

# Role of SBRT with VMAT-FFF for abdomino-pelvic lymph node metastases in oligometastatic patients



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# Introduction

- State of **oligometastasis** coined in 1995 as a category of patients **developing a limited number of metastatic sites.**

Hellman, S. & Weichselbaum, R. Oligometastases. J. Clin. Oncol. 13, 8–10 (1995).

- The chance to treat with **ablative approach** such isolated metastatic sites of disease could improve **quality of life** of oligometastatic patients and **delay the onset of systemic therapies.**
- **Stereotactic Body Radiation Therapy (SBRT)** is considered a **non-invasive and well tolerated treatment.** The development of very performing SBRT techniques, VMAT and the Flattening Filter Free beams, enabled the delivery of highly conformed treatment in a very short time.

# Materials and methods

INCLUSION CRITERIA	
Age:	≥18years
WHO performance status:	≤ 2
Histologically-proven of primary cancer disease	
M1 stage with primary cancer site radically treated with complete response/resection or stable.	
A maximum of 3 lymph node sites of disease	
Diameter:	<5 cm
Abdomen/pelvic site	
No previous surgery or RT in the region to treat	

# Materials and methods

From 2009 to 2015

Mean Follow-up 1,44 years  
(range 0,14 – 6,21)

N. patients	71
N. lesions	79
Gender (n. patients)	
• Male	46 (64,7%)
• Female	25 (35,2%)
Mean Age y (n. patients) (range)	65 32-89
Primary tumor	
• Gastroenteric	42 (59,1%)
• Genitourinary	25 (35,2%)
• Lung	3 (4,22%)
• Breast	1 (1,4%)
N. of metastases	
• Solitary metastases	45 (63,3%)
• Other sites	26 (36,6%)

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# Materials and methods

CTV volume (cm<sup>3</sup>):

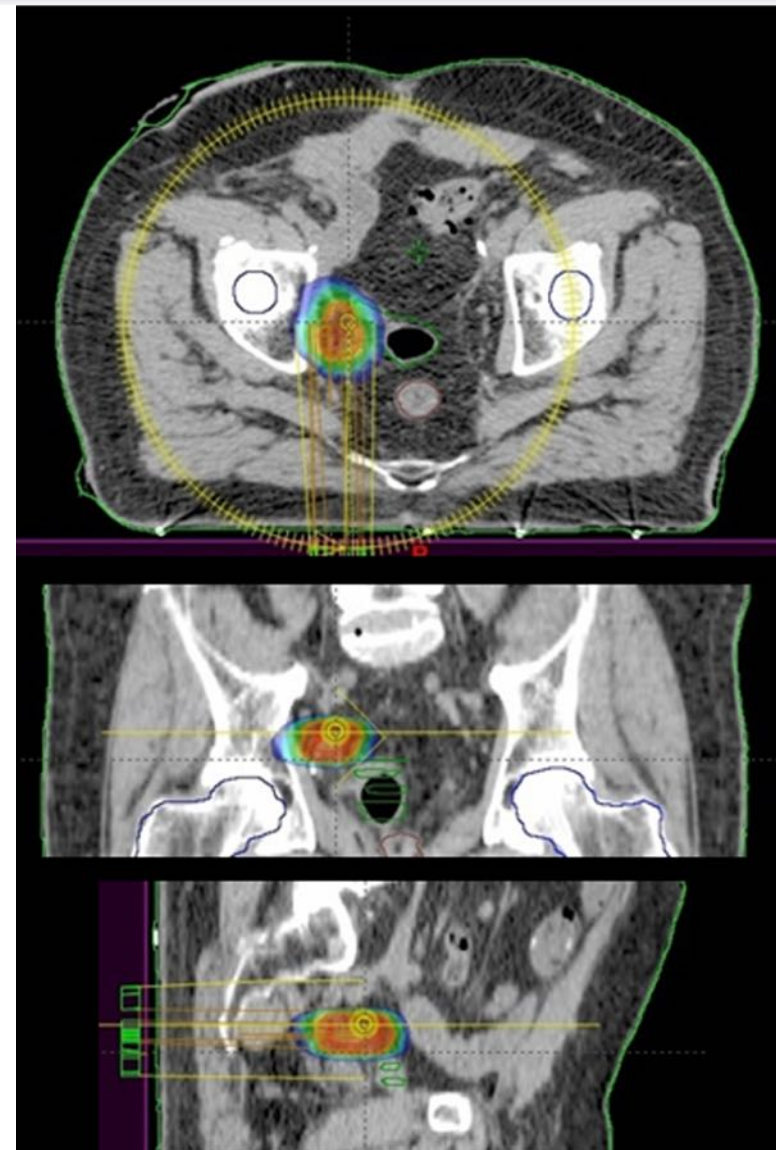
Mean  $\pm$  SD: 16.5  $\pm$  16.6  
(range: 1.2, 103,8)

PTV volume (cm<sup>3</sup>):

Mean  $\pm$  SD: 45.3  $\pm$  31.2  
range (9.6, 185.9)

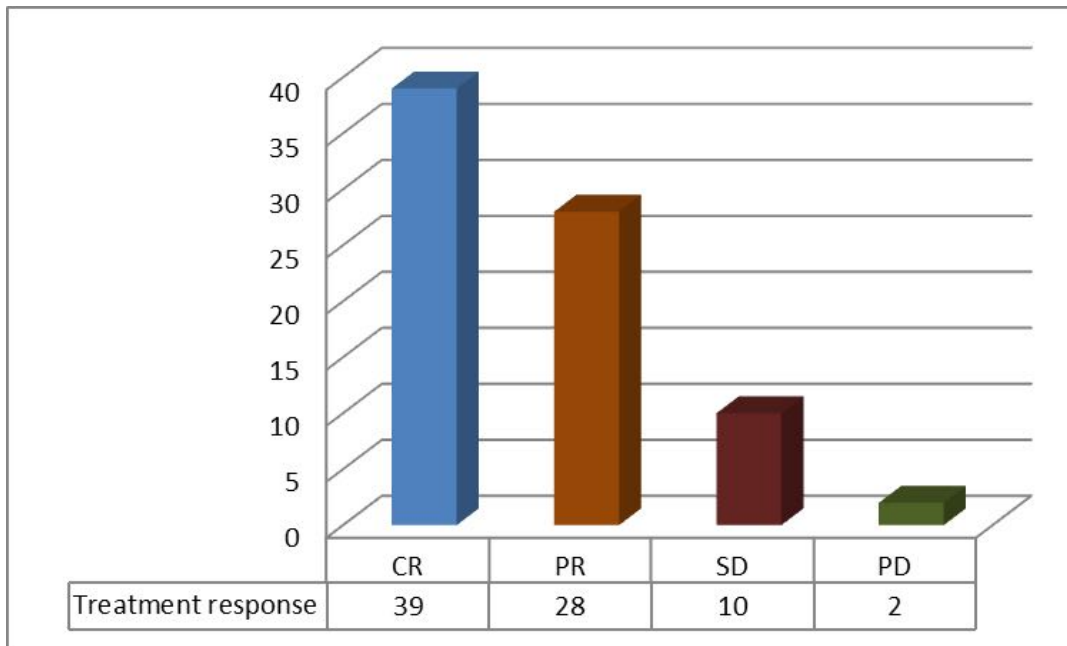
Prescription dose: 45 Gy in 6  
consecutive fx of 7.5 Gy

Volumetric Modulated Arc Therapy  
RapidArc with Flattening Filters Free  
beams



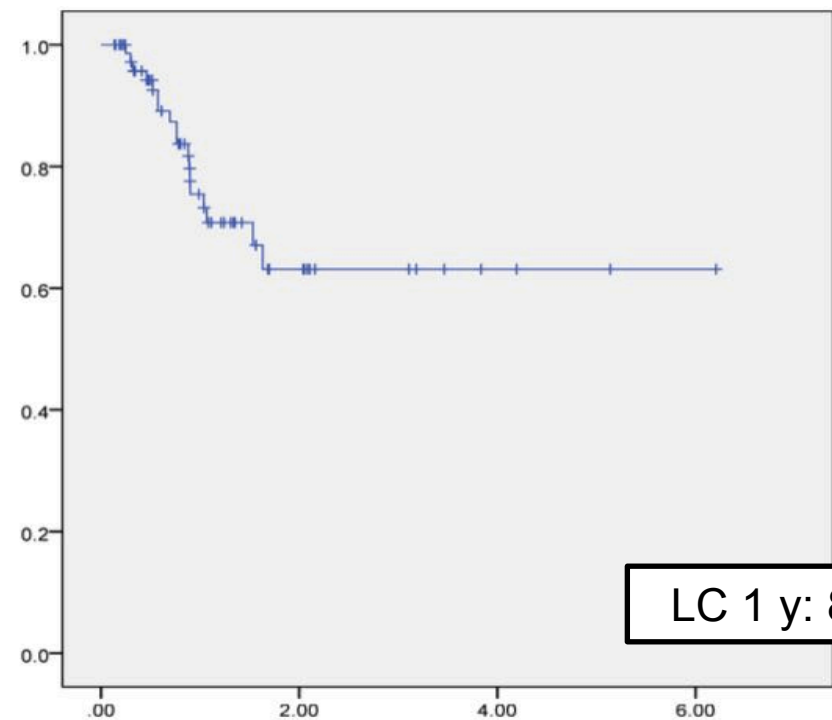
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# Results



Overall benefit rate: 97.5%

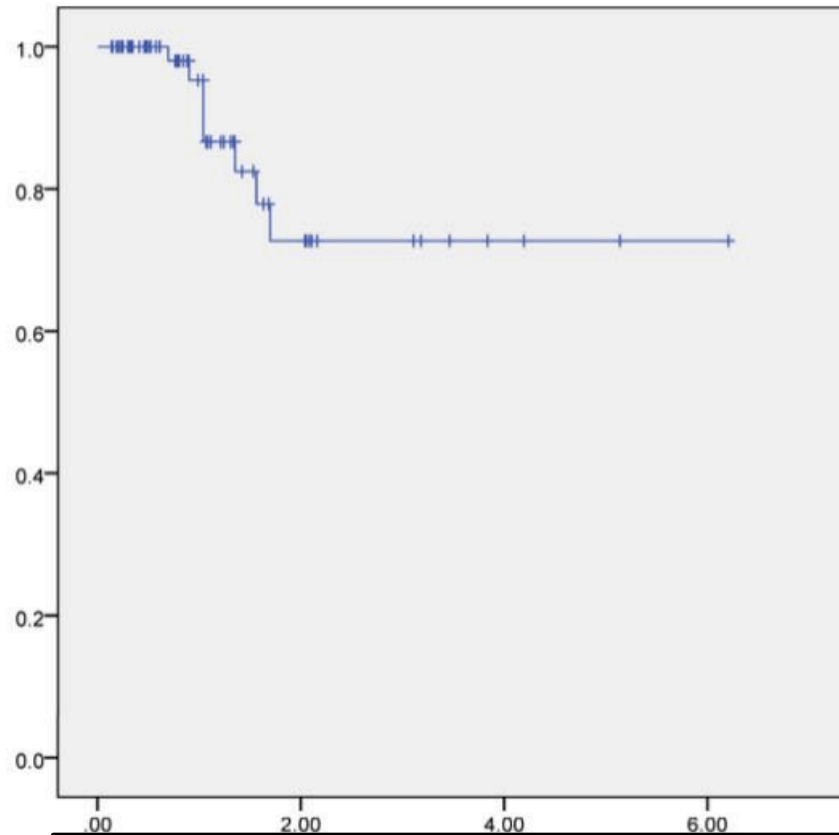
- In-field progression: 18 (22%) cases
- Out-field LN progression: 22 (27%) cases



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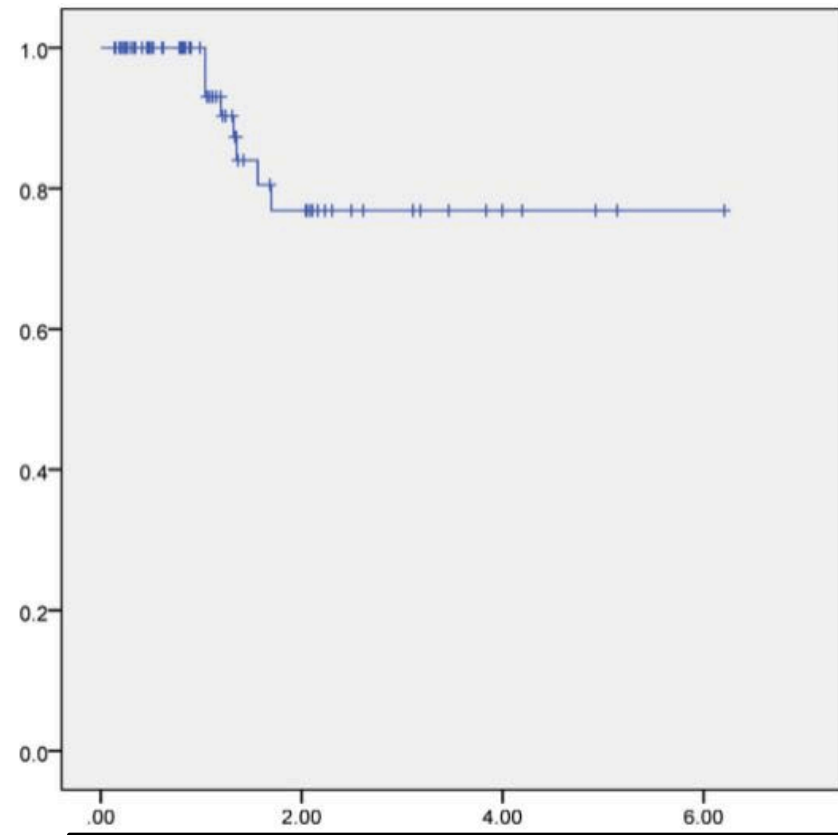
# Results

PROGRESSION FREE SURVIVAL



PFS at 1 year: 86%

OVERALL SURVIVAL

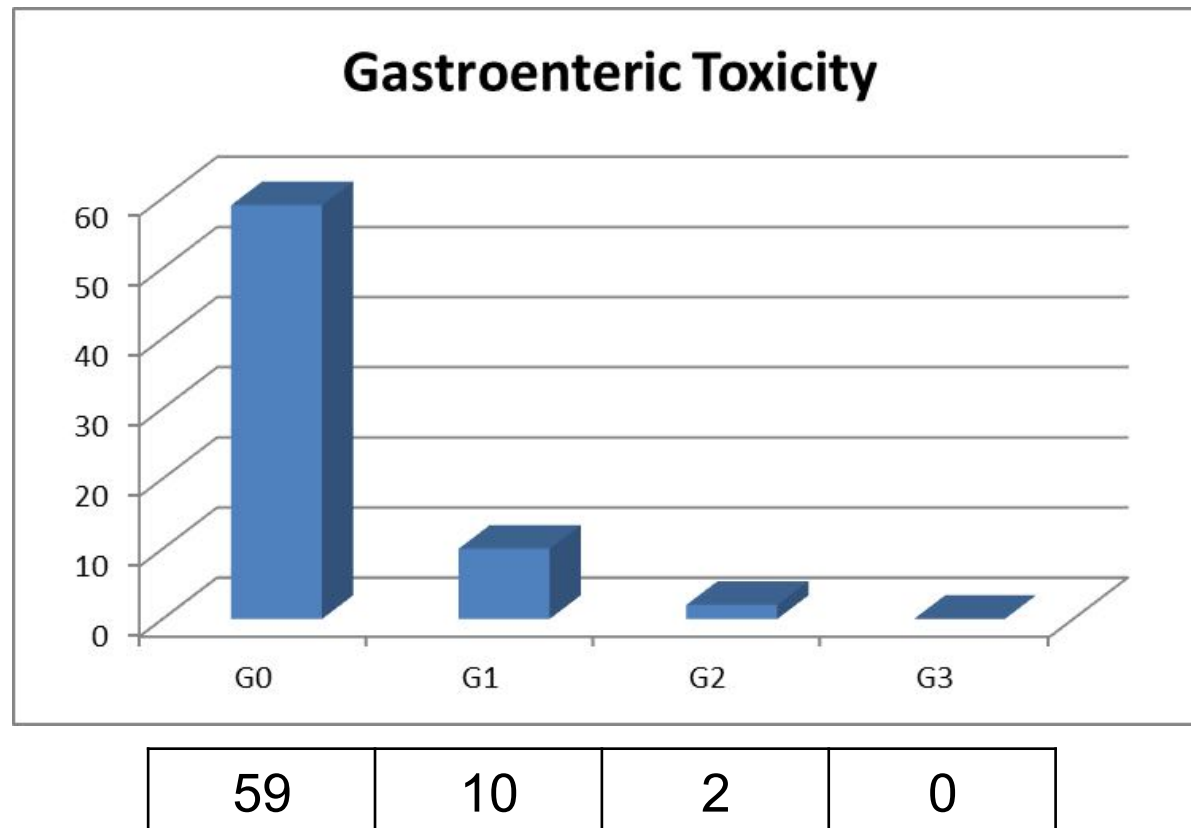


OS at 1 year: 93%

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# Results

## ACUTE TOXICITY



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# Results

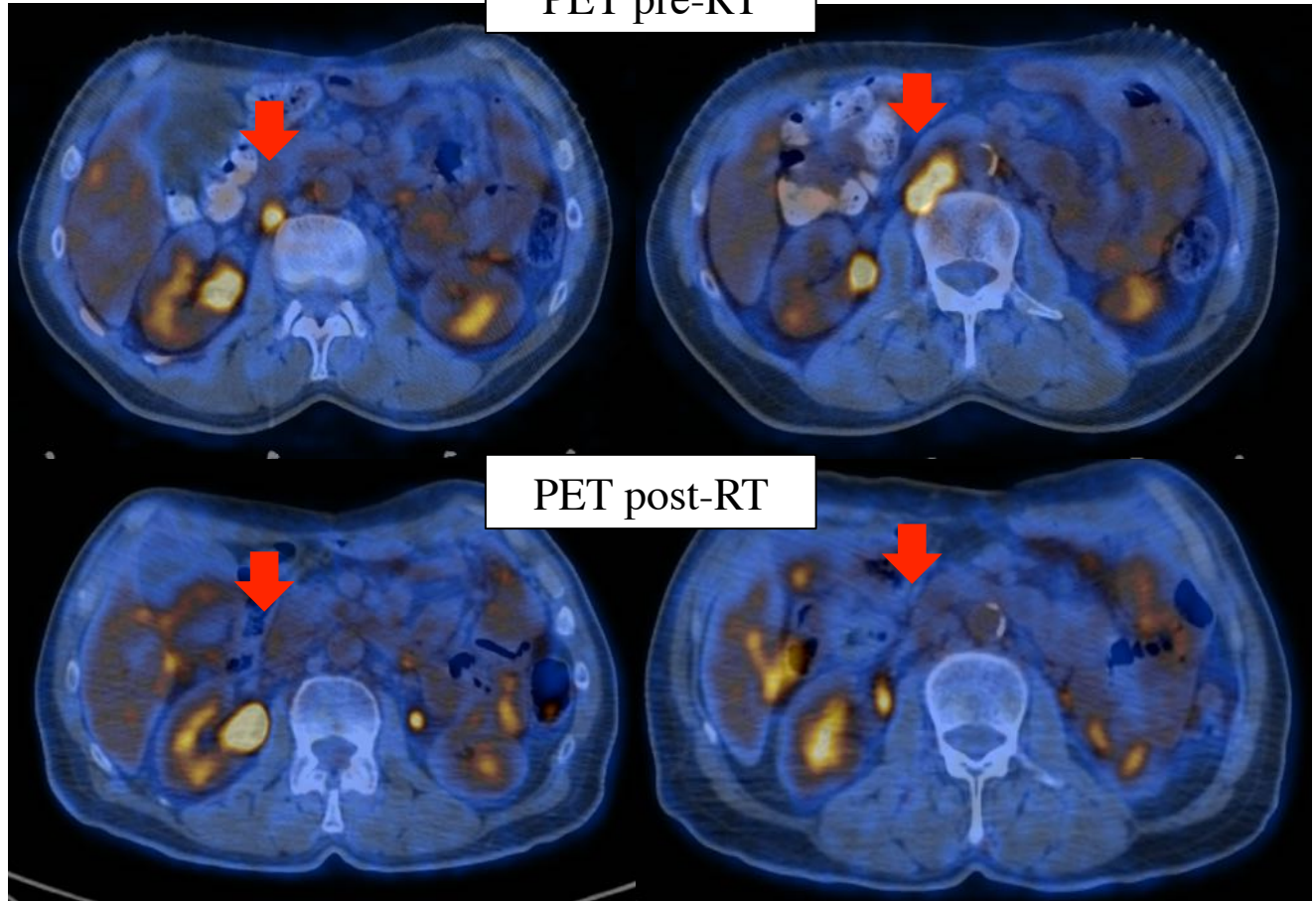
60 y.o. male

Diagnosis of Gastric cancer  
in 2008

Abdominal lymph node  
metastasis in 2012

SBRT with VMAT-FFF: 45  
Gy in 6 fx

PET pre-RT



PET post-RT

# Conclusions

- SBRT with VMAT and FFFs is a safe and effective approach in oligometastatic patients with abdomen/pelvis isolated lymph node metastases
- Future studies are necessary to better identify patient who benefit most from SBRT
- Multimodal approach including chemotherapy and biologic therapies should be investigated

# Humanitas Clinical and Research Hospital



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Thank you

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