Update in Radiation Oncology

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Geriatric Oncology:
Cancer in Senior Adults,Paris
3rd-5th November 2011

CALGB trial BCS, Tam+/- RT in 70 yr+ (Hughes et al,2004)

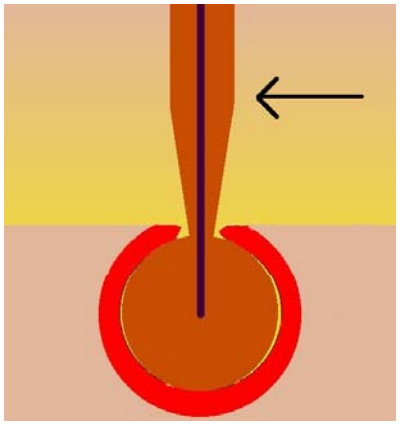
- 636 T1,N0,MO ER+ 1994-99
- WLE, Tam +/- RT
- Clear margins
- Axillary node dissection discouraged
- Median follow up 28 mos

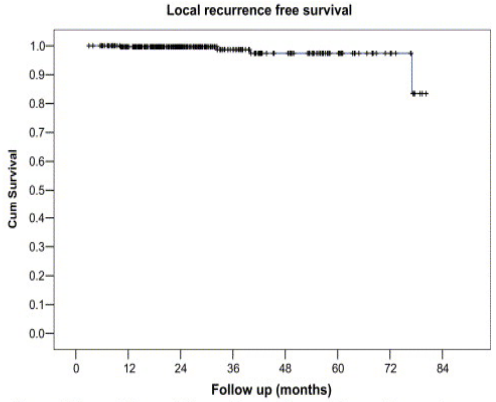
CALGB trial WLE, Tam +/- RT Hughes,2004; 2010

	IBTR median FU 5 years	IBTR median FU 10 years
WLE + Tam	4%	1%
WLE + Tam + RT	9%	2%

Intraoperative ABPI

- INTRABEAM emits soft X-rays (50 kV) from within the breast
- The X-rays are emitted from the tip of a 10 cm × 3.2 mm diameter probe, enclosed in a spherical applicator inserted in the tumour bed
- prescribed dose is 5 and 20 Gy at 1 cm and 0.2 cm, respectively, from the tumour bed.
- The biologically effective dose is calculated to be 7–53 Gy for α/β = 10 and 20–120 Gy for α/β = 1.5.

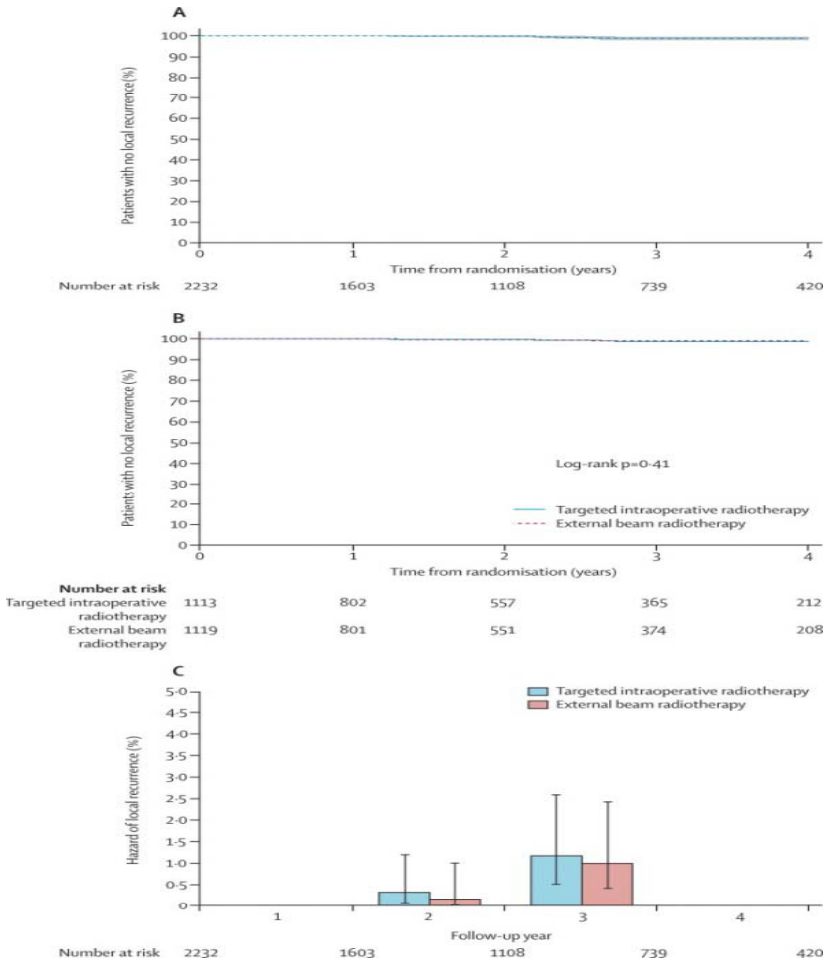


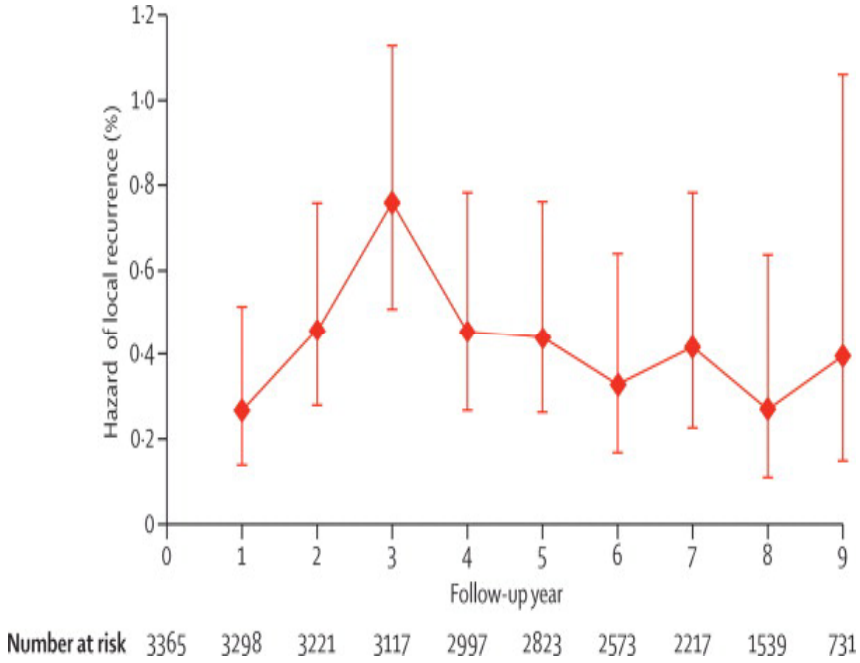


No. at risk	302	266	164	90	57	28	12	0
LR Free Survival (%)		99.6	99.6	98.7	97.4	97.4	97.4	83.5
95% Confidence Intervals		0.78	0.78	1.96	3.3	3.3	3.3	25.5

Vaidya JS et al IJRBOP 2006:66:1335

Local recurrence in TARGIT and START trials (Vaidya et al; Haviland et al, Lancet 2010)

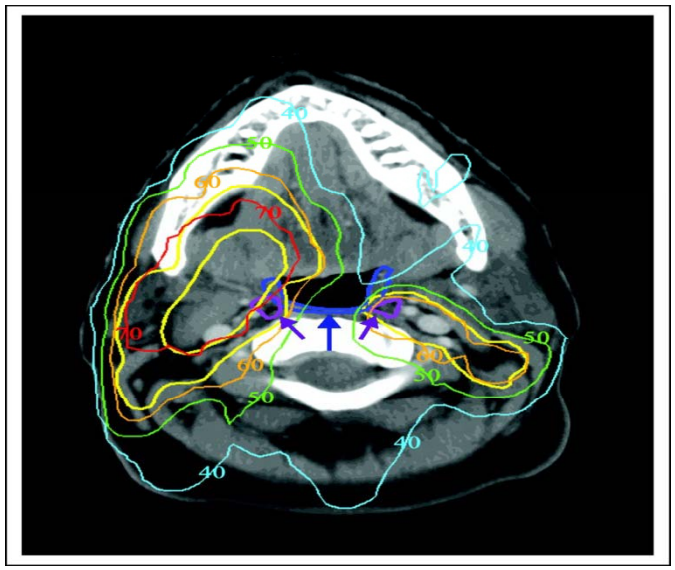


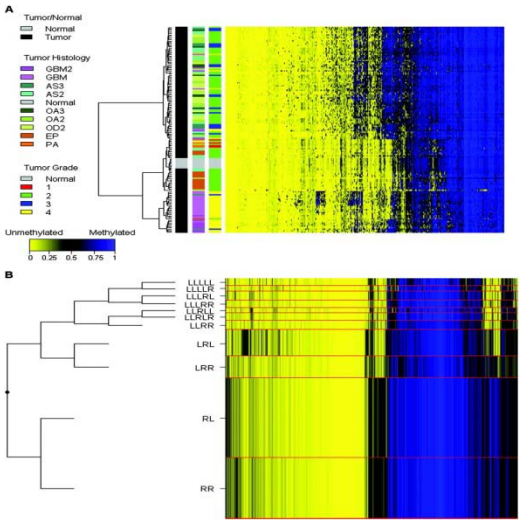


Cautions about ABPI (Ross G Br Ca Res 2005;7:110-2.

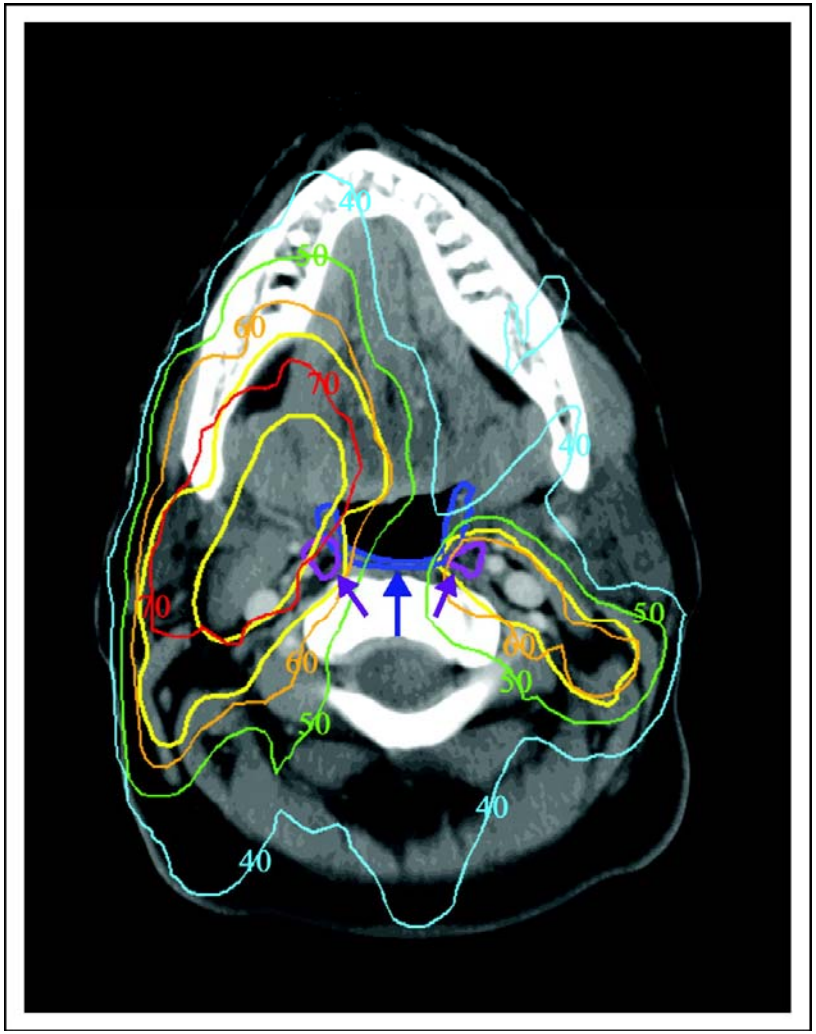
- Uncertainty and lack of experience in defining CTV
- Optimum margin around Gross tumour volume is unclear (?10-20mm)
- Impact of respiratory motion on breast movement
- Risks of contralateral breast cancer from IMRT
- Uncertainties about biological effects of high single doses on microscopic breast cancer
- Premature and empirical adoption of the technology without the results of well designed trials comparing WBRT with different target definitions and fractionation is likely to set back the entire field.

Technical advances in RT delivery and identification of benefit for older patients





Example of intensity-modulated radiotherapy plan.



Feng F Y et al. JCO 2010;28:2732-2738

JOURNAL OF CLINICAL ONCOLOGY

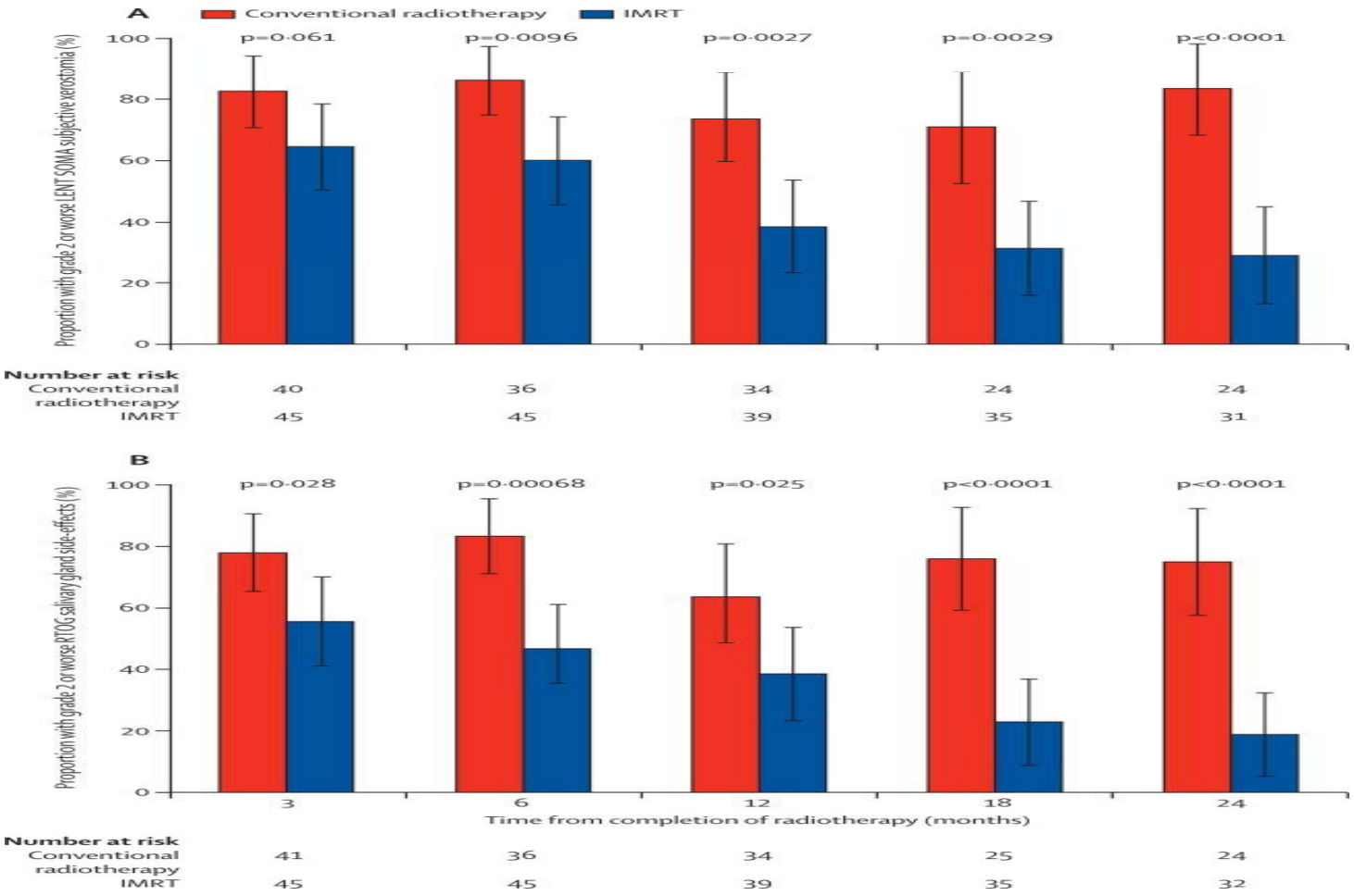
Intensity-Modulated Chemoradiotherapy Aiming to Reduce Dysphagia in Patients with Oropharyngeal Cancer: Clinical and Functional Results

Feng FF et al - JCO 2010 28; 16:2732-2738

Table 2. Observer-Rated Dysphagia

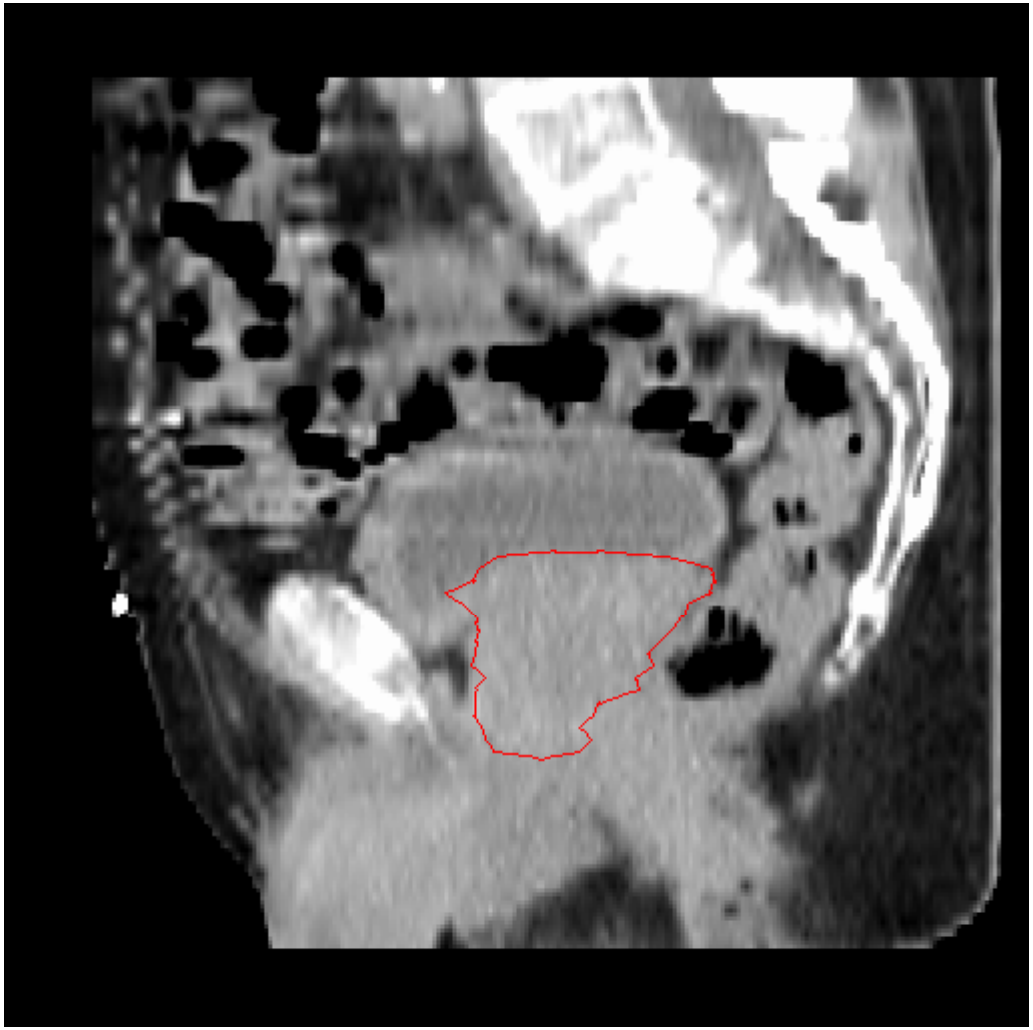
Event Grade	Time Period (months)											
	Pre-therapy (n = 73)		3 (n = 72)		6 (n = 62)		12 (n = 68)		18 (n = 58)		24 (n = 51)	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
0	71	97	36	50	32	52	39	58	36	62	30	59
1	1	2	25	35	22	35	25	37	19	33	19	37
2	1	2	6	8	4	6	3	4	2	3	1	2
3	0	0	5	7	4	6	1	1	1	2	1	2

Xerostomia (dry mouth) IMRT vs standard RT in head & neck ca (Nutting et al,Lancet Oncol 2011;79:308-14)



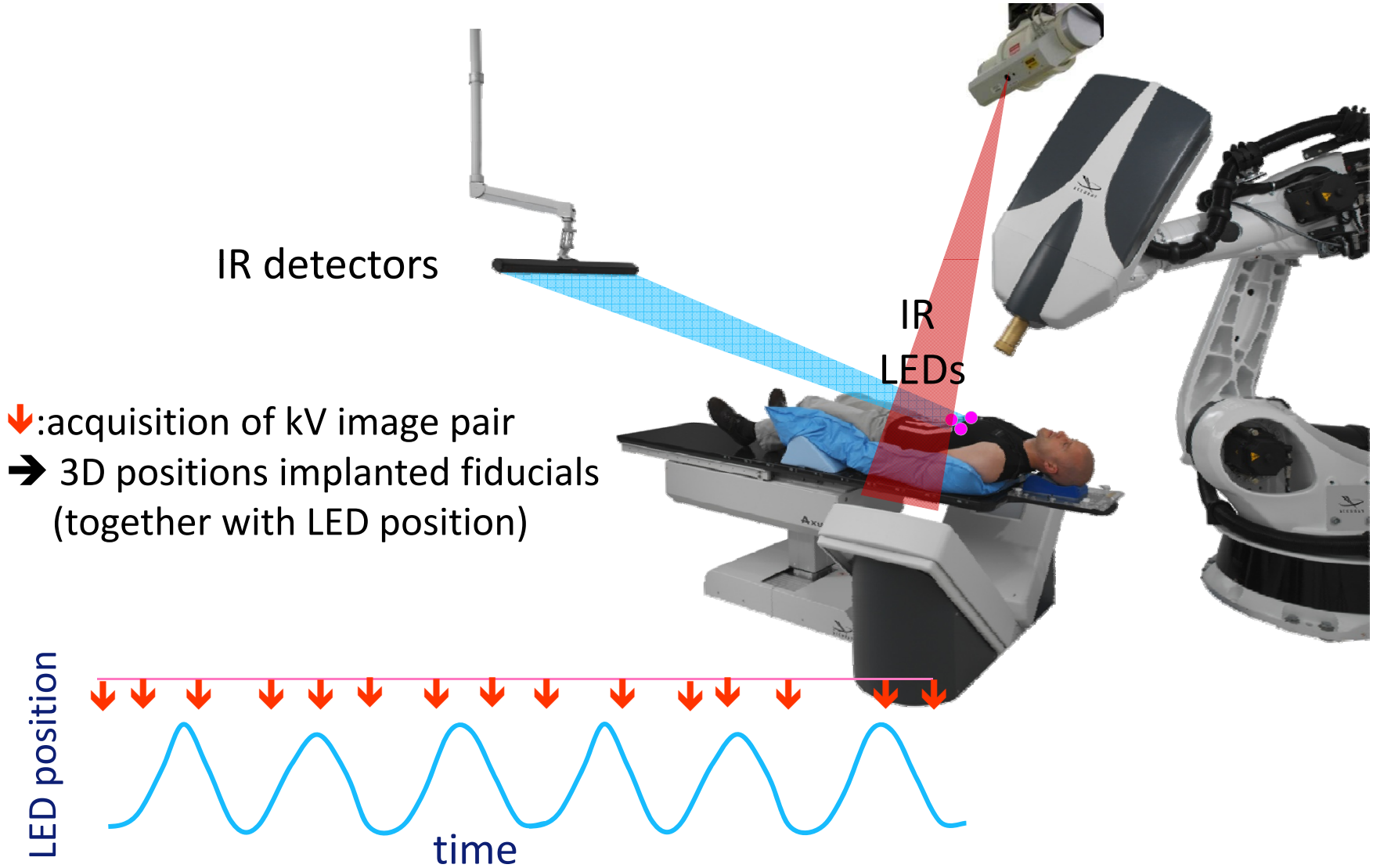
Prostatic Motion

(courtesy of M. Van Herk, Amsterdam)



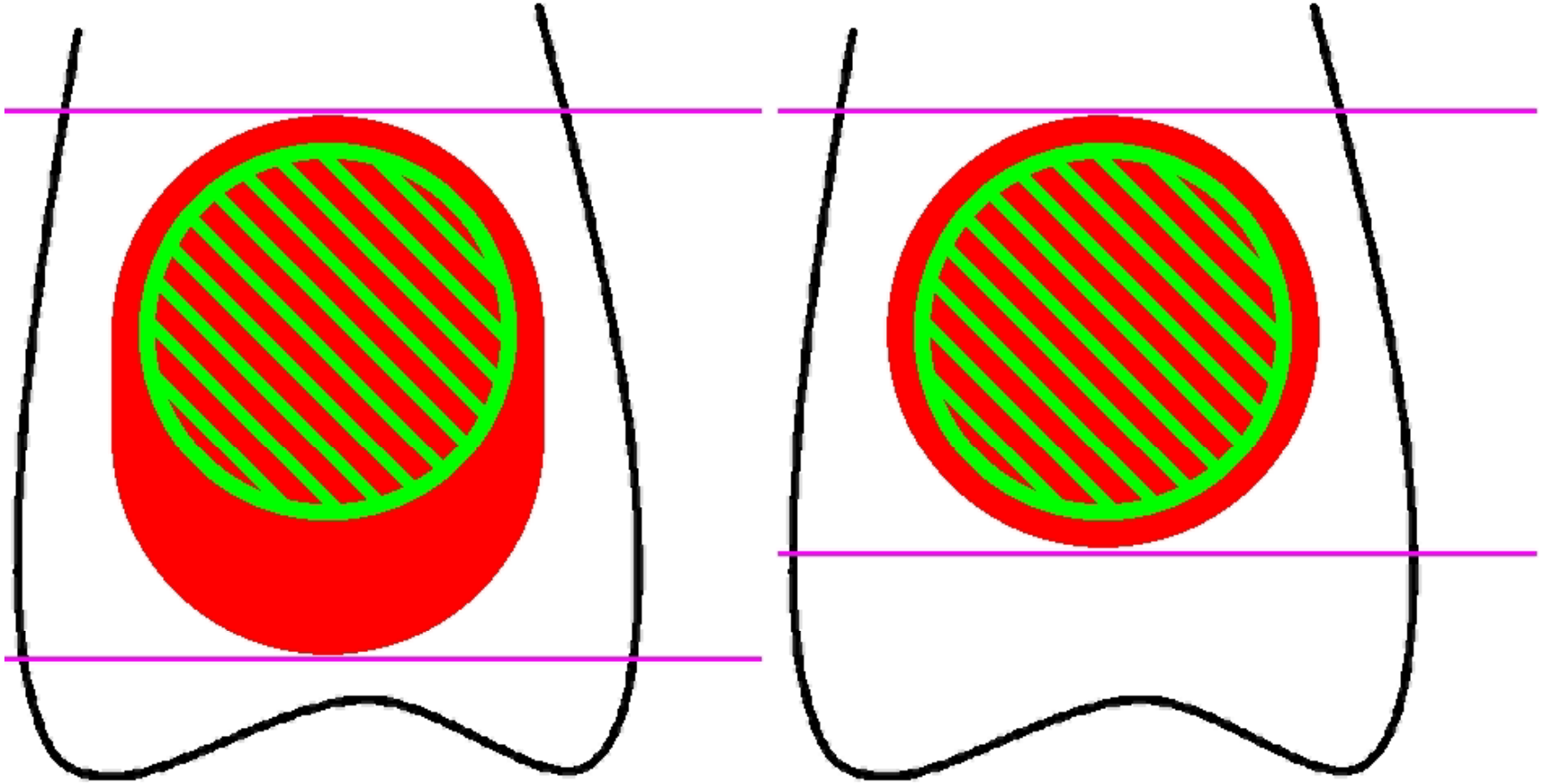
The Synchrony™ Respiratory Tracking System

- Establishment of correspondence model

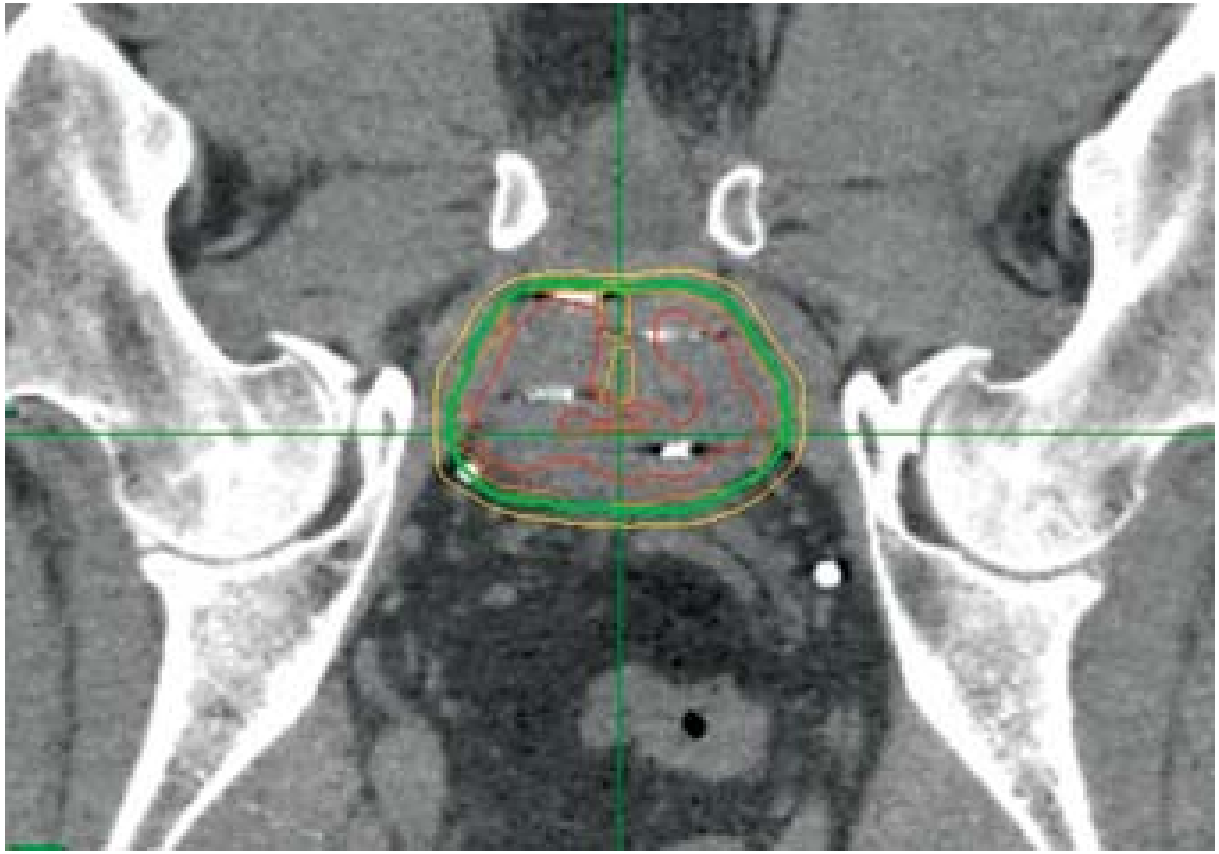


Conventional treatment

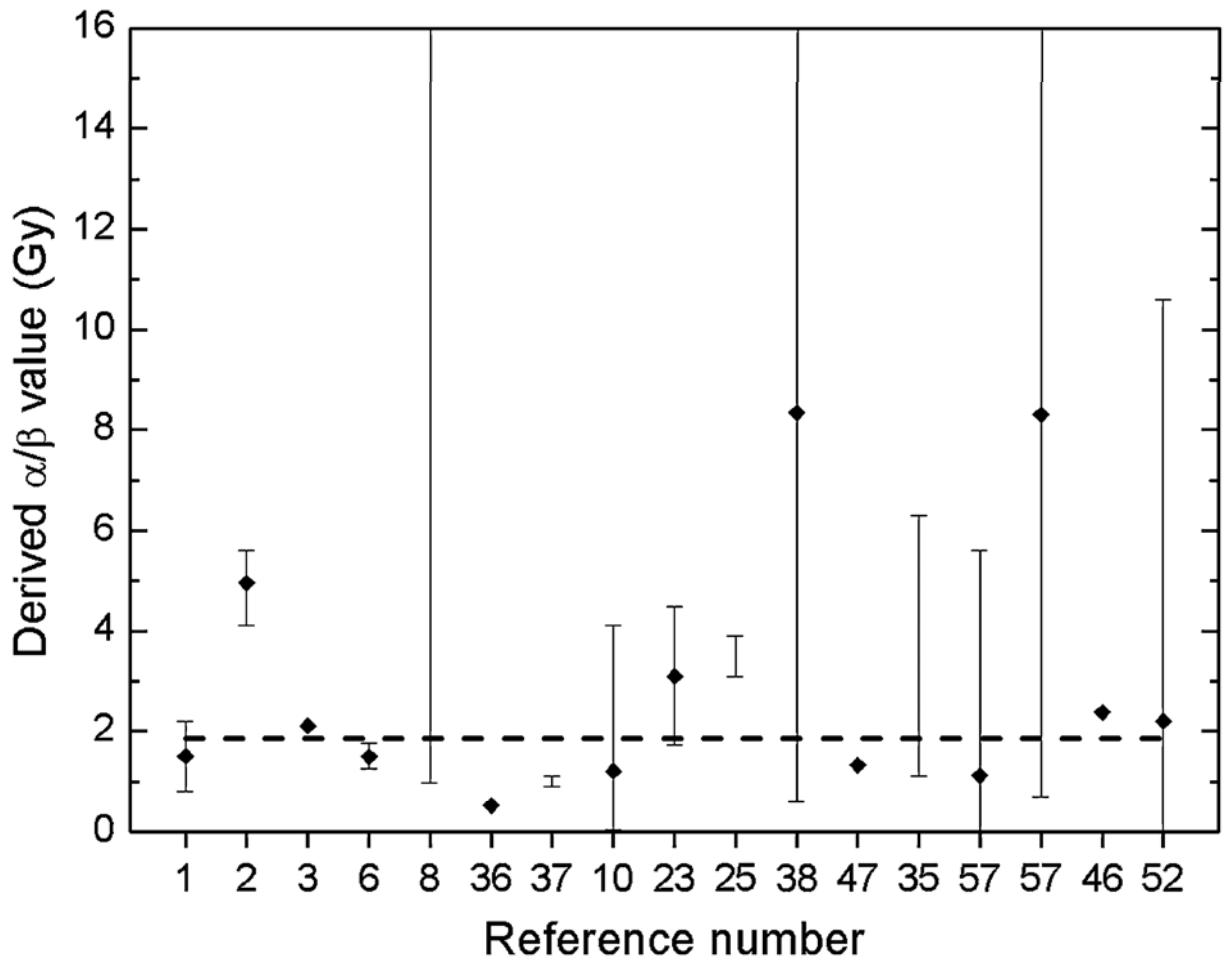
Cyberknife



Stereotactic RT for prostate cancer



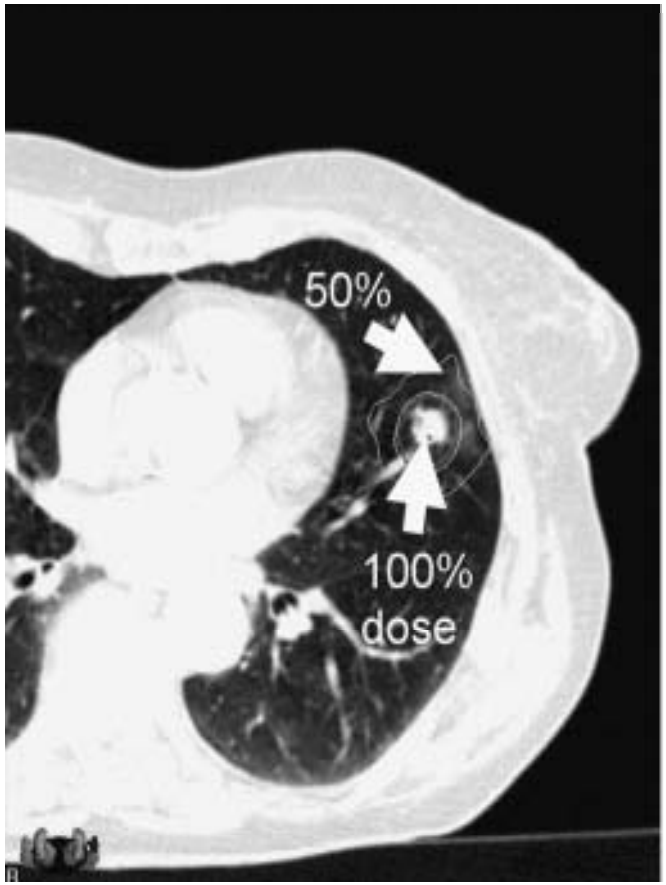
Hypofractionation and alpha/beta ratio for prostate ca (Dasu,Clin Oncol 2007;19:289-301

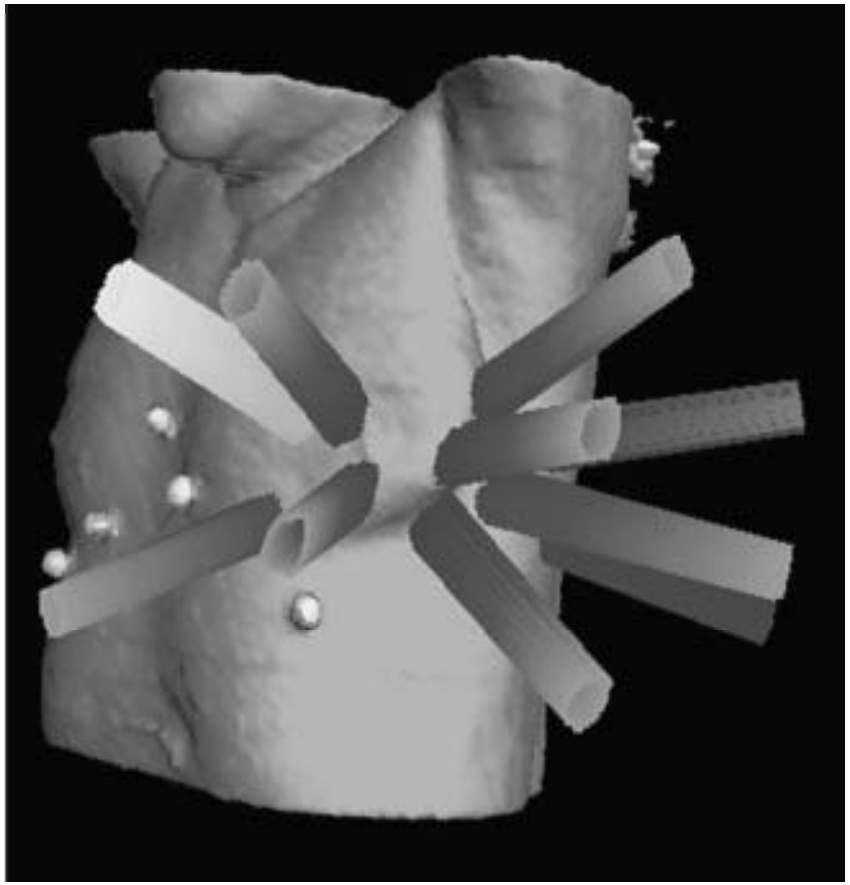


Stereotactic RT for low-risk prostate cancer (King CC et al,IJRBOP,2011)

- 67 clinically localised low risk prostate ca 2003-2009
- Stereotactic RT with Cyberknife (36.25 Gy in 5#)
- Median FU 2.7 years
- 5 yr KM PSA relapse free survival 94% 95% CI 85%-102%)

Stereotactic RT for NSCLC (Haasbeck et al,Lung Ca 2009;64:1-8





Stereotactic RT in elderly for stage I lung cancer =/> 75 yr (Haasbeck et al, Cancer 2010;116-406-414)

- 203 tumors in 193 patients
- Stage 1A/IB
- Median charlson comorbidity score =4
- Stereotactic RT (Novalis) 60 Gy in 3 #
- Actuarial local control 89% at 3 years
- Acute toxicity uncommon
- Late toxicity (=/> grade 3) <10%

Conclusions

- Technical advances in RT provide scope for better tumour control, less toxicity and adaptation to frailty
- Subgroup of sufficiently low risk after BCS for omission of RT still to be identified
- ABPI still investigational in early breast cancer
- IMRT reducing head & neck morbidity (eg parotid)
- Stereotactic RT for inoperable st. 1 NSCLC standard and investigational in 'low risk' prostate ca