

**Supplemental Table S1. ICD codes used in the study**

| <b>Diagnosis</b>                               | <b>ICD-9 code</b>   | <b>ICD-10 code</b>  |
|--|---|---|
| <b>Undergoing radical cystectomy</b>           | <b>PCS: 57.7</b>  | <b>PCS: 0TTB*</b>   |
| <b>Diabetes mellitus</b>                       | <b>CM: 250</b>  | <b>CM: E10-E14</b>  |
| <b>Pure laparoscopic</b>                       | <b>PCS: 54.21, 54.51 but no 17.4</b>  | <b>PCS: 0WJJ4ZZ, 0DNW4ZZ, 0TTB4ZZ, 0TTB7ZZ, 0TTB8ZZ but no 8E0W0CZ, 8E0W3CZ, 8E0W4CZ, 8E0W7CZ, 8E0W8CZ</b>  |
| <b>Robotic-assisted radical cystectomy</b>     | <b>PCS: 17.4</b>  | <b>PCS: 8E0W0CZ, 8E0W3CZ, 8E0W4CZ, 8E0W7CZ, 8E0W8CZ</b>   |
| <b>AMI and cardiac complications</b>           | <b>CM: 410, 997.1, 785.51, 998.01, 427.5, 428.23, 458.29, 423.2, 423.3, 427.81, 426.0</b><br><b>PCS: 37.80</b><br><b>DXCCS: 100</b>   | <b>CM: I21, I22, I97.7, I97.88, I97.89, R57.0, I46.9, I50.23, T81.11, I95.1, I31.3, I31.1, I31.4, I49.5, I44</b><br><b>PCS: 0JH60PZ, 0JH63PZ, 0JH80PZ, 0JH83PZ</b><br><b>DXCCSR_CIR009&gt;0</b> |
| <b>CVA and nervous system complications</b>    | <b>CM: 348.1, 430-437, 997.0</b><br><b>DXCCS: 109</b>   | <b>CM: I60-I66, I67.0-I67.2, I67.4-I67.82, I67.841-I67.9, I68, I69, G45, G46, G93.1, G97</b><br><b>DXCCSR_CIR020&gt;0</b>   |
| <b>VTE</b>                                     | <b>CM: 415, 451-453, 671, 673, 997.2</b>  | <b>CM: I260, I269, I801-803, I808, I809, I820-I823, I828, I829, O082, O223, O871, O882, I81, I82</b>  |
| <b>Respiratory complications and pneumonia</b> | <b>CM: 486, 481, 482.8, 482.3, 997.3, 518.5, 518.8, 493.22, 512.1, 518.5, 518.81, 486, 481, 480, 482, 483, 484.7, 484.8, 4I5, 485, 514, 517, 073.0, 115.15, 115.95</b><br><b>DXCCS: 122</b> | <b>CM: A48.1, J12-J18, J95, J96, J80, J81.0, R06.03</b>   |
| <b>Digestive system complications</b>          | <b>CM: 567.22, 997.4, 998.59</b>  | <b>CM: K91, K65.1, K66.0, K68.11</b>  |
| <b>Urinary complications</b>                   | <b>CM: 595.0, 596.54, 598.9, 590.10, 599.0, 996.64, 788.20, 788.3, 997.5</b>  | <b>CM: N99.1-N99.9, N39.0, R33.8, N31.1, N39.4, N35.1, N10, N30.00, N30.01, T83.510A, T83.511A, T83.512A, T83.518A</b>  |
| <b>Vascular complication</b>                   | <b>CM: 997.2, 997.7, 444.2</b>  | <b>CM: T81.7, I74.1, I74.2</b>  |

**Supplemental Table S1. ICD codes used in the study**

| <b>Diagnosis</b>                                 | <b>ICD-9 code</b>  | <b>ICD-10 code</b>  |
|--|--|---|
| <b>Bleeding/ need for transfusion</b>            | <b>CM:</b> V58.2, 998.1, 998.2, 998.51, 285.1, 459.0<br><b>PCS:</b> 39.98, 99.0                    | <b>CM:</b> E87.71, J95.84, E83.111, T80.3, T80.4, T80.A, T80.5, T80.6<br><b>PCS:</b> 0W380ZZ, 0W383ZZ, 0W384ZZ, 30233H, 30233J, 30233K, 30233L, 30233M, 30233N, 30233P, 30233R, 30233T, 30233V, 30233W  |
| <b>Infection</b>                                 | <b>CM:</b> 001-139, 998.5  | <b>CM:</b> L00-L08, B99, T81.43, O86.03, T81.4<br><b>CM:</b> R78.81, A41, R65.2, T81.4, T80.2, A42.7, A22.7, B37.7, A26.7, A28.2, A54.86, B00.7, A32.7, A24.1, A39.2, A20.7, A21.7, A48.3, R57.1, R57.9, R55, T78.2, I97.1, T81.10, T81.12, T81.19, R65.1, A40, T82.6, T82.7, T85.71, T85.72, T85.73, T85.79, T83.5, T83.6, T84.5, T84.6, T84.7 |
| <b>Sepsis/shock</b>                              | <b>CM:</b> 995.9, 996.64, 038, 999.3, 790.7, 041, 785.52, 785.50, 785.52-785.59, 995.0, 038        | <b>CM:</b> Z99.1, Z93.0<br><b>PCS:</b> 5A19   |
| <b>Tracheostomy/ mechanical ventilation</b>      | <b>CM:</b> 216, 519.0<br><b>PCS:</b> 96.7  | <b>CM:</b> N17, N99.0<br><b>DXCCSR_GEN002&gt;0</b>  |
| <b>AKI</b>                                       | <b>CM:</b> 584, V45.1<br><b>DXCCS:</b> 157   |   |
| <b>Wound and device-related complication</b>     | <b>CM:</b> 998.12, 998.13, 998.3, 998.83, 996.1, 996.62, 996.74, 998.2, 998.4, 998.7, 998.5, 998.2 | <b>CM:</b> T81.3, T81.5, T81.6, K91.7   |
| <b>Lymph node invasion or metastatic disease</b> | <b>CM:</b> 196-199   | <b>CM:</b> C77-C79  |
| <b>Smoking</b>                                   | <b>CM:</b> 305.1, V15.82, 989.84   | <b>CM:</b> Z71.6, Z72.0, Z86.43, Z87.891, F17, O99.33, T65.2  |
| <b>DM with end organ damage</b>                  | <b>CM:</b> 250.4-250.7   | <b>CM:</b> E10.2-E10.5, E10.7, E11.2-E11.5, E11.7, E12.2-E12.5, E12.7, E13.2-E13.5, E13.7, E14.2-E14.5, E14.7   |

Abbreviation: AMI, acute myocardial infarction; CVA, cerebrovascular accident; VTE, venous thromboembolism; AKI, acute kidney injury; DM, diabetes mellitus.

**Supplementary Table 2. Characteristics of the study population before matching**

|  | Total<br>(N = 5,312) | RARC<br>(n = 553) | ORC<br>(n = 4,759) | P-<br>value      |
|--|----------------------|-------------------|--------------------|------------------|
| <b>In-hospital mortality</b>                     | 89 (1.7)             | 11 (2.0)          | 78 (1.6)           | 0.554            |
| <b>Complication, any</b>                         | 3256 (61.3)          | 312 (56.2)        | 2944 (61.9)        | <b>0.011</b>     |
| AMI and cardiac complications                    | 449 (8.5)            | 38 (6.8)          | 411 (8.7)          | 0.137            |
| CVA and nervous system complications             | 130 (2.5)            | 12 (2.2)          | 118 (2.5)          | 0.641            |
| VTE  | 190 (3.6)            | 13 (2.3)          | 177 (3.8)          | 0.078            |
| Respiratory complications and pneumonia          | 742 (14.0)           | 68 (12.3)         | 674 (14.2)         | 0.218            |
| Digestive system complications                   | 1001 (18.9)          | 95 (17.1)         | 906 (19.1)         | 0.289            |
| Urinary complications                            | 804 (15.2)           | 62 (11.3)         | 742 (15.6)         | <b>0.005</b>     |
| Vascular complication                            | 54 (1.0)             | 4 (0.7)           | 50 (1.1)           | 0.394            |
| Bleeding/transfusion                             | 1132 (21.2)          | 109 (19.6)        | 1023 (21.4)        | 0.367            |
| Infection  | 712 (13.4)           | 74 (13.3)         | 638 (13.4)         | 0.961            |
| Sepsis/shock                                     | 573 (10.8)           | 57 (10.3)         | 516 (10.9)         | 0.665            |
| Tracheostomy/mechanical Ventilation              | 232 (4.3)            | 27 (4.8)          | 205 (4.3)          | 0.533            |
| AKI  | 1053 (20.0)          | 108 (19.6)        | 945 (20.0)         | 0.824            |
| Wound and device-related complication            | 450 (8.5)            | 30 (5.4)          | 420 (8.8)          | <b>0.003</b>     |
| <b>Prolonged LOS<sup>a, b</sup></b>              | 1539 (29.0)          | 103 (18.5)        | 1436 (30.2)        | <b>&lt;0.001</b> |
| <b>Unfavorable discharge<sup>a</sup></b>         | 1030 (19.8)          | 76 (14.1)         | 954 (20.4)         | <b>&lt;0.001</b> |
| <b>Age, years)</b>                               | 69.6 ± 0.1           | 69.5 ± 0.3        | 69.6 ± 0.1         | 0.758            |
| 18-59  | 734 (13.8)           | 67 (12.2)         | 667 (14.0)         | 0.075            |
| 60-69  | 1731 (32.6)          | 208 (37.4)        | 1523 (32.1)        |                  |
| 70-79  | 2162 (40.7)          | 212 (38.4)        | 1950 (41.0)        |                  |
| 80+  | 685 (12.9)           | 66 (12.0)         | 619 (13.0)         |                  |
| <b>Sex</b>                                       |                      |                   |                    | <b>0.005</b>     |
| Male   | 4358 (82.1)          | 477 (86.3)        | 3881 (81.6)        |                  |
| Female   | 954 (17.9)           | 76 (13.7)         | 878 (18.4)         |                  |
| <b>Insurance status</b>                          |                      |                   |                    | 0.051            |
| Medicare/Medicaid                                | 3900 (73.5)          | 382 (69.3)        | 3518 (74.0)        |                  |
| Private including HMO                            | 1252 (23.6)          | 152 (27.5)        | 1100 (23.1)        |                  |
| Self-pay/no-charge/other                         | 154 (2.9)            | 18 (3.2)          | 136 (2.9)          |                  |
| Missing  | 6                    | 1                 | 5                  |                  |
| <b>Household income</b>                          |                      |                   |                    | <b>0.003</b>     |
| Q1   | 1264 (24.3)          | 113 (21.0)        | 1151 (24.7)        |                  |
| Q2   | 1402 (26.9)          | 125 (23.0)        | 1277 (27.4)        |                  |
| Q3   | 1346 (25.9)          | 163 (30.3)        | 1183 (25.4)        |                  |
| Q4   | 1188 (22.9)          | 140 (25.8)        | 1048 (22.6)        |                  |
| Missing  | 112                  | 12                | 100                |                  |
| <b>Lymph node invasion or metastatic disease</b> |                      |                   |                    | <b>0.039</b>     |
| Yes  | 1151 (21.6)          | 100 (18.0)        | 1051 (22.0)        |                  |
| No   | 4161 (78.4)          | 453 (82.0)        | 3708 (78.0)        |                  |
| <b>Smoking</b>                                   |                      |                   |                    | <b>&lt;0.001</b> |
| Yes  | 2120 (40.1)          | 272 (49.3)        | 1848 (39.0)        |                  |

|   |             |            |             |                  |
|---|-------------|------------|-------------|------------------|
| No  | 3192 (59.9) | 281 (50.7) | 2911 (61.0) |                  |
| <b>DM with end organ damage</b>           |             |            |             | 0.546            |
| Yes                                       | 671 (12.7)  | 66 (11.9)  | 605 (12.8)  |                  |
| No  | 4641 (87.3) | 487 (88.1) | 4154 (87.2) |                  |
| <b>CCI</b>                                |             |            |             | 0.778            |
| 0-1                                       | 3818 (71.8) | 389 (70.4) | 3429 (71.9) |                  |
| 2-3                                       | 1301 (24.6) | 144 (26.0) | 1157 (24.4) |                  |
| 4-5                                       | 180 (3.4)   | 18 (3.3)   | 162 (3.4)   |                  |
| 6+  | 13 (0.2)    | 2 (0.4)    | 11 (0.2)    |                  |
| <b>Emergent admission</b>                 |             |            |             | <b>&lt;0.001</b> |
| Yes                                       | 553 (10.4)  | 23 (4.2)   | 530 (11.1)  |                  |
| No  | 4750 (89.6) | 530 (95.8) | 4220 (88.9) |                  |
| Missing                                   | 9           | 0          | 9           |                  |
| <b>Weekend admission</b>                  |             |            |             | 0.099            |
| Yes                                       | 242 (4.5)   | 17 (3.1)   | 225 (4.7)   |                  |
| No  | 5070 (95.5) | 536 (96.9) | 4534 (95.3) |                  |
| <b>Hospital bed size</b>                  |             |            |             | <b>&lt;0.001</b> |
| Small                                     | 558 (10.3)  | 98 (17.6)  | 460 (9.4)   |                  |
| Medium                                    | 956 (18.3)  | 78 (14.3)  | 878 (18.8)  |                  |
| Large                                     | 3771 (71.4) | 376 (68.0) | 3395 (71.8) |                  |
| Missing                                   | 27          | 1          | 26          |                  |
| <b>Hospital location/ teaching status</b> |             |            |             | <b>&lt;0.001</b> |
| Rural                                     | 131 (2.4)   | 3 (0.5)    | 128 (2.6)   |                  |
| Urban nonteaching                         | 874 (16.4)  | 54 (9.9)   | 820 (17.2)  |                  |
| Urban teaching                            | 4280 (81.2) | 495 (89.6) | 3785 (80.2) |                  |
| Missing                                   | 27          | 1          | 26          |                  |

Abbreviation: HMO, Health Maintenance Organization; RARC, robotic-assisted radical cystectomy; ORC, open radical cystectomy; AMI, acute myocardial infarction; CVA, cerebrovascular accident; VTE, venous thromboembolism; AKI, acute kidney injury; LOS, length of stay in hospital; DM, diabetes mellitus; CCI, Charlson Comorbidity Index.

Continuous variables are presented as mean  $\pm$  SE; categorical variables are presented as unweighted counts (weighted percentage).

<sup>a</sup> Excluding patients died in the hospital.

<sup>b</sup> LOS > 11 days.

P-value < 0.05 is shown in bold.

**Supplementary Table 3. Associations between study variables, in-hospital mortality, prolonged LOS, and unfavorable discharge**

| Variables  | In-hospital mortality     |                           | Prolonged LOS <sup>a</sup> |                          | Unfavorable discharge <sup>a</sup> |                          |
|--|---------------------------|---------------------------|----------------------------|--------------------------|------------------------------------|--------------------------|
|  | Univariable               | Multivariable             | Univariable                | Multivariable            | Univariable                        | Multivariable            |
|  | OR (95% CI)               | aOR (95% CI)              | OR (95% CI)                | aOR (95% CI)             | OR (95% CI)                        | aOR (95% CI)             |
| <b>RARC vs. ORC</b>                              | 1.25 (0.69, 2.28)         | 1.48 (0.81, 2.69)         | <b>0.51 (0.41, 0.63)</b>   | <b>0.56 (0.45, 0.71)</b> | <b>0.70 (0.54, 0.91)</b>           | <b>0.74 (0.56, 0.97)</b> |
| <b>Age, years</b>                                |                           |                           |                            |                          |                                    |                          |
| 18-59  | Ref.                      | Ref.                      | Ref.                       | Ref.                     | Ref.                               | Ref.                     |
| 60-69  | 0.93 (0.32, 2.71)         | 0.90 (0.31, 2.65)         | 1.08 (0.82, 1.42)          | 1.05 (0.79, 1.40)        | 0.82 (0.59, 1.15)                  | 0.72 (0.50, 1.04)        |
| 70-79  | 2.07 (0.81, 5.30)         | 1.88 (0.75, 4.74)         | <b>1.39 (1.06, 1.83)</b>   | 1.27 (0.94, 1.71)        | <b>1.85 (1.33, 2.56)</b>           | 1.26 (0.86, 1.85)        |
| 80+  | <b>4.69 (1.62, 13.56)</b> | <b>4.02 (1.41, 11.44)</b> | <b>1.51 (1.08, 2.10)</b>   | 1.31 (0.91, 1.88)        | <b>4.31 (2.99, 6.23)</b>           | <b>2.80 (1.84, 4.25)</b> |
| <b>Sex</b>                                       |                           |                           |                            |                          |                                    |                          |
| Male   | 1.35 (0.55, 3.36)         |                           | <b>0.79 (0.64, 0.99)</b>   | 0.80 (0.63, 1.00)        | <b>0.54 (0.42, 0.68)</b>           | <b>0.58 (0.45, 0.75)</b> |
| Female   | Ref.                      |                           | Ref.                       | Ref.                     | Ref.                               | Ref.                     |
| <b>Insurance status</b>                          |                           |                           |                            |                          |                                    |                          |
| Medicare/Medicaid                                | Ref.                      |                           | Ref.                       | Ref.                     | Ref.                               | Ref.                     |
| Private including HMO                            | 0.94 (0.52, 1.71)         |                           | <b>0.77 (0.64, 0.92)</b>   | 0.96 (0.79, 1.18)        | <b>0.26 (0.20, 0.35)</b>           | <b>0.39 (0.28, 0.54)</b> |
| Self-pay/no-charge/ other                        | 1.67 (0.61, 4.59)         |                           | 0.76 (0.46, 1.26)          | 0.97 (0.55, 1.72)        | 0.60 (0.31, 1.16)                  | 0.84 (0.43, 1.65)        |
| <b>Household income</b>                          |                           |                           |                            |                          |                                    |                          |
| Q1   | 1.19 (0.58, 2.45)         |                           | 1.22 (0.97, 1.53)          |                          | 1.12 (0.86, 1.47)                  |                          |
| Q2   | 0.90 (0.40, 2.02)         |                           | 1.03 (0.81, 1.31)          |                          | 0.90 (0.69, 1.19)                  |                          |
| Q3   | 1.19 (0.59, 2.39)         |                           | 1.04 (0.82, 1.31)          |                          | 0.90 (0.69, 1.18)                  |                          |
| Q4   | Ref.                      |                           | Ref.                       |                          | Ref.                               |                          |
| <b>Lymph node invasion or metastatic disease</b> |                           |                           |                            |                          |                                    |                          |
| Yes  | 0.44 (0.17, 1.12)         |                           | 1.18 (0.97, 1.42)          |                          | 1.08 (0.86, 1.36)                  |                          |
| No   | Ref.                      |                           | Ref.                       |                          | Ref.                               |                          |
| <b>Smoking</b>                                   |                           |                           |                            |                          |                                    |                          |
| Yes  | <b>0.46 (0.25, 0.84)</b>  | <b>0.49 (0.27, 0.91)</b>  | <b>0.65 (0.55, 0.77)</b>   | <b>0.68 (0.57, 0.81)</b> | <b>0.77 (0.64, 0.94)</b>           | 0.85 (0.69, 1.04)        |
| No   | Ref.                      |                           | Ref.                       | Ref.                     | Ref.                               | Ref.                     |
| <b>DM with end-organ damage</b>                  |                           |                           |                            |                          |                                    |                          |
| Yes  | 1.66 (0.86, 3.20)         |                           | <b>1.31 (1.04, 1.66)</b>   | 1.01 (0.78, 1.32)        | <b>1.81 (1.42, 2.30)</b>           | <b>1.31 (1.00, 1.73)</b> |
| No   | Ref.                      |                           | Ref.                       | Ref.                     | Ref.                               | Ref.                     |
| <b>CCI</b>                                       |                           |                           |                            |                          |                                    |                          |
| 0-1  | Ref.                      | Ref.                      | Ref.                       | Ref.                     | Ref.                               | Ref.                     |
| 2-3  | <b>1.97 (1.14, 3.42)</b>  | <b>1.90 (1.09, 3.30)</b>  | <b>1.60 (1.34, 1.91)</b>   | <b>1.65 (1.36, 2.00)</b> | <b>1.82 (1.49, 2.23)</b>           | <b>1.65 (1.32, 2.06)</b> |
| 4-5  | 0.64 (0.09, 4.73)         | 0.57 (0.07, 4.33)         | <b>2.87 (1.95, 4.23)</b>   | <b>2.76 (1.82, 4.17)</b> | <b>2.66 (1.76, 4.02)</b>           | <b>2.14 (1.36, 3.38)</b> |
| 6+   | <b>8.60 (1.07, 69.24)</b> | 10.34 (0.90, 118.35)      | 0.35 (0.04, 2.76)          | 0.34 (0.03, 3.32)        | 1.55 (0.33, 7.23)                  | 2.10 (0.38, 11.77)       |
| <b>Emergent admission</b>                        |                           |                           |                            |                          |                                    |                          |
| Yes  | <b>0.34 (0.18, 0.64)</b>  | <b>0.36 (0.19, 0.68)</b>  | <b>0.35 (0.28, 0.45)</b>   | <b>0.40 (0.32, 0.52)</b> | <b>0.52 (0.40, 0.68)</b>           | <b>0.58 (0.44, 0.76)</b> |
| No   | Ref.                      | Ref.                      | Ref.                       | Ref.                     | Ref.                               | Ref.                     |
| <b>Weekend admission</b>                         |                           |                           |                            |                          |                                    |                          |
| Yes  | Ref.                      |                           | Ref.                       | Ref.                     | Ref.                               | Ref.                     |
| No   | 0.61 (0.22, 1.73)         |                           | <b>0.42 (0.30, 0.57)</b>   | <b>0.55 (0.39, 0.78)</b> | <b>0.61 (0.42, 0.87)</b>           | 0.79 (0.52, 1.19)        |
| <b>Hospital bed size</b>                         |                           |                           |                            |                          |                                    |                          |
| Small  | 1.60 (0.84, 3.05)         |                           | 0.92 (0.75, 1.13)          |                          | 0.87 (0.65, 1.15)                  |                          |
| Medium   | 1.54 (0.82, 2.88)         |                           | 0.93 (0.76, 1.13)          |                          | 1.13 (0.89, 1.43)                  |                          |
| Large  | Ref.                      |                           | Ref.                       |                          | Ref.                               |                          |
| <b>Hospital location/teaching status</b>         |                           |                           |                            |                          |                                    |                          |
| Rural  | <b>1.40 (1.01, 1.95)</b>  |                           | 0.78 (0.49, 1.26)          |                          | 0.70 (0.35, 1.37)                  |                          |
| Urban nonteaching                                | 1.47 (0.83, 2.61)         |                           | 1.13 (0.93, 1.39)          |                          | 1.12 (0.89, 1.41)                  |                          |
| Urban teaching                                   | Ref.                      |                           | Ref.                       |                          | Ref.                               |                          |

Abbreviation: HMO, Health Maintenance Organization; RARC, robotic-assisted radical cystectomy; ORC, open radical cystectomy; LOS, length of hospital stay; DM, diabetes mellitus; CCI, Charlson Comorbidity Index; OR, odd ratio; aOR, adjusted odds ratio; CI, confidence interval.

P-value < 0.05 is shown in bold.

<sup>a</sup> Excluding patients who died in the hospital.

Variables that were significant in univariable regression were adjusted in multivariable models.

**Supplementary Table 4. Associations between study variables and postoperative complications**

| Variables  | Complication, any        |                          | Infection                |                          | Urinary complications    |                          | AKI                       |                           | Wound and device-related complication |                          |
|--|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|---------------------------|---------------------------|---------------------------------------|--------------------------|
|  | Univariable              | Multivariable            | Univariable              | Multivariable            | Univariable              | Multivariable            | Univariable               | Multivariable             | Univariable                           | Multivariable            |
|  | OR (95% CI)              | aOR (95% CI)             | OR (95% CI)              | aOR (95% CI)             | OR (95% CI)              | aOR (95% CI)             | OR (95% CI)               | aOR (95% CI)              | OR (95% CI)                           | aOR (95% CI)             |
| <b>RARC vs. ORC</b>                              | <b>0.80 (0.67, 0.96)</b> | 0.83 (0.69, 1.01)        | 1.02 (0.78, 1.33)        | 1.08 (0.83, 1.42)        | <b>0.68 (0.52, 0.89)</b> | <b>0.75 (0.57, 0.98)</b> | 1.00 (0.80, 1.25)         | 1.04 (0.82, 1.31)         | <b>0.58 (0.40, 0.84)</b>              | <b>0.59 (0.41, 0.86)</b> |
| <b>Age, years</b>                                |                          |                          |                          |                          |                          |                          |                           |                           |                                       |                          |
| 18-59  | Ref.                     | Ref.                     | Ref.                     | Ref.                     | Ref.                     | Ref.                     | Ref.                      | Ref.                      | Ref.                                  | Ref.                     |
| 60-69  | 0.89 (0.70, 1.14)        | 0.85 (0.66, 1.10)        | 1.00 (0.71, 1.40)        | 0.95 (0.67, 1.35)        | <b>0.56 (0.42, 0.76)</b> | <b>0.56 (0.41, 0.75)</b> | 1.22 (0.90, 1.67)         | 1.12 (0.81, 1.54)         | 0.92 (0.60, 1.43)                     | 0.91 (0.59, 1.40)        |
| 70-79  | 1.12 (0.88, 1.44)        | 0.97 (0.73, 1.29)        | 1.01 (0.72, 1.43)        | 0.85 (0.59, 1.23)        | <b>0.57 (0.42, 0.77)</b> | <b>0.52 (0.37, 0.71)</b> | 1.31 (0.97, 1.79)         | 1.04 (0.75, 1.45)         | 0.98 (0.64, 1.49)                     | 0.86 (0.56, 1.31)        |
| 80+  | 1.32 (0.98, 1.79)        | 1.10 (0.79, 1.53)        | 0.89 (0.58, 1.38)        | 0.73 (0.46, 1.15)        | 0.83 (0.58, 1.19)        | 0.69 (0.47, 1.02)        | <b>1.58 (1.09, 2.29)</b>  | 1.33 (0.88, 1.99)         | 1.19 (0.71, 1.99)                     | 1.01 (0.60, 1.69)        |
| <b>Sex</b>                                       |                          |                          |                          |                          |                          |                          |                           |                           |                                       |                          |
| Male   | <b>0.66 (0.54, 0.82)</b> | <b>0.65 (0.52, 0.81)</b> | 0.80 (0.59, 1.08)        | 0.80 (0.59, 1.08)        | <b>0.51 (0.39, 0.66)</b> | <b>0.54 (0.42, 0.71)</b> | 1.16 (0.88, 1.52)         | 1.15 (0.87, 1.52)         | <b>0.67 (0.47, 0.94)</b>              | <b>0.68 (0.48, 0.96)</b> |
| Female   | Ref.                     | Ref.                     | Ref.                     | Ref.                     | Ref.                     | Ref.                     | Ref.                      | Ref.                      | Ref.                                  | Ref.                     |
| <b>Insurance status</b>                          |                          |                          |                          |                          |                          |                          |                           |                           |                                       |                          |
| Medicare/Medicaid                                | Ref.                     | Ref.                     | Ref.                     | Ref.                     | Ref.                     | Ref.                     | Ref.                      | Ref.                      | Ref.                                  | Ref.                     |
| Private including HMO                            | <b>0.77 (0.65, 0.91)</b> | 0.90 (0.74, 1.10)        | 0.80 (0.62, 1.03)        | 0.77 (0.58, 1.02)        | 0.92 (0.73, 1.17)        | 0.88 (0.67, 1.15)        | <b>0.79 (0.64, 0.97)</b>  | 0.95 (0.75, 1.21)         | 0.73 (0.54, 1.00)                     | 0.76 (0.54, 1.06)        |
| Self-pay/no-charge/other                         | 1.13 (0.71, 1.78)        | 1.39 (0.86, 2.25)        | 1.04 (0.55, 1.96)        | 1.09 (0.58, 2.07)        | 0.82 (0.44, 1.52)        | 0.84 (0.45, 1.56)        | 1.42 (0.89, 2.26)         | <b>1.92 (1.21, 3.04)</b>  | 1.29 (0.64, 2.61)                     | 1.45 (0.70, 2.99)        |
| <b>Household income</b>                          |                          |                          |                          |                          |                          |                          |                           |                           |                                       |                          |
| Q1   | 1.11 (0.90, 1.37)        |                          | 0.75 (0.55, 1.03)        |                          | 1.00 (0.76, 1.32)        |                          | 1.14 (0.87, 1.50)         |                           | 1.10 (0.71, 1.69)                     |                          |
| Q2   | 1.05 (0.86, 1.29)        |                          | 0.95 (0.71, 1.27)        |                          | 1.04 (0.79, 1.38)        |                          | 1.30 (1.00, 1.69)         |                           | 1.15 (0.78, 1.70)                     |                          |
| Q3   | 1.07 (0.87, 1.31)        |                          | 1.02 (0.76, 1.36)        |                          | 1.08 (0.82, 1.42)        |                          | 1.09 (0.84, 1.42)         |                           | 0.99 (0.67, 1.45)                     |                          |
| Q4   | Ref.                     |                          | Ref.                     |                          | Ref.                     |                          | Ref.                      |                           | Ref.                                  |                          |
| <b>Lymph node invasion or metastatic disease</b> |                          |                          |                          |                          |                          |                          |                           |                           |                                       |                          |
| Yes  | 1.02 (0.85, 1.21)        |                          | 0.98 (0.75, 1.28)        |                          | 1.00 (0.77, 1.30)        |                          | 1.17 (0.94, 1.45)         |                           | <b>1.61 (1.21, 2.15)</b>              |                          |
| No   | Ref.                     |                          | Ref.                     |                          | Ref.                     |                          | Ref.                      |                           | Ref.                                  |                          |
| <b>Smoking</b>                                   |                          |                          |                          |                          |                          |                          |                           |                           |                                       |                          |
| Yes  | <b>0.86 (0.74, 1.00)</b> | 0.87 (0.74, 1.01)        | <b>0.74 (0.60, 0.92)</b> | <b>0.73 (0.58, 0.91)</b> | <b>0.80 (0.65, 0.98)</b> | 0.83 (0.67, 1.03)        | 0.93 (0.77, 1.11)         | 0.87 (0.72, 1.05)         | <b>0.69 (0.53, 0.91)</b>              | <b>0.71 (0.54, 0.94)</b> |
| No   | Ref.                     | Ref.                     | Ref.                     | Ref.                     | Ref.                     | Ref.                     | Ref.                      | Ref.                      | Ref.                                  | Ref.                     |
| <b>DM with end-organ damage</b>                  |                          |                          |                          |                          |                          |                          |                           |                           |                                       |                          |
| Yes  | <b>1.72 (1.36, 2.17)</b> | 1.20 (0.94, 1.55)        | 1.23 (0.90, 1.68)        | 1.06 (0.74, 1.50)        | 1.26 (0.96, 1.65)        | 1.08 (0.80, 1.45)        | <b>2.27 (1.80, 2.87)</b>  | 1.29 (0.99, 1.69)         | 1.00 (0.67, 1.49)                     | 0.84 (0.55, 1.28)        |
| No   | Ref.                     | Ref.                     | Ref.                     | Ref.                     | Ref.                     | Ref.                     | Ref.                      | Ref.                      | Ref.                                  | Ref.                     |
| <b>CCI</b>                                       |                          |                          |                          |                          |                          |                          |                           |                           |                                       |                          |
| 0-1  | Ref.                     | Ref.                     | Ref.                     | Ref.                     | Ref.                     | Ref.                     | Ref.                      | Ref.                      | Ref.                                  | Ref.                     |
| 2-3  | <b>2.34 (1.93, 2.84)</b> | <b>2.32 (1.91, 2.83)</b> | <b>1.43 (1.14, 1.81)</b> | <b>1.43 (1.11, 1.84)</b> | <b>1.38 (1.11, 1.72)</b> | <b>1.44 (1.13, 1.82)</b> | <b>4.26 (3.50, 5.19)</b>  | <b>4.11 (3.33, 5.08)</b>  | 1.27 (0.95, 1.70)                     | 1.34 (0.98, 1.84)        |
| 4-5  | <b>3.55 (2.26, 5.58)</b> | <b>3.25 (2.05, 5.14)</b> | 1.57 (0.93, 2.65)        | 1.49 (0.86, 2.58)        | 1.16 (0.70, 1.93)        | 1.06 (0.62, 1.81)        | <b>6.22 (4.22, 9.19)</b>  | <b>5.90 (3.94, 8.84)</b>  | 1.60 (0.85, 3.00)                     | 1.62 (0.86, 3.04)        |
| 6+   | 1.92 (0.59, 6.21)        | 1.98 (0.56, 6.99)        | 1.94 (0.42, 8.96)        | 2.03 (0.40, 10.33)       | 0.73 (0.09, 5.70)        | 0.78 (0.09, 6.84)        | <b>7.04 (2.15, 23.01)</b> | <b>7.17 (2.21, 23.31)</b> | 1.21 (0.15, 9.47)                     | 1.44 (0.17, 11.90)       |
| <b>Emergent admission</b>                        |                          |                          |                          |                          |                          |                          |                           |                           |                                       |                          |
| Yes  | <b>0.57 (0.44, 0.74)</b> | <b>0.63 (0.48, 0.82)</b> | <b>0.77 (0.56, 1.07)</b> | 0.82 (0.59, 1.14)        | <b>0.43 (0.33, 0.57)</b> | <b>0.49 (0.37, 0.65)</b> | <b>0.64 (0.49, 0.83)</b>  | <b>0.62 (0.47, 0.82)</b>  | 0.90 (0.58, 1.39)                     | 1.04 (0.67, 1.61)        |

**Supplementary Table 4. Associations between study variables and postoperative complications**

| Variables                                | Complication, any        |                          | Infection         |                   | Urinary complications    |                          | AKI                      |                   | Wound and device-related complication |                   |
|--|--------------------------|--------------------------|-------------------|-------------------|--------------------------|--------------------------|--------------------------|-------------------|---------------------------------------|-------------------|
|  | Univariable              | Multivariable            | Univariable       | Multivariable     | Univariable              | Multivariable            | Univariable              | Multivariable     | Univariable                           | Multivariable     |
|  | OR (95% CI)              | aOR (95% CI)             | OR (95% CI)       | aOR (95% CI)      | OR (95% CI)              | aOR (95% CI)             | OR (95% CI)              | aOR (95% CI)      | OR (95% CI)                           | aOR (95% CI)      |
| No                                       | Ref.                     | Ref.                     | Ref.              | Ref.              | Ref.                     | Ref.                     | Ref.                     | Ref.              | Ref.                                  | Ref.              |
| <b>Weekend admission</b>                 |                          |                          |                   |                   |                          |                          |                          |                   |                                       |                   |
| Yes                                      | Ref.                     | Ref.                     | Ref.              | Ref.              | Ref.                     | Ref.                     | Ref.                     | Ref.              | Ref.                                  | Ref.              |
| No                                       | <b>0.56 (0.40, 0.80)</b> | <b>0.64 (0.45, 0.92)</b> | 0.74 (0.48, 1.14) | 0.79 (0.51, 1.24) | <b>0.48 (0.33, 0.71)</b> | <b>0.58 (0.39, 0.86)</b> | 0.99 (0.67, 1.46)        | 1.16 (0.76, 1.79) | 0.73 (0.42, 1.26)                     | 0.79 (0.45, 1.41) |
| <b>Hospital bed size</b>                 |                          |                          |                   |                   |                          |                          |                          |                   |                                       |                   |
| Small                                    | 1.02 (0.81, 1.28)        |                          | 0.85 (0.64, 1.13) |                   | 1.09 (0.84, 1.41)        |                          | <b>1.26 (1.00, 1.58)</b> |                   | 0.77 (0.51, 1.14)                     |                   |
| Medium                                   | 1.03 (0.85, 1.24)        |                          | 0.69 (0.52, 0.91) |                   | 1.03 (0.79, 1.34)        |                          | 1.12 (0.89, 1.41)        |                   | 0.87 (0.63, 1.20)                     |                   |
| Large                                    | Ref.                     |                          | Ref.              |                   | Ref.                     |                          | Ref.                     |                   | Ref.                                  |                   |
| <b>Hospital location/teaching status</b> |                          |                          |                   |                   |                          |                          |                          |                   |                                       |                   |
| Rural                                    | 0.87 (0.58, 1.31)        |                          | 0.68 (0.37, 1.24) |                   | <b>0.50 (0.45, 0.56)</b> |                          | 0.94 (0.54, 1.63)        |                   | 1.02 (0.57, 1.81)                     |                   |
| Urban nonteaching                        | 1.14 (0.94, 1.38)        |                          | 1.03 (0.79, 1.35) |                   | 1.11 (0.87, 1.42)        |                          | 0.98 (0.78, 1.22)        |                   | 1.14 (0.83, 1.56)                     |                   |
| Urban teaching                           | Ref.                     |                          | Ref.              |                   | Ref.                     |                          | Ref.                     |                   | Ref.                                  |                   |

Abbreviation: HMO, Health Maintenance Organization; RARC, robotic-assisted radical cystectomy; ORC, open radical cystectomy; DM, diabetes mellitus; CCI, Charlson Comorbidity Index; OR, odd ratio; aOR, adjusted odds ratio; CI, confidence interval.

P-value < 0.05 is shown in bold.

Variables that were significant in univariable regression were adjusted in multivariable models.