

**THE BRITISH ASSOCIATION OF
UROLOGICAL SURGEONS**

SECTION of ONCOLOGY

**BAUS Cancer Registry
Analyses of Complex Operations
January 1st – 31st December 2006**

May 2007

MEMBERS OF THE EXECUTIVE COMMITTEE

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PRODUCED FOR BAUS SECTION OF ONCOLOGY

by

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Introduction

On behalf of the Executive Committee of the BAUS Section of Oncology I would like to introduce, and commend to you, this printout of the data collection and analysis of complex operations undertaken in 2006. Being our third year of collecting such data we are now in a position to observe changes in practice and outcome.

Unfortunately we have had less data submitted this year overall and especially so for Radical Prostatectomy operations. Cystectomy procedures are reported in similar numbers to previous years, but they are being carried out in fewer centres (36 vs 50 in 2004) but by a similar number of consultants. This is presumably a consequence of the centralisation of these complex procedures to fewer major centres. If this is the reason it is curious why we have not been able to report a larger proportion of patients undergoing orthotopic bladder replacement or continent diversions.

With the ability to compare this reports data with the previous two years interesting details are emerging; for example the increasing use of neo-adjuvant chemotherapy prior to cystectomy (20.4% versus 8.2% in 2004), and the greater use of pre-cystectomy MRI staging. Laparoscopy is increasingly used for radical prostatectomy (30% of the total), but the proportion of kidneys removed in this fashion has not risen in the last twelve months. Gratifyingly this is the first year that we can report no deaths within thirty days of a radical prostatectomy and the mortality rate for radical cystectomy remains low at 2.6%.

Can this year's report be taken as a true picture of contemporary British urological oncological practice? The answer is probably, and sadly, not as there are a very large number of operations being undertaken that are not being reported to us. In comparison to Hospital Episode Statistics data (HESonline.co.uk) we have received data of only 945 of potentially over 3,500 radical prostatectomy operations. This is only 26% of the total in comparison to 48% in 2004, our first year of data collection. The percentage data collection for cystectomy remains static at approximately 25% whereas nephrectomy submissions have fallen to only 18% of the potential total numbers. This report therefore reflects contemporary practice of a group of surgeons / teams who are enthusiastic and able to collect and submit their data. The true picture for the whole of the country regarding blood loss, transfusion requirements, morbidity and mortality may be very different, and possibly much worse than we are reporting, assuming it is the more keen and experienced surgeons who are submitting data. It will be most interesting to be able to study the combined databases of HES, the English Cancer Registries (through the South West Public Health Observatory) and the BAUS Cancer Registry as they are complimentary to each other and will hopefully give a truer picture of contemporary practice. This collaboration is proceeding smoothly and the credit for this initiative is largely due to our chairman, David Gillatt.

The sudden unexpected death last month of Jane Morrison the BAUS section administrator is a significant loss to the section of Oncology as she was at the forefront of the smooth running of our meetings, the BAUS Cancer Registry and the section overall. She will be sorely missed and our condolences are extended to her family and friends.

Gregor McIntosh
Salisbury
May 2007

AUDIT RESULTS SUMMARY

BAUS Complex Operations Datasets – January 1st – December 31st 2006

- **379 cystectomies reported by 70 consultants from 36 centres**
- **72% males (246/342 recorded)**

- **92% (349/379) of the cystectomy data was returned electronically**

- **945 prostatectomies reported by 80 consultants from 49 centres**
- **95% (896/945) of the prostatectomy data was returned electronically**

- **857 nephrectomies reported by 106 consultants from 55 centres**
- **62% males (489/786 recorded)**

- **81% (696/857) of the nephrectomy data was returned electronically**

Private patients accounted for 2.4% (9/379) of the cystectomies; 2.9% (27/945) of the radical prostatectomies and 4.0% (34/857) of the nephrectomies.

How were the data analysed?

Information obtained from consultants was entered into the computer database using unique identifying numbers for individual consultants or, if they preferred, a centre number. Three centres returned data under a centre number only (8 consultants in total).

Data could be returned either by completion of pro formas for each patient (240 – 11% of returns) or in electronic format using either an Access (Microsoft) database or “in-house” database (1941 – 89% of returns) designed for the purpose. The pro formas were entered directly into an Access database, at which time validation comprising mainly of checks for duplicate entries and on dates could be carried out. There are separate pro formas for the operation and follow-up information.

The data presented here are a summary of the data received up to 16th April 2007 and relate to operations performed during the whole of 2006. Follow-up information was returned on 26% (100/379) of the cystectomies; 27% (257/945) of the radical prostatectomies and 21% (180/857) of the nephrectomies.

For the ranked charts (1, 2, 21, 22, 25, 26, 47, 48, 51, 52, 69 & 70) the individual consultant or centre identification numbers were removed and replaced with rank numbers starting at 1. A unique, confidential "Ranking Sheet" was prepared for each surgeon to enable them to identify their rank in every chart. For those charts where overall figures for the entire database are shown the ranking sheet displays the consultant's individual figures. No one else can identify the results of an individual consultant. The ranked charts comprise single bars ranked from left to right in the ascending order of the data item being measured with, in addition, the 25, 50, and 75 percentiles. Where percentages are included figures have been rounded up to one decimal point.

A personal ranking sheet for each consultant for each of the three procedures was issued individually to go with this chart book.

Sarah Fowler
BAUS Cancer Registry (BCR) Manager
May 2007

A. Cystectomies for malignant disease

Chart 1

Total Number of Cystectomies Reported per Consultant
Median: 3 (Interquartile Range 1 - 9)

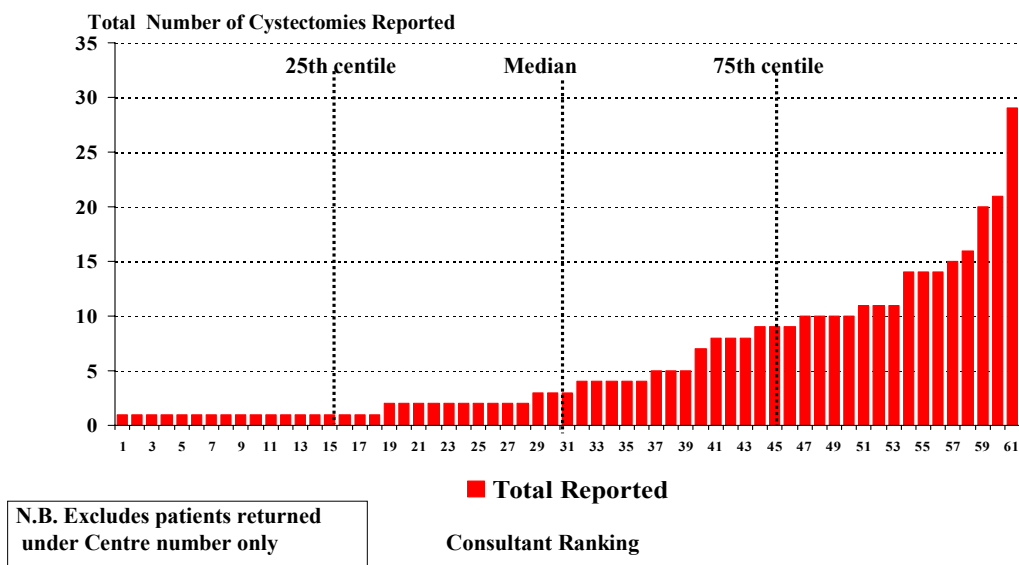


Chart 2

Total Number of Cystectomies Reported per Centre
Median: 8 (Interquartile Range 3 - 14)

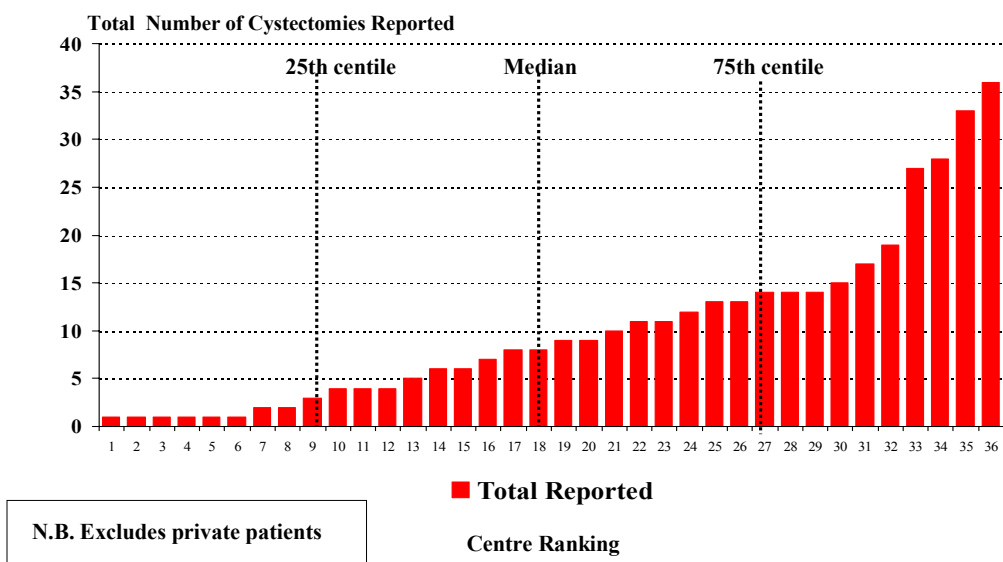


Chart 3

Indication for Cystectomy

Indication	Number & percentage of total (379)	
	N	%
Muscle invasive TCC	207	54.6
Salvage after Radiotherapy	17	4.5
Uncontrolled superficial disease	35	9.2
Squamous cell ca	18	4.7
Primary CIS	24	6.3
Sarcoma	2	0.5
Gynaecological ca	8	2.1
Primary Adenocarcinoma	7	1.8
Secondary Adenocarcinoma	5	1.3
Other	28	7.4
Not recorded	28	7.4

Chart 4

Cystectomy Pre-operative Clinical Staging Staging could be estimated in 77.6% (294/379) cases

Known Staging	Total Known	
	N	%
Stage 0a (T _a N ₀ M ₀)	4	1.4
Stage 0is (T _{is} N ₀ M ₀)	20	6.8
Stage I (T ₁ N ₀ M ₀)	47	16.0
Stage II (T _{2a} , 2b N ₀ M ₀)	124	42.2
Stage III (T _{3a} , 3b, 4a N ₀ M ₀)	78	26.5
Stage IV (T _{4b} N ₀ M ₀)	21	7.1
Any T N ₁ , N ₂ , N ₃ M ₀ Any T any N M ₁)	including 1 with metastases	0.3

Chart 5

Cystectomy - Comparison of Pre-operative clinical & pathological Categories

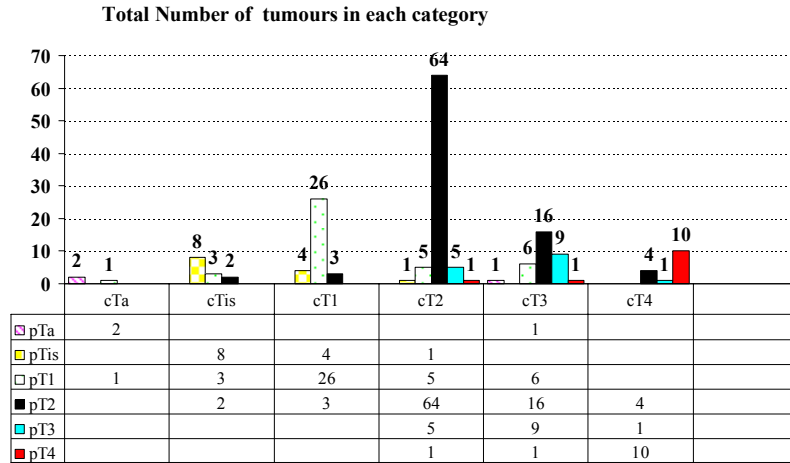


Chart 6

Cystectomy - Comparison of Pre-operative clinical & Post-operative pathological staging

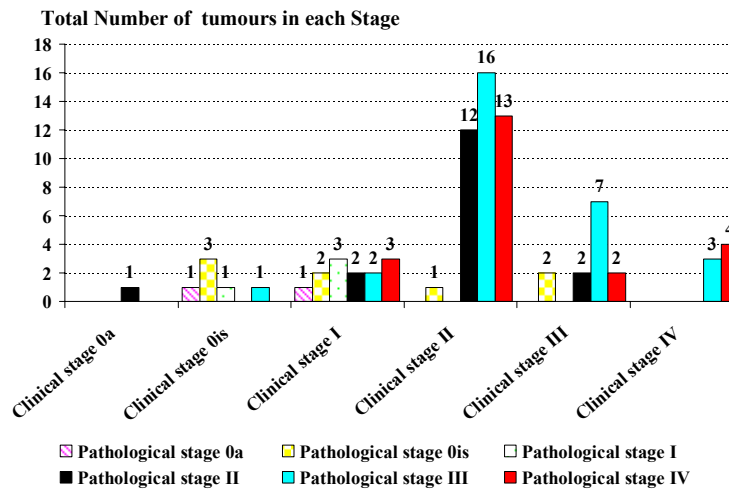


Chart 7

Cystectomy - Pre-operative Imaging Total Numbers Reported with those as only Imaging method in () Information recorded in 93% cases (354/379)

Imaging Method	N
CT Scan	277 (131)
MRI	78 (27)
Bone Scan	70 (1)
IVU	91 (2)
Others	33 (4)
None	25 (25)

Chart 8

Cystectomy - Pre-operative Serum Creatinine

Serum Creatinine Level $\mu\text{mols/l}$	N	% of total (379)
0 – 120 $\mu\text{mols/l}$	248	65.4
121 - 200 $\mu\text{mols/l}$	52	13.7
> 200 $\mu\text{mols/l}$	6	1.6
Not recorded	73	19.3

Chart 9

Cystectomy - Other Pre-operative findings

	N	% of total reporting
Pre operative Radiotherapy	73/344	21.2
Pre operative Neoadjuvant Chemotherapy	71/348	20.4
Synchronous Upper tract disease	10/338	3.0

Chart 10

Cystectomy - Status Upper Tracts

Status	Number & percentage of total reported (379)	
	N	%
Normal	232	61.2
Tumour	6	1.6
Hydronephrosis – left	40	10.6
Hydronephrosis – right	29	7.7
Hydronephrosis – bilateral	22	5.8
Non – functioning kidney	4	1.1
Other	8	2.1
Not recorded	38	10.0

Chart 11

Cystectomy Pre-operative Potency

	N	% of total (379)
Impotent	73	19.3
Partially potent	55	14.5
Fully potent	82	21.6
Potency not recorded	169	44.6

Chart 12

Cystectomy Pre-operative Continence

	N	% of total (379)
Complete	274	72.3
Minor stress leakage	28	7.4
1 pad per day	3	0.8
> 1 pad per day	13	3.4
Appliance	8	2.1
Continence not recorded	53	14.0

Chart 13

Cystectomy Grade of Main Operating Surgeon with numbers & percentage reported as being a supervised training operation

	Total Number	% of total (379)	Supervised training operation	%
Consultant	296	78.1	62/161	38.5
Specialist Registrar	58	15.3	52/53	98.1
Other	18	4.7	3/17	17.6
Surgeon not recorded	7	1.8	-	-

Chart 14

Cystectomy - Diversion procedure 4 laparoscopic procedures were reported 60 combined synchronous urethrectomies 10 combined synchronous nephroureterctomies

	N	% of total (379)
Ileal conduit	320	84.4
Orthotopic	19	5.0
Rectal diversion	2	0.5
Continent cutaneous diversion	0	-
Other	5	1.3
Not recorded	33	8.7

68% (13/19) of the orthotopics were Studer

Chart 15

Cystectomy Lymph Node Dissection

	N	% of total (379)
None	57	15.0
Palpable only	28	7.4
Below bifurcation of common iliac	189	49.8
Extended above bifurcation of common iliac	44	11.6
Not recorded	61	16.1

Chart 16

Cystectomies

- **Median duration of operation:**
 - All patients = 270 mins; Range: 65 – 737; (308 patients)
 - Patients having LND = 270 mins; Range: 65 – 737; (238 patients)
 - Patients with no LND = 240 mins; Range: 85 – 510; (41 patients)
- **Median number of units of blood transfused = 2**
Range: 0 - 25
(reported in 81% (306) patients)
- **Median measured blood loss = 1,200 mls**
Range: 0 – 10,000
(reported in 76% (289) patients)
- **Median post-operative stay = 13 days (excluding deaths)**
Range: 0 - 100
(reported in 76% (287) patients)

Chart 17

Cystectomies Complications

		N	%
Intra-operative complications:		27/352	7.7
	Bleeding	12/352	3.4
	Other / NR	15/352	4.3
Post-operative complications:		97/306	31.6
	Infections/ Septicaemia	31/306	10.1
	Prolonged Ileus	18/306	5.9
	Leaks	9/306	2.9
	Other / NR	39/306	12.7

Chart 18

Cystectomy - Significance of Complications

Overall morbidity Rate = 30.3% (115/379)

30 day mortality Rate = 2.6% (10/379)

	Intra-operative		Post-operative	
	N	%	N	%
No action required	5	15.2	9	9.0
Contributed to death	4	12.1	6	6.0
Delayed discharge	6	18.2	27	27.0
Required medical treatment	5	15.2	29	29.0
Required surgery	2	6.1	18	18.0
Not recorded	11	33.3	11	11.0

Chart 19

Cystectomy - Operative Histology reported in 28.7% (109/379) cases

Histology	Number & percentage of total known (108)	
	N	%
No cancer	20	18.5
Muscle invasive TCC	58	53.7
SCC	4	3.7
Primary CIS	14	13.0
Sarcoma	1	0.9
Gynaecological ca	2	1.9
Primary adenocarcinoma	2	1.9
Secondary adenocarcinoma	1	0.9
Other	6	5.6

Chart 20

Cystectomy Follow ups

Follow up recorded in 26.4% (100 / 379) patients

Median time to Follow-up = 89 days; range 22 – 381 days

Median number of Follow-ups = 0; Range: 0 - 3

Time to latest follow-up:

Time from Operation to follow-up	N	% of total (100)
0 – 90 days	53	53
91 – 180 days	28	28
181 – 360 days	17	17
>=361 days	2	2

Chart 21

**Total Number of Cystectomies Reported per Consultant
Including number with follow-ups
Follow up recorded in 26.4% (100 / 379) patients**

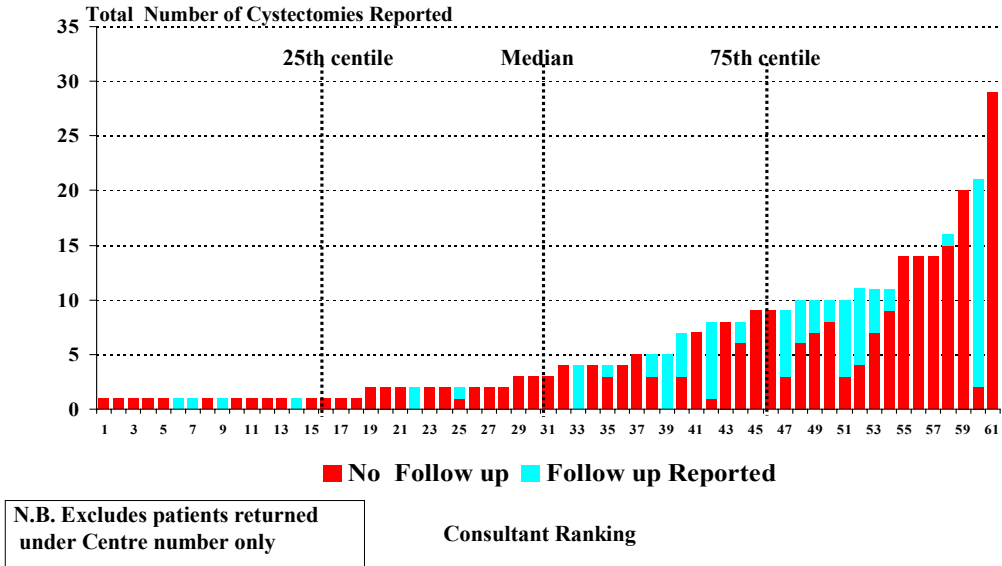


Chart 22

**Total Number of Cystectomies Reported per Centre
Including number with follow-ups
Follow up recorded in 26.4% (100 / 379) patients**

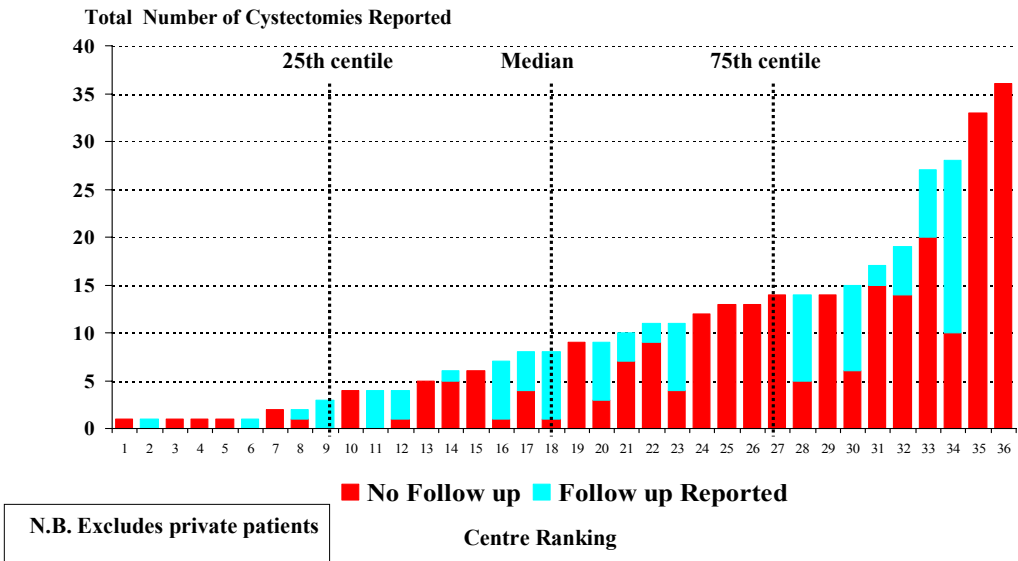


Chart 23

Cystectomy - Current Status
 Follow up recorded in 26.4% (100 / 379) patients
 Median time to Follow-up = 89 days; range 22 – 381 days

	N	% of total (100)
Alive with no evidence of bladder cancer	79	79
Alive with local recurrence of bladder cancer	0	0
Alive with lymph node involvement	7	7
Alive with metastatic disease	2	2
Dead	7	7
Not recorded	5	5

Late complications were reported in 12/100 (12%) patients

Chart 24

Cystectomy - Current Status
 Follow up recorded in 26.4% (100 / 379) patients
 Median time to Follow-up = 89 days; range 22 – 381 days

Time to follow up	N	% of total (100)	0 – 90 days		91-180 days		181 – 360 days		≥361 days	
			N	%	N	%	N	%	N	%
Alive with no evidence of bladder cancer	79	79	46	86.8	18	64.3	15	88.2	0	-
Alive with local recurrence of bladder cancer	0	-	0	-	0	-	0	-	0	-
Alive with lymph node involvement by bladder ca	7	7	2	3.8	2	7.1	1	5.9	2	100.0
Alive with metastatic disease	2	2	1	1.9	1	3.6	0	-	0	-
Dead	7	7	2	3.8	5	17.9	0	-	0	-
Not recorded	5	5	2	3.8	2	7.1	1	5.9	0	-

B. Radical prostatectomies

Chart 25

Total Number of Prostatectomies Reported per Consultant
Median: 5 (Interquartile Range 2 - 15)

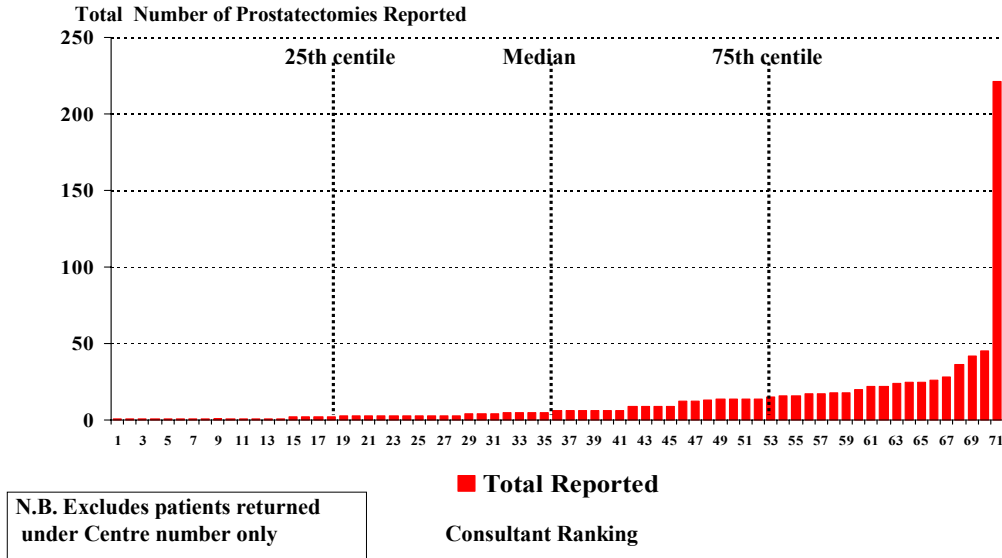


Chart 26

Total Number of Prostatectomies Reported per Centre
Median: 12 (Interquartile Range 3 - 26)

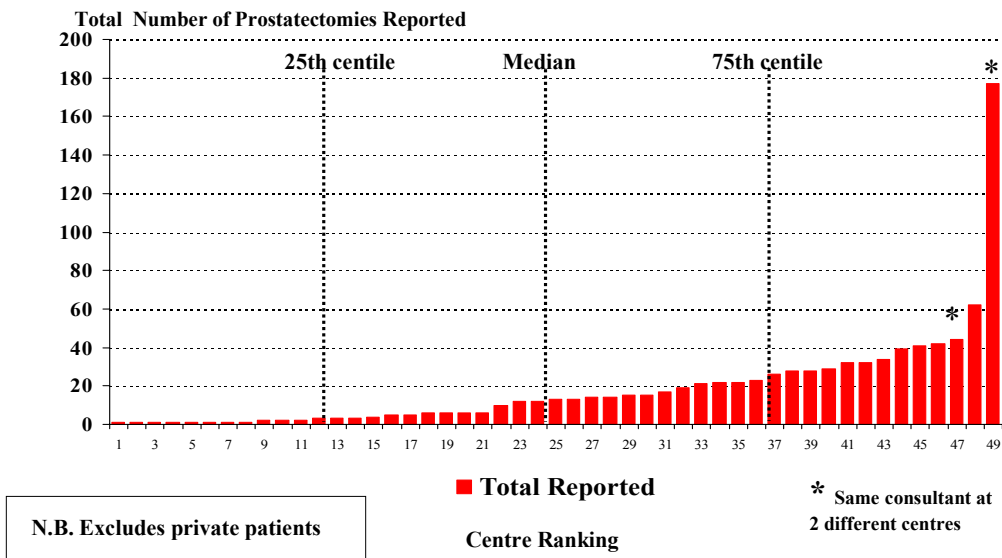
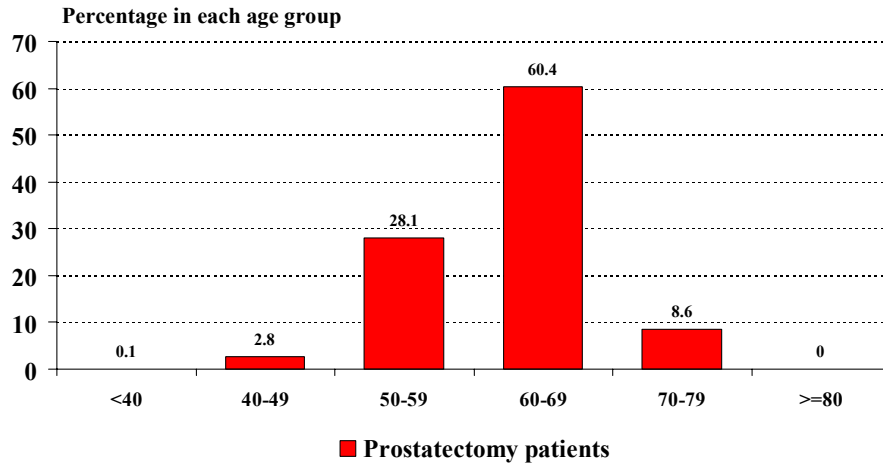


Chart 27

Percentage Age Distribution - Prostatectomies Median : 63 Years; Range 33 -79 (n= 935*)



Age could be calculated when both date of birth and operation date were recorded = 935/945 (99%)

Chart 28

Prostatectomy Presentation

Presentation	N	% of total (945)
Via Screening or Case Finding	541	57.2
LUTS	161	17.0
Other	186	19.7
Not recorded	57	6.0

Other presentation was only recorded in 18% (33/186) cases:

1.4% (13/945) Referred for surgery from another hospital

0.4% (4/945) Haematuria

0.4% (4/945) TURP

6.0% (48/806) were reported as having had a previous TURP

Chart 29

Prostatectomy Pre-operative Clinical Staging
 Staging could be estimated in 89.5% (846/945) cases

Known Staging	Total Known	
	N	%
Stage I (T1a N0 M0)	5	0.6
Stage II (T1b, 1c, 1, 2 N0 M0)	T1 - 61	7.2
	T1b - 15	1.8
	T1c- 368	43.5
	T2 - 369	43.6
Stage III (T3 N0 M0)	27	3.2
Stage IV (T4 N0 M0 Any T N1 M0 Any T any N M1)	1	0.1

Chart 30

Prostatectomies
 Comparison of clinical & pathological staging

Total Number of tumours in each Stage

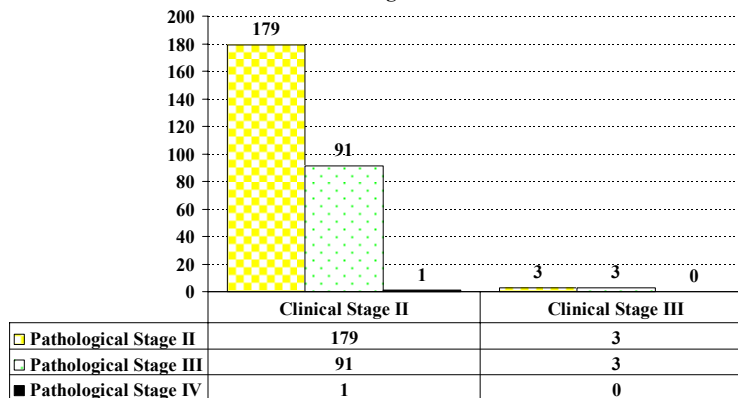


Chart 31

Staging of Prostate Tumours by PSA

Numbers falling in each category
 Pre-operative PSA was recorded in 93% patients (882/945)
 Staging could be estimated in 89.5% (846/945) cases

Known Clinical Staging	Total Patients	PSA 0-5		PSA 6-10		PSA 11-20		PSA 21-50		PSA > 50	
		N	%	N	%	N	%	N	%	N	%
Stage I T1a N0 M0	4	3	1.6	1	0.2	0	0.0	0	-	0	-
Stage II T1b, 1c, 1, 2, N0 M0	796	177	96.7	447	96.5	155	94.5	17	100.0	0	-
Stage III T3 N0 M0	26	3	1.6	14	3.0	9	5.5	0	-	0	-
Stage IV (T4 N0 M0 Any T N1 M0 Any T any N M1)	1	0	-	1	0.2	0	-	0	-	0	-
Totals	827	183		463		164		17		0	

Chart 32

Gleason Sum Scores by Age Group - Prostatectomies

Number falling into each category
 Gleason scores were recorded in 90% (848/945)
 Age could be recorded in 99% (838/848) of these

Age Group	Total Patients	Gleason sum 2 – 4		Gleason sum 5 – 6		Gleason sum 7		Gleason sum 8 – 10	
		N	%	N	%	N	%	N	%
< 60	259	1	0.4	163	62.9	88	34.0	7	2.7
60 – 64	275	1	0.4	161	58.5	98	35.6	15	5.5
65 – 69	231	0	-	139	60.2	75	32.5	17	7.4
70 – 74	65	0	-	48	73.8	10	15.4	7	10.8
75 – 79	8	0	-	5	62.5	2	25.0	1	12.5
>=80	0	-	-	-	-	-	-	-	-
Totals	838	2	0.2	516	61.6	273	32.6	47	5.6

Chart 33

Gleason Sum Score Related to Age

Gleason scores were recorded in 90% (848/945)
 Age could be recorded in 99% (838/848) of these

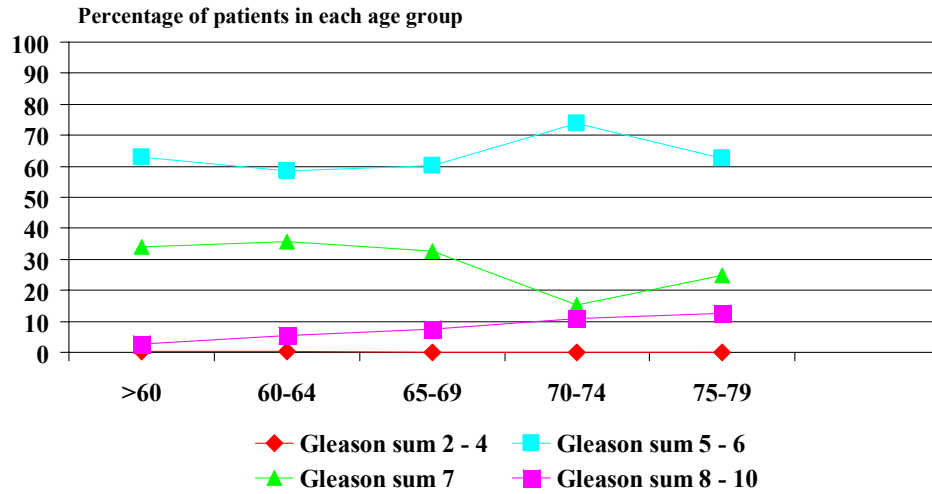


Chart 34

Prostatectomy Pre-operative Potency

	N	% of total (945)
Impotent	134	14.2
Partially potent	162	17.1
Fully potent	489	51.7
Potency not recorded	160	16.9

Chart 35

Prostatectomy Pre-operative Continence

	N	% of total (945)
Complete	822	87.0
Minor stress leakage	19	2.0
1 pad per day	3	0.3
> 1 pad per day	2	0.2
Appliance	0	-
Continence not recorded	99	10.5

Chart 36

Prostatectomy Grade of Main Operating Surgeon with numbers & percentage reported as being a supervised training operation

	Total Number	% of total (945)	Supervised training operation	%
Consultant	858	91.0	129/552	23.4
Specialist Registrar	56	5.9	50/51	98.0
Other	26	2.7	2/26	7.7
Surgeon not recorded	5	0.5	-	-

Chart 37

Prostatectomy - Procedure Nerve sparing

Nerve Sparing	N	% of total (945)
Bilateral	388	41.1
Unilateral	140	14.8
None	294	31.1
Not recorded	123	13.0

Chart 38

Prostatectomy Procedure - Approach

	N	% of total (945)
Retropubic	708	74.9
Perineal	29	3.1
Other	4	0.4
Not recorded	204	21.6

Chart 39

Prostatectomy Procedure – Laparoscopic Conversion rate = 2.8% (8/290)*

Laparoscopic	N	% of total (945)
Yes	290	30.7
No	435	46.0
Not recorded	220	23.3

* **Conversion reasons included:**

- 3 difficult anatomy / poor space & view
- 1 bleeding & rectal adhesions

Chart 40

Prostatectomies

- 39.5% had Lymph Node dissection (348/881 patients)
- Median duration of operation:
 - All patients = 155 mins; Range: 60 - 540; (797 patients)
 - Patients having LND = 165 mins; Range: 61 - 430; (291 patients)
 - Patients with no LND = 150 mins; Range: 60 – 540; (468 patients)
- Median number of units of blood transfused = 0
Range: 0 - 8
(reported in 84% (798) patients)
- Median measured blood loss = 500 mls
Range: 0 – 7,000
(reported in 87% (820) patients)
- Median post-operative stay = 4 days (excluding deaths)
Range: 0 - 215
(reported in 90% (851) patients)

Chart 41

Prostatectomies - Procedure

	Procedure	N	Median	Range
Duration of Operation (mins)	Total patients	797	155	60 – 540
	Retropubic	638	160	63 – 430
	Perineal	21	140	90 – 250
	Laparoscopic	283	180	96 - 540
Units of Blood Transfused	Total patients	798	0	0 – 8
	Retropubic	645	0	0 – 8
	Perineal	22	0	0 – 1
	Laparoscopic	281	0	0 - 2
Measured Blood Loss (mls)	Total patients	820	500	0 – 7,000
	Retropubic	659	500	0 – 7,000
	Perineal	23	280	100 – 2500
	Laparoscopic	284	250	0 - 2500
Post –op Length of Stay (days)	Total patients	851	4	0 – 215
	Retropubic	658	3	0 – 215
	Perineal	28	4	2 – 29
	Laparoscopic	282	3	0 – 153

Chart 42

Prostatectomies Complications

		N	%
Intra-operative complications:		52/887	5.9
	Bleeding	16/887	1.8
	Rectal Injury	5/887	0.6
	Other / NR	31/887	3.5
Post-operative complications:		79/841	9.4
	Wound Infections	17/841	2.0
	Ileus	8/841	0.9
	Leaks	5/841	0.6
	Anastamotic Stenosis	3/841	0.4
	Other / NR	46/841	5.5

Chart 43

Prostatectomy - Significance of Complications

Overall morbidity Rate = 13.1% (124/945)

30 day mortality Rate = 0% (0/945)

	Intra-operative		Post-operative	
	N	%	N	%
No action required	10	19.2	6	7.6
Contributed to death	0	-	0	-
Delayed discharge	3	5.8	21	26.6
Required medical treatment	5	9.6	25	31.6
Required surgery	2	3.8	7	8.9
Not recorded	32	61.5	20	25.3

Chart 44

Prostatectomies Comparison of Pre-operative Biopsy and Operative Surgical Gleason Sum Scores

Total Number of tumours in each Group

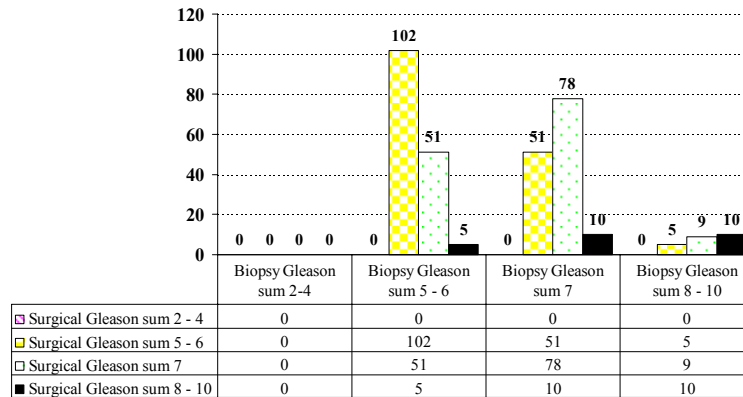


Chart 45

Prostatectomy Pathology

	N	% of total known
Known Positive Lymph Nodes	3/102	2.9
Known Seminal Vesical Involvement	29/573	5.1

Chart 46

Prostatectomy Follow ups

Follow up recorded in 27.2% (257 / 945) patients

Median time to Follow-up = 92 days; range 12 – 369 days

Median number of Follow-ups = 0; Range: 0 - 4

Time to latest follow-up:

Time from Operation to follow-up	N	% of total (2573)
0 – 90 days	127	49.4
91 – 180 days	84	32.7
181 – 360 days	43	16.7
>=361 days	3	1.2

Chart 47

**Total Number of Prostatectomies Reported per Consultant
Including number with follow-ups
Follow up recorded in 27.2% (257 / 945) patients**

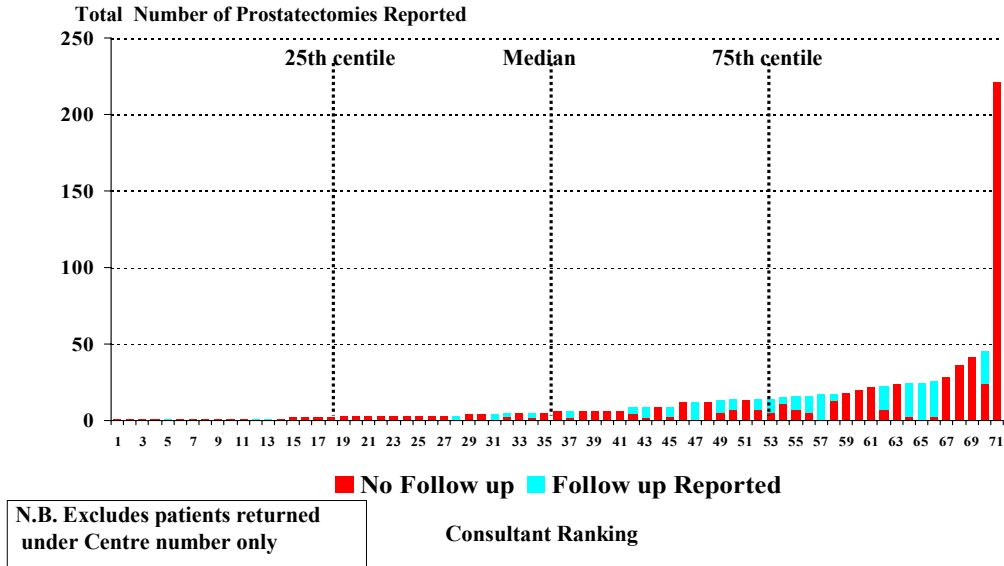


Chart 48

**Total Number of Prostatectomies Reported per Centre
Including number with follow-ups
Follow up recorded in 27.2% (257 / 945) patients**

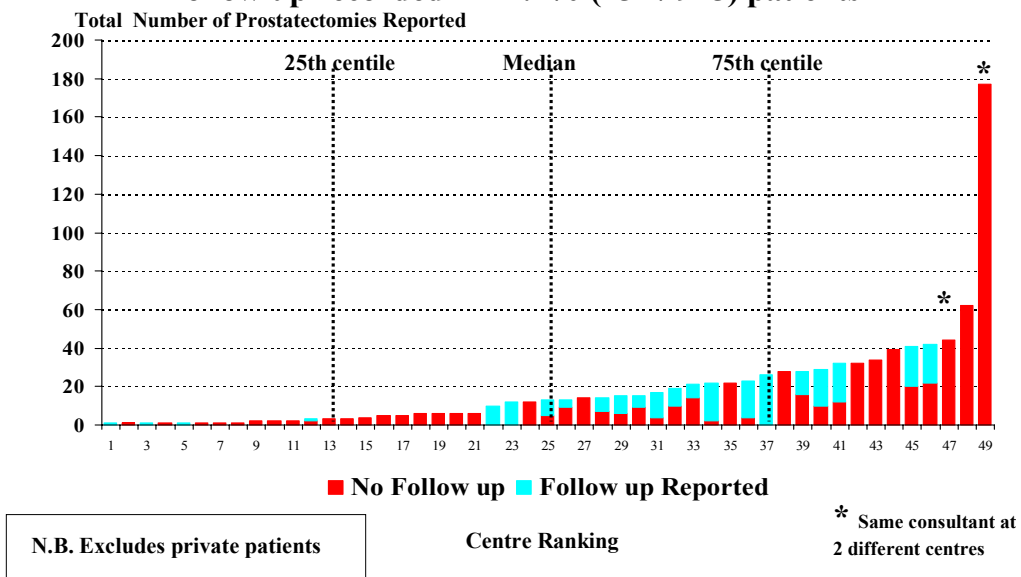


Chart 49

Prostatectomy - Current Status

Follow up recorded in 27.2% (257 / 945) patients
 Median time to Follow-up = 92 days; range 12 – 369 days

	N	% of total (257)
Alive with no evidence of prostate cancer	225	87.5
Alive with local recurrence of prostate cancer	11	4.3
Alive with lymph node involvement	0	0.0
Alive with metastatic disease	0	0.0
Dead	0	0.0
Not recorded	21	8.2

Late complications were reported in 14% (36/257) patients:

- 20 Anastamotic strictures
- 3 Urethral strictures
- 3 Recurrent UTI
- 1 Testicular pain
- 1 Hernia
- 10 Other complications

Chart 50

Prostatectomy - Current Status

Follow up recorded in 27.2% (257 / 945) patients
 Median time to Follow-up = 92 days; range 12 – 369 days

Time to follow up	N	% of total (257)	0 – 90 days		91-180 days		181 – 360 days		≥361 days	
			N	%	N	%	N	%	N	%
Alive with no evidence of prostate cancer	225	87.5	106	84.1	79	92.9	37	86.0	3	100
Alive with local recurrence of prostate cancer	11	4.3	6	4.8	1	1.2	4	9.3	0	-
Not recorded	21	8.2	14	11.1	5	5.9	2	4.7	0	-

C. Nephrectomies

Chart 51

Total Number of Nephrectomies Reported per Consultant
Median: 5 (Interquartile Range 2 - 9)

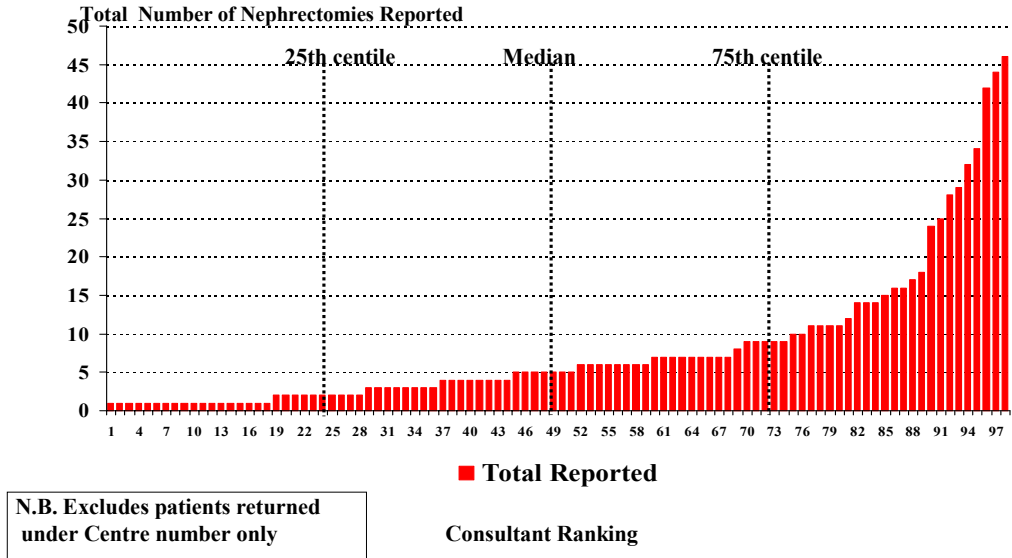


Chart 52

Total Number of Nephrectomies Reported per Centre
Median: 10 (Interquartile Range 4 - 21)

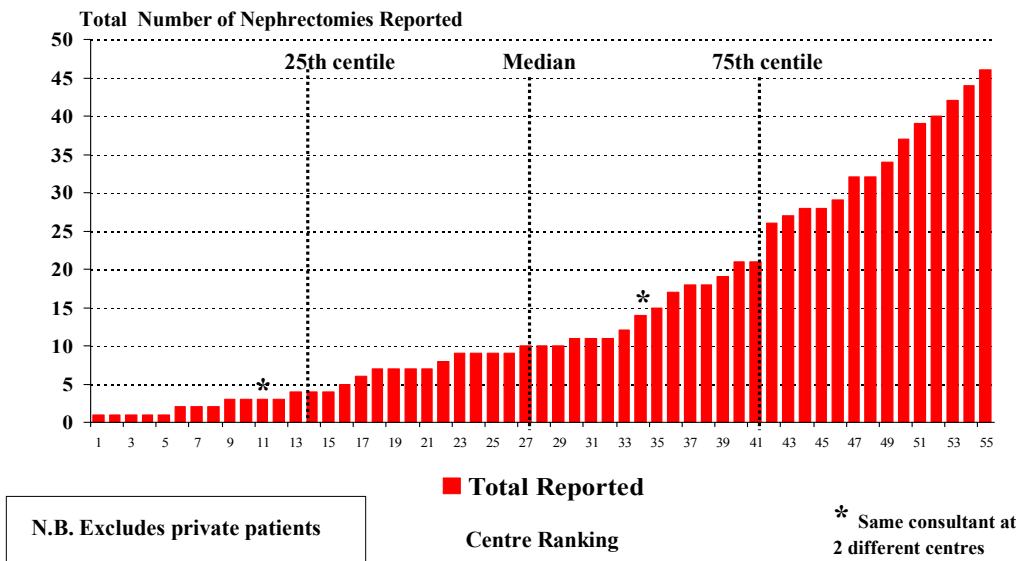


Chart 53

Nephrectomy - Pre-operative presentation

	N	% of total (857)
Incidental finding with no symptoms	246	28.7
Haematuria	259	30.2
Other:	265	30.9
Pain	69	8.1
Anaemia	11	1.3
Weight loss	17	2.0
Infection	16	1.9
Other/Not recorded	146	17.0
Not recorded	87	10.1

Chart 54

Nephrectomies – Haematology at Presentation

	N	Median	Range
Hb (g/L)	646	13.8	7 – 182
Total WBC (* 10⁹ / L)	612	8	2 – 95
Neutrophils (* 10⁹ / L)	504	5	2 – 79
Lymphocytes (* 10⁹ / L)	349	2	2 - 139
Platelets (* 10⁹ / L)	604	265	3 – 1,126

Chart 55

Nephrectomy - Pre-operative Serum Creatinine

Serum Creatinine Level $\mu\text{mols/l}$	N	% of total (857)
0 – 120 $\mu\text{mols/l}$	529	61.7
121 - 200 $\mu\text{mols/l}$	124	14.5
> 200 $\mu\text{mols/l}$	14	1.6
Not recorded	190	22.2

Chart 56

Nephrectomy Pre-operative Clinical Staging Staging could be estimated in 76% (653/857) cases

Known Staging	Total Known	
	N	%
Stage I (T1 N0 M0)	331	50.7
Stage II (T2 N0 M0)	153	23.4
Stage III (T1, T2, T3 N0, N1 M0)	104	15.9
Stage IV (T4 N0, N1 M0 Any T N2 M0 Any T any N M1)	65 including 42 with metastases	10.0 6.4

6.8% (52/765) patients were reported as having a pre-operative biopsy

Chart 57

**Nephrectomies
Comparison of clinical & pathological staging**

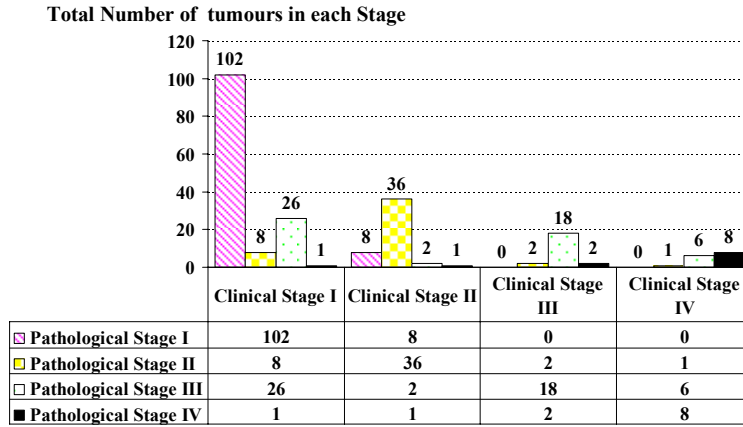


Chart 58

**Nephrectomy Grade of Main Operating Surgeon
with numbers & percentage reported as being a supervised training operation**

	Total Number	% of total (857)	Supervised training operation	%
Consultant	652	76.1	105/390	27.0
Specialist Registrar	146	17.0	129/136	95.0
Other / Not recorded	59	6.9	-	

Chart 59

Nephrectomy – Procedure

The vena cava was reported as being explored in 6.5% (39/600) cases
82.6% (19/23) Infra-diaphragmatically; 17.4% (4/23) Supra-diaphragmatically

	N	% of total (857)
Radical Nephrectomy	583	68.0
Bilateral Radical Nephrectomy	3	0.4
Partial Nephrectomy	78	9.1
Simple Nephrectomy	39	4.6
Nephroureterectomy	105	12.3
Other	16	1.9
Not Recorded	33	3.9

Chart 60

Nephrectomies – Surgical Approach

Known Laparoscopic Conversion rate = 16.6% (37/223)*

Approach	N	% of total (857)
Open	606	70.7
Laparoscopic	251	29.3

* Conversion reasons

- 10 due to bleeding
- 3 due to adhesions
- 5 due to failure to progress
- 19 other / not recorded

Chart 61

Nephrectomy Approach by Pre-operative Clinical Staging Staging could be estimated in 76% (653/857) cases

Known Staging	Total	Open		Laparoscopic	
	N	N	%	N	%
Stage I (T1 N0 M0)	331	187	56.5	144	43.5
Stage II (T2 N0 M0)	153	126	82.4	27	17.6
Stage III (T1, T2, T3 N0, N1 M0)	104	94	90.4	10	9.6
Stage IV (T4 N0, N1 M0 Any T N2 M0 Any T any N M1)	65	54	83.1	11	16.9

Chart 62

Nephrectomies

- 11.9% had Lymph Node dissection (94/788 patients)
- Median duration of operation = 150 minutes
Range: 30 - 480
(reported in 74% (635) patients)
- Median number of units of blood transfused = 0
Range: 0 - 12
(reported in 74% (632) patients)
- Median measured blood loss = 300 mls
Range: 0 - 7,000
(reported in 61% (522) patients)
- Median post-operative stay = 6 days (excluding deaths)
Range: 1 - 159
(reported in 80% (685) patients)

Chart 63

Nephrectomies - Procedure

	Procedure	N	Median	Range
Duration of Operation (mins)	Total patients	635	150	30 - 480
	Open	420	140	30 - 480
	Laparoscopic	204	180	65 - 375
	LND	81	180	59 - 330
Units of Blood Transfused	Total patients	632	0	0 - 12
	Open	424	0	0 - 12
	Laparoscopic	208	0	0 - 6
Measured Blood Loss (mls)	Total patients	522	300	0 - 7,000
	Open	338	400	0 - 7,000
	Laparoscopic	184	100	0 - 3,000
Post-op Length of Stay (days)	Total patients	685	6	1 - 159
	Open	479	7	1 - 105
	Laparoscopic	206	5	1 - 159

Chart 64

Nephrectomies Complications

		N	%
Intra-operative complications:		102/788	12.9
	Bleeding	35/788	4.4
	Required splenectomy	11/788	1.4
	Pneumothorax	3/788	0.4
	Other / NR	52/788	6.6
Post-operative complications:		150/707	21.2
	Wound Infection	17/707	2.4
	Chest Infection	18/707	2.5
	Bleeding	7/707	1.0
	Pain	4/707	0.6
	Confusion	4/707	0.6
	MI	2/707	0.3
	Other / NR	98/707	13.9

Chart 65

Nephrectomy - Significance of Complications

Overall morbidity Rate = 27.2% (233/857)

30 day mortality Rate = 1.5% (13/857)

	Intra-operative		Post-operative	
	N	%	N	%
No action required	18	17.6	13	8.7
Contributed to death	2	2.0	5	3.3
Delayed discharge	1	1.0	22	14.7
Required medical treatment	20	19.6	65	43.3
Required surgery	7	6.9	12	8.0
Not recorded	54	52.9	33	22.0

Chart 66

Nephrectomies – Parenchymal Tumours

Predominant cell type

Reported in 99% parenchymal tumours (185/187)

Predominant Cell Type	N	% of total reported (187)
Clear Cell	129	69.7
Papillary	28	15.1
Oncocytoma	14	7.6
Chromophobe	3	1.6
Collecting duct	1	0.5
Other	10	5.4

Chart 67

Nephrectomies – Urothelial Tumours Site of Tumour Reported in 94% parenchymal tumours (32/34)

Site of Tumour	N	% of total reported (32)
Calyx	3	9.4
Pelvis	13	40.6
PUJ	1	3.1
Ureter	9	28.1
Multiple sites	5	15.6
Other	1	3.1

Chart 68

Nephrectomy Follow ups

Follow up recorded in 21% (180 / 857) patients

Median time to Follow-up = 67 days; range 13 – 419 days

Median number of Follow-ups = 0; Range: 0 - 4

Time to latest follow-up:

Time from Operation to follow-up	N	% of total (180)
0 – 90 days	106	58.8
91 – 180 days	36	20.0
181 – 360 days	35	19.4
>=361 days	3	1.7

Chart 69

**Total Number of Nephrectomies Reported per Consultant
Including number with follow-ups
Follow up recorded in 21% (180 / 857) patients**

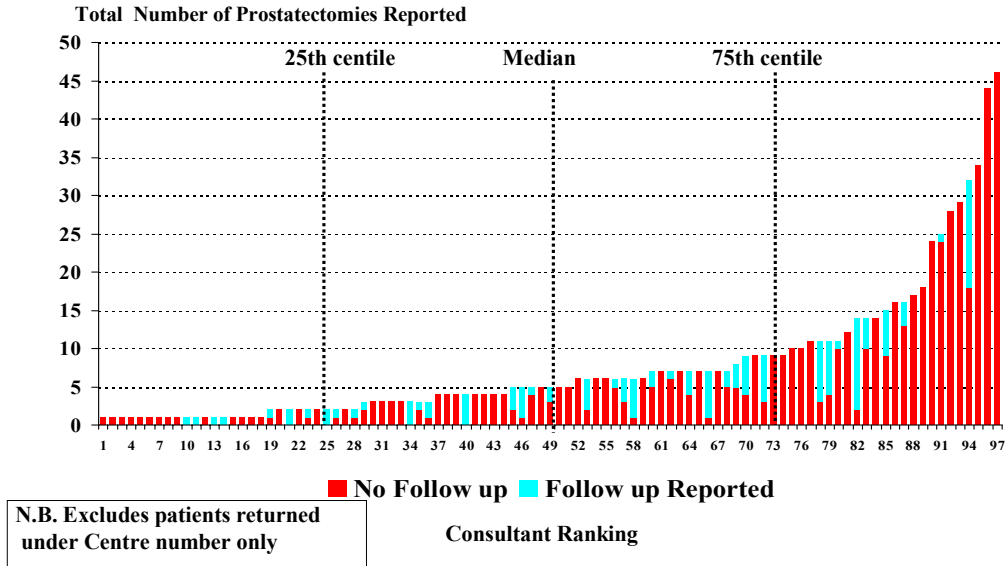


Chart 70

**Total Number of Nephrectomies Reported per Centre
Follow up recorded in 21% (180 / 857) patients**

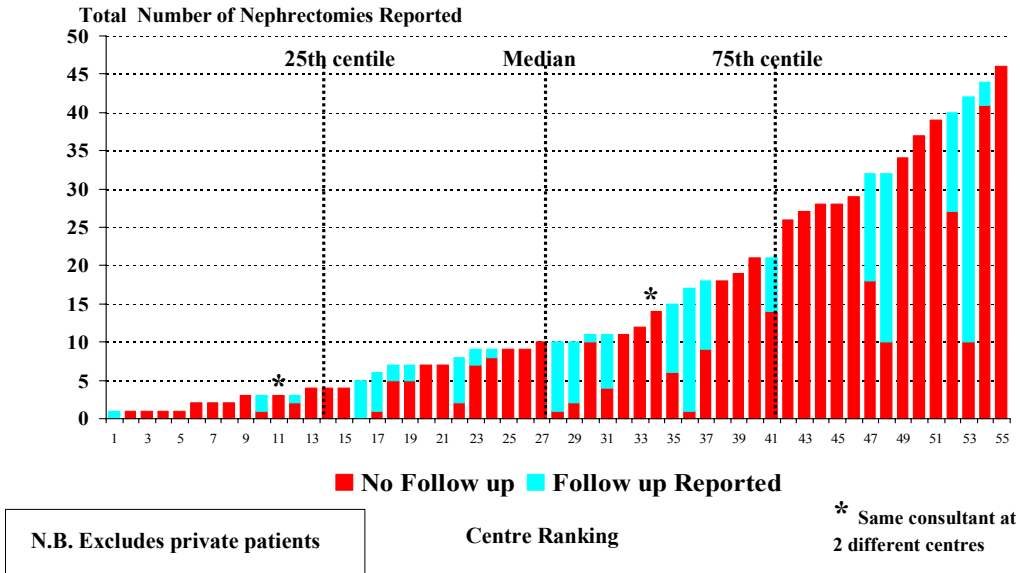


Chart 71

Nephrectomy - Current Status

Follow up recorded in 21% (180 / 857) patients
 Median time to Follow-up = 67 days; range 13 – 419 days

	N	% of total (180)
Alive with no evidence of renal cancer	139	77.2
Alive with local recurrence of renal cancer	1	0.6
Alive with lymph node involvement	1	0.6
Alive with metastatic disease	11	6.1
Dead	3	1.7
Not recorded	25	13.9

Late complications were reported in 11/180 (6%) patients:

3 wound infection

4 wound pain

4 other

Chart 72

Nephrectomy - Current Status

Follow up recorded in 21% (180 / 857) patients
 Median time to Follow-up = 67 days; range 13 – 419 days

Time to follow up	N	% of total (180)	0 – 90 days		91-180 days		181 – 360 days		≥361 days	
			N	%	N	%	N	%	N	%
Alive with no evidence of renal cancer	139	77.2	82	78.8	27	73.0	28	77.8	2	66.7
Alive with local recurrence of renal cancer	1	0.6	1	1.0	0	-	0	-	0	-
Alive with lymph node involvement	1	0.6	1	1.0	0	-	0	-	0	-
Alive with metastatic disease	11	6.1	6	5.8	3	8.1	2	5.6	0	-
Dead	3	1.7	2	1.9	0	-	1	2.8	0	-
Not recorded	25	13.9	12	11.5	7	18.9	5	13.9	1	33.3