XXI Congreso Colombiano de Cáncer

Boost with BT or SBRT in intermediate & high risk prostate cancer

F. Guedea

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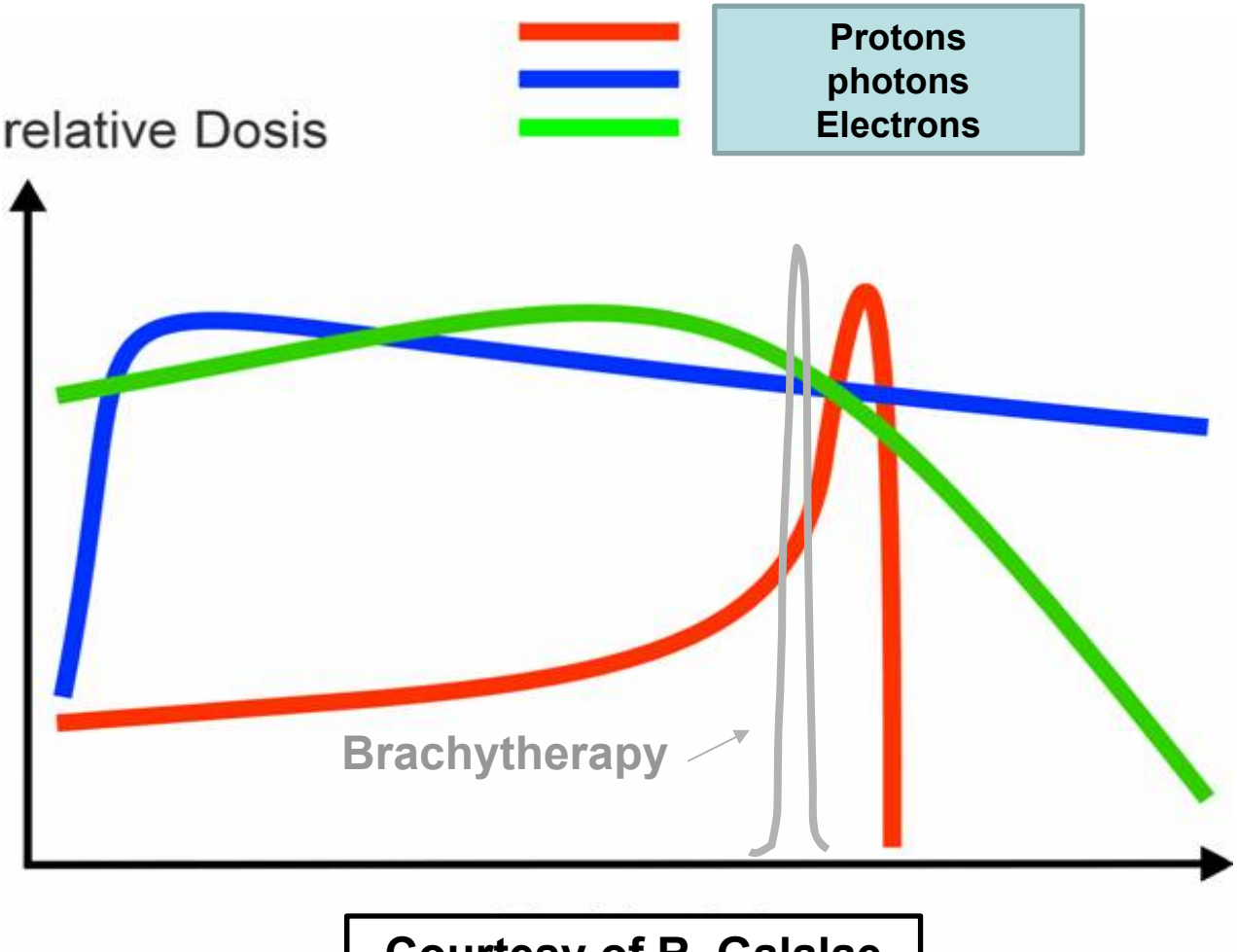
ASOPROCÁNCER
Asociación Pro Congreso de Cancerología

Outline of the presentation

- **Potential of BT in front of new technologies for EBRT (IMRT, VMAT, SBRT):**
- **Literature review in BT boost for Intermediate & High-Risk prostate cancer:**
- **Literature review in SBRT boost for Intermediate & High-Risk prostate cancer:**
- **ICO experience for BT or SBRT boost for Intermediate & High-Risk prostate cancer:**
- **Conclusions:**

Potential of Brachytherapy in prostate cancer: Intregal dose very low

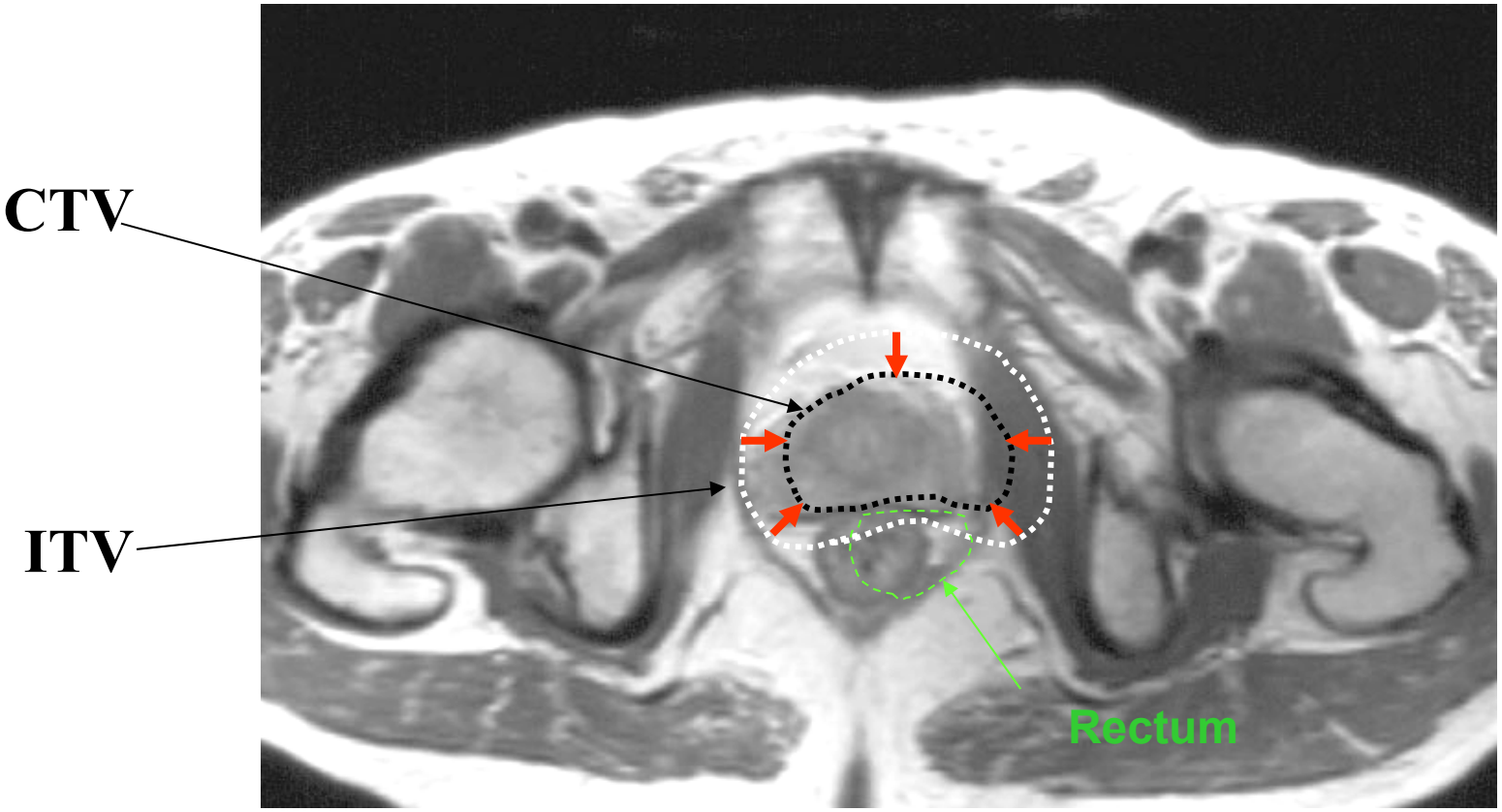


Courtesy of R. Galalae

Potential of Brachytherapy in prostate cancer:
Moving target is not a problem in BT
Moving target remains a problem in EBRT

Interstitial Brachytherapy for Prostate: CTV = PTV

No extra margin necessary . Much smaller PTV



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Phase III Trial comparing EBRT boost with BT boost

1. ASCENDE-RT, a multi-centre Canadian phase 3 trial (Ir-192):

2. Sathya & Dayes phase 3 trial (Ir-192):

3. Hoskin phase 3 trial (HDR):

Phase III Trial comparing EBRT boost with BT boost. ASCENDE-RT (Ir-192)

Methods: Between 2002 and 2011, 400 patients (276 HR & 122 IR) from 6 cancer centers with 12 months of ADT were randomized to:

- 200 men were assigned to EBRT-Boost.
- 198 to LDR-Boost.

W. James Morris et al.
Journal of Clinical Oncology 33. 7. 2015
IJROBP 98. 275-285. 2017

3 Phase III Trial comparing EBRT boost with BT boost. ASCENDE-RT (Ir-192)

Recurrence free survival:

- 94% vs 94% at 3y BFS
- 77% vs 89% at 5y BFS
- 71% vs 86% at 7y BFS
- 63% vs 83% at 9y BFS

In favour of LDR-Boost vs EBRT-Boost

Late Genito Urinary (GU) morbity grade 3:

- 19% BT Boost vs 5% EBRT boost at 5y.

W. James Morris et al.
Journal of Clinical Oncology 33. 7. 2015
IJROBP 98. 275-285. 2017

3 Phase III Trial comparing EBRT boost with BT boost

Sathya & Dayes Trial (Ir-192)

- ►66 Gy in 33 fractions vs 40 Gy in 20 fractions + Ir-192 35 Gy in a small study of 104 pts (Intermediate: 40% & High Risk: 60%). No AD.

- ►Biochemical relapse free survival was 29% in EBRT arm vs 61 in the EBRT + Ir-192 arm.

- ►Grade ≥3 GU toxicity at 18 months was 13,7% in EBRT+Ir-192 arm vs 3,8% in EBRT a

Sathya JR., Dayes IS, et al.
Journal of Clinical Oncology 23. 1192-1199. 2005.
IJROBP 99. 90-93. 2017

3 Phase III Trial comparing EBRT boost with BT boost
Hoskin phase 3 trial (HDR)

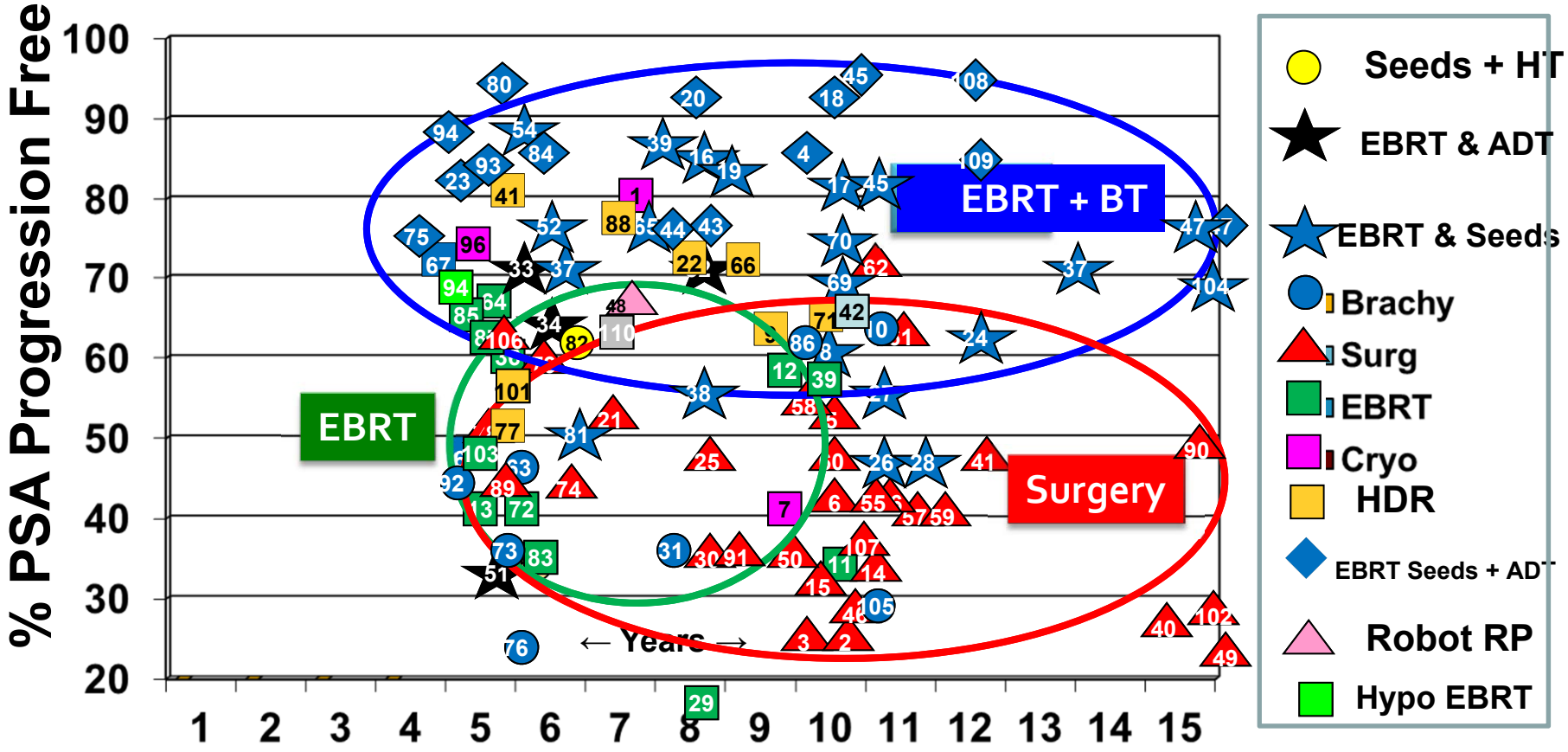
►55 Gy in 20 fractions vs 35,7 Gy in 13 fractions + HDR of 17 Gy in 2 fractions. AD in 75% of cases. A study of 218 pts (Intermediate: 40% & High Risk: 55%).

►Biochemical relapse free survival at 10 years was 39% in EBRT arm vs 46% in the EBRT + HDR arm. No differences in metastasis free or OS.

►No difference in GU, GI toxicity or QoL between the 2 arms.

Hokin P. , et al.
Radiotherapy & Oncology 103. 217-222. 2012.
Radiotherapy & Oncology. 2020.

Non Phase III Trial comparing EBRT boost with BT boost: Grimm Study (More than 40 months median FU & more tan 50 pts.)



Grimm P., el al. BJU Int. Vol 109 (Supp.1). 2012.
Upgrate 6-2014

Non Phase III Trial comparing EBRT boost with BT boost: Study of RP, EBRT, or EBRT + BT in Patients with Gleason Score 9-10 Prostate Cancer

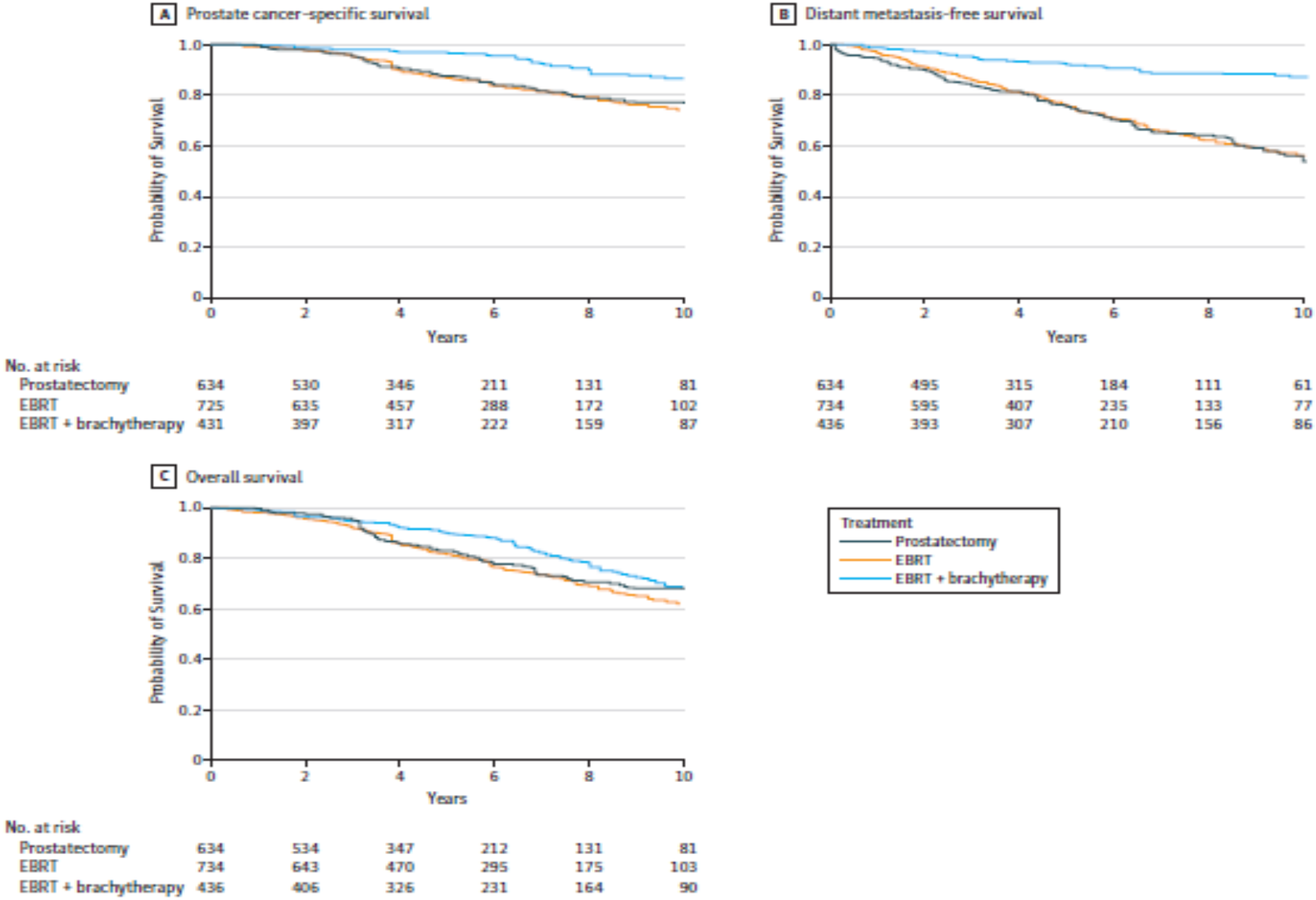
Results: Of 1809 men from 12 centers (11 USA & 1 Norway) from 2000 to 2013, 639 underwent RP, 734 EBRT, and 436 EBRT+BT.

5-year prostate cancer-specific mortality rates were RP, 12%; EBRT, 13%; & EBRT+BT, 3%.

5-year incidence rates of distant metastasis were RP, 24%; EBRT, 24%; & EBRT+BT, 8%.

Kishan AU, Cook RR, Ciezki JP, et al (USA):
JAMA. 2018 Mar 6;319(9):896-905

Non Phase III Trial comparing EBRT boost with BT boost: Study of RP, EBRT, or EBRT + BT in Patients with Gleason Score 9-10 Prostate Cancer



Non Phase III Trial comparing EBRT boost with BT boost: Norway study

Men with high-risk PCa have a significantly reduced Prostate cancer specific mortality (PCSM) & Overall mortality (OM) rates when treated with dose-escalated radiotherapy achieved by HDR-BT/EBRT (N:325 with 50 Gy + 2 times 10 Gy) compared to EBRT alone (N: 296 with 70 Gy).

Wedde TB, Fosså SD, Hellebust TP, et al (Norway)
Ten-year survival after High-Dose-Rate Brachytherapy combined with EBRT in high-risk prostate cancer: A comparison with the Norwegian SPCG-7 cohort
Radiother Oncol. 2019 Mar;132:211-217

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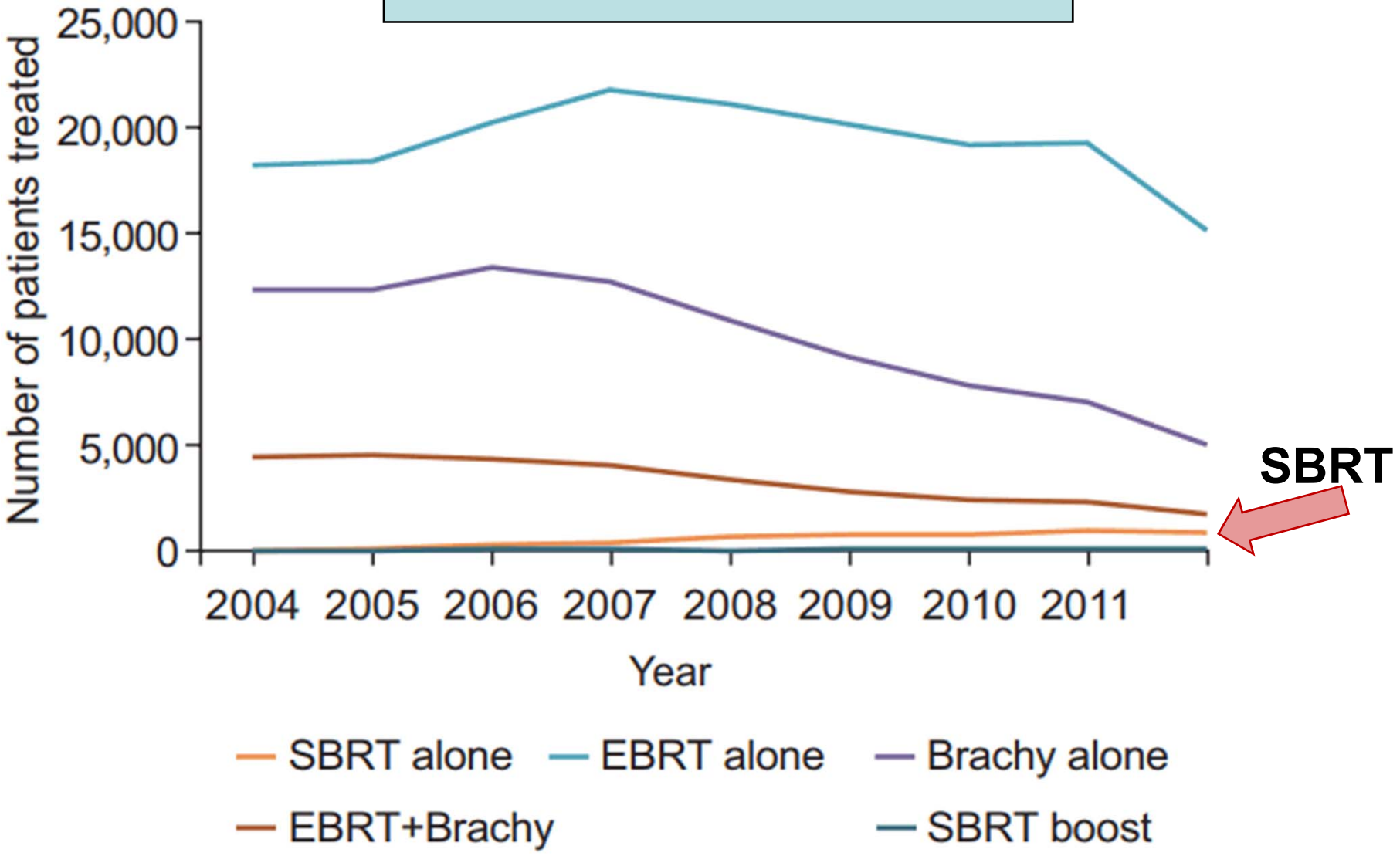
No Phase III Trial comparing EBRT boost with SBRT boost

SBRT Utilization in USA



Weiner et al., Radiat Oncol. J. 35. 137-143. 2017.

SBRT vs LDR BT vs EBRT: Propensity Score Matched Analysis of Canadian Data

Contents lists available at ScienceDirect

Clinical Oncology

journal homepage: www.clinicaloncologyonline.net

Original Article

Stereotactic Ablative Radiotherapy Versus Low Dose Rate Brachytherapy or External Beam Radiotherapy: Propensity Score Matched Analyses of Canadian Data

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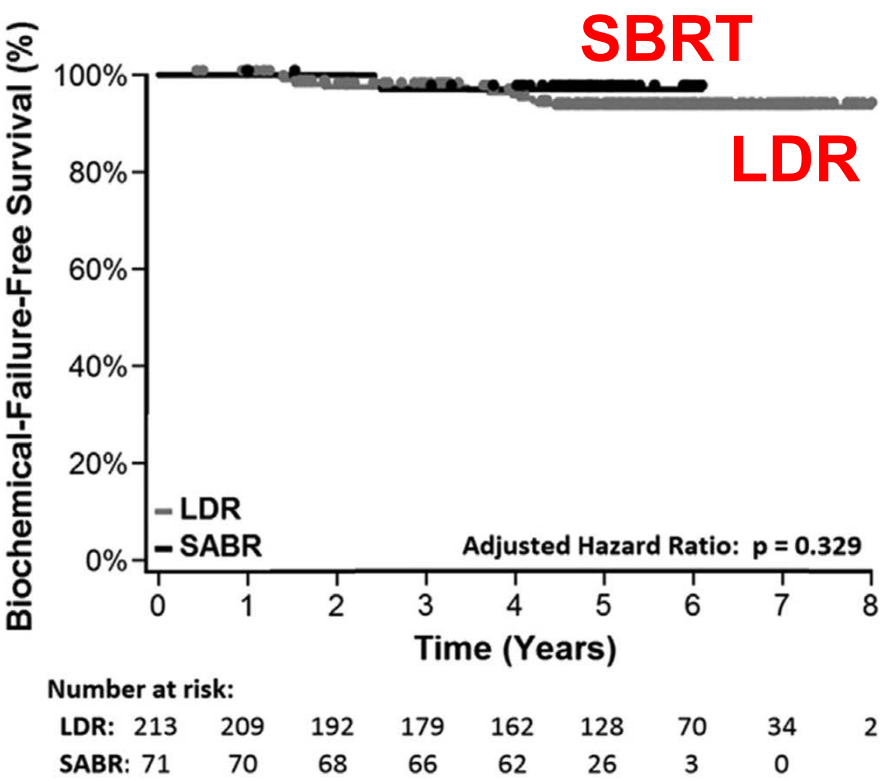
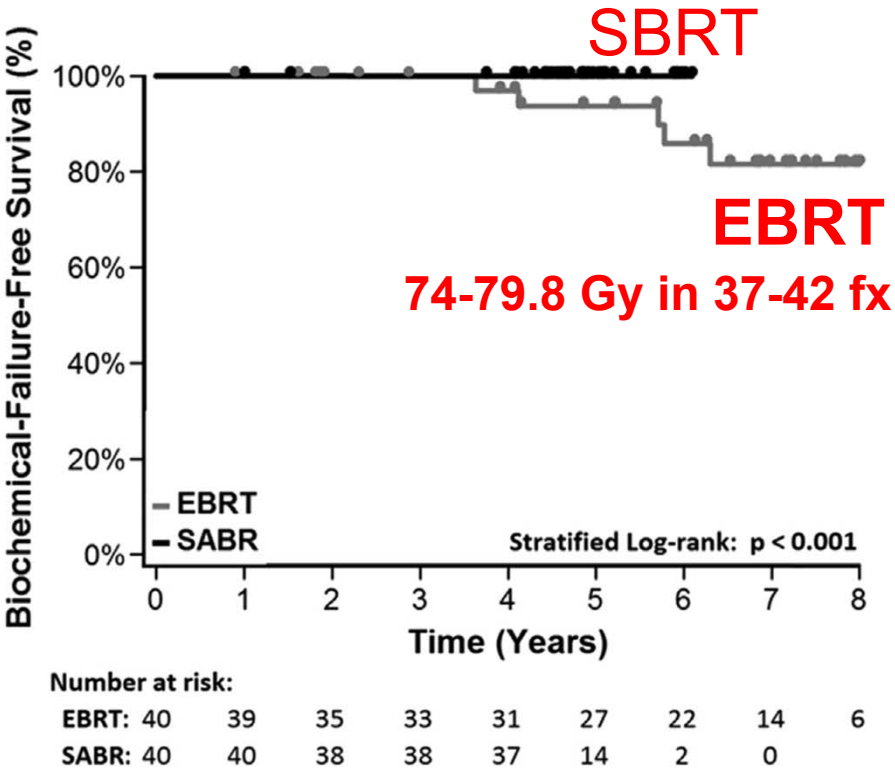
Received 11 April 2016; received in revised form 25 August 2016; accepted 22 September 2016

Loblaw et al., Clinical Oncology, 29. 161-170. 2017.

SBRT vs LDR BT vs EBRT: Propensity Score Matched Analysis of Canadian Data

N= 602 patients, low risk
Median FU: 5.1, 5.7 and 6.9 yrs for SBRT, LDR and EBRT.





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Catalan Institute of Oncology (ICO)

Catalonia
7.2 million inhabitants

The Catalan Institute of Oncology (ICO), created in 1995, is a Public centre focused on Cancer.
It follows the model of Comprehensive Cancer Centres, which handle prevention, research, treatment and specialized training all within the same organization.

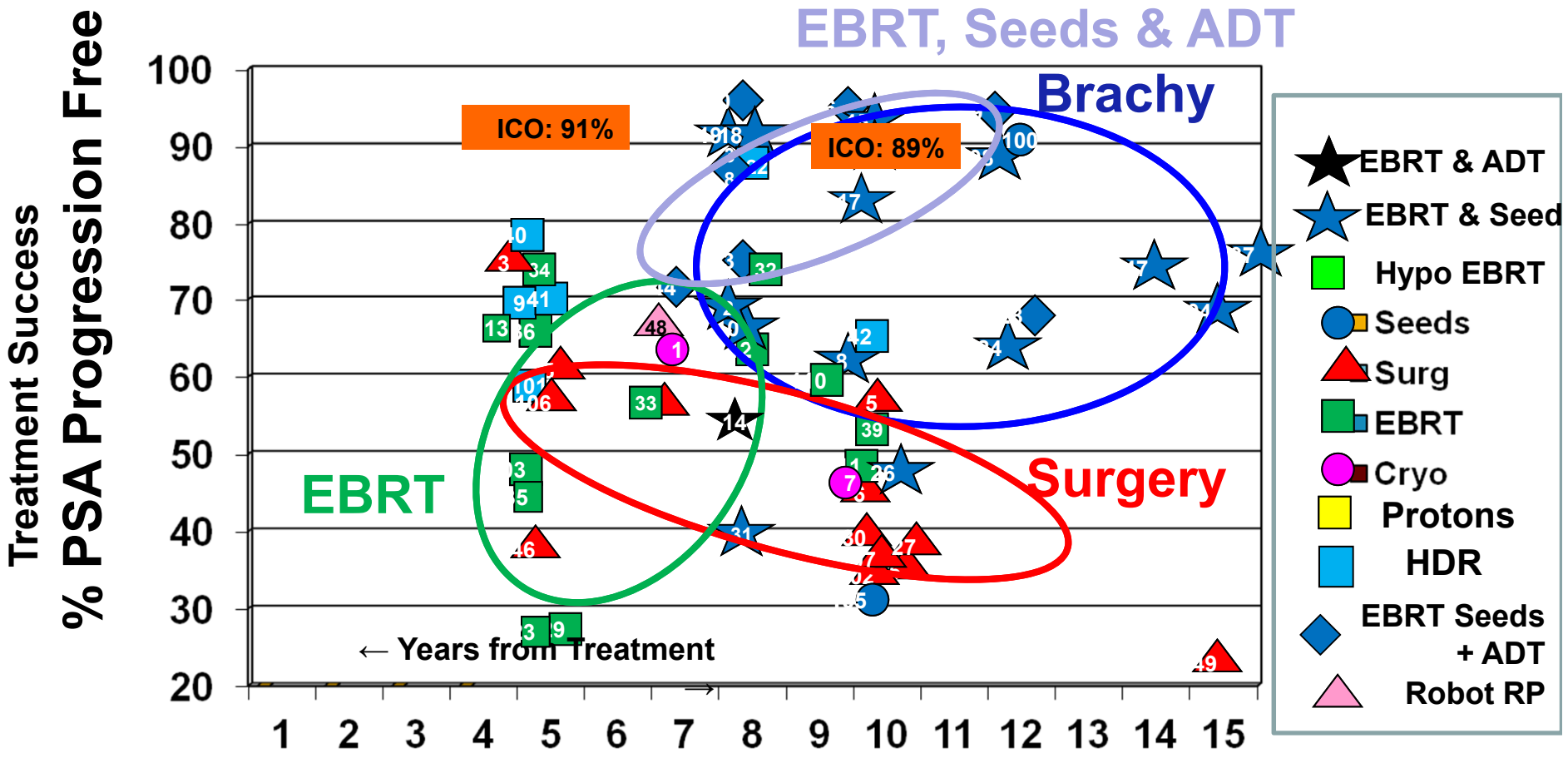
- **3 general hospitals**
- **16 community hospitals**
- **Nearly 2.5 million people**

40% of the adult population of Catalonia

Healthcare Activity at ICO 2021

	2021	Hospitalet	Girona	Badalona
External Beam RT treatments (12 Linacs)	6010	2950 (6 Linacs Varian with 3 TrueBeam & 2 Halcyon)	1450 (3 Linacs Varian with 2 TrueBeam)	1610 (3 Linacs Varian with 2 trueBeam)
Brachytherapy treatments (1 HDR, 3 PDR, 1 OR, 14 beds)	1100	1100		
Radiosurgery treatments	171	171 (With Truebeam Novalis)		
IORT to Breast & Brain	80	33	21	26

Results of 377 pts with High Risk Prostate cancer treated with EBRT (60 Gy) + HDR-BT (9 Gy) + AD 3y at ICO. Median FU: 48,7 months.



Boladeras A., Pera J., Guedea F., R&O 2014.

Grimm P., el al. BJU Int. Vol 109 (Supp.1). 2012. Upgrated 6-2014

Phase II Trial of SBRT boost after EBRT in advanced prostate cancer (Ongoing Trial)

1. **Standard treatment for high risk prostate cancer:**

   60 Gy IMRT + 9 Gy HDR + AD.

2. **Clinical Trial for high risk prostate cancer:**

   60 Gy IMRT + 9 Gy SBRT + AD.

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- Conclusions:

Conclusions

HDR or LDR BT boost with EBRT & AD shoul be offered to pts with Intermediate or high risk prostate cancer. It is a Grade A, Level 1a.

Henry, A., Pieters B., Siebert A., and Hokin P., Prostate BT Guidelines from GEC-ESTRO Radiotherapy & Oncology. 2022.

Kee DLC, et al.
BT vs EBRT boost for prostate cancer: Systematic review with meta-analysis of RCT. Cancer Treatment Review 70. 265- 271. 2018.