

Supplementary Table 1. Summary of near-miss incidents

Incidents	n	%
Intraoperative answering of a telephone call	310	49.4
Malfunctions and connection problems with surgical forceps and devices	123	19.6
Anatomical misidentification	51	8.1
Unexpected heavy bleeding	50	8.0
Communication problems among surgeons and surgical team	35	5.6
Sponge/Needle count discrepancy	23	3.7
Anesthesia-related problems	21	3.3
Sudden deterioration of patient's condition	9	1.4
Temporary loss of needles or instruments	4	0.6
Port site problems	1	0.2

* Several near-miss incidents simultaneously reported in one case.

Supplementary Table 2. Summary of other difficulties

Difficulties	n	%
Marked adhesion in the abdominal cavity	69	35.4
Experiencing any difficulty or exhaustion during the procedure	47	24.1
Surgery with an unscheduled procedure	22	11.3
Difficulty due to patients' body size	16	8.2
Collaborative surgery with other disciplines	13	6.7
Redo surgery	9	4.6
Adhesive visceral fat	7	3.6
Poor physical condition of the surgeon	5	2.6
Conversion to open surgery	4	2.1
Anatomical abnormalities	3	1.5

* Several other difficulties simultaneously reported in one case.

Supplementary Table 3. Patients' histories

Comorbidities	n
Hypertension	1019
Previous surgery	565
Diabetes	397
Cardiovascular disease	383
Cancer	361
Cerebrovascular disease	222
Chronic kidney disease	85
Non hemodialysis	60
Hemodialysis	25
Gastrointestinal disease (benign)	65
Orthopedic disease (benign)	62
Pulmonary respiratory disease (benign)	50
Dyslipidemia	47
Mental illness/Dementia	47
Urological disease (benign)	33
Ophthalmic disease	29
Hyperuricemia	28
Neurodegenerative disease	23
Metabolic endocrine disease	21
Obesity	19
Rheumatoid arthritis	14
Otorhinolaryngological disease (benign)	11
Infectious disease	9
Gynecological disease (benign)	5
Miscellaneous	66
None	472

* Several comorbidities simultaneously reported in one case.

Supplementary Table 4. Details of surgical procedures

Procedure	n
Open (n=259)	
Cystectomy	
Radical cystectomy (Ileal conduit)	19*
Radical cystectomy (Cutaneous ureterostomy)	15
Radical cystectomy (Ileal neobladder)	2
Radical cystectomy (Cutaneous ureterostomy) + Nephroureterectomy (Open)	5
Radical cystectomy (Cutaneous ureterostomy) + Nephroureterectomy (Laparoscopic)	3
Radical cystectomy (without urinary diversion) + Nephroureterectomy (Open)	1
Partial cystectomy	6†
Prostatectomy	
Radical prostatectomy	68
Suprapubic simple prostatectomy	1
Radical nephroureterectomy	8
Nephrectomy	
Radical nephrectomy	25‡
Simple nephrectomy	3
Partial nephrectomy	12
Adrenalectomy	4
Resection of retroperitoneal tumors	7
Retroperitoneal lymph node dissection	6
Resection of urachal remnant	3
Transplantation surgery	
Renal transplantation	39
Graftectomy	3
Lithotomy	
Cystolithotomy	2
Ureterolithotomy	1
Pyeloplasty	1
Enterocystoplasty	2
Anastomosis	
Ureterovesical	4

Ureter-ureter	3
Ureter-ileal conduit	2
Suprapubic catheterization (Open cystotomy)	4
Vesicocutaneous fistula	2
Miscellaneous	8

Laparoscopic (n=321)

Cystectomy

Radical cystectomy (Ileal conduit)	1
Radical cystectomy (Cutaneous ureterostomy)	2

Radical nephroureterectomy 88

Nephrectomy

Radical nephrectomy	84
Simple nephrectomy	5
Partial nephrectomy	22

Adrenalectomy

Adrenalectomy	40
Partial adrenalectomy	1

Resection of retroperitoneal tumors 6

Retroperitoneal lymph node dissection 3

Resection of urachal remnant 7

Transplantation surgery

Donor nephrectomy	47
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Lithotomy

Ureterolithotomy	2
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Pyeloplasty 2

Varicocelelectomy 2

Orchidopexy 1

Peritoneal dialysis catheter placement 4

Miscellaneous 4

Robotic (n=415)

Cystectomy

Radical cystectomy (Ileal conduit)	34§
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Radical cystectomy (Cutaneous ureterostomy)	4
Radical cystectomy (Ileal neobladder)	4
Radical cystectomy (without urinary diversion)	3
Radical cystectomy (Cutaneous ureterostomy) + Nephroureterectomy (Laparoscopic)	5
Radical cystectomy (Cutaneous ureterostomy) + Nephroureterectomy (Robotic)	1
Prostatectomy	
Radical prostatectomy	247
Nephrectomy	
Partial nephrectomy	105
Sacrocolpopexy	7
Pyeloplasty	4
Anastomosis	
Ureter-ureter	1

Transurethral (n=733)

Transurethral resection of bladder tumor (TURBT)	
TURBT	281
TURBT + Upper urinary tract procedures ^{II}	13
Transurethral resection of the prostate (TURP)	
TURP	60
TURP + Transurethral cystolithotripsy	3
Transurethral enucleation of the prostate with bipolar system (TUEB)	21
Transurethral lithotripsy	
Ureterolithotripsy	135
Cystolithotripsy	19
Transurethral electrocoagulation	11
Dilation	
Ureteral dilation	14
Urethral dilation	7
Transurethral incision	
Bladder neck contracture	4
Urethral stricture	1
Ureteroscopy	19
Bladder hydrodistention	8

Ureteral stent placement	127 [¶]
Miscellaneous	10

Others (n=441)

Vascular access surgery

Creation of vascular access (Arteriovenous fistula)	68
Permanent dialysis catheter placement	2
Thrombectomy of arteriovenous fistula	2

Prostate needle biopsy

Transrectal prostate needle biopsy (TRPB)	32
Transperineal prostate needle biopsy (TPPB)	11

Orchidopexy

Undescended testis	45
Testicular torsion	15

Orchiectomy

Simple orchiectomy	35
Radical orchiectomy	15

Hydrocelectomy

18

Spermatocectomy

4

Varicocelectomy

1

Penectomy

Partial penectomy	3
Total penectomy	2 ^{**}

Fiducial marker (Gold marker) placement

9

Surgery for phimosis

Circumcision	9
Dorsal slit of prepuce back	5

Urethroplasty

7

Hypospadias repair

4

Artificial urinary sphincter insertion

5

Excision of caruncles

2

Tension-free vaginal tape (TVT) or Transobturator tape (TOT)

2

Tension-free vaginal mesh (TVM)

8

Vesicovaginal fistula repair

2

Percutaneous cystostomy	29
Percutaneous nephrostomy	37††
Percutaneous puncture of renal cyst	3
Percutaneous kidney biopsy	11‡‡
Peritoneal dialysis catheter placement/removal or creation of exit site	24
Central venous access port placement	7
Miscellaneous	24

* Contains one case of Total pelvic exenteration.

† Contains two cases requiring simultaneous ureterovesical anastomosis.

‡ Contains three cases requiring simultaneous thrombectomy.

§ Contains one case of Total pelvic exenteration.

|| Upper urinary tract procedures were as follows: ureteroscopy=7, ureteral stent placement=4, laser ablation of renal pelvis tumor=1, and retrograde pyelography=1.

¶ Contains one case of metallic stent placement.

** Contains one case requiring simultaneous sentinel lymph node biopsy.

†† Contains three cases requiring simultaneous ureteral stent placement, and one case of nephrostomy of transplanted kidney.

‡‡ Contains five cases of transplanted kidney biopsy.

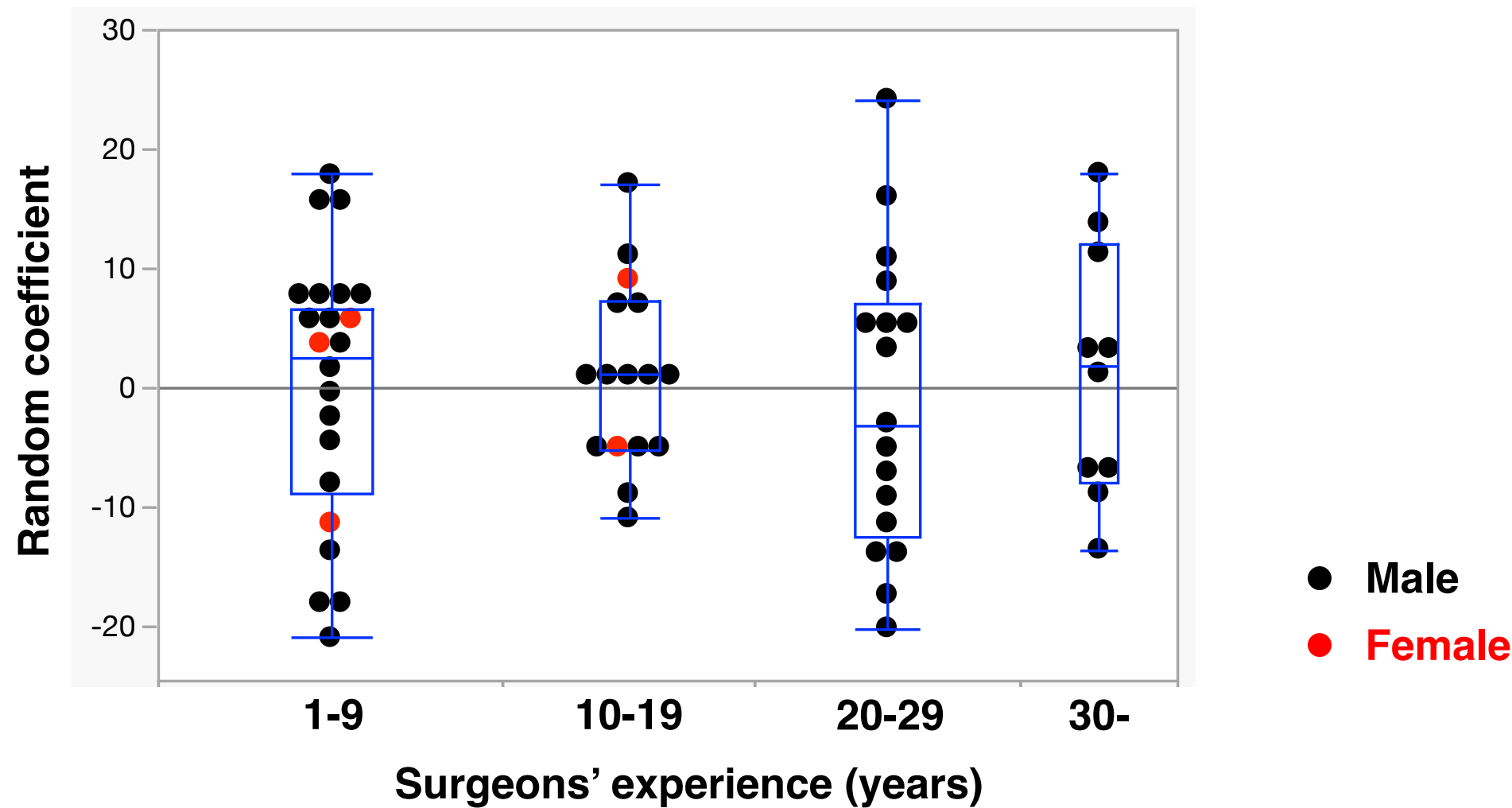
TURBT, Transurethral resection of bladder tumor; TURP, Transurethral resection of the prostate;

TUEB, Transurethral enucleation of the prostate with bipolar system; TRPB, Transrectal prostate

needle biopsy; TPPB, Transperineal prostate needle biopsy; TVT, Tension-free vaginal tape; TOT,

Transobturator tape; TVM, Tension-free vaginal mesh.

Supplementary Figure 1. Box-plot of the random coefficients for years of surgeons' experience



Supplementary Figure 1. Box-plot of the random coefficients for years of surgeons' experience

Black dots represent male surgeons, and red dots represent female surgeons. The random coefficients of the mixed-effects model did not differ among the 4 groups of years of surgeons' experience (1-9, 10-19, 20-29, and 30 or more years)