

DETERMINANTS OF TUMOUR UPGRADING AND PATHOLOGICAL INSIGHTS IN YOUNG PATIENTS (<55 YEARS) UNDERGOING RADICAL PROSTATECTOMY

R Sharma¹, M Moschovas^{1,3}, S Saikali¹, Y Ozawa¹, M Sandri², Y Fikret⁴, A Gamal¹, T Rogers¹, V Patel^{1,3}

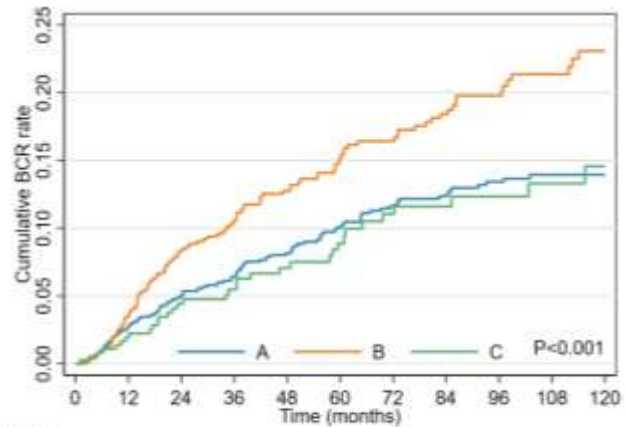
1. Global Robotics Institute, Advent Health, Celebration, Florida, US
2. Data Methods and Systems Statistical Laboratory, University of Brescia, Brescia, Italy
3. University of Central Florida, Orlando, Florida, USA

Introduction

- **PCa in Younger Men:** Rising incidence (6.7% of new cases) due to PSA screening & MRI.
- **Issue:** Limited research on risk stratification in men ≤55.
- **Challenge:** Pathological upgrading—biopsy underestimates tumor aggressiveness.
- **Risk Factors:** PSA >10 ng/mL, PSA density, lower ISUP Grade Group, % core involvement.
- **Study Goal:** Identify preoperative predictors of upgrading in men <55 undergoing RP.
- **Impact:** Improve risk assessment, treatment decisions, and long-term outcomes.

Methods

- **Study Type:** Retrospective cohort study
- **Objective:** Identify preoperative factors predicting ISUP GG upgrading in men <55 undergoing RARP
- **Timeframe:** 14 years (2010-2024)
- **Data Source:** GRI database
- **Cohort Size:** 2,585 patients
- **Follow-up:** BCR, continence, and potency (2010-2021, minimum 3-year follow-up)
- **Data Collected:** Demographic, clinical, pathological, and follow-up variables (Oncological, continence and potency)
- **Exclusion:** Prior radiotherapy or prostate surgeries estimated using the Kaplan-Meier method, with group differences evaluated using the log-rank test. Statistical significance was set at $p < 0.05$.



Num. at risk	A	B	C
0	1270	1133	1004
12	872	753	627
24	535	451	384
36	298	218	134
48	134	67	67
60	67	67	67
72	67	67	67
84	67	67	67
96	67	67	67
108	67	67	67
120	67	67	67

Figure 1: Cumulative BCR Over 10 year follow up Across Groups A, B, and C

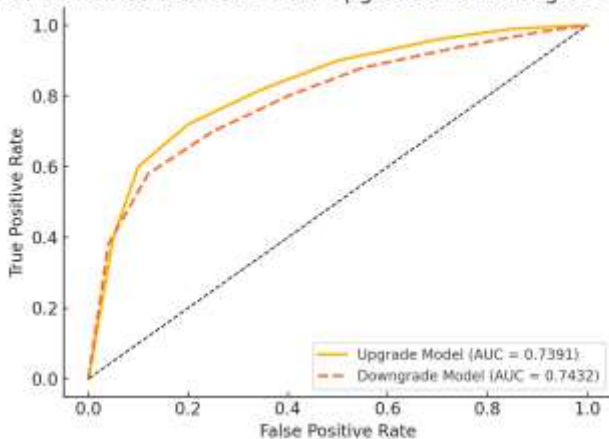
Variable	Odds Ratio	P-Value
Preop ISUP (2 vs 1)	0.183	0.000
Preop ISUP (3 vs 1)	0.105	0.000
Preop ISUP (4 vs 1)	0.296	0.000
log ₁₀ (PSA density)	7.45	0.000
log ₁₀ (biopsy core positivity %)	2.82	0.000
CAPRA Group (Interm. vs Low)	2.69	0.002
CAPRA Group (High vs Low)	3.24	0.001

Table 1: Tumor Upgrade - Significant Variables

Variable	Odds Ratio	P-Value
Preop ISUP (2 vs 5)	0.258	0.000
Preop ISUP (3 vs 5)	1.69	0.051
Preop ISUP (4 vs 5)	2.61	0.001
log ₁₀ (PSA)	0.46	0.014
CAPRA Group (Interm. vs Low)	1.60	0.129
CAPRA Group (High vs Low)	2.37	0.023

Table 1: Tumor Downgrade - Significant Variables

Final Combined ROC Curve for Upgrade and Downgrade Model



Conclusion

- **Higher Risk of Upgrading:** Seen in low-risk D'Amico with high PSA density & high-risk CAPRA.
- **Smoking Factor:** Linked to increased pathological progression.
- **Oncological Impact:** Upgraded tumors had worse long-term outcomes.
- **Functional Recovery:** Continence & potency remained similar across groups.
- **Need for Better Stratification:** Improved tools required for younger patients.
- **Guideline Update:** Clinical criteria may need revision for precise risk prediction.