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**Early Secondary Treatment of Lymph Node Positive Prostate Cancer after Radical Prostatectomy is Associated with Aggressive Tumor Features and Detectable Prostate Specific Antigen**

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**INTRODUCTION AND OBJECTIVE:** Patients with lymph node positive (pN+) disease found at the time of radical prostatectomy (RP) and pelvic lymphadenectomy (PLND) are at high risk of disease recurrence and progression. There is ongoing debate with regards to optimal care of pN+ patients. While data supports the use of adjuvant androgen deprivation therapy (ADT) with or without radiation (RT), most guidelines include observation as an alternative. We sought to understand contemporary practice patterns of patients with pN+ prostate cancer (PCa) in a diverse, statewide quality collaborative.

**METHODS:** Patients in the Michigan Urologic Surgery Improvement Collaborative (MUSIC) with PCa who underwent RP with PLND and pN+ on final pathology and 12 months follow up between March 2012 and Feb 2021 were identified. Patients who received neoadjuvant therapy were excluded. The primary outcome was early post-RP treatment (ADT, RT, ADT+RT) within 12 months of diagnosis, which was categorized as either adjuvant (PSA<0.1 ng/ml) or salvage (PSA≥0.1 ng/ml). Time to any post-RP treatment and type of treatment were secondary outcomes. Multivariable logistic and Cox regression models were fit to identify factors associated with post-RP treatment. Kaplan-Meier analysis was performed to assess treatment-free survival.

**RESULTS:** We identified 425 patients who had pN+ disease at the time of RP, of which 280 (66%) underwent early post-RP treatment (86 adjuvant and 194 salvage) and 145 (34%) were observed. One year treatment-free survival for patients with first post-RP PSA≥0.1 was 18% (95% CI 14%-24%) compared to 58% (95% CI 51%-65%) for PSA<0.1 ng/ml ( $p<0.001$ ). In the multivariable Cox model, pathologic grade group, tumor stage, margin status, first post-RP PSA, and race were associated with time to secondary treatment ( $p<0.05$  for each). Of 145 patients on initial observation, 23% had post-RP PSA≥0.1. ADT was most common early adjuvant therapy (45.4%), followed by ADT+RT (36%), RT alone (17.4%), and other (1.2%)

**CONCLUSIONS:** Most patients with pN+ PCa in MUSIC received early post-RP treatment and men with a first post-RP PSA <0.1ng/mL had improved secondary treatment free survival. Early treatment, which was predominantly ADT ± RT, is influenced by aggressive disease features and detectable post-RP PSA. Nearly one out of four patients with pN+ cancer not receiving early post RP treatment had a detectable PSA, suggesting an opportunity for quality improvement by increasing use of postoperative therapy.

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