

**BIOPSIE PROSTATICHE
ECOGUDATE:
INDICAZIONI E TECNICHE**

L'introduzione del PSA e della TRUS hanno rivoluzionato l'indicazione e la tecnica della biopsia prostatica incrementando in maniera sostanziale l'accuratezza diagnostica della biopsia prostatica



Indicazioni generali alla biopsia prostatica

- INCREMENTO DEL PSA
- ALTERAZIONI ALL'ESPLORAZIONE RETTALE
- ALTERAZIONI ALLA TRUS
- PIN DOPO TURP

Diagnosi precoce e fattori predittivi del comportamento del cancro della prostata

Gli effetti dello screening per PCa La migrazione dello stadio

Localizzati

Avanzati

68%

1983

32%

90%

2003

10%

SCREENING

METODOLOGIA

- DRE → Non rileva 40% PCa curabile
- PSA → Non rileva 25% PCa curabile
- DRE + PSA (cdr 78%) **Consigliabile**



Catalona WJ, J Urol 1994

SCREENING ENDPOINT = MIGLIORE SELEZIONE
PER BIOPSIA PROSTATICA

Esami umorali

Antigene prostatico specifico (PSA)

Valori elevati si riscontrano solo nelle patologie prostatiche

Benigne

IPB

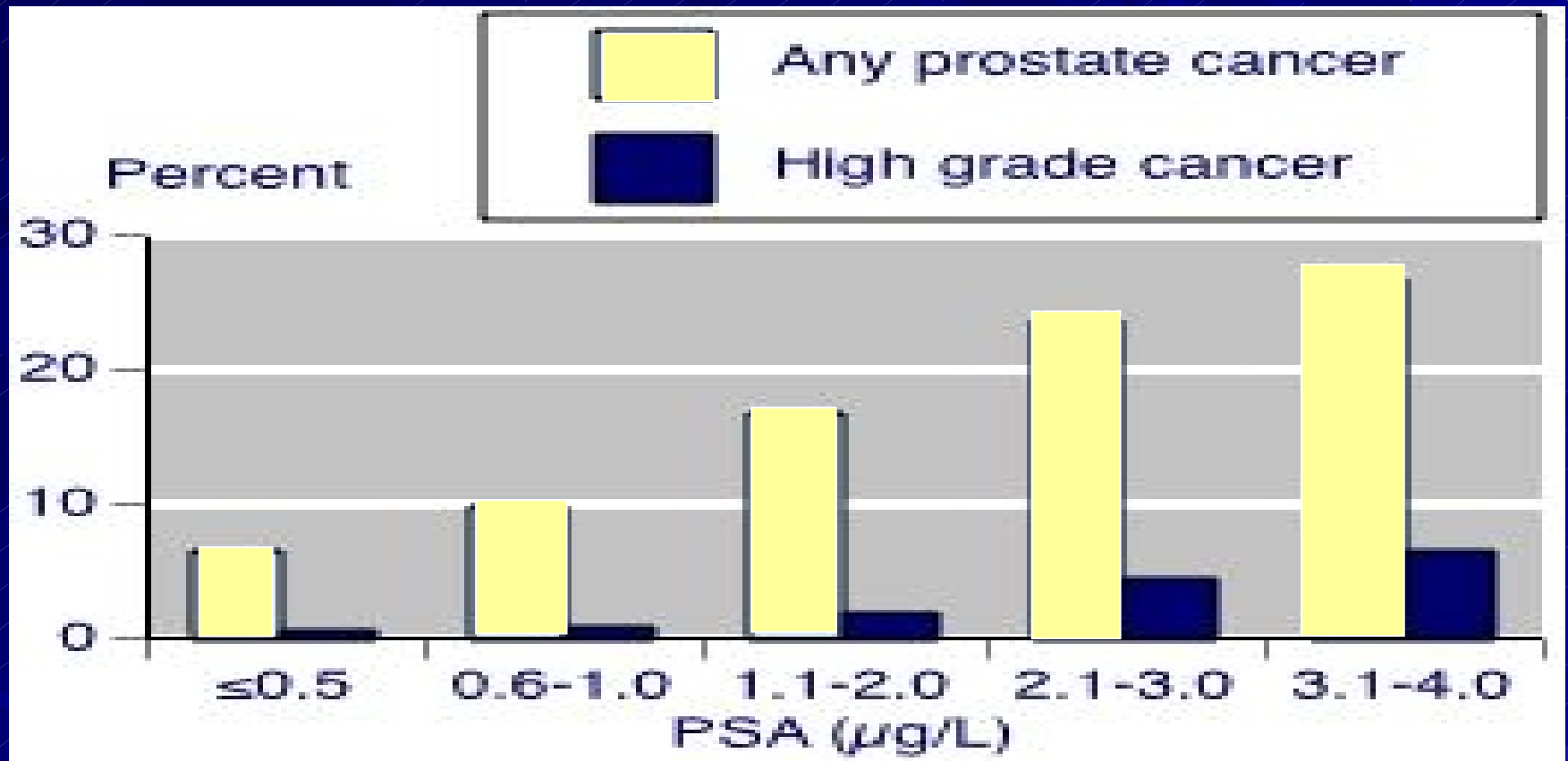
Prostatite

Maligne

PSA and Prostate Cancer

PSA	Number	Cancer	HG Cancer
≤ 0.5	486	6.6%	0.83%
0.6-1.0	791	10.1%	1%
1.1-2.0	998	17%	2.1%
2.1-3.0	482	23.9%	4.6%
3.1-4.0	193	26.9%	6.7%
Total	2950	15.2%	2.26%

Prevalenza del PCa in PSA < 4 ng/ml

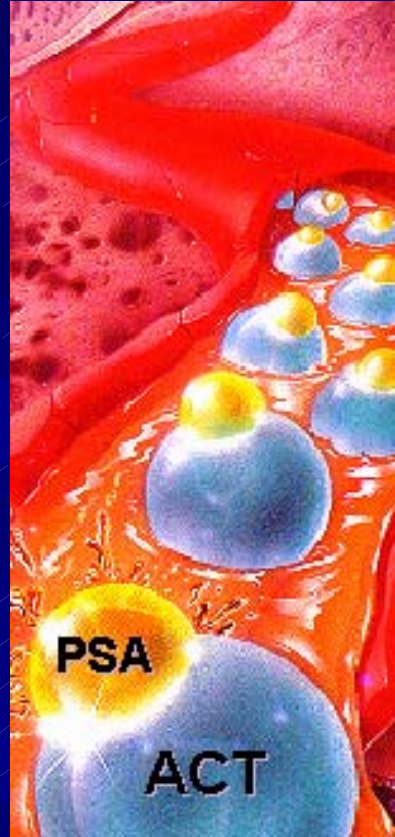


Thompson IM et al., N Engl J Med 2004
Thompson IM et al., Jama 2005

PSA Libero



BPH



Ca-P

L'85-90% del PSA Tot.
è complessato all' α -1-
antichimotripsina (ACT)

Rapporto
F/T

Cut-off: 0,15 ?

PROBABILITA' DI CANCRO IN BASE AL PSA ED AL PSA FREE/TOTAL

PSA(ng/ml)	% DI CANCRO	% FREE	% DI CANCRO
2	1	0-10	56
2-4	15	10-45	28
4-10	25	15-20	20
> 10	> 50	20-25	16

BRAWER MK et al., CANCER J CLIN 1999

PSAD

Rapporto tra PSA sierico e volume prostatico
misurato ecograficamente

Rischio di carcinoma prostatico

PSAD < 0.01 = 5%

PSAD tra 0.1 e 0.15 = 15%

PSAD > 0.15 = 25%

Benson MC et al., J Urol 1992
Bazinet M et al., Urology 1995

PSA velocity

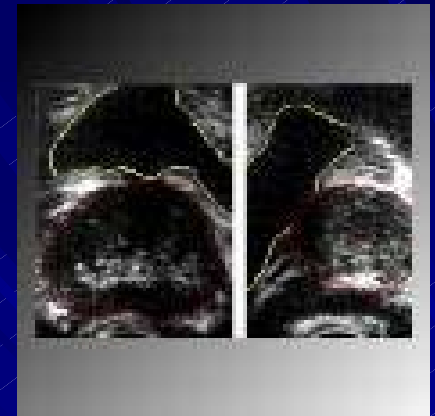
Rate of PSA change > 0,75ng/ml/Yr

Using this cut-off, **specificity** reportedly increases to over **90%** with **72% sensitivity** in predicting occult prostate cancer in men with PSA < 10.0 ng/mL. Of note, it is recommended that in order to obtain maximal benefit from using PSAV measurements, at least 3 PSA measurements should be taken at intervals of 1.7-2.0 years

Carter HB, Pearson JD, Waclawiw Z, et al. Prostate-specific antigen variability in men without prostate cancer: effect of sampling interval on prostate-specific antigen velocity. *Urology*. 1995;45:591-596.
Carter HB, Pearson JD. Prostate-specific antigen velocity and repeated measures of prostate-specific antigen. *Urol Clin North Am*. 1997;24:333-338

Indication for Biopsy	Comments
Total PSA	20%-30% cancer detection rate if PSA 4-10 ng/mL and normal DRE
PSA velocity	PSA velocity > 0.75 ng/mL/yr, requires multiple PSA measurements over many years, biologic and assay variability bias
PSA density (PSAD)	PSAD > 0.15, requires TRUS, significant decrease in biopsy numbers. Potential bias/error from ultrasound operator variability and assay variability.
Age-adjusted PSA	PSA cut-off of 6.5 (age > 70), 4.5 (age 60-70), 3.5 (age 50-60), and 2.5 (age 40-50). Improved sensitivity in young men, decreased sensitivity in older men.
Free/total PSA (% free PSA)	Unnecessary biopsy reduced by 20% if % free PSA cut-off of 25%. If % free PSA 0%-10% and PSA 4-10 ng/mL, cancer detection > 50%.
Complexed PSA	Measurement of only 1 analyte. Reported improved specificity over total PSA. Large assay variability.

TRUS



- IS EXTREMELY USEFUL FOR GUIDING NEEDLE BIOPSES OF THE PROSTATE
- DOES NOT REFLECT PRESENCE, LOCATION, SIZE, OR EXTENT OF CANCER (65% of CaP \oplus \longrightarrow PREVIOUS TRUS \ominus)
- ACCURACY \leq DRE

Greene DR et. al., Campbells Urology 1992
Rifkin MD. et al., N Engl J Med 1992
Wolf JS et al., BJU 1992

BIOPSIA PROSTATICA

- Via Transrettale (più diffusamente utilizzata)
- Via Transperineale
- Digito-guidata (ormai storica)

Carcinoma della prostata

PROSTATA ANATOMIA E FUNZIONE

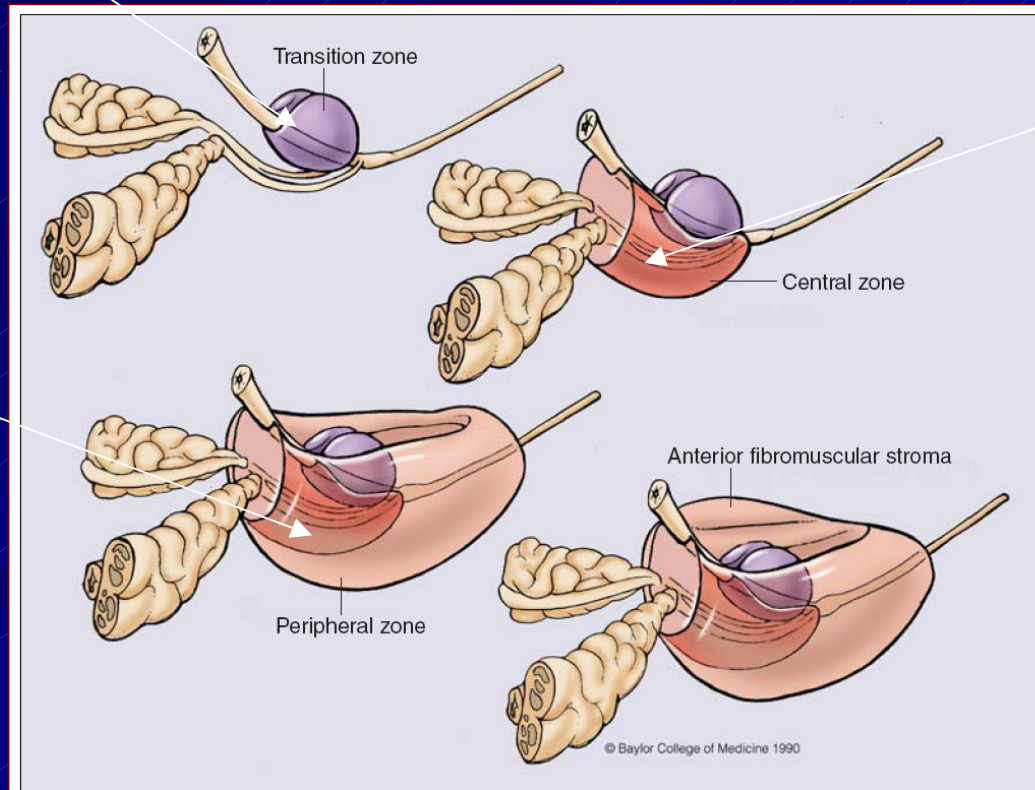
Il parenchima della prostata può essere suddiviso in 3 zone visibili sia all'ecografia transrettale sia all'esame anatomopatologico

ZONA DI TRANSIZIONE

Intorno all'uretra prostatica
25% del parenchima prostatico

20% dei carcinomi prostatici

Sito di origine dell'iperplasia prostatica benigna



ZONA CENTRALE

Circonda i dotti eiaculatori
10% del parenchima prostatico

ZONA PERIFERICA

Regione posterolaterale
70% del parenchima prostatico

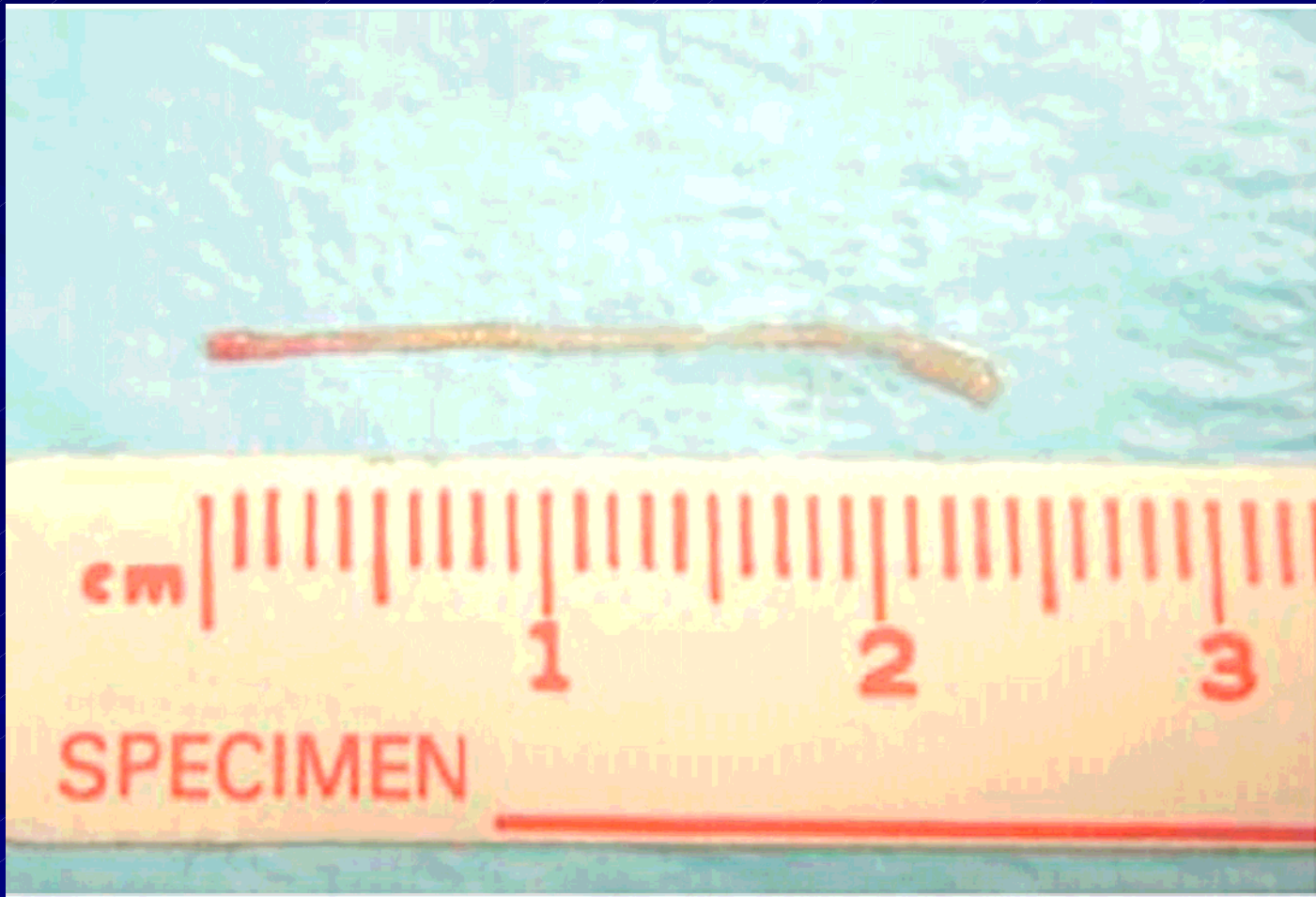
≥ 70% dei carcinomi della prostata

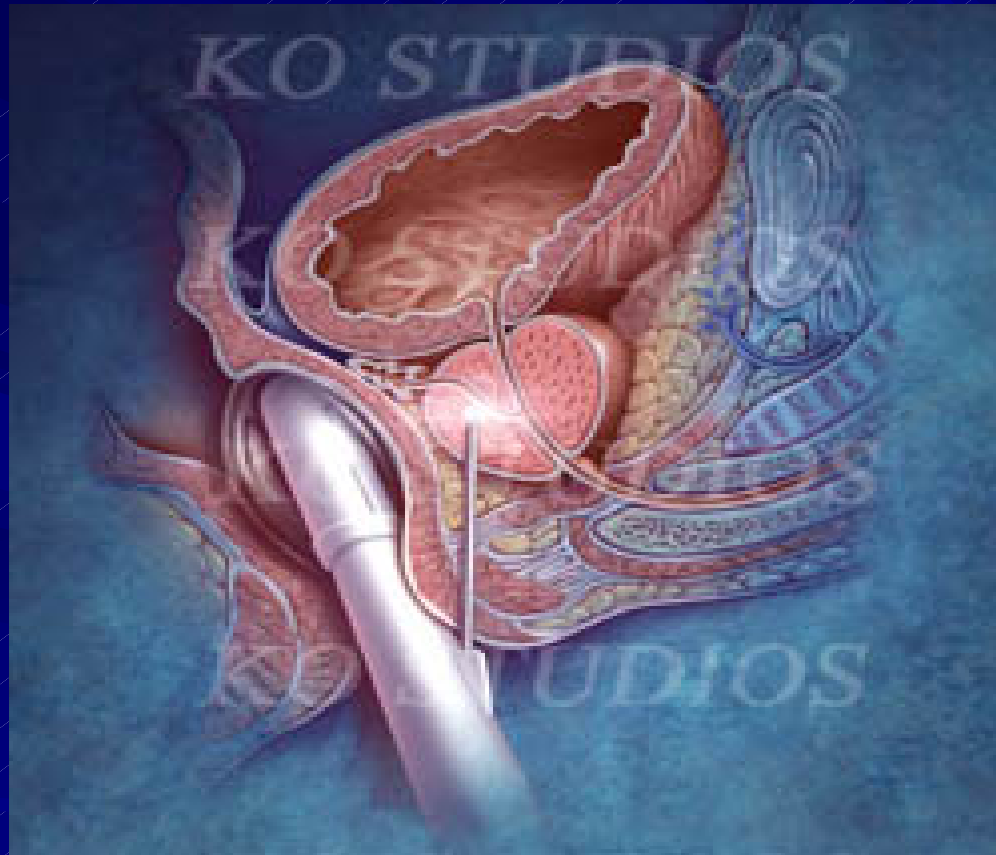
1-5% di tutti i carcinomi prostatici

Transrettale

- Anestesia endorettale topica
- Decubito laterale
- TRUS (volume prostatico e dell'adenoma)
- Ago 18-19 Gauge (escursione dell'ago 2,5 cm - carota 2 cm)







The influence of prostate size on cancer detection.

Urology. 1995; 46(6):831-6 (ISSN: 0090-4295)

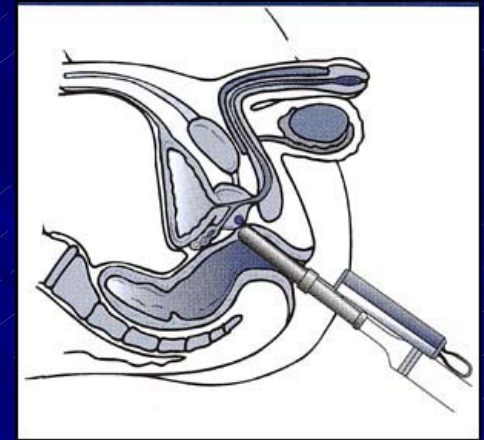
Uzzo RG ; Wei JT ; Waldbaum RS ; Perlmutter AP ; Byrne JC ; Vaughan ED

Department of Urology, James Buchanan Brady Foundation, New York Hospital-Cornell University
Medical Center, NY 10021, USA.

■ Vol > 50 cc CDR 23%

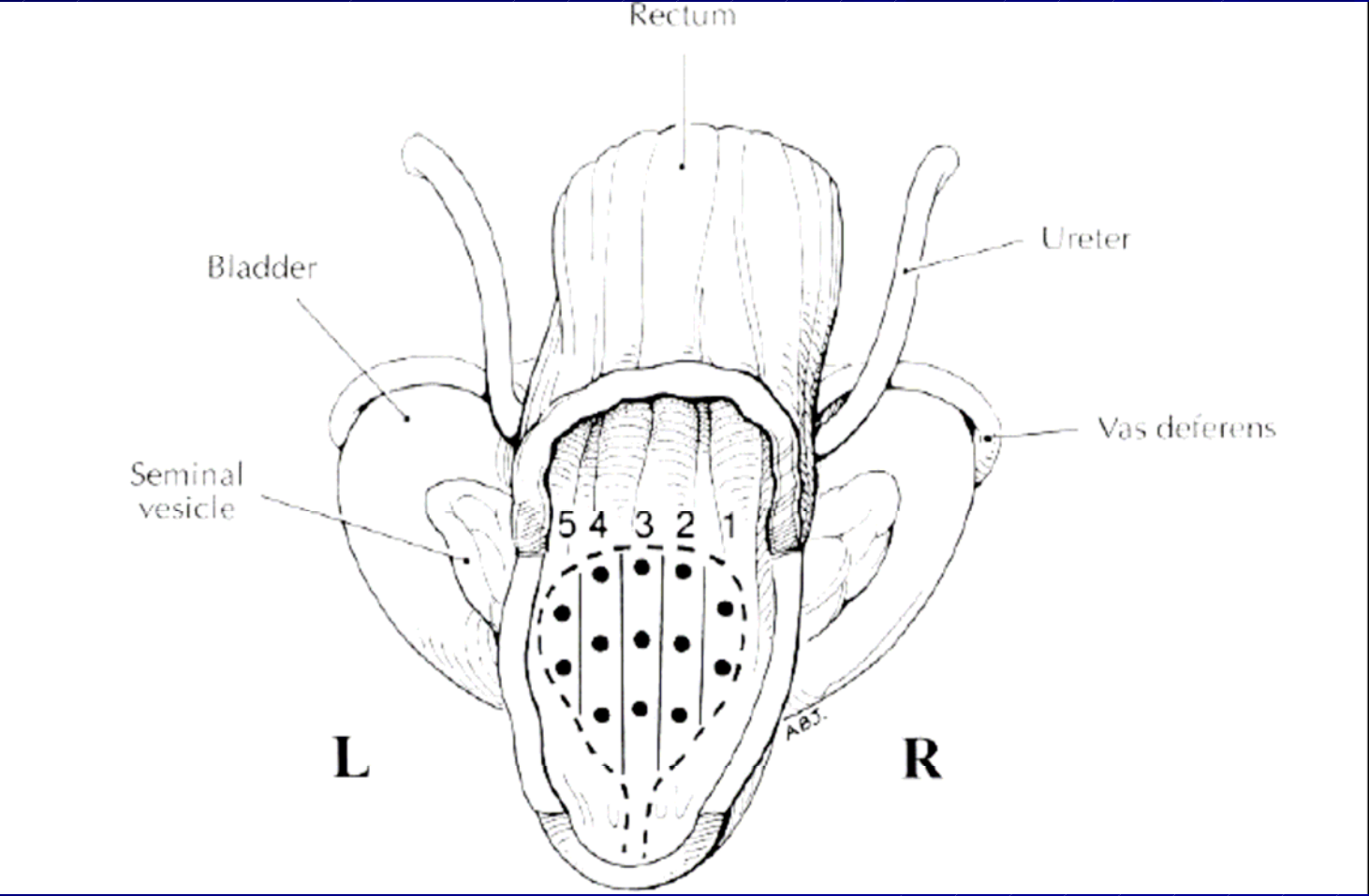
■ Vol < 50 cc CDR 38%

BIOPSIA PROSTATICA



SCHEMI BIOPTICI CHE COMPORTANO 11-14
CORES INNALZANO IL CANCER DETECTION
RATE DEL 33 % CIRCA (PROSTATE BIOPSY: INDICATION AND
TECNIQUE. J UROL. 2003 JAN; 169(19):12-9)

**C'è una relazione inversa tra il volume
della prostata e la probabilità di
trovare cancro nei prelievi bioptici**



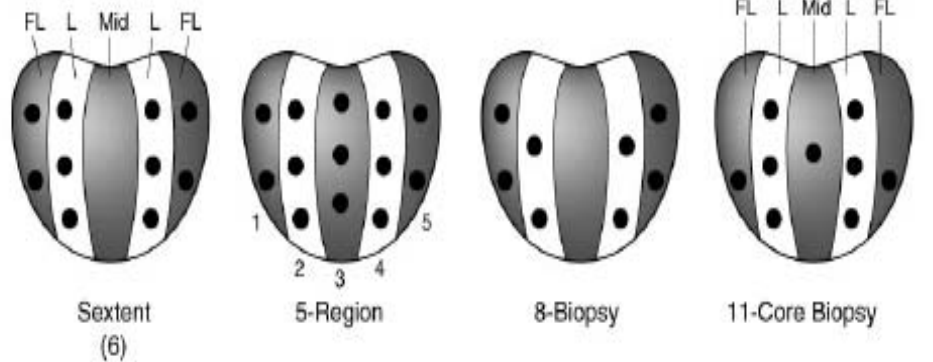


Figure 5

Popular biopsy strategies to optimize prostate cancer detection.

Contemporary **sextant** biopsy template, **five-region** biopsy template, **eight-biopsy** systematic template, and the **eleven-core** biopsy multi-site directed template.

FL-far lateral peripheral zone, **L**-lateral peripheral zone, **Mid**-peripheral zone, **RTZ**-right transition zone, **LTZ**-left transition zone.

Three-dimensional computer reconstruction of prostate cancer from radical prostatectomy specimens: evaluation of the model by core biopsy simulation.

Urology. 1999; 53(1):192-8 (ISSN: 0090-4295)

Egevad L ; Frimmel H ; Norberg M ; Mattson S ; Carlbom I ; Bengtsson E ; Busch C
Department of Pathology, Centre of Image Analysis, Uppsala University, Sweden.

10 prelievi incrementavano del 24 % CDR rispetto alla biopsie a sestante

Transrectal prostate biopsy

endfiring us-probe



Urologische Universitätsklinik Hamburg-Eppendorf

Transrectal prostate biopsy

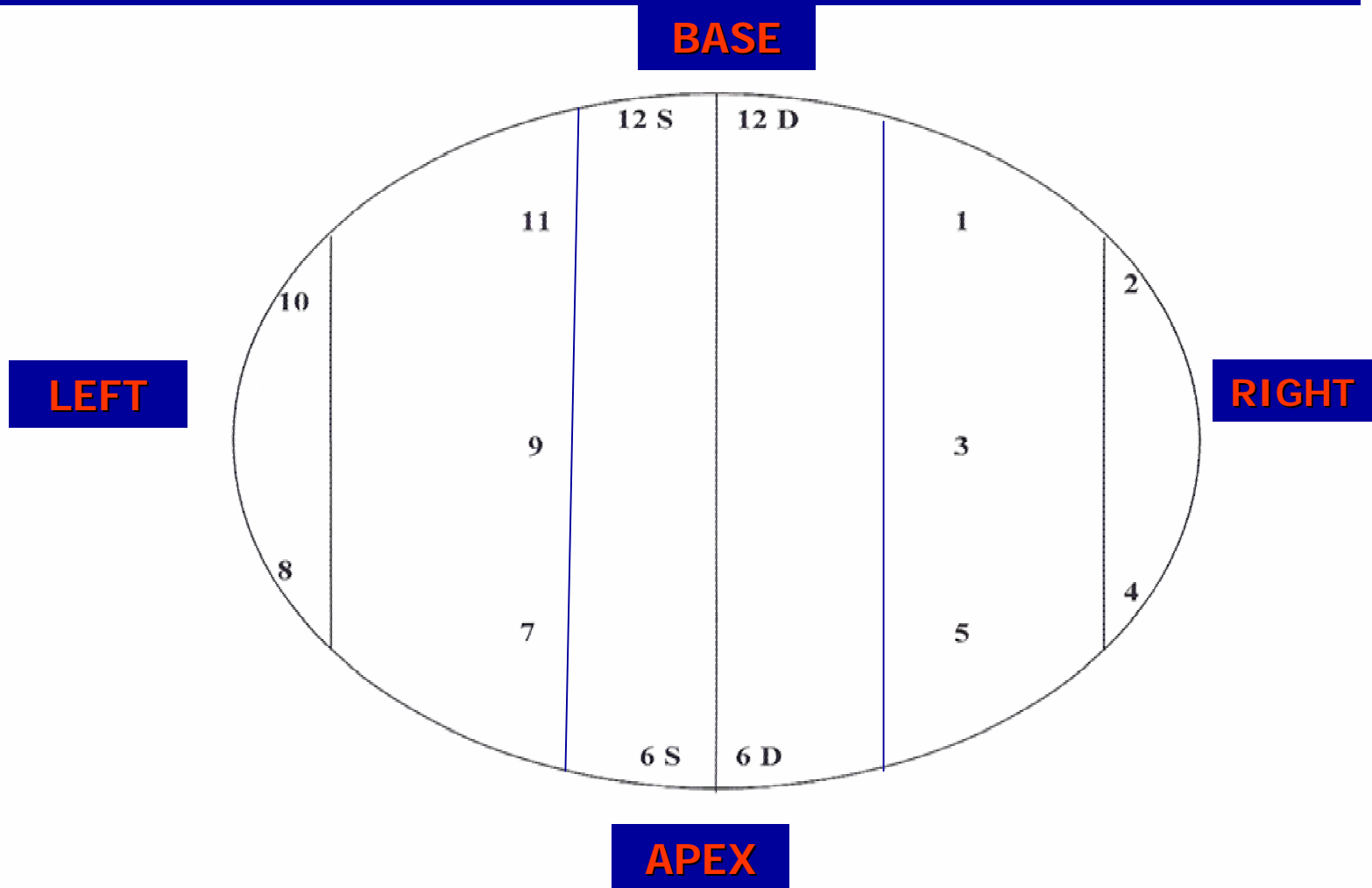
side-firing us-probe



Urologische Universitätsklinik Hamburg-Eppendorf

Fig. 5. Biopsy tracks produced by end-firing and side-firing biopsy probes.

NOSTRO SCHEMA 14 BIOPSIE



**LOCALIZZAZIONE E QUANTIFICAZIONE
DELLA MALATTIA**



Transperineale

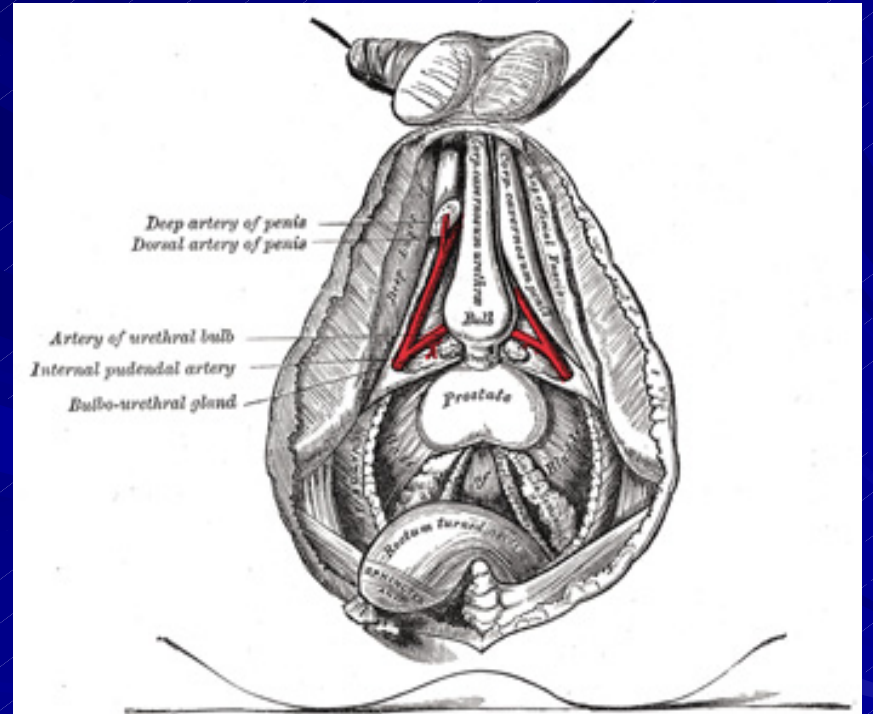
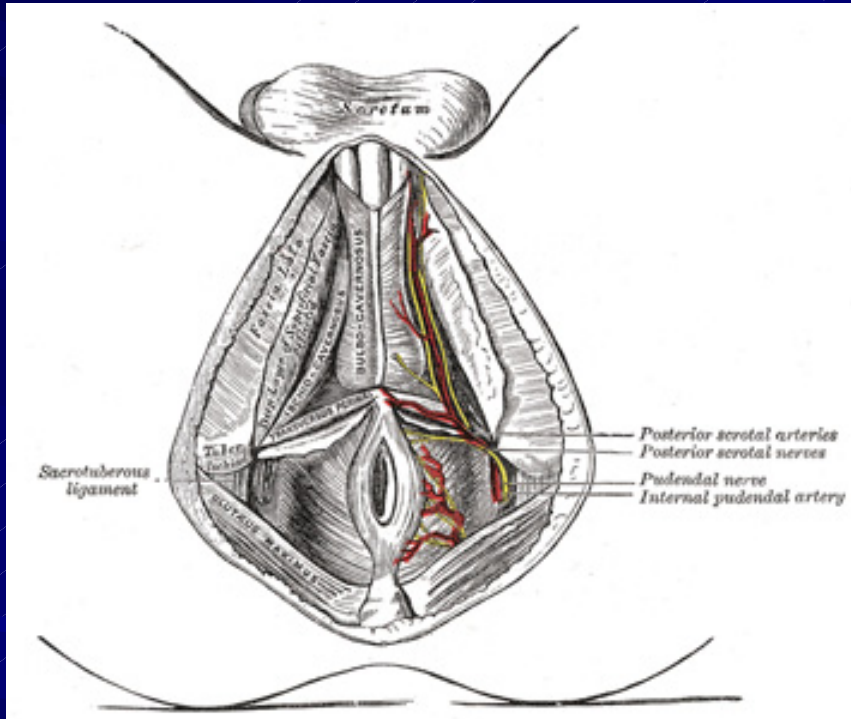
- Posizione litotomica
- Tricotomia
- Accesso 1,5 cm sopra lo sfintere anale
- Anestesia del piano perineale e dell'apice prostatico (ago da spinale 22 G 10 + 10 cc xilocaina 1%) sotto guida ecografica
- Procedura bioptica
- 6-10-14 cores a seconda del volume prostatico

BEST APPROACH FOR PROSTATE CANCER DETECTION: A PROSPECTIVE STUDY ON TRANSPERINEAL VERSUS TRANSRECTAL SIX-CORE PROSTATE BIOPSY

P. EMILIOZZI, A. CORSETTI, B. TASSI, G. FEDERICO, M. MARTINI, AND V. PANSADORO

UROLOGY 61 (5), 2003

- Overall cancer detection rate 40%(43 di 107
- 32% (34 di 107) TRUS
- 38% (41 di 107) TPUS
- 43 carcinomi diagnosticati 95% con TPUS
79% con TRUS



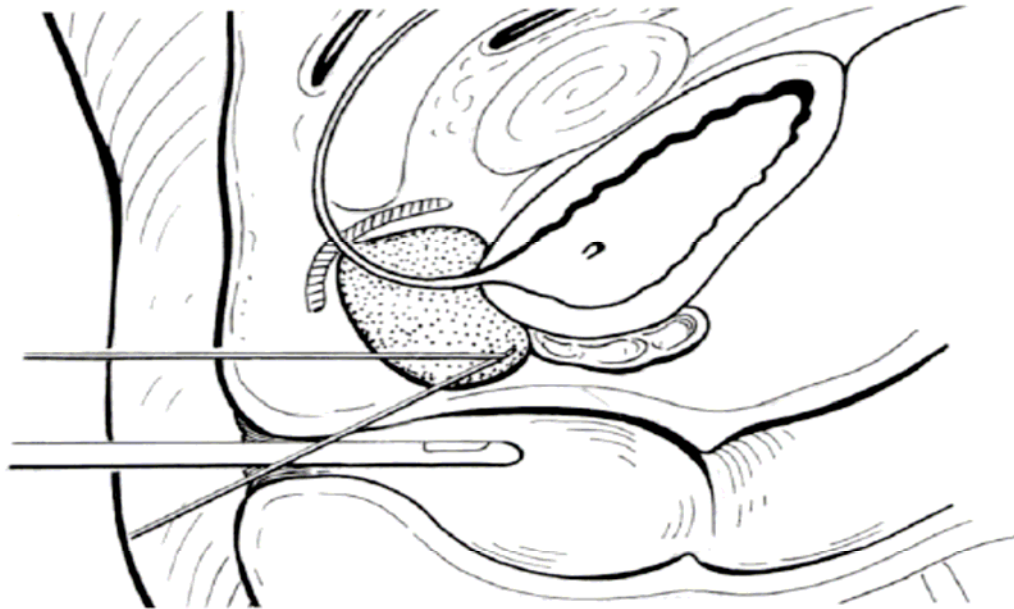


FIGURE 2. *The needle for transperineal biopsy must be exactly parallel to the ultrasound probe to obtain a specimen from the targeted area. The transrectal biopsy is performed on a different axis.*

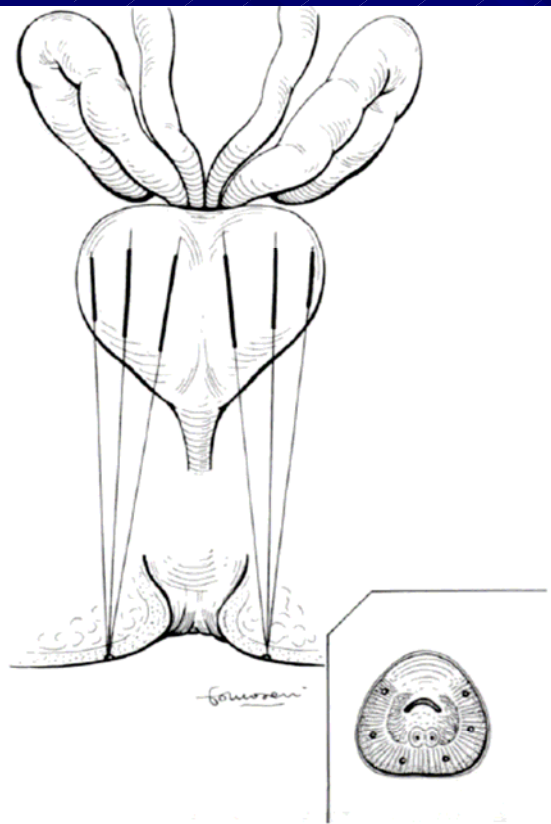


FIGURE 1. *Scheme of transperineal six-core biopsy. Cores are also taken from the far lateral aspect of the prostate.*

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CONCLUSIONS

This is the first report comparing the effectiveness of two different routes of prostate biopsy in vivo under transrectal ultrasound guidance. In addition, selection bias was avoided by performing the procedure in the same group of patients. The transperineal approach seems statistically superior to the transrectal approach for prostate cancer detection. Although the transperineal biopsy may require longer training, it should be reconsidered as a sensitive technique for prostate cancer detection.

UROLOGY 61 (5), 2003

Schema biopsie transperineali

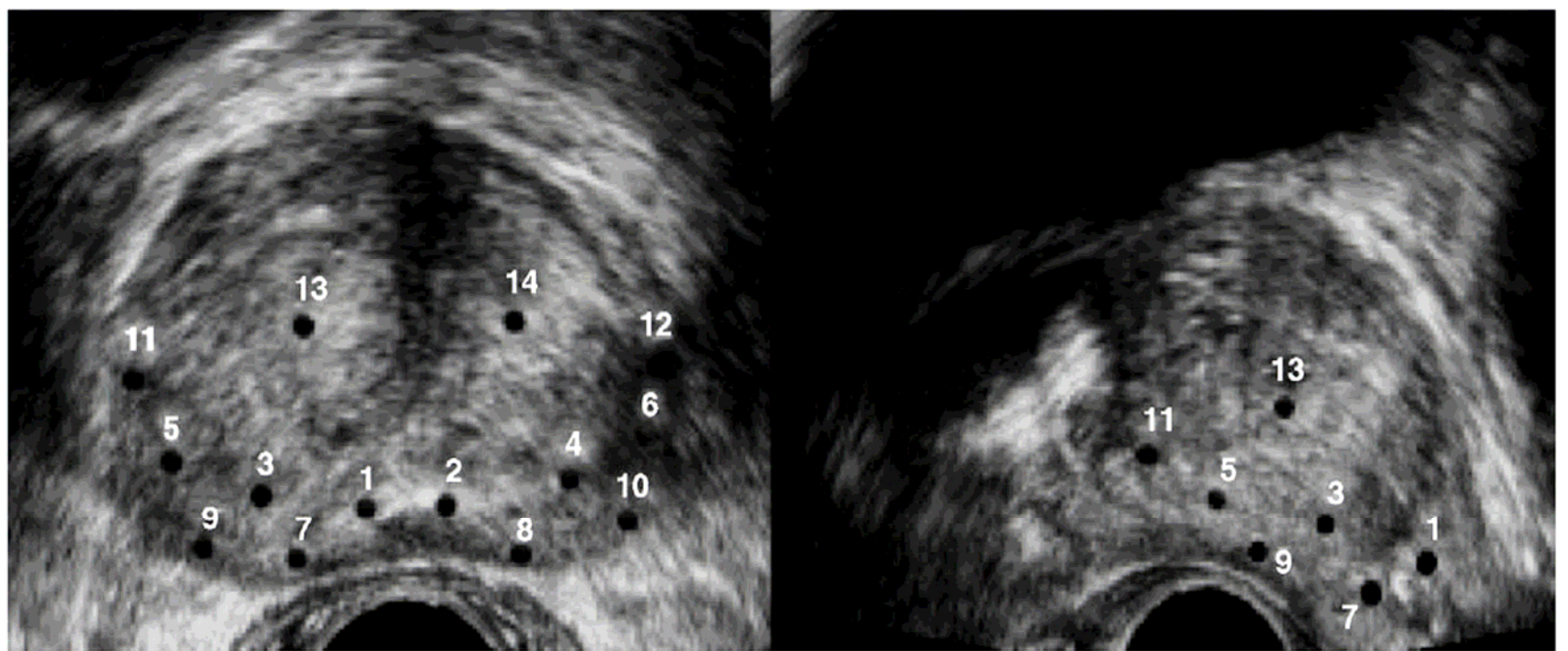


Fig. 1. 14-core scheme. TRUS images in transversal and longitudinal plans with number and site of each core.

The Potential Impact of Prostate Volume in the Planning of Optimal Number of Cores in the Systematic Transperineal Prostate Biopsy

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480 Pazienti

- Febbre 3 pz (0,6%)
- Ritenzione urinaria 3 pz (0,6%)
- Ricovero in 3 pz (0,6%) (2 ematuria 1 ematoma perineale)

Complicanze riportate dalla letteratura con tecnica transperineale.

Ematuria	26-42%
Ematuria severa	0,7%
Emospermia	13-46%
Ematoma pelvico	0,1%
Dolore (con anestesia)	31%
Disuria	2,7%
Ritenzione	2%
Setticemia	0,1-0,7%
Infezione urinaria	0,0-0,5%
Rettorragia	0,0%
Febbre	0,5%

Complicanze riportate dalla letteratura con tecnica transrettale.

Ematuria	47-74%
Ematuria severa	0,1-0,7%
Emospermia	19-45%
Ematoma pelvico	0,0%
Dolore	36%
Disuria	6,8-7,2%
Ritenzione	1%
Setticemia	0,1-0,2%
Infezione urinaria	27-32%
Infezione urinaria (previa profilassi)	0,2-5,6%
Rettorragia lieve	4,9-22,1%
Rettorragia severa	1,2%
Febbre	1%