Central European Journal of Urology

ORIGINAL PAPER

UROLOGICAL ONCOLOGY

Does body mass index affect the proper pre-operative grade and stage assessment in patients with prostate cancer undergoing radical prostatectomy?

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Citation: Drewa J, Adamowicz J, Juszczak K. Does body mass index affect the proper pre-operative grade and stage assessment in patients with prostate cancer undergoing radical prostatectomy? Cent European J Urol. 2026; 79: 118-125.

Article history
Submitted: Nov. 29, 2025
Accepted: Feb. 1, 2026
Published online: Mar. 26, 2026

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Introduction Accurate pre-operative assessment of prostate cancer (PCa) grade and stage is critical for determining the optimal treatment strategy and predicting oncological outcomes. Body mass index (BMI) may affect the diagnostic accuracy of pre-operative evaluations.
Aim of the study is to investigate whether BMI affects the accuracy of pre-operative grade and stage assessment in patients PCa who undergo robotic-assisted radical prostatectomy (RARP).
Material and methods This retrospective study analyzed 338 patients with PCa who underwent RARP, assessing concordance between preoperative and postoperative tumor grade (ISUP, Gleason) and stage (TNM) across BMI categories. Correlations between BMI and histopathological parameters were examined, and potential risk factors for underestimation in preoperative evaluation were identified.
Results The median age and BMI of the cohort was 67 years. The median BMI was 27.4 with 49.7% overweight and 25.6% obese. Upstaging occurred in 56.4% of cases, with concordance in 34.9% and overestimation in 8.7%. Underestimation rates increased progressively with BMI – 51.8% (normal weight), 54.5% (overweight), and 65.4% (obese). Similarly, ISUP grade concordance declined with higher BMI, from 48.7% in normal-weight to 31.2–33.8% in obese patients, paralleled by higher underestimation (34–36% vs 49–54%). Gleason score concordance also fell with increasing BMI, while underestimation rose accordingly. Although BMI correlated weakly with most postoperative pathological parameters, higher BMI was significantly associated with underestimation of grade and stage. Metabolic comorbidities (particularly hypertension and diabetes) further amplified this trend.
Conclusions Elevated BMI is associated with a progressively increased risk of underestimating PCa grade and stage during preoperative assessment. The reduced concordance across TNM staging, ISUP grading, and Gleason scoring is observed in obese patient with PCa. Due to the risk of underestimating PCa, patients in this group should be very cautiously selected for active surveillance.

Key Words: prostate cancer ‹› obesity ‹› underestimation ‹› active surveillance ‹› radical prostatectomy

INTRODUCTION

Obesity has become increasingly prevalent worldwide and is recognized as an important modifier of cancer risk and progression. The relationship between obesity and the risk of prostate cancer is still unclear. Obese patients with prostate cancer present a higher risk for dying of prostate cancer [1]. Moreover, obesity predisposes men to more aggressive form of prostate cancer [2, 3]. Previous meta-analyses indicate a positive association between prostate cancer and obesity [4]. Body mass index (BMI) >25 was associated with an increased risk of prostate cancer and mortality [5]. Optimal

pre-operative assessment (staging and grading) of patients with prostate cancer are essential for proper radical treatment especially radical prostatectomy. Pre-operative assessments of patient with prostate cancer relies primarily on digital rectal examination (DRE), prostate-specific antigen (PSA) level, multiparametric magnetic resonance imaging (mpMRI) of the prostate, and prostate biopsy. Despite advances in imaging techniques (transrectal ultrasonography, mpMRI) and prostate biopsy techniques, discrepancies frequently arise between clinical and pathological findings following radical prostatectomy. Singh et al. [6] results on a cohort of 174 patient revealed the discordance between Gleason scores obtained from transrectal prostate biopsy and robotic-assisted radical prostatectomy (RARP) surgical specimens (in 75 cases showing up-grading, and in 8 cases down-grading). In obese patients the discrepancies between pre-operative and post-operative findings were describes. In most of the cases the tendency to pre-operative stage and grade underestimation has been observed. Obesity could be related to more aggressive form of prostate cancer, as well as the differences in the Gleason score between the biopsy and the final specimen [7]. It was postulated that obesity may affect the proper accuracy of staging and grading in different cancers [8, 9]. Obesity may affect the prostate cancer detection and staging.
Therefore, the purpose of the current study was to evaluate whether BMI affects the accuracy of preoperative grade and stage assessment (derived from prostate biopsy results and magnetic resonance imaging findings) of prostate cancer in patients undergoing robotic-assisted radical prostatectomy.

MATERIAL AND METHODS

The retrospective analysis was performed in a cohort of 338 patients who underwent RARP for prostate cancer. The relevant information of patients with prostate cancer was retrieved from the medical record database. Clinical, demographic, imaging, and histopathological data were collected. According to World Health Organization (WHO) criteria, the patients were stratified into BMI categories, as follows: 1) normal weight, 2) overweight, 3) obese. Preoperative assessments included PSA, MRI (PiRADS classification), and prostate biopsy for ISUP grade and Gleason score. Postoperative evaluation incorporated full pathological staging and grading.

Study protocol

This clinical retrospective study is intended to quantify the frequency and magnitude of discrepancies, with a specific focus on instances of underestimation regarding disease stage and grade of prostate cancer in the preoperative assessment. An additional secondary objective involves examining the influence of body mass index on preoperative clinical staging (cTNM) and histological grading (ISUP grade groups and Gleason scores from biopsy), accounting for the notable prevalence of overweight (49.7%) and obesity (25.6%) within the cohort and their potential links to higher-risk disease attributes. Finally, a further secondary objective is to evaluate the impact of body mass index on postoperative histopathological parameters, including pathological staging (pTNM), lymph node involvement, lobe-specific tumor characteristics such as percentage involvement and capsular breach, organ boundary extensions, highest tumor grades, cribriform patterns, and extraprostatic extension, to determine any correlations between elevated body mass index and adverse outcomes in the surgical specimen.

Statistical analysis

All analyses were conducted with a predefined statistical significance threshold of $p < 0.05$. Continuous variables were summarized using medians accompanied by interquartile ranges (first and third quartiles) and overall ranges (minimum and maximum), while categorical variables were expressed as counts with corresponding percentages, calculated based on non-missing observations. Comparisons between two independent groups for continuous variables employed the Wilcoxon rank sum test to evaluate differences in medians. For categorical variables, Pearson's χ^2 test was applied where appropriate, with Fisher's exact test utilized in instances of low expected cell frequencies to ensure robustness in assessing associations. Discrepancies between preoperative and postoperative assessments – categorized as concordance, underestimation, or overestimation – were quantified through contingency tables, with distributions presented as absolute counts and percentages, both overall and stratified by body mass index categories. Transitions in staging and grading were visualized via alluvial plots, which depicted patient flows across categories, incorporating stratum-specific group sizes and color-coded classifications to facilitate interpretation of shifts. Correlations between body mass index and postoperative histopathological parameters were examined using Blomqvist's coefficient for numeric pairings (Blomqvist, 1950) and point-biserial correlation for dichotomous outcomes, reported with 95% confidence intervals

to quantify the strength and direction of relationships. Subgroup analyses within extraprostatic extension cases further explored grade distributions to identify patterns of association with underestimation. The term "up- or down-staging" and "up- or down-grading" were used for strict description of changes in T stage and ISUP grade. The terms "over-/under-estimation" were used to described the changes of analysed parameters in pre- and post-operative assessment. The concordance refers to agreement or consistency between pre- and postoperative results.

Bioethical standards

This retrospective study was approved by the Ethics Committee of Nicolaus Copernicus University in Torun (No KB 272/2025).

RESULTS

Patients characteristics

The median patient age was 67.0 years (IQR 63.0–72.0). BMI averaged at a median of 27.4 kg/m^2 (IQR: 25.0–30.1 kg/m^2), placing nearly half (49.7%) in the overweight category and an additional 25.6% as obese. Comorbidities included hypertension (56.2%), diabetes (20.7%), neurological disorders (3.0%), and kidney disease (1.2%), while asthma and gout each impacted around 4–6%. The ASA classification further delineated physical status, with scores of 2 and 3 encompassing 96.7% of the group (40.8% and 55.9%, respectively).

Preoperative assessment and risk stratification

Biopsy findings revealed a predominance of lower-grade disease, as ISUP grade groups 1 and 2 accounted for 70.9% (41.2% and 29.7%), with Gleason scores mirroring this at 87.2% for scores 6 and 7. Higher grades (ISUP 3-5) comprised the remaining 29.0%, underscoring a cohort skewed toward intermediate-risk rather than high-risk pathology at initial evaluation. Tumor localization showed bilateral involvement in 45.9%, with unilateral cases split between left (24.1%) and right (30.0%) lobes, reflecting varied anatomical patterns. Clinical examination via digital rectal examination identified abnormalities in 43.7%, while prostate volume measured a median of 40.0 ml (IQR: 30.0–51.0 ml). Preoperative PSA levels had a median of 8.0 ng/ml (IQR: 5.4–12.0). MRI evaluations emphasized high-suspicion lesions, as PiRADS 4-5 scores dominated in over 80% of both lobes (81.1% left, 82.1% right), and capsular infiltration appeared in 25.8%. TNM staging preoperatively classified 81.3% as cT1 or cT2, with only 17.0% at cT3 or higher, portraying a group largely viewed as localized prior to surgery.

Evaluation of preoperative and postoperative prostate cancer staging and grading assessments

TNM

The cross-tabulation of preoperative and postoperative TNM staging for the 218 patients with complete data in both assessments revealed the substantial shifts, underscoring the limitations of preoperative evaluations in accurately delineating disease extent (Table 1). Specifically, among patients preoperatively staged as cT1 (n = 72), 50.0% experienced upstaging, with 36.1% advancing to pT3a and 13.9% to pT3b. Similarly, for those staged as cT2 (n = 105), 40.0% were upstaged, including 24.8% to pT3a and 16.2% to pT3b – trends potentially attributable to biopsy sampling errors or occult extracapsular extension undetected on magnetic resonance imaging. Downstaging occurred infrequently, notably in 40.0% of cT3a cases (n = 25, shifting to pT2) and 44.4% of cT3b cases (n = 9, shifting to pT2), indicating a conservative bias in preoperative staging that may occasionally overestimate local advancement (Figure 1). Lymph node metastases were rare (0.3%), confirming primarily organ-confined disease.

Our results demonstrate a predominant pattern of underestimation in preoperative TNM staging relative to postoperative histopathological findings, accounting for 56.4% of cases overall, with concordance observed in 34.9% and overestimation in a minority (8.7%). Stratification by BMI category reveals a progressive increase in underestimation rates – from 51.8% in normal weight patients to 54.5% in overweight and 65.4% in obese individuals – accompanied by a corresponding decline

Table 1. *Contingency table of preoperative vs postoperative TNM staging for overall sample (n = 218)*

Preoperative	Postoperative					
	pT0	pT1	pT2	pT3a	pT3b	pT4
cT0	0	0	3	1	0	
cT1	0	0	36	26	10	
cT2	1	0	61	26	17	
cT3a	0	0	10	11	4	0
cT3b	0	0	4	1	4	0
cT4	0	0	1	1	1	0

in concordance (37.5%, 36.4%, and 28.8%, respectively). Overestimation rates exhibit a modest decrease across these groups (10.7%, 9.1%, and 5.8%), indicating a possible gradient where higher BMI correlates with greater diagnostic discordance (Table 2).

ISUP grade

The cross-tabulations of preoperative ISUP grade groups obtained from biopsy against postoperative ISUP grades for the highest grade, based on 310 patients with paired data are presented in Table 3. The highest grade table emphasizes maximal tumor aggressiveness, with 58 true upgrades from preoperative grades 1–3 to higher grades (13 from grade 1, 34 from grade 2, and 11 from grade 3 to grades 4-5). The shifts in ISUP grade from preoperative to postoperative highest score assessments was presented in Figure 2. Stratification by BMI categories discloses a discernible gradient in discrepancy rates. Concordance is highest among normal weight patients (48.7% across comparisons) and diminishes progressively in overweight (44.2% to 49.4%) and obese (31.2% to 33.8%) groups. In contrast, underestimation intensifies with increasing BMI, ranging from 34.2% to 35.5% in normal weight individuals to 48.8% to 53.8% in those with obesity, whereas overestimation remains comparatively stable (13.0% to 17.5%). With respect to the impact of elevated BMI on concordance, the data exhibit a consistent inverse relationship: concordance decreases as BMI rises, with obese patients showing 14.9% to 17.5% lower rates rela-

Table 2. *Distribution of staging discrepancies between preoperative and postoperative TNM assessments, overall and stratified by body mass index categories*

Discrepancy type	Overall n (%)	Normal weight n (%)	Overweight n (%)	Obesity n (%)
Concordance	76 (34/9)	21 (37.5)	40 (36.4)	15 (28.8)
Underestimation	123 (56.4)	29 (51.8)	60 (54.5)	34 (65.4)
Overestimation	19 (8.7)	6 (10.7)	10 (9.1)	3 (5.8)

Table 3. *Contingency table of preoperative biopsy vs postoperative highest grade ISUP grades (n = 310)*

Preoperative biopsy	Postoperative highest grade				
	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
Grade 1	44	70	8	3	2
Grade 2	9	51	16	15	3
Grade 3	3	15	20	9	2
Grade 4	4	7	3	12	8
Grade 5	0	0	3	0	3

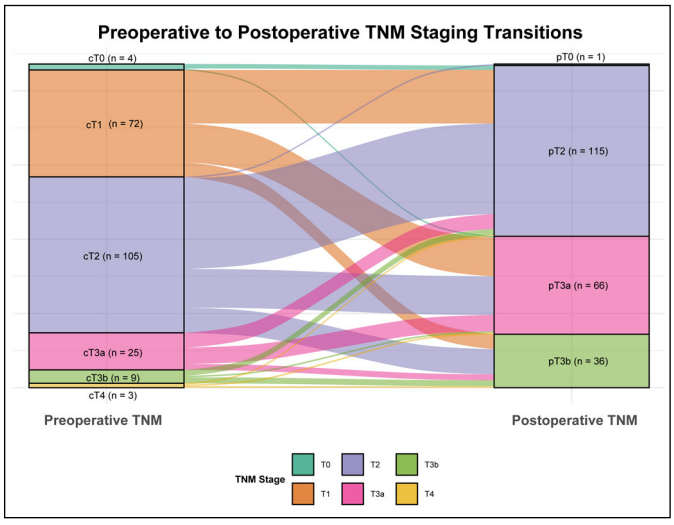

Figure 1. *TNM staging transitions from preoperative to postoperative assessments following RARP, with stratum-specific group sizes and color-coded TNM categories (n = 218). The figure visualizes the changes in TNM tumors staging from preoperative clinical assessment (cT) to postoperative pathological assessment (pT). It shows how patients move between different T stages before (cT) and after surgery (pT).*

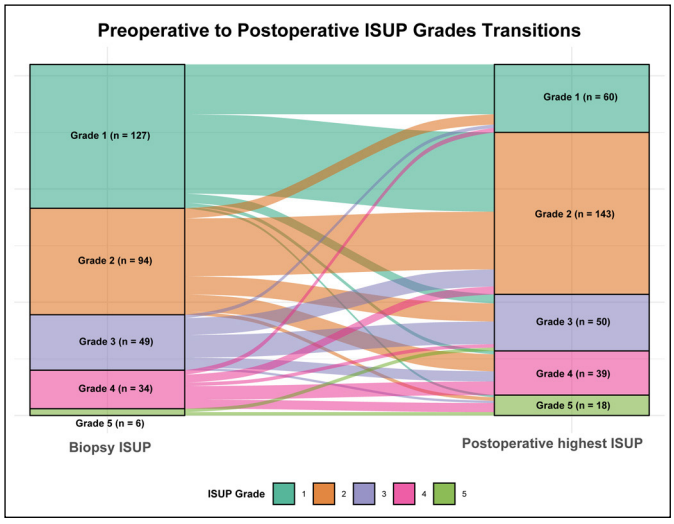

Figure 2. *Comprehensive analysis of ISUP grading transitions from preoperative biopsy to postoperative highest assessments following robotic-assisted radical prostatectomy, featuring stratum-specific group sizes and color-coded ISUP grades (n = 310). The figure illustrates how individual patients' International Society of Urological Pathology (ISUP) grades changed from preoperative biopsy assessment to postoperative highest grade after surgery. It visualizes both the number of patients in each grade and the transitions between grades.*

tive to normal weight counterparts across all comparisons. These findings support the adoption of BMI-stratified diagnostic and management strategies in clinical practice (Table 4).

Gleason Score

In the analysis of Gleason score discrepancies, the contingency Table 5 illustrates the distribution of preoperative biopsy scores relative to postoperative assessments in the highest grade among 310 patients with paired data. Stratification by body mass index reveals a trend toward lower concordance and higher underestimation in the obesity group (e.g., 38.8–42.5% concordance and 45.0–50.0% underestimation) compared to normal weight (53.9–56.6% concordance and 30.3–34.2% underestimation) and overweight (55.8–63.0% concordance and 27.3–35.7% underestimation) categories (Table 6).

BMI and TNM concordance. Across all patients, preoperative staging underestimated disease in 56.4%, matched in 34.9%, and overestimated in 8.7%. By BMI category: 1) normal weight: 51.8% underestimation, 37.5% concordance, 2) overweight: 54.5% underestimation, 36.4% concordance, and 3) obese: 65.4% underestimation, 28.8% concordance. A clear gradient indicates that higher BMI correlates with lower preoperative accuracy.

BMI and ISUP grade. Overall concordance between biopsy and postoperative ISUP grade ranged from 41.9% to 45.2%, with underestimation in 38–44% and overestimation in 14–17%. Concordance declined steadily with BMI: 48.7% (normal), 44–49% (overweight), and 31–34% (obese). Underestimation rose from 35% in normal weight to over 50% in obese patients, suggesting reduced biopsy precision and sampling bias in higher BMI groups.

BMI and Gleason Score. Preoperative and postoperative Gleason scores exhibited moderate alignment (≈51–56% concordance). Underestimation was most common (33–39%) and increased with BMI, reaching nearly half of obese patients. Overestimation remained low across all groups (≈10–12%).

Correlation between BMI and pathological parameters. Correlation analyses demonstrated that BMI had weak and mostly non-significant associations with postoperative parameters ($p > 0.05$), except for a modest negative correlation with lymph node effusions ($r = -0.15$, $p = 0.007$).

Risk factors for preoperative underestimation. Underestimation correlated with: 1) higher BMI and obesity prevalence, 2) metabolic comorbidities (hypertension, diabetes mellitus), 3) advanced postoperative stage (pT3a/b). Conversely, normal BMI, abnormal digital rectal examination findings, and identifiable capsular infiltration on MRI were protective against underestimation.

DISCUSSION

The pathomechanisms of obesity causing cancer are complex and multifactorial. Several potential cellular and molecular pathomechanisms linking cancer development, as well as cancer progression and metastases development to obesity have been described, as follows: 1) micro-environmental disturbances and extracellular matrix remodeling,

Table 4. *Distribution of ISUP grade discrepancies (biopsy vs postoperative highest grade), overall and stratified by body mass index categories*

ISUP grade comparison/ discrepancy type	Overall n (%)	Normal weight n (%)	Overweight n (%)	Obesity n (%)
Biopsy vs highest grade				
Concordance	130 (41.9)	37 (48.7)	68 (44.2)	25 (31.2)
Overestimation	44 (14.2)	12 (15.8)	20 (13.0)	12 (15.0)
Underestimation	136 (43.9)	27 (35.5)	66 (42.9)	43 (53.8)

Table 5. *Contingency table of preoperative biopsy vs postoperative highest grade Gleason scores (n = 310)*

Preoperative biopsy	Postoperative Highest Grade				
	Score 6	Score 7	Score 8	Score 9	Score 10
Score 6	44	78	3	2	0
Score 7	12	102	24	4	1
Score 8	4	10	11	6	0
Score 9	0	3	1	1	3
Score 10	0	0	0	1	0

Table 6. *Distribution of Gleason score discrepancies (biopsy vs postoperative highest grade), overall and stratified by body mass index categories*

Gleason score comparison/ discrepancy type	Overall n (%)	Normal weight (including underweight) n (%)	Overweight n (%)	Obesity n (%)
Biopsy vs highest grade (n = 310)				
Concordance	158 (51.0)	41 (53.9)	86 (55.8)	31 (38.8)
Overestimation	31 (10.0)	9 (11.8)	13 (8.4)	9 (11.2)
Underestimation	121 (39.0)	26 (34.2)	55 (35.7)	40 (50.0)

2) altered fatty acid metabolism, 3) hormonal disturbances (e.g. anabolic hormone), 4) chronic inflammation and 5) immune instability [10–12]. White adipose tissue surrounding the prostate gland forms periprostatic adipocyte tissue (PPAT) and is one of the most important components of the prostate microenvironment, taking an active part in the physiological conditions as well as in the development of prostate cancer. PPAT is an active endocrine tissue, influencing the activity of prostate cells, but above all, by modulating the microenvironment, it promotes the processes of migration, invasion and aggressiveness of prostate cancer cells [12, 13]. Additionally, EPIC cohort study showed that men who are taller and who have greater adiposity have an elevated risk of high-grade prostate cancer and prostate cancer death [14]. Also, a poorer outcomes with higher BMI among prostate cancer patients were observed [15].

Our results demonstrate that BMI, particularly obesity, is associated with a substantial decline in the concordance between preoperative assessments and final postoperative histopathological outcomes in patients undergoing robotic-assisted radical prostatectomy. Obese individuals are at higher risk of underestimating of disease severity. Duffield et al. [16] concluded that patients with prostate cancer who undergo an active surveillance strategy in most cases develop progression within 1 to 2 years after diagnosis suggesting undersampling of more aggressive tumors rather than progression of indolent tumors. Moreover, Epstein et al. [17] results showed that approximately a quarter of prostate cancer Gleason 5 and 6 tumors on biopsy will be Gleason 7 or higher in radical prostatectomy specimen. Thus, improper classification of higher-grade prostate cancer as a low-risk tumour can lead to inappropriate inclusion of patients into active surveillance protocols, delaying curative treatment and potentially compromising oncologic outcomes. A close positive correlation between prostate cancer and other comorbidities (e.g. metabolic syndrome and obesity) has been described [18]. The adipose tissue covers about 48% of the prostate gland surface [19]. Periprostatic adipocyte tissue influences prostate cancer development and progression through paracrine and endocrine signaling via adipokines secretion [20]. PPAT especially its adipocytes are directly involved in prostate cancer cell migration outside the prostate gland. Additionally, obesity promotes this migration [12, 21]. Taking into account the contribution of obesity to the development of cancer, the misclassification of high risk tumors seems to be significant in the group of patients with abnormal BMI.

Our results revealed that higher BMI levels consistently correlated with increased rates of underestimation and decreased diagnostic accuracy in patients with prostate cancer (based on TNM staging, ISUP grade groups, and Gleason scores). These results underscore the significant challenges posed by obesity in the preoperative characterization of prostate cancer and highlight potential implications for clinical decision-making. We observed that preoperative TNM staging underestimated disease extent in about 56.4%, with only one-third (34.9%) demonstrating accurate concordance. The underestimation reached 65.4% among obese patients. Concordance declined proportionally, falling to 28.8% in the obese group. The marked upstaging from cT1–2 to pT3a/b, observed in roughly half of patients initially staged with localized disease, further illustrates the limitations of standard diagnostic tools in obese patients with prostate cancer. Moreover, in the case of biopsy grade assessments a similar pattern of diminished accuracy with higher BMI was observed. In comparisons between biopsy-derived ISUP grade groups and postoperative pathology, obese patients exhibited the lowest concordance rates (31–34%) and the highest rates of underestimation (49–54%). Additionally, the Gleason score underestimation reached approximately 50% in the obese patients, compared to only 30–35% in normal weight and overweight cohorts. Moreover, our results showed that BMI did not strongly predict postoperative pathological outcomes, with largely weak and statistically non-significant associations. Nonetheless, obesity emerged as an independent factor correlated with preoperative underestimation. BMI appears to be an independent predictor of underestimation; however, due to the lack of multivariate modeling, it should also be considered that BMI is an indirect substitute for other factors, such as MRI quality or biopsy technique and sampling error, which seems less likely.

Moreover, it is worth noting that abnormal digital rectal examination findings and clear capsular infiltration on mpMRI were protective against preoperative underestimation. These parameters may serve as valuable compensatory indicators in obese patients where routine imaging and biopsy performance may be suboptimal. In patients with low- to intermediate-risk prostate cancer, curative therapy (radical prostatectomy or radiotherapy) may be postponed, or avoided altogether, using active surveillance strategy [22]. Given the results obtained, it is worth paying special attention to overweight or obese patients who are being considered for active surveillance, as in many cases the disease may

be underestimated at the time of qualification for active surveillance. Obesity can mask clinically significant disease and complicate pre-operative evaluation. In obese patients with prostate cancer, hormonal imbalance, hyperinsulinemia, and chronic inflammation contribute to more heterogeneous or aggressive tumor features [12, 23]. Previous studies show that obesity, and in particular increased periprostatic adipose tissue (PPAT), appears to play a key role in cancer progression. This progression is often due to the migration of prostate cancer cells outside the prostate capsule, which is not visible on conventional imaging studies (mpMRI) during standard diagnostic procedures. Therefore, qualifying obese patients for an active surveillance strategy may be associated with a high risk of prostate cancer progression during surveillance (to the stage of prostate capsule invasion – cT3a or more advanced stages involving invasion of the seminal vesicles – cT3b or adjacent structures – cT4). Osiecki et al. [24] revealed that pathological evaluation of both prostate biopsies and radical prostatectomy specimens requires special expertise and vigilance from uropathologist in the detection of prostate cancer because its presence matters and may have an impact on decisions regarding the patients' treatment and prognosis. Cariolou et al. [25] found evidence of a J shaped association between BMI and all-cause mortality, and a similar but flatter non-linear shape in the underweight and normal weight groups for BMI and mortality specific to prostate cancer. Also obesity showed a moderate, consistent relationship with biochemical recurrence after radical prostatectomy [26]. Obesity was associated with increased prostate cancer-specific mortality [27].

It is worth noting that when deciding on the treatment strategy for prostate cancer (radical treatment vs active surveillance), the influence of biochemical factors affecting PSA interpretation in obese patients should also be taken into account. Another factor that may contribute to the observed underestimation of prostate cancer risk in patients with elevated BMI is altered interpretation of PSA levels [28]. Obesity is associated with increased plasma volume, which may lead to dilution of circulating PSA and consequently lower measured PSA concentrations despite comparable or greater tumor burden. As PSA remains a cornerstone of preoperative risk stratification and active surveillance eligibility, this effect may partially explain why obese patients are more frequently classified as having low-risk disease. In the present study, PSA-related underestimation may act in concert with biopsy sampling limitations and reduced imaging performance, thereby amplifying the risk of inaccurate staging and grading. These findings support a more cautious approach to PSA-based decision-making in overweight and obese patients, particularly when considering active surveillance, and suggest that adjunctive parameters such as PSA density and MRI features should be emphasized in this population. Thus, urologists should interpret pre-operative findings with caution in obese patients to avoid the underestimation of prostate cancer.

CONCLUSIONS

Higher body mass index is associated with a progressively increased risk of underestimating prostate cancer grade and stage during preoperative assessment. The reduced concordance across TNM staging, ISUP grading, and Gleason scoring is observed in obese patient with prostate cancer. We acknowledge the specific limitations of this study. The cohort includes only patients who ultimately underwent radical prostatectomy, which introduces selection bias and limits extrapolation to patients undergoing active surveillance. Nevertheless, it appears that obese patients should be very carefully selected for active surveillance. Further research is necessary in this area.

CONFLICTS OF INTEREST

The authors declare no conflict of interest.

FUNDING

This research received no external funding.

ETHICS APPROVAL STATEMENT

The study was approved by the Ethics Committee of Nicolaus Copernicus University in Torun (No KB 272/2025).

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