

Con il Patrocinio di



Associazione Italiana
Radioterapia e Oncologia clinica



2° Convegno Nazionale

IL TEAM INTERDISCIPLINARE NEL CARCINOMA DELLA PROSTATA

NEGRAR DI VALPOLICELLA 6-7 DICEMBRE 2019

Sala Perez - IRCCS Ospedale Sacro Cuore Don Calabria



Coordinatori: STEFANIA GORI - FILIPPO ALONGI - STEFANO CAVALLERI

Seconda Sessione **STADIAZIONE**

Moderatori **Giovanni Carbognin, Maurizio Nicodemo**

15,20 Linee Guida: cosa indicano? **Elisa Zanardi**

15,35 RMN. Quale ruolo? **Emanuele Demozzi**

15,50 PET colina, PET-PSMA: quale ruolo nel 2019? **Matteo Salgarello**

16,05 Dalla routine alle situazioni particolari: come comportarci? *Confronto tra esperti:*

Urologo **Fabrizio Dal Moro**

Oncologo **Teodoro Sava**

Radioterapista **Niccolò Giaj Levra**

16,50 Discussione

STADIAZIONE: RMN. QUALE RUOLO?

Emanuele Demozzi

Radiodiagnostica

*IRCCS Ospedale Sacro Cuore Don
Calabria, Negrar*



emanuele.demozzi@sacrocuore.it

CHE COSA è LA RM MULTIPARAMETRICA (mpMRI)?



INTEGRAZIONE TRA 3 TECNICHE

RM multi-parametrica

**struttura
tissutale**

T2-weighted images
(T2W)

**densità
cellulare**

Diffusion Weighed
Imaging (DWI)

Vascularizzazione

Dynamic Contrast
enhanced (DCE)

INDICAZIONI RM:

- identificazione PCa
- localizzazione PCa
- stadiazione PCa
- guida per biopsia
- sorveglianza attiva
- identificazione recidiva dopo RARP o rt

INDICAZIONI RM:

- identificazione PCa
- localizzazione PCa
- **STADIAZIONE** PCa
- guida per biopsia
- sorveglianza attiva
- identificazione recidiva dopo RARP o rt

stadiazione PCa

una **STADIAZIONE** accurata del tumore prostatico è essenziale per definire:

- una corretta **PROGNOSI**
- una corretta **STRATIFICAZIONE DEL RISCHIO**
- un appropriato **MANAGEMENT DEL PZ**

PRIMO OBIETTIVO di una corretta STADIAZIONE è distinguere i tumori:

- CONFINATI ALL'INTERNO DELLA GHIANDOLA (T1-T2)
- LOCALMENTE AVANZATI (T3-T4)

Swanson GP, Riggs M, Hermans M. Pathologic findings at radical prostatectomy: risk factors for failure and death. Urol Oncol 2007

Godoy G, Tareen BU, Lepor H. Site of positive surgical margins influences biochemical recurrence after radical prostatectomy. BJU

Epstein JI, Partin AW, Potter SR, Walsh PC. Adenocarcinoma of the prostate invading the seminal vesicle: prognostic stratification b

T

T

mpRM:

- metodica migliore per definire ESTENSIONE LOCALE del tumore prostatico:
 - invasione del tessuto adiposo periprostatico;
 - rottura capsulare.

T

sequenze T2w → estensione extraprostatica (**EPE**) della neoplasia:

T

sequenze T2w → estensione extraprostatica (EPE) della neoplasia:

- **estensione extracapsulare (T3a);**

T

sequenze T2w → estensione extraprostatica (EPE) della neoplasia:

- estensione extracapsulare (T3a);
- **coinvolgimento vescichette seminali (T3b).**

T

mpRM:

- ECE se 57% sp 91%
- SVI se 58% sp 96%

- ECE+SVI se 61% sp 88%

T

mpRM:

- **EPE**

> **focale EPE**

- se 40 %

- sp 95 %

> **estesa EPE**

- se 62 %

- sp 95 %

T

mpRM:

- EPE se 57% sp 91%

> no EPE microscopica

- detection rate da 14% a 100% se EPE da <1 a >3mm

T

mpRM:

- EPE se 57% sp 91%

> **no EPE microscopica**

- detection rate da 14% a 100% se EPE da <1 a >3mm

→ **NO** per stadiazione locale in PZ a basso rischio

T

INDICAZIONI RM:

- pz rischio *intermedio*
- pz rischio *elevato*

T3a

T3a

Criteria imaging per EPE:

- **asimmetria o invasione del fascio neurovascolare;**

Engelbrecht MR et al. Local staging of prostate cancer using magnetic resonance imaging: a meta-analysis. European Radiol 2002Sep;12(9): 2294-302.

Johnston R et al. The role of 1.5 Tesla magnetic resonance imaging in staging prostate cancer. ANZ J Surg 2013 Apr;83(4):234-8.

Wang L et al. Prostate cancer: incremental value of endorectal MR imaging findings for prediction of extracapsular extension. Radiology 2004;232:133-9.

Renard-Penna R et al. Accuracy of high resolution (1.5 tesla) pelvic phased array magnetic resonance imaging (MRI) in staging prostate cancer in candidates for radical prostatectomy: results from a prospective study. Urologic Oncology 2013 May;31(4):448-54.

Baco E et al. Predictive value of Magnetic Resonance Imaging Determined Tumor Contact Length for Extra-capsular Extension of Prostate cancer. J Urol 2015;193:466-472.

T3a

Criteri imaging per EPE:

- asimmetria o invasione del fascio neurovascolare;
- **bulging del profilo capsulare;**

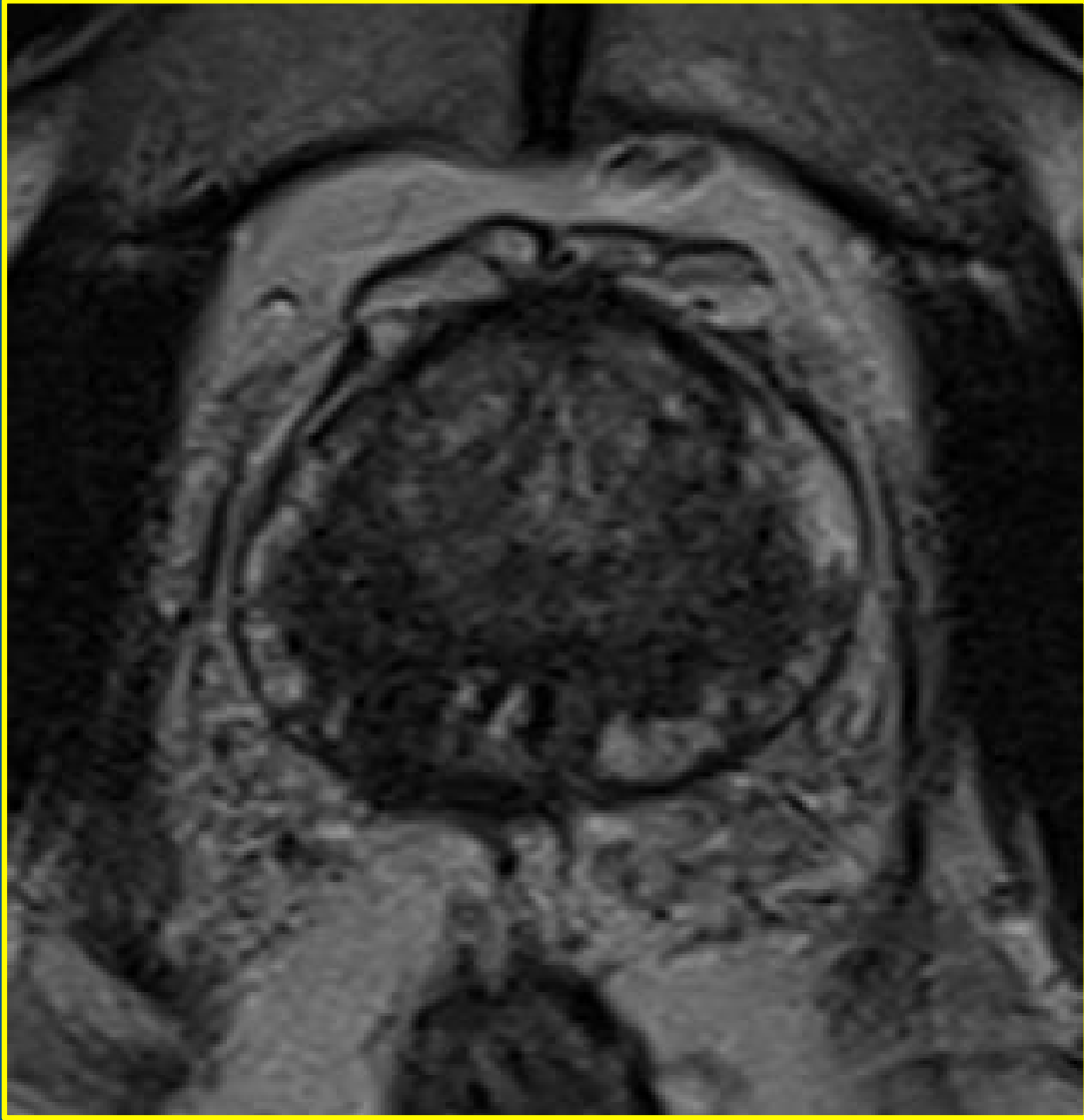
Engelbrecht MR et al. Local staging of prostate cancer using magnetic resonance imaging: a meta-analysis. European Radiol 2002Sep;12(9): 2294-302.

Johnston R et al. The role of 1.5 Tesla magnetic resonance imaging in staging prostate cancer. ANZ J Surg 2013 Apr;83(4):234-8.

Wang L et al. Prostate cancer: incremental value of endorectal MR imaging findings for prediction of extracapsular extension. Radiology 2004;232:133-9.

Renard-Penna R et al. Accuracy of high resolution (1.5 tesla) pelvic phased array magnetic resonance imaging (MRI) in staging prostate cancer in candidates for radical prostatectomy: results from a prospective study. Urologic Oncology 2013 May;31(4):448-54.

Baco E et al. Predictive value of Magnetic Resonance Imaging Determined Tumor Contact Length for Extra-capsular Extension of Prostate cancer. J Urol 2015;193:466-472.



T3a

Criteria imaging per EPE:

- asimmetria o invasione del fascio neurovascolare;
- bulging del profilo capsulare;
- **marginare irregolare o con spicature;**

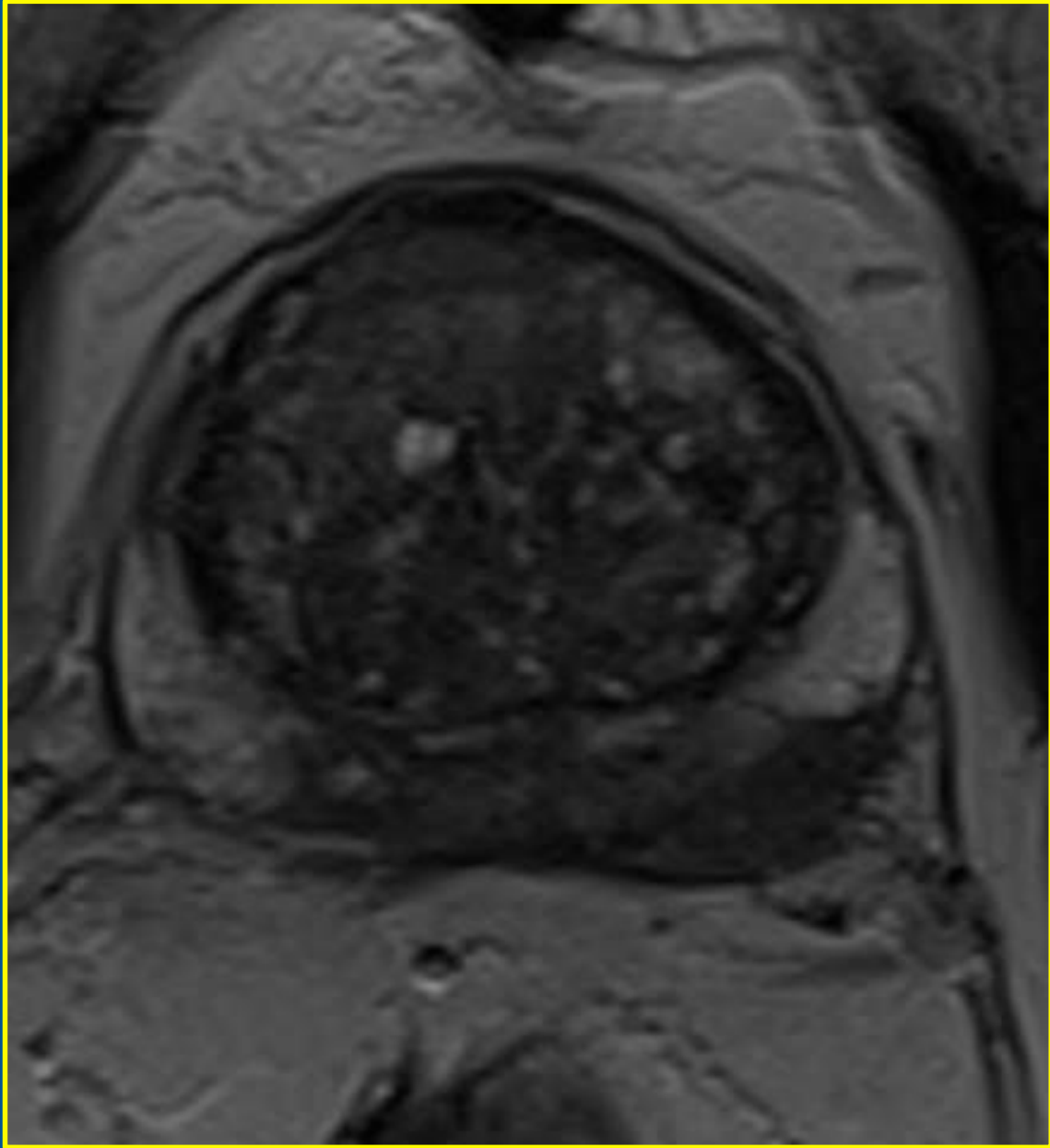
Engelbrecht MR et al. Local staging of prostate cancer using magnetic resonance imaging: a meta-analysis. European Radiol 2002Sep;12(9): 2294-302.

Johnston R et al. The role of 1.5 Tesla magnetic resonance imaging in staging prostate cancer. ANZ J Surg 2013 Apr;83(4):234-8.

Wang L et al. Prostate cancer: incremental value of endorectal MR imaging findings for prediction of extracapsular extension. Radiology 2004;232:133-9.

Renard-Penna R et al. Accuracy of high resolution (1.5 tesla) pelvic phased array magnetic resonance imaging (MRI) in staging prostate cancer in candidates for radical prostatectomy: results from a prospective study. Urologic Oncology 2013 May;31(4):448-54.

Baco E et al. Predictive value of Magnetic Resonance Imaging Determined Tumor Contact Length for Extra-capsular Extension of Prostate cancer. J Urol 2015;193:466-472.



T3a

Criteria imaging per EPE:

- asimmetria o invasione del fascio neurovascolare;
- bulging del profilo capsulare;
- margine irregolare o con spicature;
- **obliterazione dell'angolo retto-prostatico;**

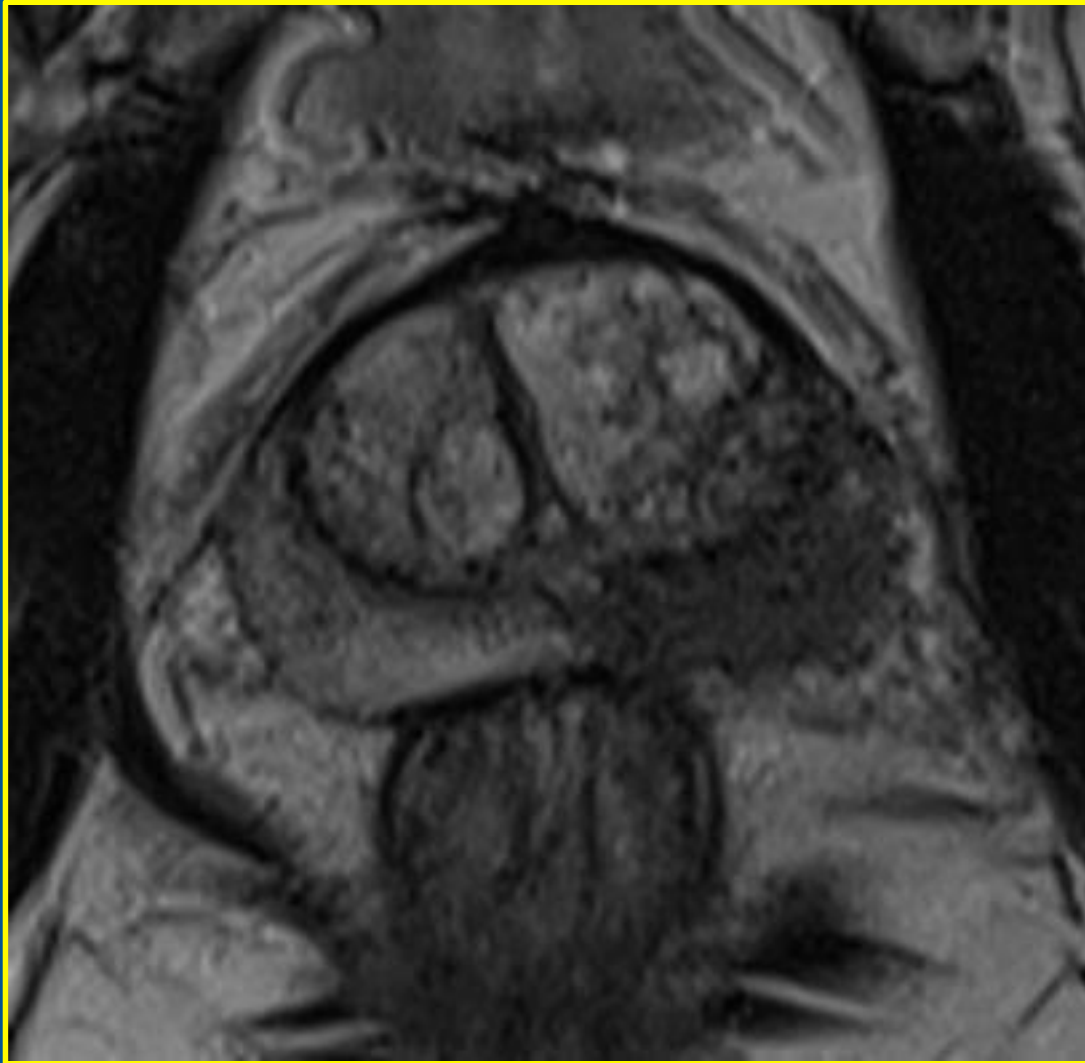
Engelbrecht MR et al. Local staging of prostate cancer using magnetic resonance imaging: a meta-analysis. European Radiol 2002Sep;12(9): 2294-302.

Johnston R et al. The role of 1.5 Tesla magnetic resonance imaging in staging prostate cancer. ANZ J Surg 2013 Apr;83(4):234-8.

Wang L et al. Prostate cancer: incremental value of endorectal MR imaging findings for prediction of extracapsular extension. Radiology 2004;232:133-9.

Renard-Penna R et al. Accuracy of high resolution (1.5 tesla) pelvic phased array magnetic resonance imaging (MRI) in staging prostate cancer in candidates for radical prostatectomy: results from a prospective study. Urologic Oncology 2013 May;31(4):448-54.

Baco E et al. Predictive value of Magnetic Resonance Imaging Determined Tumor Contact Length for Extra-capsular Extension of Prostate cancer. J Urol 2015;193:466-472.



T3a

Criteria imaging per EPE:

- asimmetria o invasione del fascio neurovascolare;
- bulging del profilo capsulare;
- margine irregolare o con spicature;
- obliterazione dell'angolo retto-prostatico;
- **interfaccia tumore/capsula > 1.0 cm;**

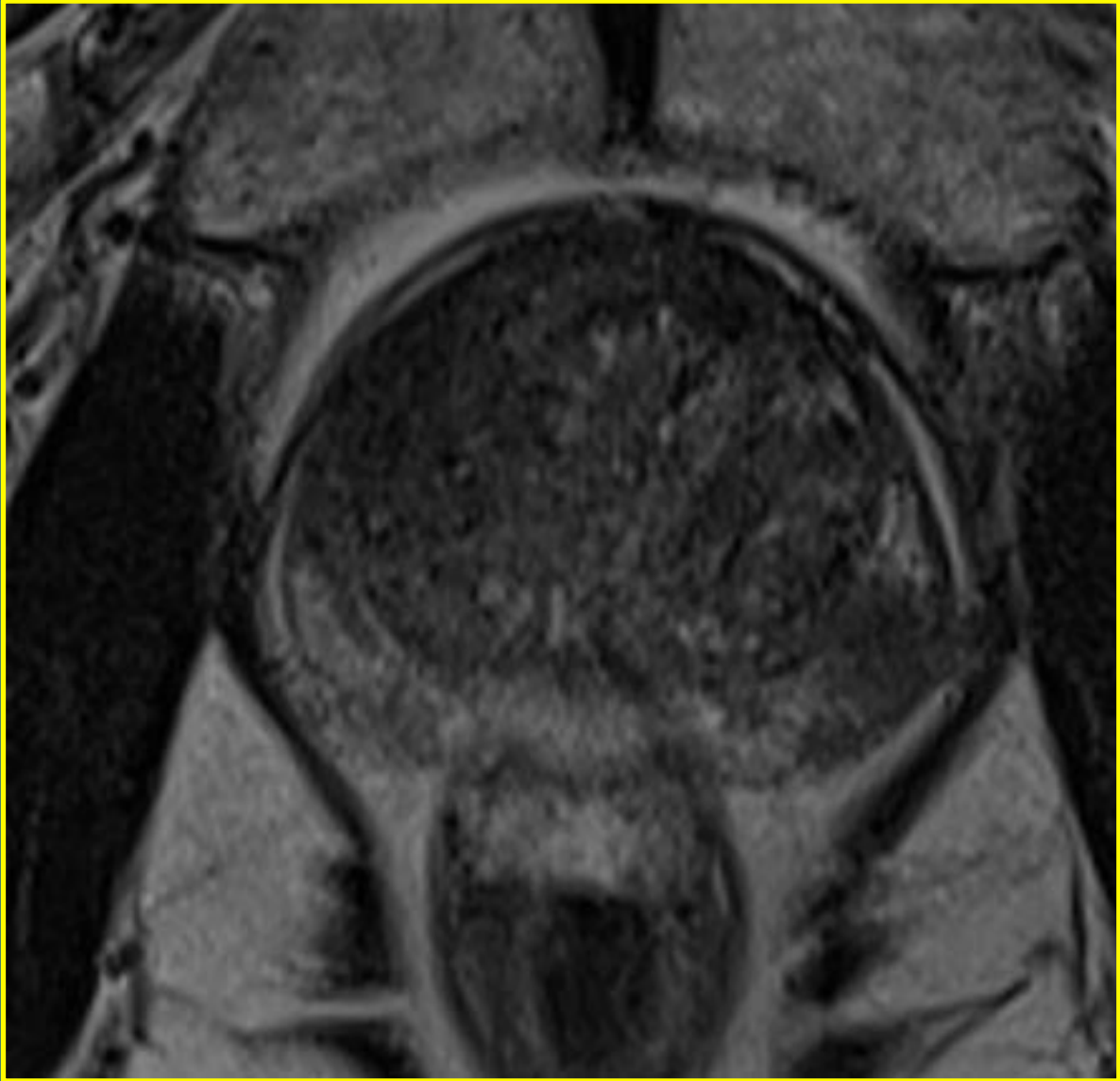
Engelbrecht MR et al. Local staging of prostate cancer using magnetic resonance imaging: a meta-analysis. European Radiol 2002Sep;12(9): 2294-302.

Johnston R et al. The role of 1.5 Tesla magnetic resonance imaging in staging prostate cancer. ANZ J Surg 2013 Apr;83(4):234-8.

Wang L et al. Prostate cancer: incremental value of endorectal MR imaging findings for prediction of extracapsular extension. Radiology 2004;232:133-9.

Renard-Penna R et al. Accuracy of high resolution (1.5 tesla) pelvic phased array magnetic resonance imaging (MRI) in staging prostate cancer in candidates for radical prostatectomy: results from a prospective study. Urologic Oncology 2013 May;31(4):448-54.

Baco E et al. Predictive value of Magnetic Resonance Imaging Determined Tumor Contact Length for Extra-capsular Extension of Prostate cancer. J Urol 2015;193:466-472.



T3a

Criteria imaging per EPE:

- asimmetria o invasione del fascio neurovascolare;
- bulging del profilo capsulare;
- margine irregolare o con spicature;
- obliterazione dell'angolo retto-prostatico;
- interfaccia tumore/capsula > 1.0 cm;
- interruzione della capsula con evidenza di estensione di malattia;**

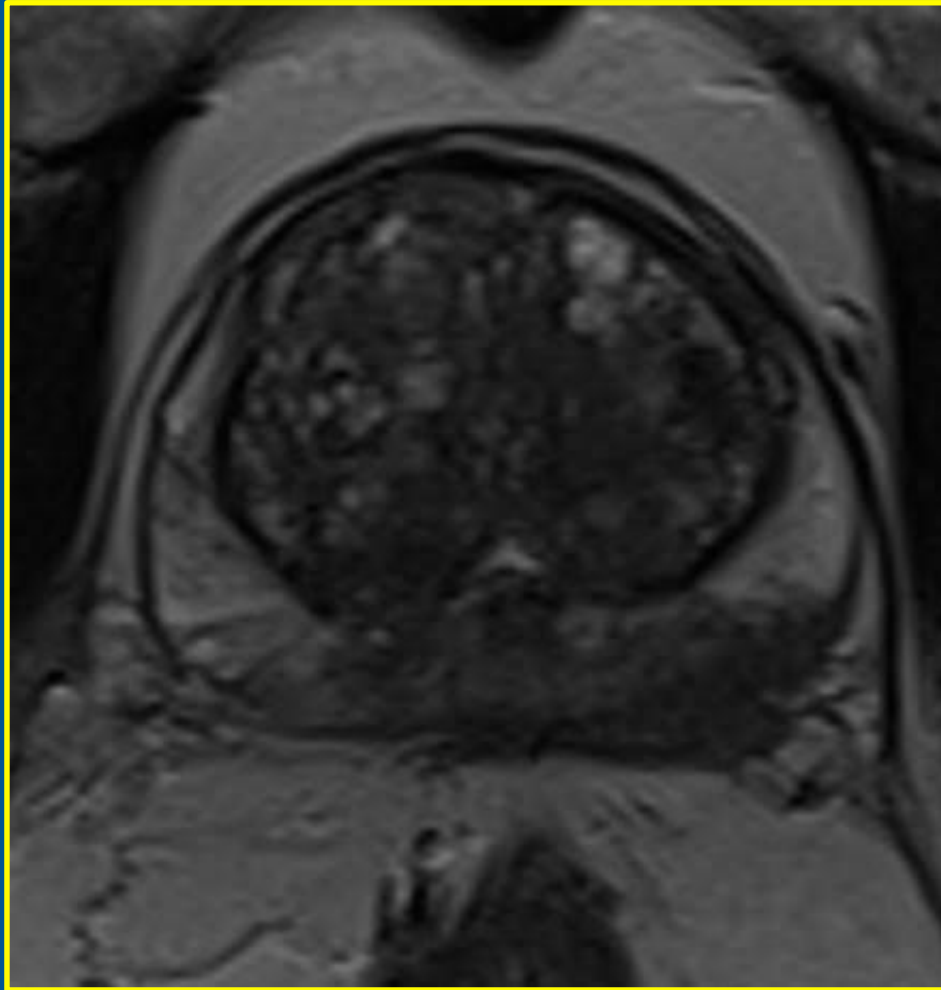
Engelbrecht MR et al. Local staging of prostate cancer using magnetic resonance imaging: a meta-analysis. European Radiol 2002Sep;12(9): 2294-302.

Johnston R et al. The role of 1.5 Tesla magnetic resonance imaging in staging prostate cancer. ANZ J Surg 2013 Apr;83(4):234-8.

Wang L et al. Prostate cancer: incremental value of endorectal MR imaging findings for prediction of extracapsular extension. Radiology 2004;232:133-9.

Renard-Penna R et al. Accuracy of high resolution (1.5 tesla) pelvic phased array magnetic resonance imaging (MRI) in staging prostate cancer in candidates for radical prostatectomy: results from a prospective study. Urologic Oncology 2013 May;31(4):448-54.

Baco E et al. Predictive value of Magnetic Resonance Imaging Determined Tumor Contact Length for Extra-capsular Extension of Prostate cancer. J Urol 2015;193:466-472.



T3a

Criteria imaging per EPE:

- asimmetria o invasione del fascio neurovascolare;
- bulging del profilo capsulare;
- margine irregolare o con spicature;
- obliterazione dell'angolo retto-prostatico;
- interfaccia tumore/capsula > 1.0 cm;
- interruzione della capsula con evidenza di estensione di malattia;
- **infiltrazione parete vescicale (collo).**

Engelbrecht MR et al. Local staging of prostate cancer using magnetic resonance imaging: a meta-analysis. European Radiol 2002Sep;12(9): 2294-302.

Johnston R et al. The role of 1.5 Tesla magnetic resonance imaging in staging prostate cancer. ANZ J Surg 2013 Apr;83(4):234-8.

Wang L et al. Prostate cancer: incremental value of endorectal MR imaging findings for prediction of extracapsular extension. Radiology 2004;232:133-9.

Renard-Penna R et al. Accuracy of high resolution (1.5 tesla) pelvic phased array magnetic resonance imaging (MRI) in staging prostate cancer in candidates for radical prostatectomy: results from a prospective study. Urologic Oncology 2013 May;31(4):448-54.

Baco E et al. Predictive value of Magnetic Resonance Imaging Determined Tumor Contact Length for Extra-capsular Extension of Prostate cancer. J Urol 2015;193:466-472.

T3a

Criteria imaging per determinare EPE:

- **sensibilità** 60 - 81%
- **specificità** 75 – 78%
- inter-reader agreement modesta ($k = 0.45$)

Boesen L, et al. Prostate cancer staging with extracapsular extension risk scoring using multiparametric MRI: a correlation with histopathology. *Eur Radiol* 2015; **25**: 1776-85

Schieda N, et al. Evaluation of the European Society of Urogenital Radiology (ESUR) PI-RADS scoring system for assessment of extra-prostatic extension in prostatic carcinoma. *Eur J Radiol* 2015; **84**: 1843-8

T3b

T3b

Criteria imaging per SVI:

- **focale o diffusa bassa intensità del segnale in T2w;**

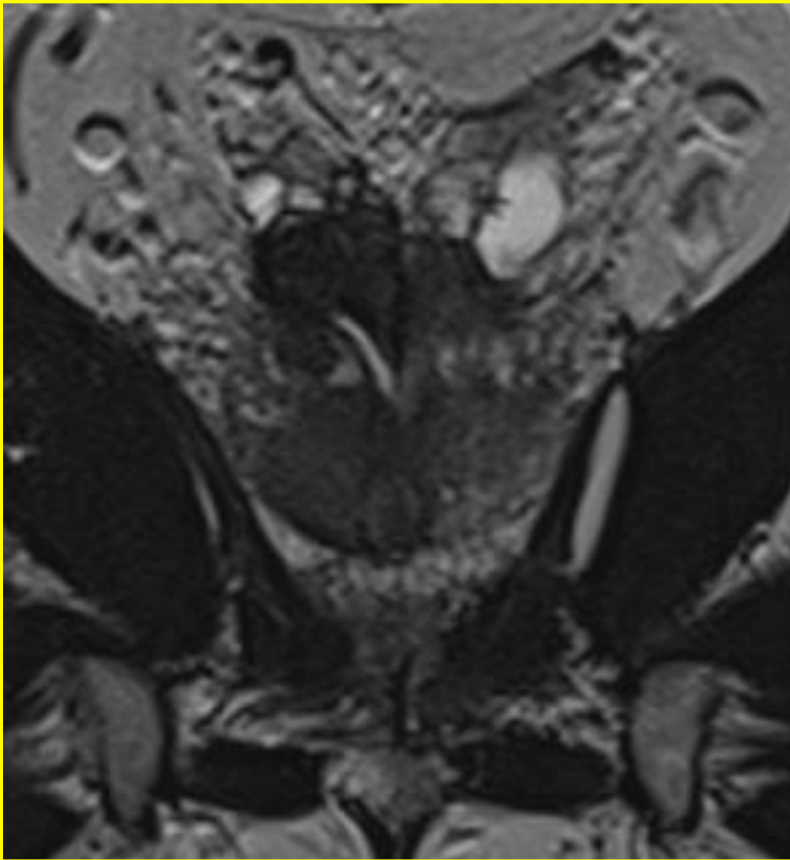
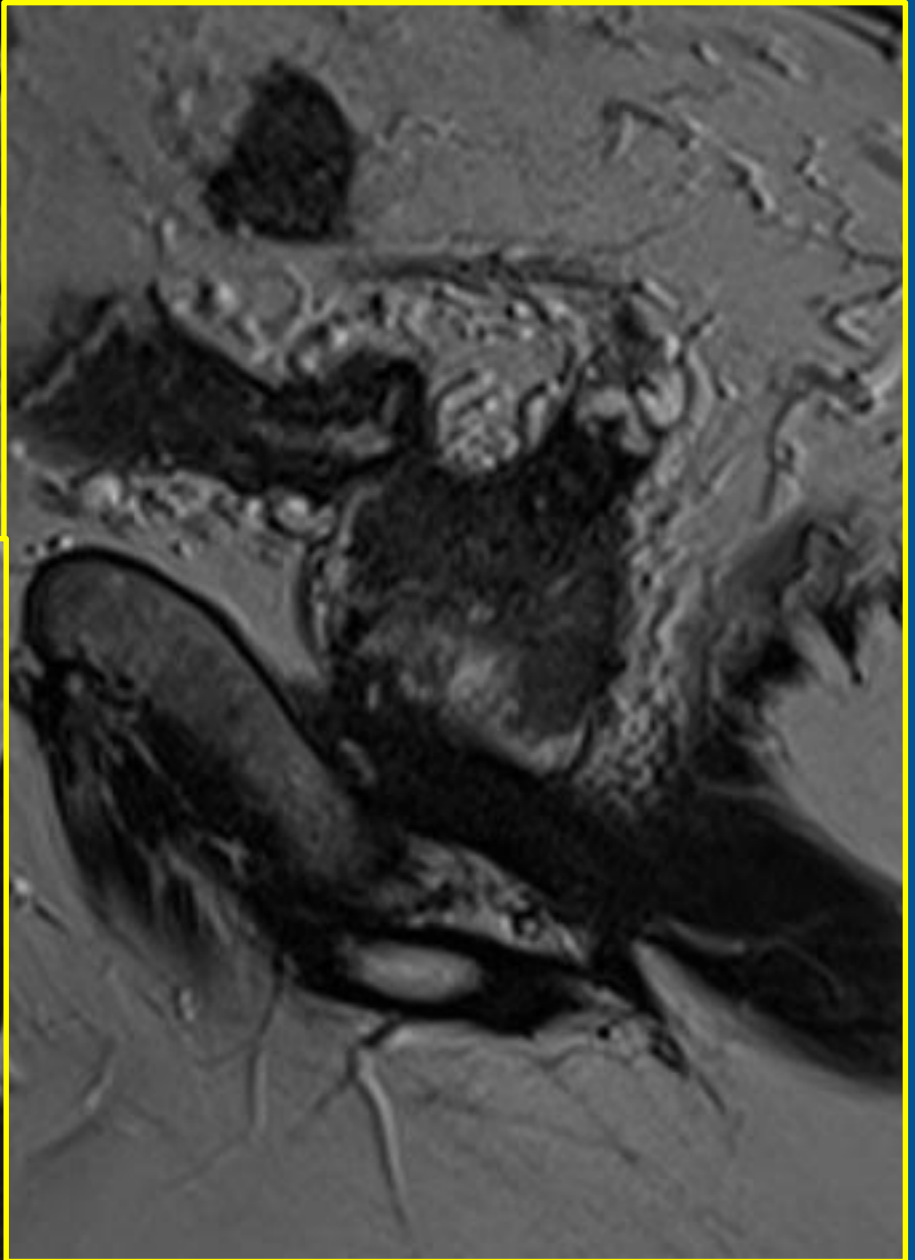
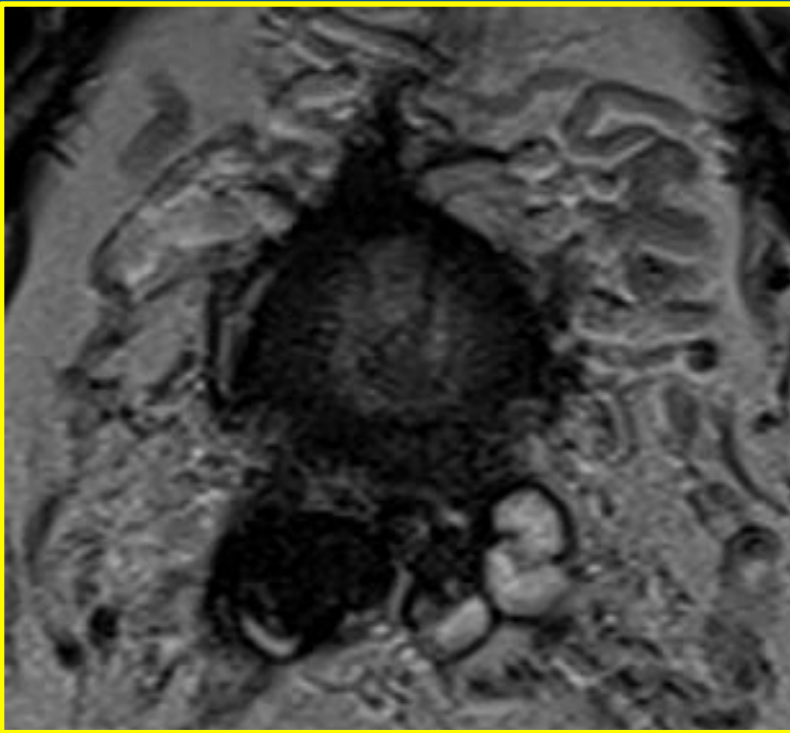
Engelbrecht MR et al. Local staging of prostate cancer using magnetic resonance imaging: a meta-analysis. European Radiol 2002Sep;12(9): 2294-302.

Johnston R et al. The role of 1.5 Tesla magnetic resonance imaging in staging prostate cancer. ANZ J Surg 2013 Apr;83(4):234-8.

Wang L et al. Prostate cancer: incremental value of endorectal MR imaging findings for prediction of extracapsular extension. Radiology 2004;232:133-9.

Renard-Penna R et al. Accuracy of high resolution (1.5 tesla) pelvic phased array magnetic resonance imaging (MRI) in staging prostate cancer in candidates for radical prostatectomy: results from a prospective study. Urologic Oncology 2013 May;31(4):448-54.

Baco E et al. Predictive value of Magnetic Resonance Imaging Determined Tumor Contact Length for Extra-capsular Extension of Prostate cancer. J Urol 2015;193:466-472.



T3b

Criteria imaging per **SVI**:

- focale o diffusa bassa intensità del segnale in T2w;
- **restrizione del coefficiente di diffusione in DWI o anomalo CE all'interno o attorno alle vescichette seminali;**

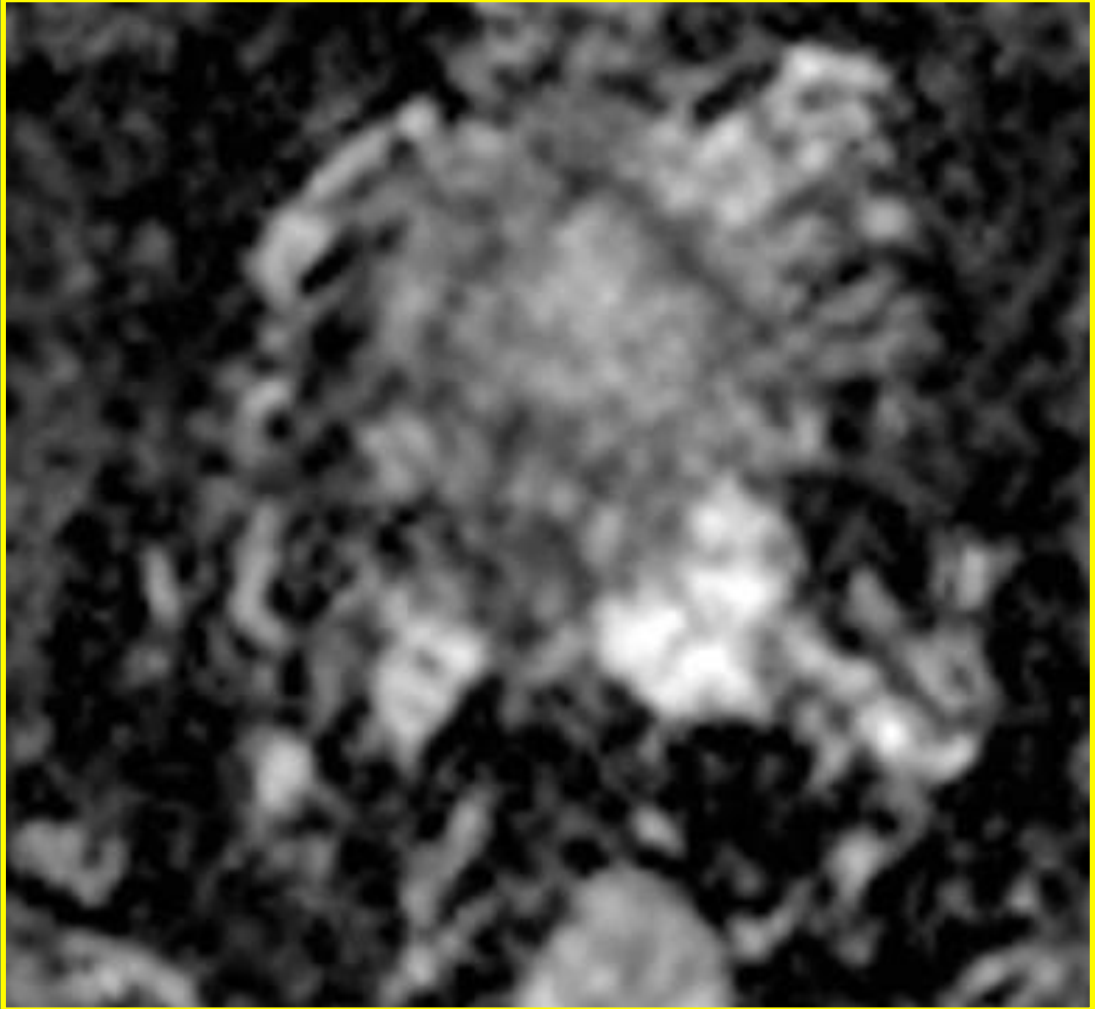
Engelbrecht MR et al. Local staging of prostate cancer using magnetic resonance imaging: a meta-analysis. European Radiol 2002Sep;12(9): 2294-302.

Johnston R et al. The role of 1.5 Tesla magnetic resonance imaging in staging prostate cancer. ANZ J Surg 2013 Apr;83(4):234-8.

Wang L et al. Prostate cancer: incremental value of endorectal MR imaging findings for prediction of extracapsular extension. Radiology 2004;232:133-9.

Renard-Penna R et al. Accuracy of high resolution (1.5 tesla) pelvic phased array magnetic resonance imaging (MRI) in staging prostate cancer in candidates for radical prostatectomy: results from a prospective study. Urologic Oncology 2013 May;31(4):448-54.

Baco E et al. Predictive value of Magnetic Resonance Imaging Determined Tumor Contact Length for Extra-capsular Extension of Prostate cancer. J Urol 2015;193:466-472.



T3b

Criteria imaging per **SVI**:

- focale o diffusa bassa intensità del segnale in T2w;
- restrizione del coefficiente di diffusione in DWI o anomalo CE all'interno o attorno alle vescichette seminali;
- **obliterazione dell'angolo tra base prostata e vescichetta seminale**

Engelbrecht MR et al. Local staging of prostate cancer using magnetic resonance imaging: a meta-analysis. European Radiol 2002Sep;12(9): 2294-302.

Johnston R et al. The role of 1.5 Tesla magnetic resonance imaging in staging prostate cancer. ANZ J Surg 2013 Apr;83(4):234-8.

Wang L et al. Prostate cancer: incremental value of endorectal MR imaging findings for prediction of extracapsular extension. Radiology 2004;232:133-9.

Renard-Penna R et al. Accuracy of high resolution (1.5 tesla) pelvic phased array magnetic resonance imaging (MRI) in staging prostate cancer in candidates for radical prostatectomy: results from a prospective study. Urologic Oncology 2013 May;31(4):448-54.

Baco E et al. Predictive value of Magnetic Resonance Imaging Determined Tumor Contact Length for Extra-capsular Extension of Prostate cancer. J Urol 2015;193:466-472.

T3b

Criteria imaging per **SVI**:

- focale o diffusa bassa intensità del segnale in T2w;
- restrizione del coefficiente di diffusione in DWI o anomalo CE all'interno o attorno alle vescichette seminali;
- obliterazione dell'angolo tra base prostata e vescichetta seminale;
- **estensione diretta dalla base prostata all'interno o attorno alle vescichette seminali.**

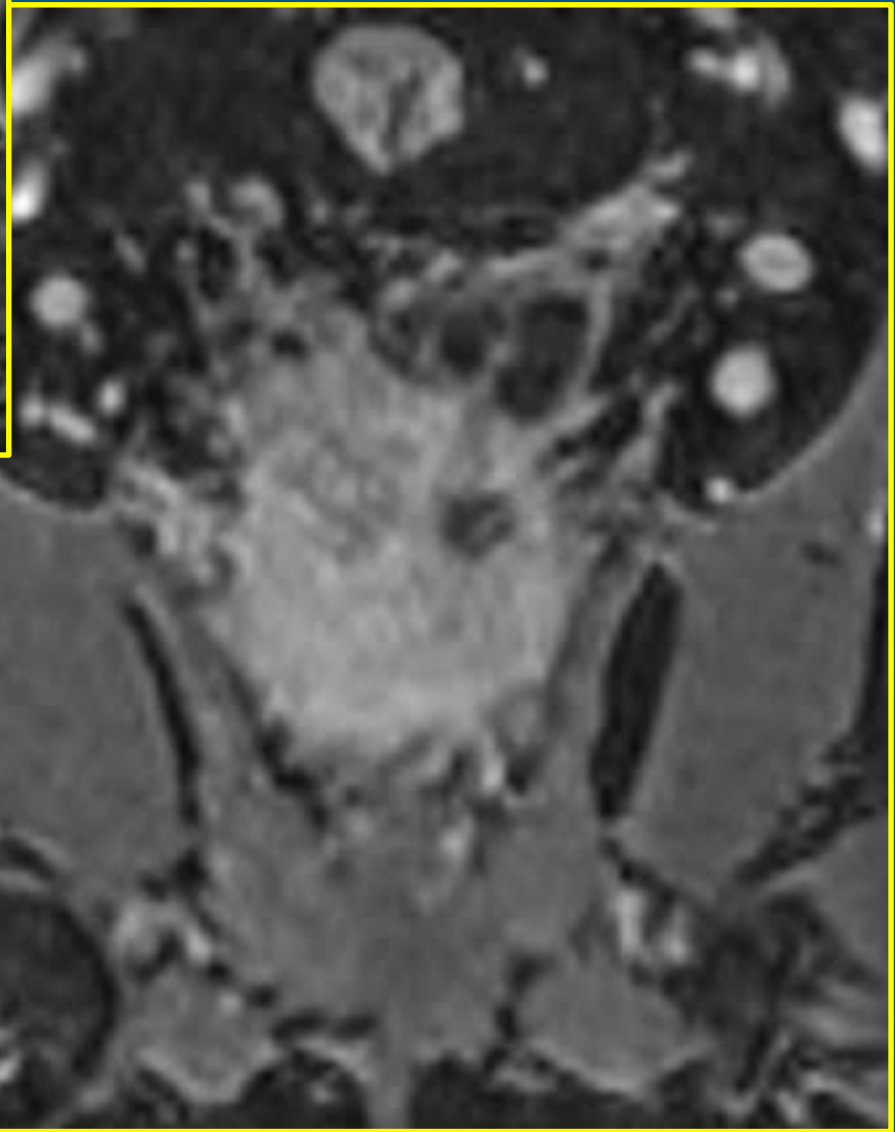
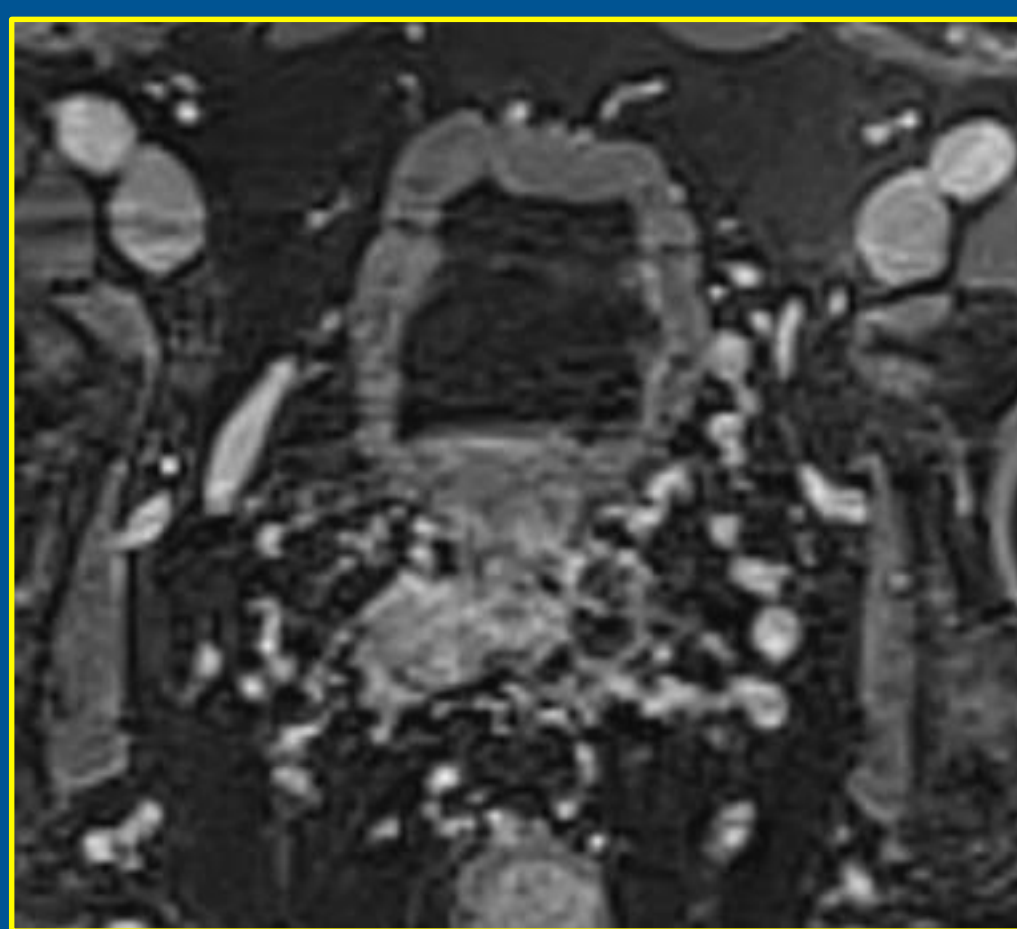
Engelbrecht MR et al. Local staging of prostate cancer using magnetic resonance imaging: a meta-analysis. European Radiol 2002Sep;12(9): 2294-302.

Johnston R et al. The role of 1.5 Tesla magnetic resonance imaging in staging prostate cancer. ANZ J Surg 2013 Apr;83(4):234-8.

Wang L et al. Prostate cancer: incremental value of endorectal MR imaging findings for prediction of extracapsular extension. Radiology 2004;232:133-9.

Renard-Penna R et al. Accuracy of high resolution (1.5 tesla) pelvic phased array magnetic resonance imaging (MRI) in staging prostate cancer in candidates for radical prostatectomy: results from a prospective study. Urologic Oncology 2013 May;31(4):448-54.

Baco E et al. Predictive value of Magnetic Resonance Imaging Determined Tumor Contact Length for Extra-capsular Extension of Prostate cancer. J Urol 2015;193:466-472.



T3b

Criteri imaging per **SVI**:

- sensibilità 75.9%;
- specificità 94.7%;

- valore predittivo positivo (PPV) 62%;
- valore predittivo negativo (NPV) 97%.

N

N

INDICAZIONI RM:

- pz rischio *intermedio*
- pz rischio *elevato*

N

RM (come TC):

- coinvolgimento linfonodi loco-regionali
 - linfonodi iliaci comuni (primari)
 - linfonodi otturatoti (secondari)
 - linfonodi iliaci esterni (terziari)
 - linfonodi pre-sacrali

N

Valutazione dei **LINFONODI** pelvici e retroperitoneali.

L'identificazione di linfonodi patologici in RM è limitata alla valutazione di:

- **dimensioni**;

- Abuzallouf, S., et al. Baseline staging of newly diagnosed prostate cancer: a summary of the literature. J Urol, 2004. 171: 2122,*
- Kiss, B., et al. Current Status of Lymph Node Imaging in Bladder and Prostate Cancer. Urology, 2016. 96: 1.*
- Harisinghani, M.G., et al. Noninvasive detection of clinically occult lymph-node metastases in prostate cancer. N Engl J Med, 2003. 348: 2491.*
- Hovels, A.M., et al. The diagnostic accuracy of CT and MRI in the staging of pelvic lymph nodes in patients with prostate cancer: a meta-analysis. Clin Radiol, 2008. 63: 387.*
- Gabriele, D., et al. Is there still a role for computed tomography and bone scintigraphy in prostate cancer staging? An analysis from the EUREKA-1 database. World J Urol, 2016. 34: 517*
- Toeny HC et al. Metastases in norma-sized pelvic lymph nodes: detection with diffusion-weighted MR imaging. Radiology 2014;273:125-135*

N

Valutazione dei **LINFONODI** pelvici e retroperitoneali.

L'identificazione di linfonodi patologici in RM è limitata alla valutazione di:

- *dimensioni*;
- ***morfologia e contorni***;

Abuzallouf, S., et al. Baseline staging of newly diagnosed prostate cancer: a summary of the literature. J Urol, 2004. 171: 2122,
Kiss, B., et al. Current Status of Lymph Node Imaging in Bladder and Prostate Cancer. Urology, 2016. 96: 1.
Harisinghani, M.G., et al. Noninvasive detection of clinically occult lymph-node metastases in prostate cancer. N Engl J Med, 2003. 348: 2491.
Hovels, A.M., et al. The diagnostic accuracy of CT and MRI in the staging of pelvic lymph nodes in patients with prostate cancer: a meta-analysis. Clin Radiol, 2008. 63: 387.
Gabriele, D., et al. Is there still a role for computed tomography and bone scintigraphy in prostate cancer staging? An analysis from the EUREKA-1 database. World J Urol, 2016. 34: 517
Toeny HC et al. Metastases in norma-sized pelvic lymph nodes: detection with diffusion-weighted MR imaging. Radiology 2014;273:125-135

N

Valutazione dei **LINFONODI** pelvici e retroperitoneali.

L'identificazione di linfonodi patologici in RM è limitata alla valutazione di:

- *dimensioni*;
- *morfologia e contorni*;
- ***pattern di impregnazione dopo mdc ev.***

Abuzallouf, S., et al. Baseline staging of newly diagnosed prostate cancer: a summary of the literature. *J Urol*, 2004. 171: 2122,
Kiss, B., et al. Current Status of Lymph Node Imaging in Bladder and Prostate Cancer. *Urology*, 2016. 96: 1.
Harisinghani, M.G., et al. Noninvasive detection of clinically occult lymph-node metastases in prostate cancer. *N Engl J Med*, 2003. 348: 2491.
Hovels, A.M., et al. The diagnostic accuracy of CT and MRI in the staging of pelvic lymph nodes in patients with prostate cancer: a meta-analysis. *Clin Radiol*, 2008. 63: 387.
Gabriele, D., et al. Is there still a role for computed tomography and bone scintigraphy in prostate cancer staging? An analysis from the EUREKA-1 database. *World J Urol*, 2016. 34: 517
Thoeny HC et al. Metastases in norma-sized pelvic lymph nodes: detection with diffusion-weighted MR imaging. *Radiology* 2014;273:125-135

N

Valutazione dei **LINFONODI** pelvici e retroperitoneali.

L'identificazione di linfonodi patologici in RM è limitata alla valutazione di:

- *dimensioni;*
- *morfologia e contorni;*
- *pattern di impregnazione dopo mdc ev.*

sono **SOSPETTI** linfonodi con:

- morfologia rotonda e diametro di **8 mm;**
- morfologia ovoidale e minor asse di **10 mm**

Abuzallouf, S., et al. Baseline staging of newly diagnosed prostate cancer: a summary of the literature. *J Urol*, 2004. 171: 2122,
Kiss, B., et al. Current Status of Lymph Node Imaging in Bladder and Prostate Cancer. *Urology*, 2016. 96: 1.
Harisinghani, M.G., et al. Noninvasive detection of clinically occult lymph-node metastases in prostate cancer. *N Engl J Med*, 2003. 348: 2491.
Hovels, A.M., et al. The diagnostic accuracy of CT and MRI in the staging of pelvic lymph nodes in patients with prostate cancer: a meta-analysis. *Clin Radiol*, 2008. 63: 387.
Gabriele, D., et al. Is there still a role for computed tomography and bone scintigraphy in prostate cancer staging? An analysis from the EUREKA-1 database. *World J Urol*, 2016. 34: 517
Thoeny HC et al. Metastases in norma-sized pelvic lymph nodes: detection with diffusion-weighted MR imaging. *Radiology* 2014;273:125-135

N

Valutazione dei **LINFONODI** pelvici e retroperitoneali.

L'identificazione di linfonodi patologici in RM è limitata alla valutazione di:

- *dimensioni;*
- *morfologia e contorni;*
- *pattern di impregnazione dopo mdc ev.*

Sono **SOSPETTI** linfonodi con:

- morfologia rotonda e minor asse di **8 mm;**
- morfologia ovoidale e minor asse di **10 mm**

Spesso linfonodi **metastatici** NON presentano incremento dimensionale

- Abuzallouf, S., et al. Baseline staging of newly diagnosed prostate cancer: a summary of the literature. J Urol, 2004. 171: 2122,*
- Kiss, B., et al. Current Status of Lymph Node Imaging in Bladder and Prostate Cancer. Urology, 2016. 96: 1.*
- Harisinghani, M.G., et al. Noninvasive detection of clinically occult lymph-node metastases in prostate cancer. N Engl J Med, 2003. 348: 2491.*
- Hovels, A.M., et al. The diagnostic accuracy of CT and MRI in the staging of pelvic lymph nodes in patients with prostate cancer: a meta-analysis. Clin Radiol, 2008. 63: 387.*
- Gabriele, D., et al. Is there still a role for computed tomography and bone scintigraphy in prostate cancer staging? An analysis from the EUREKA-1 database. World J Urol, 2016. 34: 517*
- Toeny HC et al. Metastases in norma-sized pelvic lymph nodes: detection with diffusion-weighted MR imaging. Radiology 2014;273:125-135*

N

Limitata accuratezza diagnostica per una bassa sensibilità
delle sequenze anatomiche T1w e T2w:

N

Limitata accuratezza diagnostica per una bassa sensibilità delle sequenze anatomiche T1w e T2w:

- **sensibilità** 39%

N

Limitata accuratezza diagnostica per una bassa sensibilità delle sequenze anatomiche T1w e T2w:

- sensibilità 39%
- **specificità 82%**

N

Limitata accuratezza diagnostica per una bassa sensibilità delle sequenze anatomiche T1w e T2w:

- sensibilità 39%
- **specificità 82%**

DISSEZIONE LINFONODALE PELVICA (PLND) *gold standard*

N

DISSEZIONE LINFONODALE PELVICA (PLND) gold standard

- morbilità
- alti costi

Roel A M Heesakkers et al. MRI with lymph-node-specific contrast agent as an alternative to CT scan and lymph-node dissection in patients with prostate cancer: a prospective multi cohort study. Lancet Oncol. 2008 Sep;9(9):850-6. doi: 10.1016/S1470-2045(08)70203-1. Epub 2008 Aug 15.

Mottet N, van den Bergh RCN, Briers E, Bourke L, Cornford P, De Santis M, et al. EAU - ESTRO - ESUR - SIOG guidelines on prostate cancer 2018. In: European Association of Urology guidelines 2018 Edition. Arnhem, The Netherlands: European Association of Urology Guidelines Office; 2018.

N

DISSEZIONE LINFONODALE PELVICA (PLND) gold standard

- morbilità
- alti costi

-omessa se probabilità LN+ < 5% sec. nomogrammi

Bishoff JT, Reyes A, Thompson IM, et al. Pelvic lymphadenectomy can be omitted in selected patients with carcinoma of the prostate: development of a system of patient selection. Urology 1995; 45: 270–74.

Bluestein DL, Bostwick DG, Bergstralh EJ, Oesterling JE. Eliminating the need for bilateral pelvic lymphadenectomy in select patients with prostate cancer. J Urol 1994; 151: 1315–20.

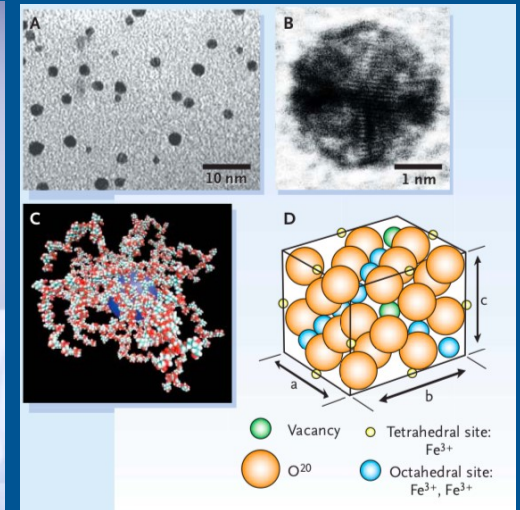
El Galley RE, Keane TE, Petros JA, et al. Evaluation of staging lymphadenectomy in prostate cancer. Urology 1998; 52: 663–67.

Meng MV, Carroll PR. When is pelvic lymph node dissection necessary before radical prostatectomy? A decision analysis. J Urol 2000; 164: 1235–40.

N

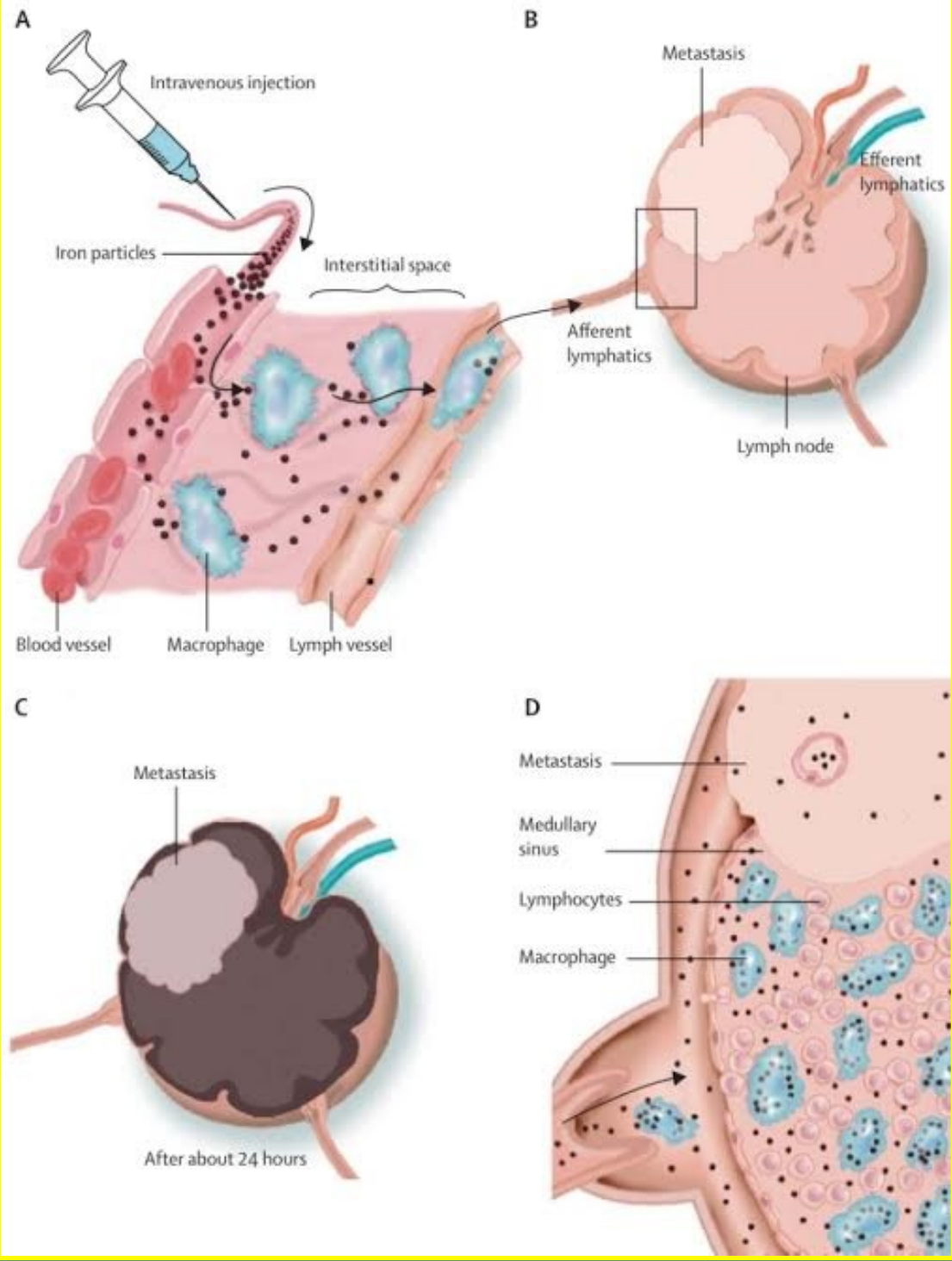
possibile aiuto LINFANGIOGRAFIA in RM (MRL)

- micro particelle di ferro
- non ancora nella pratica clinica
- solo nei Paesi Bassi (Combidex)
- in protocolli di ricerca clinica



Barentsz JO et al. The diagnostic accuracy of CT and MRI in the staging of pelvic lymph nodes in patients with prostate cancer: a metaanalysis. *ClinRadiol*2008;**63**:387-95.doi:10.1016/j.crad.2007.05.022

Fortuin AS, Brüggemann R, van der Linden J, Panfilov I, Israël B, Scheenen TWJ, et al. Ultra-small superparamagnetic iron oxides for metastatic lymph node detection: back on the block. *Wiley Interdiscip Rev Nanomedicine Nanobiotechnology* 2018; **10**: e1471. doi: 10.1002/wnan.1471



N

possibile aiuto LINFANGIOGRAFIA in RM (MRL)

- SE 82%

- VPN 96%

—> pz con MRL - : < 4 % di possibilità di avere L+

Barentsz JO et al. The diagnostic accuracy of CT and MRI in the staging of pelvic lymph nodes in patients with prostate cancer: a metaanalysis. ClinRadiol2008;63:387-95.doi:10.1016/j.crad.2007.05.022

Fortuin AS, Brüggemann R, van der Linden J, Panfilov I, Israël B, Scheenen TWJ, et al. Ultra-small superparamagnetic iron oxides for metastatic lymph node detection: back on the block. Wiley Interdiscip Rev Nanomedicine Nanobiotechnology 2018; 10: e1471. doi: 10.1002/wnan.1471

N

—> pz con MRL - : < 4 % di possibilità di avere L+



PLND può essere evitata in Pz con MRL -

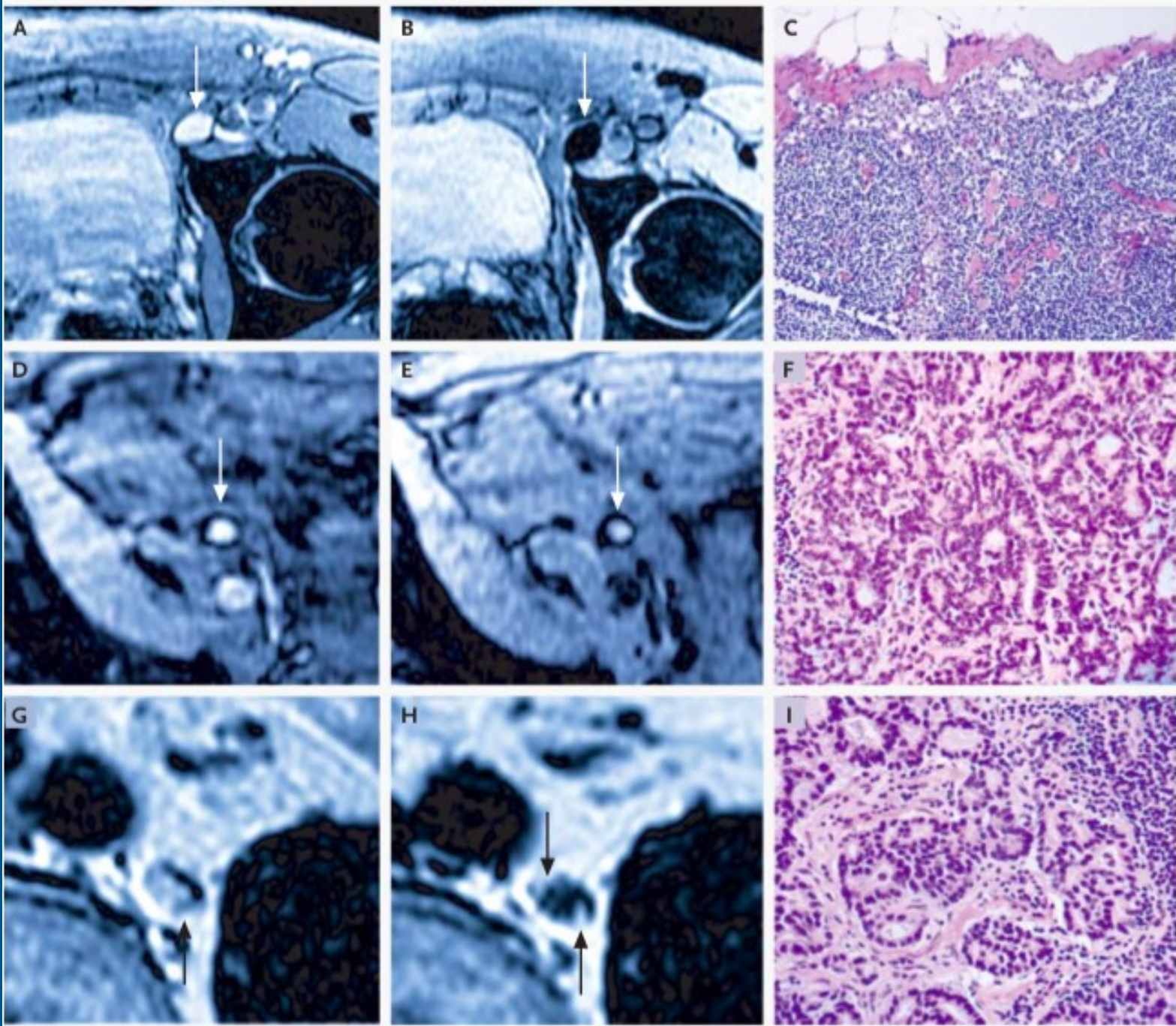
Barentsz JO et al. The diagnostic accuracy of CT and MRI in the staging of pelvic lymph nodes in patients with prostate cancer: a metaanalysis. ClinRadiol2008;63:387-95. doi:10.1016/j.crad.2007.05.022

Fortuin AS, Brüggemann R, van der Linden J, Panfilov I, Israël B, Scheenen TWJ, et al. Ultra-small superparamagnetic iron oxides for metastatic lymph node detection: back on the block. Wiley Interdiscip Rev Nanomedicine Nanobiotechnology 2018; 10: e1471. doi: 10.1002/wnan.1471

Roel A M Heesackers et al. MRI with lymph-node-specific contrast agent as an alternative to CT scan and lymph-node dissection in patients with prostate cancer: a prospective multi cohort study. Lancet Oncol. 2008 Sep;9(9):850-6. doi: 10.1016/S1470-2045(08)70203-1. Epub 2008 Aug 15.

Noninvasive Detection of Clinically Occult Lymph-Node
Metastases in Prostate Cancer

Mukesh G. Harisinghani, M.D., Jelle Barentsz, M.D., Ph.D., Peter F. Hahn, M.D., Ph.D.,
Willem M. Deeseno, M.D., Shahn Tabatabai, M.D., Christine Hulsbergen van de Kaa, M.D., Ph.D.,
Jean de la Rivette, M.D., Ph.D., and Ralph Weissleder, M.D., Ph.D.



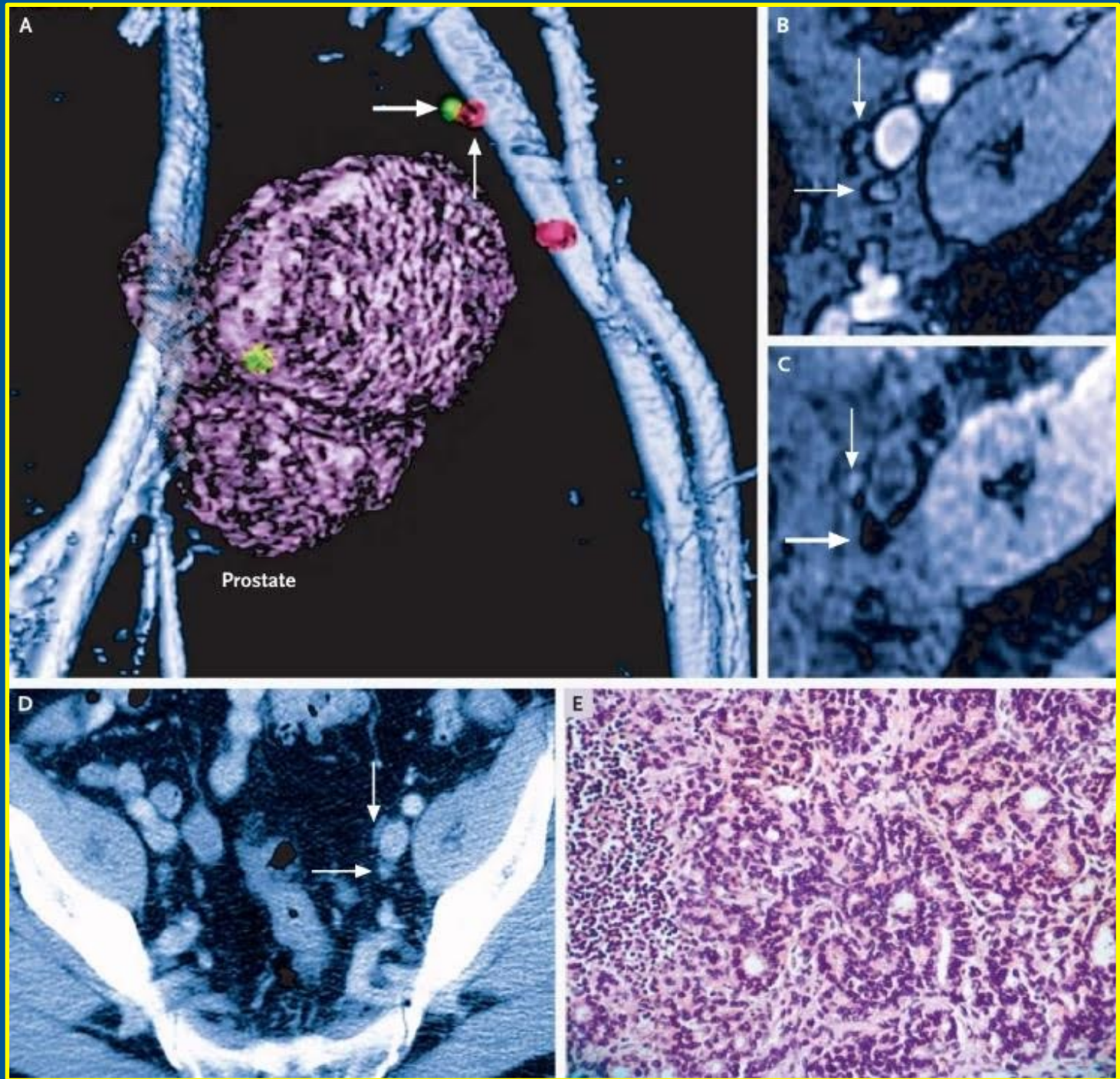


Table 2. Sensitivity, Specificity, Accuracy, and Positive and Negative Predictive Values of MRI Alone and MRI with Lymphotropic Superparamagnetic Nanoparticles.

Variable	MRI Alone	MRI with Lymphotropic Superparamagnetic Nanoparticles	P Value
Results per patient (n=80)			
Sensitivity (%)	45.4	100	<0.001
Specificity (%)	78.7	95.7	
Accuracy (%)	65.0	97.5	
Positive predictive value (%)	60.0	94.2	
Negative predictive value (%)	67.2	100	
Results per individual lymph nodes of all sizes (n=334)			
Sensitivity (%)	35.4	90.5	<0.001
Specificity (%)	90.4	97.8	
Accuracy (%)	76.3	97.3	
Positive predictive value (%)	55.9	95.0	
Negative predictive value (%)	80.3	97.8	
Area under the curve	0.756	0.975	<0.001
Results for nodes with a short-axis diameter of 5–10 mm (n=45)			
Sensitivity (%)	28.5	96.4	<0.001
Specificity (%)	87.2	99.3	
Accuracy (%)	78.3	98.9	
Positive predictive value (%)	28.5	96.4	
Negative predictive value (%)	87.2	99.3	
Results for nodes with a short-axis diameter of <5 mm (n=17)			
Sensitivity (%)	0	41.1	
Specificity (%)	100	98.1	
Accuracy (%)	86.4	90.4	
Positive predictive value (%)	NA*	77.7	
Negative predictive value (%)	86.4	91.3	





M

M

RUOLO RM:

- pz rischio ELEVATO

* malattia a livello SCHELETRICO
- WHOLE BODY MRI

Identification of Bone Metastasis With Routine Prostate MRI: A Study of Patients With Newly Diagnosed Prostate Cancer

Sungmin Woo¹
Sang Youn Kim¹
Seung Hyup Kim^{1,2}
Jeong Yeon Cho^{1,2}

OBJECTIVE. The purpose of this study was to evaluate whether routine prostate MRI is adequate for detection of bone metastasis in patients with newly diagnosed prostate cancer.

MATERIALS AND METHODS. The study included 308 patients with newly diagnosed prostate cancer who underwent prostate MRI. Two radiologists categorized MRI findings as normal, metastasis, or equivocal. Histologic analysis or best valuable comparator

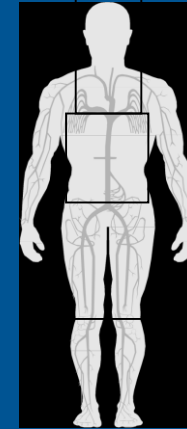
RM più sensibile e specifica rispetto
alla scintigrafia ossea o RX
nell'identificazione delle **metastasi**
ossee:

- sensibilità 95.2%;
- specificità 99-100%;
- VPP 86.9-100%;

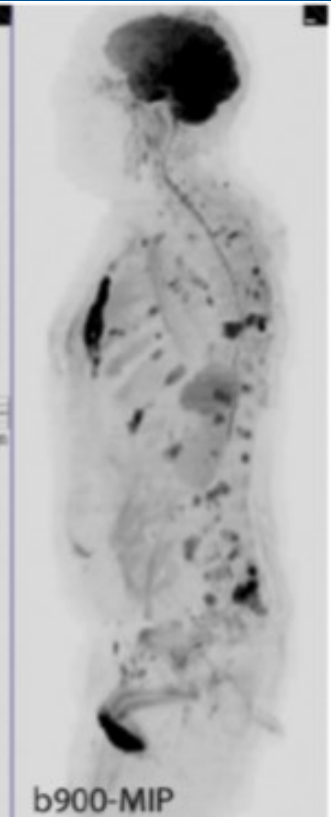
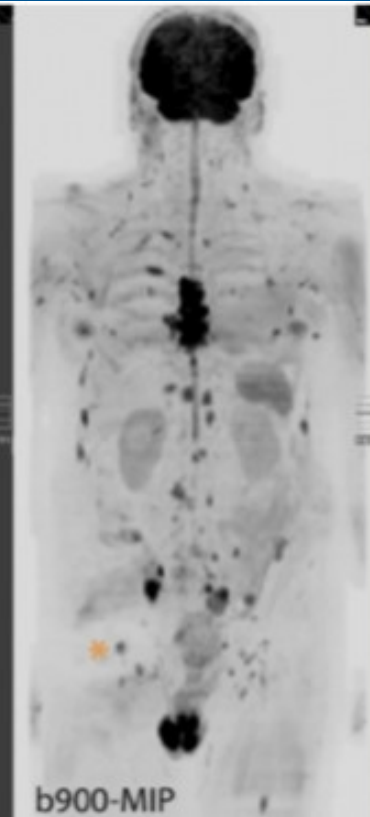
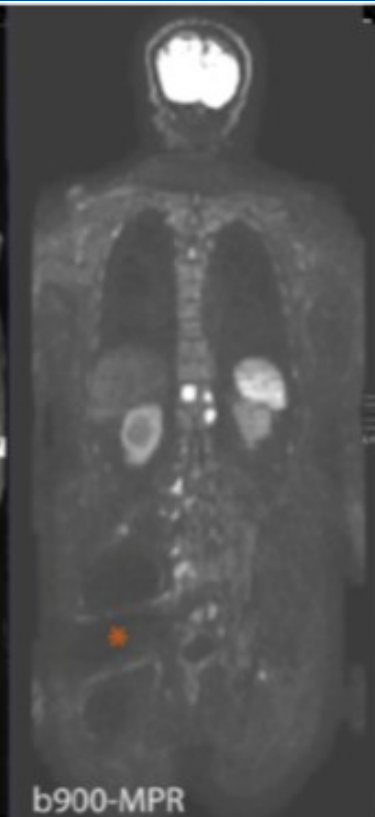
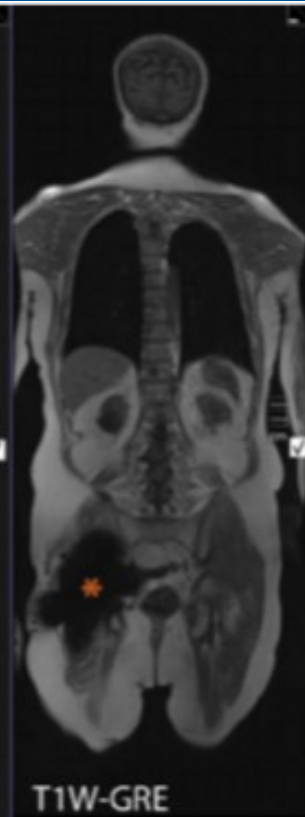


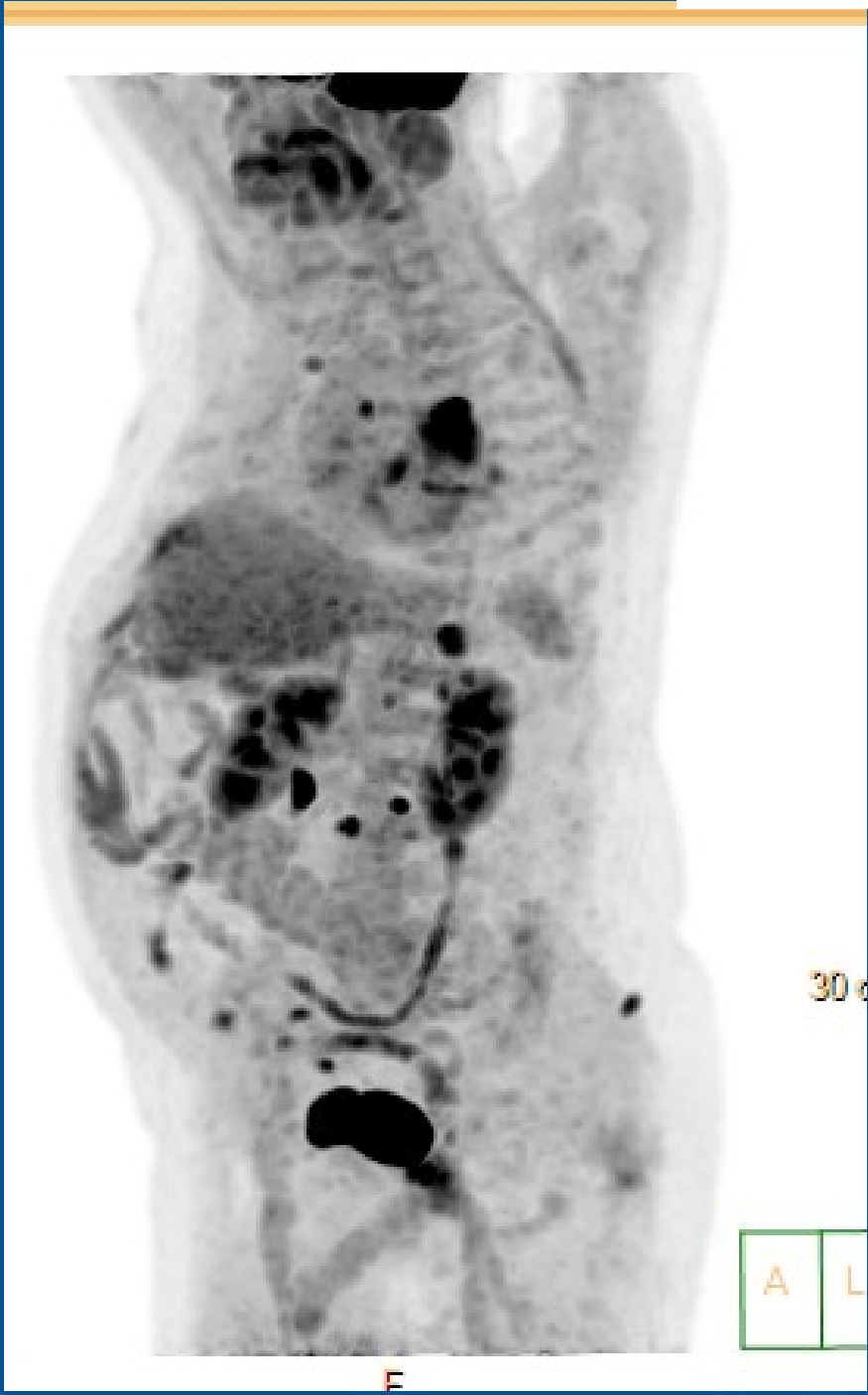
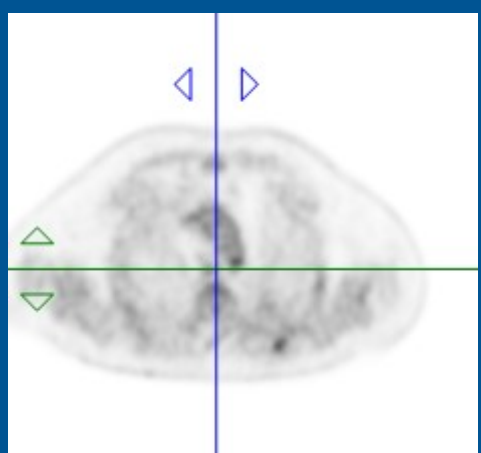
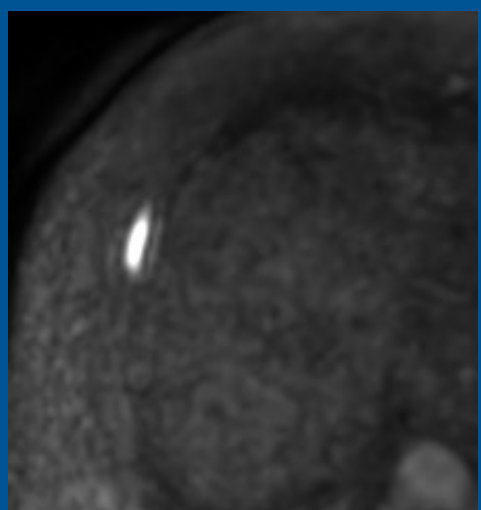
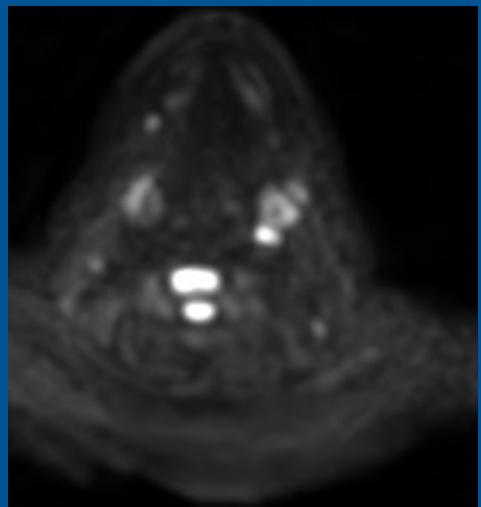
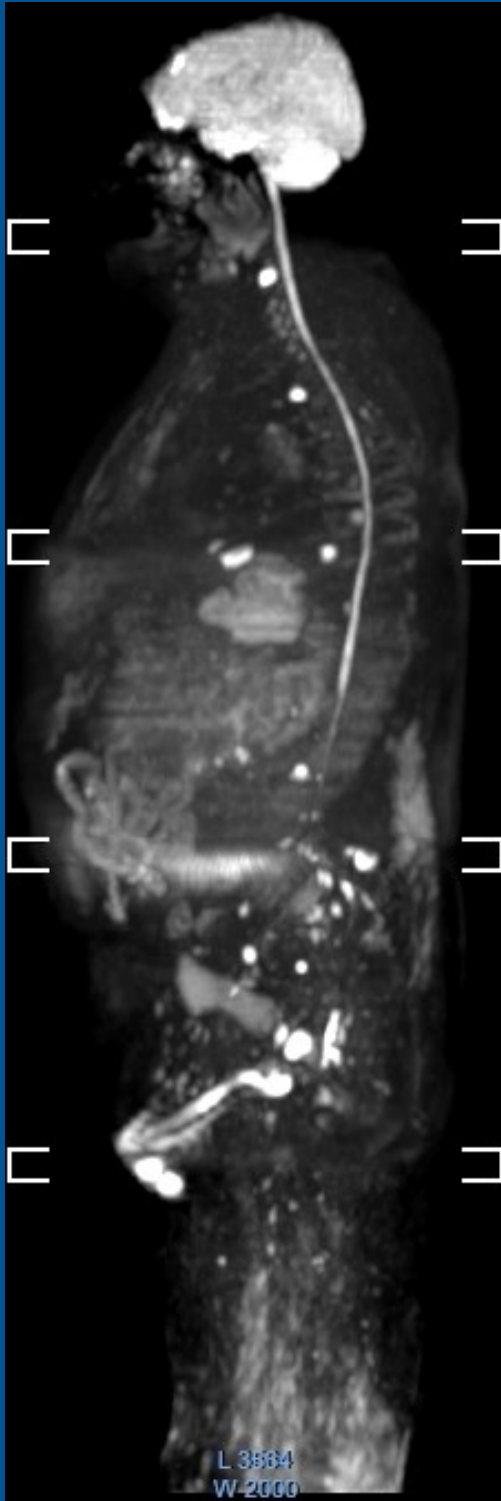
PROTOCOLLO ESAME WHOLE BODY

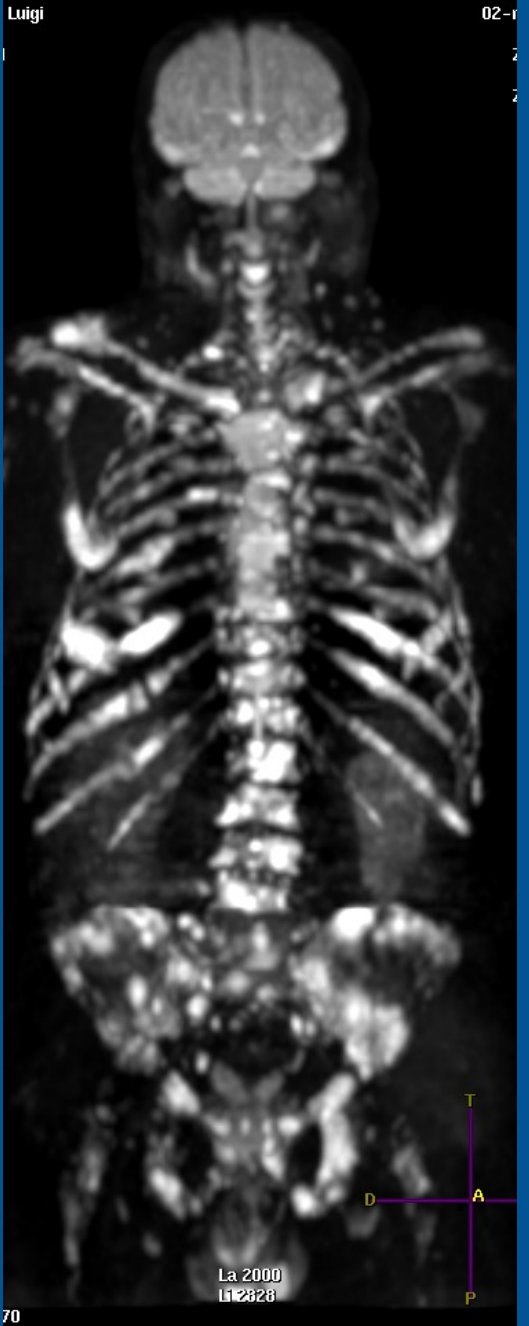
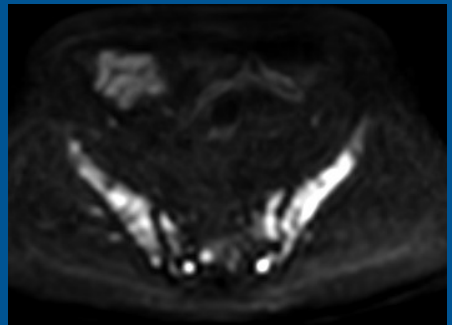
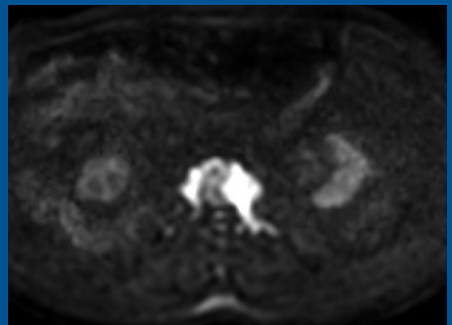
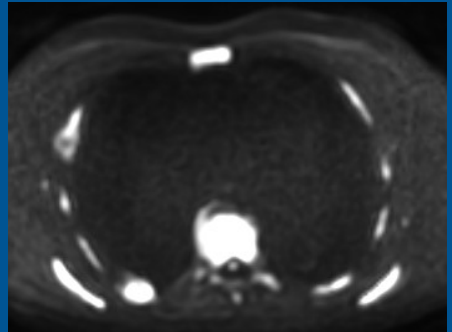
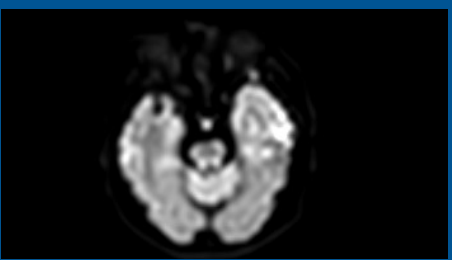
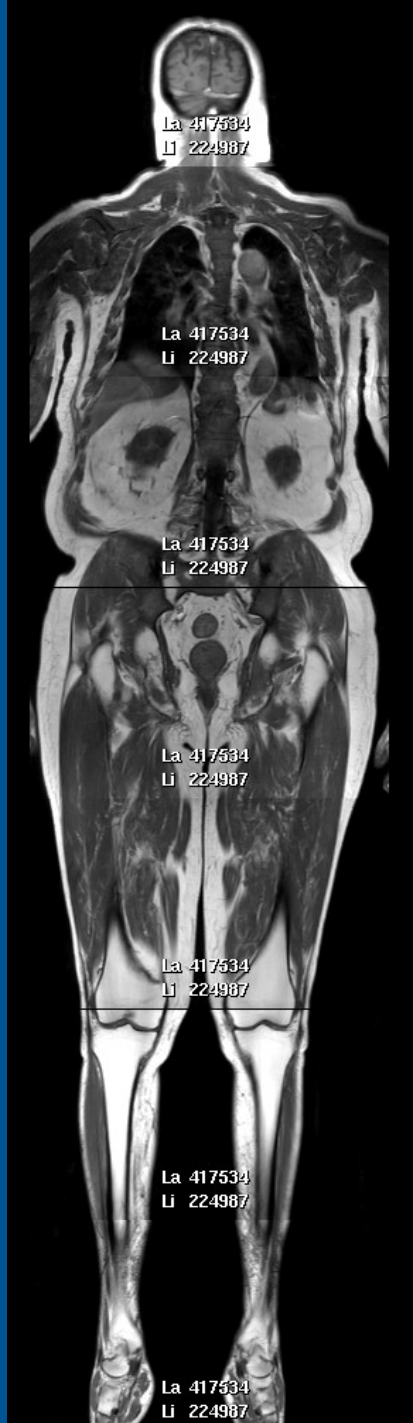
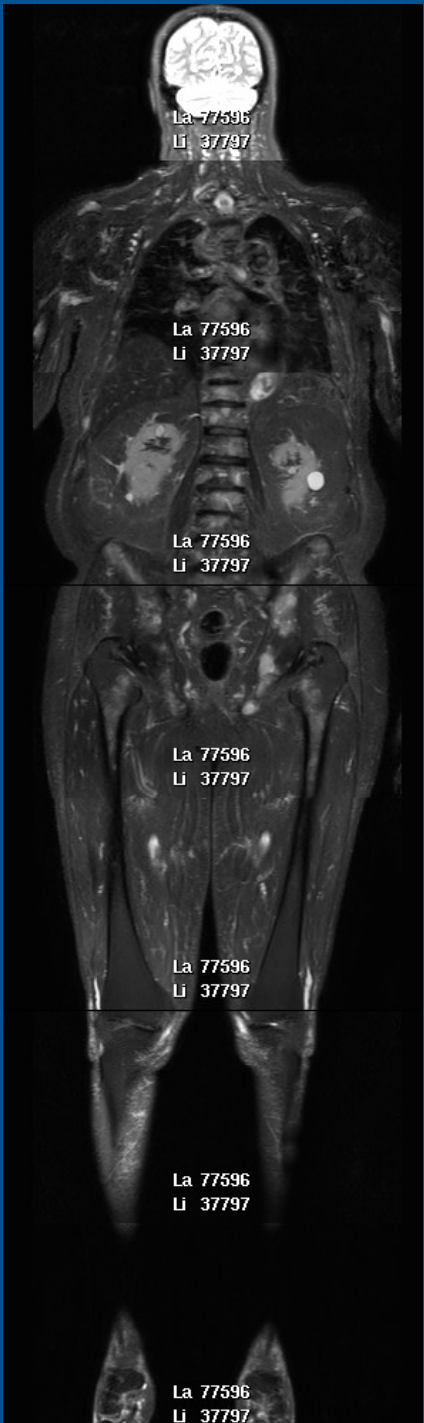
- Sequenze STIR sag cor
- Sequenze T1 sag cor
- Sequenze DWI



30
Minuti







M

WHOLE BODY RM:

- informazioni morfologiche e funzionali
- valutazione quantitativa pz a rischio elevato
 - * ripetibile
 - * utile nel follow up
- valutazione RISPOSTA ALLA TP
 - * 30-60 min

grazie