Technical advances in the treatment of localized prostate cancer

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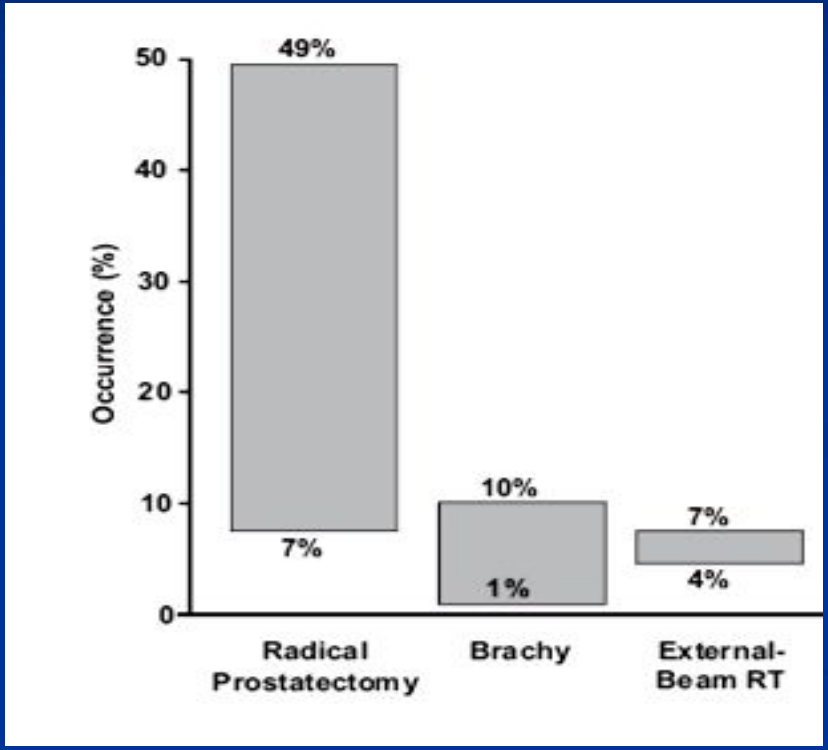
Introduction

- Curative treatments of localized prostate cancer :
  - Radical prostatectomy
  - Brachytherapy
  - External beam radiotherapy
- Similar oncological results
  10-year specific survival > 90%
- Different concepts and adverse effects

Urinary incontinence



Ellis et al, Urology 2007

Erectile dysfunction

	Complete loss	Partial loss	Normal potency
Radical prostatectomy	26-100%	16-48%	9-46%
Radiotherapy	8-85%	21-47%	36-63%
Brachytherapy	14-61%	21%	18%

Meta-analysis of 31 studies *Burnett et al, J Urol 2007*

Radical prostatectomy

Oncological results

Functional outcomes

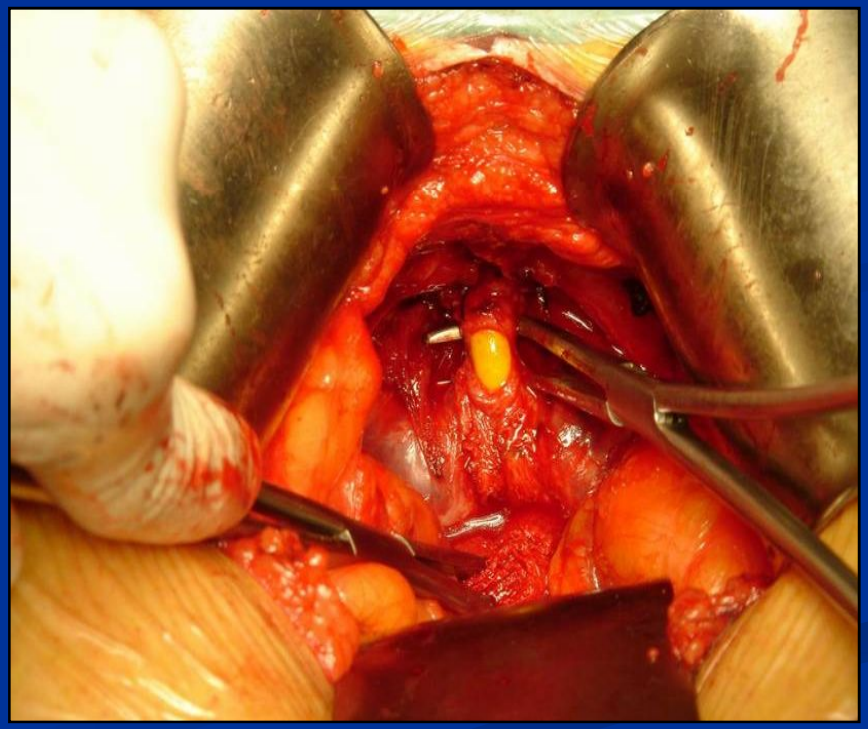
Quality of surgical excision / reconstruction

Continence : technical improvements

- Apical dissection +++

Walsh et al, J Urol 2005

- ♦ Sufficient urethral length
- ♦ Preservation of striated sphincter
- ♦ Mucosal anastomosis



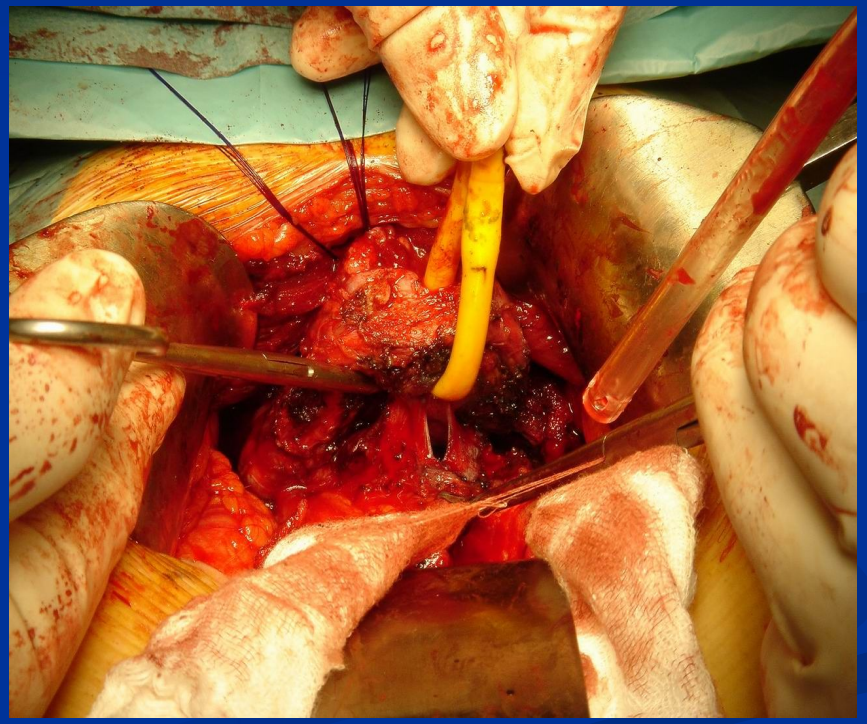
- Bladder neck preservation

Selli et al, Scand J Urol 2004

↑ early continence
long-term continence ?

Risks :

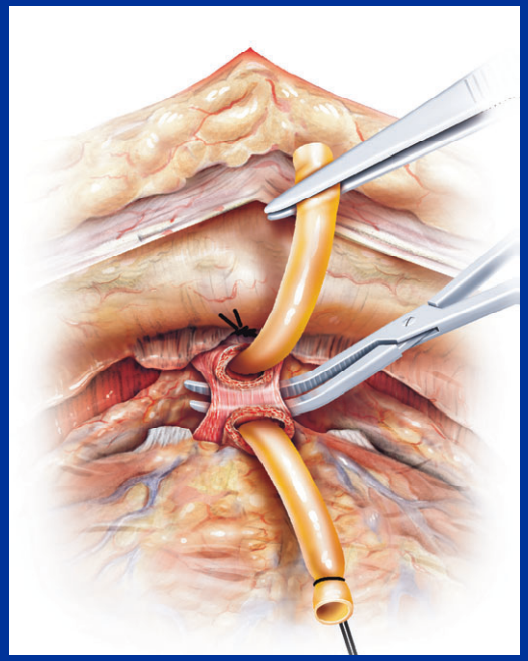
↑ postoperative retention
↑ bladder neck stricture
surgical margins ?

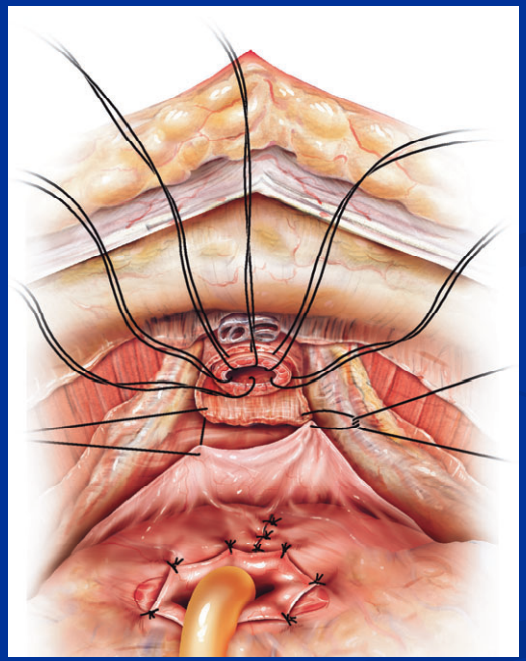


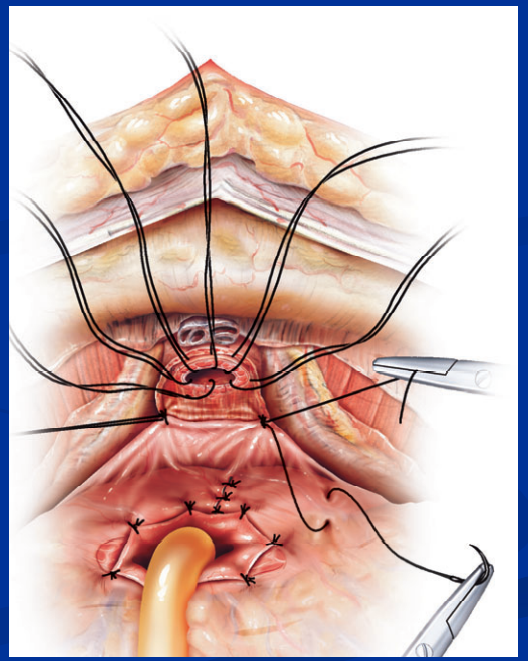
- Posterior support to the anastomosis

→ Rocco stitch

Apposition of the free edge of Denonvillier fascia with the posterior median raphe



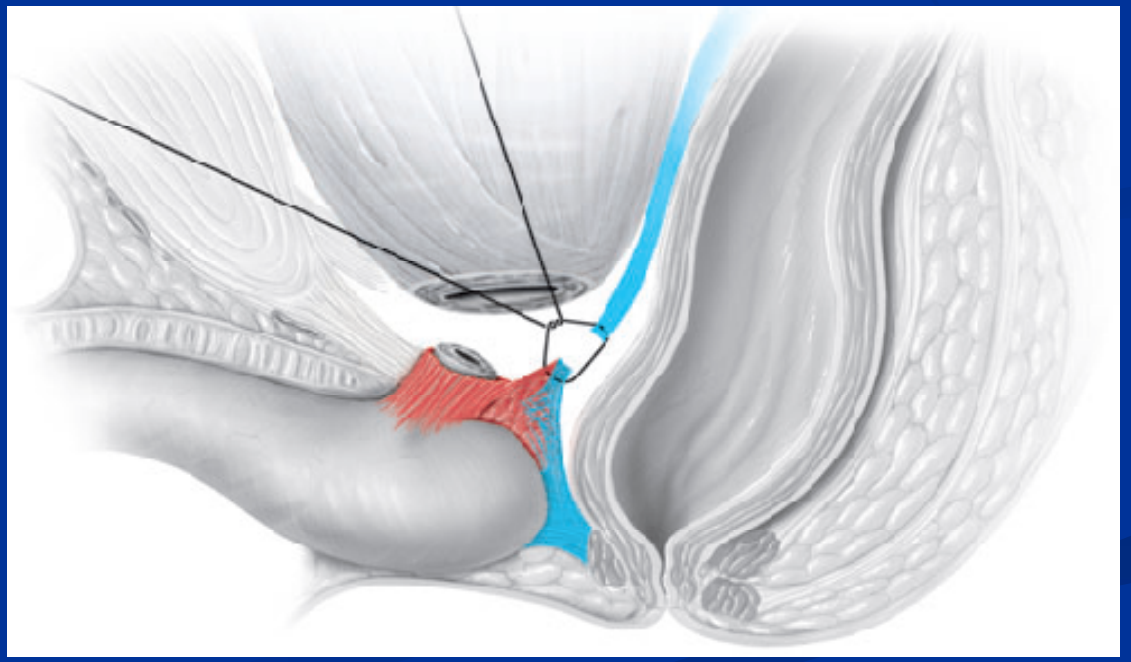




Rocco et al, Eur Urol 2007

Rocco stitch

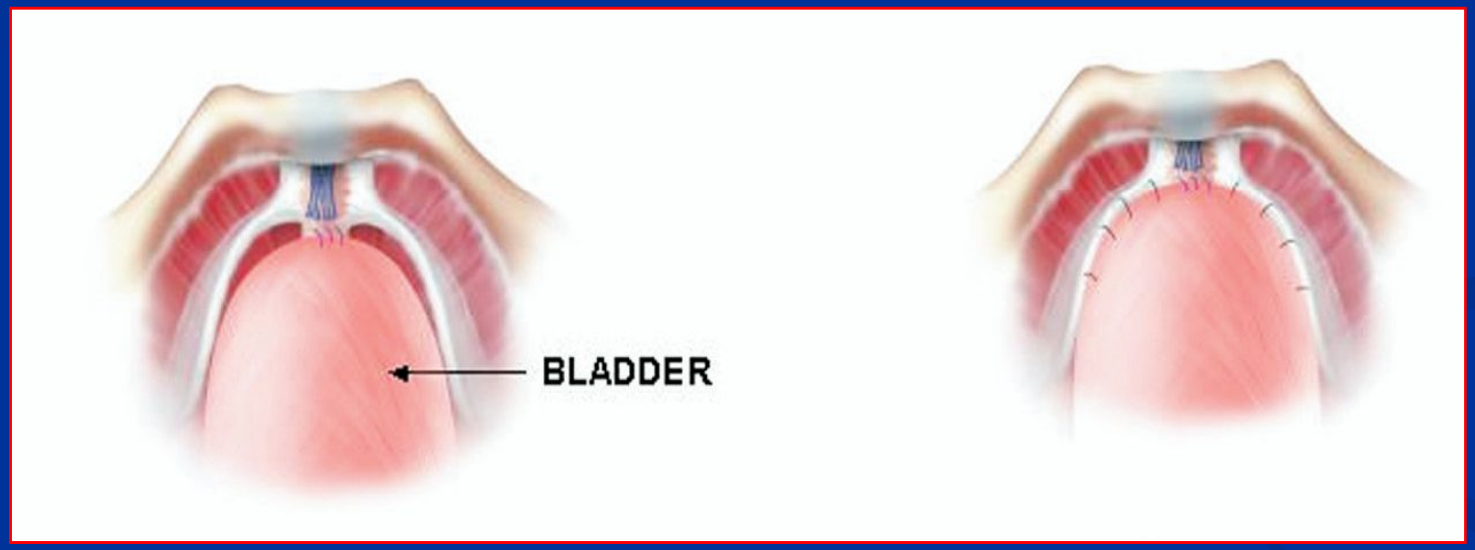
- Early continence recovery
- Similar long term results



Rocco et al, Eur Urol 2007

- Anterior support to the anastomosis

Preservation of the puboprostatic support
Apposition of the lateral bladder with pelvic aponeurosis



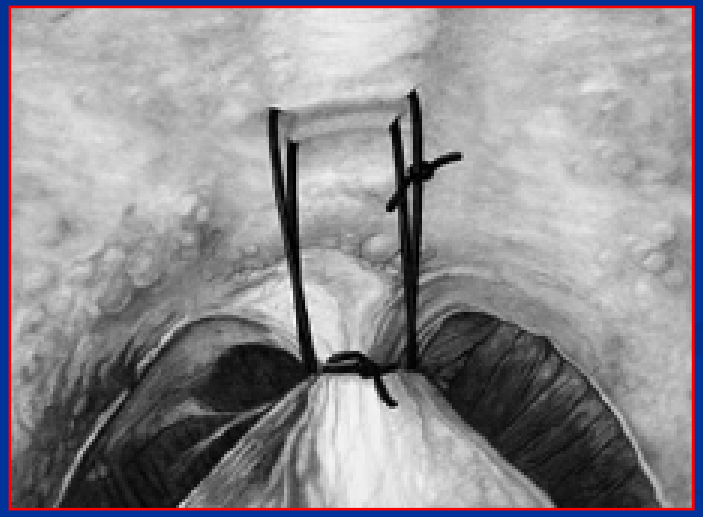
N= 50 patients *Continence rate :*

29%	1st week
62%	6th
88%	12th
95%	16th

Tewari et al, Urology 2007

- Anterior support to the anastomosis

  Periurethral suspension stitch



↑ continence rate at 3 months
↓ time to continence recovery

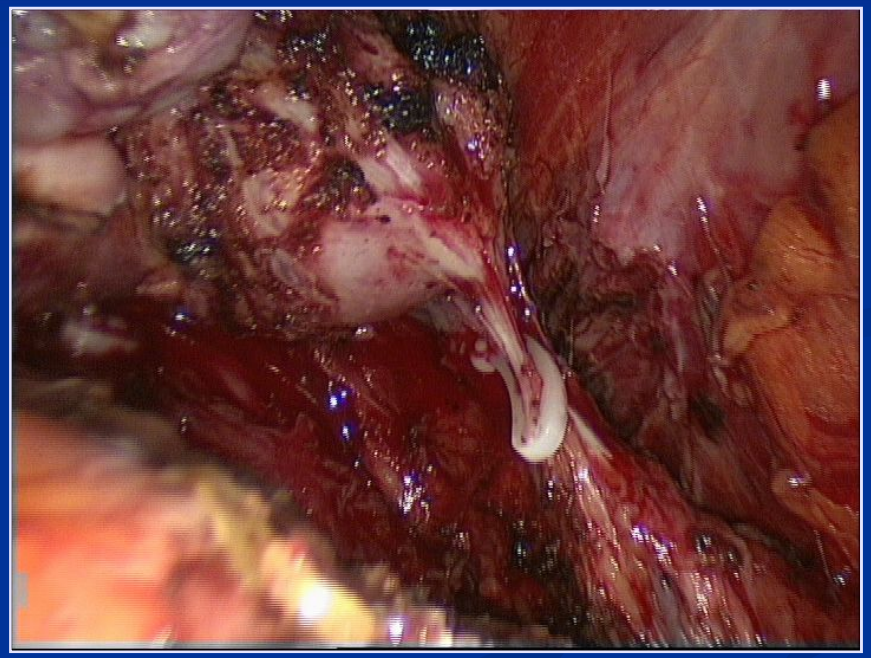
Long-term results ?

Patel et al, J Urol 2009

Erectile function : technical improvements

- Neuro-vascular bundles +++

  Avoid thermal or cautery injury

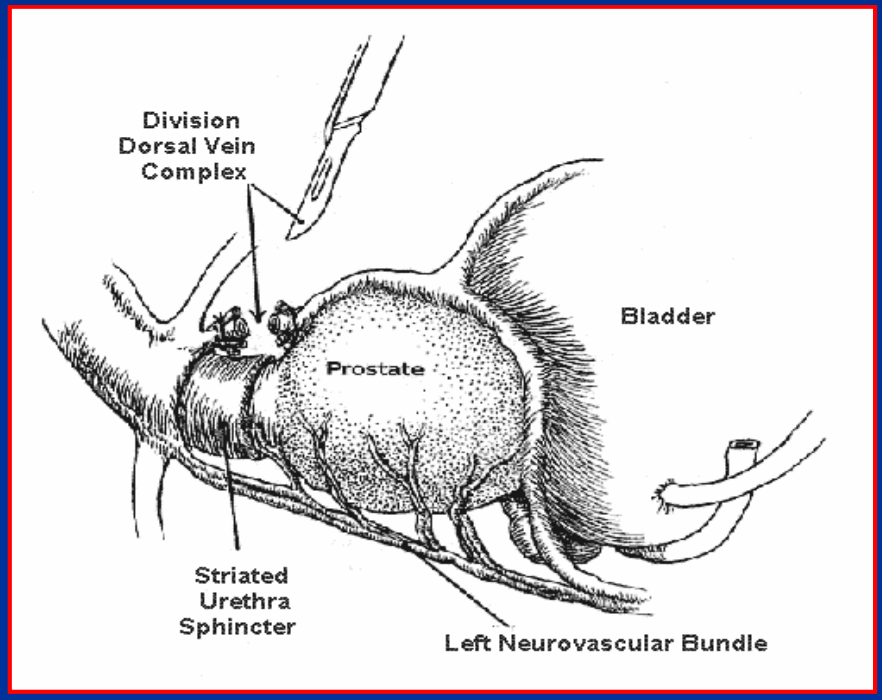


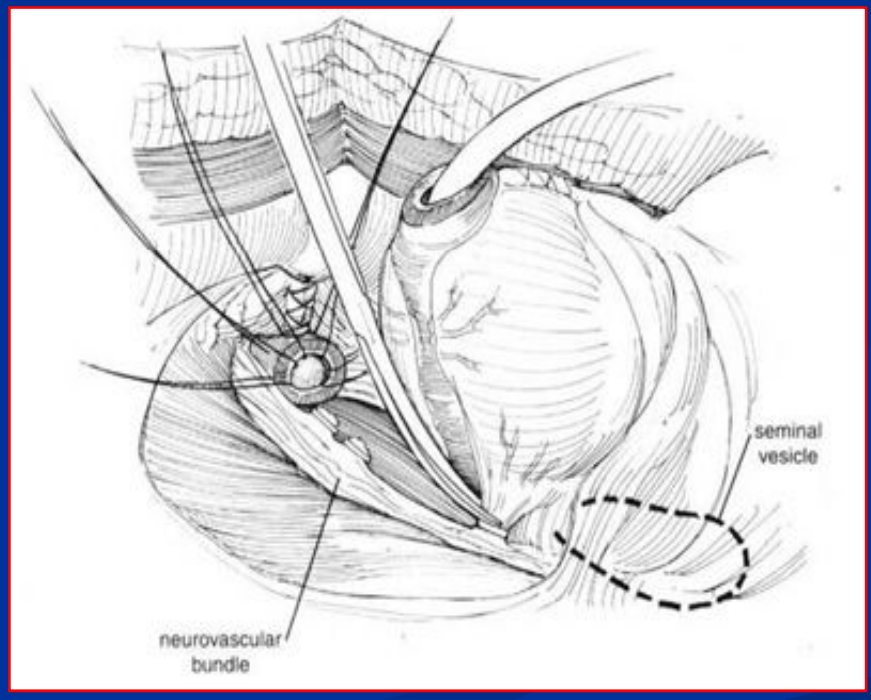
Erectile function : technical improvements

- Neuro-vascular bundles +++

  Avoid thermal or cautery injury

- Intra-fascial dissection





Finley et al, BJU Int 2009

- Retrospective study, 694 patients *Michl et al, J Urol 2006*
  Follow up ≥ 12 months
  IIEF questionnaires, QDV scores
  Bilateral preservation > unilateral preservation > no preservation

- Prospective study, 1110 patients *Marien et al, J Urol 2009*
  Same technique, same surgeon
  Multivariate analysis : nerve preservation, age, and diabetes
  = only independent predictors of potency

- Controversies
  Does intra-fascial dissection increase the risk of surgical margins ?

Palisaar et al, Eur Urol 2005

Robotic surgery

- For the patient
  Lack of randomized study
  Short term results: similar

Ficarra et al, BJU Int 2009

- For the surgeon
  Technical challenge and marketing effect
  Training curve easier
  Improved ergonomy

neck and back pain :
50% open surgery
56% laparoscopy
23% robotic surgery

Bagrodia et al, J Endourol 2009

Single port laparoscopy

- Recent case reports
  Operating time X 3
  No advantage (yet)

Kaouk et al, Urology 2008

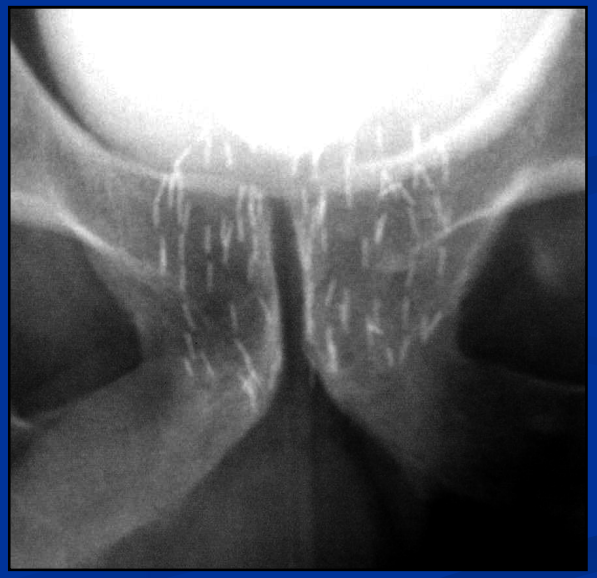
Brachytherapy

- Advantages :

  Mini-invasive (old patients, obesity..)

  Urinary function

  Sexual function



- Disadvantages :

  Strict selection criteria

  No histology

  PSA follow up

  No salvage radiotherapy

Brachytherapy : urinary function

- Prospective study, 325 patients
  Median follow up 7 years
- Evaluation of urinary symptoms
  (AUA symptom score)
- At 3 years:
  Symptoms back to baseline

Stone et al, Urology 2007

Table 2. Comparison of preimplant and postimplant urinary symptoms as measured by AUA symptom score

Time	n	Preimplant Score	SD	*P* Value (Compared with Baseline)
Baseline	325	7.1	6.3	
6 mo	156	12.5	7.4	<0.001
1 yr	145	9.1	6.5	<0.001
2 yr	165	9.5	7.0	0.012
3 yr	161	8.1	6.6	0.381
4 yr	164	7.3	6.0	0.199
5 yr	176	7.3	6	0.615
Last follow-up	213	7.1	5.8	0.610

AUA = American Urological Association.
Numbers represent mean on scale of 0–35; postimplant scores at average of 7 years after implantation.

Table 3. Comparison of preimplant and postimplant urinary bother scores as measured by AUA symptom score

Time	n	Preimplant Score	SD	*P* Value (Compared with Baseline)
Baseline	325	1.5	1.4	
6 mo	158	2.6	1.5	<0.001
1 yr	142	2	1.4	<0.001
2 yr	163	1.9	1.4	<0.001
3 yr	158	1.6	1.3	0.279
4 yr	166	1.6	1.3	0.406
5 yr	178	1.6	1.2	0.380
Last follow-up	214	1.5	1.2	0.591

AUA = American Urological Association.
Numbers represent means on a scale of 0–6; postimplant scores at median of 7 years after implantation.

Brachytherapy : sexual function

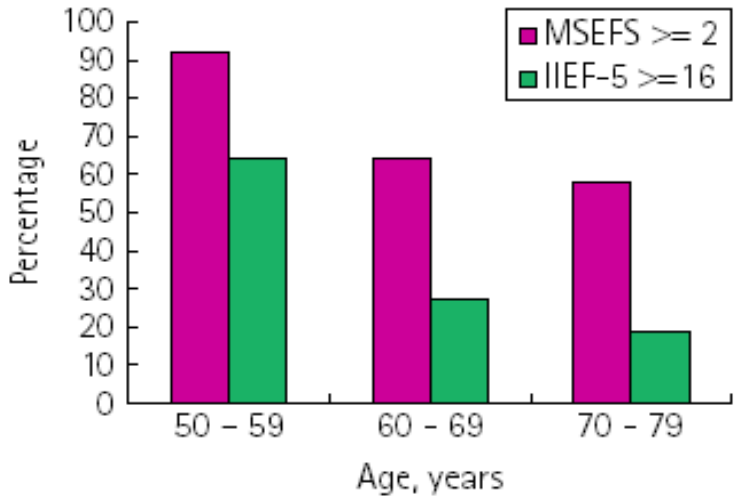
- Prospective study, 223 patients
  Median follow up 8.2 years

- Best results for men aged 50-59:

Potency preserved in 64-92%

Cesaretti et al, BJU Int 2008

FIG. 1. The percentage of patients with an MSEF score of 2 or 3 and IIEF-5 score of ≥16 after ≥7 years of follow-up, and who had normal EF before brachytherapy.



Brachytherapy : novel techniques

- Combined brachytherapy and external beam radiotherapy
  Total dose > 200 Gy

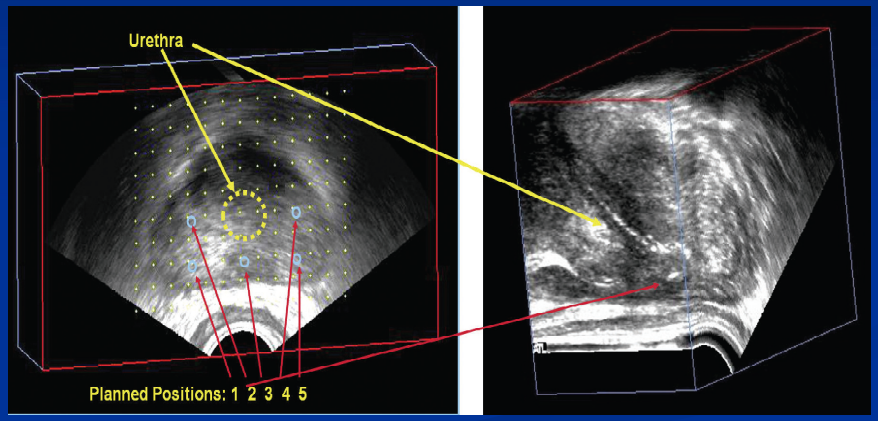
  Evaluated for patients with intermediate and high risk criteria
  Gleason ≥7 : 5-year recurrence free survival = 88%

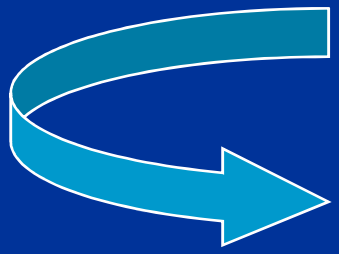
- Brachytherapy with high effective dose

Stone et al, Int J Radiat Oncol Biol Phys 2009

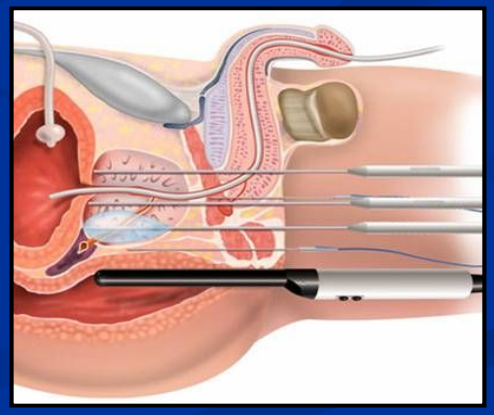
Focal treatments

- HIFU
- Cryotherapy
- Phototherapy





Focal
1 lobe
2 lobes



High intensity focalized ultrasound

- First treatment (age > 70 years) or after failure of local treatment
- Advantages: non-invasive, well tolerated
- Disadvantage: TURP mandatory, high recurrence rate
- Follow up biopsies: cancer in 7-36%

  5-year recurrence free survival: 30-40%

  Meta-analysis (37 studies, stage T1-T2 N0M0)

Rebillard et al, BJU Int 2008

Conclusions

Today

Surgery

in constant improvement

Physical treatments

in major development

Tomorrow

Focal treatments ?

Role of imaging

Risks

Obsession of functional result

Obsession of technical challenge