



II° CONGRESSO
Gruppo Interregionale
AIRO Piemonte-Liguria
Vale d'Aosta

“Aspetti clinici e tecnici
della radioterapia nei
tumori del colon-retto”

8 ottobre 2011
Castello di Grinzane Cavour

Con il patrocinio



Associazione
Italiana
Radioterapia
Oncologica



FNOMCoO
CUNEO



LILT
LIGA ITALIANA PER LA
LUTTA CONTRO IL CANCRO
Sezione Provinciale
di Cuneo

RADIOTERAPIA CON TOMOTERAPIA E CAPECITABINA NEL TRATTAMENTO PRE-OPERATORIO DEL CARCINOMA DEL RETTO LOCALMENTE AVANZATO: ESPERIENZA PRELIMINARE DELL'IST DI GENOVA

Giulia Vidano
Università degli Studi di Genova
IRCCS San Martino-IST

Presidenti Onorari:
Dott. G. Marchetti
Dott.ssa F. Ozzello

La CT/RT neoadiuvante
rappresenta
il trattamento standard
nel carcinoma del retto localmente
avanzato (cT3-4 e/o N1-2)



LIVELLO DI
EVIDENZA 1



CATEGORIA 1

La **recidiva locale** rimane
causa di severa morbidità
e mortalità



L' **OS** a 5 anni scende al **20%**

“Neoadjuvant RT dose significantly correlated with 5-year rates of DFS and OS, but not 5-year CSS. Significant advantages were found for doses greater than 45 Gy”

CLINICAL INVESTIGATION **Rectum**

PROGNOSTIC VALUE OF PATHOLOGIC COMPLETE RESPONSE AFTER NEOADJUVANT THERAPY IN LOCALLY ADVANCED RECTAL CANCER: LONG-TERM ANALYSIS OF 566 ypCR Patients

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	Number	5-y DFS		5-y OS	
		%	p	%	p
All	566	84.7		91.6	
Age					
≤60	224	90.8		96.3	
>60	342	80.2	0.004	88.1	0.002
Gender					
M	372	83.3		90.9	
F	194	87.5	0.087	92.8	0.11
cStage					
II	249	90.2		94.9	
III	253	77.9	0.004	87.8	0.004
Dose (Gy)					
≤45	248	81.3		89.2	
>45	318	88.2	0.023	93.8	0.037

CLINICAL INVESTIGATION

Rectum

PHASE II STUDY OF PREOPERATIVE HELICAL TOMOTHERAPY FOR RECTAL CANCER

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 BART OP DE BEECK, M.D.,|| VINCENT VINH-HUNG, M.D., PH.D.,* JACQUES DE GRÈVE, M.D., PH.D.,¶
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“Helical tomotherapy may decrease gastrointestinal toxicity in the preoperative radiotherapy of patients with rectal cancer. A simultaneous integrated boost seems to result in a high metabolic response rate without excessive toxicity”

CLINICAL INVESTIGATION

Rectum

PREOPERATIVE HELICAL TOMOTHERAPY AND MEGAVOLTAGE COMPUTED TOMOGRAPHY FOR RECTAL CANCER: IMPACT ON THE IRRADIATED VOLUME OF SMALL BOWEL

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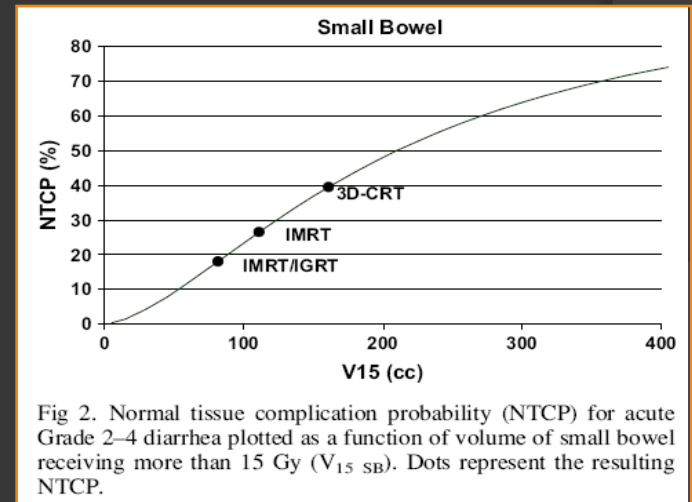


Fig 2. Normal tissue complication probability (NTCP) for acute Grade 2–4 diarrhea plotted as a function of volume of small bowel receiving more than 15 Gy ($V_{15\text{ SB}}$). Dots represent the resulting NTCP.

ESPERIENZA PRELIMINARE DELL'IST

9 pz affetti da LARC (cT3N1)



Capecitabina 825 mg/mq 2v/die



Gruppo A (6 pz)

CTV: 50 Gy/25 fx

Gruppo B (3 pz)

CTV1: 52.5 Gy/25 fx

CTV2: 45 Gy/25 fx

FATTIBILITA' E TOLLERANZA

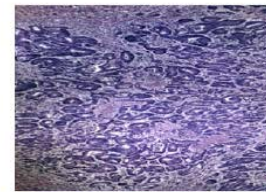
- ❖ Nessuna tossicità G3
- ❖ Gruppo **A**: 1 diarrea G1
- ❖ Gruppo **B**: 2 tossicità cutanea G2

RISPOSTA PATOLOGICA

55% Downstaging (5 pz)

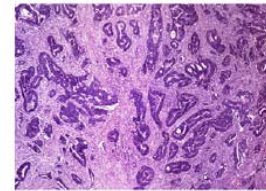


22% pCR (2 pz)



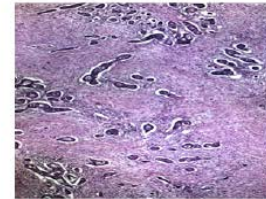
Grad 0 No Regression

No Regression



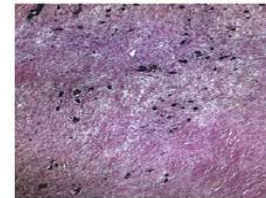
Grad 1 Regression <25%

Predominantly tumor cells, amongst radiogenic transformed tissue



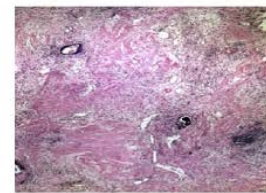
Grad 2 Regression 25-50%

Predominantly fibrotic tissue, simply detectable tumor cell nests



Grad 3 Regression >50%

Tumor cells isolated and microscopically hard to detect. Predominantly fibrotic tissue



Grad 4 Complete Regression

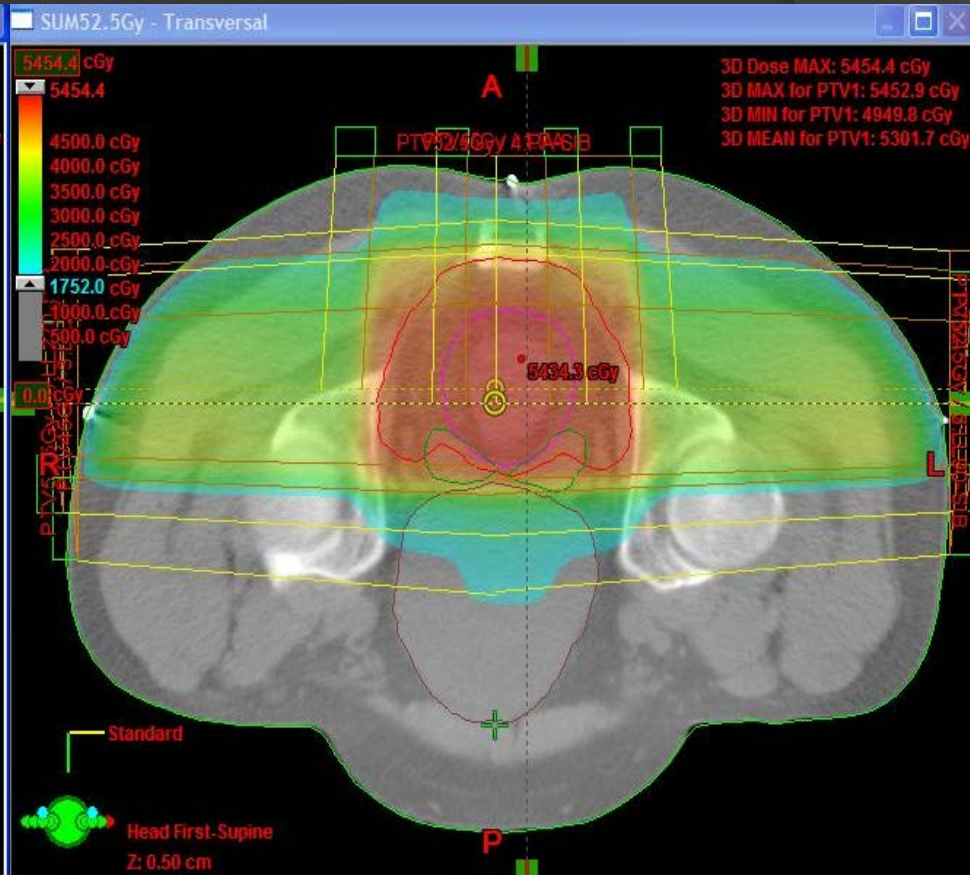
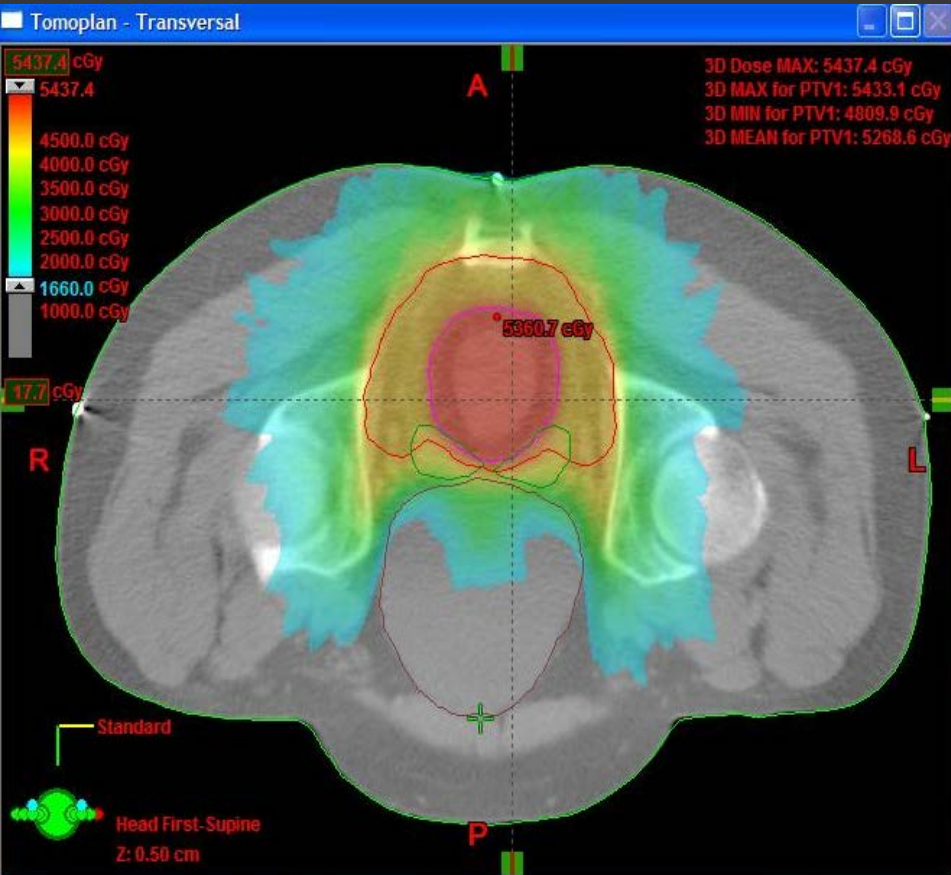
No tumor cells, only fibrotic tissue

Fig. 1. Tumor regression grading (TRG) after preoperative treatment according to Dworak *et al.* (25).

CONFRONTO

IMRT-IGRT

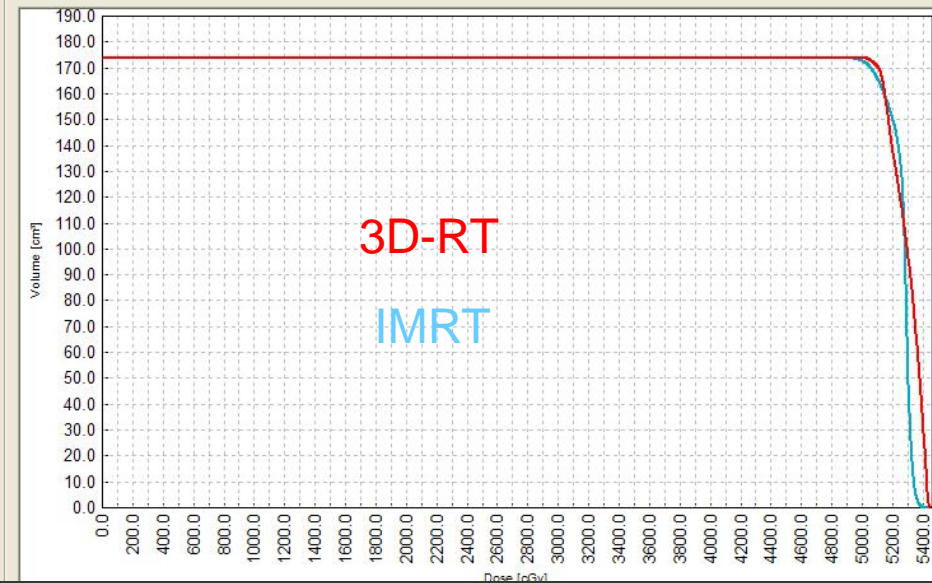
3D-RT



Plan Comparison with Dose Volume Histogram

Histogram

Plan	Structure	Prescr. Dose [cGy]	Treat. [%]	Cov. [%] / [%]	Volume [cm ³]	Min [cGy]	Max [cGy]	Mean [cGy]	Modal [cGy]	Median [cGy]	STD
<input checked="" type="checkbox"/>	Retto/Tomopla PTV1	5250.0	3.1	100.0 / 99.9	173.9	4695.5	5437.4	5269.4	5301.9	5288.3	71.26
<input checked="" type="checkbox"/>	Retto/SUM52 PTV1			100.0 / 100.0	173.9	4930.4	5454.4	5303.9	5426.9	5325.5	98.14

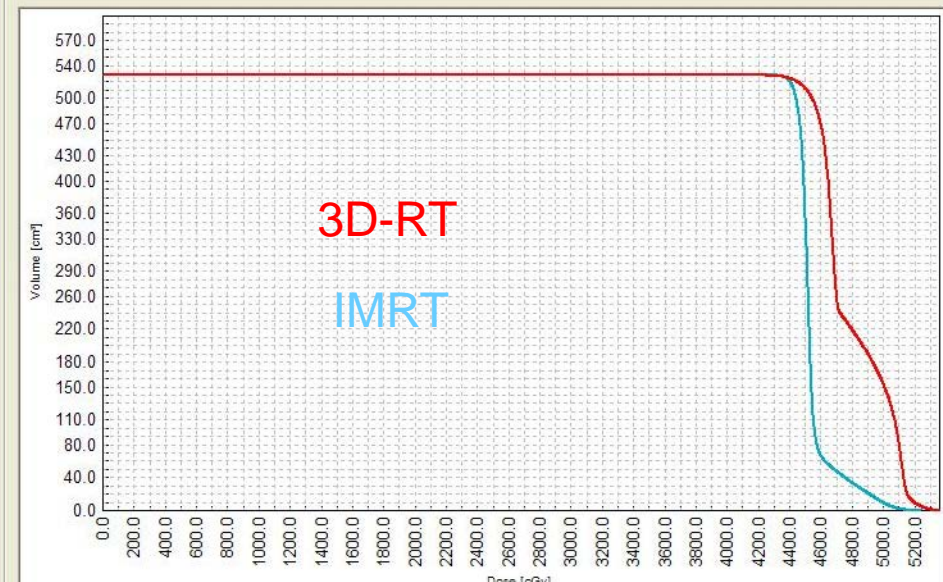


Target

Plan Comparison with Dose Volume Histogram

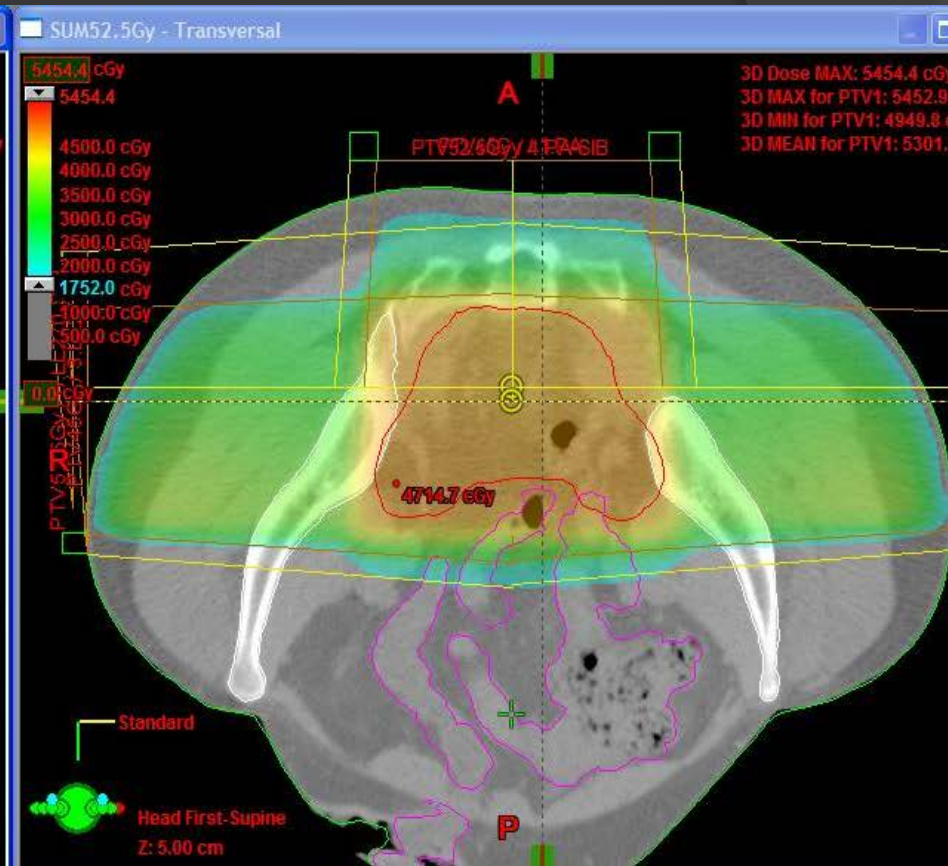
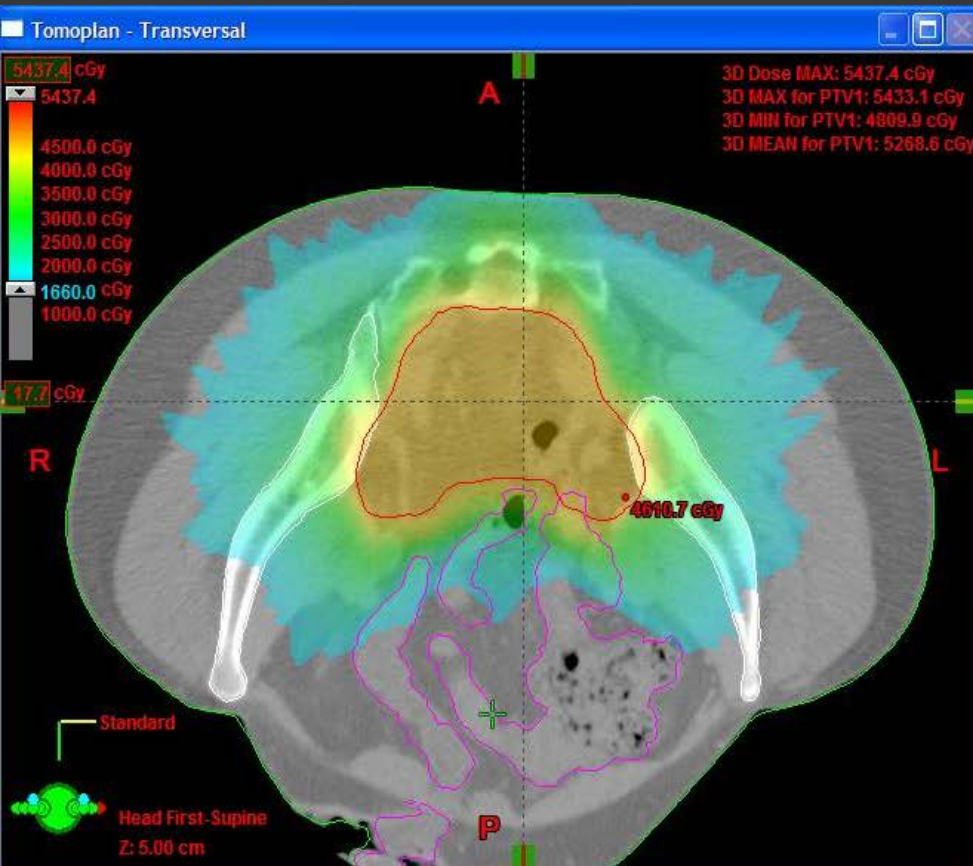
Histogram

Plan	Structure	Prescr. Dose [cGy]	Treat. [%]	Cov. [%] / [%]	Volume [cm ³]	Min [cGy]	Max [cGy]	Mean [cGy]	Modal [cGy]	Median [cGy]
<input checked="" type="checkbox"/>	Retto/Tomopla PTV2-PTV1	5250.0	3.1	100.0 / 99.9	528.5	3982.0	5243.7	4548.4	4517.5	4519.5
<input checked="" type="checkbox"/>	Retto/SUM52 PTV2-PTV1			100.0 / 99.9	528.5	4018.4	5359.1	4812.2	4692.7	4700.7



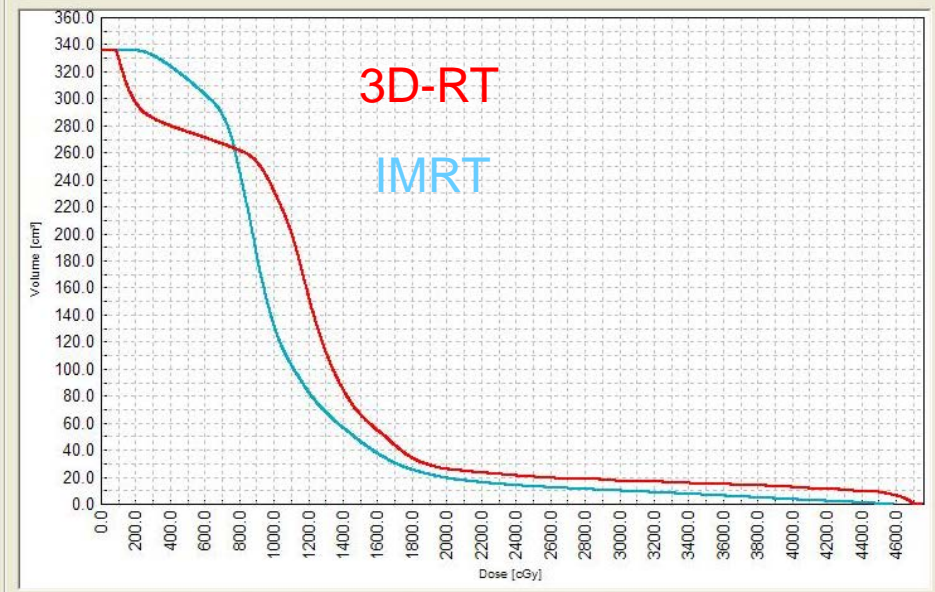
IMRT-IGRT

3D-RT



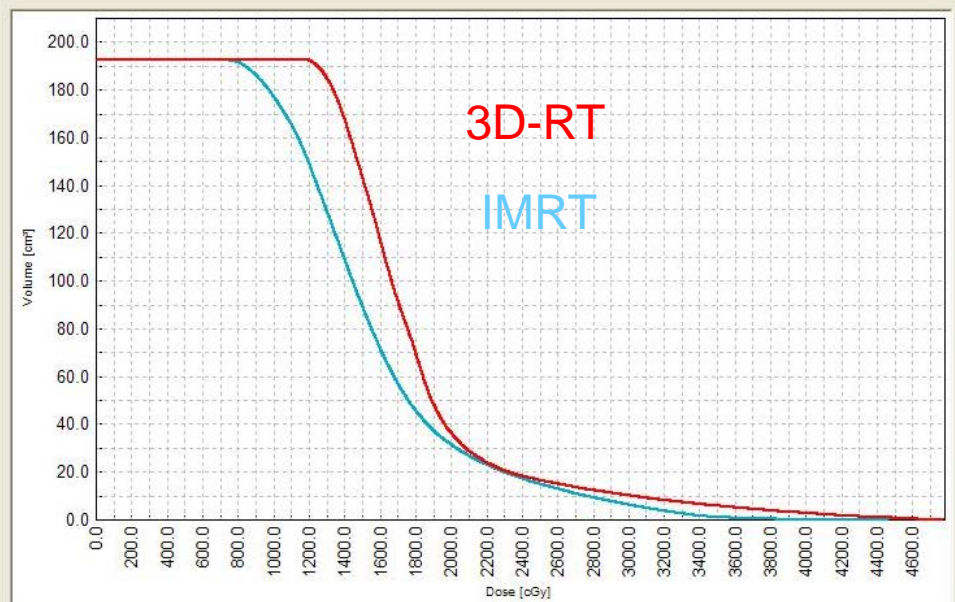
Plan	Structure	Prescr. Dose [cGy]	Treat. [%]	Cov. [%] / [%]	Volume [cm ³]	Min [cGy]	Max [cGy]	Mean [cGy]	Modal [cGy]	Med [cG]
<input checked="" type="checkbox"/> Retto/Tomoplan	Small Bowel	5250.0	3.1	100.0 / 100.0	335.8	181.9	4583.9	1091.9	831.8	929.
<input checked="" type="checkbox"/> Retto/SUM52.5Gy	Small Bowel			100.0 / 100.0	335.8	82.8	4757.3	1232.9	1140.7	1173.

Small bowel



Plan	Structure	Prescr. Dose [cGy]	Treat. [%]	Cov. [%] / [%]	Volume [cm ³]	Min [cGy]	Max [cGy]	Mean [cGy]	Modal [cGy]	M [cG]
<input checked="" type="checkbox"/> Retto/Tomoplan	Bladder, NOS	5250.0	3.1	100.0 / 100.0	192.6	705.8	4469.8	1585.6	1429.3	14
<input checked="" type="checkbox"/> Retto/SUM52.5Gy	Bladder, NOS			100.0 / 100.0	192.6	1174.8	4771.7	1820.2	1828.7	16

Bladder



CONCLUSIONI

- ❖ RT con Tomoterapia + Capecitabina: trattamento fattibile e ben tollerato
- ❖ SIB: aumento della dose e maggior risparmio degli organi critici
- ❖ IMRT/IGRT vs 3D-RT: miglior omogeneità di dose all'interno del target

GRAZIE