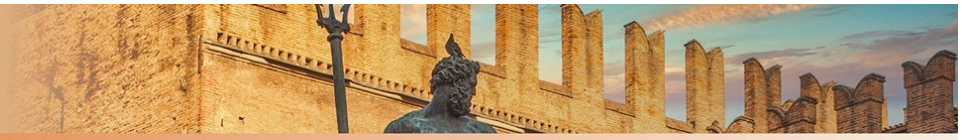
Associazione Italiana Radioterapia e Oncologia clinica

Società Italiana di Radiobiologia

Stereotassi: standard e innovazione nella pratica clinica

Luca Nicosia, MD

Associazione Italiana Radioterapia e Oncologia clinica
Società Italiana di Radiobiologia



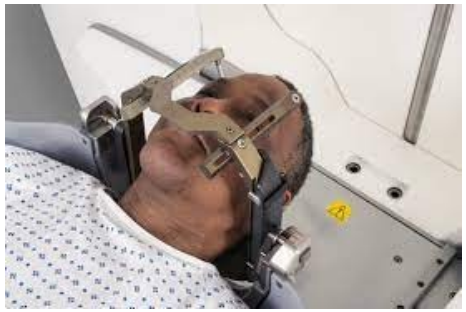
DICHIARAZIONE

Relatore: Luca Nicosia

Come da nuova regolamentazione della Commissione Nazionale per la Formazione Continua del Ministero della Salute, è richiesta la trasparenza delle fonti di finanziamento e dei rapporti con soggetti portatori di interessi commerciali in campo sanitario.

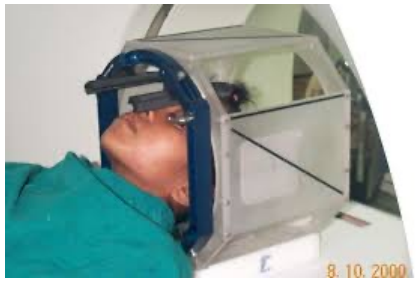
- Posizione di dipendente in aziende con interessi commerciali in campo sanitario **(NIENTE DA DICHIARARE)**
- Consulenza ad aziende con interessi commerciali in campo sanitario **(NIENTE DA DICHIARARE)**
- Fondi per la ricerca da aziende con interessi commerciali in campo sanitario **(NIENTE DA DICHIARARE)**
- Partecipazione ad Advisory Board **(NIENTE DA DICHIARARE)**
- Titolarità di brevetti in compartecipazione ad aziende con interessi commerciali in campo sanitario **(NIENTE DA DICHIARARE)**
- Partecipazioni azionarie in aziende con interessi commerciali in campo sanitario **(NIENTE DA DICHIARARE)**
- Altro

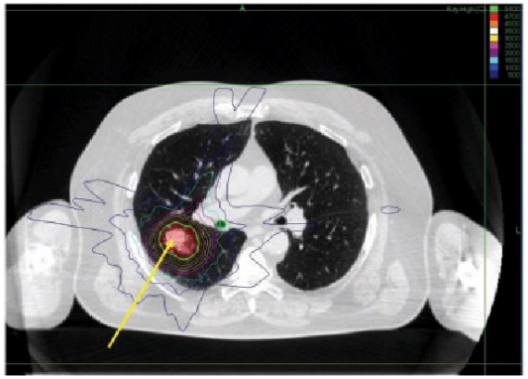
SABR/SBRT evolution



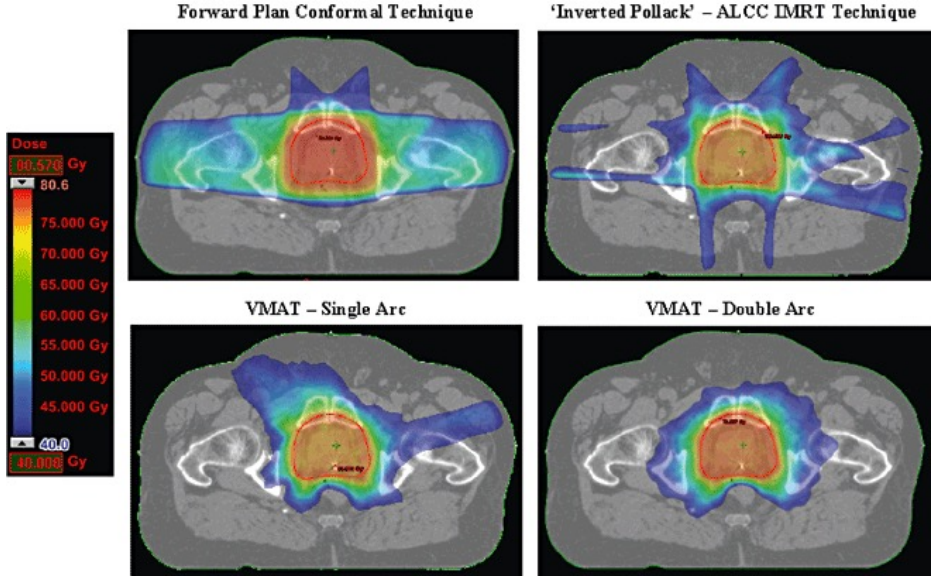
Frameless SRS

SRS frame



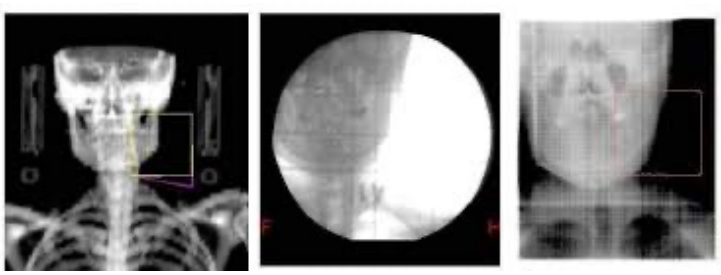


Body SABR/SBRT

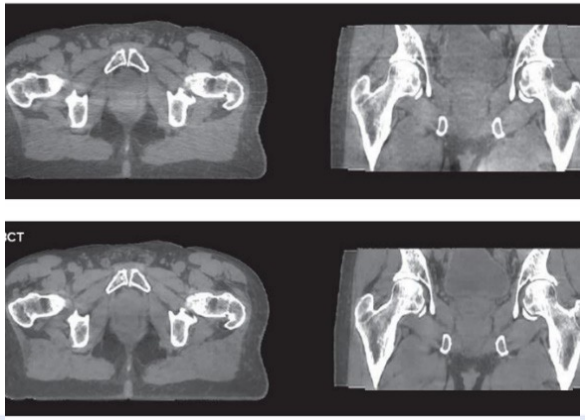


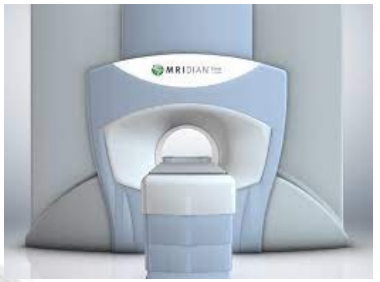
Planning technique: 3DCRT -> IMRT -> VMAT

SABR/SBRT evolution



From EPID to cbCT

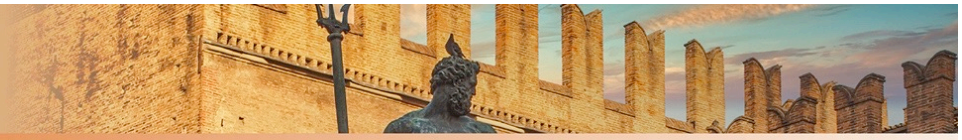




Linac evolution

Agenda

- Prostate Cancer (SBRT and new technologies)
- NSCLC
- Oligometastases
- Other primary tumors (pancreas, kidney)



National Comprehensive Cancer Network®

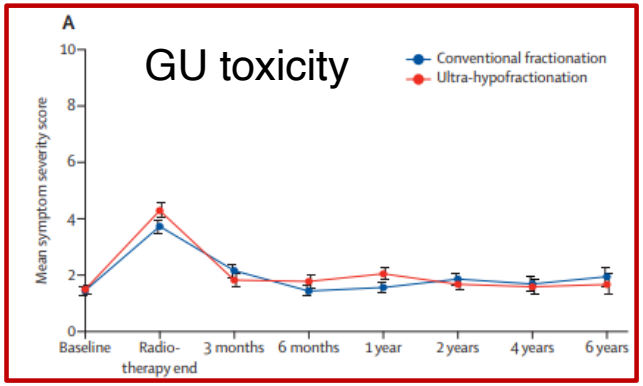
NCCN Guidelines Version 1.2023
Prostate Cancer

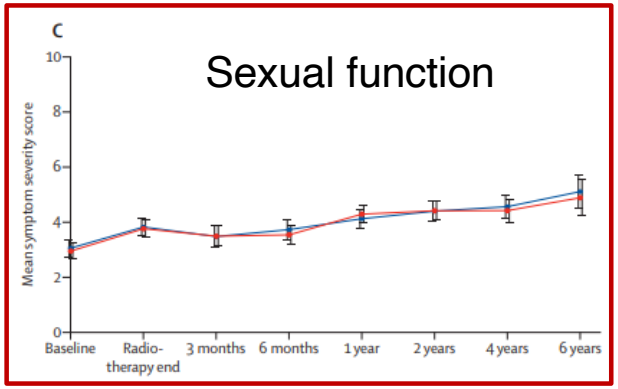
Regimen	Preferred Dose/Fractionation	NCCN Risk Group (✓ indicates an appropriate regimen option if RT is given)					
		Very Low and Low	Favorable Intermediate	Unfavorable Intermediate	High and Very High	Regional N1	Low Volume M1[a]
EBRT							
Moderate Hypofractionation (Preferred)	3 Gy x 20 fx 2.7 Gy x 26 fx 2.5 Gy x 28 fx	✓	✓	✓	✓	✓	
	2.75 Gy x 20 fx						✓
SBRT Ultra-Hypofractionation	9.5 Gy x 4 fx 7.25–8 Gy x 5 fx 6.1 Gy x 7 fx	✓	✓	✓	✓		
	6 Gy x 6 fx						✓

Ultra-hypofractionated versus conventionally fractionated radiotherapy for prostate cancer (HYPO-RT-PC): patient-reported quality-of-life outcomes of a randomised, controlled, non-inferiority, phase 3 trial

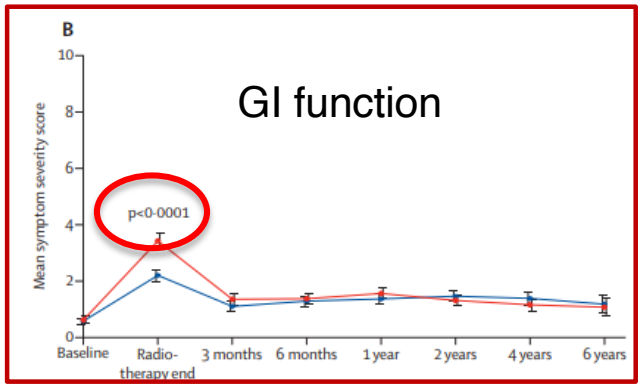
Per Fransson, Per Nilsson, Adalsteinn Gunnlaugsson, Lars Beckman, Björn Tavelin, David Norman, Camilla Thellenberg-Karlsson, Morten Hoyer, Magnus Lagerlund, Jon Kindblom, Claes Ginman, Bengt Johansson, Kirsten Björnlinger, Mihajl Seke, Måns Agrup, Björn Zackrisson, Elisabeth Kjellén, Lars Franzén, Anders Widmark

Lancet 2021





1180 patients randomized 1:1 to:
- 78 Gy/39 fx
- 42.7 Gy/7 fx on every other day



Intensity-modulated radiotherapy versus stereotactic body radiotherapy for prostate cancer (PACE-B): 2-year toxicity results from an open-label, randomised, phase 3, non-inferiority trial

Tree et al., Lancet. Oct 2022

874 low and intermediate risk PCa patients randomized 1:1: CRT (78 Gy/39 fx) or SBRT (36.25 [illegible]

II end-point: grade 2 or higher late GI and GU toxicity (sec. RTOG and CTCAE) (prespecified analysis)

Interpretation In the PACE-B trial, 2-year RTOG toxicity rates were similar for five fraction SBRT and conventional schedules of radiotherapy. Prostate SBRT was found to be safe and associated with low rates of side-effects. Biochemical outcomes are awaited.

	CRT	SBRT	P
		GI	
Grade 2	2%	2%	0.32
Grade 3	1%	0%	

Zelefsky et al Red J 2019

5-Year Outcomes of a Phase I Dose Escalation Study Using Stereotactic Body Radiosurgery for Patients with Low and Intermediate Risk Prostate Cancer

Michael J. Zelefsky, M.D., Marisa Kollmeier, M.D., Sean McBride, M.D., Melissa Varghese, B.A, Borys Mychalczak, M.D., Richard Gewanter, M.D., Madhur K. Garg, M.D., Laura Happersett, M.S., Debra A. Goldman, M.S., Isaac Pei, Ph.D., Mary Lin, B.A., Zhigang Zhang, Ph.D., Brett W. Cox, M.D.

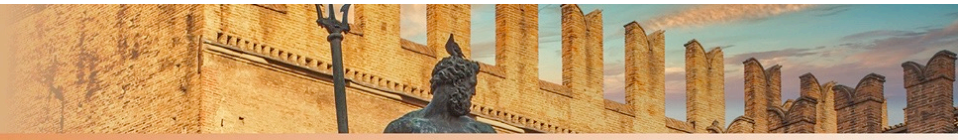
✓136 pts in Phase I dose escalation SBRT study

✓The initial dose level was 32.5 Gy in 5 fractions, and doses were then sequentially escalated to 35 Gy, 37.5 Gy and 40 Gy.

✓Late grade 2 urinary toxicities for dose levels were 23.3%, 25.7%, 27.8% and 31.4% respectively.

✓Only one late grade 3 urinary toxicity (urethral stricture) developed in the 40 Gy dose arm corrected with transurethral resection.

⬆ DOSE
⬆ TOX≥2!!!



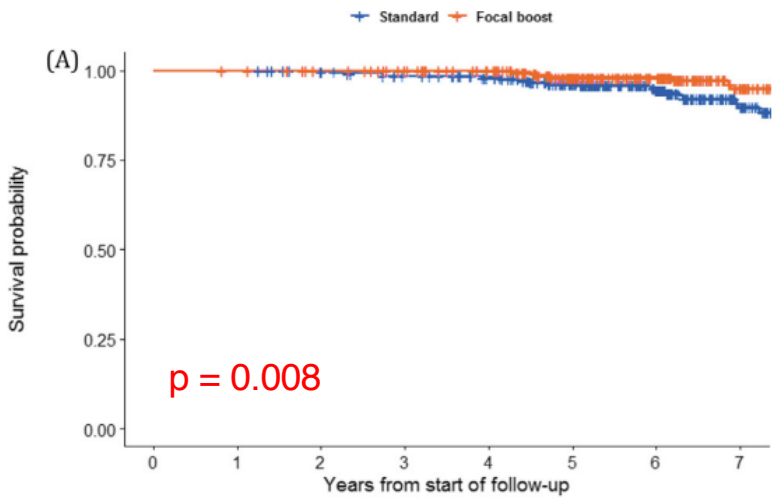
Results and Limitations: Among patients who underwent post-treatment biopsies, 39/247 (15.8%) were positive for Gleason-gradable prostate adenocarcinoma, of which 35/39 (90%) had a DIL initially present and 29/39 (74.4%) had a positive biopsy within the DIL. Factors independently associated with post-treatment biopsy outcomes included the presence of a DIL (OR 6.95; $p = 0.001$), radiographic T3 disease (OR 5.23, $p < 0.001$), SBRT dose $\geq$40 Gy (OR 0.26, $p = 0.003$), and use of androgen deprivation therapy (ADT; OR 0.28, $p = 0.027$). Among patients with a DIL (N = 149), the only factors associated with post-treatment biopsy outcomes included $\geq$50% percent cores positive (OR 2.4, $p = 0.037$), radiographic T3 disease (OR 4.04, $p = 0.001$), SBRT dose $\geq$40 Gy (OR 0.22, $p < 0.001$), and use of ADT (OR 0.21, $p = 0.014$).

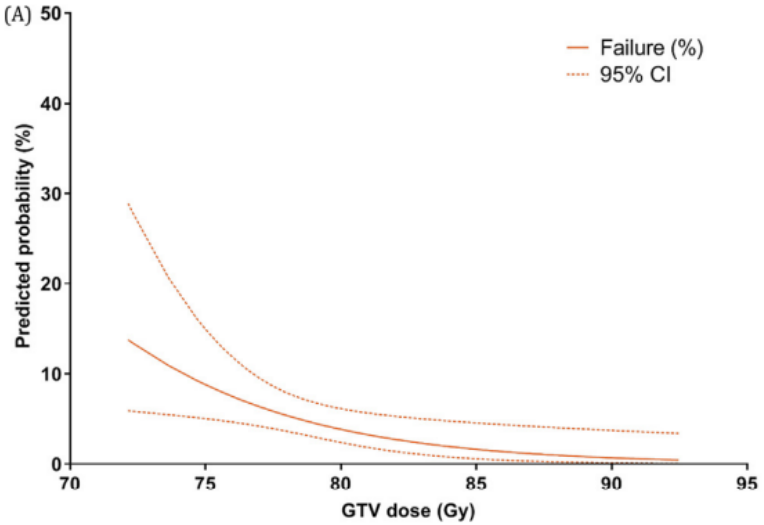
Conclusions: Our results suggest that men with PI-RADS 4 or 5 DILs have a higher risk of local recurrence after prostate SBRT and that most recurrences are located within the DIL.

Gorovets et al., Eur Urol 2021

Patterns of Failure Following External Beam Radiotherapy With or Without an Additional Focal Boost in the Randomized Controlled FLAME Trial for Localized Prostate Cancer

Groen et al. Eur Urol 2021





Prostate Stereotactic Body Radiation Therapy With a Focal Simultaneous Integrated Boost: Acute Toxicity and Dosimetry Results From a Prospective Trial

Andrew M. McDonald MD, MS [a,*], Michael C. Dobelbower MD, PhD [a], Eddy S. Yang MD, PhD [a], Grant M. Clark MD [b], Rojymon Jacob MD [a], Robert Y. Kim MD [a], Rex A. Cardan PhD [a], Richard Popple PhD [a], Jeffrey W. Nix MD [c], Soroush Rais-Bahrami MD [c], John B. Fiveash MD [a]

2018

26 pts treated with prostate SBRT (36.25 Gy/5 fx + boost up to 40 Gy to the DIL)

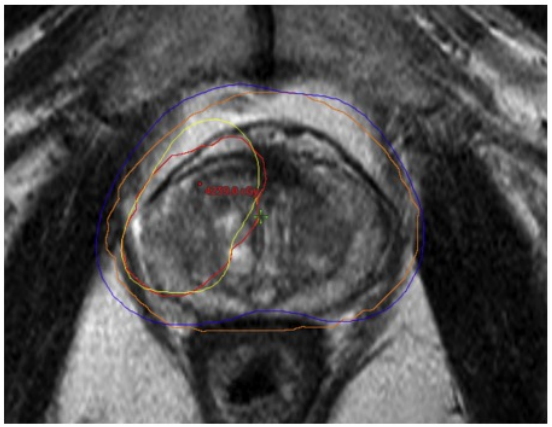


Table 3 Acute toxicity events

	Grade 1	Grade 2
Genitourinary toxicity		
Dysuria	3 (11.5%)	4 (15.4%)
Frequency	4 (15.4%)	6 (23.1%)
Hesitancy	5 (19.2%)	2 (7.7%)
Hematuria	0	1 (3.8%)
Gastrointestinal toxicity		
Diarrhea	3 (11.5%)	1 (3.8%)
Hematochezia	3 (11.5%)	0
Pain	1 (3.8%)	0
Urgency	1 (3.8%)	1 (3.8%)

SABR for High-Risk Prostate Cancer: A Prospective Multilevel MRI-Based Dose Escalation Trial

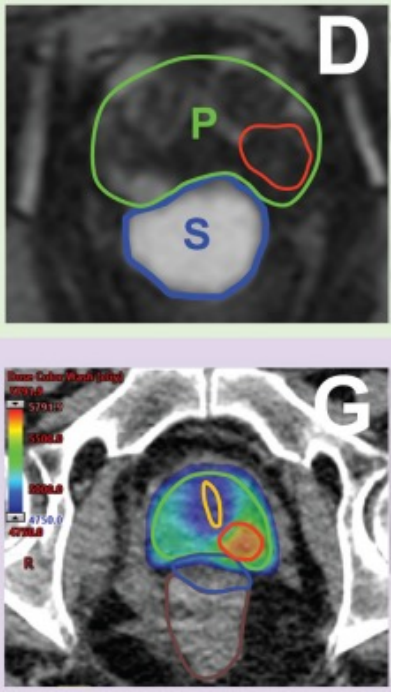
INTERNATIONAL JOURNAL OF RADIATION ONCOLOGY · BIOLOGY · PHYSICS

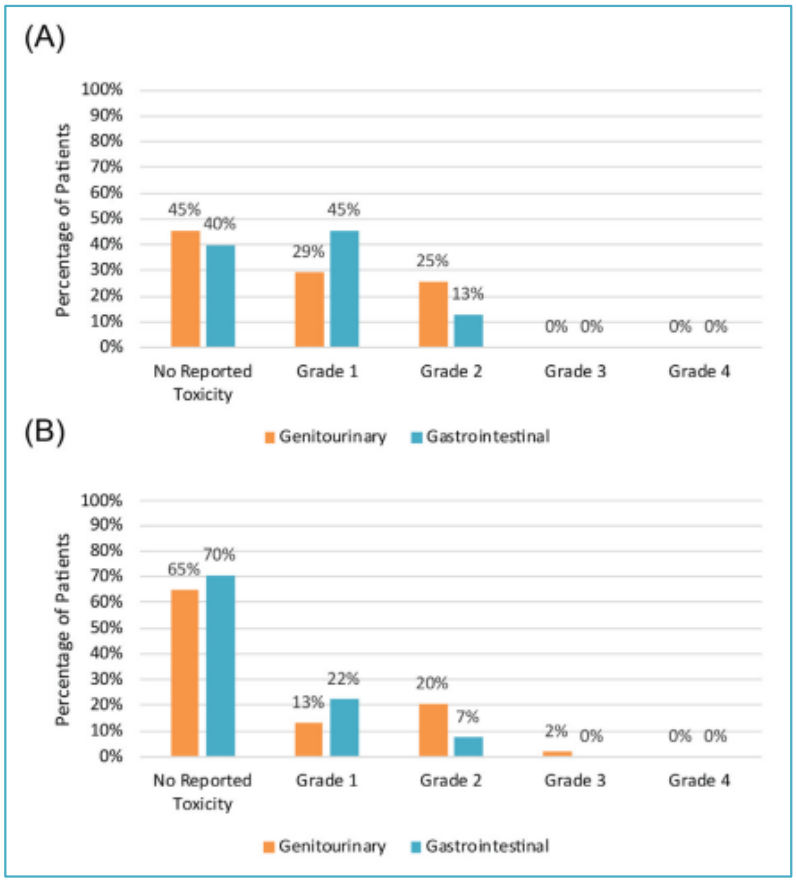
Hannan et al., Jun, 2022

Phase I clinical trial of 5/fx SABR in high-risk Pca (55 pts)

47.5Gy to the prostate + boost to 50 Gy to the DIL + 22.5 Gy to the pelvis

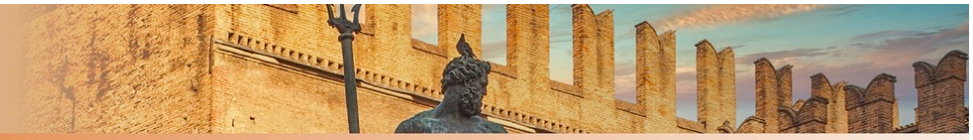
Dose escalation up to 55 Gy to the DIL and 25 Gy to the pelvis





SABR for HR-PCa using multilevel dose painting is feasible and can be safely delivered with 47.5 Gy to prostate, 55 Gy to mpMRI-defined intraprostatic lesion(s), and 25 Gy to pelvic lymph nodes in 5 fractions. The treatment was well tolerated with acceptable acute 90-day GU/GI toxicity. This is the highest reported SABR dose for treating HR-PCa in 5 fractions. Long-term follow-up is required to assess late toxicity and outcomes.

Hannan et al., RedJournal Jun, 2022



PubMed.gov

prostate radiotherapy mr-linac OR mrgrt

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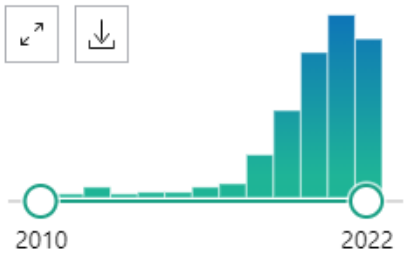
RESULTS BY YEAR



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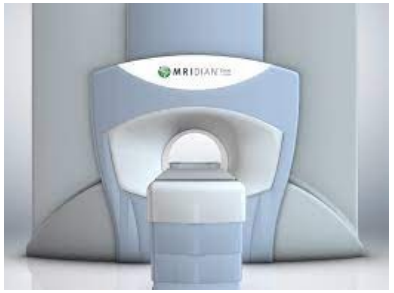
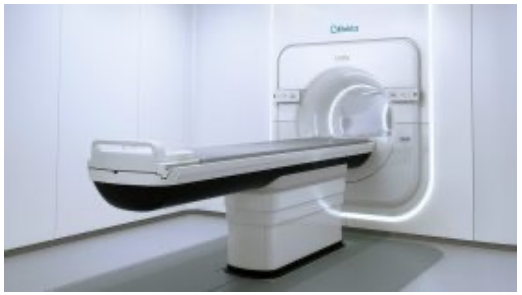
331 results Page 1 of 34

Low T MR-linac



High T MR-linac



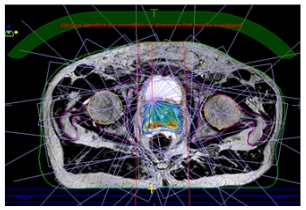
Daily dosimetric variation between image-guided volumetric modulated arc radiotherapy and MR-guided daily adaptive radiotherapy for prostate cancer stereotactic body radiotherapy

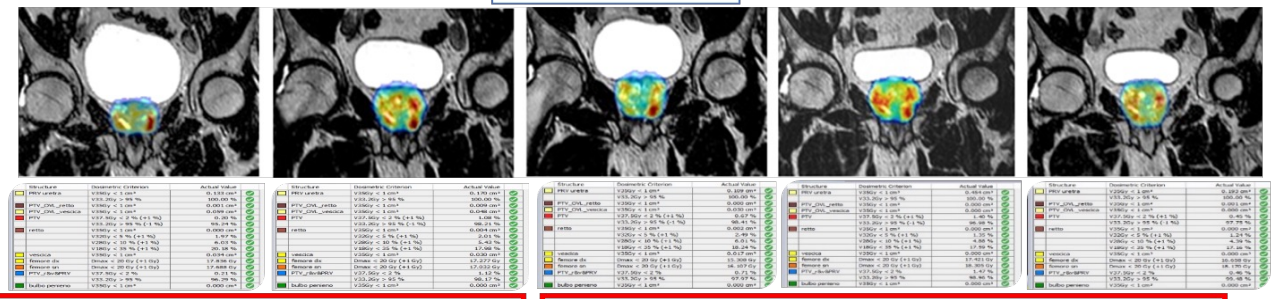
Nicosia et al., Acta Oncol 2021

MRgRT (group 1)

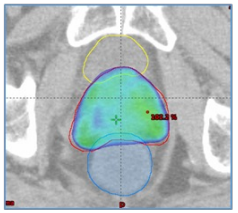
Initial planning

Daily adaptive RT with ATS

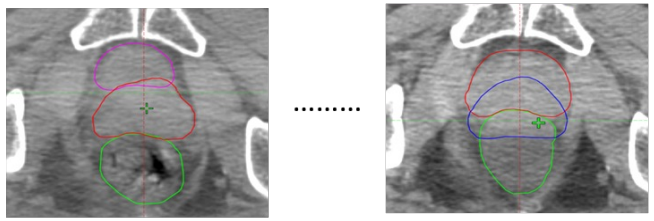




IGRT with and without fiducials (group 2,3) (initial plan)

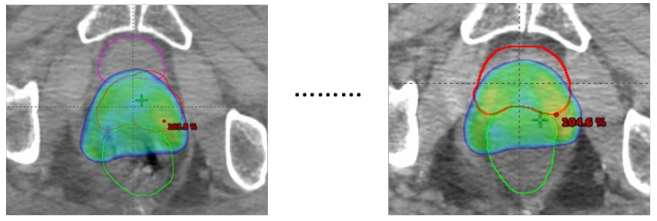


cbCT recontouring (prostate, rectum and bladder)



cbCT 1 ..... cbCT 5

Translate the original plan of each recontoured cbCT



cbCT 1 ..... cbCT 5

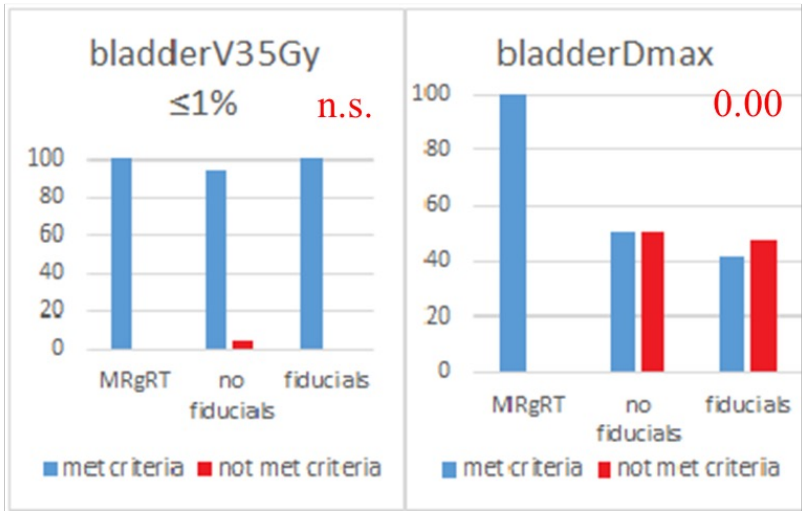
Daily dosimetric variation between image-guided volumetric modulated arc radiotherapy and MR-guided daily adaptive radiotherapy for prostate cancer stereotactic body radiotherapy

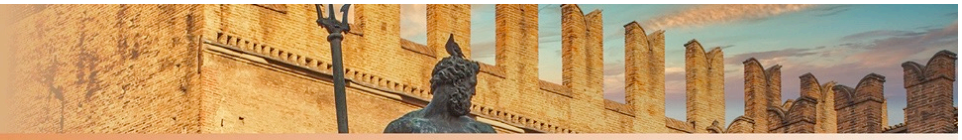
Nicosia et al., Acta Oncol 2021

Rectum constraint violation rate

*after Bonferroni correction for multiple testing

Bladder constraint violation rate





Stereotactic MRI-guided radiation therapy for localized prostate cancer (SMILE): a prospective, multicentric phase-II-trial

Rad Oncol, 2022

J. Ristau[1,2,3*], J. Hörner-Rieber[1,2,3,4], C. Buchele[1,2,3], S. Klüter[1,2,3], C. Jäkel[1,2], L. Baumann[7], N. Andratschke[8], H. Garcia Schüler[8], M. Guckenberger[8], M. Li[9], M. Niyazi[9], C. Belka[9], K. Herfarth[1,2,3,4,5,6], J. Debus[1,2,3,4,5,6] and S. A. Koerber[1,2,3,4*]

Methods: The study is designed as a prospective, one-armed, two-stage, multi-center phase-II-trial with 68 patients planned. Low- and intermediate-risk localized prostate cancer patients will be eligible for the study as well as early high-risk patients (cT3a and/or Gleason Score ≤ 8 and/or PSA ≤ 20 ng/ml) according to d'Amico. All patients will receive definitive MRI-guided stereotactic radiation therapy with a total dose of 37.5 Gy in 5 fractions (single dose 7.5 Gy) on alternating days. A focal simultaneous integrated boost to MRI-defined tumor(s) up to 40 Gy can optionally be applied. The primary composite endpoint includes the assessment of urogenital or gastrointestinal toxicity ≥ grade 2 or treatment-related discontinuation of therapy. The use of MRI-guided radiotherapy enables online plan adaptation and intrafractional gating to ensure optimal target volume coverage and protection of organs at risk.

Agenda

- Prostate Cancer
- NSCLC (primary and metastatic)
- Oligometastases
- Other primary tumors (pancreas, kidney)

NSCLC (primary and metastatic)

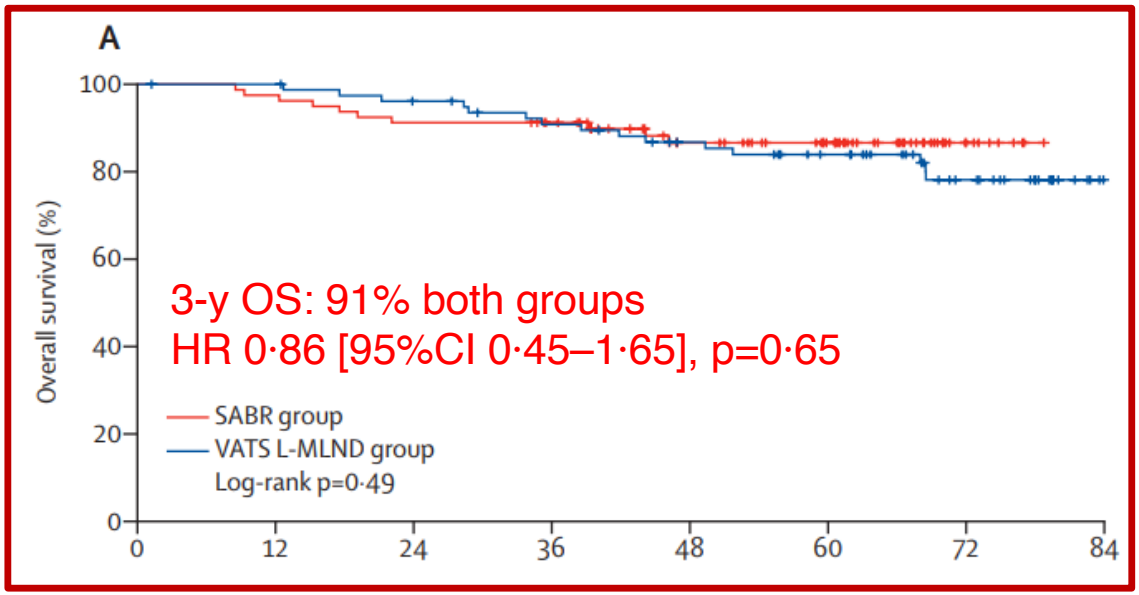
- SABR is the standard of treatment in (in)operable early-stage NSCLC (ROSEL e STARS trials prematurely closed)

- Consolidate role in oligometastatic patients (SABR-COMET, Gomez trial,…)

Stereotactic ablative radiotherapy for operable stage I non-small-cell lung cancer (revised STARS): long-term results of a single-arm, prospective trial with prespecified comparison to surgery

*Joe Y Chang, Reza J Mehran, Lei Feng, Vivek Verma, Zhongxing Liao, James W Welsh, Steven H Lin, Michael S O'Reilly, Melenda D Jeter, Peter A Balter, Stephen E McRae, Donald Berry, John V Heymach, Jack A Roth, on behalf of The STARS Lung Cancer Trials Group**

Lancet, 2021



Interpretation Long-term survival after SABR is non-inferior to VATS L-MLND for operable stage IA NSCLC. SABR remains promising for such cases but multidisciplinary management is strongly recommended.

Long-term Follow-up on NRG Oncology RTOG 0915 (NCCTG N0927): A Randomized Phase 2 Study Comparing 2 Stereotactic Body Radiation Therapy Schedules for Medically Inoperable Patients With Stage I Peripheral Non-Small Cell Lung Cancer

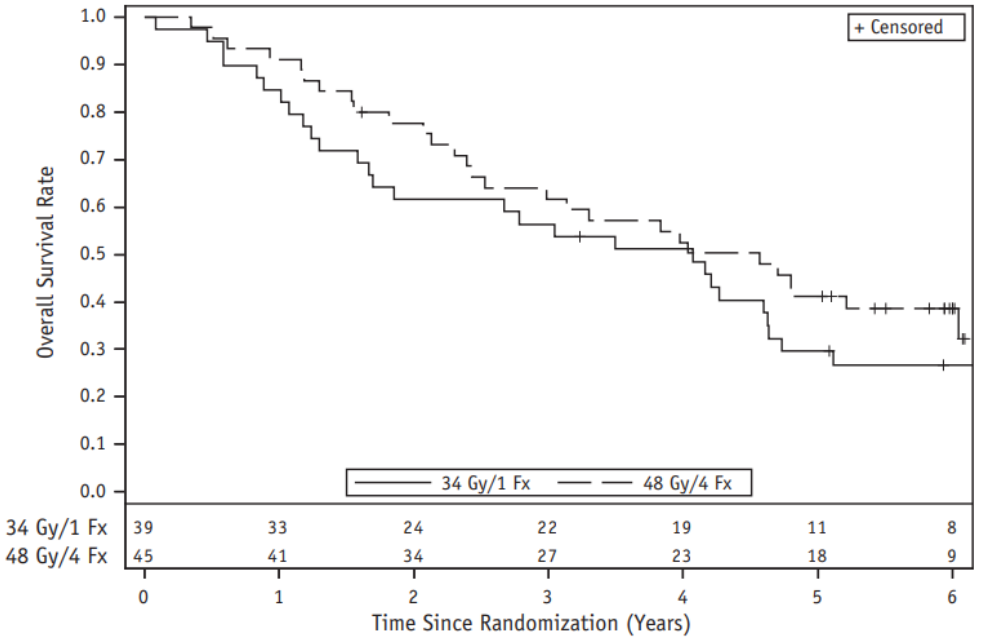
International Journal of Radiation Oncology biology • physics

Videtic et al., RedJournal, 2019

84 inoperable stage I peripheral NSCLC treated with SABR 34 Gy/1fx or 48 Gy/4 fx

I end-point: 1-year toxicity

Long-term follow-up data for RTOG 0915/NCCTG N0927 revealed no excess development of late-appearing toxicity in either arm, coupled with persistently high rates of local control. The median OS of 4 years for each arm suggests similar efficacy between the arms.



Radiation and checkpoint blockade immunotherapy: radiosensitisation and potential mechanisms of synergy

Andrew B Sharabi, Michael Lim, Theodore L DeWeese, Charles G Drake

Lancet Oncology 2015; 16: e498–509

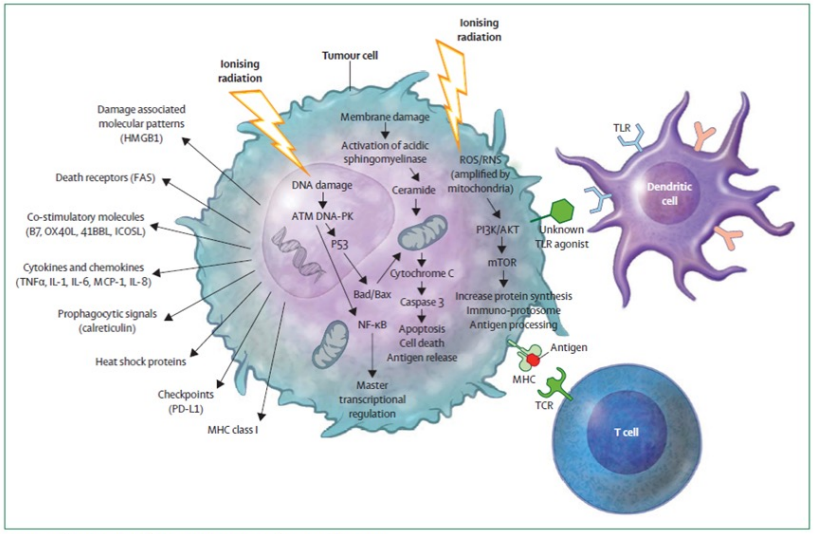


Figure 1: **Radiation induces changes to the tumour cell immunophenotype**
Radiation-induced DNA and membrane damage, and cytoplasmic reactive oxygen species (ROS) activate many transcription factors and signalling pathways that modulate the immunophenotype and immunogenicity of tumour cells. Modified from Finkelstein and colleagues.[14]

MHC class I is downregulated in tumors to evade immune recognition

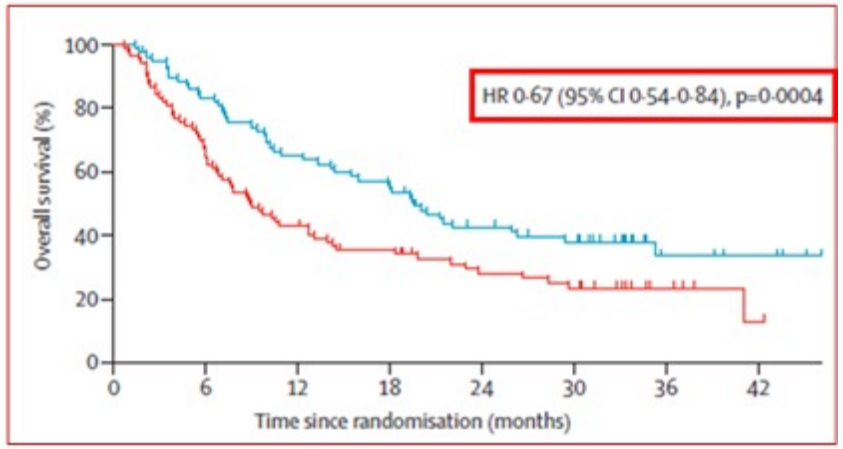
↓

Radiation enhances MHC class I surface expression, calreticulin expression, and release of HMGB1

Radiation activates dendritic cells and enhances cross-presentation of tumour antigens

Radiation increases the density of tumour-infiltrating lymphocytes

Radiation modulates the expression of immune checkpoint molecules



Pembrolizumab with or without radiotherapy for metastatic non-small-cell lung cancer: a pooled analysis of two randomised trials

Theelen, Lancet Respir Med 2020; 9: 467–75

Pooled analysis of PEMBRO-RT trial (*Theelen, 2019*) + MDACC trial (*Welsh, 2020*)

	Pembrolizumab alone (n=76)	Pembrolizumab plus radiotherapy (n=72)	Number needed to treat	Odds ratio (95% CI)	p value
Best overall response					
Abscopal response rate	15/76 (19·7%)	30/72 (41·7%)	2·00	2·96 (1·42–6·20)	0·0039
Abscopal control rate	33/76 (43·4%)	47/72 (65·3%)	4·58	2·51 (1·28–4·91)	0·0071
PD-L1 status					
<1%	6/36 (16·7%)	11/29 (37·9%)	4·69	3·00 (0·96–10·00)	0·080
1–49%	3/14 (21·4%)	9/19 (47·4%)	3·85	3·30 (0·96–16·70)	0·16
≥50%	5/15 (33·3%)	6/13 (46·2%)	16·13	1·72 (0·37–7·69)	0·70
Objective response at 12 weeks					
Abscopal response rate	14/76 (18·4%)	25/72 (34·7%)	5·26	1·95 (0·91–4·20)	0·086
Abscopal control rate	29/76 (38·2%)	45/72 (62·5%)	4·09	2·71 (1·39–5·28)	0·0033

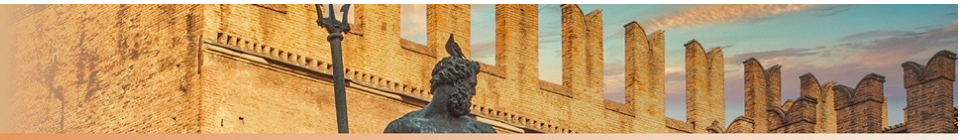
Data are n (%), unless otherwise stated.

Implications of all the available evidence

Our pooled analysis shows that adding radiotherapy to pembrolizumab significantly increases response rates to unirradiated lesions, leading to a significant progression-free survival and overall survival benefit. The combination of pembrolizumab with radiotherapy could be considered a treatment option for patients with metastatic non-small-cell lung cancer. These results warrant validation in a randomised phase 3 trial.

Need for patients selection..

AIRO2022
XXXII CONGRESSO NAZIONALE AIRO
XXXIII CONGRESSO NAZIONALE AIRB
XII CONGRESSO NAZIONALE AIRO GIOVANI
Radioterapia di precisione per un'oncologia innovativa e sostenibile



Alliance A082002 -a randomized phase II/III trial of modern immunotherapy-based systemic therapy with or without SBRT for PD-L1-negative, advanced non-small cell lung cancer

Steven E. Schild,[1] Xiaofei Wang,[2] Christine M. Bestvina,[3] Terence Williams,[4] Greg Masters,[5] Anurag K. Singh,[6] Thomas E. Stinchcombe,[7] Joseph K. Salama,[7] Steven Wolf,[7] Tyler Zemla,[8] Narjust Duma,[9] Stephen G. Chun,[10] Arya Amini,[4] David Kozono,[11] Colleen Watt[12]

Agenda

- Prostate Cancer (SBRT and new technologies)
- NSCLC (combination with systemic therapy)
- Oligometastases
- Other primary tumors (pancreas, kidney)

Oligometastases (new outcome predictors and technologies)

Stereotactic Ablative Radiotherapy for the Comprehensive Treatment of Oligometastatic Cancers: Long-Term Results of the SABR-COMET Phase II Randomized Trial Palma et al., JCO 2020

Consolidative Radiotherapy for Limited Metastatic Non-Small-Cell Lung Cancer
A Phase 2 Randomized Clinical Trial
Yiengar et al., JAMA 2018

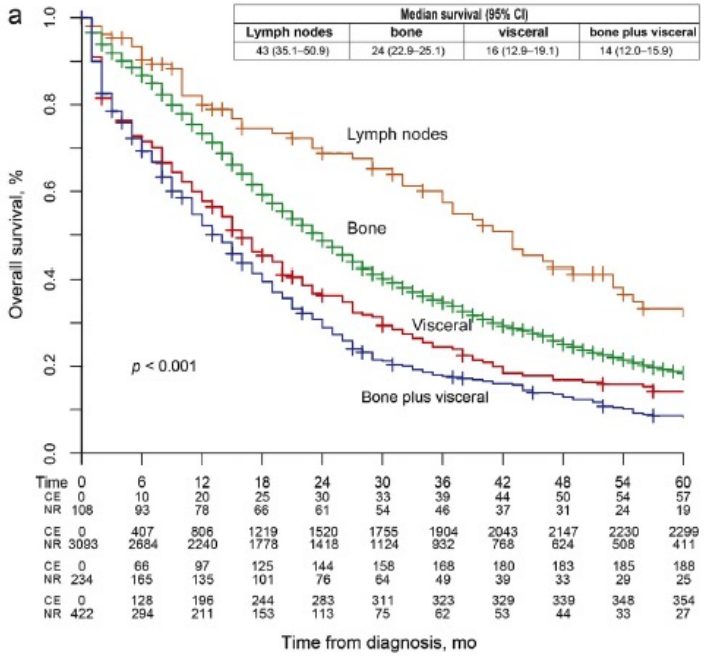
Long-Term Outcomes and Genetic Predictors of Response to Metastasis-Directed Therapy Versus Observation in Oligometastatic Prostate Cancer: Analysis of STOMP and ORIOLE Trials Deek et al., JCO 2022

Local Consolidative Therapy Vs. Maintenance Therapy or Observation for Patients With Oligometastatic Non–Small-Cell Lung Cancer: Long-Term Results of a Multi-Institutional, Phase II, Randomized Study Gomez et al., JCO 2019

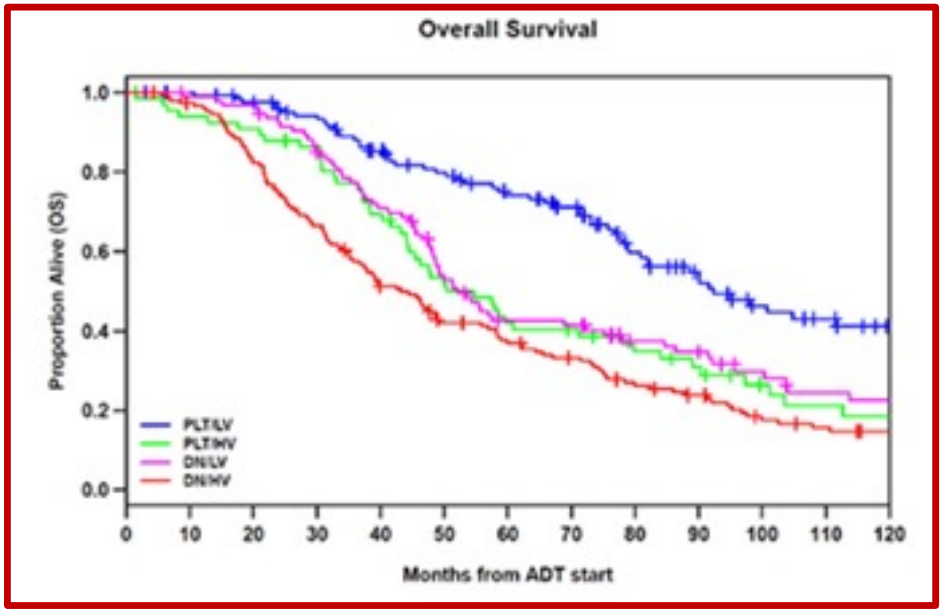
A phase II randomized trial of Observation versus stereotactic ablative RadiatIon for OLigometastatic prostate CancEr (ORIOLE)
Radwan et al., BMC 2017

Single-Fraction vs Multifraction Stereotactic Ablative Body Radiotherapy for Pulmonary Oligometastases (SAFRON II)
The Trans Tasman Radiation Oncology Group 13.01 Phase 2 Randomized Clinical Trial
Siva et al., JAMA 2021

Oligometastases (new outcome predictors and technologies)



Gandaglia et al, Eur Urol 2015



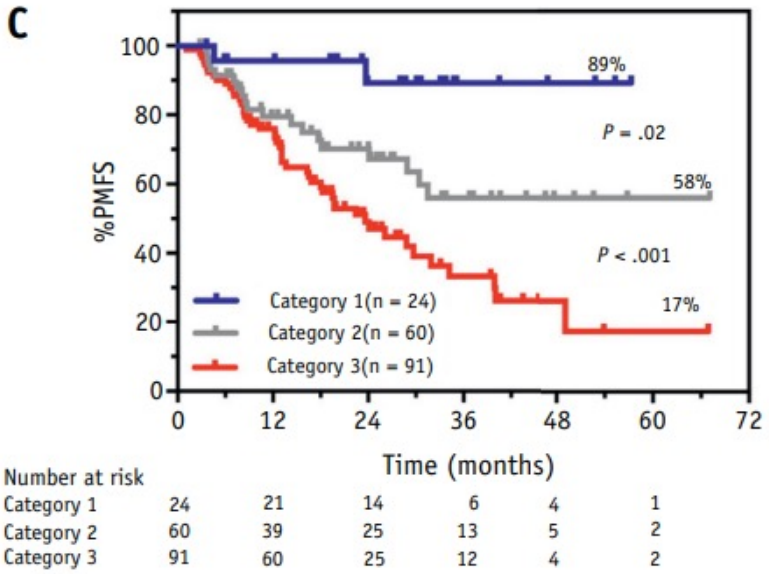
Francini et al., The Prostate 2018

What is the best candidate for MDT in oligometastatic disease?

Oligometastases (new outcome predictors and technologies)

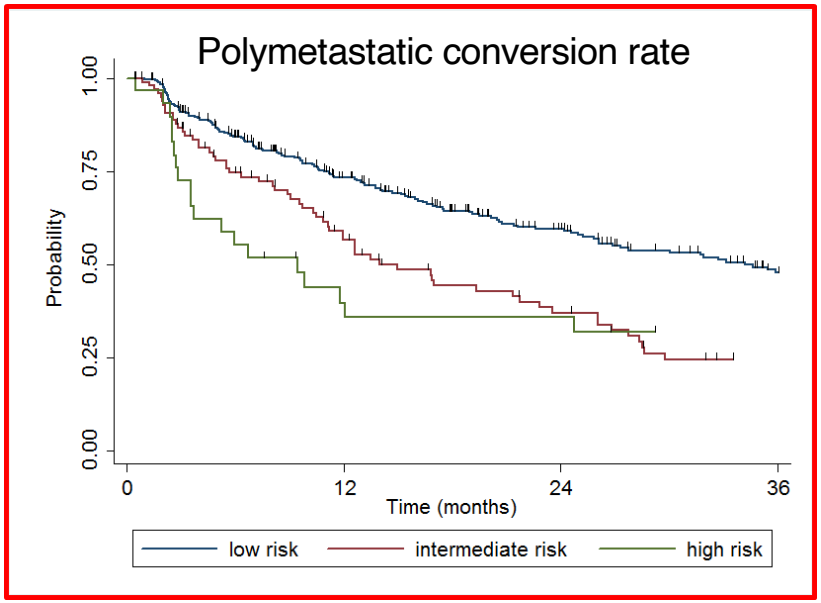
Phenotype-Oriented Ablation of Oligometastatic Cancer with Single Dose Radiation Therapy

Greco et al., RedJournal 2019



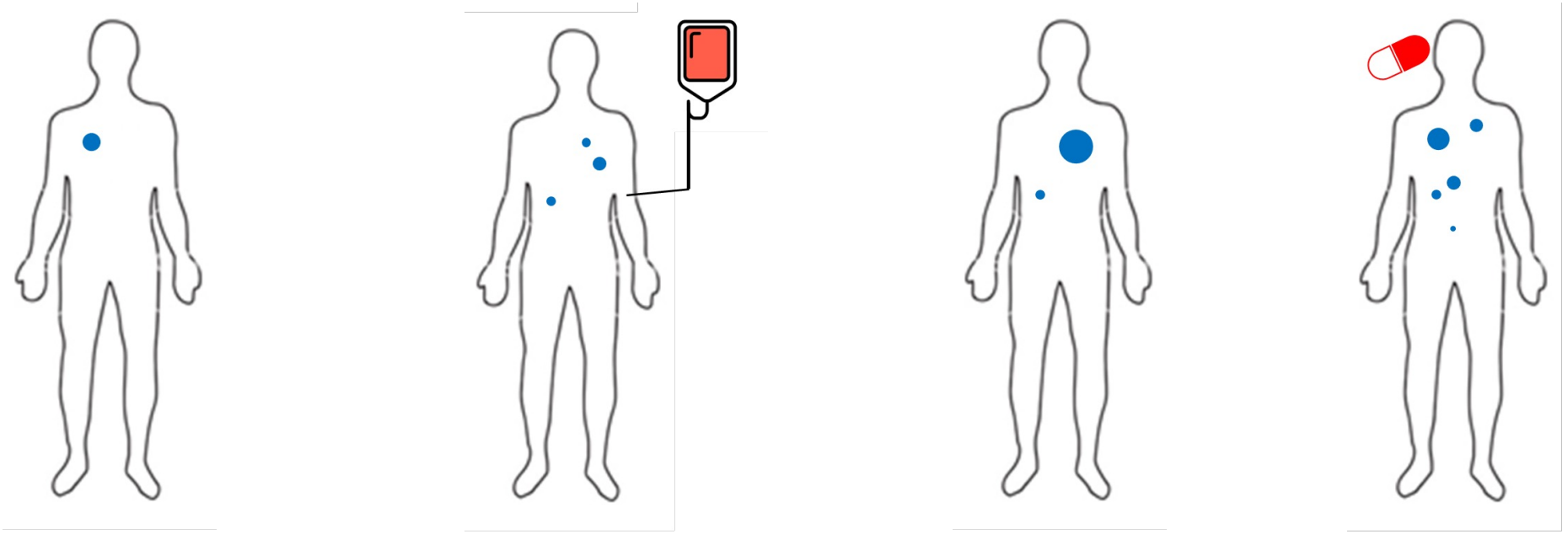
Combined factors or tumor volume + SUV value

Nicosia et al., RED LaIT-SABR, ESTRO 2022



Combined factors or tumor volume + metastases number

«The oligometastatic spectrum»



Oligomts pt #1

Oligomts pt #2

Oligomts pt #3

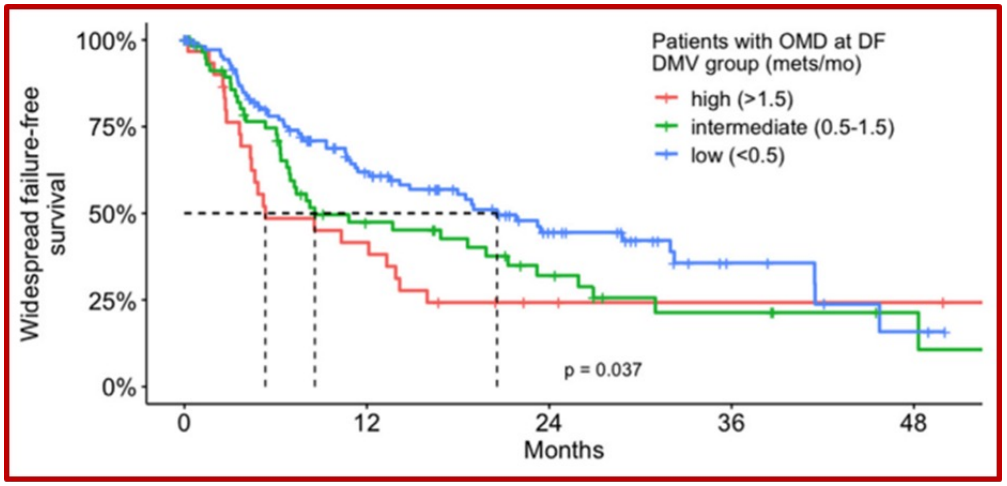
Oligomts pt #4

Distant Metastasis Velocity as a Novel Prognostic Score for Overall Survival After Disease Progression Following Stereotactic Body Radiation Therapy for Oligometastatic Disease

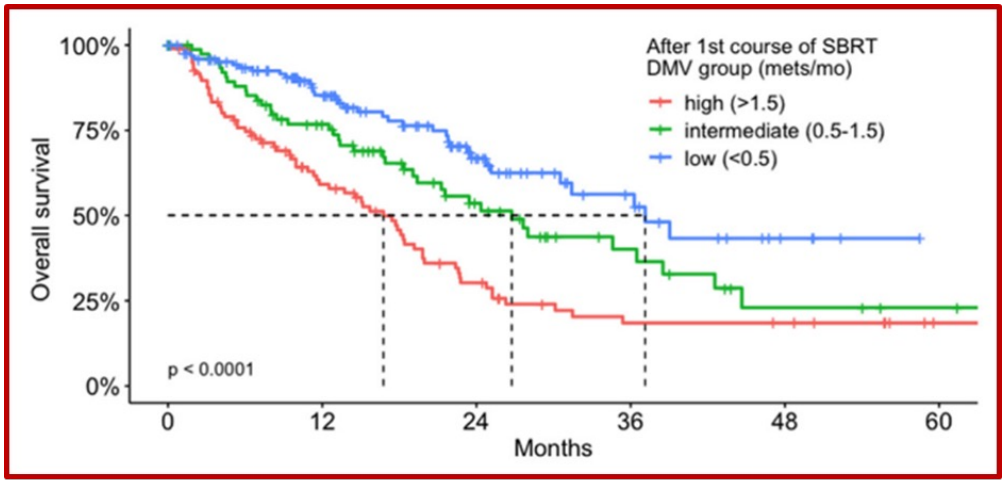
INTERNATIONAL JOURNAL OF RADIATION ONCOLOGY · BIOLOGY · PHYSICS

Willmann J et al., 2022

Distant metastases velocity (DMV): cumulative number of new distant metastases (extra- and intracranial) per month after SBRT, determined at first DF



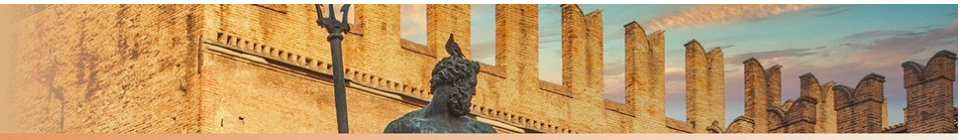
Polymetastatic disease occurrence



Overall survival

New m
prosta

Jrol. 2019



Agenda

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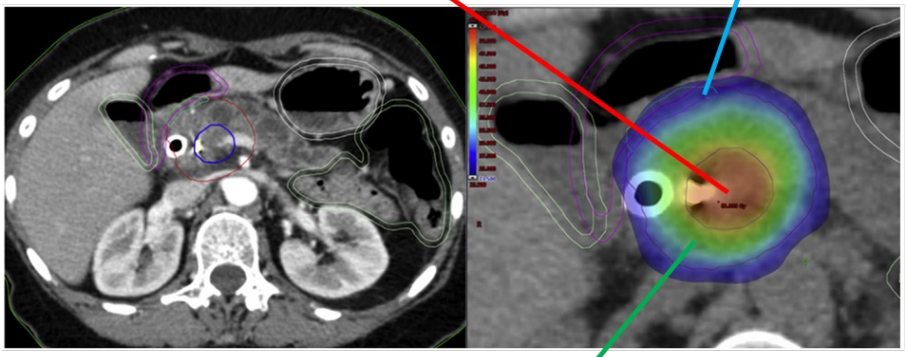
Hypofractionated Stereotactic Body Radiation Therapy With Simultaneous Integrated Boost and Simultaneous Integrated Protection in Pancreatic Ductal Adenocarcinoma

N. Simoni *,**,1, R. Micera *,1, S. Paiella †, S. Guariglia ‡, E. Zivelonghi ‡, G. Malleo †, G. Rossi *, L. Addari †, T. Giuliani †, T. Pollini †, C. Cavedon ‡, R. Salvia †, M. Milella §, C. Bassi †, R. Mazzarotto *

2021

Prescription dose 50 Gy/5fx to the vessel infiltrating area

SIP dose 30Gy/5 fx to the overlap with OARs and PRVs



De-escalate region

59 pancreatic cancer patients inoperable (borderline, locally advanced,..)

Results:
Median follow-up 15.1 months
Overall LC: 79.7%
Median OS 19.1 months
1-y and 2-y OS: 95% and 72.5%

Toxicity:
Grade 2: fatigue 25%, anorexia 15%, dyspepsia 10%, nausea 15%, vomiting 5%, diarrhoea 10%, abdominal pain 20%

Grade 3: 0%

Stereotactic ablative radiation for pancreatic cancer on a 1.5 Telsa magnetic resonance-linac system

Kathryn R. Tringale [a], Neelam Tyagi [b], Marsha Reyngold [a], Paul B. Romesser [a,c], Abraham Wu [a], Eileen M. O'Reilly [d], Anna M. Varghese [d], Paola Godoy Scripes [b], Danny N. Khalil [d], Wungki Park [d], Kenneth Yu [d], Christopher H. Crane [a,*]

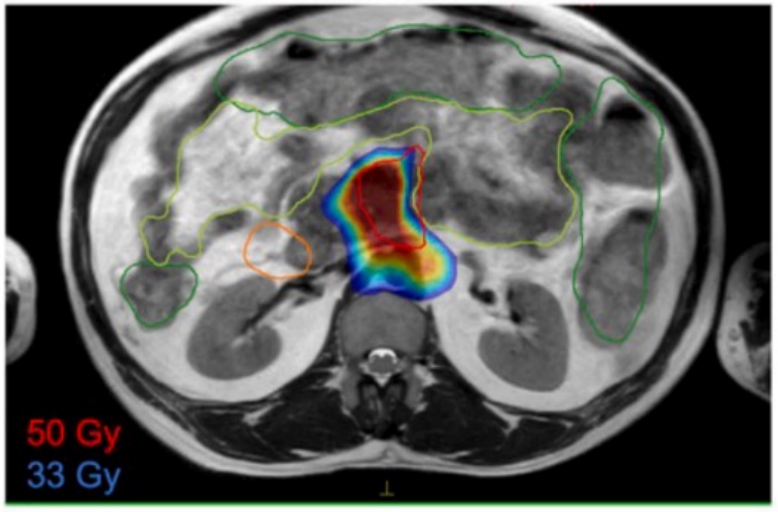
phiRO Physics and Imaging in Radiation Oncology ESTRO

2022

30 patients treated with 1.5T MR-guided SABR in 5 fractions (50 Gy)

Results:

- 1-year local control 80.7%
- 1-year OS 80.0 %
- 1-year PFS 39.7 %
- No grade 3 + toxicities



Induction Chemotherapy and Ablative Stereotactic Magnetic Resonance Image-Guided Adaptive Radiation Therapy for Inoperable Pancreas Cancer

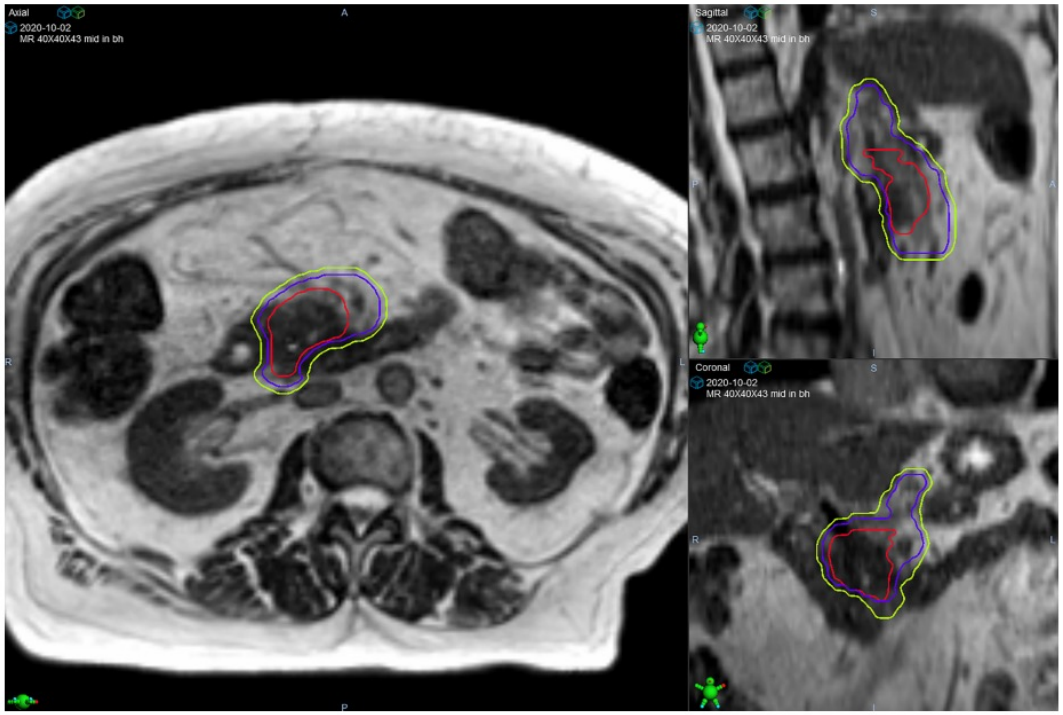
frontiers

Chuong et al., 2022

62 locally adv. pancreatic pts treated with 0.35T MR-guided SABR in 5 fractions (40-50 Gy) after induction FOLFIRINOX

Results:

- 2-year LC: 68.8%
- 2-year OS: 45.5%
- 2-year PFS: 40.0%
- Acute and late grade 3+ toxicity: 4.8% and 4.8%



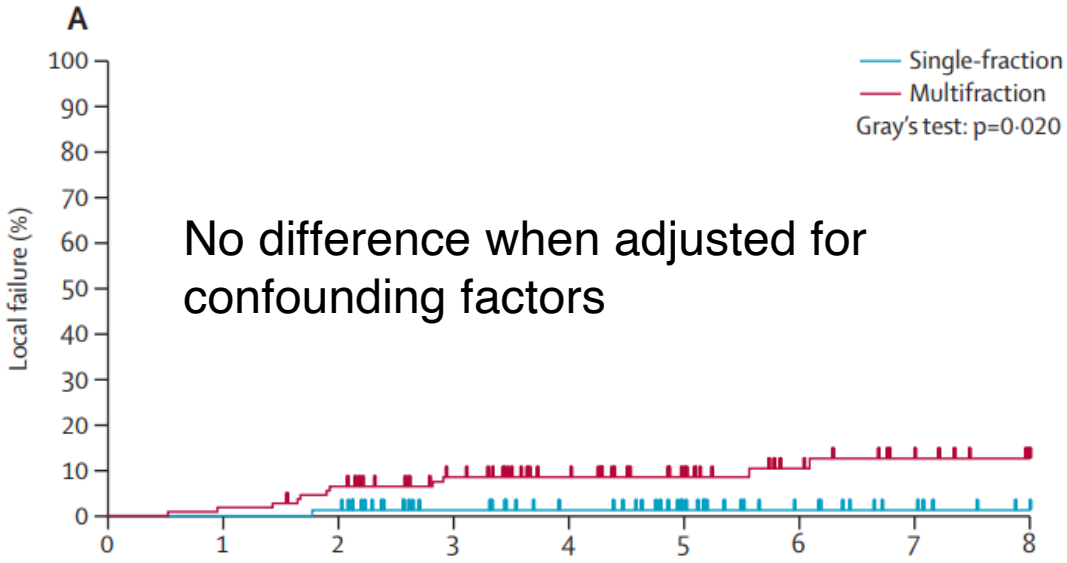
5-year outcomes after stereotactic ablative body radiotherapy for primary renal cell carcinoma: an individual patient data meta-analysis from IROCK (the International Radiosurgery Consortium of the Kidney)

Siva S. et al., Lancet 2022

190 pts treated with SBRT to primary kidney tumor
Median follow-up 5 years

SBRT schedules:
1 fx (81): 25 Gy
Multi fx (109): 42 Gy in 3-5 fx

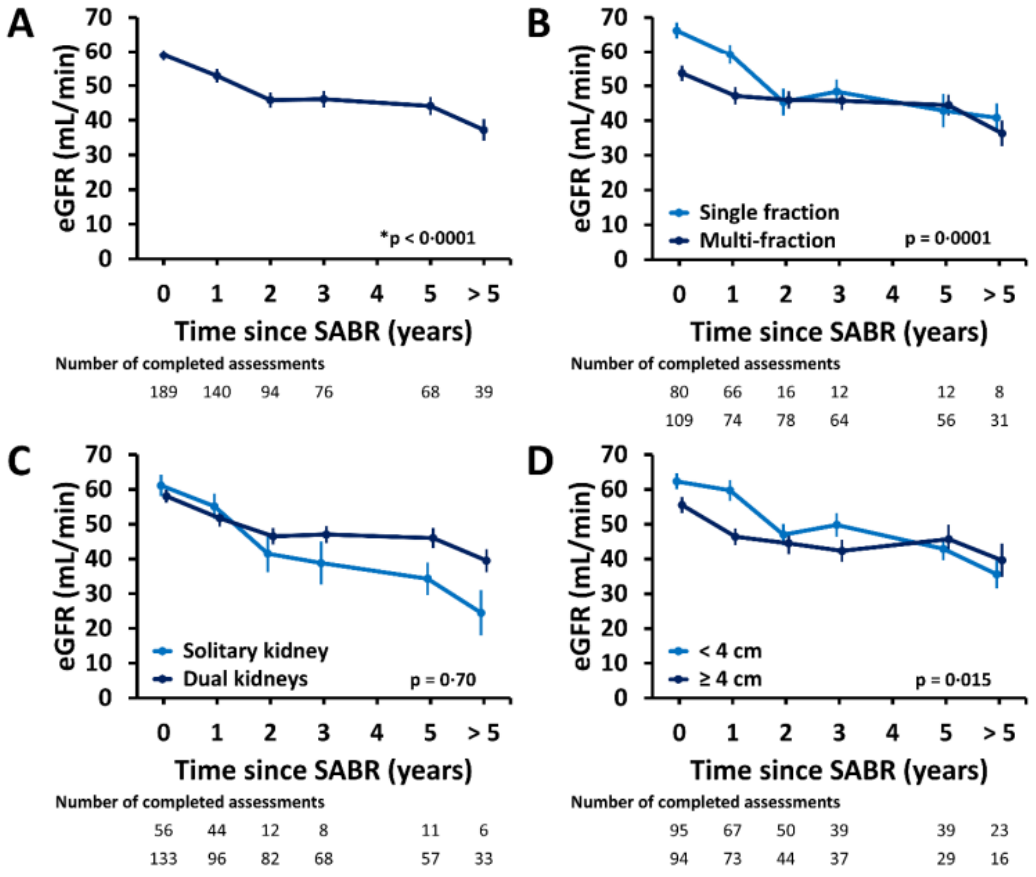
5-y local failure: 5.5%
5-y cancer-specific survival: 92%



No difference when adjusted for confounding factors

Siva S. et al., Lancet 2022

	All patients (n=190)	Single-fraction SABR (n=81)	Multifraction SABR (n=109)
Any toxic effects			
Grade 1–2	70 (37%)	29 (36%)	41 (38%)
Grade 4	1 (1%)	0	1 (1%)
Fatigue			
Grade 1–2	51 (27%)	17 (21%)	34 (31%)
Nausea			
Grade 1–2	25 (13%)	16 (20%)	9 (8%)
Chest wall pain			
Grade 1–2	12 (6%)	5 (6%)	7 (6%)
Skin-related toxic effects			
Grade 1–2	3 (2%)	2 (2%)	1 (1%)
Gastritis			
Grade 1–2	3 (2%)	1 (1%)	2 (2%)
Grade 4	1 (1%)	0	1 (1%)
Bowel-related toxic effects			
Grade 1–2	3 (2%)	1 (1%)	2 (2%)
Grade 4	1 (1%)	0	1 (1%)

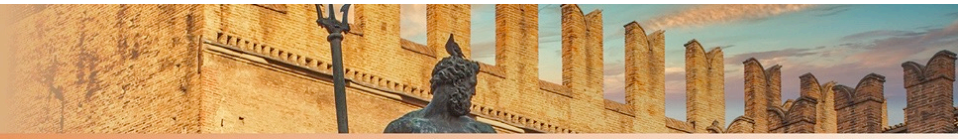


Certezza Globale delle prove	Raccomandazione	Forza della raccomandazione clinica
Molto Bassa	Nei pazienti con malattia localizzata non candidabile a chirurgia, il trattamento con terapia ablative (radioterapia stereotassica, ablazione con microonde o con radio-frequenza e crioablazione) può essere preso in considerazione.	**Positiva debole**
COI: i Membri del Panel non dichiarano conflitti di interesse in atto per il presente quesito		

Certezza Globale delle prove	Raccomandazione	Forza della raccomandazione clinica
Molto bassa (ref.1) **Bassa** (ref.2)	Nei pazienti con malattia oligometastatica (≤5 metastasi il trattamento diretto sulle metastasi (radioterapia stereo-tassica, chirurgia) può essere preso in considerazione	**Positiva debole**
COI: i Membri del Panel non dichiarano conflitti di interesse in atto per il presente quesito		

Conclusion

- SABR is a common standard in several clinical settings
- New technologies might help to improve the therapeutical ratio and reduce toxicity
- SABR might be exploited in combination with newly systemic agents



THANKS FOR YOUR ATTENTION