

**THE BRITISH ASSOCIATION OF
UROLOGICAL SURGEONS
Section of Oncology**

Analyses of Radical Cystectomies performed between

January 1st and December 31st 2017

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AUDIT RESULTS SUMMARY – Cystectomy dataset

All the data presented here are a summary of the data extracted from the web-based database on 3rd September 2018 and relate to operations performed during the whole of 2017. Once extracted the data was transferred to an Access™ database for validation before being imported into Tableau™ for generation of the analyses. The validation mainly comprised checks for duplicate and / or empty entries and invalid / inappropriate dates.

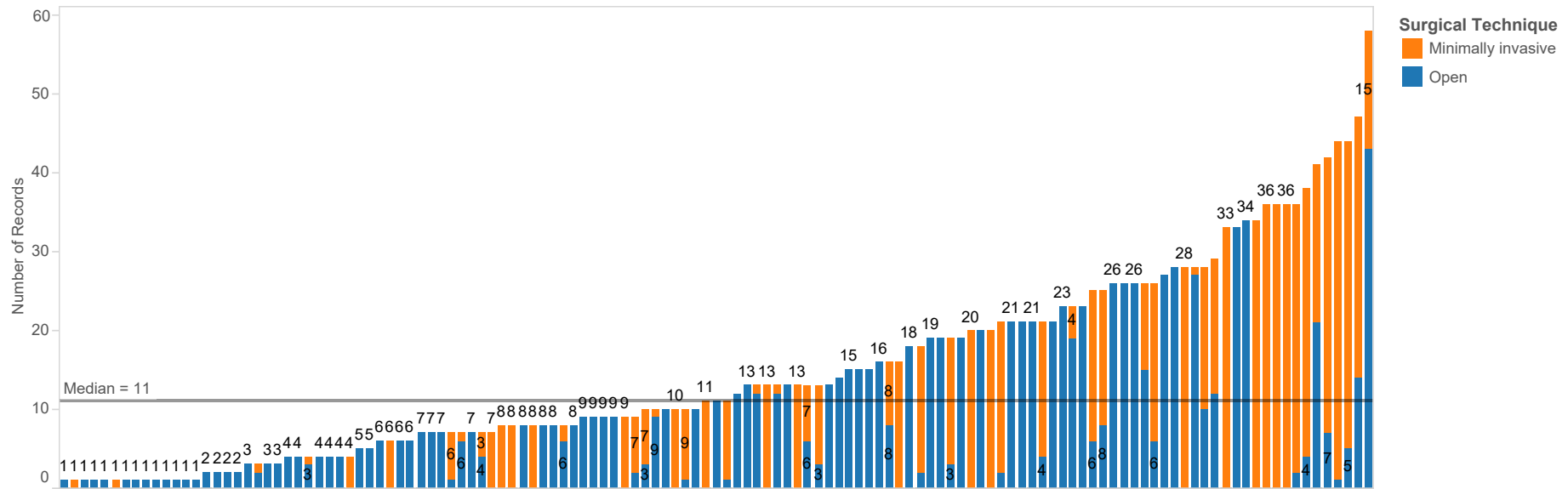
The data collection period was from 1 January 2016 to 31 December 2017.

- 1,906 cases were submitted in total, of which 1,768 were from England. The 1,906 cases came from 129 consultants at 67 sites and include 35 private patients from 18 consultants.
- Median number of cases per consultant: 11 (range 1 - 58)
- Median number of cases per centre: 24(range 1 - 91)
- The overall transfusion rate was 13.4% By technique, the transfusion rates were: open 19.7% and minimally invasive 5.9%.
- The overall known Clavien Dindo Grade III plus post-operative complication rate was 9.1%. (Open 10.0%, minimally invasive 7.9%)
- Hospital Episode Statistics (HES) for 2017 indicate that there were 1,913 cystectomies undertaken so we collected data on 92% of the cases undertaken in England in 2017.

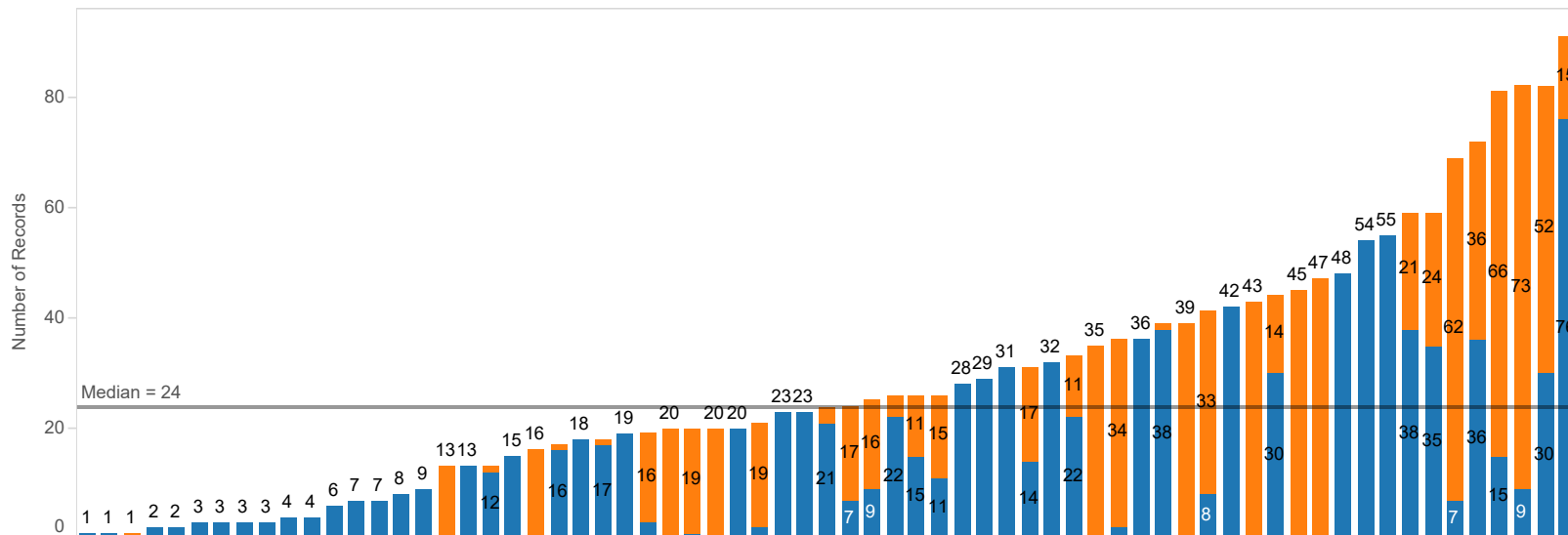
Total returns for Radical Cystectomy procedures performed between 01/01/2017 and 31/12/2017

1906 cases from 129 consultants at 67 centres including 35 private cases from 18 consultants

Total by Consultant



Total by Centre



Totals by Technique

Gender	Open		Surgical Technique Minimally invasive		Grand Total	
	N	% of Total	N	% of Total	N	% of Total
Male	762	72.9%	671	77.9%	1,433	75.2%
Female	283	27.1%	190	22.1%	473	24.8%
Grand Total	1,045	100.0%	861	100.0%	1,906	100.0%

Technique by Age

Surgical Technique	N	Median Age	Min. Age	Max. Age
Open	1,010	69	0	99
Minimally invasive	861	69	0	100

Indication

Indication For Cystectomy	N	% of Total
Muscle invasive TCC	844	44.3%
Primary NMIBC	248	13.0%
NMIBC refractory to intravesical treatment	295	15.5%
Primary adenocarcinoma	28	1.5%
Primary CIS	81	4.2%
Salvage after radiotherapy	81	4.2%
Sarcoma	11	0.6%
Squamous cell carcinoma	71	3.7%
Benign disease	35	1.8%
Gynaecological cancer	17	0.9%
Secondary adenocarcinoma	18	0.9%
Other	149	7.8%
Not recorded	28	1.5%
Grand Total	1,906	100.0%

Pre-op Imaging

Pre Operative Imaging (group)	N	% of Total
CT	1,060	55.6%
CT +/- Bone scan, USS, MRI Others	611	32.1%
MRI	22	1.2%
MRI + others	5	0.3%
USS +/- Other	5	0.3%
PET	4	0.2%
CT,PET,IVU,USS	1	0.1%
PET,Bone scan	1	0.1%
None	91	4.8%
Not recorded	106	5.6%
Grand Total	1,906	100.0%

Pre-operative Serum Egfr

ops EgfrNor..	Serum Egfr	N	% of Total
Yes (>60)	not recorded / applicable	1,272	66.7%
No	20 - 39	87	4.6%
	40 - 60	307	16.1%
	<20	8	0.4%
	not recorded / applicable	37	1.9%
Not recorded	not recorded / applicable	195	10.2%
Grand Total		1,906	100.0%

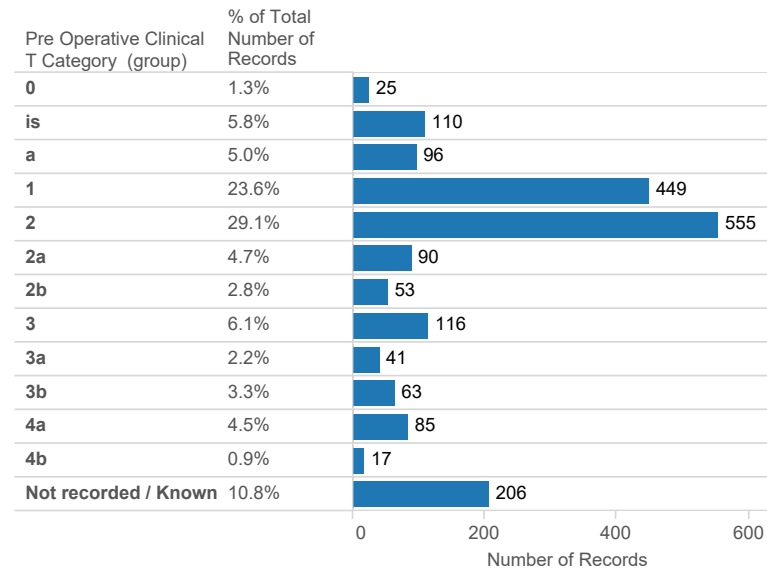
Pre-op Serum Creatinine

Pre-op Serum Creat..	N	% of Total
0 - 120	1,420	74.5%
121 - 200	212	11.1%
> 200	25	1.3%
Not recorded	249	13.1%
Grand Total	1,906	100.0%

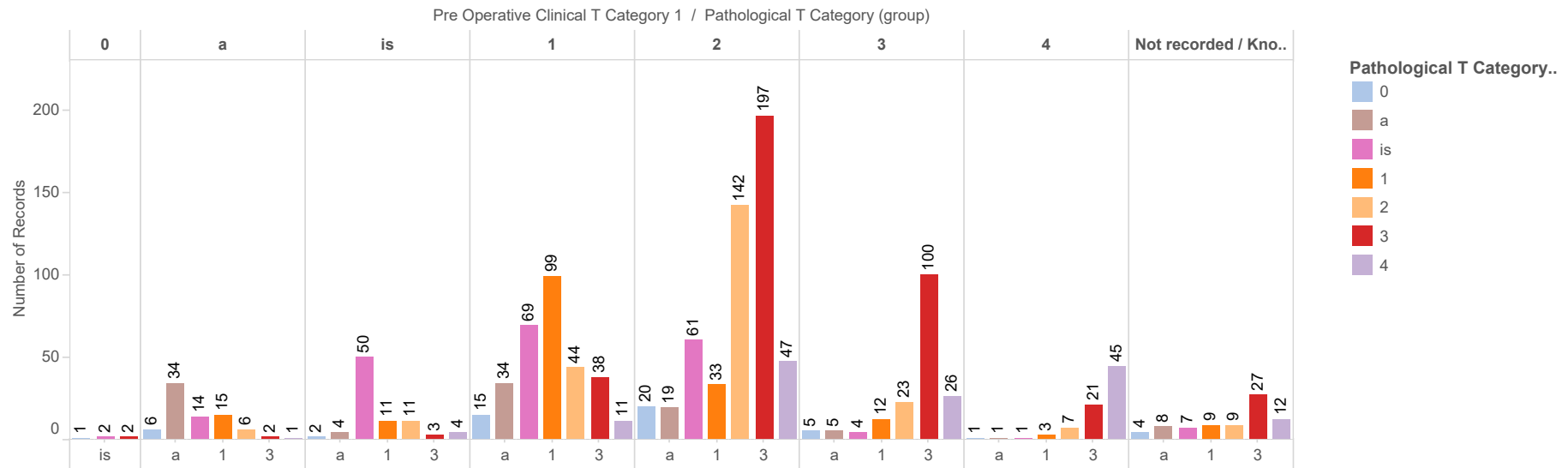
Status Upper Tracts

ops StatusUpperTracts	N	% of Total
Normal	1,232	64.6%
Unilateral hydronephrosis	258	13.5%
Bilateral hydronephrosis	78	4.1%
TCC	30	1.6%
RCC	6	0.3%
Single functioning kidney	41	2.2%
Other	45	2.4%
Not recorded	216	11.3%
Grand Total	1,906	100.0%

Pre-operative CT category



Comparison clinical T category with pathological T category



Operating Surgeon

Grade Of Mai..	Supervised Training ..	N	% of Total
Consultant	Yes	13	0.7%
	No	136	7.1%
	Null	1,667	87.5%
	Total	1,816	95.3%
SpR	Yes	45	2.4%
	Total	45	2.4%
Other	Yes	3	0.2%
	Total	3	0.2%
Not recorded	Null	42	2.2%
	Total	42	2.2%
Grand Total		1,906	100.0%

Diversion Procedure

Diversion Procedure	Open		Surgical Technique		Grand Total	
	N	% of Total	N	% of Total	N	% of Total
Continent cutaneous	12	1.1%	3	0.3%	15	0.8%
Ileal conduit	892	85.4%	768	89.2%	1,660	87.1%
Orthotopic	55	5.3%	31	3.6%	86	4.5%
Rectal diversion			1	0.1%	1	0.1%
Other	30	2.9%	26	3.0%	56	2.9%
Not recorded	56	5.4%	32	3.7%	88	4.6%
Grand Total	1,045	100.0%	861	100.0%	1,906	100.0%

Joint Operating Cases

Grade Of Mai..	Joint Operating C..	N	% of Total
Consultant	Yes	497	26.1%
	No	1,319	69.2%
	Total	1,816	95.3%
SpR	No	45	2.4%
	Total	45	2.4%
Other	No	3	0.2%
	Total	3	0.2%
Not recorded	Yes	15	0.8%
	No	27	1.4%
	Total	42	2.2%
Grand Total		1,906	100.0%

Time from Diagnosis to Cystectomy

Time Diagnosis to cystectomy (..	N	% of Total
0-30days	1	0.2%
31 to 60	13	2.3%
61-90	24	4.2%
91-180	139	24.6%
181-360	127	22.4%
>360	262	46.3%
Grand Total	566	100.0%

CPEX Testing

Cpex Testing	N	% of Total
Yes	575	30.2%
No	1,176	61.7%
Not recorded	155	8.1%
Grand Total	1,906	100.0%

Total Pelvic exenteration

Total Pelvic Exenteration	Surgical Technique					
	Open		Minimally invasive		Grand Total	
	N	% of Total	N	% of Total	N	% of Total
Yes	65	6.2%	4	0.5%	69	3.6%
No	980	93.8%	857	99.5%	1,837	96.4%
Grand Total	1,045	100.0%	861	100.0%	1,906	100.0%

N.B. Specific question added to dataset late 2017 and combined with free text data from 'other concomitant procedures' field

Synchronous Urethrectomy

Surgical Technique	Combined Synchronous Urethrectomy							
	Yes		No		Not recorded		Grand Total	
	N	% of Total Number o..	N	% of Total Number o..	N	% of Total Number o..	N	% of Total Number o..
Open	155	14.8%	814	77.9%	76	7.3%	1,045	100.0%
Minimally invasive	75	8.7%	735	85.4%	51	5.9%	861	100.0%
Grand Total	230	12.1%	1,549	81.3%	127	6.7%	1,906	100.0%

Synchronous Nephroureterectomy

Surgical Technique	Combined Synchronous Nephroureterectomy							
	Yes		No		Not recorded		Grand Total	
	N	% of Total Number of Records ..	N	% of Total Number of Records ..	N	% of Total Number of Records ..	N	% of Total Number of Records ..
Open	36	3.4%	933	89.3%	76	7.3%	1,045	100.0%
Minimally invasive	15	1.7%	794	92.2%	52	6.0%	861	100.0%
Grand Total	51	2.7%	1,727	90.6%	128	6.7%	1,906	100.0%

Other Concomitant procedures

Surgical Technique	Concomitant Procedures Specify (group)					
	Other Concomitant procedure		None/ Not recorded		Grand Total	
	N	% of Total Number ..	N	% of Total Number ..	N	% of Total Number ..
Open	203	19.4%	842	80.6%	1,045	100.0%
Minimally invasive	117	13.6%	744	86.4%	861	100.0%
Grand Total	320	16.8%	1,586	83.2%	1,906	100.0%

N.B. Text field in dataset from start of data collection - includes all other procedures including Total Pelvic exenterations.

Duration of Operation

Surgical Technique	Duration Of Operation (group)									
	<3 hours		3-5 hours		>5 hours		Null		Grand Total	
	N	% of Total Number of Records ..	N	% of Total Number of Records ..	N	% of Total Number of Records ..	N	% of Total Number of Records ..	N	% of Total Number of Records ..
Open	98	9.4%	439	42.0%	421	40.3%	87	8.3%	1,045	100.0%
Minimally invasive	65	7.5%	350	40.7%	409	47.5%	37	4.3%	861	100.0%
Grand Total	163	8.6%	789	41.4%	830	43.5%	124	6.5%	1,906	100.0%

Blood Loss

Surgical Technique	Measured Blood Loss													
	<300 ml		300-500 ml		>500-1000 ml		>1000-2000 ml		>2000 ml		Not recorded		Grand Total	
	N	% of Total Number of Records ..	N	% of Total Number of Records ..	N	% of Total Number of Records ..	N	% of Total Number of Records ..	N	% of Total Number of Records ..	N	% of Total Number of Records ..	N	% of Total Number of Records ..
Open	157	15.0%	295	28.2%	299	28.6%	122	11.7%	35	3.3%	137	13.1%	1,045	100.0%
Minimally in..	462	53.7%	224	26.0%	109	12.7%	18	2.1%	2	0.2%	46	5.3%	861	100.0%
Grand Total	619	32.5%	519	27.2%	408	21.4%	140	7.3%	37	1.9%	183	9.6%	1,906	100.0%

Transfusions

Surgical Technique	Number Of Units Of Blood Transfused During This Surgical Ad											
	Nil		Minor (<2 units)		Moderate (3-6 units)		Major (>6 units)		Not recorded		Grand Total	
	N	% of Total Number..	N	% of Total Number..	N	% of Total Number ..	N	% of Total Number ..	N	% of Total Number ..	N	% of Total Number ..
Open	807	77.2%	133	12.7%	52	5.0%	13	1.2%	40	3.8%	1,045	100.0%
Minimally in..	801	93.0%	39	4.5%	10	1.2%	1	0.1%	10	1.2%	861	100.0%
Grand Total	1,608	84.4%	172	9.0%	62	3.3%	14	0.7%	50	2.6%	1,906	100.0%

Known Transfusion Rate

Surgical Technique	Transfusion			
	Yes		No	
	N	% of Total Number of Records ..	N	% of Total Number of Records ..
Open	198	19.7%	807	80.3%
Minimally invasive	50	5.9%	801	94.1%
Grand Total	248	13.4%	1,608	86.6%

Intraoperative Complications by Technique

Intra Operative Complications ..	Surgical Technique					
	Open		Minimally invasive		Grand Total	
	N	% of To..	N	% of To..	N	% of To..
None	857	82.0%	718	83.4%	1,575	82.6%
Adhesions	32	3.1%	16	1.9%	48	2.5%
Difficult dissection	48	4.6%	34	3.9%	82	4.3%
Haemorrhage / Bleeding	29	2.8%	18	2.1%	47	2.5%
Nerve injury	1	0.1%	3	0.3%	4	0.2%
Rectal Injury	9	0.9%	5	0.6%	14	0.7%
Robotic device failure			1	0.1%	1	0.1%
Small bowel injury	3	0.3%	1	0.1%	4	0.2%
Vascular injury	4	0.4%	3	0.3%	7	0.4%
Port complications			1	0.1%	1	0.1%
Haemorrhage / bleeding,Small ..	1	0.1%			1	0.1%
Vascular injury,Difficult dissec..	1	0.1%	1	0.1%	2	0.1%
Not recorded	60	5.7%	60	7.0%	120	6.3%
Grand Total	1,045	100.0%	861	100.0%	1,906	100.0%

Postoperative Complications by Technique

Post Operative Complications (gro..	Surgical Technique					
	Open		Minimally invasive		Grand Total	
	N	% of Total	N	% of Total	N	% of Total
No Complications	616	58.9%	548	63.6%	1,164	61.1%
Anastomotic leak	8	0.8%	11	1.3%	19	1.0%
Bleeding/Haemorrhage	6	0.6%	7	0.8%	13	0.7%
Bowel obstruction	10	1.0%	8	0.9%	18	0.9%
Chest Infection +/- Others	51	4.9%	31	3.6%	82	4.3%
Intra-abdominal infection +/- others	35	3.3%	25	2.9%	60	3.1%
Lymphocele	3	0.3%	1	0.1%	4	0.2%
MI	5	0.5%	3	0.3%	8	0.4%
Wound infection / dehiscence	73	7.0%	19	2.2%	92	4.8%
PE / DVT	9	0.9%	2	0.2%	11	0.6%
Prolonged ileus +/- others	80	7.7%	59	6.9%	139	7.3%
Urine leak	10	1.0%	6	0.7%	16	0.8%
Not recorded	139	13.3%	141	16.4%	280	14.7%
Grand Total	1,045	100.0%	861	100.0%	1,906	100.0%

Post-operative complication rate

Postoprecorded

Surgical Technique	No Complication		Complication		Grand Total	
	N	% of Total Number of Records ..	N	% of Total Number of Records ..	N	% of Total Number of Records ..
Open	616	68.0%	290	32.0%	906	100.0%
Minimally invasive	548	76.1%	172	23.9%	720	100.0%
Grand Total	1,164	71.6%	462	28.4%	1,626	100.0%

Clavien Dindo Grade of Post operative complications

Clavien Dindo Grade Of Complications

Surgical Technique	Grade I		Grade II		Grade IIIa		Grade IIIb		Grade IVa		Grade IVb		Grade V		No complication		Grand Total	
	N	% of Total Number of Records ..	N	% of Total Number of Records ..	N	% of Total Number of Records ..	N	% of Total Number of Records ..	N	% of Total Number of Records ..	N	% of Total Number of Records ..	N	% of Total Number of Records ..	N	% of Total Number of Records ..	N	% of Total Number of Records ..
Open	68	7.7%	113	12.8%	38	4.3%	37	4.2%	6	0.7%			8	0.9%	616	69.5%	886	100.0%
Minimally in..	48	6.7%	61	8.6%	15	2.1%	25	3.5%	4	0.6%	3	0.4%	9	1.3%	548	76.9%	713	100.0%
Grand Total	116	7.3%	174	10.9%	53	3.3%	62	3.9%	10	0.6%	3	0.2%	17	1.1%	1,164	72.8%	1,599	100.0%

Known Post-operative Clavien Dindo Grade III plus complication rate

Surgical Technique

Postoprecorded	Clavien Dindo ..	Open		Minimally invasive		Grand Total	
		N	% of Total	N	% of Total	N	% of Total
Complication	Grade I & II	181	20.4%	109	15.3%	290	18.1%
	Grade III plus	89	10.0%	56	7.9%	145	9.1%
	Total	270	30.5%	165	23.1%	435	27.2%
No Complication	Not applicable	616	69.5%	548	76.9%	1,164	72.8%
	Total	616	69.5%	548	76.9%	1,164	72.8%
Grand Total		886	100.0%	713	100.0%	1,599	100.0%

Total by LOS

Surgical Technique	N	Median	Minimum	Maximum
Open	1,045	11	0	169
Minimally invasive	861	7	0	132
Grand Total	1,906	9	0	169

30 day mortality

Surgical Technique	Thirty Day Mortality (group)				Grand Total	
	No		y		N	% of Total Number of Records ..
	N	% of Total Number of Records ..	N	% of Total Number of Records ..		
Open	1,020	98.08%	20	1.92%	1,040	100.00%
Minimally invasive	849	98.72%	11	1.28%	860	100.00%
Grand Total	1,869	98.37%	31	1.63%	1,900	100.00%

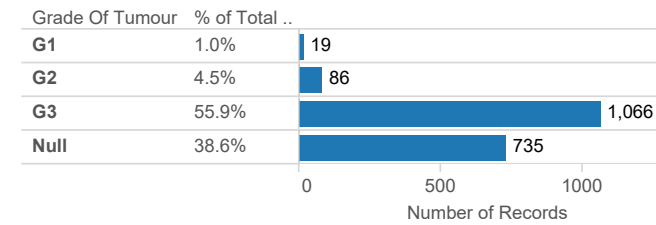
cumulative 90 day mortality

Surgical Technique	Ninety Day Mortality (group)				Grand Total	
	No		Yes		N	% of Total Number of Records ..
	N	% of Total Number of Records ..	N	% of Total Number of Records ..		
Open	1,014	97.03%	31	2.97%	1,045	100.00%
Minimally invasive	847	98.37%	14	1.63%	861	100.00%
Grand Total	1,861	97.64%	45	2.36%	1,906	100.00%

EnhancedRecovery

Surgical Technique	Enhanced Recovery Pathway						Grand Total	
	Yes		No		Null		N	% of Total Number of Records ..
	N	% of Total Number of Records ..	N	% of Total Number of Records ..	N	% of Total Number of Records ..		
Open	693	66.3%	227	21.7%	125	12.0%	1,045	100.0%
Minimally invasive	623	72.4%	72	8.4%	166	19.3%	861	100.0%
Grand Total	1,316	69.0%	299	15.7%	291	15.3%	1,906	100.0%

Grade of Tumour



Unplanned readmission

Surgical Technique	Unplanned Readmission To Hospital						Grand Total	
	Yes		No		Null		N	% of Total Number of Records ..
	N	% of Total Number of Records ..	N	% of Total Number of Records ..	N	% of Total Number of Records ..		
Open	105	10.0%	835	79.9%	105	10.0%	1,045	100.0%
Minimally invasive	87	10.1%	635	73.8%	139	16.1%	861	100.0%
Grand Total	192	10.1%	1,470	77.1%	244	12.8%	1,906	100.0%

Operative Histology

Operative Histology (group)	N	% of Total
No cancer	220	11.5%
TCC	859	45.1%
TCC + Others	58	3.0%
Primary CIS	124	6.5%
Primary CIS+ other	1	0.1%
Squamous cell carcinoma	77	4.0%
Squamous cell carcinoma plus others	8	0.4%
Primary adenocarcinoma	40	2.1%
Primary adenocarcinoma + others	1	0.1%
Secondary adenocarcinoma	15	0.8%
Gynaecological cancer	9	0.5%
Gynaecological cancer + others	1	0.1%
Sarcoma	8	0.4%
Radiation change only	2	0.1%
Other	156	8.2%
Not recorded	327	17.2%
Grand Total	1,906	100.0%

Lymph nodes

Lymph Nodes Sampled	Positive Lymph Nodes										Grand Total					
	None		1 - 5		6-10		11-20		21-30		>30		Not recorded		N	% of Total Nu..
	N	% of Total Nu..	N	% of Total Nu..	N	% of Total Nu..	N	% of Total Nu..	N	% of Total Nu..	N	% of Total Nu..	N	% of Total Nu..		
1 - 5	124	88.6%	15	10.7%	1	0.7%									140	100.0%
6-10	209	81.3%	44	17.1%	3	1.2%							1	0.4%	257	100.0%
11-20	556	79.1%	117	16.6%	15	2.1%	3	0.4%					12	1.7%	703	100.0%
21-30	178	74.5%	51	21.3%	3	1.3%	3	1.3%	1	0.4%	1	0.4%	2	0.8%	239	100.0%
>30	46	69.7%	15	22.7%	3	4.5%	2	3.0%							66	100.0%
Grand Total	1,113	79.2%	242	17.2%	25	1.8%	8	0.6%	1	0.1%	1	0.1%	15	1.1%	1,405	100.0%

LNDlevel2

Lymph Node Dissection	N	% of Total
Level I	193	13.7%
Level I,Level II	73	5.2%
Level I,Level II,Level III	3	0.2%
Level II	861	61.3%
Level II,Level III	5	0.4%
Level III	161	11.5%
Level I,Level III	1	0.1%
None	35	2.5%
Not recorded	73	5.2%
Grand Total	1,405	100.0%

Known Positive Surgical Margin Rate

Surgical Technique	Positive Margins					
	Yes		No		Grand Total	
	N	% of Total Number of Records ..	N	% of Total Number of Records ..	N	% of Total Number of Records ..
Open	73	9.1%	729	90.9%	802	100.0%
Minimally invasive	41	7.7%	491	92.3%	532	100.0%
Grand Total	114	8.5%	1,220	91.5%	1,334	100.0%

Status at most recent Follow-up

Current Status	Patient Status	Time to Follow Up									
		0-90		91 - 180		181 - 360		> 360		Grand Total	
		N	% of Total Number of Records ..	N	% of Total Number of Records ..	N	% of Total Number of Records ..	N	% of Total Number of Records ..	N	% of Total Number of Records ..
Not recorded	Alive	10	38.5%	4	15.4%	6	23.1%	6	23.1%	26	100.0%
	Died in followup	10	24.4%	15	36.6%	13	31.7%	3	7.3%	41	100.0%
Alive with local recurrence of bladd..	Alive			3	100.0%					3	100.0%
Alive with lymph node involvement ..	Alive	3	50.0%	2	33.3%	1	16.7%			6	100.0%
Alive with metastatic disease	Alive	5	41.7%	3	25.0%	4	33.3%			12	100.0%
Alive with no evidence of bladder c..	Alive	119	41.0%	68	23.4%	73	25.2%	30	10.3%	290	100.0%
Discharged to GP / Other consultant	Alive	10	83.3%	2	16.7%					12	100.0%
Grand Total		157	40.3%	97	24.9%	97	24.9%	39	10.0%	390	100.0%

Participating Hospital Centres 2017

We are grateful to consultants from the following NHS Centres / trusts who returned data for these analyses:

Aberdeen Royal Infirmary	Lister Hospital, Stevenage	Royal Marsden Hospital, London
Addenbrooke's Hospital, Cambridge	Manchester Royal Infirmary	Royal Preston Hospital
Alexandra Hospital, Redditch	Medway Maritime Hospital, Gillingham	Royal Shrewsbury Hospital
Arrowe Park Hospital, Wirral	Monklands District General Hospital, Airdrie	Royal Stoke University Hospital
Barking, Havering & Redbridge University Hospital	Morrison Hospital, Swansea	Royal Surrey County Hospital, Guildford
Bradford Royal Infirmary	New Cross Hospital, Wolverhampton	Salford Royal Hospital
Castle Hill Hospital, Hull	Ninewells Hospital, Dundee	Southampton General Hospital
Charing Cross Hospital, London	Norfolk & Norwich University Hospital	Southend Hospital
Cheltenham General Hospital	Northwick Park Hospital	Southmead Hospital, Bristol
Christie Hospital	Nottingham City Hospital	St George's Hospital, London
Churchill Hospital, Oxford	Pinderfields General Hospital, Wakefield	St James's University Hospital, Leeds
Colchester General Hospital	Queen Alexandra Hospital, Portsmouth	Stepping Hill Hospital, Stockport
Darent Valley Hospital, Kent	Queen Elizabeth Hospital, Birmingham	Stobhill Hospital, Glasgow
Derriford Hospital, Plymouth	Queen Elizabeth University Hospital	Sunderland Royal Hospital
Eastbourne District General Hospital	Raigmore Hospital, Inverness	University College Hospital, London
Forth Valley Royal Hospital, Larbert	Royal Blackburn Hospital	Walsgrave Hospital, Coventry
Freeman Hospital, Newcastle	Royal Alexandra Hospital, Paisley	Wycombe Hospital, High Wycombe
Guy's & Thomas's Hospital	Royal Berkshire Hospital, Reading	Wythenshawe Hospital, Manchester
Heartlands Hospital, Birmingham	Royal Bournemouth General Hospital	
James Cook University Hospital, Middlesbrough	Royal Derby Hospital	
Kent & Canterbury Hospital	Royal Devon & Exeter Hospital	
Leicester General Hospital	Royal Hallamshire Hospital, Sheffield	
Lincoln County Hospital	Royal Liverpool University Hospital	