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Radical renal surgery (laparoscopic and open) in octogenarians

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ABSTRACT

Aim: An ageing population is at significant risk of developing of renal cell carcinoma (RCC). We evaluate our units experience in managing RCC in octogenarians using either laparoscopic or open radical nephrectomy, highlighting the postoperative complication rates and survival outcomes.

Materials and methods: From June 2001 to June 2008, 65 octogenarians underwent a radical nephrectomy for suspected renal cell carcinoma. The procedure was performed laparoscopically (group 1) in 29 patients (44%) and via an open nephrectomy (group 2) in 36 patients (56%). The presenting age, sex distribution, ASA score, preoperative co-morbidities and indications for nephrectomy were statically comparable in both groups. Postoperative complications were recorded using the Clavien–Dindo classification.

Results: Both groups were similar preoperatively with respect to age of presentation, ASA score and co-morbidities such as hypertension, ischemic heart disease, and chronic respiratory disease. Group 1 showed better statistically significant operative parameters (operative time and blood loss), mean length of hospital stay and most importantly postoperative complications. Postoperative complication rates were lower in group 1 (48.3%) when compared with group 2 (80.5%) ($p < 0.05$).

Conclusion: Surgery for renal cancer in patient over the age of 80 should only be considered after a thorough work up. Chronological age itself should not be the only determining factor. If such a surgery was to be undertaken, then in our experience, patients who underwent laparoscopic radial nephrectomy had fewer complications than those had open radical nephrectomy.

Introduction

In 2009, kidney cancer accounted for 3% of new cancer diagnosis and 2% of cancer related deaths making it the 8th most common cancer in the United Kingdom. For men and women aged 85 and older, death rates from kidney cancer more than doubled between 1971 and 2006, from 23.8 to 75.5 per 100,000 for men and from 12.8 to 30.5 per 100,000 for women.

General improvements in health care have improved the average life span of the population in comparison to life expectancy in pre-industrial times.[1] It is envisaged that with an increase in life expectancy urologists will see an increase in

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new referrals of RCC.[2] Laparoscopic radical nephrectomy (LRN) and open radical nephrectomy (ORN) are both established as safe procedures for the treatment of RCC. For small renal masses the treatment options include laparoscopic partial nephrectomy/open partial nephrectomy, radiofrequency ablation and cryoablation.[3]

Octogenarians have existing co-morbidities and are at higher risk of postoperative complications such as chronic renal dysfunction, increased risk of cardiovascular events and mortality following renal surgery.[4,5] We have retrospectively evaluated the morbidity and survival outcomes in octogenarians undergoing LRN and ORN.

Methods

Patient and methods

From January 2001 until December 2008, 1587 radical renal surgical procedures (laparoscopic and open) including radical nephrectomy, radical nephrouretrectomy and partial nephrectomy were performed in our department. Amongst these, 1109 (70%) patients underwent a radical nephrectomy (laparoscopic and open).

We have retrospectively collected patient data in 65 patients over the age of 80 who underwent a radical nephrectomy for a suspected RCC in our unit. All patients were discussed at our units multidisciplinary team (MDT) meeting prior to surgery, where the suspicion of a renal malignancy was very high in all cases preoperatively.

The patients were stratified into two groups. Group 1 consisted of 29 (44%) patients who underwent a LRN and group 2 consisted of 36 (56%) of patients who underwent an ORN. Data analysis consisted of preoperative parameters which included basic patient demographics such as age of presentation, sex distribution, indication for surgery, American Society of Anaesthesiology (ASA) score, preoperative creatinine levels and preoperative investigations performed. The perioperative parameters evaluated included operative time, estimated blood loss, Intraoperative blood transfusion rate, hospital stay and postoperative blood transfusion rate. All complications occurring within the first 100 days of surgery were recorded, defined and graded using the Clavien–Dindo system summarized in Table 1.[6] The complications were classified into from grades I to V. Grade I – required oral medication / bedside care; Grade II – required intravenous therapy, enteral feeding or transfusion; Grade III – required intubation, interventional radiology or re-operative intervention; Grade IV – required organ resection or resulted in chronic disability and Grade V – death.

All variables in groups 1 and 2 were summarized separately. Statistical analysis was conducted on all comparable variables in both groups.

Surgical techniques

All operations were performed by consultant urological surgeons. LRN was performed via the transperitoneal approach. Pneumoperitoneum was created using carbon dioxide (CO_2) with an average pressure of 10–12 mm Hg. Upon nephrectomy the specimen was extracted using a specimen retrieval bag via a Pfannenstiel incision. Patients in group 2 underwent an ORN via a flank (85%) and subcostal (15%) incision.

Statistical analysis

Statistical analysis was performed using 'graph pad prism 3.0'. Demographic data were presented as mean ± standard error (SE). Statistical analysis between the two groups was carried out using the Mann–Whitney U test with $p < 0.05$ as being significant. Survival curve was plotted using the Kaplan–Meier survival curve; log rank p value was used to compare the survival curves.

Results

Preoperative characteristics

From 2001 to 2008, 65 octogenarians underwent radical nephrectomy (both LRN and ORN) for RCC in our centre. (Group 1 (laparoscopic radical nephrectomy) consisted of 29 patients (44% of cohort) and group 2 open radical nephrectomy) consisted of 36 patients (56% of cohort). The mean age at presentation and surgery was 81.9 years (range 80–91) in group 1 and 82.5 years (range 80–89) in group 2. Both groups were statically comparable with regards to age, sex distribution, (ASA) score, preoperative co-morbidities and preoperative creatinine. The number of renal lesions diagnosed incidentally was higher in group 1 ($p<0.05$). 21 patients had loin pain on presentation in group 2. This was the initial complaint on the general practitioner's referral letter in 14 cases and loin pain and microscopic haematuria in the remaining 7 cases. It is important to highlight that none of the 21 patients with loin pain had an incidental diagnosis prior to presentation. Preoperative parameters are summarized in Table 1.

Following assessment in the outpatient clinic all patients were evaluated in our department's pre-anaesthetic clinic by consultant anaesthetists. All patients had basic preoperative haematological tests (haemoglobin levels, white blood cell count, platelet count, renal function tests and clotting parameters, preoperative chest x-ray and electrocardiography). More specialist investigations such as echocardiograms and pulmonary function tests were performed in 34% (10/29) of patients in group 1 and 38% (14/36) of patients in group 2. Elective high dependency unit (HDU) support was organized in 20% (6) in group 1 and 19% (7) of patients in group 2.

Operative characteristics

All patients were admitted a day prior to surgery and had routine low molecular weight heparin prophylaxis. The mean operative time in group 1 was 164 min (range 100–350) in group 2 was 201 min (range 120–420). No cases were converted to open nephrectomy in group 1. The mean operative blood loss was 205 ml (range 20–1300) in group 1 and 264 ml (range 50–1000 ml) in group 2. The main reason for a longer mean operative time of in group 2 was due to a higher number of T2 (1 in group 1 versus 6 in group 2). 3 patients had significant intraoperative bleeding in group 1