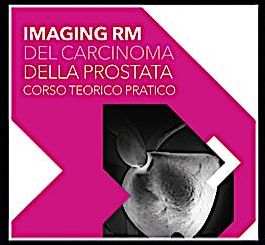


Imaging RM del Carcinoma della Prostata
Corso teorico-pratico
Ospedale San Raffaele
Milano 11/12 ottobre 2018

INDICAZIONI E RISULTATI

G. Cardone

OSPEDALE
SAN RAFFAELE

Unita' Operativa di Radiologia
IRCCS Ospedale San Raffaele-Turro, Milano
cardone.gianpiero@hsr.it

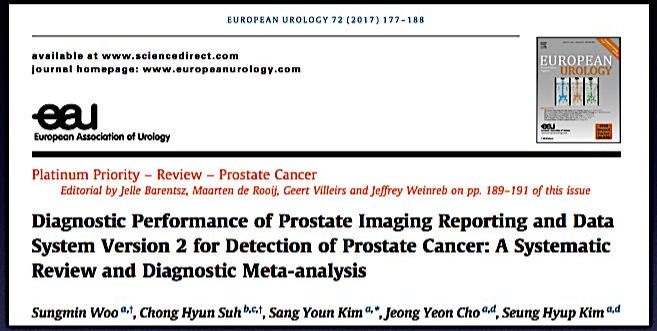
POTENZIALI INDICAZIONI RMmp

- IDENTIFICAZIONE CA PROSTATA
- MANAGEMENT CA PROSTATA
  - Stadiazione
  - Sorveglianza attiva
  - Biopsie target
  - Follow-up
  - Trp focali

* PI-RADS v2.0, Barentsz et al, European Urology 2015

IDENTIFICAZIONE CA PROSTATA

RISULTATI



EUROPEAN UROLOGY 72 (2017) 177–188

available at www.sciencedirect.com
journal homepage: www.europeanurology.com

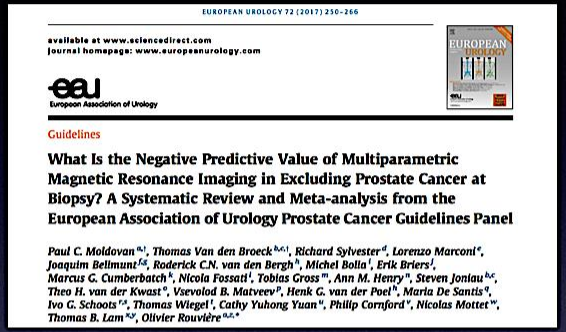
European Association of Urology

Platinum Priority – Review – Prostate Cancer

Editorial by Jelle Barentsz, Maarten de Rooij, Geert Villeirs and Jeffrey Weinreb on pp. 189–191 of this issue

Diagnostic Performance of Prostate Imaging Reporting and Data System Version 2 for Detection of Prostate Cancer: A Systematic Review and Diagnostic Meta-analysis

Sungmin Woo [a,†], Chong Hyun Suh [b,c,†], Sang Youn Kim [a,], Jeong Yeon Cho [a,d], Seung Hyup Kim [a,d]*



EUROPEAN UROLOGY 72 (2017) 250–266

available at www.sciencedirect.com
journal homepage: www.europeanurology.com

European Association of Urology

Guidelines

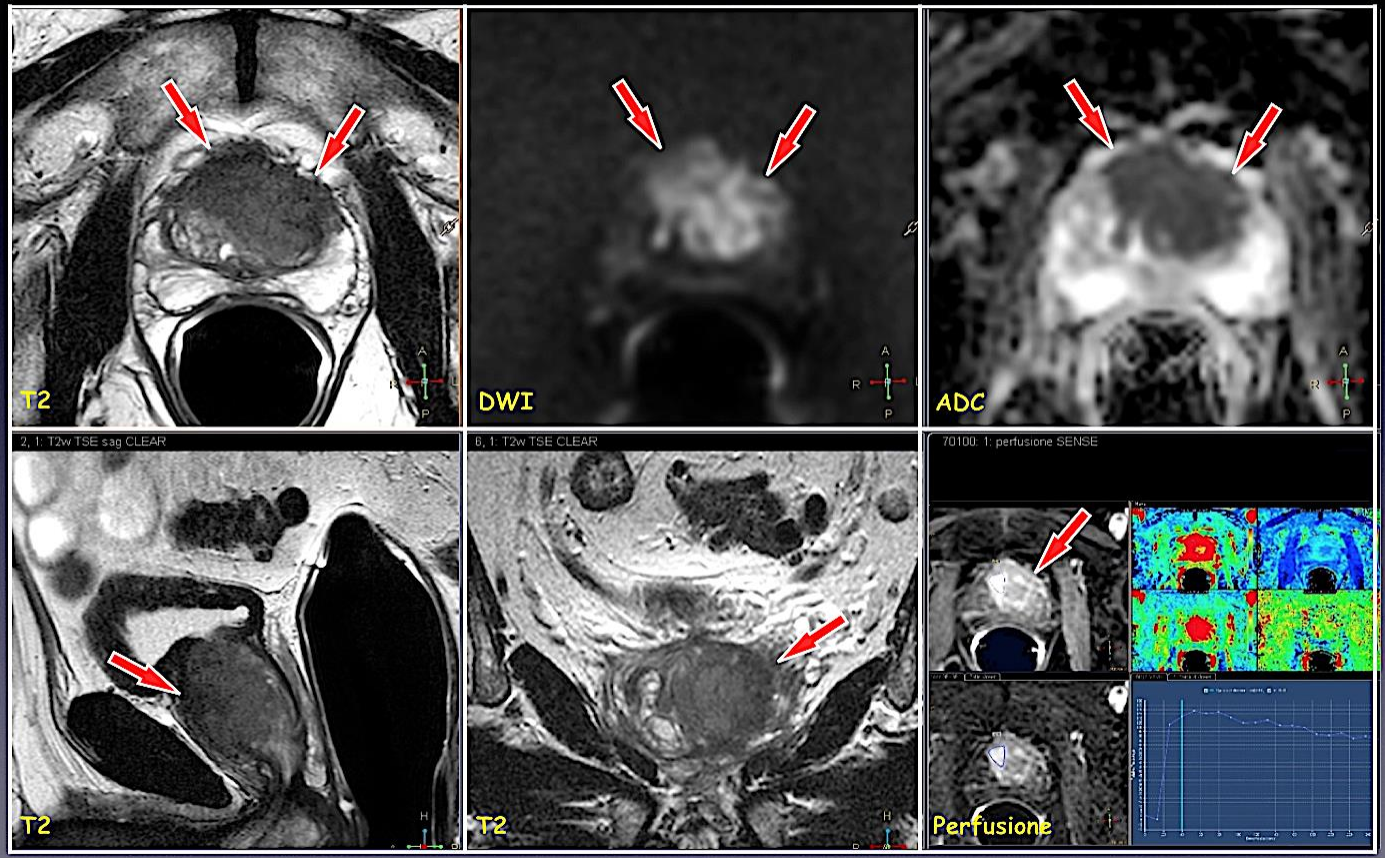
What Is the Negative Predictive Value of Multiparametric Magnetic Resonance Imaging in Excluding Prostate Cancer at Biopsy? A Systematic Review and Meta-analysis from the European Association of Urology Prostate Cancer Guidelines Panel

Paul C. Moldovan [a,†], Thomas Van den Broeck [b,c,†], Richard Sylvester [d], Lorenzo Marconi [e], Joaquim Bellmunt [f,g], Roderick C.N. van den Bergh [h], Michel Bolla [i], Erik Briers [j], Marcus G. Cumberbatch [k], Nicola Fossati [l], Tobias Gross [m], Ann M. Henry [n], Steven Joniau [b,c], Theo H. van der Kwast [o], Vsevolod B. Matveev [p], Henk G. van der Poel [h], Maria De Santis [q], Ivo G. Schoots [r,s], Thomas Wiegel [t], Cathy Yuhong Yuan [u], Philip Cornford [v], Nicolas Mottet [w], Thomas B. Lam [x,y], Olivier Rouvière [a,z,]*

- METANALISI PERFORMANCE RMmp+PI-RADS v2 (21 studi)*
  - Sensibilita' 95% (85%-98%), Specificita' 73% (36%-94%)
- CONFRONTO PI-RADS v2 vs PI-RADS v1 (6 studi)*
  - Sensibilita' PI-RADS v1 = 88% (80%-93%), Specificita' 73% (47%-89%)
  - Sensibilita' PI-RADS v2 = 95% (85%-98%), Specificita' 73% (36%-94%)
- METANALISI VALORE PREDITTIVO NEGATIVO RMmp+PI-RADS v2 (48 studi)**
  - VPN per CA significativo 88% (86%-93%)
  - VPN per CA 82% (69%-92%)

* Woo et al, European Urology 2017
** Moldovan et al, European Urology 2017

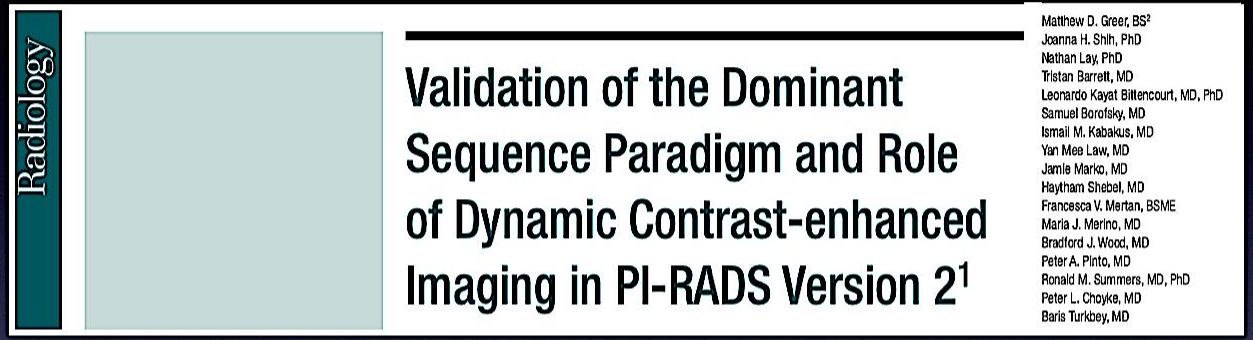
IDENTIFICAZIONE CA PROSTATA



PSA 15	ER -	BIOPSIE: 3 set precedenti -	RM: PI-RADS 5	BIOPSIA FUSION Ca GS 4+4

IDENTIFICAZIONE CA PROSTATA

RISULTATI (PROBABILITA' CA)


Radiology

Validation of the Dominant Sequence Paradigm and Role of Dynamic Contrast-enhanced Imaging in PI-RADS Version 2[1]

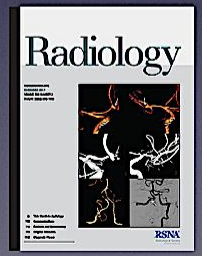
Matthew D. Greer, BS[2]
Joanna H. Shih, PhD
Nathan Lay, PhD
Tristan Barrett, MD
Leonardo Kayat Bittencourt, MD, PhD
Samuel Borofsky, MD
Ismail M. Kabakus, MD
Yan Mee Law, MD
Jamie Marko, MD
Haytham Shebel, MD
Francesca V. Mertan, BSME
Maria J. Merino, MD
Bradford J. Wood, MD
Peter A. Pinto, MD
Ronald M. Summers, MD, PhD
Peter L. Choyke, MD
Baris Turkbey, MD

PI-RADS v2: MRI-Clinically Significant PCa

- Gleason score ≥ 7 (including 3+4 with prominent but not predominant Gleason 4 component), and
- Volume ≥ 0.5cc, and/or
- Extraprostatic extension (EPE)

Wolters T, et al. J Urol 2011;185:121-5

- PROBABILITA' NEOPLASIA PROSTATICA SIGNIFICATIVA*
  - PI-RADS score 2 = 15% (10%)***
  - PI-RADS score 3 = 33% (30%)***
  - PI-RADS score 3+1 = 50%
  - PI-RADS score 4 = 70% (40%)***
  - PI-RADS score 5 = 90% (80%)***



* Greer et al, Radiology 2017
** Walters et al, J Uro 2011
*** Thai et al, Radiology 2018

IDENTIFICAZIONE CA PROSTATA

INDICAZIONI


Guidelines
EAU-ESTRO-SIOG Guidelines on Prostate Cancer. Part 1: Screening, Diagnosis, and Local Treatment with Curative Intent

Table 5.2.3: PCa detection rates (%) by mpMRI for tumour volume and Gleason score [126]

Gleason score	Tumour volume (mL)		
	< 0.5	0.5-2	> 2
GS6	21-29%	43-54%	67-75%
GS7	63%	82-88%	97%
GS >7	80%	93%	100%

5.2.4.3 Guidelines for imaging

Recommendation	LE	GR
Before repeat biopsy, perform mpMRI when clinical suspicion of PCa persists in spite of negative biopsies.	1a	A
During repeat biopsy include systematic biopsies and targeting of any mpMRI lesions seen.	2a	B

- INDICAZIONI CONSOLIDATE (ESUR/EAU)*
  - Individuazione ca prima rebiopsia
- INDICAZIONI EMERGENTI**/***/****/*****
  - Individuazione/Esclusione NEOPLASIE SIGNIFICATIVE in pz con sospetto clinico-laboratoristico (Pre-biopsia)
  - Guida alle Biopsie "target" (Cognitive Biopsy, US/MR Fusion Biopsy, MR guided Biopsy)

* EAU Prostate Cancer guidelines 2017
** PI-RADS v2.0, Barentsz et al, European Urology 2015
*** Radtke et al, Journal of Endourology 2015
**** Gurses et al, European radiology 2008
***** Hahmed et al, Lancet 2017

IDENTIFICAZIONE CA PROSTATA

Diagnostic Pathway with Multiparametric Magnetic Resonance Imaging Versus Standard Pathway: Results from a Randomized Prospective Study in Biopsy-naïve Patients with Suspected Prostate Cancer

Francesco Porpiglia [a,], Matteo Manfredi [a], Fabrizio Mele [a], Marco Cossu [a], Enrico Bollito [b], Andrea Veltri [c], Stefano Cirillo [d], Daniele Regge [e], Riccardo Faletti [f], Roberto Passera [g], Cristian Fiori [a], Stefano De Luca [a]*

EURURO-6996; No. of Pages 7

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EUROPEAN UROLOGY XXX (2016) XXX–XXX

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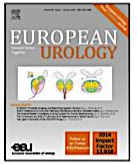
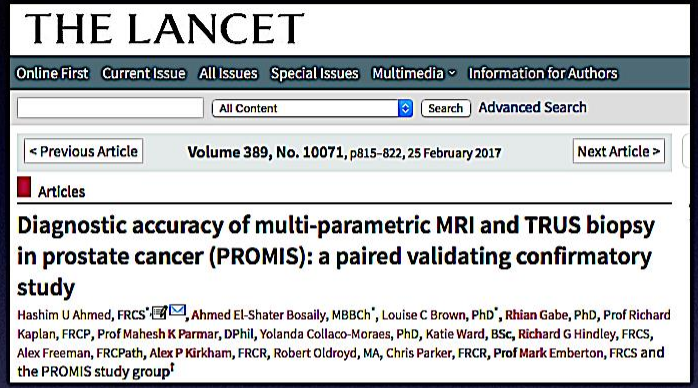
European Association of Urology



- CONFRONTO TRA PERCORSO CON RMmp PRE BIOPSIA E PERCORSO CON BIOPSIA STANDARD
  - European Urology 2016
  - 212 Pz
  - GRUPPO A: RMmp + biopsia fusion se RMmp positiva, Biopsia TRUS se RMmp negativa
  - GRUPPO B: Biopsia TRUS
- RISULTATI
  - GRUPPO A: 47/111 (43,9%) neoplasie significative
  - GRUPPO B: 19/112 (18,1%) neoplasie significative
  - GRUPPO A con RMmp negativa sottoposti successivamente a Biopsia TRUS: 1 caso di ca significativo (3,8%)
- CONCLUSIONI
  - Percorso diagnostico con RMmp prima della prima biopsia > detection rate ca prostata del percorso con Biopsia TRUS

* Porpiglia et al, European Urology 2016

IDENTIFICAZIONE CA PROSTATA


THE LANCET

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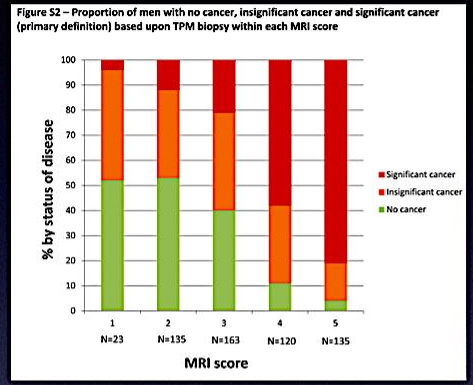
< Previous Article Volume 389, No. 10071, p815–822, 25 February 2017 Next Article >

Articles

Diagnostic accuracy of multi-parametric MRI and TRUS biopsy in prostate cancer (PROMIS): a paired validating confirmatory study

Hashim U Ahmed, FRCS*, Ahmed El-Shater Bosaily, MBBCh*, Louise C Brown, PhD*, Rhian Gabe, PhD, Prof Richard Kaplan, FRCP, Prof Mahesh K Parmar, DPhil, Yolanda Collaco-Moraes, PhD, Katie Ward, BSc, Richard G Hindley, FRCS, Alex Freeman, FRCPath, Alex P Kirkham, FRCR, Robert Oldroyd, MA, Chris Parker, FRCR, Prof Mark Emberton, FRCS and the PROMIS study group†



	MP-MRI, % (95% CI)	TRUS-biopsy, % [95% CI]	Test ratio* [95% CI]	p value
Primary definition (Gleason score ≥4+3 or cancer core length ≥6 mm), prevalence of clinically significant cancer 230 (40%, 36–44%)				
Sensitivity test	93 (88–96)	48 (42–55)	0·52 (0·45–0·60)	p<0·0001
Specificity test	41 (36–46)	96 (94–98)	2·34 (2·08–2·68)	p<0·0001
PPV	51 (46–56)	90 (83–94)	8·2 (4·7–14·3)	p<0·0001
NPV	89 (83–94)	74 (69–78)	0·34 (0·21–0·55)	p<0·0001
Secondary definition (Gleason score ≥3+4 or cancer core length ≥4 mm), prevalence of clinically significant cancer 331 (57%, 53–62%)				
Sensitivity test	87 (83–90)	60 (55–65)	0·69 (0·64–0·76)	p<0·0001
Specificity test	47 (40–53)	98 (96–100)	2·11 (1·85–2·41)	p<0·0001
PPV	69 (64–73)	98 (95–100)	22·7 (8·6–59·9)	p<0·0001
NPV	72 (65–79)	65 (60–70)	0·70 (0·52–0·96)	p=0·025
Any Gleason score 7 (≥3+4), prevalence of clinically significant cancer 308 (53%, 49–58%)				
Sensitivity test	88 (84–91)	48 (43–54)	0·55 (0·49–0·62)	p<0·0001
Specificity test	45 (39–51)	99 (97–100)	2·22 (1·94–2·53)	p<0·0001
PPV	65 (60–69)	99 (95–100)	40·8 (10·2–162·8)	p<0·0001
NPV	76 (69–82)	63 (58–67)	0·53 (0·38–0·73)	p<0·0001

- CONFRONTO TRA PERCORSO CON RMmp PRE BIOPSIA E PERCORSO CON BIOPSIA TRUS con TEMPLATE (STUDIO PROMIS)
  - Lancet 2017
  - 576 Pz prebiopsia
  - RMmp seguita da Biopsia Fusion e Biopsia TRUS con Template
- RISULTATI
  - MRI + Biopsia Fusion >Biopsia TRUS
- CONCLUSIONI
  - L'associazione RMmp e Biopsia Fusion ha consentito di aumentare detection rate del 18% per neoplasie significative e ridurre del 5% il numero di diagnosi di ca non significativi
  - Utillizzando la RMmp come triage 27% pz avrebbe correttamente evitato la biopsia.
  - Migliore rapporto costo/beneficio

* Ahmed et al, The Lancet 2017
** Faria et al, European Urology 2017

IDENTIFICAZIONE CA PROSTATA

The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812 MAY 10, 2018 VOL. 378 NO. 19

MRI-Targeted or Standard Biopsy for Prostate-Cancer Diagnosis

V. Kasivisvanathan, A.S. Rannikko, M. Borghi, V. Panebianco, L.A. Mynderse, M.H. Vaarala, A. Briganti, L. Budäus, G. Hellawell, R.G. Hindley, M.J. Roobol, S. Eggener, M. Ghei, A. Villers, F. Bladou, G.M. Villeirs, J. Virdi, S. Boxler, G. Robert, P.B. Singh, W. Venderink, B.A. Hadaschik, A. Ruffion, J.C. Hu, D. Margolis, S. Crouzet, L. Klotz, S.S. Taneja, P. Pinto, I. Gill, C. Allen, F. Giganti, A. Freeman, S. Morris, S. Punwani, N.R. Williams, C. Brew-Graves, J. Deeks, Y. Takwoingi, M. Emberton, and C.M. Moore, for the PRECISION Study Group Collaborators*

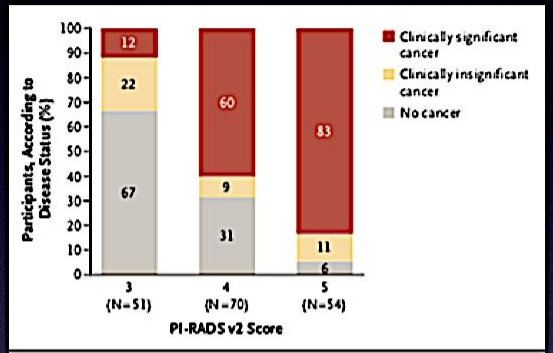
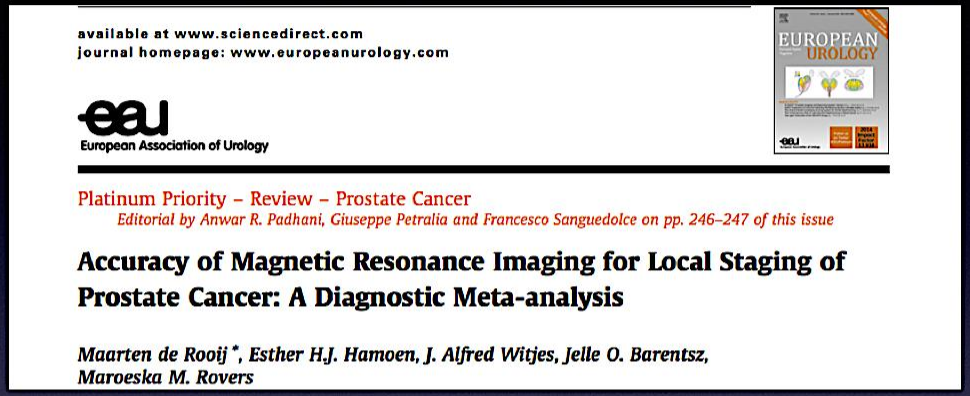


Figure 3. Percentages of Men with Clinically Significant, Clinically Insignificant, and No Cancer, Identified According to PI-RADS v2 Score.

- CONFRONTO TRA PERCORSO RMmp PRE BIOPSIA e BIO RM TARGET E PERCORSO CON BIOPSIA TRUS (STUDIO PRECISION)
  - New England Journal of Medicine 2018
  - 500 Pz naive PSA elevato
- RISULTATI
  - MRI + Biopsia target 38% pz positivi per ca, 28% negativi alla RM no biopsia
  - Biopsia TRUS 26% pz positivi per ca
- CONCLUSIONI
  - In pz con rischio clinico di ca prostata, la valutazione con RMmp pre biopsia e l'eventuale esecuzione di una biopsia Target sono risultati superiori alla valutazione standard (Biopsia TRUS)

* Kasivisvanathan et al, The New England Journal of Medicine 2018

MANAGEMENT CA PROSTATA (STADIAZIONE)



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European Association of Urology

Platinum Priority – Review – Prostate Cancer
Editorial by Anwar R. Padhani, Giuseppe Petralia and Francesco Sanguedolce on pp. 246–247 of this issue

Accuracy of Magnetic Resonance Imaging for Local Staging of Prostate Cancer: A Diagnostic Meta-analysis

*Maarten de Rooij *, Esther H.J. Hamoen, J. Alfred Witjes, Jelle O. Barentsz, Maroeska M. Rovers*

- STADIAZIONE LOCALE
  - Estensione extracapsulare
  - Infiltrazione vescicole seminali
- METANALISI RMmp (75 studi)
  - Estensione extracapsulare (Sensibilita' 57% (49%-64%), Specificita' 91% (88%-93%))
  - Infiltrazione vescicole seminali (Sensibilita' 58% (47%-68%), Specificita' 96% (95%-97%))
  - Bassa sensibilita' x infiltrazione microscopica
  - Migliore metodica imaging stadiazione locale (Vantaggio utilizzo 3T o 1,5T+ERC)

* De Rooij et al, European Urology 2016

STADIAZIONE CA PROSTATA

RMmp NELLA PIANIFICAZIONE DELLA CHIRURGIA NERVE SPARING

Use of MR Imaging to Determine Preservation of the Neurovascular Bundles at Robotic-assisted Laparoscopic Prostatectomy[1]

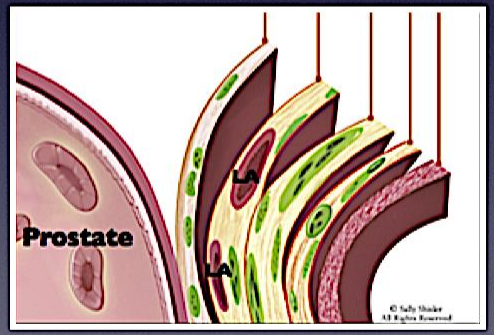
MRI Displays the Prostatic Cancer Anatomy and Improves the Bundles Management Before Robot-Assisted Radical Prostatectomy

Riccardo Schiavina, MD,[1,2] Lorenzo Bianchi, MD,[1,3,4] Marco Borghesi, PhD,[1,2] Hussam Dababneh, PhD,[1] Francesco Chessa, MD,[1] Cristian Vincenzo Pultrone, PhD,[1,2] Andrea Angiolini, MD,[1] Caterina Gaudiano, MD,[5] Angelo Porreca, MD,[6] Michelangelo Fiorentino, MD,[7] Ruben De Groote, MD,[3] Frederiek D'Hondt, MD,[3] Geert De Naeyer, MD,[3] Alexandre Mottrie, MD,[3–5] and Eugenio Brunocilla, MD[1,2]

Influence of Magnetic Resonance Imaging in the Decision to Preserve or Resect Neurovascular Bundles at Robotic Assisted Laparoscopic Radical Prostatectomy

Bong Hee Park,* Hwang Gyun Jeon, Byong Chang Jeong, Seong Il Seo, Hyun Moo Lee, Han Yong Choi and Seong Soo Jeon†

From the Department of Urology, Samsung Medical Center, Sungkyunkwan University School of Medicine, Seoul, Korea



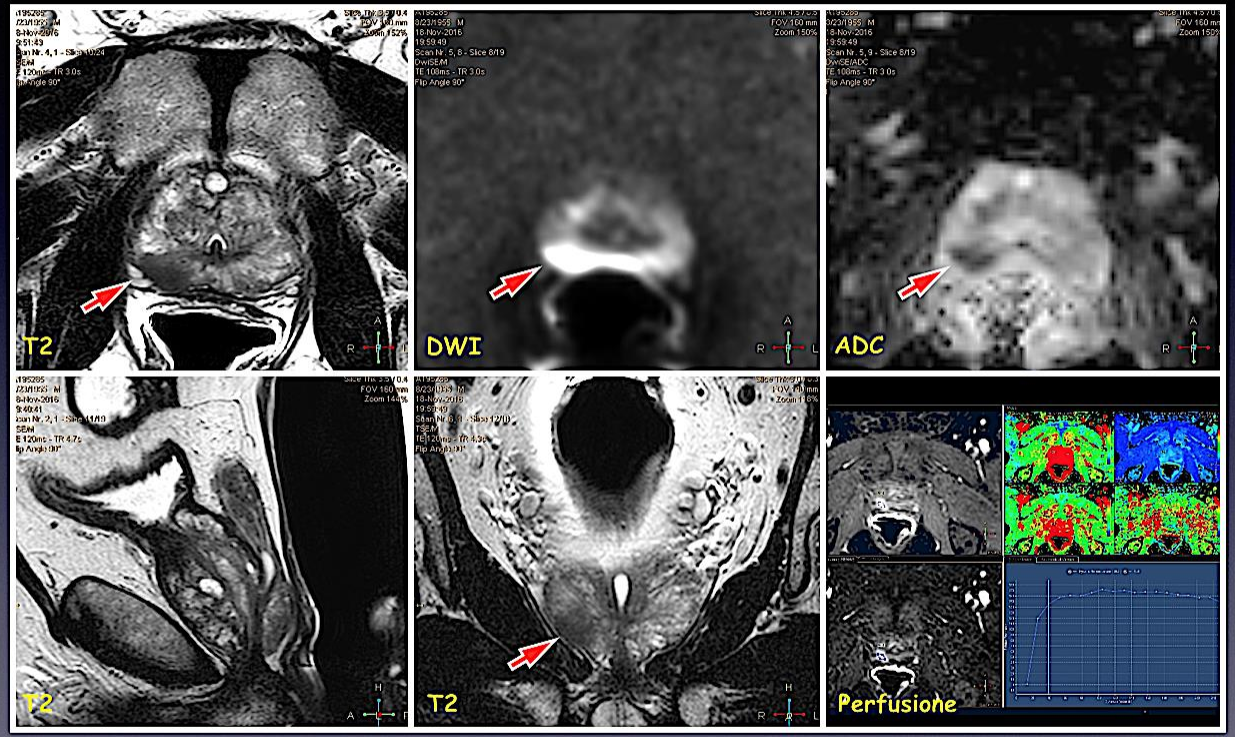
- Con RMmp si modifica l'estensione della chirurgia nerve sparing nel 28-39% casi*/**/***
- Nei pz in cui e' stata modificata la strategia nerve sparing sulla base della RMmp, non sono stati evidenziati margini chirurgici positivi sul lato interessato*

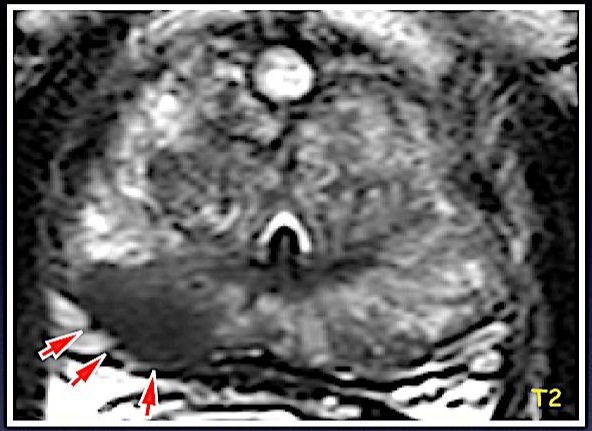
* McClure et al, Radiology 2012

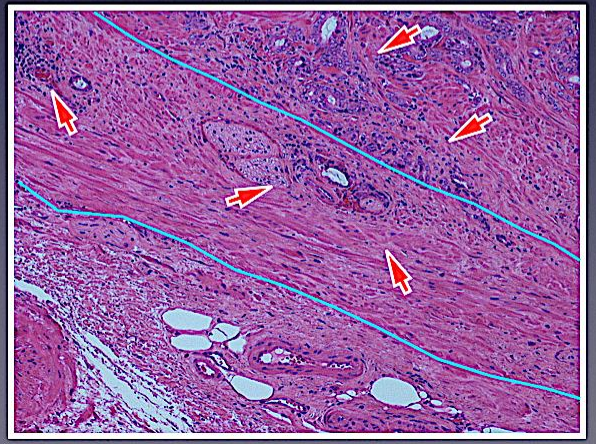
** Bong et al, J Urology 2014

*** Schiavina et al, J Endourol 2018

STADIAZIONE CA PROSTATA

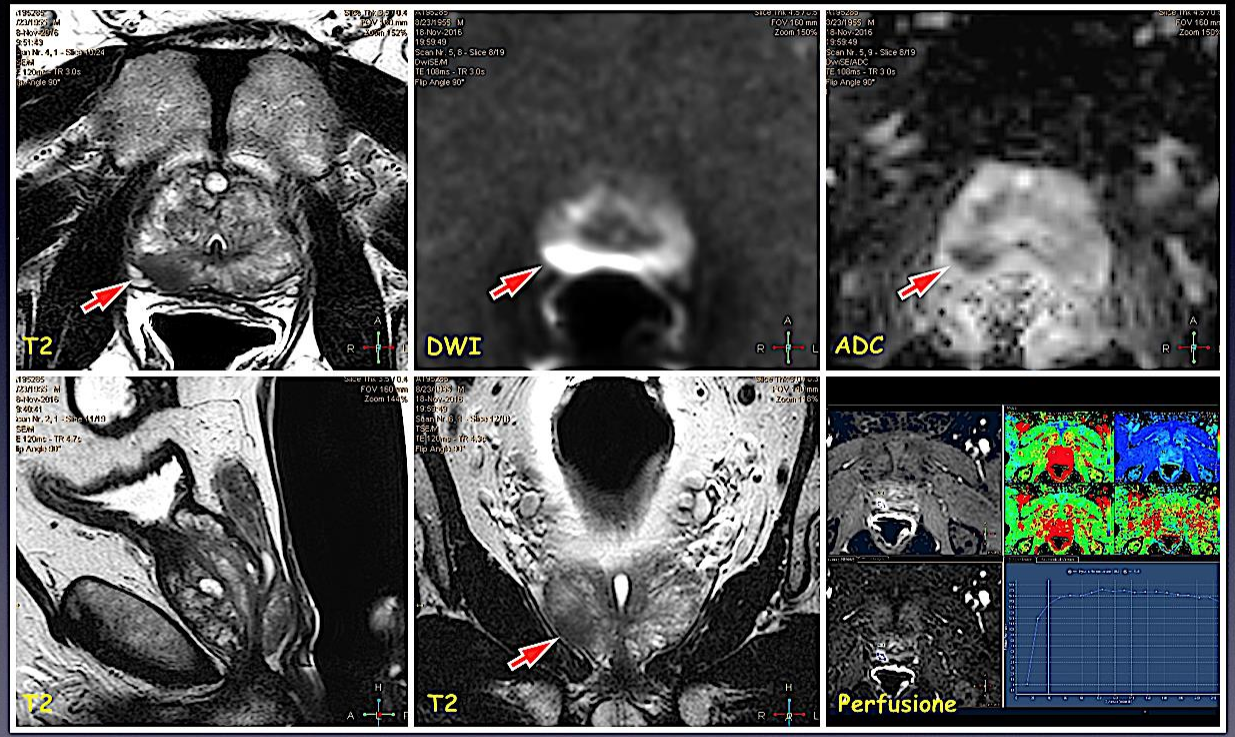


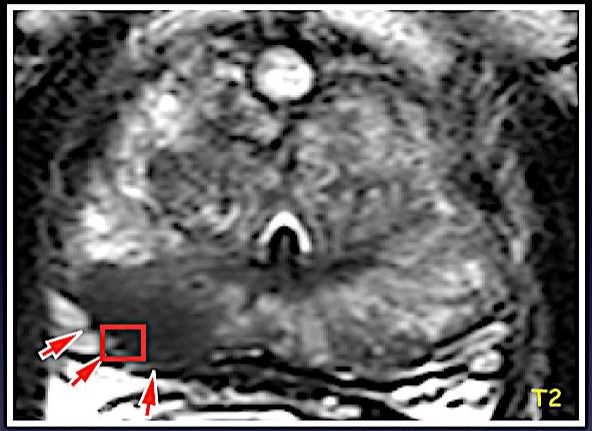


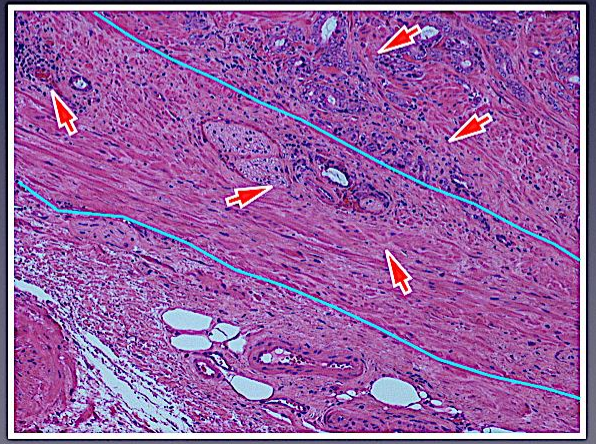


Infiltrazione capsulare RMmp → Prostatectomia robotica extrafasciale DX

STADIAZIONE CA PROSTATA



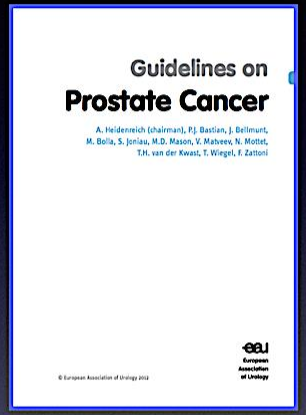




Infiltrazione capsulare RMmp → Prostatectomia robotica extrafasciale DX

STADIAZIONE CA PROSTATA

INDICAZIONI



Low-risk localised PCa	LE	GR
Do not use additional imaging for staging purposes.	2a	A

Intermediate-risk PCa	LE	GR
In predominantly Gleason pattern 4, metastatic screening, include at least a cross-sectional abdominopelvic imaging and a CT/MRI and bone-scan for staging purposes.	2a	A*
In predominantly Gleason pattern 4, use prostate mpMRI for local staging and metastatic screening.	2b	A

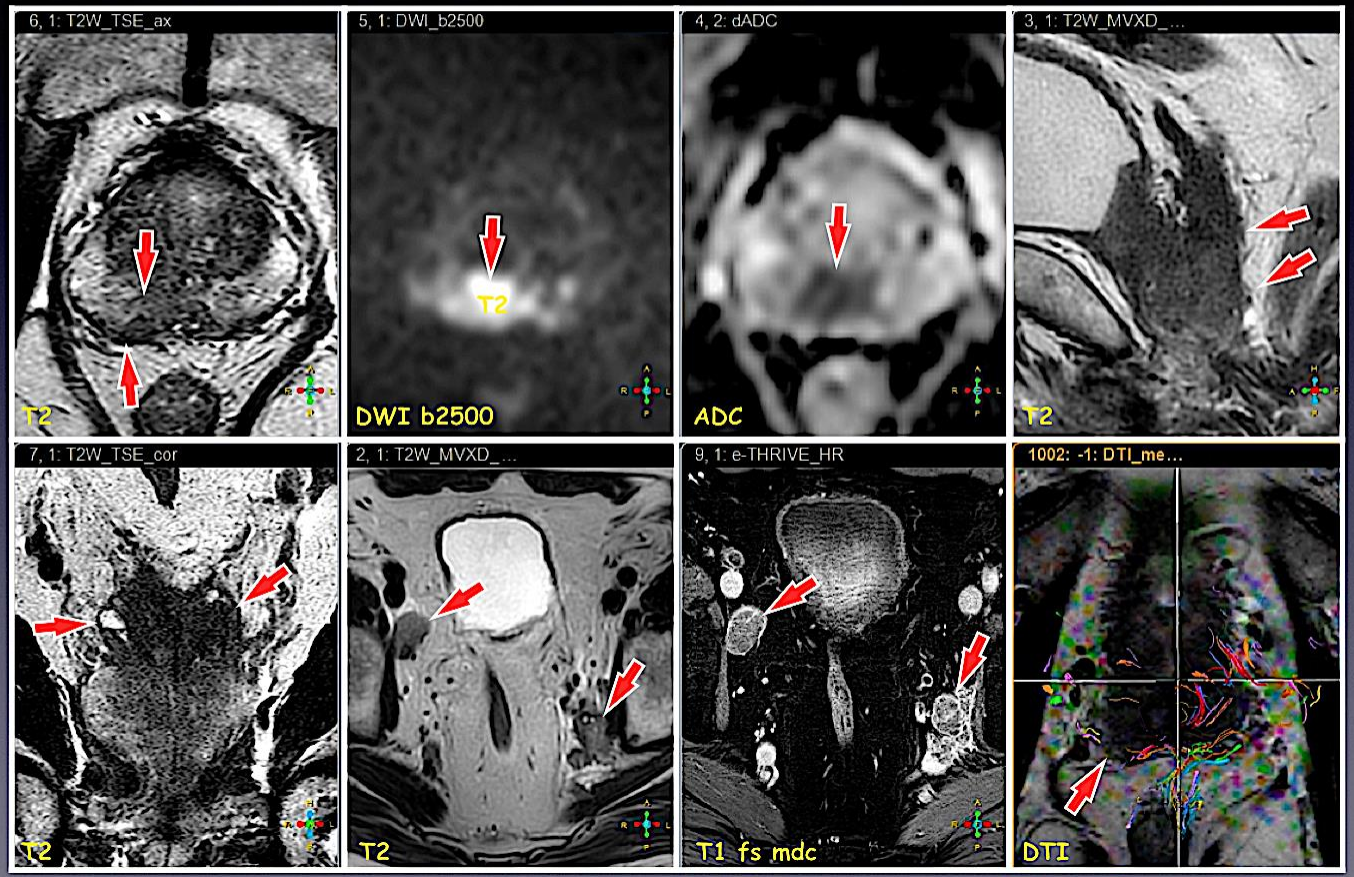
High-risk localised PCa/ High-risk locally advanced PCa	LE	GR
Use prostate mpMRI for local staging.	2b	A
Perform metastatic screening including at least cross-sectional abdominopelvic imaging and a bone-scan.	2a	A

- **INDICAZIONI CONSOLIDATE**
  - Stadiazione locale
  - Pz a rischio intermedio/elevato
  - Non raccomandata in pz a basso rischio, ma utile nella pianificazione del trattamento in casi selezionati (es candidati brachiterapia)

* EAU guidelines on Prostate Cancer 2017, European Urology 2017

MANAGEMENT CA PROSTATA (STADIAZIONE)

VALUTAZIONE STRUTTURE PELVICHE



MANAGEMENT (SORVEGLIANZA ATTIVA)

European Urology
Volume 67, Issue 4, April 2015, Pages 627-636

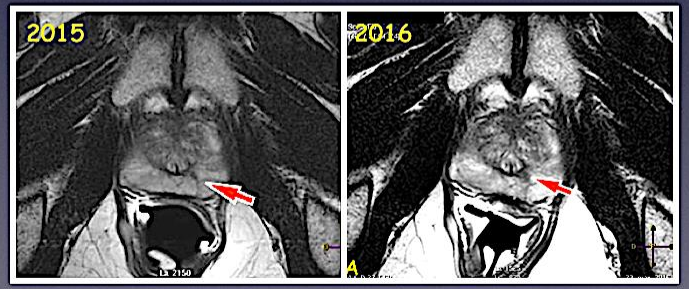
Platinum Priority – Review – Prostate Cancer

Editorial by Chris H. Bangma, Riccardo Valdagni, Peter R. Carroll, Hein van Poppel, Laurence Klotz and Jonas Hugosson on pp. 646–648 of this issue

Magnetic Resonance Imaging in Active Surveillance of Prostate Cancer: A Systematic Review

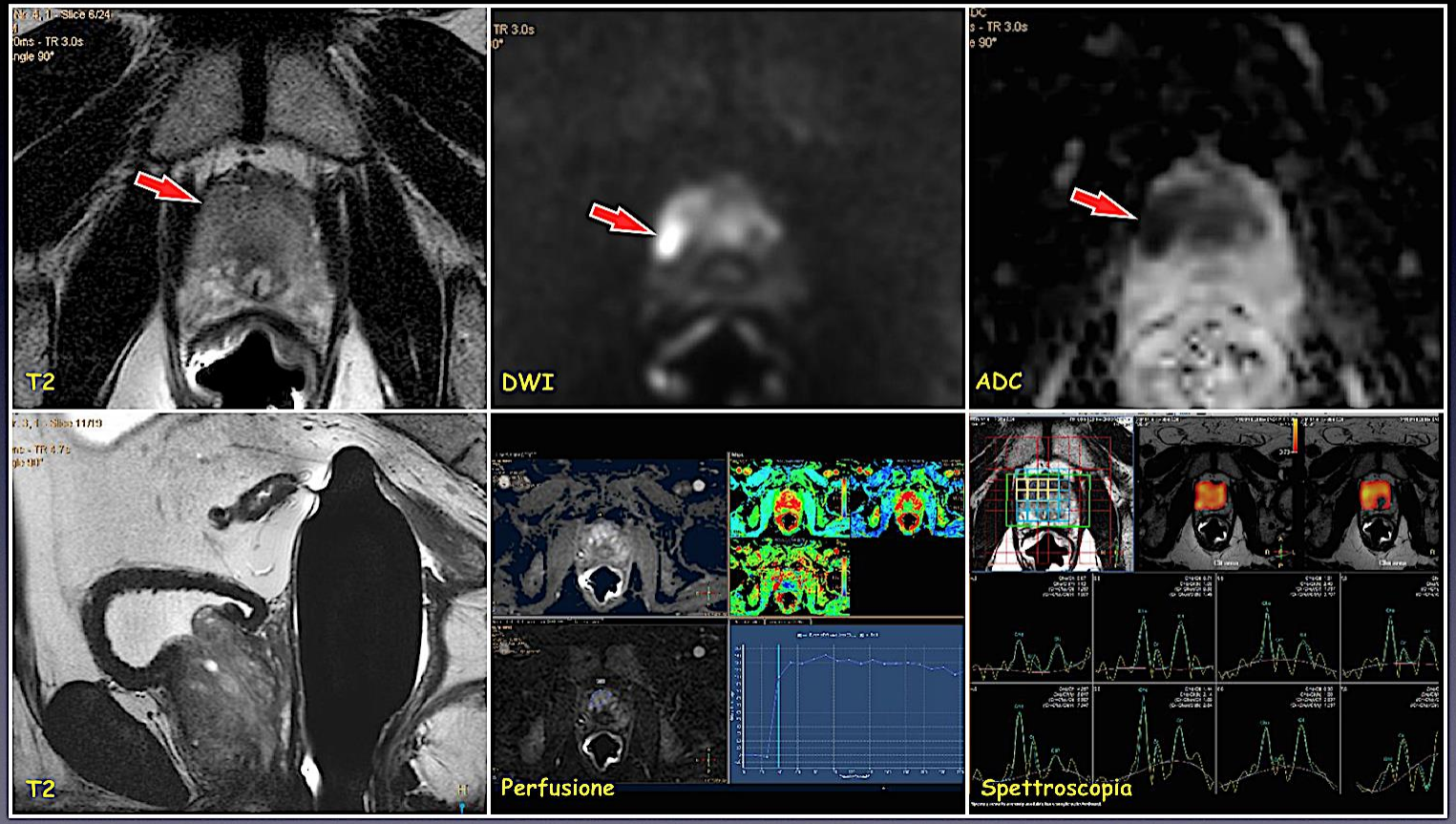
Ivo G. Schoots [a], Neophytos Petrides [b, c], Francesco Giganti [d, e], Leonard P. Bokhorst [f], Antti Rannikko [g], Laurence Klotz [h], Arnauld Villers [i], Jonas Hugosson [j], Caroline M. Moore [b, c]

- RM IN PZ IN SORVEGLIANZA ATTIVA*
  - RM positiva in 70% pz arruolabili in sorveglianza attiva
  - Riclassificazione mt in 47% pz arruolati con biopsia standard, con RM positiva e successiva biopsia di fusione
  - Riclassificazione mt in 14% pz arruolati dopo RM e biopsia di fusione
  - Patterns RM di progressione
    - Aumento volume
    - Aumento score PI-RADS
    - Diffusione (Riduzione ADC)
- INDICAZIONI CONSOLIDATE
  - PROGETTO SIURO PRIAS ITA
  - UK NICE guidelines
  - Ruolo complementare all'indagine bioptica



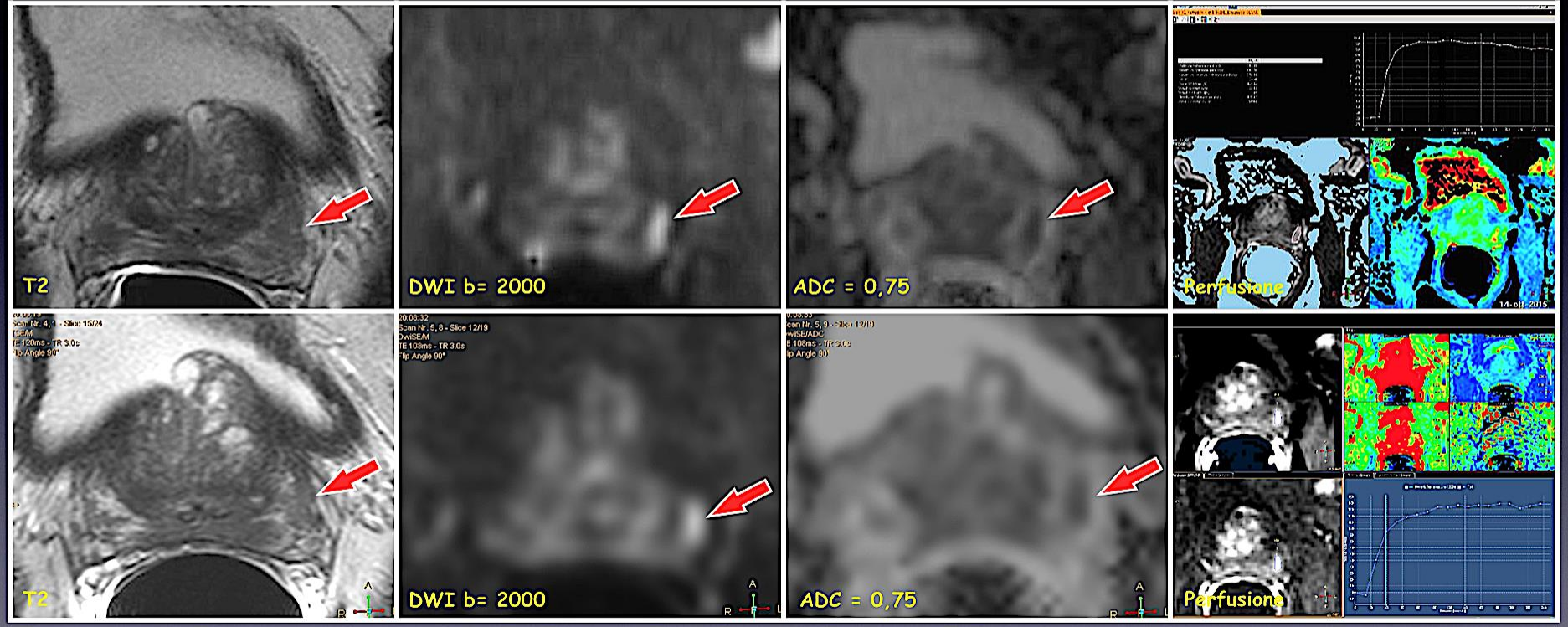
* Schoots et al, European Urology 2015
** PI-RADS v2.0, Barentsz, European Urology 2015
*** Progetto PRIAS SIURO ITA 2016
**** NICE clinical guideline on prostate cancer 2014

MANAGEMENT (SORVEGLIANZA ATTIVA)



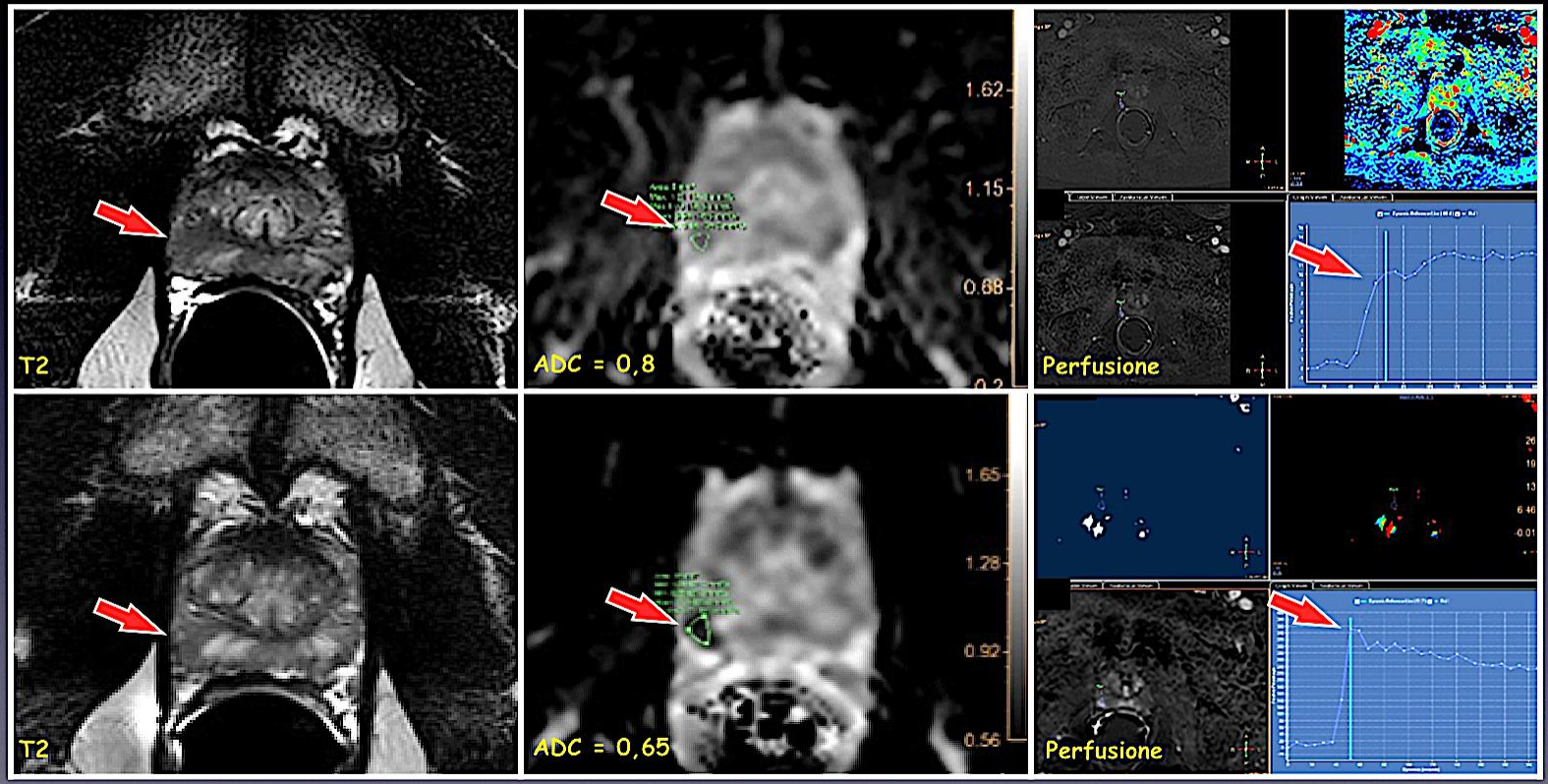
SA	BIOPSIA prec mf GS 3+3	PSA 8 in aumento	ER -	RM: PI-RADS 5	BIOPSIA FUSION Ca GS 3+4

MANAGEMENT (SORVEGLIANZA ATTIVA)



PSA 4	PI-RADS 3	BIOPSIA fusion GS 3+3 PZ	36m, PSA =	PI-RADS 3	BIOPSIA fusion GS 3+3 TZ

MANAGEMENT (SORVEGLIANZA ATTIVA)



BIOPSIA prec mf GS 3+3 dx	PSA 5	PI-RADS 3	12m, PSA>	PI-RADS 4	BIOPSIA FUSION Ca GS 3+4

MANAGEMENT (SORVEGLIANZA ATTIVA)

available at www.sciencedirect.com
journal homepage: www.europeanurology.com

European Association of Urology

Prostate Cancer

Reporting Magnetic Resonance Imaging in Men on Active Surveillance for Prostate Cancer: The PRECISE Recommendations—A Report of a European School of Oncology Task Force

Caroline M. Moore [a,b,,i], Francesco Giganti [c,d,i], Peter Albertsen [e], Clare Allen [c], Chris Bangma [f], Alberto Briganti [g], Peter Carroll [h], Masoom Haider [i], Veeru Kasivisvanathan [a,b], Alex Kirkham [c], Laurence Klotz [j], Adil Ouzzane [k], Anwar R. Padhani [l], Valeria Panebianco [m], Peter Pinto [n], Philippe Puech [o], Antti Rannikko [p], Raphaele Renard-Penna [q], Karim Touijera [r], Baris Turkbey [s], Heinrik van Poppel [t], Riccardo Valdagni [u,v], Jochen Walz [w], Ivo Schoots [x]*

PRECISE Case report form for men having baseline or follow up MRI on active surveillance

Reporting radiologist		Date of scan		Date of report	
PSA		PSA date		PSA density	
Prostate volume on T2-weighted imaging		Magnet strength		Coil used	
1-5 score for clinically significant disease		PIRADS 2 score (maximal)		TNM stage	
Likelihood of extraprostatic extension (T3a) (1-5)		Likelihood of seminal vesicle invasion (T3b) (1-5)			

Lesion	Appeared since last scan?	Not visible	D1	D2	D3	Volume (D1 x D2 x D3 x 0.52)	Volume by planimetry	1-5 score*	PIRADS- 2 score
1									
2									
3									

Lesion	Sequence where lesion best seen	Volume where lesion best seen	Volume on T2-weighted imaging	1-5 score*
1				
2				
3				

* 1-5 score for likelihood of significant disease

Draw and number each lesion on the diagram, with the most significant lesion being number 1.

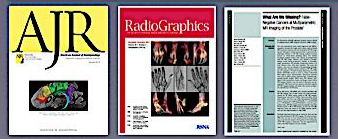
	Date of previous MRI	Likelihood of change from previous MRI (1-5 score)	Parameter which has changed eg volume on T2W-I, visibility on DWI, Likert score or PIRADS score, T3a or T3b disease
Lesion 1			
Lesion 2			
Lesion 3			

- RACCOMANDAZIONI "PRECISE" REFERTAZIONE RMmp IN SORVEGLIANZA ATTIVA
  - Dimensioni lesioni sui 3 assi e volume (ev variazioni in val assoluti e %)
  - Punteggio da 1 a 5 per probabilita' cambiamento lesione
  - Parametri RM modificati

* Moore et al, European Urology 2016

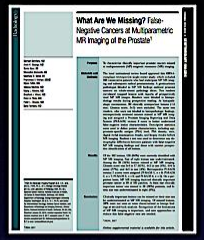
LIMITI RMmp

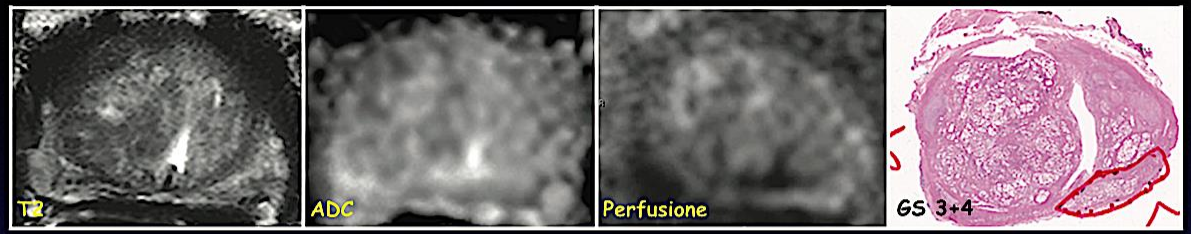
- FALSI POSITIVI mpRM
- FALSI NEGATIVI mpRM
- PROBLEMATICHE TECNICHE
- ESPERIENZA RADIOLOGI



* Rosenkrantz, Taneja, AJR 2013
** Kitzing et al, Radiographics 2016
*** Borofsky et al, Radiology 2018 in press

FALSI NEGATIVI RMmp


What Are We Missing? False-Negative Cancers at Multiparametric MR Imaging of the Prostate1

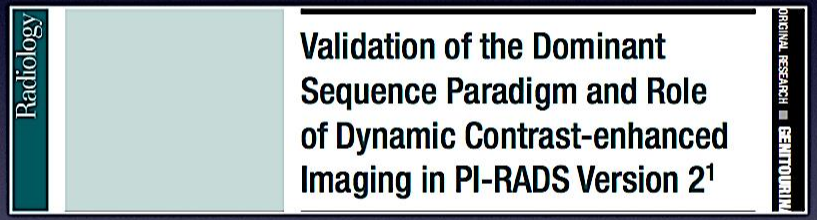


- STUDI DI CORRELAZIONE RADIOLOGICA - ANATOMIA PATOLOGICA*/**/***
  - Eccellente sensibilita' "per paziente"
  - Minore sensibilita' "per lesione" (RMmp meno accurata identificazione tutte lesioni significative in un det. pz)
  - Sensibilita' lesione "index" 93%, tutte le lesioni 64%
  - 67% lesioni di basso grado (</= GS 3+3)
- RIVALUTAZIONE LESIONI PERSE ALLA RMmp (Radiology 2018)***
  - 26 CA significativi non diagnosticati su 162 lesioni (16%) alla prostatectomia radicale
  - Bassa % componente aggressiva (pattern 4)
  - Piccole dimensioni (lesioni Ø >0,5cc 95%, Ø <0,5cc 24%)
  - "SOS phenomenon" (Satisfaction Of Search)
- IMPLICAZIONI CLINICHE***
  - RMmp come criterio di inclusione unico per Sorveglianza Attiva e Terapie Focali

* Le et al, European Urology 2015
** Russo et al, Br J Urol Int 2016
*** Borofsky et al, Radiology 2018

PROBLEMATICHE TECNICHE

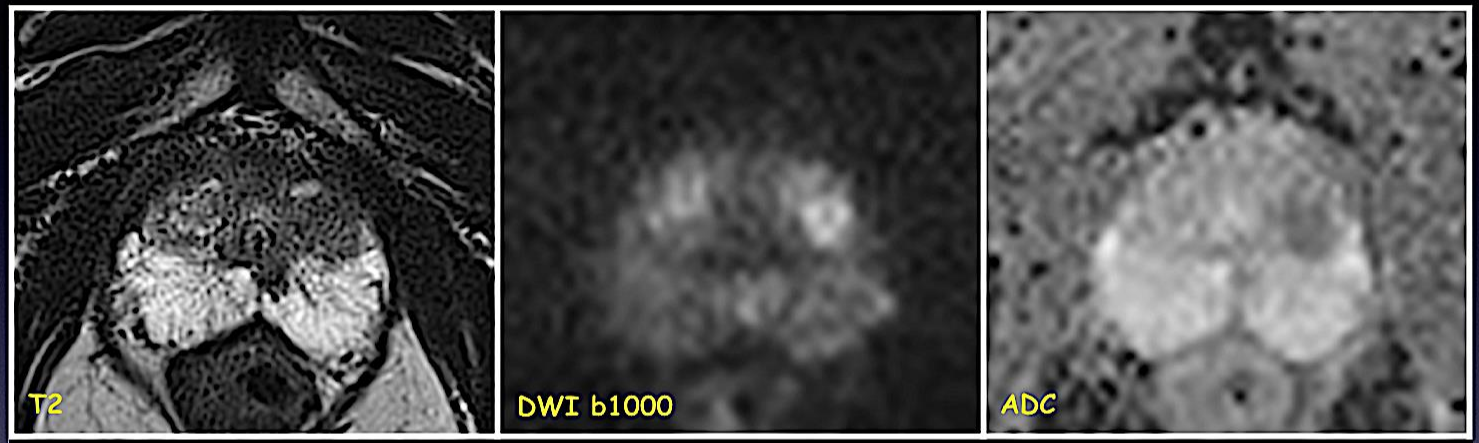
- SCARSA ADERENZA AGLI STANDARD TECNICI LINEE GUIDA PI-RADS
  - Risoluzione spaziale, Valori elevati b (DWI), Risoluzione temporale DCE
  - 30%-70% (Rosenkranz, RSNA 2017)
  - 50% (SRT)
- QUALITA' IMMAGINI**/***
  - Bobine
  - Performances sistema
- PROTOCOLLI ABBREVIATI*/****
  - Esame Bi-parametrico (no DCE)
  - DCE aumenta probabilità Ca nel 16% lesioni PI-RADS 2, 16% lesioni PI-RADS 3 e 9% lesioni PI-RADS 4
  - Ca nel 40% lesioni PI-RADS 3 contro 68% lesioni Pi-RADS 3+1 (positive alla DCE)



* Rosenkrantz et al, RSNA 2017
** Rosenkrantz, Taneja, AJR 2013
*** Thomas, Oto, Radiol Clin North am, 2018
**** Greer et al, Radiology 2017

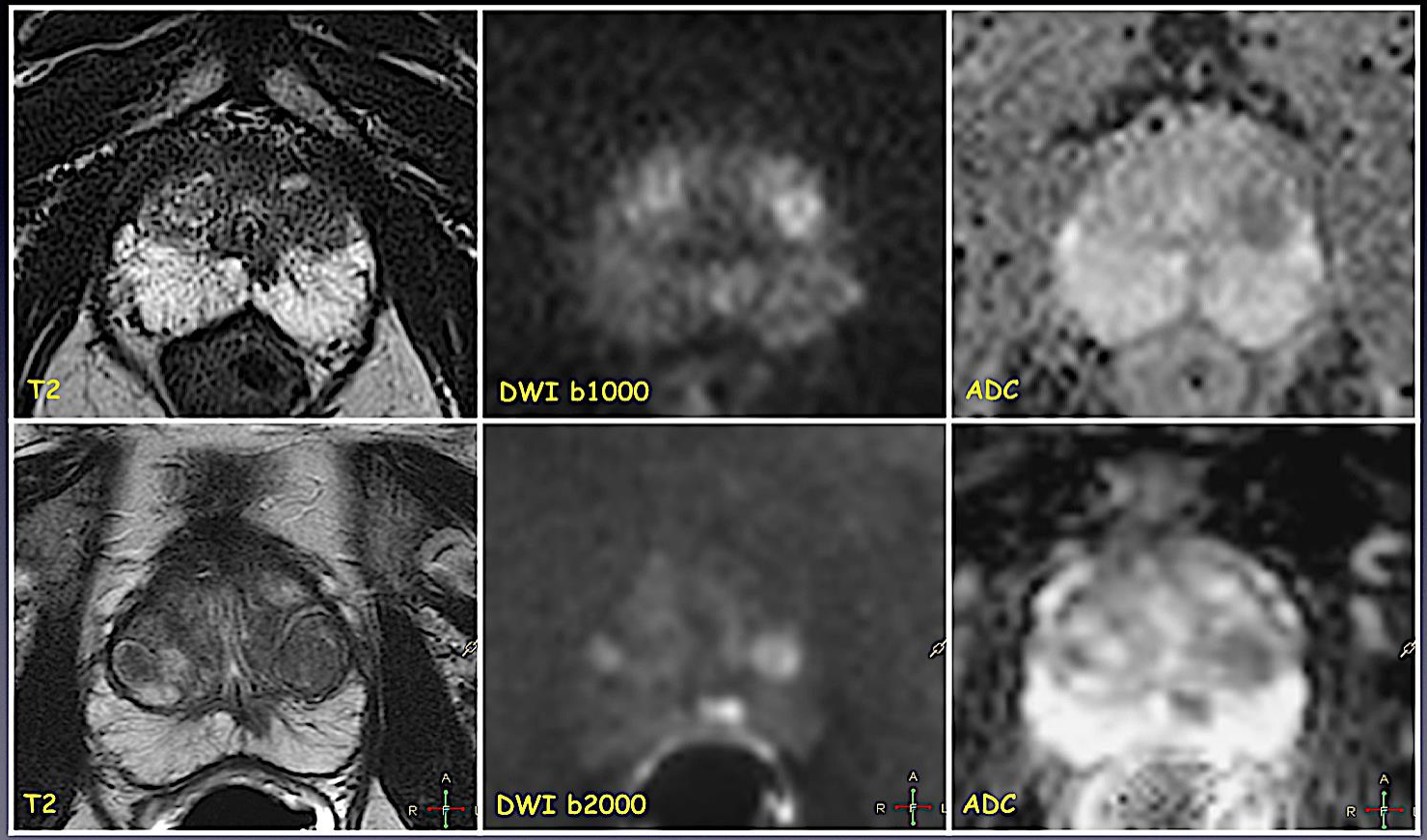
PROBLEMATICHE TECNICHE

SCARSA QUALITA' IMMAGINI - B VALUE SUBOTTIMALE

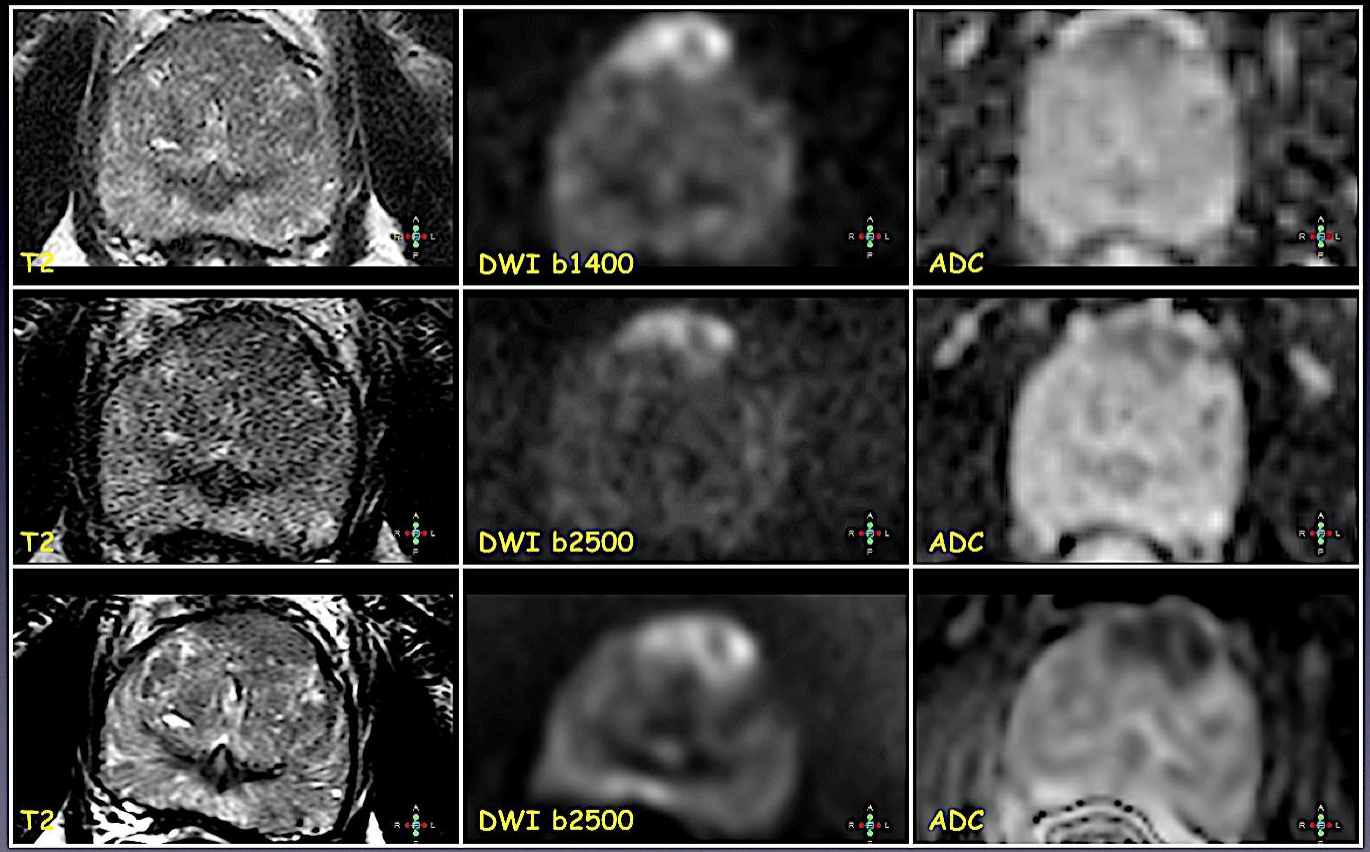


PROBLEMATICHE TECNICHE

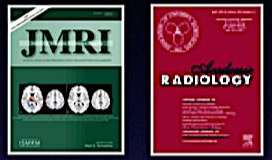
SCARSA QUALITA' IMMAGINI - B VALUE SUBOTTIMALE



PROBLEMATICHE TECNICHE



ERC



J Magn Reson Imaging. 2014 June ; 39(6): 1443–1448. doi:10.1002/jmri.24317.

Comparison of Endorectal coil and Non-endorectal coil T2W and DW MRI at 3T for Localizing Prostate Cancer: Correlation with Whole-mount Histopathology

Baris Turkbey, M.D.[1], Maria J. Merino, M.D.[2], Elma Carvajal Gallardo, B.S.[3,4], Vijay Shah, Ph.D.[5], Omer Aras, M.D.[1], Marcelino Bernardo, B.S.[1,6], Esther Mena, M.D.[1], Dagane Daar, R.T.[1], Ardeshir R. Rastinehad, D.O.[7], W. Marston Linehan, M.D.[7], Bradford J. Wood, M.D.[3], Peter A. Pinto, M.D.[7], and Peter L. Choyke, M.D.[1]

Conclusion—Dual-coil prostate MRI detected more cancer foci than non-endorectal coil MRI. While non-endorectal coil MRI is an attractive alternative, physicians performing prostate MRI should be aware of its limitations.

Academic Radiology

Volume 22, Issue 4, April 2015, Pages 467–474

Original Investigation

Performance Comparison of 1.5-T Endorectal Coil MRI with 3.0-T Nonendorectal Coil MRI in Patients with Prostate Cancer

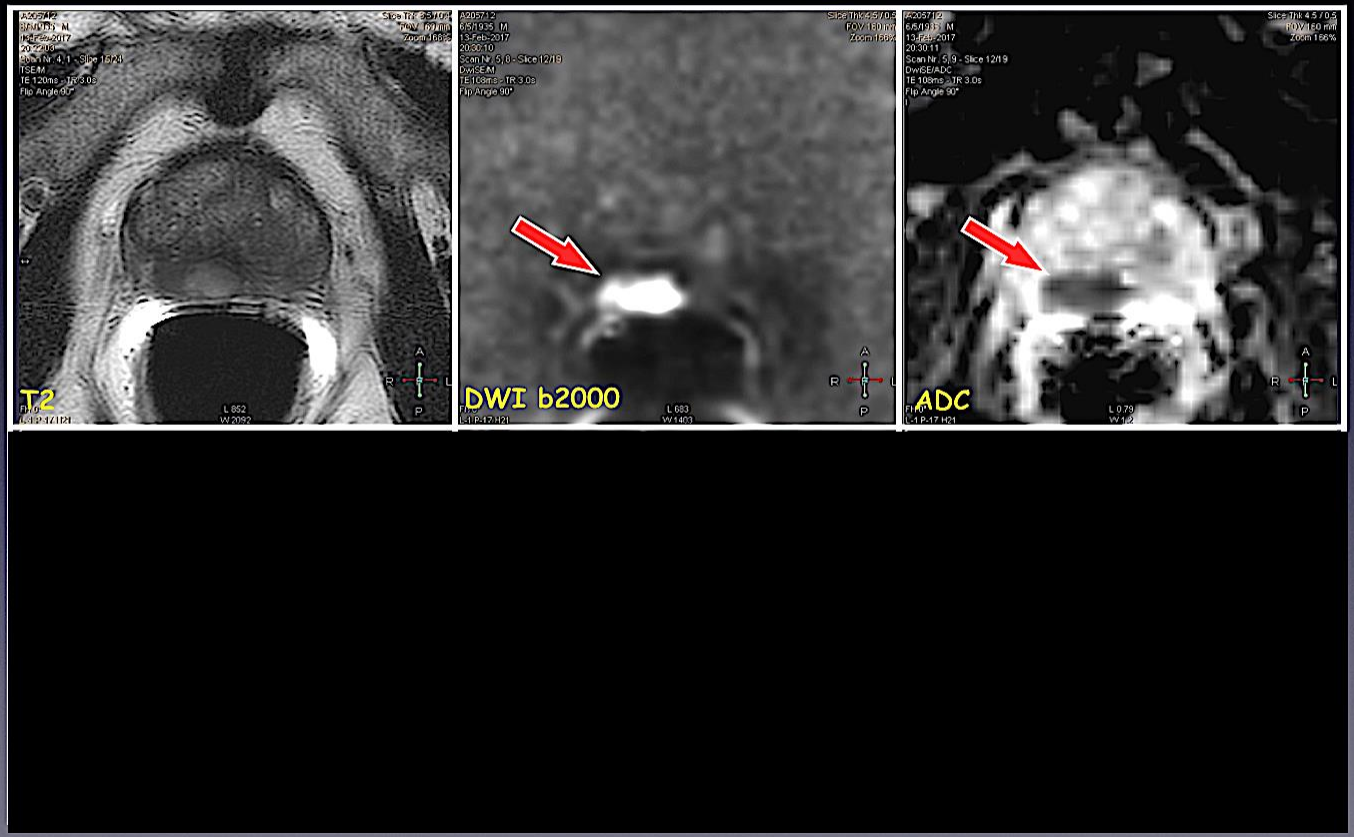
Zarine K. Shah, MD[a], Saba N. Elias, MS[a], Ronney Abaza, MD[b], Debra L. Zynger, MD[c], Lawrence A. DeRenne, MD[c], Michael V. Knopp, MD, PhD[a], Beibei Guo, PhD[d], Ryan Schurr, BS[a], Steven B. Heymsfield, MD[f], Guang Jia, PhD[a,f]

CONCLUSIONS: Nonendorectal coil 3.0-T MRI provides prostate images that are natural in shape and that have comparable image quality to those obtained at 1.5 T with an endorectal coil, but not superior diagnostic performance. These findings suggest an opportunity exists for improving technical aspects of the 3.0-T prostate MRI.

* Rosenkrantz et al, RSNA 2017
** Turkbey et al, J Magn Res Imaging 2014
*** Shah et al, Ac Radiology 2015

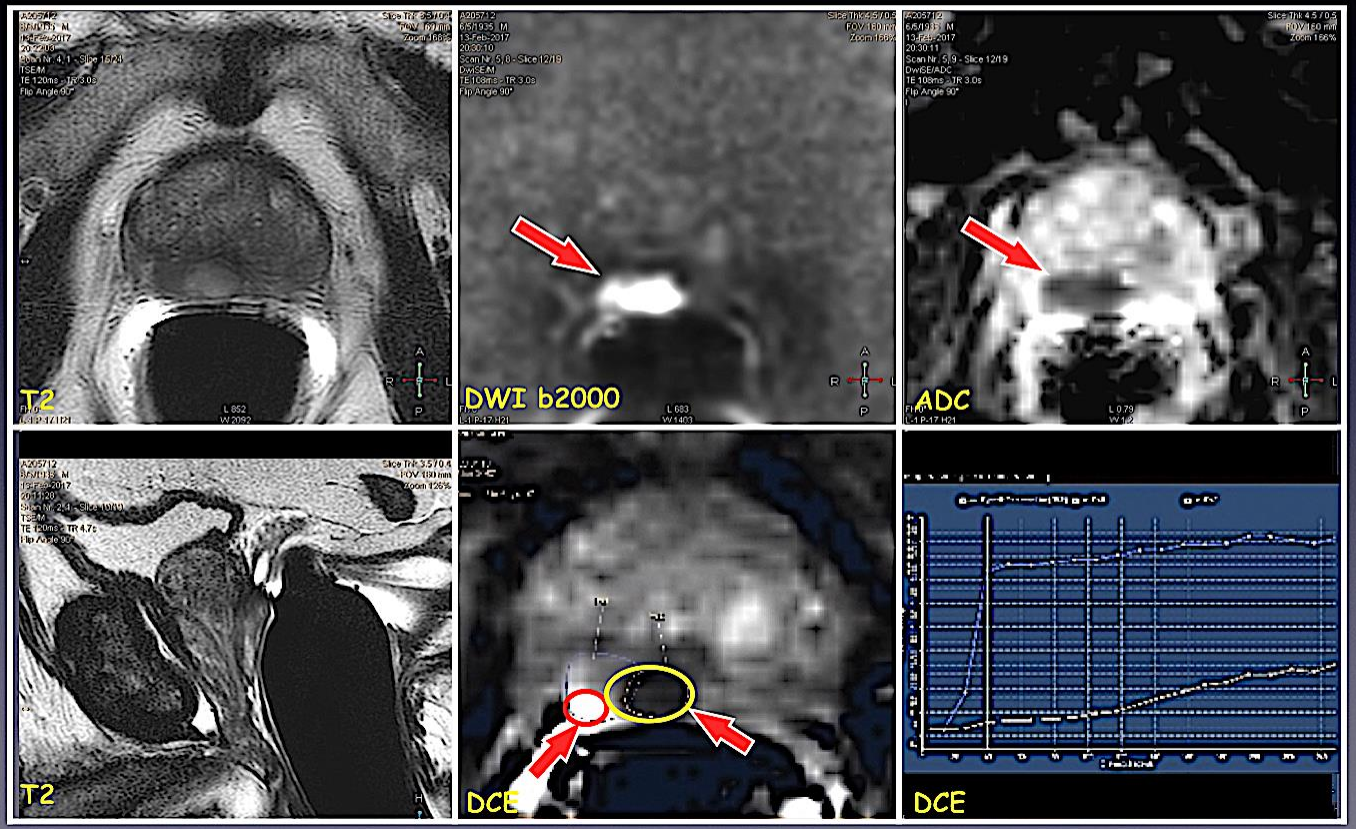
PROBLEMATICHE TECNICHE

STUDIO DINAMICO MDC (DCE)

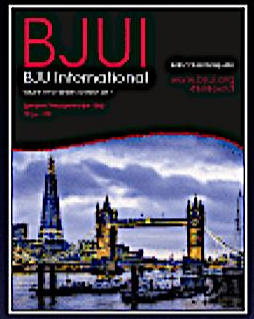


PROBLEMATICHE TECNICHE

STUDIO DINAMICO MDC (DCE)



ESPERIENZA RADIOLOGI



BJUI
BJU International

Is negative multiparametric magnetic resonance imaging really able to exclude significant prostate cancer? The real-life experience

Nicolas Branger*, Thomas Maubon*, Miriam Traumann*, Jeanne Thomassin-Piana†, Nicolas Brandone†, Sebastien Taix‡, Julien Tauziède‡, Serge Brunelle‡, Geraldine Pignol*, Noji Salem§, Gwenaelle Gravis§ and Jochen Walz*

*Departments of *Urology, †Pathology, ‡Radiology, §Radiotherapy, and ¶Oncology, Institut Paoli-Calmettes Cancer Centre, Marseille, France*

Objectives

To evaluate the histopathological results after radical prostatectomy (RP) in patients that had normal preoperative multiparametric magnetic resonance imaging (mpMRI), in order to determine whether they had significant or insignificant disease. Moreover, we evaluated the influence of the expertise of the radiologist on the results.

Patients and Methods

We retrospectively included patients who underwent RP in our centre and who had a preoperative negative mpMRI. The MRIs were considered negative when no suspicious lesion was seen or when the Prostate Imaging Reporting and Data System version 1 score was <7. We used Pathological

Results

We identified 101 patients from 2009 to 2015. Final pathology showed that 16.9% had extraprostatic extension, 13.8% had primary Gleason pattern 4 (4 + 3 and above), 47.5% had secondary Gleason pattern 4 of 5, and 35.9% and 20.6% had a main tumour volume of ≥0.5 and ≥2 mL, respectively. When limiting the analysis to expert reading only, the numbers improved: only one patient (3.4%) had extraprostatic extension ($P = 0.03$), one patient (3.4%) had primary Gleason pattern 4 ($P = 0.01$), and 64.7% and 5.9% had a main tumour volume of ≥0.5 and ≥2 mL, respectively ($P = 0.01$).

Conclusion

A negative MRI does not guarantee the absence of significant prostate cancer

1.1 mL). The above observations strongly support the need of a specialised uroradiologist if mpMRI is really to have a benefit in the management of prostate cancer. Until this need is met and an appropriate quality is assured outside of expert centres, mpMRI is not ready for use in a general population.

REVIEW

How are we going to train a generation of radiologists (and urologists) to read prostate MRI?

Philippe Puech[a,b,c], Marco Randazzo[d], Adil Ouzzane[b,c,e], Vianney Gaillard[a,b], Ardeshir Rastinehad[f], Laurent Lemaitre[a,b], and Arnauld Villers[b,c,e]

Purpose of review

Multiparametric MRI has gained tremendous importance in the daily practice for patients at risk or diagnosed with prostate cancer. Interpretation of multiparametric-MRI is a complex task, supposedly restricted to experienced radiologists. The purpose of this review is to analyze fundamentals of multiparametric-MRI interpretation and to describe how multiparametric-MRI training could be organized.

Recent findings

Recently, professional guidelines have been published to provide technical and interpretation frameworks and harmonize multiparametric-MRI practice, but the question of physicians training in prostate multiparametric-MRI reading is still pending. What kind of education, practice, and training makes a radiologist able to reliably interpret a prostate multiparametric-MRI? How can findings be reported to be easily understood? How much experience is needed? How can we train urologists and other physicians to review the examinations they request? Is double-reading necessary?

Summary

An institutional-based competency certification process for prostate multiparametric-MRI interpretation may encourage nonspecialized radiologists to qualify for prostate imaging in a standardized and reproducible way, exactly as urologists need it.

are usually considered as experienced. Depending on center size, this represents between 400 and 1200 cases (5–15 cases a week) with full analysis of indications, clinical settings, multiparametric-MRI

- RADIOLOGI DEDICATI vs RADIOLOGI GENERALI*
  - Valutazione retrospettiva 2009-2015
  - Radiologo locale esperto (>10aa RMmp) vs Radiologi generali esterni
  - Differenza detection rate 20-50% (funzione delle dimensioni)
- DEFINIZIONE "RADIOLOGO ESPERTO" RMmp**
  - N. totale casi studiati (400/1200), frequenza (5/15 casi a settimana)

* Branger et al, BJU International 2017
** Puech, Current Opinion in Urology 2015

CONCLUSIONI

- RM MULTIPARAMETRICA MIGLIOR METODICA IMAGING VALUTAZIONE DEL CA PROSTATA*
- INDICAZIONI CONSOLIDATE (ESUR/EAU)**
  - Individuazione ca prima rebiopsia
  - Stadiazione locale (Pz alto rischio, casi selezionati)
- INDICAZIONI EMERGENTI***/****/*****/******
  - Individuazione/Esclusione NEOPLASIE SIGNIFICATIVE in pz con sospetto clinico-laboratoristico
  - Guida Biopsia (Cognitive Biopsy, Fusion Biopsy, MR guided Biopsy)
  - Arruolamento e/o follow-up pz sorveglianza attiva (Valutazione "INDIRETTA" neoplasie di BASSO GRADO, esclusione focolai di ALTO GRADO)
  - Guida al trattamento (MR guided HIFU, MR guided Cryo)
  - Follow-Up dopo trattamento
- E' TUTTO ORO QUELLO CHE LUCCICA?***/*******
  - Apparecchiature RM performanti
  - Utilizzo classificazione PI-RADS
  - Radiologi "esperti"

* Delongchamps et al, BJU 2011
** EAU Prostate Cancer guidelines 2016**
*** Linee guida ESUR ACR RM prostata, European Radiology 2015
**** Kim et al, Radiology 2014
***** Gandaglia, Montorsi et al, European Urology 2016
****** Hahmed et al, Lancet 2017
******* Branger et al, British Journal Urology International 2017

cardone.gianpiero@hsr.it