



# External Validation of the 2019 Briganti Nomogram for the Identification of Prostate Cancer Patients Who Should Be Considered for an Extended Pelvic Lymph Node Dissection

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## INTRODUCTION

Multiparametric MRI (mpMRI) dramatically changed the diagnostic pathway of prostate cancer (PCa). The 2019 Briganti nomogram has been developed to calculate the risk of lymph node invasion (LNI) in patients diagnosed with MRI-targeted biopsy. Although it depicted promising characteristics, its implementation in the clinical practice is limited by the lack of a formal external validation.

We aimed at validating the 2019 Briganti nomogram to identify candidates for an extended pelvic lymph node dissection (ePLND) in a contemporary cohort of patients diagnosed with MRI-targeted biopsy.

## MATERIALS AND METHODS

Overall, 487 patients diagnosed using MRI-targeted with concomitant systematic biopsy who received radical prostatectomy (RP) and ePLND at seven European tertiary referral centers were identified.

The ROC-derived operating characteristic curve (AUC), calibration plots, and decision curve analysis (DCA) were used to externally validate the 2019 Briganti nomogram. We then compared the performances of the 2019 Briganti nomogram with available models developed in men diagnosed with systematic biopsy such as the MSKCC risk calculator, the 2012 and 2017 Briganti nomograms.

## CONCLUSIONS

We performed the first external validation of the 2019 Briganti nomogram predicting LNI in PCa patients diagnosed with MRI-targeted biopsy. The model showed excellent performance characteristics and highest AUC as well as better calibration and higher net-benefit compared to available tools. The Briganti 2019 nomogram should be adopted to identify candidates for ePLND among men diagnosed with MRI-targeted biopsy.

Patients characteristics

| VARIABLES                              | OVERALL (n=487)  |
|--|------------------|
| Age at diagnosis                       | 65 (60; 69)      |
| PSA at diagnosis (ng/mL)               | 7,6 (5.5; 10.8)  |
| Number of lesions                      | 1 (1; 2)         |
| Max PIRADS of the index lesion         |                  |
| 3                                      | 27 (5%)          |
| 4                                      | 268 (56%)        |
| 5                                      | 185 (39%)        |
| Max diameter of the index lesion, mm   | 11 (8; 16)       |
| Number of biopsy cores                 | 14 (13; 15)      |
| Extracapsular extension on mpMRI       | 79 (16%)         |
| Seminal vesicle invasion on mpMRI      | 20 (4%)          |
| Grade Group on targeted Biopsy         |                  |
| 1                                      | 72 (14%)         |
| 2                                      | 221 (45%)        |
| 3                                      | 124 (25%)        |
| 4                                      | 52 (11%)         |
| 5                                      | 18 (4%)          |
| GG in systematic Biopsy                |                  |
| Negative                               | 49 (10%)         |
| 1                                      | 70 (14%)         |
| 2                                      | 234 (48%)        |
| 3                                      | 69 (14%)         |
| 4                                      | 47 (10%)         |
| 5                                      | 18 (4%)          |
| Pathologic T stage                     |                  |
| 2                                      | 266 (55%)        |
| 3a                                     | 160 (33%)        |
| 3b/4                                   | 61 (13%)         |
| Lymph node invasion on final pathology | 38 (8%)          |
| Number of nodes removed                | 18.0 (14.0-24.0) |

Discrimination of available models

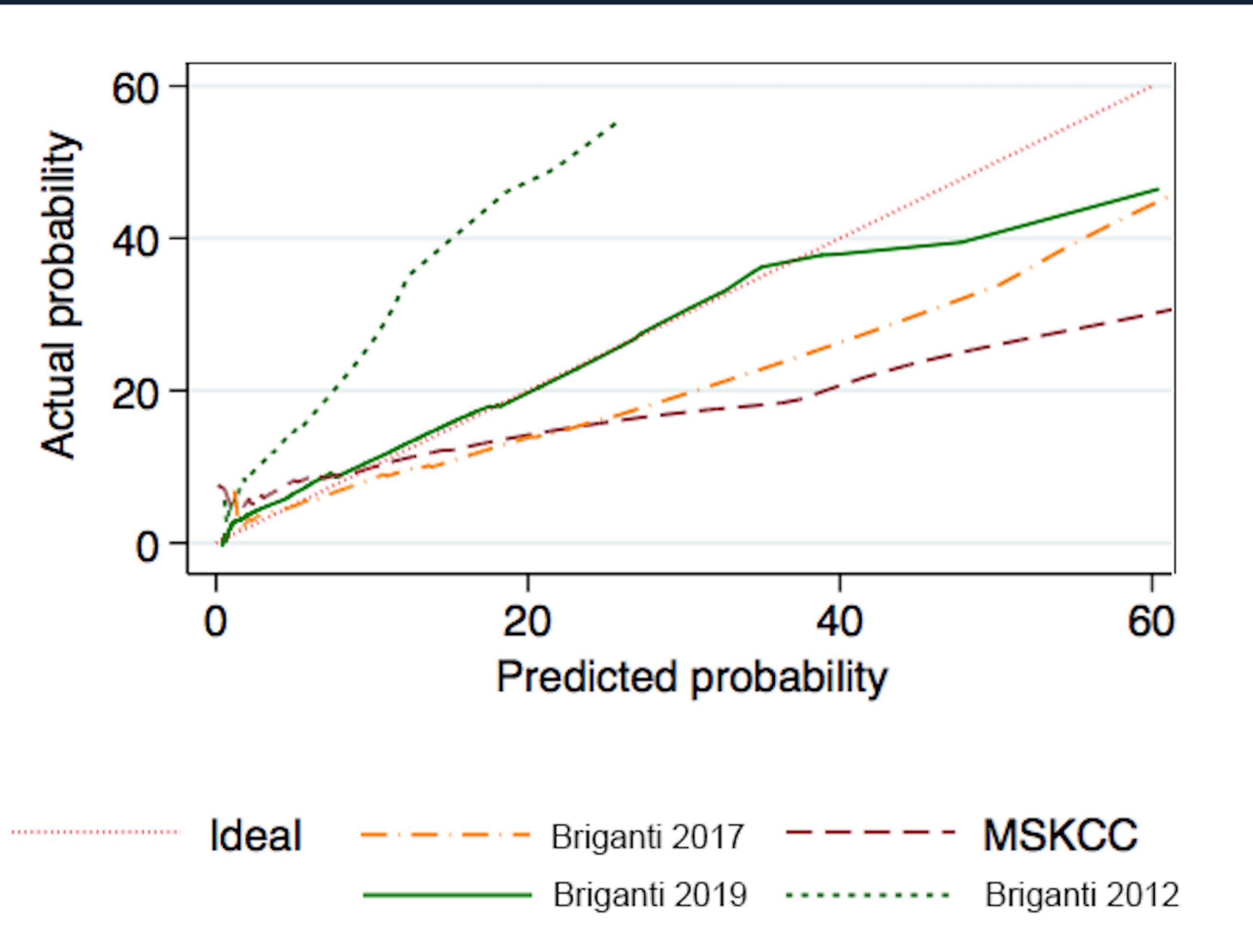
| Model         | AUC |
|---------------|-----|
| MSKCC         | 74% |
| Briganti 2012 | 75% |
| Briganti 2017 | 65% |
| Briganti 2019 | 79% |

Implications of the implementation of the 2019 Briganti nomogram

| Cut-off | Number of PLND spared | Number of LNI missed |
|---------|-----------------------|----------------------|
| 7%      | 274 (56%)             | 7 (2.6%)             |

## RESULTS

Calibration plot



Decision-curve analysis

