

XXXIII CONGRESSO NAZIONALE AIRO

AIRO2023

BOLOGNA,
27-29 OTTOBRE 2023

PALAZZO DEI CONGRESSI

Radioterapia Oncologica: l'evoluzione al servizio dei pazienti



Associazione Italiana
Radioterapia e Oncologia clinica

XXXIII CONGRESSO NAZIONALE AIRO

AIRO2023

BOLOGNA,
27-29 OTTOBRE 2023

PALAZZO DEI CONGRESSI

Radioterapia Oncologica: l'evoluzione al servizio dei pazienti

Study of a Geometric Score to Identify the Increased Risk of Local Failure after SBRT for Locally Advanced Pancreatic Cancer

E. La Rocca¹, T. Rancati², R. Rossi¹, G. Rossi¹, A. Benini¹, G. Volpi¹, C. Cavedon³, and R. Mazzarotto¹.

1 Department of Radiation Oncology, University of Verona Hospital Trust, Verona, Italy;

2 Fondazione IRCCS Istituto Nazionale dei Tumori, Data Science Unit, Milan, Italy;

3 Medical Physics Unit, University of Verona Hospital Trust, Verona, Italy

BACKGROUND

Risk Adapted Ablative Radiotherapy After Intensive Chemotherapy for Locally Advanced Pancreatic Cancer

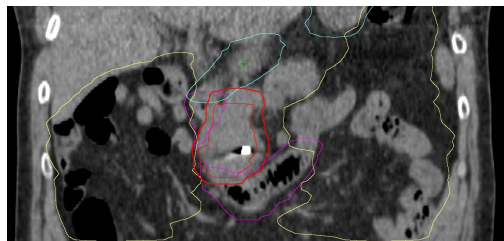
Gabriella Rossi^{1†}, Nicola Simoni^{1†}, Salvatore Paiella², Roberto Rossi¹, Martina Venezia¹, Renato Micera¹, Giuseppe Malleo², Roberto Salvia², Tommaso Giuliani², Anthony Di Gioia², Alessandra Auriemma³, Michele Milella³, Stefania Guariglia⁴, Carlo Cavedon⁴, Claudio Bassi² and Renzo Mazzarotto¹*



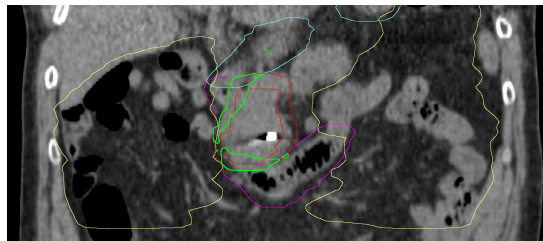
Local failures predominantly occurred within the RT field.



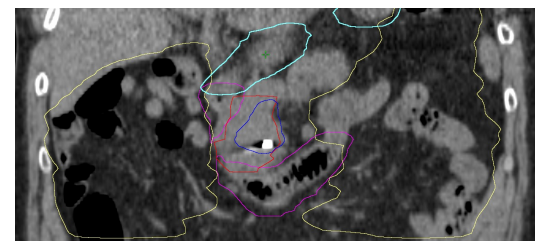
Azienda Ospedaliera
Universitaria Integrata
Verona



PTV 30



PTV 25



PTV 50

Mellon E.A., Acta Oncologica 2015

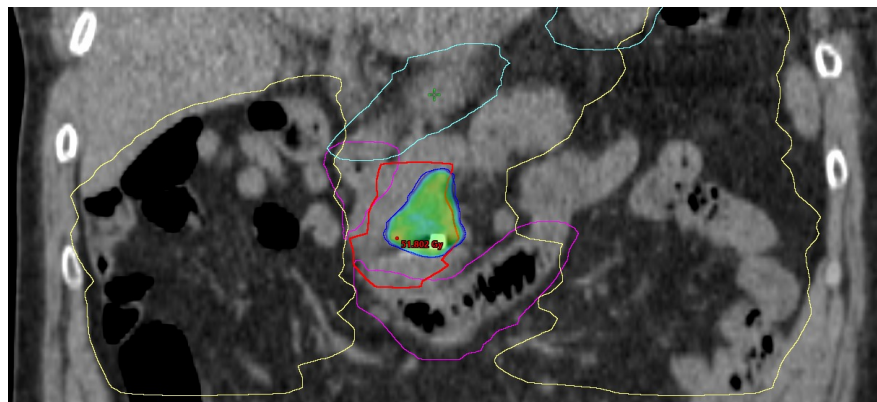
AIM



Azienda Ospedaliera
Universitaria Integrata
Verona



This analysis aimed to quantitatively assess the role of GTV size and incomplete GTV covering with SIB in increasing the risk of local failure.

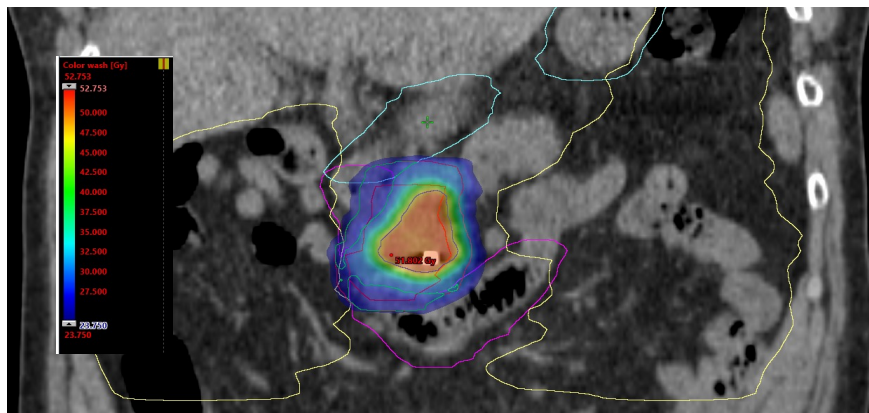


METHODS

51 consecutive LAPC patients (Nov 2016 - Nov 2019) → SBRT



Azienda Ospedaliera
Universitaria Integrata
Verona



- 30 Gy in 5 fractions to the tumor PTV;
- 50 Gy SIB to the region of vessel abutment/encasement;
- 25 Gy SIP to the overlap between tumor PTV, and the Planning OAR volumes.

-Cox regression, Kaplan-Meier Curves, Log-Rank test.

-Variables with $p \leq 0.2$ at UVA were included for MVA assessment.

METHODS

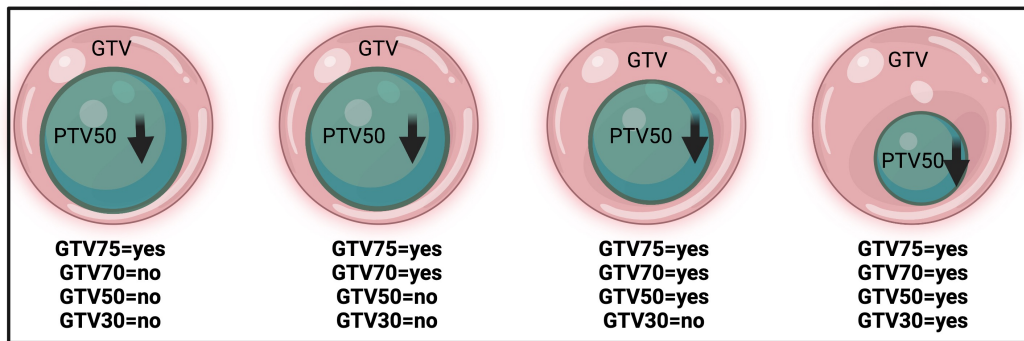


Azienda Ospedaliera
Universitaria Integrata
Verona



Specifically, we defined a set of incomplete GTV-covering levels:

- GTV75=yes if less than 75% of the GTV was included in the 50 Gy SIB isodose
- GTV70 =yes if less than 70% of the GTV was included in the 50 Gy SIB isodose
- GTV50 =yes if less than 50% of the GTV was included in the 50 Gy SIB isodose
- GTV30 =yes if less than 30% of the GTV was included in the 50 Gy SIB isodose



RESULTS

- median follow-up 17 months (range 1.4-47)
- 12 local failure



Covariate	b	SE	Wald	P	Exp(b)	95% CI of Exp(b)
cT2-3 vs cT4	-0,4182	0,6672	0,3929	0,5308	0,6582	0.1780 to 2.4339
cN0 vs cN+	-0,1456	0,5875	0,06143	0,8043	0,8645	0.2733 to 2.7342
T<40mm vs >40mm	-0,1828	0,6126	0,08907	0,7654	0,8329	0.2507 to 2.7672
TVI >=2 vs <2	0,1969	0,5785	0,1159	0,7335	1,2177	0.3918 to 3.7842
stent si vs stent no	-0,7572	0,7821	0,9374	0,3329	0,469	0.1013 to 2.1721
Folfiri vs Gem-abraxane	1,1412	0,7759	2,1635	0,1413	3,1306	0.6842 to 14.3241
Cicli ct completi vs cicli ct parziali	0,2733	1,0456	0,06834	0,7938	1,3143	0.1693 to 10.2024
chirurgia vs no chirurgia	-1,134	0,7767	2,132	0,1442	0,3217	0.0702 to 1.4743
R0 vs R1	0,9113	1,416	0,4142	0,5199	2,4875	0.1550 to 39.9094
ITV_cc_30%_GTVcc	-0,6304	1,0463	0,363	0,5468	0,5324	0.0685 to 4.1387
ITV_cc_50%_GTV_cc	-0,6764	0,6683	1,0245	0,3115	0,5084	0.1372 to 1.8840
ITV_cc_70%_GTV_cc	-1,15	1,0457	1,2095	0,2714	0,3166	0.0408 to 2.4583
Ptv_50_30%_GTV	1,3185	1,0456	1,59	0,2073	3,7377	0.4815 to 29.0163
PTV_50_50%_GTV	0,1928	0,5862	0,1082	0,7422	1,2126	0.3844 to 3.8259
GTV_cc	0,03681	0,01368	7,2442	0,0071	1,0375	1.0101 to 1.0657

RESULTS

Geometric Score

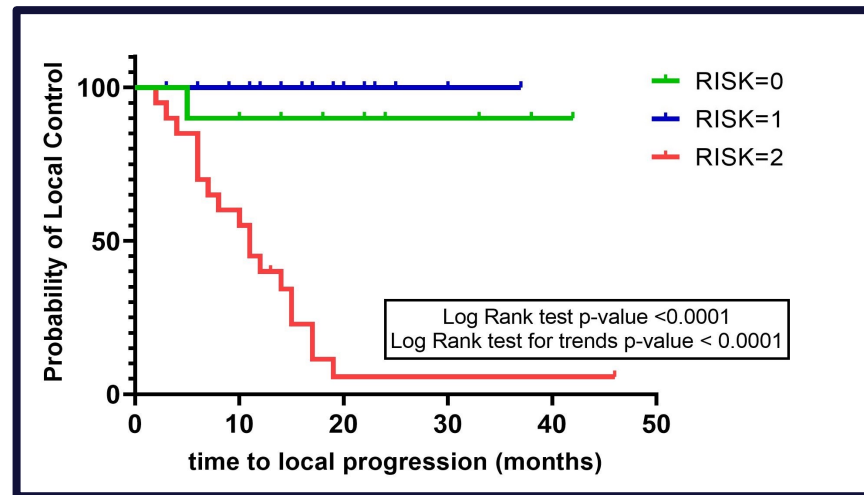
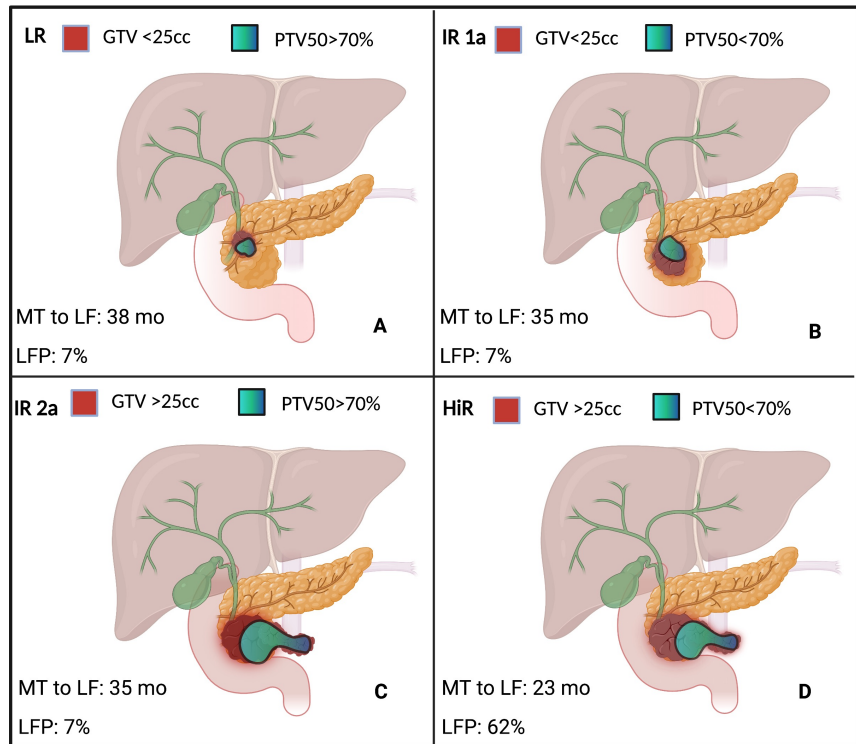


Azienda Ospedaliera
Universitaria Integrata
Verona



Risk class	GTV size		GTV70
Low risk	<25cc	AND	no
Intermediate Risk	>25 cc	OR	yes
High Risk	>25 cc	AND	yes

RESULTS



10/12 local failure

CONCLUSIONS



- A large GTV size coupled with an incomplete (<70%) covering of GTV from the SIB, highly increases the risk of local failure
 - 62% actuarial probability in the HiR group vs 7% in the LR/IR groups.
- Full coverage of the GTV with SIB would be of clinical relevance for pts with large macroscopic tumors.
- The Geometric Score could be used to select pts that would effectively benefit from online tumor tracking (e.g. with an MRI-Linac), allowing a reduction of the SIP volume and a consequent decrease in the amount of GTV left uncovered by the SIB.

Predizione o magia?



Azienda Ospedaliera
Universitaria Integrata
Verona



Grazie per l'attenzione!!