

## Abstracts from the British Association of Urological Surgeons Section of Oncology meeting 22–23 November 2017, John McIntyre Conference Centre, Edinburgh, UK: Paper Abstracts

Journal of Clinical Urology  
2018, Vol. 11(4) 236–247  
© British Association of Urological Surgeons 2018  
Reprints and permissions:  
sagepub.co.uk/journalsPermissions.nav  
DOI: 10.1177/2051415817752052  
journals.sagepub.com/home/uro  
SAGE

### Radiofrequency ablation versus partial nephrectomy for cT1 small renal masses: A comparison of clinical and oncological outcomes

A Thwaini, W El Baroni, M Evans, W Loan and R Lindsay

Belfast City Hospital, UK

**Introduction:** We aimed to compare the safety profiles and oncological outcomes of partial nephrectomy and radiofrequency ablation for cT1 renal masses.

**Materials:** We retrospectively analysed 284 patients with cT1 renal masses treated with either partial nephrectomy or radiofrequency ablation between 2003–2016. Patients were analysed according to their demographics and RENAL nephrometry score. Follow-up protocol consisted of a tri-phasic renal computed tomography scan at 3–6 months and yearly thereafter. Magnetic resonance imaging was used for those with poor renal function. Local recurrence for partial nephrectomy was defined as abnormally enhancing new lesion at the site of previous resection. For radiofrequency ablation, LR was defined as interval growth or new enhancement of a successfully treated lesion on subsequent imaging. StatsDirect was used for the statistical analysis. A *p*-value less than or equal to 0.05 was considered statistically significant.

**Results:** After excluding patients with less than five-year follow-up and those with benign pathology, 46 radiofrequency ablation and 37 partial nephrectomy patients were included. There was no significant difference in patients' demographics nor RENAL scoring system (*p*=0.7, 0.3 respectively). Post-procedural hospital stay (days) was 1.3 and 4.9 (*p*=0.04) for radiofrequency ablation and partial nephrectomy respectively. Peri-operative complication rate was significantly higher in the partial nephrectomy group (*p*=0.047). At five-year follow-up, there were six

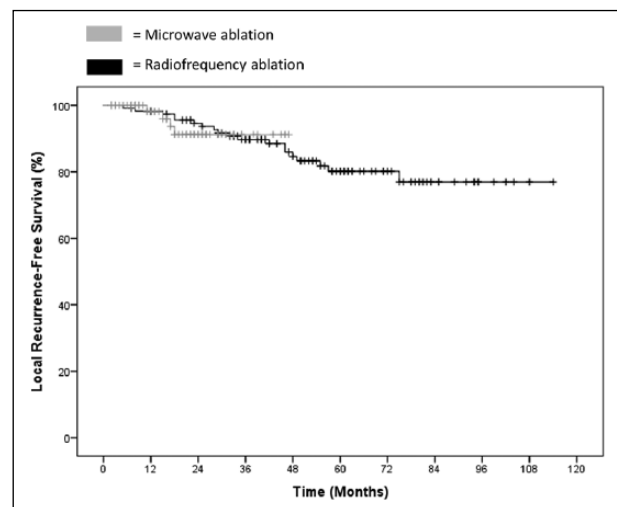
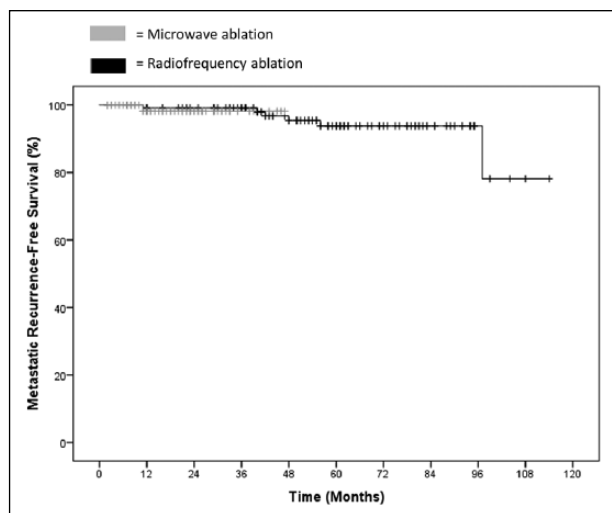


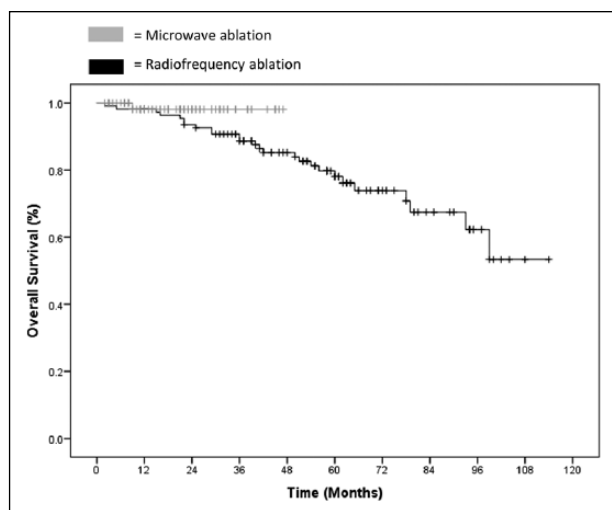
Figure 1. Local recurrence rates.

failed radiofrequency ablation cases and one partial nephrectomy local recurrence (*p*≤0.0001). The five-year cancer-specific survival was 98% and 100% for radiofrequency ablation and partial nephrectomy respectively (95% confidence interval 0.7–1.7, *p*=0.31); five-year overall survival for the radiofrequency ablation and partial nephrectomy was 89% and 92% (95% confidence interval 0.7–1.8, *p*=0.29) (Figures 1–3). Limitations include selection bias and the difference in patients' demographics in the two groups.

**Conclusion:** Peri-operative complications were predictably higher with the partial nephrectomy group. However, oncological outcome was better in this group, compared with the radiofrequency ablation group. Validation of these results with long-term term follow-up is important given the disparity in complication rate and severity.



**Figure 2.** Metastatic recurrence rates.



**Figure 3.** Overall survival rates.

### Conflicting interests

The authors declare that there is no conflict of interest.

### Funding

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

### The end of transfaecal biopsies: Systematic and targeted transperineal prostate biopsies under local anaesthetic in outpatients

F Kum, M Kulkarni, N Faure-Walker, O Elhage, P Cathcart and R Popert

Guy's and St Thomas' Hospitals, London, UK

**Introduction:** Traditionally, prostate biopsies have been performed in an outpatient setting via the transrectal ultrasound approach. The PrecisionPoint transperineal

access system enables both standard systematic template and targeted transperineal prostate biopsy, using an ergonomic disposable freehand device under local anaesthetic in the outpatient setting.

**Methods and patients:** One hundred and thirty-seven patients underwent prostate biopsies using the PrecisionPoint system from April 2016–August 2017. Initial cases were performed under general anaesthetic in day surgery to enable familiarisation with the technique and local anaesthetic protocol. Cognitively targeted biopsies were performed in 26 patients, a further 28 patients had targeted biopsies in addition to the standard template. Median age was 64.6 (33–83) years, median prostate specific antigen 7.5 (0.7–1374) ng/ml with a median prostate volume of 40 (10–157) cc. Histological and oncological outcomes were recorded, in addition to pain scores using the validated 'Visual Analogue Score' (VAS) for ultrasound probe insertion, local anaesthetic administration, biopsies and overall rating.

**Results:** Thirteen biopsies were performed under general anaesthetic, 16 under sedation+local anaesthetic, and 108 with local anaesthetic only. Comparing local anaesthetic transperineal versus conventional transrectal ultrasound biopsy methods, Visual Analogue Score scores were not significantly different. However, patients who underwent local anaesthetic transperineal biopsies in day surgery compared with the outpatient department reported significantly higher pain scores for the three procedural stages ( $p < 0.05$ ), but not overall ( $p = 0.07$ ). One hundred and eleven (81%) were for primary biopsies, 22 (16%) were on active surveillance, and four (3%) were for restaging. Of the 111 primary biopsies, 79 (71%) were positive and 32 (23%) were benign. Cancer pickup rates were similar to conventional transperineal biopsies. Complications were urinary retention in one patient and clot retention in another, which resolved. No patients developed sepsis.

**Conclusions:** Prostate biopsies can be performed safely under local anaesthetic in an outpatient setting using the PrecisionPoint system, with good histological outcomes. This method of transperineal biopsy has potential to supersede the transrectal approach.

### Conflicting interests

The authors declare that there is no conflict of interest.

### Funding

This research received no specific grant from any funding agency in the public, commercial or not-for-profit sectors.

### The safety and efficacy of robotic-assisted radical cystectomy in octogenarians using the multidisciplinary enhanced recovery programme

V Kusuma, P Pavlakis, D Moschonas, S Woodhams, M Swinn, H Mostafid, A Roodhouse, K Patil and M Perry  
Royal Surrey County Hospital, Guildford, UK

**Objective:** Radical cystectomy is the standard surgical management for muscle invasive and high risk non-muscle invasive bladder cancer. Robotic-assisted radical cystectomy is rapidly evolving as a surgical option with equal oncological outcomes. Few patients above 80 years old undergo cystectomy because of high morbidity and mortality. We aim to evaluate the safety and efficacy of robotic-assisted radical cystectomy in this population.

**Materials and methods:** Between May 2013–May 2017, 195 patients underwent robotic-assisted radical cystectomy with the newly introduced multidisciplinary enhanced recovery programme. Of these, 23 patients were 80 years and older and formed the cohort of this study. All patients underwent thorough preoperative assessment including cardiopulmonary exercise testing. Retrospective analysis of the data collected from the institutional database were analysed for ASA score, estimated blood loss, transfusion requirements, length of hospital stay, 90 day morbidity and mortality.

**Results:** The mean age was 82.1 years (range 80–89 years). Indication for cystectomy was for muscle invasive bladder cancer in 20 patients, two patients underwent salvage and one patient underwent palliative cystectomy. The mean ASA score was two. The average blood loss and operative times were 174 ml (range 50–300 ml) and 368 min (range 215–540 min). None of the patients needed blood transfusion. The average length of hospital stay was seven days (range 4–17 days). Clavien Grade 3 complications were seen in two patients and Grade 4 in one patient. One patient died postoperatively on Day 4.

**Conclusion:** Our results show that robotic-assisted radical cystectomy in octogenarians is safe and feasible with acceptable morbidity and mortality.

#### Conflicting interests

The authors declare that there is no conflict of interest.

#### Funding

This research received no specific grant from any funding agency in the public, commercial or not-for-profit sectors.

### Antibiotic resistance in a high-risk population undergoing transrectal ultrasound guided biopsy of the prostate: Overcoming the challenge

**C Bastianpillai, J Pushparajah and J Green**  
*Whipps Cross Hospital, London, UK*

**Introduction:** Transrectal ultrasound guided-biopsy of the prostate is a widely-used technique in the diagnosis of prostate cancer, and sepsis is an important cause of morbidity and mortality post-procedure. Quinolones are commonly used within prophylaxis regimes, but antibiotic resistance in the commensal rectal flora poses a significant barrier to reducing post-biopsy sepsis rates, and international travel is a risk factor. We report on the challenges of

antibiotic resistance within a high-risk immigrant population in East London, and the efficacy of implementing tailored antibiotic regimes based on pre-biopsy rectal swabs.

**Methods:** Over 18 months, patients undergoing transrectal ultrasound guided-biopsy at Whipps Cross hospital were retrospectively identified along with those presenting with post-biopsy sepsis. All were given standard prophylaxis, with diabetic patients receiving an extended course. A protocol was then introduced whereby patients underwent a rectal swab to assess antibiotic sensitivities, and a tailored prophylactic regime was administered to those displaying ciprofloxacin resistance. The records of the following 18 months were analysed.

**Results:** Over a 36-month period, 2002 patients underwent transrectal ultrasound guided-biopsy. In the 18 months prior to the introduction of our protocol, of the 917 patients biopsied, 0.55% presented with post-biopsy sepsis. In the 18 months following the introduction of our protocol, 1085 patients underwent transrectal ultrasound guided-biopsy of which 50.8% successfully received a pre-biopsy rectal swab. The post-biopsy sepsis rate was 0.28%, conferring a 49.1% relative reduction. Only one patient with sepsis had received a rectal swab, and this had not revealed ciprofloxacin-resistant organisms. Of 551 rectal swabs taken, 16.9% of patients had ciprofloxacin-resistant bacteria.

**Conclusions:** Our protocol successfully reduced the post-biopsy sepsis rate. As quinolones remain the antibiotic of choice for transrectal ultrasound guided-biopsy, we suggest performing rectal swabs on all patients prior to the procedure. Increased adherence to pre-biopsy rectal swabs may reduce sepsis rates further, with appropriate guidance from microbiology on tailored regimes.

#### Conflicting interests

The authors declare that there is no conflict of interest.

#### Funding

This research received no specific grant from any funding agency in the public, commercial or not-for-profit sectors.

### Risk-stratified imaging follow-up for renal cancer identifies most recurrences at an asymptomatic stage

**B Yang and R Kockelbergh**  
*University Hospitals of Leicester, Leicester, UK*

**Introduction:** Patients who undergo radical or partial nephrectomy for renal cell carcinoma are routinely followed up with radiological surveillance, but there is variation in modality, frequency and duration of follow-up. We report retrospectively on experience from follow-up at one centre on cases done from June 2011–September 2014, using a risk-stratified surveillance protocol.

**Methods:** One hundred and fifty-four patients had diagnoses of kidney cancer at MDT. Data were collected for

the 151 patients with notes available on presentation, histology, follow-up investigations and disease status at last follow-up. The follow-up protocol was risk stratified on histology, and by Leibovich score for clear cell renal cell carcinoma.

**Results:** One hundred and twenty-six patients had localised disease at presentation and proceeded to partial or radical nephrectomy. Follow-up duration was 0–2055 days (mean 875). Histology: 84.3% were clear cell renal cell carcinoma, 9.3% were papillary renal cell carcinoma, 4.3% were chromophobe and 2.1% were others. Twenty patients developed metastatic disease on follow-up (19 clear cell renal cell carcinoma and one papillary renal cell carcinoma), representing 18% of clear cell renal cell carcinomas and 8% of papillary renal cell carcinomas. Eighty-five percent of metastases were discovered on scheduled follow-up imaging, 10% in response to symptoms and 5% incidental findings on imaging done for other reasons. All metastases were found on computed tomography imaging. Duration from operation to metastasis was 18–1110 days (mean 399 days).

**Discussion:** Histology findings and rates of metastatic disease on follow-up are in line with national rates, including when clear cell renal cell carcinoma is stratified by Leibovich score. The vast majority of patients with metastases were diagnosed on routine follow-up imaging (85%), while previous data suggested that most presented clinically. It is possible that metastatic disease could be detected earlier by more intensive imaging of appropriate risk groups. Many patients undergo annual chest X-rays during follow-up, but in our experience, no metastases were detected by this method and it is not always done regularly in the community. The value of chest X-ray is therefore questionable.

### Conflicting interests

The authors declare that there is no conflict of interest.

### Funding

This research received no specific grant from any funding agency in the public, commercial or not-for-profit sectors.

### Percutaneous microwave versus radiofrequency ablation of small renal cancers: Intermediate follow-up

**A Thwaini, M Evans, W El Baroni, W Loan and R Lindsay**

*Belfast City Hospital, Belfast, UK*

**Introduction:** There is an increase in the incidence of renal cancer diagnosis, with a clear trend towards an earlier stage shift. Nephron-sparing treatment is the gold standard for T1 tumours, with comparable oncological outcomes to radical nephrectomy with preservation of renal function. Focal ablative therapies constitute a viable

alternative to the partial nephrectomy, especially for high risk surgical candidates and those who are not keen on major operations. We aim to compare the effects of the microwave ablation to radiofrequency ablation for small renal cancers.

**Method:** Data was collected on radiofrequency ablation and microwave ablation cases performed between September 2003–August 2016 at a single tertiary referral centre. Follow up protocol consisted of triple phase computed tomography scan of the abdomen (or magnetic resonance imaging for those with poor renal function) 4–12 weeks after the procedure and yearly thereafter. Statistical analysis was performed using IBM SPSS Statistics 24. Treatment and complication rates were assessed using the Chi-squared test. Recurrence and survival data was calculated using the Kaplan-Meier technique. A *p*-value less than 0.05 was considered statistically significant.

**Results:** Both groups (radiofrequency ablation *n*=136, microwave ablation *n*=79) had similar demographics. RENAL nephrometry scoring was comparable in both groups (*p*=0.75). There was no difference in treatment success rate (*p*=0.09). Complication rate was significantly higher in microwave ablation (*p*=0.04). At a median follow up of 19 for microwave ablation and 57 months for radiofrequency ablation, local recurrence-free, metastasis-free and overall survival was similar (*p*=0.85, 0.74, 0.16 respectively).

**Conclusion:** Radiofrequency ablation and microwave ablation provide a viable treatment option for small renal cancers. Microwave ablation carries higher peri-operative complications. This may improve with experience and technological advancement. Longer follow-up is required to validate these results.

### Conflicting interests

The authors declare that there is no conflict of interest.

### Funding

This research received no specific grant from any funding agency in the public, commercial or not-for-profit sectors.

### The role of percutaneous renal biopsy in renal mass lesions: Five-year experience from a UK high-volume centre

**M Wanis, K Rafique, K Ramesar, S Garnett and S Ahmed**

*Eastbourne District General Hospital, Eastbourne, UK*

**Background:** The increased usage of cross-sectional imaging has resulted in an increasing detection of incidental renal lesions. This places an increased burden on urological services. Percutaneous renal biopsy is a useful diagnostic tool with a high diagnostic yield of 78–97% and low morbidity. This study aims to evaluate the role, efficacy

and safety of renal biopsy in the assessment of renal mass lesions in a high-volume UK centre.

**Methods:** The electronic records of all patients undergoing renal biopsy between January 2012–December 2016 were evaluated. Outcome measures included diagnostic yield rate, accuracy of renal biopsy histology compared with final histology following radical nephrectomy or partial nephrectomy, malignancy rate and complication rates.

**Results:** One hundred and eighty-one renal biopsy cases were conducted in this period but 46 cases did not meet the inclusion criteria. Mean age was 72.9 years and 68.4% were male. Mean lesion size was 3.4 cm (range 0.5–18 cm). The majority of renal biopsies (68.1%) were performed for small renal masses. Of renal biopsies, 70.4% were malignant, 15.6% were non-diagnostic, with 38.5% being non-diagnostic in lesions <2 cm. Altogether 14.9% of lesions <3 cm were benign. Nineteen renal biopsies were performed for complex renal cysts, with a diagnostic yield rate of 84.2%. Overall, 42 patients underwent either radical nephrectomy or partial nephrectomy. Histological subtype was accurate in 77% of renal biopsy reports whilst Fuhrmann grading was accurate in only 46%. There were no major complications, with no patients requiring transfusion or embolisation.

**Conclusions:** Renal biopsy is a safe and effective tool in the evaluation of renal lesions with a high diagnostic yield overall as well as a low morbidity. However, diagnostic yield was lower in tumours <2 cm. Fifteen percent of lesions <3 cm were benign, an important consideration when counselling young, fit patients for active treatment. Accuracy of Fuhrmann grading in RB when compared with final histology was poor overall, particularly in high-grade tumours.

### Conflicting interests

The authors declare that there is no conflict of interest.

### Funding

This research received no specific grant from any funding agency in the public, commercial or not-for-profit sectors.

### The evolution of robotic assisted partial nephrectomy: Improving pentafecta outcomes in advanced tumours

**N de Luyk, B Namdarian, A Rajangam, R Gray, Y Altal, R Catterwell, A Fernando and B Challacombe**  
Guy's and St Thomas' NHS Foundation Trust, London, UK

**Introduction and objectives:** Robotic-assisted partial nephrectomy is the predominant method to treat small renal masses. Recent studies demonstrate equivalent short-term oncological outcomes with reduced peri-operative morbidity. We analysed our results looking at the case mix with disease parameters and pertinent outcomes of both operative and oncological variables.

**Materials and methods:** We reviewed our prospectively collated database of all robotic-assisted partial nephrectomies performed sequentially in our unit between 2010–2017. Cases were divided into three case cohorts. Variables included age, body mass index, ASA, estimated glomerular filtration rate, tumour size, PADUA score, operative time, blood loss, warm ischaemic time and length of stay. The renal trifecta was defined as warm ischaemic time  $\leq 25$  min, negative surgical margins and absence Clavien  $\geq 3$ a complications. Pentafecta was defined as achievement of trifecta with addition of over 90% estimated glomerular filtration rate preservation and no chronic kidney disease stage upgrade. Results were analysed using non-parametric analysis.

**Results:** Three hundred cases were performed with clinical features below (Table 1). There was a steady increase in patient and tumour complexity while our pentafecta

**Table 1.** Clinical features of cases.

Cohort	1	2	3	<i>p</i> value <sup>a</sup>
No.	100	100	100	
Median age, years (IQR)	58 (47–64)	57 (49–67)	56 (46.3–64)	0.731 <sup>b</sup>
Male (%)	72	60	61	0.158 <sup>c</sup>
Female (%)	28	40	39	0.158 <sup>c</sup>
ASA score category (%)				
1	29	34	21	0.882 <sup>c</sup>
2	69	43	68	0.166 <sup>c</sup>
3	2	23	11	0.012 <sup>c</sup>
Median BMI, kg/m <sup>2</sup> (IQR)	27.8 (24.2–32.1)	29.9 (25.0–31.8)	29.5 (25.8–33.5)	0.165 <sup>b</sup>

(Continued)

**Table 1.** (Continued)

Cohort	1	2	3	p value <sup>a</sup>
Pre-op CKD $\geq 3$ (n)	3	13	17	–
Median Hb diff, g/l (IQR)	14 (10–19.8)	14 (5.8–20)	14 (8–19)	0.880 <sup>c</sup>
Median tumour size, cm (IQR)	2.8 (2–3.5)	3.2 (2.4–4)	3.5 (2.6–4.1)	0.002 <sup>b</sup>
pT1a (%)	92	85	76	0.001 <sup>c</sup>
pT1b (%)	8	13	20	0.016 <sup>c</sup>
pT2 (%)	0	2	4	0.031 <sup>c</sup>
Median PADUA (IQR)	7 (7–8)	7 (7–8)	8 (7–9)	0.006 <sup>b</sup>
Median WIT (IQR)	17 (14.6–20.9)	18 (14.6–21)	16 (14–20)	0.102 <sup>b</sup>
Median op time, min (IQR)	180 (160–190)	160 (145–180)	160 (150–198)	0.149 <sup>b</sup>
Median EBL, ml (IQR)	110 (50–200)	200 (100–281)	150 (100–300)	0.022 <sup>b</sup>
Median LOS (IQR)	3 (3–4)	3 (2–3)	2 (2–3)	<0.001 <sup>b</sup>
Recurrence (n)	3	1	0	–

BMI: body mass index; CKD: chronic kidney disease; IQR: interquartile range; LOS: length of stay; WIT: warm ischemic time.

<sup>a</sup>Values of *p* are calculated between set 1 and set 3 to determine the significance over time. Values in bold are indicated as statistically significant (*p*-value<0.05).

Statistical tests undertaken: <sup>b</sup>Wilcoxon-sign rank test, <sup>c</sup>chi-squared test for proportions.

**Table 2.** Patient and tumour complexity with the pentapecta rates.

Cohort	1	2	3	p-Value <sup>a</sup>
WIT<25, n (%)	96	99	99	0.097 <sup>b</sup>
No complications, n (%)	97	99	93	1.000 <sup>b</sup>
Clear margins, n (%)	98	99	97	0.667 <sup>b</sup>
<b>Trifecta rate (%)</b>	92	96	90	0.217 <sup>b</sup>
% change of GFR<10%, n (%)	76	86	95	0.010 <sup>b</sup>
No CKD upgrade, n (%)	95	98	98	0.430 <sup>b</sup>
<b>Pentapecta rate (%)</b>	70	83	85	0.005 <sup>b</sup>
<b>Median PADUA scores</b>	7	7	8	0.006 <sup>c</sup>

CKD: chronic kidney disease; GFR: glomerular filtration rate; WIT: warm ischemic time.

<sup>a</sup>Values of *p* are calculated between set 1 and set 3 to determine the significance over time. Values in bold are indicated as statistically significant (*p*-value <0.05).

Statistical tests undertaken: <sup>b</sup>Wilcoxon-sign rank test, <sup>c</sup>chi-squared test for proportions.

rates significantly and steadily increased over the cohorts (Table 2).

**Conclusion:** Despite performing robotic-assisted partial nephrectomy on more comorbid patients with greater body mass index who have larger more complex lesions the pentapecta rates have climbed. Length of stay is shorter without a concomitant increase in warm ischaemic time. In our experience this affirms the evolution of robotic-assisted partial nephrectomy

utility in the more complex patient and more complex pathology.

### Conflicting interests

The authors declare that there is no conflict of interest.

### Funding

This research received no specific grant from any funding agency in the public, commercial or not-for-profit sectors.

## Radiological progression and clinical outcomes of Bosniak 2F cysts

M Moore<sup>1</sup>, C Gutteridge<sup>1</sup> and E Bright<sup>2</sup>

<sup>1</sup>Derriford Hospital Plymouth NHS Trust, UK

<sup>2</sup>Royal Cornwall NHS Trust, UK

**Introduction:** The Bosniak classification describes a 15% risk of malignant transformation in 2F cysts, and therefore recommends computed tomography surveillance. We investigated our adherence to our five-year surveillance protocol and the incidence of cyst progression.

**Methods:** Retrospective analysis of all Bosniak 2F cysts diagnosed on computed tomography from 2006–2013 to assess radiological progression and clinical outcome.

**Results:** Ninety-seven cysts were identified in 97 patients (58 male, 39 female; mean age 65 years, range 28–90 years). Cyst were identified in the right ( $n=49$ ), left ( $n=47$ ) and in one transplant kidney; upper pole ( $n=35$ ), lower pole ( $n=42$ ), and in the interpolar region ( $n=20$ ). Mean cyst size measured 4.9 cm (range 0.7–20 cm). Cysts were an incidental finding in 72 patients, the remainder presented with haematuria ( $n=18$ ), loin pain ( $n=4$ ), unknown reason ( $n=2$ ) and a family history of polycystic kidney disease ( $n=1$ ). Twenty-five patients received  $\geq 5$  years' surveillance (mean 39 months; range 6–90 months); only nine adhered to the follow-up protocol. Five cysts increased in size but did not progress. Seven progressed, of which four underwent nephrectomy. All progression occurred within the first 18 months of surveillance. No cyst-related mortality occurred.

**Conclusion:** The majority of cysts were incidental findings. Whilst 97% of patients did not receive our five-year specified screening protocol, 61% did received at least  $\geq 3$  years surveillance. As all progression occurred within 18 months, an argument could be made for reducing the surveillance regimen.

### Conflicting interests

The authors declare that there is no conflict of interest.

### Funding

This research received no specific grant from any funding agency in the public, commercial or not-for-profit sectors.

## Tyrosine kinase inhibitors for metastatic renal cell carcinoma – what should we tell our patients?

G Broadley and P Rajjayabun

Alexandra Hospital, UK

**Introduction:** Tyrosine kinase inhibitors are established as standard treatment in metastatic renal cell carcinoma. However, clinical outcomes are less well known to urological surgeons as patients are managed by oncologists. We performed an overview of contemporary tyrosine kinase inhibitor use over six years.

**Patients and methods:** Using an electronic database we gathered data for patients treated with a tyrosine kinase inhibitor for metastatic renal cell carcinoma between 2010–2016. Parameters included cancer specific survival, disease progression/regression and drug toxicity.

**Results:** We identified 91 patients treated with a tyrosine kinase inhibitor (64 males, 27 females, median age 63 years; range 46–92). Patient sub-groups included (a) tyrosine kinase inhibitor alone ( $n=24$ ), (b) early tyrosine kinase inhibitor following cytoreductive nephrectomy ( $n=20$ ), (c) delayed tyrosine kinase inhibitor following historical nephrectomy with subsequent development of metastases ( $n=47$ ). Median cancer specific survival for each sub-group was (a) 163 days; (b) 495 days, median time for tyrosine kinase inhibitor initiation to death 396 days; (c) 873 days, median time for tyrosine kinase inhibitor initiation to death 381 days. Responses to tyrosine kinase inhibitor at six months included: 32% stable disease, 26% partial regression, 4% complete resolution, 19% disease progression, 19% died within six months. Eight patients required hospital admission for sepsis, nine patients developed thromboembolic complications. No patient suffered grade 3 gastro-intestinal tract or neuro-toxicity. One patient discontinued treatment.

**Conclusion:** We have clarified contemporary anticipated outcomes and side effects for patients embarking on tyrosine kinase inhibitor therapy. This has enhanced our ability to counsel patients with metastatic renal cell carcinoma. We note similarities in cancer-specific survival once tyrosine kinase inhibitors are started when comparing patients treated with 'up-front' tyrosine kinase inhibitors versus delayed initiation.

### Conflicting interests

The authors declare that there is no conflict of interest.

### Funding

This research received no specific grant from any funding agency in the public, commercial or not-for-profit sectors.

## Managing bladder cancer pain with morphine may have detrimental consequences on patient outcomes? In vitro studies

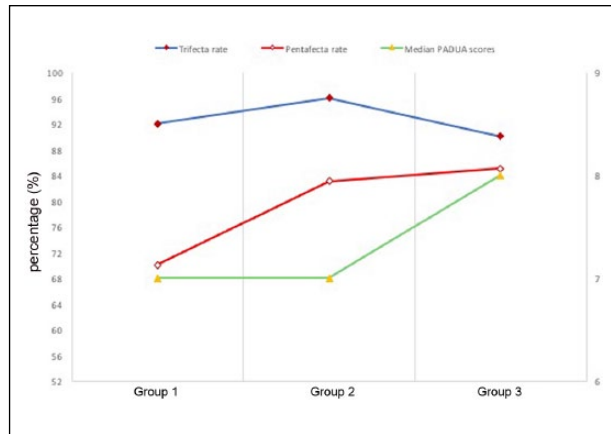
P Harper<sup>1</sup>, O Hald<sup>1</sup>, B Lwaleed<sup>1</sup>, A Kyyaly<sup>1</sup>, A Cooper<sup>2</sup> and B Birch<sup>1</sup>

<sup>1</sup>University Hospital Southampton, UK

<sup>2</sup>University of Portsmouth, UK

**Objective:** The purpose of this study was to determine the effect of morphine on bladder cancer cell proliferation and apoptosis in vitro.

**Materials and methods:** MTT assay was used to measure residual viable biomass of RT-112 human bladder cancer cells after 72 h of morphine/morphine+naloxone



**Figure 4.** Trifecta and Pentafecta outcomes and PADUA scores. PADUA:

treatment. Expression of mu-opioid receptors was assessed by Western blot and, finally, apoptotic assays were carried out using confocal microscopy. Data was analysed using descriptive statistics and Student's paired *t*-tests using Graphpad Prism (Graphpad Software, San Diego, California, USA).

**Results:** The MTT assays showed that morphine increased RT-112 cell growth ( $p < 0.05$ ). When administered together, morphine and naloxone demonstrated a competitive relationship. Western blot analysis regarding mu-opioid receptor expression in RT-112 cells remains inconclusive. Morphine was also found to decrease the rate of apoptosis of RT-112 cells, an effect which naloxone inhibited.

**Conclusions:** This study provides evidence that morphine, at clinically relevant doses, causes RT-112 bladder cancer cell proliferation and at least some of this effect might be due to decreased apoptosis. Clinically, this suggests that managing bladder cancer pain with morphine might have detrimental consequences on patient outcomes.

### Conflicting interests

The authors declare that there is no conflict of interest.

### Funding

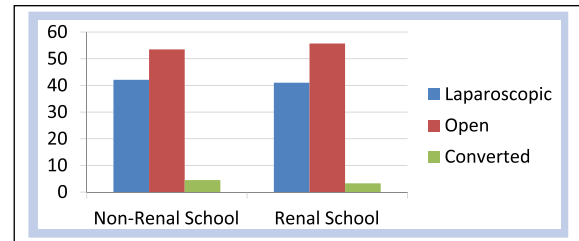
This research received no specific grant from any funding agency in the public, commercial or not-for-profit sectors.

### Pre-operative renal school improves renal cell carcinoma surgical outcome, provides hospital cost saving of £960 per patient and achieves excellent patient satisfaction

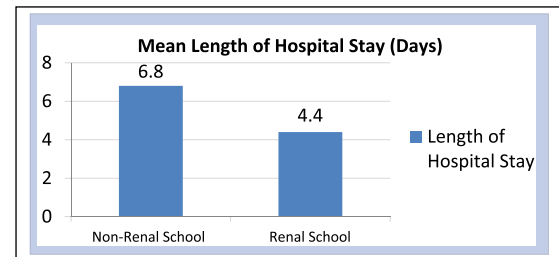
**S Hulligan<sup>1</sup>, K Hughes<sup>2</sup>, N Patrick<sup>2</sup>, K Buchannan<sup>2</sup>, K Burns<sup>2</sup>, D Lcasiano<sup>2</sup>, A Khattak<sup>2</sup>, H Gana<sup>2</sup> and R Mistry<sup>1,2</sup>**

<sup>1</sup>Southport and Ormskirk NHS Trust, UK

<sup>2</sup>St Helens and Knowsley Teaching Hospital NHS Trust, UK



**Figure 5.** Percentage of patients in each surgical approach sub-group, shows an even spread.



**Figure 6.** Length of hospital stay.

**Introduction and aim:** Enhanced recovery pathways have been proven to improve patient outcomes and reduce length of hospital stay. There is limited evidence regarding the role of pre-operative patient education.

British Association of Urological Surgeons enhanced recovery pathway guidelines specify that a well-informed and motivated patient is integral to successful implementation of enhanced recovery pathway. A pioneering pre-operative renal school has been introduced from May 2016 at Whiston Hospital. We have assessed outcomes of this novel service.

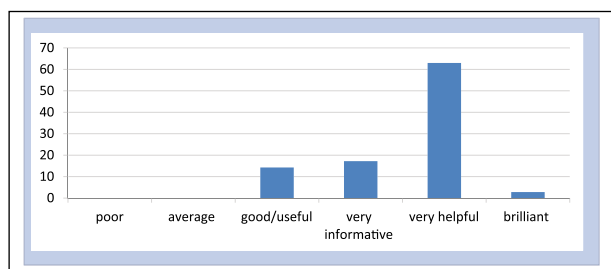
**Methods:** Two hundred and sixty-one patients undergoing elective renal surgery over a five-year period were grouped into those attending pre-operative renal school ( $n=61$ ) and those who did not ( $n=201$ ). Length of hospital stay and patient satisfaction were primary outcomes. Type of surgery and surgical approach were sub-analysed (see Figure 5),  $p$ -values  $\leq 0.005$  were deemed statistically significant. Patient satisfaction following renal school was assessed using patient diaries, and standardised questionnaire telephone follow up at 24 h and seven days post-discharge.

**Results:** Renal school patients had a statistically significant reduction in mean length of hospital stay compared to non-renal school, 4.4 versus 6.8 days respectively ( $p \leq 0.001$ ) (see Figure 6), producing a potential cost saving of £58,560 over the 8 months since introduction. This is equivalent to £7320 cost saving per month and £960 per patient. There was a consistent reduction in length of hospital stay for renal school patients across all surgical approach sub-groups (see Table 3). For laparoscopic procedures the reduction in length of hospital stay was 5.9 versus 3.7 days ( $p \leq 0.005$ ). Mean patient satisfaction score was:



**Table 3.** Change in length of hospital stay (LOHS) for each surgical sub-group.

	Non-renal school		Renal school		p-Value
		Standard deviation		Standard deviation	
<b>Total</b>	201		61		
<b>LOHS mean</b>	<b>6.8</b>	<b>4.6</b>	<b>4.4</b>	<b>1.9</b>	<b>&lt;0.001</b>
LOHS Median	6		4		
<b>Open</b>					
Total	106		32		
<b>LOHS mean</b>	<b>7</b>	<b>3.4</b>	<b>4.8</b>	<b>1.9</b>	<b>&lt;0.001</b>
LOHS median	6		4		
<b>Laparoscopic</b>					
Total	84		25		
<b>LOHS mean</b>	<b>5.9</b>	<b>4.8</b>	<b>3.7</b>	<b>1.6</b>	<b>&lt;0.001</b>
LOHS median	4		3		
<b>Laparoscopic nephrectomy</b>					
Total	57		19 (simple-3 radical-16)		
<b>LOHS mean</b>	<b>6.2</b>	<b>5.6</b>	<b>3.5</b>	<b>1.5</b>	<b>0.001</b>
LOHS median	4		3		
<b>Laparoscopic nephro-ureterectomy</b>					
Total	27		6		
<b>LOHS mean</b>	<b>5.3</b>	<b>2.2</b>	<b>4.3</b>	<b>1.5</b>	<b>0.208</b>
LOHS median	5		3.5		
<b>Converted</b>					
Total	11		2		
<b>LOS mean</b>	<b>11.7</b>	<b>8.6</b>	<b>5.3</b>	<b>1.9</b>	<b>0.016</b>
LOS median	7		4.5		

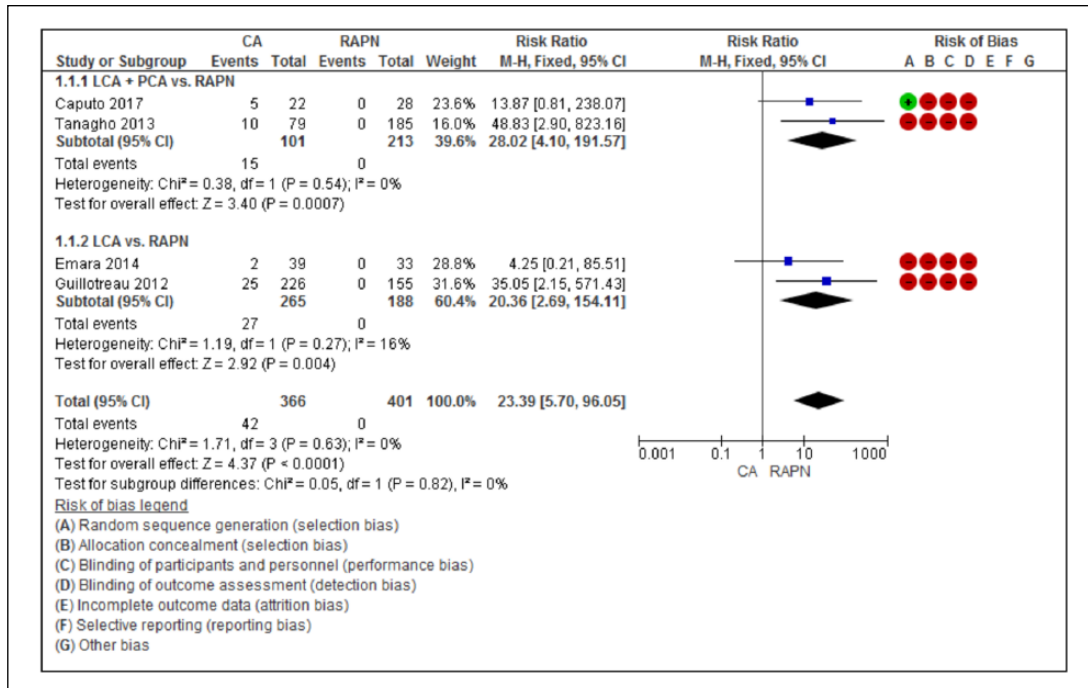
**Figure 7.** Patient feedback, percentage of patients responding with following comments. Mean patient feedback score 8.5/10.

8.5/10, 81% rated the service as very informative/helpful, 13% as good/useful, 6% as brilliant. 0% as average or unhelpful (see Figure 7).

**Conclusion:** Our analysis demonstrates that preoperative education in the form of renal school as part of enhanced recovery pathway is achievable and produces significant reductions in length of hospital stay with associated cost savings. It is associated with excellent patient compliance and satisfaction.

#### Conflicting interests

The authors declare that there is no conflict of interest.



**Figure 8.** Forest plot of comparison: recurrence rates. CA: cryotherapy; CI: confidence interval; LCA: laparoscopic cryotherapy; PCA: percutaneous cryotherapy; RAPN: robotic-assisted partial nephrectomy.

## Funding

This research received no specific grant from any funding agency in the public, commercial or not-for-profit sectors.

## Poster Abstracts

### Is cryotherapy a genuine rival to robotic assisted partial nephrectomy in the management of suspected renal malignancy? A systematic review and meta-analysis

P Jones<sup>1</sup>, C Tait<sup>2</sup>, R Gowda<sup>2</sup>, A Bhatti<sup>2</sup>, R Amitharaj<sup>2</sup>, J Adshear<sup>3</sup>, B Somani<sup>1</sup> and B Rai<sup>2</sup>

<sup>1</sup>University Hospital Southampton, UK

<sup>2</sup>James Cook University Hospital, UK

<sup>3</sup>Lister Hospital, UK

**Introduction:** A plethora of options are available in the management of renal masses suspected to be malignant. We aimed to compare oncological outcomes, morbidity, renal function and peri-operative outcomes between cryotherapy and robotic-assisted partial nephrectomy for renal masses.

**Methods:** The systematic review was performed according to the Cochrane PRISMA guidelines. All randomised trials and observational studies comparing laparoscopic and percutaneous cryotherapy with robotic assisted partial nephrectomy were considered. The GRADE approach to rate the quality of evidence. The Mantel–Haenszel Chi-square test was used for continuous data and expressed as the mean difference with 95% confidence interval, and for dichotomous data an inverse variance was used and

expressed as odds ratio or risk difference with 95% confidence interval.

**Results:** Two hundred and forty-one potential publications were identified and after thorough evaluation, four were included for evaluation. A total of 581 and 521 patients underwent cryotherapy and robotic assisted partial nephrectomy respectively. There was a statistically significant difference in recurrence rates (11.5% vs 0%,  $p < 0.00001$ ) between the two techniques favouring the robotic assisted partial nephrectomy cohort but there was no statistically significant difference in overall complications (including sub-analysis of Clavien > 3a) rates between the two techniques ( $p = 0.22$ ). There was no difference between survival and mortality outcomes between the two cohorts. There was a general trend towards better renal function preservation with the cryotherapy cohort (Figure 8).

**Conclusion:** This meta-analysis emphasises that robotic-assisted partial nephrectomy has significantly lower recurrence rates when compared to cryotherapy. It also suggests that robotic-assisted partial nephrectomy achieves superior oncological outcomes without compromising on morbidity when compared to cryotherapy.

## Conflicting interests

The authors declare that there is no conflict of interest.

## Funding

This research received no specific grant from any funding agency in the public, commercial or not-for-profit sectors.

## Are emergency admissions with visible haematuria waiting longer for diagnostics than those referred on the suspected urological cancer pathway?

N Patrick, J Lane, H Minshull-Beech and N Parr  
Wirral University Trust Hospitals, UK

**Background:** There is evidence that prompt treatment of solid bladder cancer influences outcome. NICE guidelines recommend that patients seen in primary care with a suspected urological cancer should be referred to a specialist and undergo investigation within a two-week time frame. However, the diagnostic pathway may differ for patients requiring urgent admission for gross visible haematuria.

**Aim:** In this study the primary outcome measure was time to flexible cystoscopy and the secondary outcome measures was time to TURBT and histological stage.

**Method:** We performed a retrospective case note review of patients undergoing investigations for haematuria over 12 months. Inclusion criteria were those presenting as an emergency admission with gross visible haematuria and those referred from primary care with visible haematuria on a suspected urological cancer pathway. Exclusion criteria were previous diagnosis of bladder cancer or other known cause of gross visible haematuria. Data collected included patient demographics, time from referral to flexible cystoscopy/TURBT and histopathological data.

**Results:** We identified 431 patients in total. Three hundred and eighty-nine were referred on a suspected urological cancer pathway with a mean age of 66.7 (range 27–92) years and mean time to flexible cystoscopy of 13.6 (range 3–62) days, and 42 presented as an emergency admission with visible haematuria with a mean age of 75.4 (range 34–95) years and a mean time to flexible cystoscopy of 33.5 (range 5–68) days  $p \leq 0.0001$ . Mean time to TURBT was also found to be longer in the emergency group, 51.2 (range 23–66) days compared to 39.2 (range 14–73) days for patients on the pathway demonstrating a trend towards delay. All of the bladder tumours identified in the patients presenting as an emergency were high-grade urothelial tumours.

**Conclusion:** Patients presenting as an emergency with gross visible haematuria are waiting longer for diagnostics than those referred on a suspected urological cancer pathway. This results in a delay to definitive diagnosis and treatment in a group of patients with potentially high-grade, high-risk tumours.

### Conflicting interests

The authors declare that there is no conflict of interest.

### Funding

This research received no specific grant from any funding agency in the public, commercial or not-for-profit sectors.

## Prognostic effect of cytoreductive nephrectomy in synchronous metastatic renal cell carcinoma: A comparative study using inverse probability of treatment weighting

T Klattel<sup>1</sup>, K Fife<sup>2</sup>, S Welsh<sup>2</sup>, M Sachdeva<sup>2</sup>, J Armitage<sup>1</sup>, T 'Aho<sup>1</sup>, A Riddick<sup>1</sup>, A Matakidou<sup>2</sup>, T Eisen<sup>2</sup> and G Stewart<sup>1</sup>

<sup>1</sup>Department of Urology, Addenbrooke's Hospital, UK

<sup>2</sup>Department of Oncology, Addenbrooke's Hospital, UK

**Purpose:** The purpose of this study was to test the hypothesis that cytoreductive nephrectomy improves overall survival of patients with synchronous metastatic renal cell carcinoma, who subsequently receive targeted therapies.

**Methods:** We identified 261 patients who received targeted therapies for synchronous metastatic renal cell carcinoma with or without prior cytoreductive nephrectomy. To achieve balance in baseline characteristics between groups, we used the inverse probability of treatment weighting method. We conducted overall survival analyses, including inverse probability of treatment weighting-adjusted Kaplan–Meier curves, Cox regression models, interaction term, landmark and sensitivity analyses.

**Results:** Of the 261 patients, 97 (37.2%) received cytoreductive nephrectomy and 164 (62.8%) did not. Inverse probability of treatment weighting-adjusted analyses showed a statistically significant overall survival benefit for patients treated with cytoreductive nephrectomy (hazard ratio=0.63, 95% confidence interval 0.46–0.83,  $p=0.0015$ ). While there was no statistically significant difference in overall survival at three months ( $p=0.97$ ), six months ( $p=0.67$ ) and 12 months ( $p=0.11$ ) from diagnosis, a benefit for the cytoreductive nephrectomy group was noted at 18 months ( $p=0.005$ ) and 24 months ( $p=0.004$ ). On interaction term analyses, the beneficial effect of cytoreductive nephrectomy increased with better performance status ( $p=0.06$ ), in women ( $p=0.03$ ) and in patients with thrombocytosis ( $p=0.01$ ).

**Conclusions:** Inverse probability of treatment weighting-adjusted analysis of our patient cohort suggests that cytoreductive nephrectomy improves overall survival of patients with synchronous metastatic renal cell carcinoma treated with targeted therapies. On the whole, the survival difference appears after 12 months. Those with a good performance status, women and patients with thrombocytosis may particularly benefit from cytoreductive nephrectomy, and these subgroups warrant further investigation in prospective trials.

### Conflicting interests

The authors declare that there is no conflict of interest.

### Funding

This research received no specific grant from any funding agency in the public, commercial or not-for-profit sectors.

**Toxicity of radiotherapy following radical prostatectomy: A national population-based study evaluating the impact of modality, hypofractionation and timing**

**A Sujenthiran<sup>1</sup>, J Nossiter<sup>1</sup>, M Parry<sup>1</sup>, S Charman<sup>1</sup>, P Cathcart<sup>4</sup>, J van der Meulen<sup>5</sup>, N Clarke<sup>2</sup>, H Payne<sup>3</sup> and A Aggarwal<sup>5</sup>**

<sup>1</sup>Clinical Effectiveness Unit, Royal College of Surgeons, UK

<sup>2</sup>The Christie and Salford Royal NHS Foundation Trusts, UK

<sup>3</sup>University College Hospital NHS Foundation Trust, UK

<sup>4</sup>Guy's and St Thomas' NHS Foundation Trust, UK

<sup>5</sup>London School of Hygiene and Tropical Medicine, UK

**Introduction:** There is evidence supporting the role of radiotherapy after radical prostatectomy in the management of high-risk prostate cancer. However, concerns remain about the associated treatment-related toxicity, patient inconvenience and costs.

**Aim:** To evaluate the impact of modality and timing of post-prostatectomy radiotherapy on severe genitourinary and gastrointestinal toxicity.

**Methods:** National population-based study of all patients treated with post-prostatectomy radiotherapy between 1 January 2010–31 December 2013 in England. A validated coding system captured severe toxicity ( $\geq$ Grade 3 according to the NCI CTCAE criteria) following radiotherapy. A competing-risks regression analysis was used to estimate hazard ratios comparing severe late toxicity between the following groups: (a) 3D-conformal radiotherapy versus intensity-modulated radiotherapy, (b) radiotherapy within six months of radical prostatectomy versus radiotherapy more than six months after radical prostatectomy.

**Results:** There was no difference in severe gastrointestinal toxicity between patients who received intensity-modulated

radiotherapy and 3D-conformal radiotherapy (3D-conformal radiotherapy: 5.8 events/100 person years; intensity-modulated radiotherapy: 5.5 events/100 person years; adjusted hazard ratio: 0.85, 95% confidence interval: 0.63–1.13;  $p=0.26$ ). The rate of severe genitourinary toxicity was lower with intensity-modulated radiotherapy but this was not statistically significant (3D-conformal radiotherapy: 5.4 events/100 person years; intensity-modulated radiotherapy: 3.8 events/100 person years; adjusted hazard ratio: 0.76, 95% confidence interval: 0.55–1.03;  $p=0.08$ ). Men who started radiotherapy more than six months after radical prostatectomy were less likely to experience genitourinary toxicity than those who started radiotherapy within six months (adjusted hazard ratio: 0.72, 95% confidence interval: 0.59–0.89;  $p<0.01$ ).

**Conclusion:** The use of intensity-modulated radiotherapy compared to 3D-conformal radiotherapy is not associated with a statistically significant reduction in rates of severe genitourinary and gastrointestinal toxicity in the post-prostatectomy setting. Starting radiotherapy at least six months after surgery reduced genitourinary toxicity. Given these findings, we would caution the transition to intensity-modulated radiotherapy in the post-prostatectomy setting and recommend waiting at least six months before the start of radiotherapy following radical prostatectomy.

**Conflicting interests**

The author declare that there is no conflict of interest.

**Funding**

This research received no specific grant from any funding agency in the public, commercial or not-for-profit sectors.