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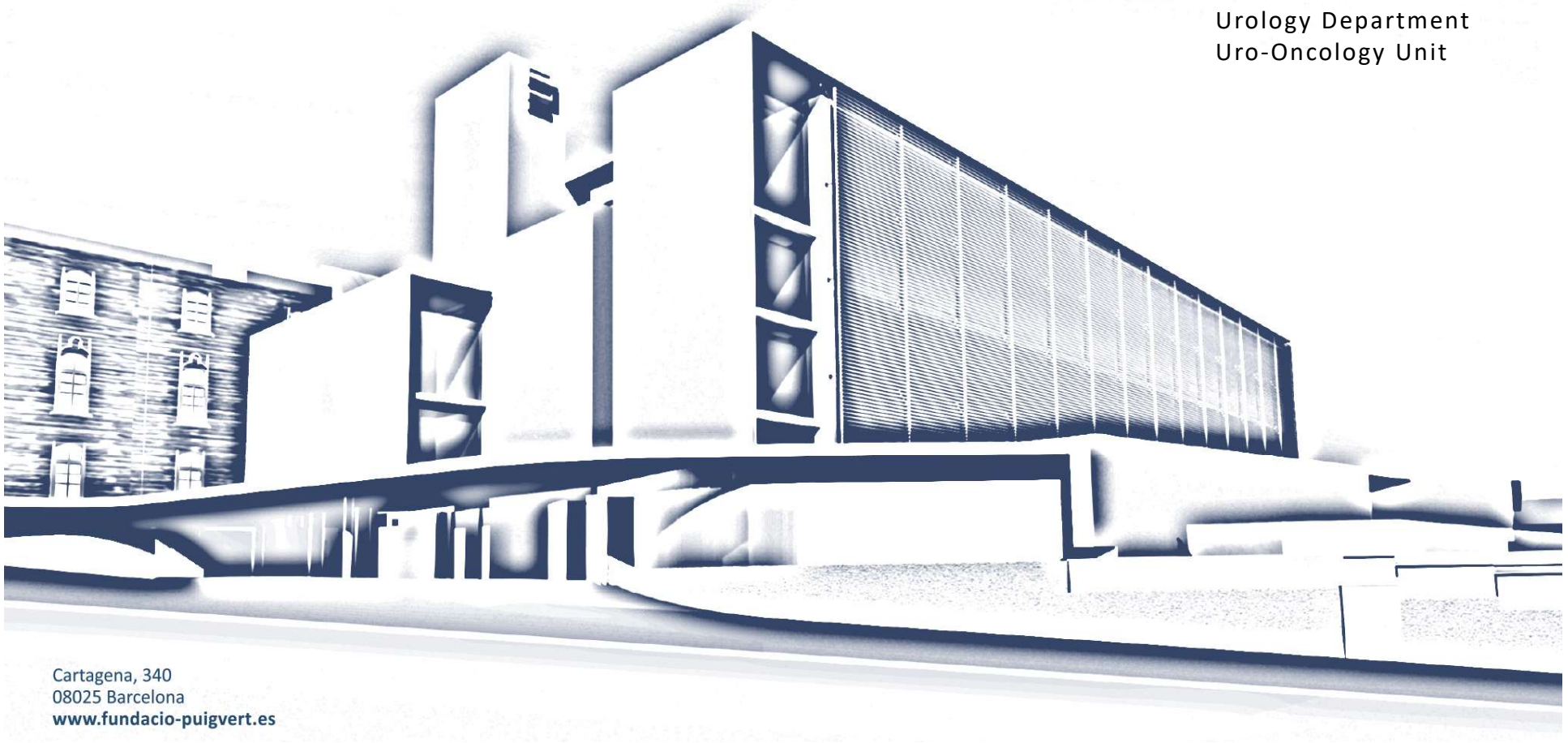

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Nomogram including maximum length core at biopsy and index lesion size at mpMRI best predicts the extracapsular extension of prostate cancer at whole-mount sections of radical prostatectomies

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BACKGROUND AND OBJECTIVES

The accuracy of mpMRI in predicting extracapsular extension (ECE) of prostate cancer (PCa) is limited.

The PIRADS scoring system includes the 15 mm index lesion (IL) size as a cut-off to distinguish between scores 4 and 5, and it was introduced for its relationship to ECE.

We have analysed clinical and radiological parameters to select and integrate the most relevant features in a new nomogram for the prediction of ECE.

MATERIAL & METHODS -1

From 01/2013 to 12/2017, 128 patients had an mpMRI (T2W, DWI and DCE) before undertaking a radical prostatectomy (RP).

Clinical parameters included PSA, PSA density (PSAd), clinical stage (cT); ISUP grade group (Gg) and maximum length cancer in a core (MLC) at TRUS biopsy.

mpMRI features included index lesion size (IL), length of capsular contact (LCC),PIRADS v2 score, overall prostate LIKERT score, ESUR ECE score and LIKERT ECE score.

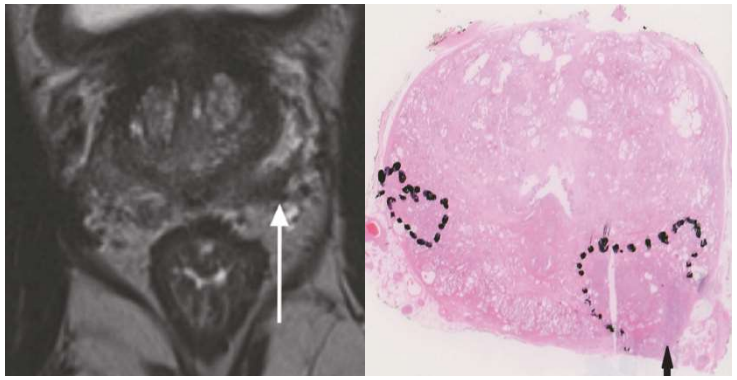
MATERIAL & METHODS -2

Two experienced radiologists retrospectively reviewed the imaging studies blinded to the final histology.

Reference standard was the histology features at whole-mount specimen sections.

Variables resulting associated to ECE at univariate analysis were dichotomised as appropriate.

Neurovascular Bundle Thickening in a 62-years old pt



RESULTS -1

mpMRI features		
Variable	Reader 1	Reader 2
Index lesion size median (IQR)	15 (10)	13 (10)
PIRADS v2 score n (%)	(n=102)	(n=121)
1-3	19 (18.62)	26 (21.49)
4	38 (37.25)	52 (42.98)
5	45 (44.12)	43 (35.54)
ESUR score n (%)	(n=100)	(n=123)
1-3	75 (75.00)	93 (75.61)
4	22 (22.00)	23 (18.70)
5	3 (3.00)	7 (5.69)
ECE LIKERT score n (%)	(n=119)	(n=123)
1-3	93 (78.15)	99 (76.43)
4	21 (17.65)	22 (17.89)
5	5 (4.20)	7 (5.69)
Overall LIKERT score n (%)	(n=118)	(n=123)
1-3	31 (26.27)	33 (26.83)
4	37 (31.36)	36 (29.27)
5	50 (42.37)	54 (43.90)

ICC were good for PIRADS, ESUR and overall/ECE LIKERT (0.752, 0.810, 0.834, 0.857, respectively), and substantial for IL size (0.916).

RESULTS -2

Variables introduced in the multivariate model resulted to be the cT (<T2≥), Gg (<7≥), MaxLengthCore(<5.5≥ mm), IL (<11≥ mm), PSAd (<0.26≥), PIRADS (≤4>), ESUR (≤2>), LIKERT (≤4>).

Clinical, pathological and mpMRI features associated to ECE at multivariate logistic regression analysis

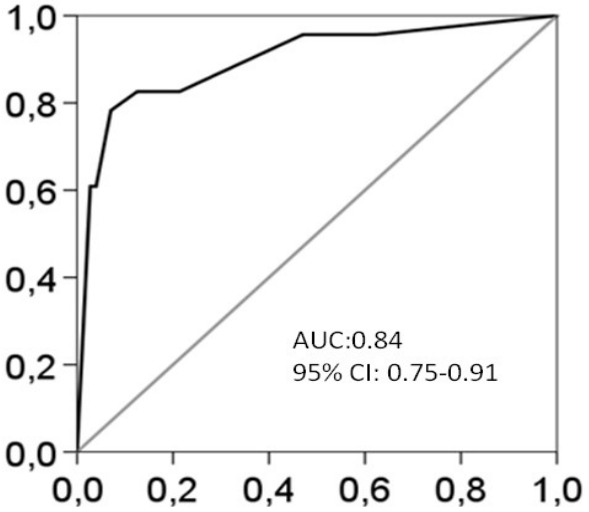
Variable	Multivariate		
	OR	95%CI	p-value
Clinical stage (T1 vs ≥T2)	4.59	1.40 – 17.21	0.016
Max length core ≤5.5 vs >5.5	14.01	4.07 – 61.94	<0.001
IL size at mpMRI (≤11 vs >11)	10.98	1.95 – 78.39	0.010

RESULTS -3

The probability for ECE with the combination of the three variables was 81.8%.

The AUC of the model in a ROC analysis was 0.84 [95%CI(0.75-0.91)], p<0.001.

The calibration analysis resulted in a good fit of the model
(Hosmer-Lemeshow *p*=0.985; R^2=56.52%).



CONCLUSION

It is confirmed that mpMRI utility alone on local staging is limited due to imaging resolution.

Current mpMRI scoring systems do not appropriately predict ECE

The combination of clinical and mpMRI features best predicts ECE at radical prostatectomy.

The 15 mm cut-off distinguishing PIRADS score 4 to 5 should be lowered.

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Thanks for your attention

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