Clinical Outcomes of Patients with Stage II-III Non-Small Cell Lung Cancer Treated with Proton Beam Therapy on the Proton Collaborative Group Prospective Registry Trial

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Disclosures

- None

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Background: Stage II-III Non-Small Cell Lung Cancer (NSCLC)

- Lung cancer is most common cause of cancer-related death in the world resulting in 1.59 million deaths worldwide in 2012

- Locally advanced disease is common and most patients are not candidates for surgical intervention due to extent of disease or comorbidities

- RTOG 0617: grade 3+ pulmonary events and pneumonitis were similar between standard RT and dose-escalated RT with photons
  - Grade 3+ pulmonary events approx. 20%
  - Grade 3+ pneumonitis approx. 7%
  - Grade 3+ esophagitis 21% in high dose group and 7% in standard dose group

Stewart BW, Wild CP. World Cancer Report 2014.

Current PCG Member Institutions

Scripps

Maryland Proton Treatment Center

MAYO CLINIC

Arizona and Minnesota

Seattle Cancer Care Alliance
Proton Therapy Center

UF PROTON THERAPY

Northwestern Medicine®
Chicago Proton Center

WILLIS-KNIGHTON HEALTH SYSTEM

HAMPTON UNIVERSITY
PROTON THERAPY INSTITUTE

ProCure
Proton Therapy Center
Oklahoma City and New Jersey

Purpose

- To assess disease control, survival and toxicity outcomes of patients with stage II-III NSCLC treated with proton therapy on the Proton Collaborative Group (PCG) registry trial

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Methods

- 100 patients treated with proton beam therapy from 2010 to 2015 at four PCG institutions
- Approximately 5/6 patients not eligible for PCG LUN005 or RTOG 1308 due to comorbidities or other contraindications
- Toxicity and outcomes prospectively recorded and reported to PCG
  - CTCAE version 4.0
- Statistical Analysis
  - Kaplan Meier survival estimate
  - Log rank test

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Patient and Tumor Characteristics

Characteristic	N=100 (%)
Median age (range)	71 (51-93)
Female	38 (38)
White	92 (92)
Current smoker Former smoker Non-smoker	11 (11) 81 (81) 8 (8)
ECOG Performance Status 0 1 2 3	29 (33) 40 (46) 16 (18) 2 (2)

Characteristic	N=100 (%)
Stage IIA IIB IIIA IIIB	13 (13) 8 (8) 55 (55) 24 (24)
Squamous cell carcinoma Adenocarcinoma Non-small cell carcinoma NOS Other	39 (39) 39 (39) 19 (19) 3 (3)

Treatment Characteristics

Characteristic	N=100 (%)
Definitive PBT Trimodality	88 (88) 12 (12)
Received chemotherapy Concurrent chemotherapy	85 (85) 70 (70)
Median PBT dose (Gy(RBE)) (range)	70 (40-75)
Completed course of PBT	93 (93)
Median follow-up all patients (months) (range) -living patients	10.2 (0-49.0) 18.5 (3.2-49.0)

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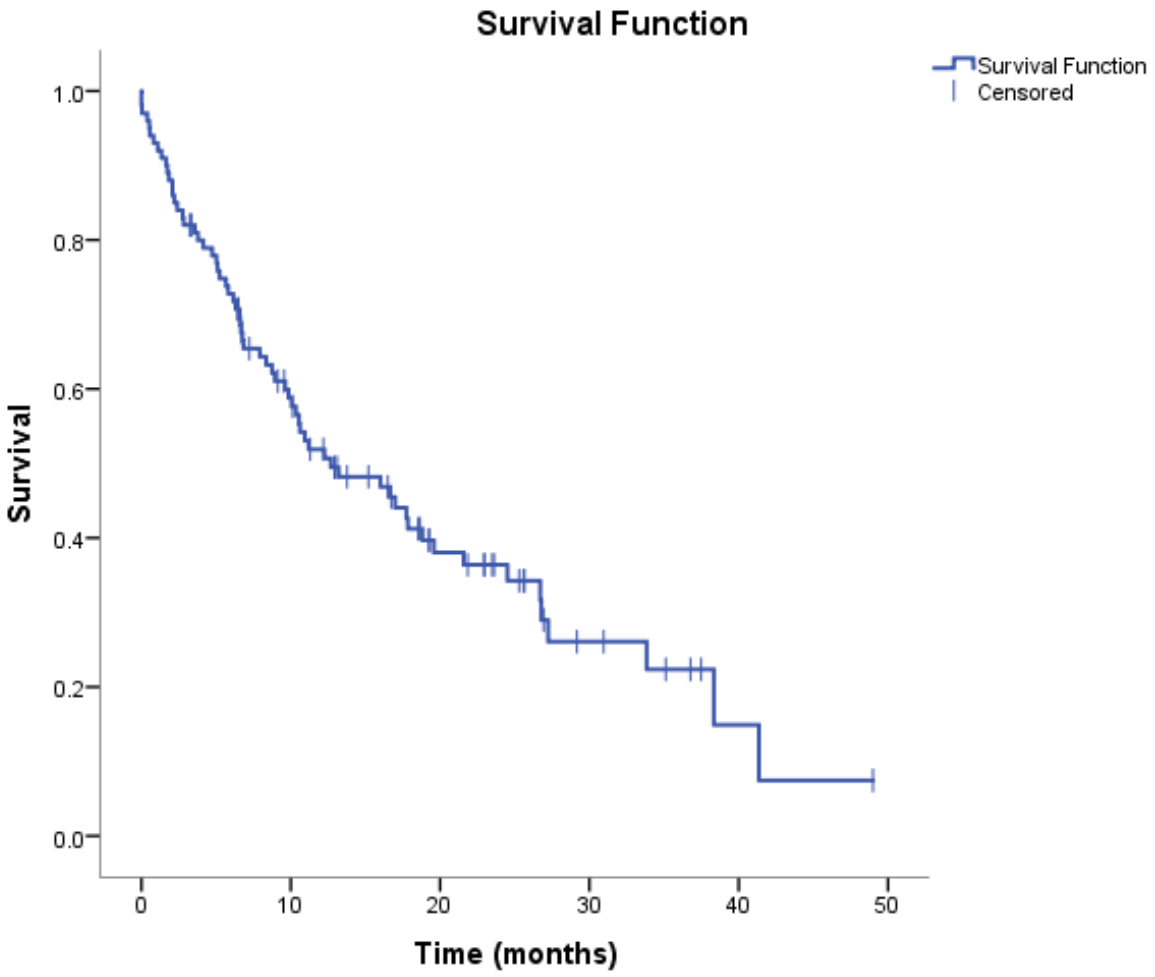
Overall Survival



	1-year	2-year	3-year
All	51.9%	36.4%	22.4%

	Median (months)
All	12.7

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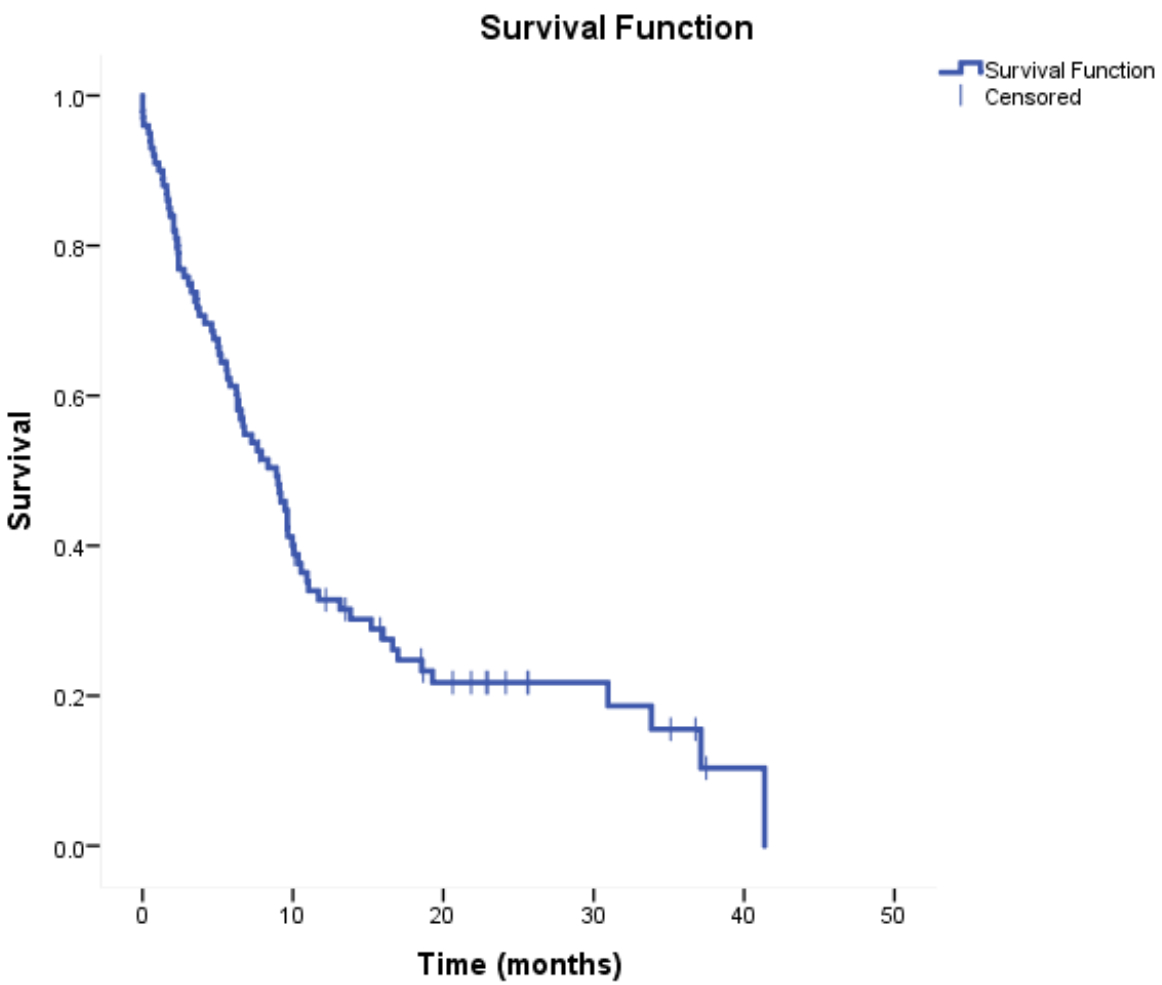
Progression-Free Survival



	1-year	2-year	3-year
All	32.8%	21.8%	15.5%

	Median (months)
All	8.9

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Toxicity

	Grade 3 n (%)	Grade 4 n (%)	Grade 5 n (%)
Dyspnea	3 (3%)	-	-
Dehydration	1 (1%)	-	-
Radiation dermatitis	1 (1%)	-	-
Skin pain	1 (1%)	-	-
Esophagitis	1 (1%)	-	-
Fatigue	1 (1%)	-	-
Bronchial hemorrhage	1 (1%)		
Myocardial Infarction	-	1 (1%)	-
Cardiac Death	-	-	2 (2%)

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Conclusions

- Despite delivery to a high-risk population with locally advanced NSCLC, PBT resulted in limited toxicity
- Ninety-three percent of patients were able to complete the entire prescribed course of PBT
- Enrollment of patients in ongoing randomized trial RTOG 1308 is important to directly compare outcomes to photon therapy

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