Low Risk Prostate Cancer :

RP vs RT- the first debate .

Hasan Murshed

Case presentation

- 60 yom
  - Sreening PSA 9/97 - 1.4, 8/01 - 2.8
  - TRUS bx + 1/6 cores Adenoca, gleason 3+3 involving 25% one rt apex cor
  - On 9/25 on presentation @ MDA
  - Frequency q3 hrs, nocturia x1, no incontinence/hematuria
  - No change in bladder/bowel habit/bleeding/bone pain
  - Errectile function 2/10

- Has h/o vasectomy, no TURP/colonoscopy
- No family h/o prostate cancer

Case presentation

- On physical exam
  - No LN/organomegaly/bony tenderness
  - Rectal exam
    - > Normal rectal tone, somewhat enlarged prostate, smooth without nodularity
- Lab
  - Repeat PSA on 10/01 - 3.5

- Dx – 60 yom with organ confined CAP T1c stage II, PSA – 3.5, gl 3+3 involving 1/6 cores.

Questions

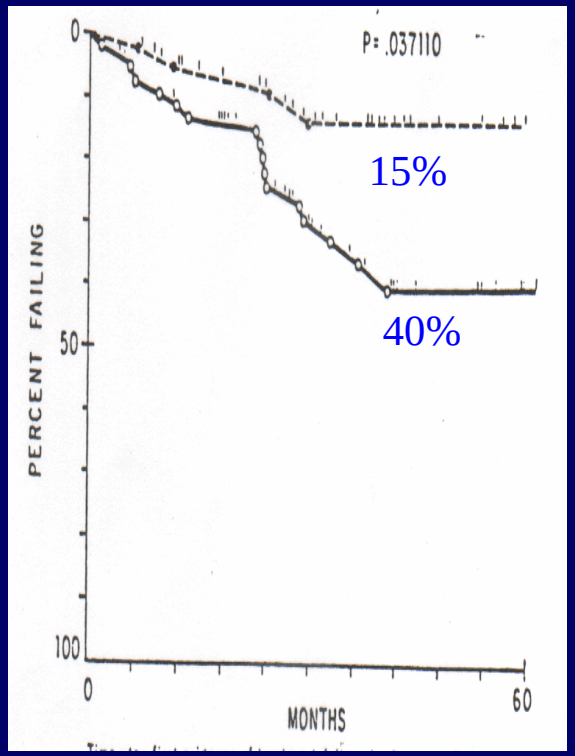
- Prognosis of low risk CAP
- Management of this pt.

Paulson et al 1982

- 97 pts T1/T2 N0 CAP randomized to RP vs EBRT.
  - balanced group of 4 pts to either RP or RT.
- 41 pts under went RP.
  - either perineal or suprapubic route.
- 56 pts received EBRT
  - RT given to large pelvis 45-50 Gy, to prostate boost 20 GY, total dose 65-70 Gy.
- Treatment failure – elevation of acid phosphatase x2, DM to bones/parenchyma.
- End point – time to first evidence of treatment failure.

The Journal of Urology:128, 502-504,1982

Paulson et al 1982



- Concl:
- Prostattectomy better than EBRT.

- Flaws:
- Peculiar randomization.
- Differences in clinical stages.
- Analysis as treatment given.
- Local control not mentioned.
- Study inconclusive.

The Journal of Urology:128, 502-504, 1982

D'Amico et al 1998

- Between 1989 and 1997
  - 1872 pts with localized CAP stage T1c-T2b all PSA retrospectively analyzed to estimate control of PSA after RP vs ERRT vs implant with or without neo-adjuvant hormonal therapy.

- Pts were stratified into risk groups
  - low risk: T1c or T2a and PSA $\leq$ 10 and gl $\leq$ 6
  - intermediate risk: T2b or PSA > 10 and $\leq$ 20 or gl 7
  - high risk: T2c or PSA > 20 or gl $\geq$ 8.

- 1992 AJCC Staging – H&P, PSA, CT/MRI, BS, TRUS guided needle bx
  - Radiologic/bx info not used to determine clinical stage

JAMA:280 (11), 969-974, 1998

D'Amico et al 1998

- Surgical treatment
  - RP and bilat pelvic LN sampling.

- EBRT was given with at least 10 MV and conformal 4 fld tech.
  - Low risk pts received RT to prostate only median dose of 66 Gy
  - intermediate/high risk pts received RT to prostate+SV 45 Gy+prostate boost 22 Gy, median dose 67 Gy.
- Implant was given by Pd-103, with a peripheral loading tech to 115 Gy MPD.

- Pts in each risk groups were analyzed for time to PSA failure as a function of treatment they received.

JAMA:280 (11), 969-974, 1998

D'Amico et al 1998

- Clinical pretreatment characteristics

Clinical Factor	No. (%) of Patients Receiving Treatment*			
	Radical Prostatectomy at the Hospital of the University of Pennsylvania (N = 888)	External Beam Radiation Therapy at the Joint Center for Radiation Therapy (N = 766)	Interstitial Radiation (Implant) (N = 66)	Interstitial Radiation (Implant) Plus Neoadjuvant Androgen Deprivation Therapy (N = 152)
PSA, ng/mL				
>0 – 4	85 (10)	77 (10)	5 (8)	16 (10.5)
4.1-10	510 (57)	329 (43)	37 (56)	111 (73)
10.1-20	210 (24)	198 (26)	16 (24)	24 (16)
>20	83 (9)*	162 (21)†	8 (12)‡	1 (0.5)§
Gleason score				
2-4	164 (19)	109 (14)	6 (9)	10 (7)
5-6	517 (58)	376 (49)	47 (71)	110 (72)
7	133 (15)	192 (25)	10 (15)	29 (19)
8-10	74 (8)	89 (12)	3 (5)	3 (2)
American Joint Commission on Cancer Staging T stage				
T1c	256 (29)	222 (29)	15 (23)	57 (37.5)
T2a	388 (44)	246 (32)	35 (53)	68 (45)
T2b	93 (10)	141 (18)	5 (7)	7 (4.5)
T2c	151 (17)	157 (21)	11 (17)	20 (13)

*PSA range of 20.3 to 243 ng/mL and median of 29.8 ng/mL.

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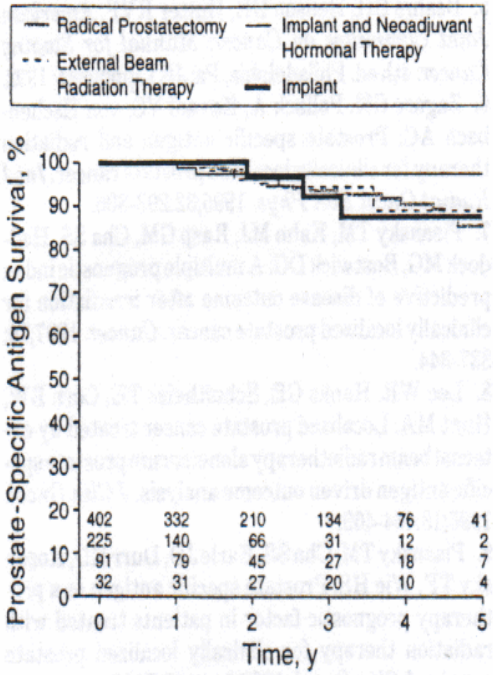

Figure 1.—Estimated prostate-specific antigen outcome for low-risk patients stratified by treatment modality. All pairwise *P* values are more than .25.

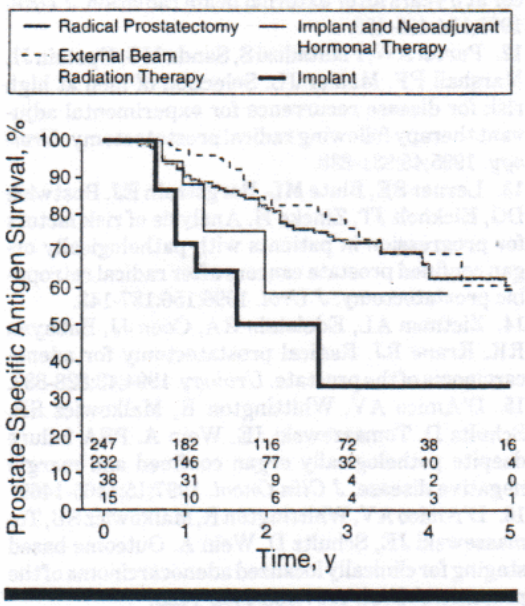

Figure 2.—Estimated prostate-specific antigen outcome for intermediate-risk patients. Pairwise *P* values are as follows: radical prostatectomy (RP) vs external beam radiation therapy (RT), .26; RP vs implant plus androgen ablation, .18; RP vs implant, .003; RT vs implant plus androgen ablation, .009; RT vs implant, .002; and implant plus androgen ablation vs implant, .14.

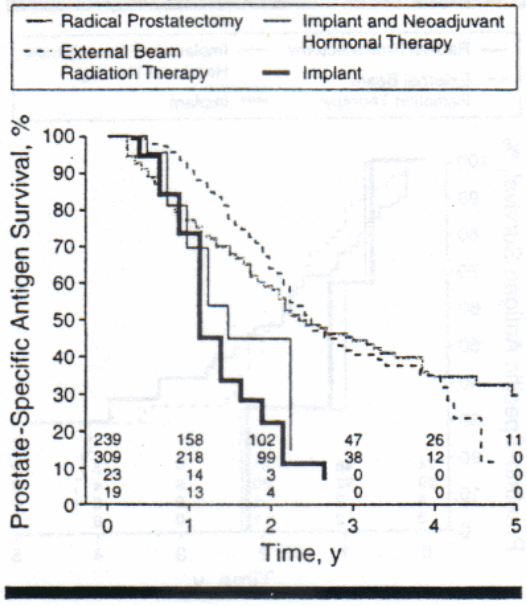

Figure 3.—Estimated prostate-specific antigen outcome for high-risk patients. Pairwise *P* values are as follows: radical prostatectomy (RP) vs external beam radiation therapy (RT), .25; RP vs implant plus androgen ablation, .01; RP vs implant, .005; RT vs implant plus androgen ablation, .007; RT vs implant, less than .001; and implant plus androgen ablation vs implant, .41.

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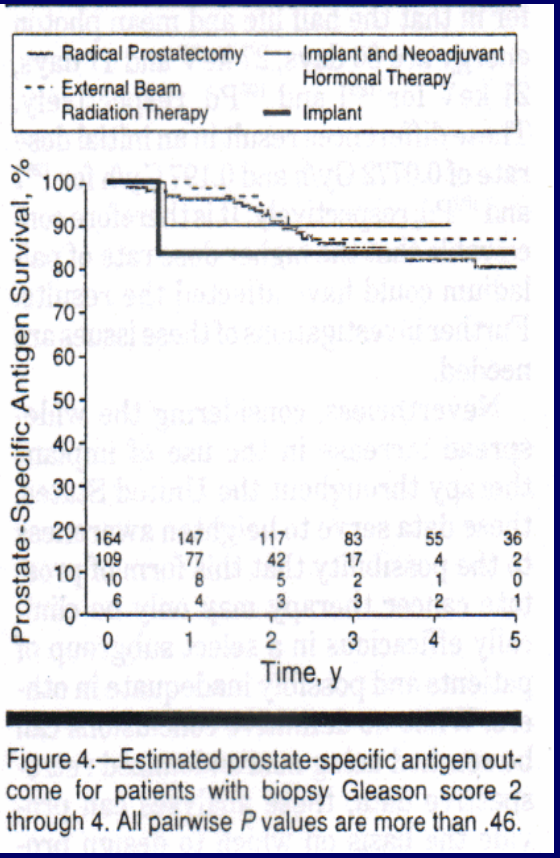

Figure 4.—Estimated prostate-specific antigen outcome for patients with biopsy Gleason score 2 through 4. All pairwise *P* values are more than .46.

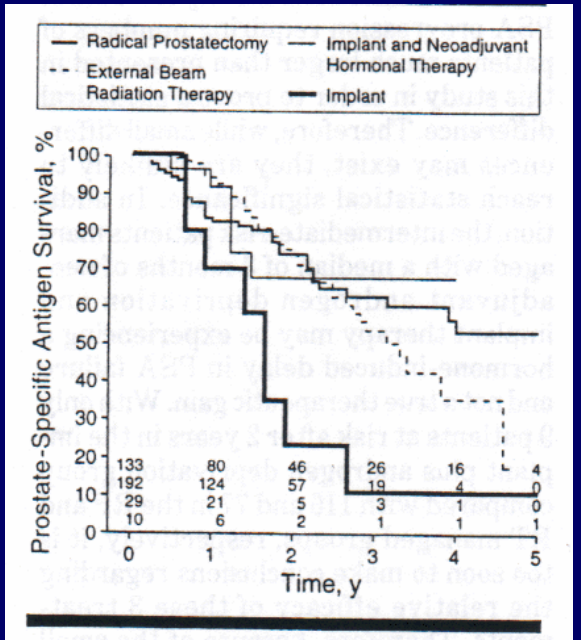

Figure 6.—Estimated prostate-specific antigen outcome for patients with biopsy Gleason score 7. Pairwise *P* values are as follows: radical prostatectomy (RP) vs external beam radiation therapy (RT), .59; RP vs implant plus androgen ablation, .95; RP vs implant, .002; RT vs implant plus androgen ablation, .79; RT vs implant, .003; and implant plus androgen ablation vs implant, .03.

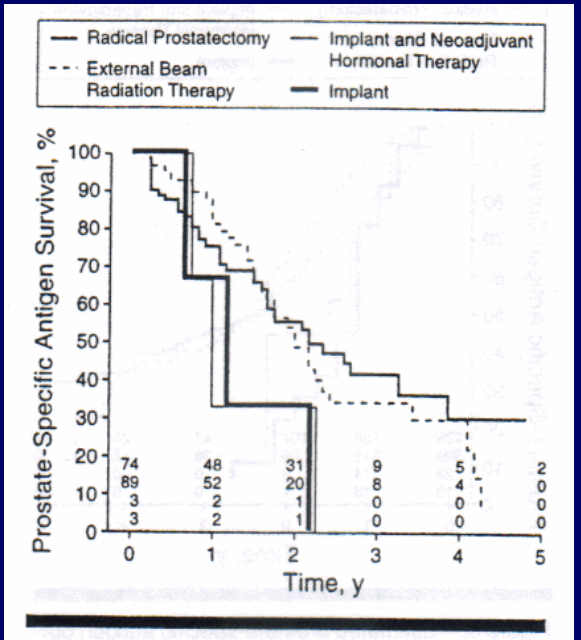

Figure 7.—Estimated prostate-specific antigen outcome for patients with biopsy Gleason score 8 through 10. Pairwise *P* values are as follows: radical prostatectomy (RP) vs external beam radiation therapy (RT), .71; RP vs implant plus androgen ablation, .07; RP vs implant, .06; RT vs implant plus androgen ablation, .06; RT vs implant, .05; and implant plus androgen ablation vs implant, .69.

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D'Amico et al 1998

		Relative risk/5 yr bFS			
	low risk		inte risk	high risk	
	RR	bFS (%)	RR	bFS (%)	RR	bFS (%)
EBRT	1.1	85	0.8	60	0.9	15
Implant	1.1	85	3.1	35	3	0
HTx+Implant	0.5	85	1.6	60	2.2	0

- Concl
  - Low risk pts no significant diff in outcome across all tx modalities
  - Inter risk pts did significantly worse if managed by implant alone
  - High risk pts did significantly better txed using RP or EBRT

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Conclusions

- Data presented indicated that all available treatment modalities may be acceptable for low risk CAP pts for PSA free survival.
- However, it is possible that significant difference in QOL may exist between the treatment modalities.
- Until further randomized data is available treatment options should be carefully recommended.

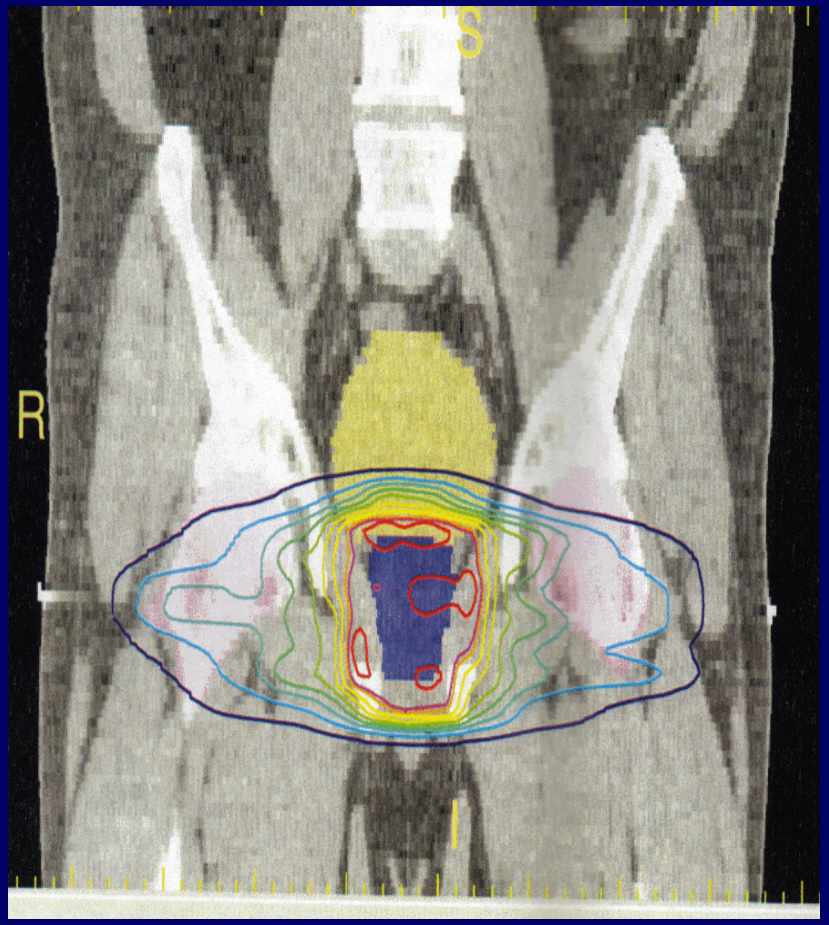
Conclusions/f/u on our pt

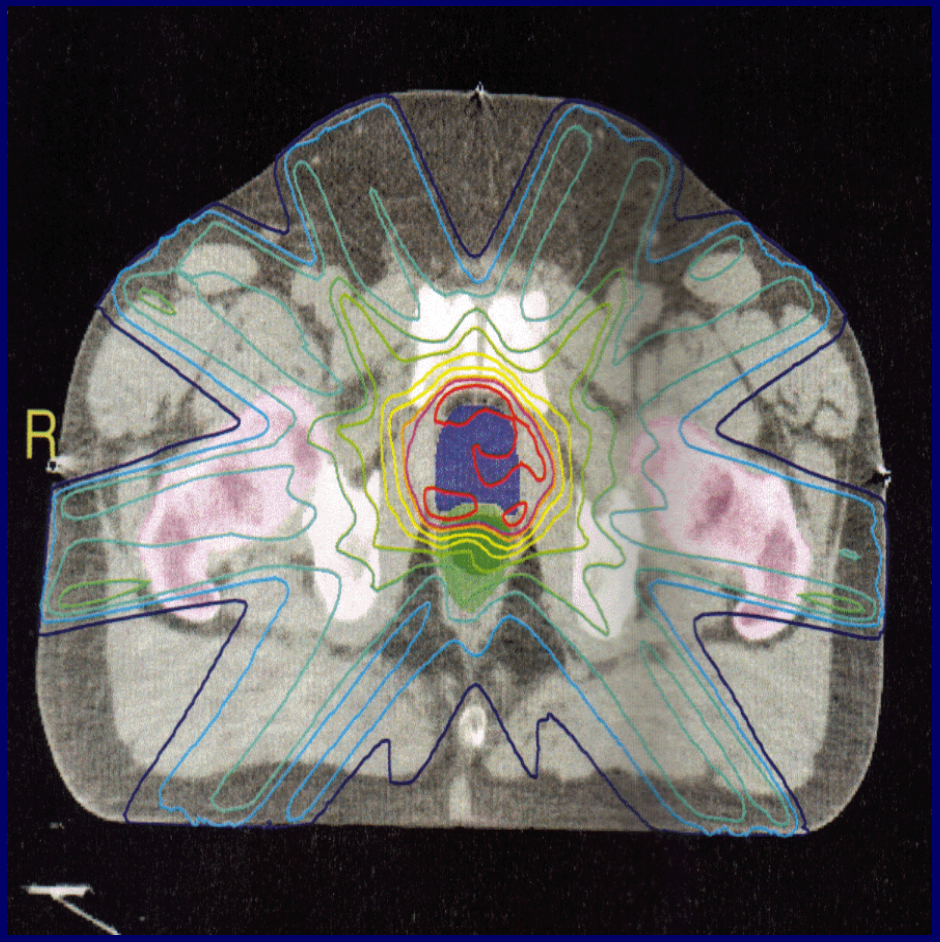
- After discussing various treatment options
  - RP, EBRT, Implant

- The pt chose EBRT as his definitive local therapy.
  - Pt supine, bladder full, rectum empty, Vac-U-Lok cradel
  - Eight IMRT field technique using 6 MV photon was used.
  - PTV = CTV+1 cm ant/rt/lt lat/inf, 0.5 cm post, 0.75 cm sup, CTV = GTV.
  - He received 75.6 Gy/1.8 Gy via IMRT to Prostate, to isoline encompassing PTV.
  - Critical structures

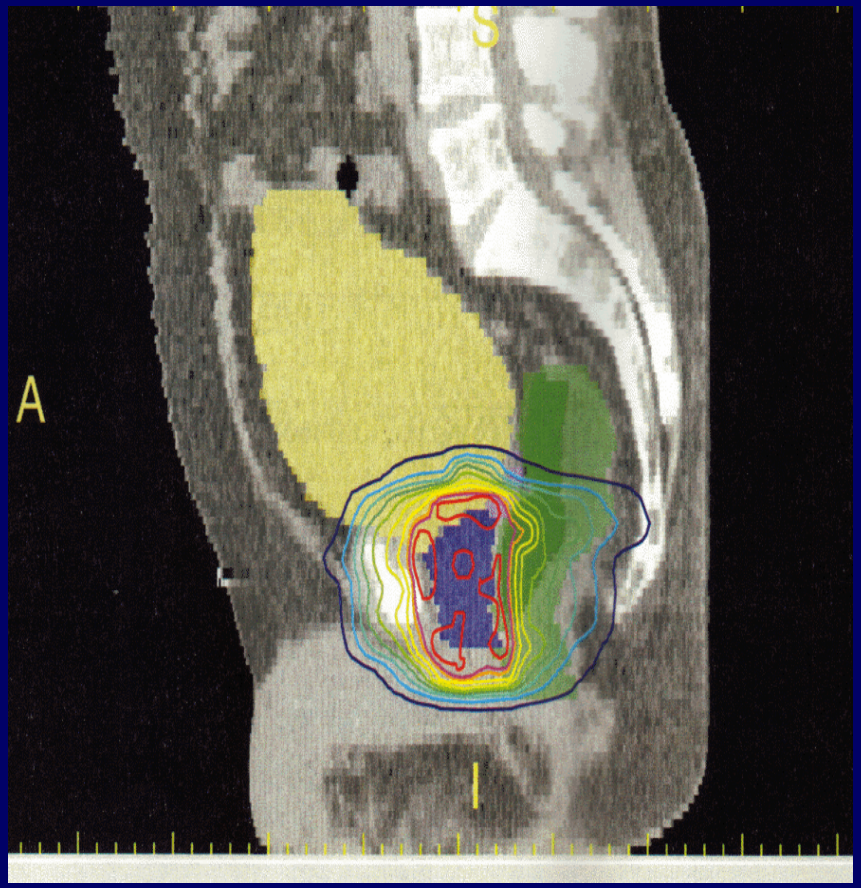
	femoral head	< 50 % to > 45 Gy
	bladder	< 25 % to > 70 Gy
	rectum	< 25 % to > 70 Gy

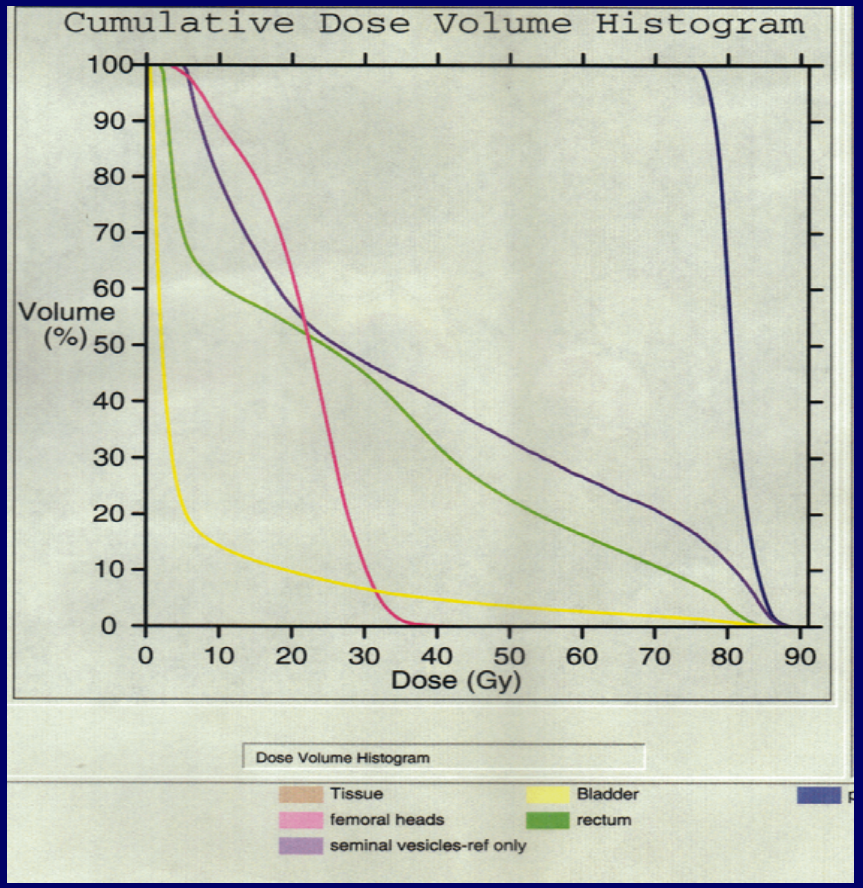
Conclusions/f/u on our pt





Conclusions/f/u on our pt





Conclusions/f/u on our pt

- The pt completed his EBRT on 1/02.
- Last f/u on 4/02
  - Doing well, frequency q4 hrs, nocturia x 2, no hematuria/incontinence/diarrhea/blood.
  - Errectile function 2//10, Viagra with some success.
  - PSA – 0.8, DRE – WNL
- Repeat PSA in 3 m, repeat PSA/PE in 6 m.

Conclusions/ongoing trial - ACOSOG Z0070

- A randomized trial of RP/LND vs Implant for pts with T1c/T2aN0M0 CAP.
- Objectives
  - To see if pts with Implant have equal or better OS vs pts receving RP.
  - MFS, QOL analysis
- Accrual goal is 1980 pts/5.5 yrs
  - 75 yrs, life expectancy > 10 yrs, PS < 2, volume < 60 cc, PSA < 10, gl < 6,
  - NHTx < 120 d.
- Implant dosimetry
  - PTV = CTV+2-3 mm ant/lat, 0 mm post, 5 mm sup/inf, CTV = TRUS GTV.
  - Pd 103 – 125 Gy, 1.0-1.6 mCi/seed, I 125 – 145 Gy, 0.28-0.5 mCi/seed.
  - Peripheral loading is advised, dose to urethra < 150% of prescription dose.

- Post implant CT based dosimetry will be done.

The END