Vol. I - n. I - 2018

SCRIPTA MANENT EDIZIONI

# ADVANCES IN UROLOGICAL DIAGNOSIS AND IMAGING



**XXI CONGRESSO NAZIONALE**
**Trieste 3-5 Maggio 2018**
**Ospedale di Cattinara**

OFFICIAL JOURNAL of

S.I.E.U.N.

Italian Society of Integrated Diagnostic in Urology, Andrology, Nephrology

## T2-DERIVED TEXTURAL FEATURES IN MULTIPARAMETRIC MAGNETIC RESONANCE IMAGING OF PROSTATE CANCER: ROLE IN GRADING AND DIAGNOSTIC STRATIFICATION

Barabino E[1], Villa A[2], Revelli M[3], Chiesa F[2], Astengo D[2], Barillaro F[4], Conti E[4], Rosenberg I[2].

[1] *Università degli Studi di Genova, Scuola di Specializzazione in Radiodiagnostica, Genova (GE), Italia;*
[2] *ASL 5 "Spezzino" - Presidio Ospedaliero del Levante Ligure, S.C. Radiodiagnostica 2, Sarzana (SP), Italia;*
[3] *AUSL Reggio Emilia - IRCCS, Dipartimento di Diagnostica per Immagini e Medicina di Laboratorio, Ospedale "C. Magati", S.C. Radiologia 2, Scandiano (RE), Italia;*
[4] *ASL 5 "Spezzino" - Presidio Ospedaliero del Levante Ligure, S.C. Urologia, Sarzana (SP), Italia.*

**Introduction.** Texture Analysis in multiparametric magnetic resonance imaging of prostate has received little attention in scientific literature so far. The Gleason score is considered the gold standard for the assessment of PCa, but recently a new grading system has been proposed by the International Society of Urological Pathology (ISUP), providing a more accurate stratification of Pca. The purpose of our study was to evaluate the correlation between T2-derived textural features and the ISUP grading system.

**Materials and Methods.** We retrospectively evaluated 51 patients who underwent a pelvis multiparametric MRI examination for detection and local staging of prostate cancer; all patients underwent transrectal ultrasound-guided random biopsy or MRI/US fusion biopsy for histological assessment. All MRI examinations were performed with a 1.5-T scanner using a dedicated protocol, including an axial high resolution T2-weighted sequence. Textural features were extracted using LIFEx (Local Image Feature Extractor) Version 3.36 (CEA-SHFJ, Orsay, France) a freely available software.

**Results.** 11/51 patients were excluded because MR acquisitions did not allowed an accurate textural analysis, due to several limitations (i.e. small size, low conspicuity, image artifacts). The remaining patients were distributed as follows: 8/40 ISUP 1, 14/40 ISUP 2, 2/40 ISUP 3, 6/40 ISUP 4 and 10/40 ISUP 5. Texture analysis was performed in order to obtain 4 textural features: skewness, kurtosis, energy and entropy.

Skewness was the only textural feature that showed a significant correlation with the ISUP grade. Stratification of the cohort in low grade (ISUP 1 and 2) and high grade (ISUP 3, 4 and 5) prostate cancer resulted in an average skewness value of -0,03 (± 0,23) and 0,55 (± 0,33) respectively, showing a statistically significant difference between the 2 groups ($p < 0.05$ at Student's t) and an AUC of 0.929 at ROC curve analysis.

**Conclusion.** T2-derived skewness assessment with texture analysis showed a statistically significant difference between low grade and high grade groups, revealing as a promising tool in non-invasive characterization of prostate carcinoma.

## REBIOPSY OF THE PROSTATE: SATURATION TECHNIQUE AGAINST TARGET MPMRI FUSION BIOPSY

Fandella A[1], Guazzieri S[1], Guidoni E[2].

[1] *Casa di Cura Rizzola (San Donà di Piave VE);*
[2] *Pavanello multiAmbulatori (Ponte di Brenta).*

**Objective.** To evaluate the best strategy for the correct "detection rate" of significant prostate cancer (PC) in patients who must undergoing re biopsy. Saturation 24 sample in no MRI lesion against target biopsy with fusion technique in finding of Pirads 3-5 lesions.

**Materials and Methods.** In the period 1.2014- 12.2016 we performed consecutively mp-MRI in 221 high risk patients (62aa mean age (range 50 - 74), average PSA 13.53 ng/ml, (range 4.6 - 23), negative DRE) who need rebiopsy. 112 Negative mp-MRI underwent "saturation biopsy". 109 mp-MRI with lesion Pirads 3-5 underwent target fusion biopsy.

Each patient had already been subjected to at least one previous set biopsy with a number average of 12 samples. This indication was previous diagnosis of PIN/ASAP in 24 (16 pts PIN/ASAP 8 patients) or abnormal increase in the PSA.

Each procedure, performed outpatient basis, was conducted by transrectal way, patients with negative mp-MRI underwent saturation with peripheral block, using a schema biopsy default to 24 withdrawals. Patients with positive mp-MRI (Pirads 3-5) underwent target biopsy, 4 sample for each lesion, using Toshiba Aplio 500 fusion sofware.

**Results.** 112 patients saturation biopsy 36 PC (31 Gleason 6 e 5 Gleason ≥ 7) 76 BPH.

109 patients target biopsy 64 PC (6 Gleason 6 - 58 Gleason ≥ 7) - 45 BPH.

29 patients underwent surgery in saturation group; 2 pT3 and 27 pT2, no significant variation in Gleason Score.

58 patients underwent surgery in target fusion biopsy 53 pT3 and 5 pT2, no significant variation in Gleason Score.

**Discussions.** The indication for which there appears to be the best evidence for cost efficacy in prostate MRI is in the man with a negative prior ultrasound-guided prostate biopsy and continued clinical suspicion for prostate cancer (1). In the past clinical nomograms provided information about likelihood of repeated biopsies being positive, but did not provide guidance for localization of repeat biopsy (2). Similarly, additional tests and biomarkers have been shown to improve the performance of PSA in men with prior negative biopsy (3). Studies of MR guided biopsy in men with prior negative ultrasound biopsy have shown an increased rate of detection of high grade tumors, especially in the anterior prostate, a region often poorly sampled in ultrasound-guided biopsy (4). A study from 2015 showed both cost savings in using MRI to inform repeat biopsy and that a large portion of repeat biopsies could be avoided (5). In patients undergoing MR-guided biopsy after negative prior biopsy the possibility of avoiding systematic (non-targeted) biopsies as a cost saving measure has been raised. This approach should be used with caution as it appears that systematic biopsies still add value and detect some clinically relevant cancers in this setting (6). As MRI tech-

niques continue to refine and MRI use in prostate cancer management grows, MRI before repeat prostate biopsy is likely to become increasingly common.
Until recently, prostate biopsy for the detection of prostate cancer has been performed transrectally and in an untargeted sampling fashion. Consequently, the procedure has suffered a small but significant risk of severe morbidity through infection, and low diagnostic accuracy, with undergrading and missed diagnosis being common. MRI is revolutionizing prostate cancer diagnosis by improving detection accuracy via targeted biopsy (7).
In fact, there is now a growing evidence in the literature that (a) saturation PBx (>20 cores) (SPBx) might be indicated in patients with PSA
**Conclusion.** After a negative mp-MRI of the prostate running extended mapping biopsy ("saturation biopsy") has a detection rate of less than 30% but of Gleason 6 tumors, and nowadays probably is not recommended to rule out significant (high risk) prostate cancer.
The correct scheme of sample with a positive mp-MRI is under discussion, we think that, after previous negative prostate mapping biopsy, target samples could be sufficient to find potentially lethal prostate cancer. Detection rate is up to more than 60% and about all significant cancer.

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## Comparing Biparametric and Multiparametric Protocols for the Detection of Prostate Cancer: A viable way?


**Basso L[1], Migone S[2], Prono V[1], Secondini L[1], Barbagallo S[1], Verardo I[1], Neumaier CE[1].**

[1] *Ospedale Policlinico San Martino, Radiologia e Senologia Diagnostica – Genova (GE);*

[2] *Ospedale San Bartolomeo – Sarzana (SP).*


**Introduction.** The purpose of our study is to evaluate diagnostic performance of biparametric Magnetic Resonance (bp-MR) protocol, considered as the combination of T2 Weighted Imaging (T2-WI), Diffusion Weighted Imaging (DWI) and pre-contrast T1 Weighted Imaging (T1-WI), compared to multiparametric (mp-MR) protocol in Prostate Cancer (PCa) detection.
**Materials and Methods.** 84 patients (mean age 69,4) suspected to have PCa on the basis of clinical or laboratory data underwent mp-MR on 3T MRI scanner. Images were analyzed independently by two radiologists blinded to clinical data (R1 and R2) with 12 and 3 years of expertise, respectively. All suspected areas were evaluated according to PIRADS v2, expressing the location using the sector map. Sensitivity, Specificity, Negative Predictive Value (NPV) and Accuracy were calculated for both protocols and successively compared using Receiver Operating Characteristic (ROC) curve analysis. K Cohen was calculated.
**Results.** R1 showed sens of 90%, spec of 53%, NPV of 52% and accuracy of 84% using biparametric protocol. R2 showed sens of 92%, spec of 50%, NPV of 65% and accuracy of 83% using bp-MRI protocol. ROC curve analysis showed no significant difference between bp-MRI and mp-MRI protocol for both readers (PR1 = 0,7915 e PR2 = 0,3475).
**Conclusion.** Our results suggest a similar statistically proven diagnostic performance of bp-MR compared to mp-MRI protocol. Omitting perfusion sequence in diagnostic protocol allow to reduce protocol acquisition time, costs related to contrast agent and adverse effects coming from its administration, making MRI faster and more suitable to face a so high prevalence disease.

## Plasmakinetic Bipolar Transurethral Resection of the Ejaculatory Ducts: A case report


**Saldutto P[1], Piccirilli A[1], Maselli G[2], Dell'Atti L[2], Galosi AB[2], Vicentini C[1].**

[1] *Clinica Urologica Università degli Studi di L'Aquila, Ospedale Civile Giuseppe Mazzini – Teramo;*

[2] *Clinica Urologica, Ospedali Riuniti Torrette – Ancona.*


**Introduction.** Ejaculatory duct obstruction (EDO) remains a relatively rare cause of infertility, hemospermia, chronic pelvic pain, painful ejaculation and lower urinary tract symptoms (LUTS) and affects about 5% of infertile men. Congenital and acquired causes have been described. Congenital causes include median utricular (Mullerian duct remnants) cysts and paramedian diverticular (Wolffian duct remnants) cysts (1). Surgical treatment is the transurethral resection of ejaculatory ducts