

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

Analyses of Radical Cystectomies performed between

January 1st and December 31st 2019

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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 28th May 2020 and relate to operations performed during the whole of 2019. Once extracted the data was transferred to an AccessTM database for validation before being imported into TableauTM for generation of the analyses. The validation mainly comprised checks for duplicate and / or empty entries and invalid / inappropriate dates. 9 procedures recorded as abandoned were removed from the dataset before analysis to prevent statistical skewing.

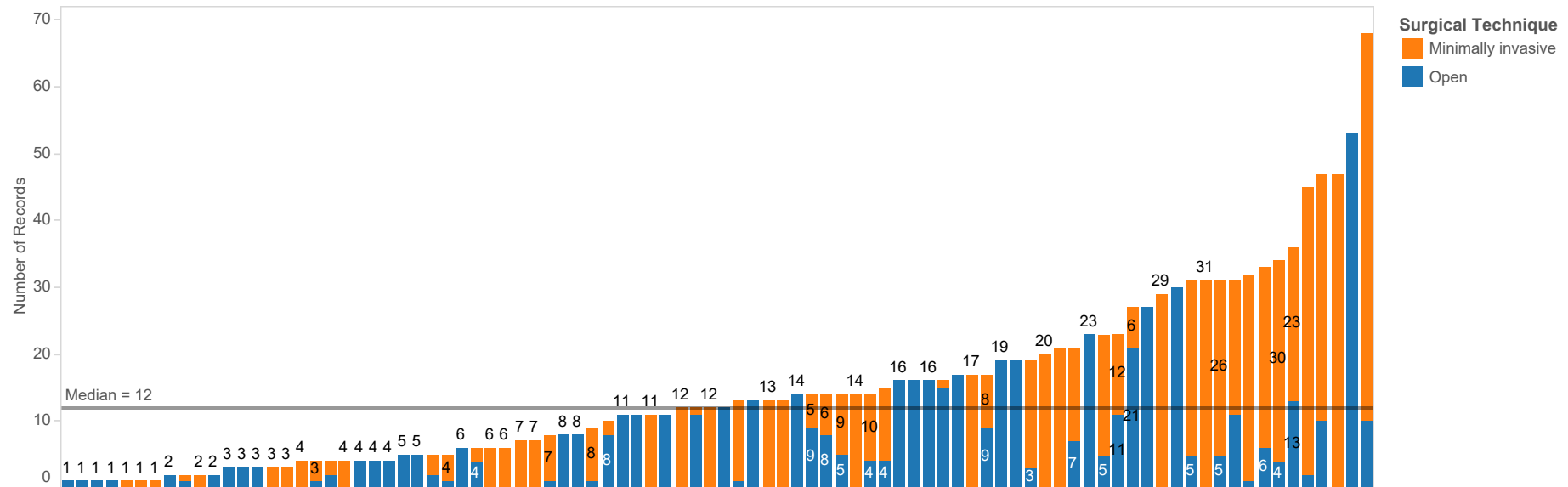
The data collection period was from 1 January 2019 to 31 December 2019.

- 1,337 cases were submitted in total, of which 1,270 were from England. The 1,337 cases came from 90 consultants at 48 sites and include 21 private patients from 11 consultants.
- Median number of cases per consultant: 12 (range 1 - 68)
- Median number of cases per centre: 23 (range 1 - 80)
- The overall transfusion rate was 9.0% By technique, the transfusion rates were: open 17.0% and minimally invasive 3.1%.
- The overall known Clavien Dindo Grade III plus post-operative complication rate was 7.2%. (Open 9.1%, minimally invasive 5.5%)
- Hospital Episode Statistics (HES) for 2019 indicate that there were 1,605 radical cystectomies undertaken so we collected data on 83% of the cases undertaken in England in 2019.

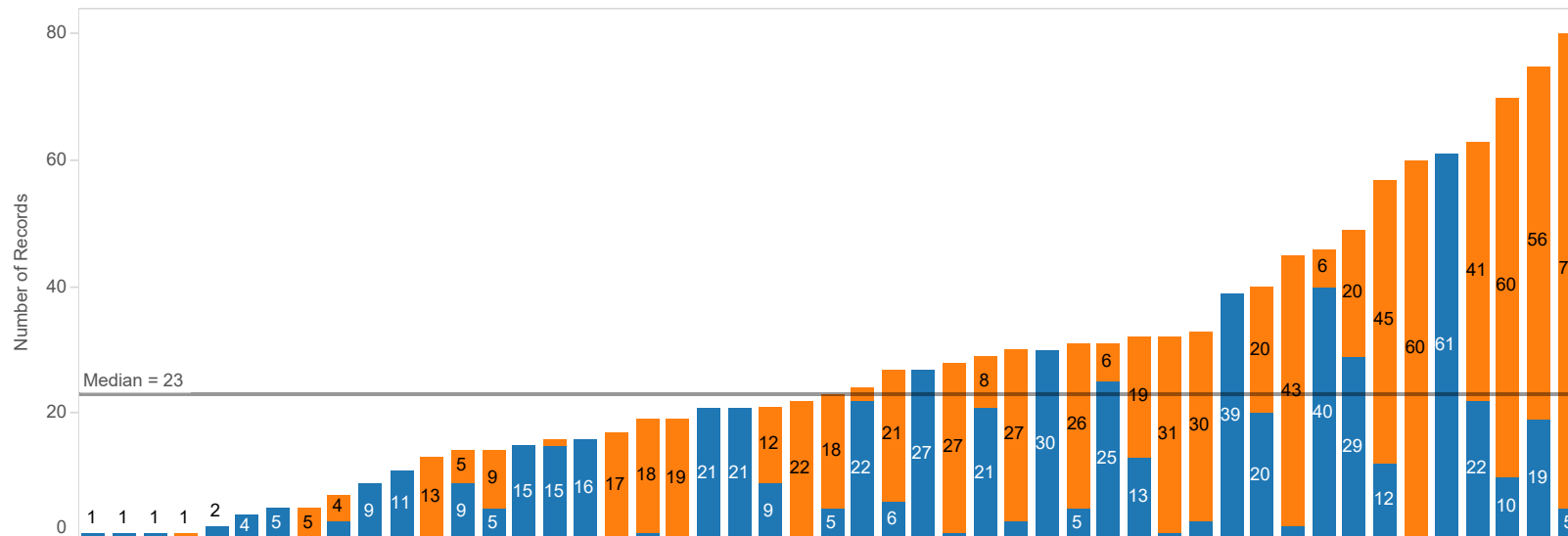
Total returns for Radical Cystectomy procedures performed between 01/01/2019 and 31/12/2019

1,337 cases from 90 consultants at 48 sites including 21 private cases from 11 consultants

Total by Consultant



Total by Centre



Totals by Technique

Gender	Surgical Technique (group)					
	Minimally invasive		Open		Grand Total	
	Number of Records	% of Total Number of Records along Table (Across)	Number of Records	% of Total Number of Records along Table (Across)	Number of Records	% of Total Number of Records along Table (Across)
Male	598	60.2%	396	39.8%	994	100.0%
Female	169	49.3%	174	50.7%	343	100.0%
Grand Total	767	57.4%	570	42.6%	1,337	100.0%

Technique by Age

Surgical Technique	Number of Records	Median Age	Min. Age	Max. Age
Open	569.0	69.0	27.0	100.0
Minimally invasive	764.0	70.0	0.0	100.0

Indication

Indication For Cystectomy	Number ..	% of Tot..
Muscle invasive TCC	586	43.8%
Primary NMIBC	178	13.3%
NMIBC refractory to intravesical treatment	192	14.4%
Primary adenocarcinoma	24	1.8%
Primary CIS	24	1.8%
Salvage after radiotherapy	54	4.0%
Sarcoma	7	0.5%
Squamous cell carcinoma	68	5.1%
Benign disease	25	1.9%
Gynaecological cancer	8	0.6%
Secondary adenocarcinoma	8	0.6%
Other	104	7.8%
Not recorded	59	4.4%
Grand Total	1,337	100.0%

Pre-op Imaging

Pre Operative Imaging (group)	Number ..	% of Tot..
CT	637	47.6%
CT +/- Bone scan, USS, MRI Others	533	39.9%
MRI	14	1.0%
Bone scan	1	0.1%
MRI + others	2	0.1%
USS +/- Other	1	0.1%
PET +/- others	1	0.1%
IVU,USS	1	0.1%
None	54	4.0%
Not recorded	93	7.0%
Grand Total	1,337	100.0%

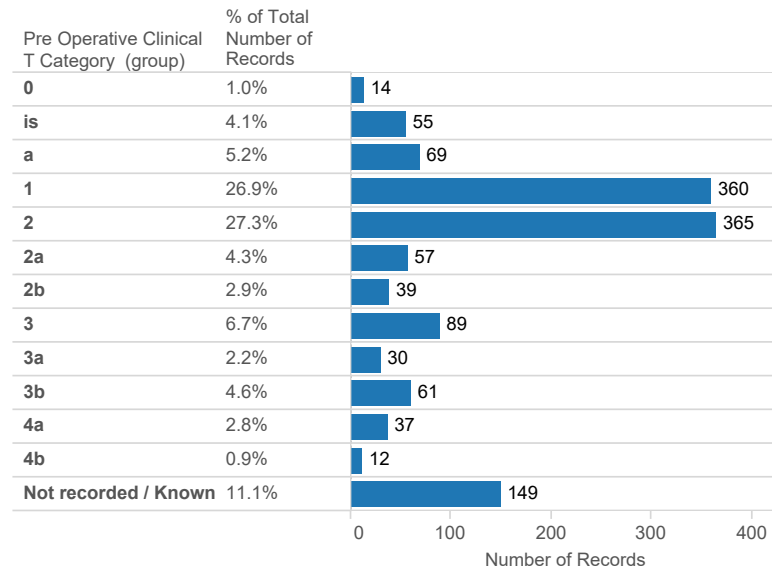
Pre-op Serum Creatinine

Pre-op Serum Creatinine	Number of Records	% of Total Number of Recor..
0 - 120	930	69.6%
121 - 200	136	10.2%
> 200	27	2.0%
Not recorded	244	18.2%
Grand Total	1,337	100.0%

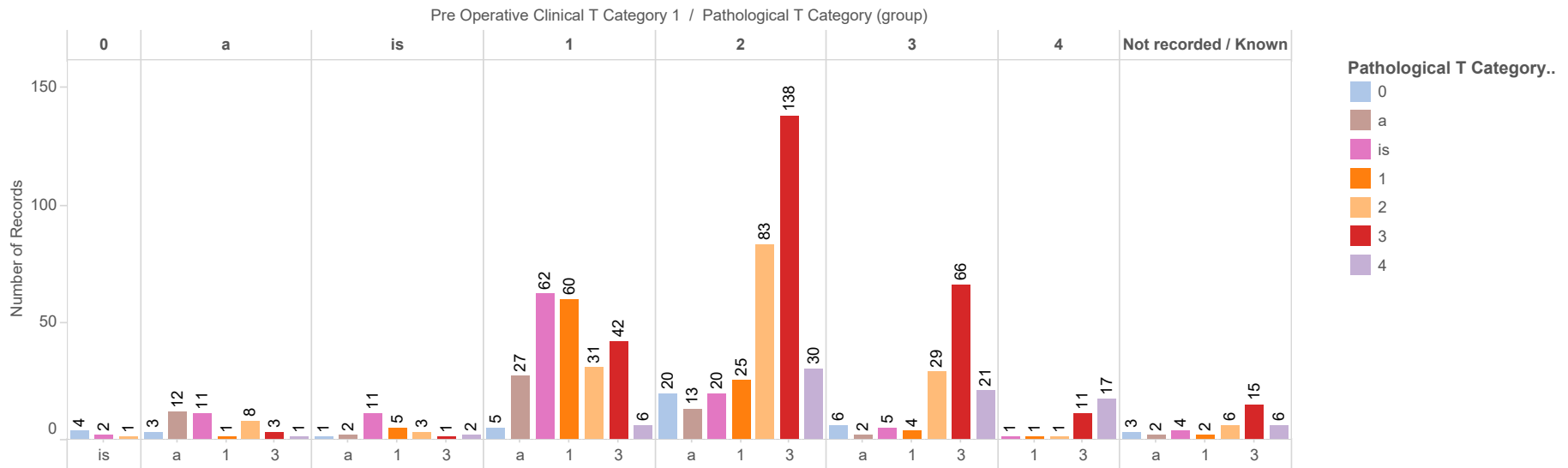
Status Upper Tracts

ops StatusUpperTracts	Number of Records	% of Total Number of Recor..
Normal	795	59.5%
Unilateral hydronephrosis	160	12.0%
Bilateral hydronephrosis	55	4.1%
TCC	16	1.2%
RCC	4	0.3%
Single functioning kidney	34	2.5%
Other	13	1.0%
Not recorded	260	19.4%
Grand Total	1,337	100.0%

Pre-operative CT category



Comparison clinical T category with pathological T category



Operating Surgeon

Grade Of Mai..	Supervised Training ..	Number ..	% of Tot..
Consultant	Yes	20	1.5%
	No	124	9.3%
	Null	1,118	83.6%
	Total	1,262	94.4%
SpR	Yes	12	0.9%
	No	1	0.1%
	Total	13	1.0%
Other	Yes	3	0.2%
	No	32	2.4%
	Total	35	2.6%
Not recorded	Null	27	2.0%
	Total	27	2.0%
Grand Total		1,337	100.0%

Diversion Procedure

Diversion Procedure	Open		Surgical Technique		Grand Total	
	Number of Records	% of Total Number of Records along Table (Down)	Number of Records	% of Total Number of Records along Table (Down)	Number of Records	% of Total Number of Records along Table (Down)
Continent cutaneous	8	1.4%	2	0.3%	10	0.7%
Ileal conduit	486	85.3%	683	89.0%	1,169	87.4%
Orthotopic	40	7.0%	24	3.1%	64	4.8%
Other	12	2.1%	23	3.0%	35	2.6%
Not recorded	24	4.2%	35	4.6%	59	4.4%
Grand Total	570	100.0%	767	100.0%	1,337	100.0%

Joint Operating Cases

Grade Of Mai..	Joint Operating C..	Number ..	% of Tot..
Consultant	Yes	383	28.6%
	No	879	65.7%
	Total	1,262	94.4%
SpR	Yes	1	0.1%
	No	12	0.9%
	Total	13	1.0%
Other	Yes	1	0.1%
	No	34	2.5%
	Total	35	2.6%
Not recorded	Yes	4	0.3%
	No	23	1.7%
	Total	27	2.0%
Grand Total		1,337	100.0%

Time from Diagnosis to Cystectomy

Time Diagnosis to cystectomy (..	Number of Records	% of Total Number of Recor..
61-90	3	1.0%
91-180	60	19.4%
181-360	71	23.0%
>360	175	56.6%
Grand Total	309	100.0%

CPEX Testing

Cpex Testing	Number of Records	% of Total Number of Recor..
Yes	436	32.6%
No	735	55.0%
Not recorded	166	12.4%
Grand Total	1,337	100.0%

Total Pelvic exenteration

Total Pelvic Exenteration	Surgical Technique					
	Open		Minimally invasive		Grand Total	
	Number of Records	% of Total Number of Records ..	Number of Records	% of Total Number of Records ..	Number of Records	% of Total Number of Records ..
Yes	40	7.0%	9	1.2%	49	3.7%
No	437	76.7%	674	87.9%	1,111	83.1%
Not recorded	93	16.3%	84	11.0%	177	13.2%
Grand Total	570	100.0%	767	100.0%	1,337	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		Null		Grand Total	
	Number of Records	% of Total Number o..	Number of Records	% of Total Number o..	Number of Records	% of Total Number o..	Number of Records	% of Total Number o..
Open	87	15.3%	425	74.6%	58	10.2%	570	100.0%
Minimally invasive	63	8.2%	654	85.3%	50	6.5%	767	100.0%
Grand Total	150	11.2%	1,079	80.7%	108	8.1%	1,337	100.0%

Synchronous Nephroureterectomy

Surgical Technique	Combined Synchronous Nephroureterectomy							
	Yes		No		Null		Grand Total	
	Number of Records	% of Total Number of Records ..	Number of Records	% of Total Number of Records ..	Number of Records	% of Total Number of Records ..	Number of Records	% of Total Number of Records ..
Open	14	2.5%	494	86.7%	62	10.9%	570	100.0%
Minimally invasive	16	2.1%	700	91.3%	51	6.6%	767	100.0%
Grand Total	30	2.2%	1,194	89.3%	113	8.5%	1,337	100.0%

Other Concomitant procedures

Surgical Technique	Concomitant Procedures Specify (group)					
	Other Concomitant procedure		None/ Not recorded		Grand Total	
	Number of Records	% of Total Number ..	Number of Records	% of Total Number ..	Number of Records	% of Total Number ..
Open	82	14.4%	488	85.6%	570	100.0%
Minimally invasive	96	12.5%	671	87.5%	767	100.0%
Grand Total	178	13.3%	1,159	86.7%	1,337	100.0%

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

Duration of Operation

Duration Of Operation (group)

Surgical Technique	<3 hours		3-5 hours		>5 hours		Not recorded		Grand Total	
	Number of Records	% of Total Number of Records ..	Number of Records	% of Total Number of Records ..	Number of Records	% of Total Number of Records ..	Number of Records	% of Total Number of Records ..	Number of Records	% of Total Number of Records ..
Open	53	9.3%	255	44.7%	212	37.2%	50	8.8%	570	100.0%
Minimally invasive	62	8.1%	323	42.1%	309	40.3%	73	9.5%	767	100.0%
Grand Total	115	8.6%	578	43.2%	521	39.0%	123	9.2%	1,337	100.0%

Blood Loss

Measured Blood Loss

Surgical Technique	<300 ml		300-500 ml		>500-1000 ml		>1000-2000 ml		>2000 ml		Not recorded		Grand Total	
	Number of Records	% of Total Number of Records ..	Number of Records	% of Total Number of Records ..	Number of Records	% of Total Number of Records ..	Number of Records	% of Total Number of Records ..	Number of Records	% of Total Number of Records ..	Number of Records	% of Total Number of Records ..	Number of Records	% of Total Number of Records ..
Open	131	23.0%	168	29.5%	152	26.7%	59	10.4%	11	1.9%	49	8.6%	570	100.0%
Minimally in..	406	52.9%	192	25.0%	80	10.4%	14	1.8%			75	9.8%	767	100.0%
Grand Total	537	40.2%	360	26.9%	232	17.4%	73	5.5%	11	0.8%	124	9.3%	1,337	100.0%

Transfusions

Number Of Units Of Blood Transfused During This Surgical Ad

Surgical Technique	Nil		Minor (<2 units)		Moderate (3-6 units)		Major (>6 units)		Not recorded		Grand Total	
	Number of Records	% of Total Number..	Number of Records	% of Total Number..	Number of Records	% of Total Number..	Number of Records	% of Total Number..	Number of Records	% of Total Number..	Number of Records	% of Total Number..
Open	460	80.7%	74	13.0%	17	3.0%	3	0.5%	16	2.8%	570	100.0%
Minimally in..	728	94.9%	21	2.7%	2	0.3%			16	2.1%	767	100.0%
Grand Total	1,188	88.9%	95	7.1%	19	1.4%	3	0.2%	32	2.4%	1,337	100.0%

Known Transfusion Rate

Transfusion

Surgical Technique	Yes		No	
	Number of Records	% of Total Number of Records ..	Number of Records	% of Total Number of Records ..
Open	94	17.0%	460	83.0%
Minimally invasive	23	3.1%	728	96.9%
Grand Total	117	9.0%	1,188	91.0%

Intraoperative Complications by Technique

Intra Operative Complications (group)	Surgical Technique					
	Open		Minimally invasive		Grand Total	
	Number of Records	% of Total Number..	Number of Records	% of Total Number..	Number of Records	% of Total Number..
None	471	82.6%	657	85.7%	1,128	84.4%
Adhesions	16	2.8%	11	1.4%	27	2.0%
Difficult dissection	20	3.5%	28	3.7%	48	3.6%
Haemorrhage / Bleeding	20	3.5%	10	1.3%	30	2.2%
Nerve injury	2	0.4%			2	0.1%
Rectal Injury	6	1.1%	2	0.3%	8	0.6%
Small bowel injury	2	0.4%	2	0.3%	4	0.3%
Vascular injury	1	0.2%	3	0.4%	4	0.3%
Not recorded	32	5.6%	53	6.9%	85	6.4%
Adhesions,Port complications			1	0.1%	1	0.1%
Grand Total	570	100.0%	767	100.0%	1,337	100.0%

Postoperative Complications by Technique

Post Operative Complications (group) 1	Surgical Technique					
	Open		Minimally invasive		Grand Total	
	Number of Records	% of Total Number of Records ..	Number of Records	% of Total Number of Records ..	Number of Records	% of Total Number of Records ..
No Complications	366	64.2%	429	55.9%	795	59.5%
Anastomotic leak	4	0.7%	2	0.3%	6	0.4%
Bleeding/Haemorrhage	6	1.1%	2	0.3%	8	0.6%
Bowel obstruction	6	1.1%	2	0.3%	8	0.6%
Chest Infection +/- Others	22	3.9%	24	3.1%	46	3.4%
Intra-abdominal infection +/- others	14	2.5%	17	2.2%	31	2.3%
Lymphocoele	4	0.7%	3	0.4%	7	0.5%
MI	1	0.2%			1	0.1%
Wound infection / dehiscence	35	6.1%	11	1.4%	46	3.4%
PE / DVT	7	1.2%	2	0.3%	9	0.7%
Prolonged ileus +/- others	34	6.0%	61	8.0%	95	7.1%
Urine leak	5	0.9%	9	1.2%	14	1.0%
Not recorded	66	11.6%	205	26.7%	271	20.3%
Grand Total	570	100.0%	767	100.0%	1,337	100.0%

Post-operative complication rate

Post Operative Complications (group)

Surgical Technique	None		complication		Not recorded		Grand Total	
	Number of Records	% of Total Number of Records ..	Number of Records	% of Total Number of Records ..	Number of Records	% of Total Number of Records ..	Number of Records	% of Total Number of Records ..
Open	366	64.2%	138	24.2%	66	11.6%	570	100.0%
Minimally invasi..	429	55.9%	133	17.3%	205	26.7%	767	100.0%
Grand Total	795	59.5%	271	20.3%	271	20.3%	1,337	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		Not recorded		Grand Total	
	Number of Records	% of Total Number of Records ..	Number of Records	% of Total Number of Records ..	Number of Records	% of Total Number of Records ..	Number of Records	% of Total Number of Records ..	Number of Records	% of Total Number of Records ..	Number of Records	% of Total Number of Records ..	Number of Records	% of Total Number of Records ..	Number of Records	% of Total Number of Records ..	Number of Records	% of Total Number of Records ..
Open	14	10.1%	76	55.1%	16	11.6%	18	13.0%	4	2.9%	1	0.7%	7	5.1%	2	1.4%	138	100.0%
Minimally in..	26	19.5%	77	57.9%	13	9.8%	10	7.5%	5	3.8%			2	1.5%			133	100.0%
Grand Total	40	14.8%	153	56.5%	29	10.7%	28	10.3%	9	3.3%	1	0.4%	9	3.3%	2	0.7%	271	100.0%

Known Post-operative Clavien Dindo Grade III plus complication rate

Surgical Technique

Clavien Dindo Grade Of Complications (group)	Open		Minimally invasive		Grand Total	
	Number of Records	% of Total Number of Records ..	Number of Records	% of Total Number of Records ..	Number of Records	% of Total Number of Records ..
Grade I & II	90	17.9%	104	18.5%	194	18.2%
Grade III plus	46	9.1%	31	5.5%	77	7.2%
No Post-op Complication	368	73.0%	427	76.0%	795	74.6%
Grand Total	504	100.0%	562	100.0%	1,066	100.0%

Total by LOS

Surgical Technique	Number of Records	Median Length Of Stay	Min. Length Of Stay	Max. Length Of Stay
Open	570	10	0	101
Minimally invasive	767	8	1	366
Grand Total	1,337	8	0	366

30 day mortality

Surgical Technique	Thirty Day Mortality (group)					
	No		y		Grand Total	
	Number of Records	% of Total Number of Records ..	Number of Records	% of Total Number of Records ..	Number of Records	% of Total Number of Records ..
Open	557	98.76%	7	1.24%	564	100.00%
Minimally invasive	760	99.48%	4	0.52%	764	100.00%
Grand Total	1,317	99.17%	11	0.83%	1,328	100.00%

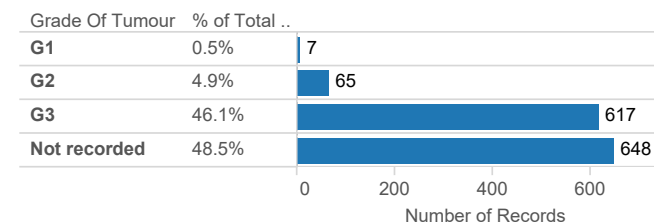
cumulative 90 day mortality

Surgical Technique	Ninety Day Mortality (group)					
	No		Yes		Grand Total	
	Number of Records	% of Total Number of Records ..	Number of Records	% of Total Number of Records ..	Number of Records	% of Total Number of Records ..
Open	553	97.02%	17	2.98%	570	100.00%
Minimally invasive	758	98.83%	9	1.17%	767	100.00%
Grand Total	1,311	98.06%	26	1.94%	1,337	100.00%

EnhancedRecovery

Surgical Technique	Enhanced Recovery Pathway						Grand Total	
	Yes		No		Null		Number of Records	% of Total Number of Records ..
	Number of Records	% of Total Number of Records ..	Number of Records	% of Total Number of Records ..	Number of Records	% of Total Number of Records ..		
Open	441	77.4%	50	8.8%	79	13.9%	570	100.0%
Minimally invasive	504	65.7%	52	6.8%	211	27.5%	767	100.0%
Grand Total	945	70.7%	102	7.6%	290	21.7%	1,337	100.0%

Grade of Tumour



Unplanned readmission

Surgical Technique	Unplanned Readmission To Hospital						Grand Total	
	Yes		No		Null		Number of Records	% of Total Number of Records ..
	Number of Records	% of Total Number of Records ..	Number of Records	% of Total Number of Records ..	Number of Records	% of Total Number of Records ..		
Open	65	11.4%	420	73.7%	85	14.9%	570	100.0%
Minimally invasive	66	8.6%	476	62.1%	225	29.3%	767	100.0%
Grand Total	131	9.8%	896	67.0%	310	23.2%	1,337	100.0%

Operative Histology

Operative Histology (group)	Number of Records	% of Total Number of Records ..
No cancer	187	14.0%
TCC	558	41.7%
TCC + Others	22	1.6%
Primary CIS	63	4.7%
Squamous cell carcinoma	62	4.6%
Squamous cell carcinoma plus others	2	0.1%
Primary adenocarcinoma	17	1.3%
Gynaecological cancer	1	0.1%
Radiation change only	3	0.2%
Sarcoma+other	5	0.4%
Secondary adenocarcinoma + other	5	0.4%
Other	78	5.8%
Primary CIS,Primary adenocarcinoma	1	0.1%
TCC,Sarcoma,Other	1	0.1%
Not recorded	332	24.8%
Grand Total	1,337	100.0%

Lymph nodes

Lymph Nodes Sampled	Positive Lymph Nodes											
	None		1 - 5		6-10		11-20		Not recorded		Grand Total	
	Number of Records	% of Total Number of ..	Number of Records	% of Total Number of ..	Number of Records	% of Total Number of ..	Number of Records	% of Total Number of ..	Number of Records	% of Total Number of ..	Number of Records	% of Total Number of ..
1 - 5	48.0	81.4%	10.0	16.9%					1.0	1.7%	59.0	100.0%
6-10	154.0	83.2%	29.0	15.7%	2.0	1.1%					185.0	100.0%
11-20	370.0	80.8%	72.0	15.7%	8.0	1.7%			8.0	1.7%	458.0	100.0%
21-30	112.0	81.8%	19.0	13.9%	4.0	2.9%	2.0	1.5%			137.0	100.0%
>30	39.0	70.9%	11.0	20.0%	1.0	1.8%	4.0	7.3%			55.0	100.0%
Grand Total	723.0	80.9%	141.0	15.8%	15.0	1.7%	6.0	0.7%	9.0	1.0%	894.0	100.0%

LNDlevel2

Lymph Node Dissection	Number of Records	% of Total Number of Recor..
Level I	167.0	18.7%
Level I,Level II	37.0	4.1%
Level I,Level II,Level III	1.0	0.1%
Level II	551.0	61.6%
Level II,Level III	1.0	0.1%
Level III	81.0	9.1%
None	31.0	3.5%
Null	25.0	2.8%
Grand Total	894.0	100.0%

Known Positive Surgical Margin Rate

Surgical Technique	Positive Margins					
	Yes		No		Grand Total	
	Number of Records	% of Total Number of Records ..	Number of Records	% of Total Number of Records ..	Number of Records	% of Total Number of Records ..
Open	38.0	9.2%	376.0	90.8%	414.0	100.0%
Minimally invasive	30.0	7.2%	387.0	92.8%	417.0	100.0%
Grand Total	68.0	8.2%	763.0	91.8%	831.0	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	
		Number of Records	% of Total Number of Records ..	Number of Records	% of Total Number of Records ..	Number of Records	% of Total Number of Records ..	Number of Records	% of Total Number of Records ..	Number of Records	% of Total Number of Records ..
Alive with local recurrence of bladd..	Alive			1	100.0%					1	100.0%
Alive with lymph node involvement ..	Alive	2	50.0%	2	50.0%					4	100.0%
Alive with metastatic disease	Alive	2	66.7%			1	33.3%			3	100.0%
Alive with no evidence of bladder c..	Alive	29	46.0%	14	22.2%	19	30.2%	1	1.6%	63	100.0%
Not recorded	Alive	23	57.5%	3	7.5%	9	22.5%	5	12.5%	40	100.0%
	Died in followup	11	36.7%	10	33.3%	7	23.3%	2	6.7%	30	100.0%
Grand Total		67	47.5%	30	21.3%	36	25.5%	8	5.7%	141	100.0%

Participating Hospital Centres 2019

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

Aberdeen Royal Infirmary
Addenbrooke's Hospital, Cambridge
Alexandra Hospital, Redditch
Arrowe Park Hospital, Wirral
Castle Hill Hospital, Hull
Charing Cross Hospital, London
Cheltenham General Hospital
Christie Hospital
Churchill Hospital, Oxford
Derriford Hospital, Plymouth
Eastbourne District General Hospital
Freeman Hospital, Newcastle
Guy's & Thomas's Hospital
James Cook University Hospital, Middlesbrough
Leicester General Hospital
Lister Hospital, Stevenage

Manchester Royal Infirmary
Medway Maritime Hospital, Gillingham
Morrison Hospital, Swansea
New Cross Hospital, Wolverhampton
Ninewells Hospital, Dundee
Norfolk & Norwich University Hospital
Pinderfields General Hospital, Wakefield
Queen Alexandra Hospital, Portsmouth
Queen Elizabeth Hospital, Birmingham
Queen Elizabeth University Hospital
Royal Blackburn Hospital
Royal Berkshire Hospital, Reading
Royal Bournemouth General Hospital
Royal Derby Hospital
Royal Devon & Exeter Hospital
Royal Hallamshire Hospital, Sheffield

Royal Liverpool University Hospital
Royal Marsden Hospital, London
Royal Preston Hospital
Royal Stoke University Hospital
Royal Surrey County Hospital, Guildford
Salford Royal Hospital
Southend Hospital
Southmead Hospital, Bristol
St George's Hospital, London
St James's University Hospital, Leeds
Stepping Hill Hospital, Stockport
Sunderland Royal Hospital
University College Hospital, London
University Hospital of Wales, Cardiff
Walsgrave Hospital, Coventry
Wythenshawe Hospital, Manchester