	COPD	T0N0	-
19	44	Former	6	Testis	Seminoma germ cell tumor	3B	ILD (Pulmonary fibrosis due to bleomycin)	T0N0	-
20	27	Never	2	Testis	Nonseminomatous mixed germ cell tumor (yolk sac tumor and embryonal carcinoma)	3B	ILD (Pulmonary fibrosis due to bleomycin)	T0N0	-
21	58	Never	7	Testis	Squamous cell carcinoma (s/p margin positive excision s/p mohs)	3C	ILD (Pulmonary fibrosis due to bleomycin)	T0N0	-
22	70	Former	2	Bladder	High grade papillary urothelial carcinoma	1	ILD (IPF)	T0N0	-
23	55	Never	6	Breast	Recurrent right breast IDC	1A	ILD (IPAF fibrotic NSIP)	T0N0	Death
24	63	Never	3	Skin	Squamous cell carcinoma (s/p margin positive excision s/p mohs)	3	ILD	T0N0	-

Figure 1: Survival Outcomes

DLT: Double lung transplantation



Clinical Characteristics	Total N = 24
Age Years	Median (Range) 67 (29-77)
Sex Female Male	n (%) 9 (38%) 15 (63%)
Race Asian Black White Other	1 (4%) 2 (8%) 19 (79%) 2 (8%)
Smoking status Never smoker Former smoker Current smoker	8 (33%) 16 (67%) 0 (0%)
Previous cancer diagnosis Lung Prostate Testis Breast Bladder Skin	15 (63%) 3 (13%) 3 (13%) 1 (4%) 1 (4%) 1 (4%)
Prior ICIs Yes No	4 (17%) 20 (83%)
DLT indication COPD ILD* CPFE	6 (25%) 16 (67%) 2 (8%)

Table 2: Patient Characteristics

*Includes IPF, bleomycin-related pulmonary fibrosis, IPAF, scleroderma pulmonary fibrosis, COVID-19 pulmonary fibrosis, and ILD secondary to IO & RT

CONCLUSIONS

DLT in patients with a recent history of malignancy was feasible and associated with acceptable perioperative safety, with patients achieving independence from supplemental oxygen. Although isolated cases of recurrence and new primary cancers were observed, no excess early mortality was attributable to prior cancer. The DREAM cohort C continues to prospectively define the safety of DLT in this high-risk population.

ACKNOWLEDGEMENTS

We are grateful to all patients who have generously volunteered to participate in this study and the study team members.

Conflict of interest

Dr Chae did not receive any financial support for this project. Dr Chae reports research grants from Abbvie, BMS, Biodesix, Freenome, Predicine, Tempus, Image AI, Picture Health, Oncohost, Regeneron; and honoraria/advisory boards: Roche/Genentech, AstraZeneca, Foundation Medicine, Neogenomics, Guardant Health, Boehringer Ingelheim, Biodesix, Immuneoncia, Lilly Oncology, Merck, Takeda, Lunit, Jazz Pharmaceutical, Tempus, BMS, Regeneron, NeoImmuneTech, Esai, Oncohost, Picture Health, Novocure, GeneCker.

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