

External validation of the Briganti nomogram in tertiary Belgian centers

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Introduction

- When Radical Prostatectomy (RP) is performed, **up to 15%** of patients have a lymph node invasion (LNI) (1)
- Looregional lymph node status is a **major prognostic factor** and correct nodal staging is mandatory to identify patients who should receive additional therapies (2)
- Extended pelvic lymph node dissection (ePLND) increases **the risk of complications** and should only be performed in patients with high-risk or intermediate risk PCa when the probability of LNI is more than 5%
- Guidelines suggest to use the **Briganti or MSKCC** nomograms to predict the risk of LNI (3)

The aim of our study was to validate the updated Briganti nomogram in 2 tertiary Belgian centers

Methods

- Between 2011 and 2017, **408 consecutive patients** were treated by robotic-assisted laparoscopic radical prostatectomy (RALAP) with **ePLND** for clinically localized PCa in two tertiary centers
- Decision on lymph node dissection was left to the discretion of the surgeons
- Uni and multivariable logistic regressions** were performed to determine preoperative data (PSA, clinical stage, primary and secondary biopsy Gleason grade and percentage of positive cores) as predictors factors for LNI
- Areas under the receiver operating characteristics curves** (AUC) were used to calculate the accuracy of our model

Results

Table 1. Patients characteristics

	Overall n=408	Briganti n= 588
Age, yr (median, IQR)	66 (61-70)	65 (60-70)
PSA, ng/ml (median, IQR)	9,5 (6,4 – 15,1)	8 (4,8 – 8,9)
Clinical stage (%)		
T1	141 (34,6)	373 (63,4)
T2	196 (48,0)	184 (31,3)
T3	71 (17,4)	31 (5,3)
Primary Gleason Grade (%)		
≤3	212 (52,0)	488 (83,0)
≥4	196 (48,0)	100 (17,0)
Secondary Gleason Grade (%)		
≤3	145 (35,6)	406 (69,0)
≥4	263 (64,4)	182 (31,0)
No. of cores taken (median, IQR)	12 (12 – 15)	17 (13 – 24)
No. of positive cores (median, IQR)	5 (3 - 8)	7 (3 -10)
Pathological stage (%)		
pT2	176 (43,1)	431 (73,3)
pT3/pT4	232 (56,9)	157 (26,6)
No. of removed lymph nodes (median, IQR)	16 (11 – 20)	19 (15 – 25)
No. of positive lymph nodes in patients with LNI (median, IQR)	1 (1 – 3)	2 (1 – 3)

Table 2a-b. Uni-multivariate analysis for prediction of LNI

	Odds Ratio	P value	AUC (%)
PSA, ng/ml	1,02	< 0,001	0,5989
Clinical stage	2,00	0,07	0,6676
Primary Gleason grade	2,29	< 0,001	0,6125
Secondary Gleason grade	1,68	0,022	0,5680
Percentage of positive cores, %	1,02	< 0,001	0,6785
Multivariable analysis (PSA, clinical stage, primary and secondary Gleason grade, percentage of positive cores)	1,036	< 0,001	0,7715

Table 3. Interest of ePLND depending on LNI cut-off

Briganti nomogram calculated of LNI cut-off (%)	Patients in whom ePLND is not recommended according to the cut-off (below cut-off) (%)	Patients in whom ePLND is not recommended without histologic LNI (%)	Patients in whom ePLND is not recommended with histologic LNI (%)	Patients in whom ePLND is recommended according to the cut-off (above cut-off) (%)	Patients in whom ePLND is recommended without histologic LNI (%)	Patients in whom ePLND is recommended with histologic LNI (%)
5	93 (22,8)	89 (21,8)	4 (1)	315 (77,2)	260 (63,7)	55 (13,5)
6	106 (26,0)	101 (24,7)	5 (1,3)	302 (74,0)	248 (60,8)	54 (13,2)
7	140 (34,2)	134 (32,8)	6 (1,4)	268 (65,8)	215 (52,8)	53 (13,0)
8	165 (40,5)	157 (38,5)	8 (2,0)	243 (59,5)	192 (47,0)	51 (12,5)
9	189 (46,3)	178 (43,6)	11 (2,7)	219 (53,7)	171 (41,9)	48 (11,8)
10	212 (51,9)	200 (49,0)	12 (2,9)	196 (48,1)	149 (36,5)	47 (11,6)

Discussion

- We demonstrated an external validation of the updated Briganti nomogram with a promising accuracy (AUC 0,77) in a Belgian cohort**
- Some notable limitations has to be noted:
 - ePLND was based on **clinical decision**, not always guided by the Briganti nomogram.
 - The optimal way to evaluate the accuracy of the nomogram is to perform an **ePLND to all the patients** (ethically issue).
 - mpMRI findings and targeted biopsies** were not taken into account.

Bibliography

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