**Supplementary Table 1**: Detailed data about all operated patients.

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| # | Sex | Age at surgery | BMI | Smoking status | ASAscore | CCI | ECOG PS | Clinical tumor localization | Transplantation (before/after CUTE)\*=Immunosuppresive | Dialysis dependent pre-CUTE | Indication for CUTE |
| 1 | M | 62 | 20 | N/A | 3 | 1 | 0 | BC | None | Yes | ESRD + pT2G3 BC |
| 2 | M | 74 | 24.9 | Never | 3 | 8 | 3 | BC+Tx | Renal (before) | Yes | ESRD + pT1G3 BC + Tx TCC & failure + afunctional native kidneys |
| 3 | M | 66 | 30.9 | Active | 3 | 4 | 2 | BC | None | No | ESRD + pT2G3 BC |
| 4 | M | 48 | 19.8 | Active | 3 | 9 | 2 | BC+Tx | Renal (before) | No | ESRD + pT1G3 BC + Tx HG TCC |
| 5 | M | 68 | 24.9 | Never | 1 | 1 | 0 | bUT+BC | \*Renal (after) | No | pT1G3 BC + bUTUC |
| 6 | M | 61 | 23.8 | Ex | 1 | 2 | 0 | bUT+BC | None | No | MIBC + bUTUC + urethral TCC |
| 7 | M | 55 | 19.4 | Never | 4 | 9 | 1 | BC | Heart (before) | Yes | ESRD + pT1G3 BC (incl. bladder neck) |
| 8 | M | 66 | 22.5 | Never | 3 | 3 | 1 | bUT | None | No | pTaG2 BC + bUTUC + reduced bladder capacity |
| 9 | M | 67 | 26 | Active | 3 | 5 | 1 | uUT | \*Renal (after) | No | pT1G3 BC + right UTUC + left afunctional kidney |
| 10 | F | 69 | 20.5 | Never | 3 | 3 | 1 | uUT+BC | Renal (before) | No | ESRD + pT2G3 BC + left UTUC |
| 11 | M | 60 | 26 | Never | 1 | 2 | 0 | BC | Renal (before) | No | ESRD + pT2G3 BC + afunctional kidneys + Tx kidney |
| 12 | M | 77 | 21 | Ex | 4 | 4 | 1 | uUT+BC | Heart (before) | Yes | ESRD + pT2G3 BC + right UTUC + afunctional kidneys |
| 13 | F | 67 | 17.3 | N/A | 3 | 9 | 1 | BC | Renal + Pancreas (before) | Yes | ESRD + pT2G3 BC + afunctional kidneys + Tx failure |
| 14 | M | 61 | 31.2 | Never | 2 | 3 | 0 | BC | \*Renal (after) | No | ESRD + urachus Ca (confined to mucosa) |
| 15 | M | 64 | 26.7 | Ex | 3 | 3 | 0 | BC | Renal (before) | No | ESRD + pT1G3 BC + afunctional kidneys |
| 16 | M | 66 | 23.5 | Ex | 4 | 4 | 0 | BC | Renal (before) | No | ESRD + pT2G3 BC + afunctional kidneys + liposarcoma of Tx kidney |
| 17 | M | 72 | 19.8 | Active | 2 | 3 | 2 | uUT | \*Renal (after) | No | ESRD + right multifocal UTUC |
| 18 | M | 58 | 34 | Never | 2 | 6 | 0 | uUT | \*Renal (after) | No | Recurrent pTaG3 BC + right multifocal UTUC after left NUx for UTUC |
| \*19 | M | 79 | 28 | Never | 3 | 5 | 1 | uUT+BC | None | No | Recurrent pT1G3 BC + left multifocal UTUC after right NUx for TCC |
| 20 | M | 79 | 28 | Never | 2 | 0 | 0 | uUT | None | No | ESRD + recurrent pT1G3 BC + right UTUC after left NUx for TCC |
| 21 | F | 59 | 22.7 | Never | 3 | 5 | 2 | uUT+BC | None | No | pT2G3 BC + left UTUC after right NUx for TCC |
| 22 | M | 60 | 22.8 | Active | 2 | 3 | 0 | bUT | None | No | bUTUC after CPUx for MIBC |
| 23 | F | 72 | 24.8 | Never | 2 | 3 | 0 | uUT | None | No | Right UTUC after Cx and left NUx for MIBC & afunctional left kidney |
| 24 | M | 76 | 29.4 | Ex | 3 | 3 | 1 | uUT | None | Yes | ESRD + Left UTUC and infection in right kidney after Cx for MIBC |
| 25 | F | 76 | 25.2 | N/A | 3 | 4 | 0 | BC | None | No | SCC bladder (with perivesical mass) + uUTUC after left NUx |

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| CUTEtype | Pre- main surgery | Main surgery | Post- main surgery | Duration (min) | EBL (mL) | Intraoperative complication | Early postoperative CDC (≤30 d) (highest grade) | Late postoperative CDC (>30 d) (highest grade) |
| One-step |  | CUTE |  | 240 | 800 | No | Grade 2-Ileus+Altered mental status | None |
| One-step |  | CUTE + Tx-ectomy |  | 146 | 400 | No | Grade 1-Altered mental status | None |
| One-step |  | CUTE |  | 170 | 1000 | No | None | None |
| One-step |  | CUTE + Tx-ectomy |  | N/A | N/A | No | Grade 2-Gout | Grade 3b-Penile wound |
| One-step |  | CUTE |  | 180 | 2200 | No | Grade 3a-Esophagitis | None |
| One-step |  | CUTE |  | 480 | 4100 | No | None | Grade 2-Pneumonia |
| One-step |  | CUTE |  | 210 | 1500 | Major vascular | None | None |
| One-step |  | CUTE |  | 180 | 1350 | No | Grade 2-Transfusion | None |
| One-step |  | CUTE |  | 190 | 800 | No | Grade 3a-Melena | Grade 2-Altered mental status |
| One-step |  | CUTE |  | 318 | 1660 | No | Grade 2-UTI+Ileus | None |
| One-step |  | CUTE |  | 220 | 1000 | No | Grade 3b-Cholecystitis+Hemothorax | None |
| One-step |  | CUTE |  | 200 | 1400 | Rectal injury | Grade 5-Sepsis+MOF | N/A |
| One-step |  | CUTE + Tx-ectomy |  | 270 | 2000 | No | Grade 3b-Carotis endarterectomy+Hemothorax | Grade 5-Aspiration+MOF |
| One-step |  | CUTE |  | 210 | 350 | No | None | None |
| One-step |  | CUTE |  | 270 | 1400 | No | Grade 2-Ileus | None |
| One-step |  | CUTE |  | 300 | 2500 | No | Grade 3b-Wound dehiscence | None |
| Stepwise | uNx | CPUx + uNUx |  | 150 | 900 | No | None | None |
| Stepwise | uNUx | CPUx | uNUx | 250 | 3500 | No | Grade 4a-Overdosage morphine | None |
| Stepwise | uNUx | CPUx + uNUx |  | 200 | 1100 | No | Grade 2-Wound infection | Grade 2-Pneumonia+Pulmonary edema |
| Stepwise | uNUx | CPUx + uNUx |  | 120 | 500 | No | Grade 3a-Abcess drainage | None |
| Stepwise | uNUx | APE + uNUx |  | 180 | 1400 | No | Grade 4a-Sepsis+AMI+Respiratory failure | Grade 5-Pneumona |
| Stepwise |  | CPUx | bNUx | 300 | N/A | No | Grade 4a-Sepsis | None |
| Stepwise |  | APE + uNUx | uNUx | 285 | 150 | No | Grade 2-Fever | None |
| Stepwise |  | CPUx | bNUx | 180 | 250 | Small bowel inj | Grade 4a-Sepsis | Grade 5-Cardiac arrest |
| Stepwise | uNx | APE + uNUx |  | 160 | 750 | No | Grade 2-Fever+Cholecystitis | None |

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| Lenght of hospital stay (d) | Length of ICU stay (d) | Pathological tumor localization | Highest pT-stage BC | Highest pT-stage UTUC | LND | Recurrence | Time fromCUTE to recurrence endpoint | Cause of death | Time fromCUTE to death endpoint |
| 16 | 0 | Bladder | pT2a | pT0 | Superextended | Yes - local (penis & pelvis) | 3 | UC | 6 |
| 12 | 1 | Bladder + Tx | pTa | pT0 | No | No | 50 | Unknown | 50 |
| 13 | 0 | Bladder | pT2 | pT0 | No | No | 78 | Unknown | 78 |
| 20 | 0 | Bladder + Tx | pTis | pT0 | Superextended | No | 59 | Alive | 59 |
| 21 | 0 | Bladder + bUT | pTa | pTa | Extended | No | 137 | Alive | 137 |
| 17 | 0 | Bladder + bUT | pT2 | pTa | Superextended | No | 43 | Non-cancer related | 43 |
| 15 | 4 | Bladder + bUT | pT2b | pT3 | No | Yes - systemic (liver) | 2 | UC | 14 |
| 12 | 0 | bUT | pT0 | pTa | Extended | No | 161 | Non-cancer related | 161 |
| N/A | 0 | uUT | pT0 | pTa | Extended | No | 104 | Other malignancy | 112 |
| 50 | 0 | uUT | pT0 | pT4 | Superextended | Yes - systemic (lung + liver + paraaortic LNs) | 7 | UC | 30 |
| 53 | 4 | Bladder + bUT | pT3a | pTis | Standard | Yes - local (renal Tx) | 10 | UC | 22 |
| 25 | 0 | Bladder | pT4a | pT0 | No | No | 0 | Treatment-related | 0 |
| 77 | 12 | Bladder | pT3a | pT0 | Standard | No | 2 | Treatment-related | 2 |
| 14 | 0 | Bladder | pT1 | pT0 | No | No | 113 | Unknown | 113 |
| 15 | 0 | Bladder | pT1 | pT0 | No | Yes - local (obturatorloge + right symphisis pubis) | 19 | Alive | 21 |
| 30 | 2 | Bladder | pT4a | pT0 | No | No | 5 | Alive | 5 |
| 22 | 0 | uUT | pT0 | pT1 | No | No | 118 | Other malignancy | 118 |
| 20 | 0 | Bladder + bUT | pTa | pTa | Standard | Yes - local (LNs below aortic bifurcation) | 44 | UC | 50 |
| 64 | 1 | Bladder + uUT | pT1 | pT3 | Superextended | No | 2 | Unknown | 2 |
| 23 | 0 | bUT | pT0 | pT2 | Standard | No | 25 | Unknown | 25 |
| 34 | 34 | none | pT0 | pT0 | No | No | 1 | Treatment-related | 1 |
| 23 | 0 | bUT | pT1 | pTa | No | No | 119 | Non-cancer related | 119 |
| 23 | 0 | uUT | pT2 | pT3 | Standard | No | 111 | Alive | 111 |
| 36 | 30 | none | N/A | pT1 | No | No | 2 | Treatment-related | 2 |
| 15 | 0 | Bladder | pT3b | pT0 | Extended | No | 2 | Alive | 2 |

N/A: Not applicable/Not available, BMI: Body-mass index, ASA: American Society of Anesthesiologists, CCI: Charlson comorbidity index, ECOG: Eastern Cooperative Oncology Group, BC: Bladder cancer, UTUC: Upper urinary tract urothelial carcinoma, Tx: Transplant kidney, uUT: Unilateral upper tract, bUT: Bilateral upper tract, ESRD: End-stage renal disease, TCC: Transitional cell carcinoma, HG: High grade, CUTE: Complete urinary tract extirpation, Tx-ectomy: Transplantectomy, CPUx: Cystoprostatourethrectomy, APE: Anterior pelvic exenteration, uNUx: Unilateral nephroureterectomy, bNUx: Bilateral nephroureterectomy, EBL: Estimated blood loss, CDC: Clavien-Dindo classification, UTI: Urinary tract infection, MOF: Multiple organ failure, AMI: Acute myocardial infarction, ICU: Intensive care unit, LN: Lymph node, LND: Lymph node dissection, UC: Urothelial carcinoma.