TRANSPERITONEAL APPROACH FOR RADICAL NEPHRECTOMY: FIVE YEARS EXPERIENCE AT PAKISTN INSTITUTE OF MEDICAL SCIENCES, ISLAMABAD, PAKISTAN.

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Background: Renal cell carcinoma (RCC) comprises 85% of all renal neoplasms. Radical nephrectomy is the only hope of cure for patients with RCC. Role of chemotherapy and radiotherapy is very limited because of the chemo-radio resistant nature of these tumours. Several surgical approaches have been employed depending upon surgeon preference, size and location of the tumour. Objective of this study is to share the five years experience (from 1999 to 2004) of radical nephrectomy at Urology Department, Pakistan Institute of Medical Sciences (PIMS), that was performed through anterior sub costal trans-peritoneal incision. **Methods:** It was a descriptive type of study with convenient non probability sampling technique. 100 patients were included. Patients were assessed by their mode of presentation, laboratory investigations, intra-operative findings, control of renal pedicle, total operative time, blood loss, intra-operative and post operative complications. The observations were noted on a proforma and analysed on SPSS version 10. **Results:** Out of 100 patients, 64% were male and 36% were female with mean age of 58 years. Most common presentation was pain, present in 60% of patients. 88% of patients had normal renal function test. Average tumour size was 7.93cm, diagnosed on ultrasonography (USG) and CT scan. Average time taken to get control of renal pedicle was 73.2minutes. 20% of patients needed venacavatomy and thrombectomy, which was easier through this approach. Mean operative time was 129.44 minutes. Average blood loss was 274.2ml. No intra-operative complications were seen. Mortality rate was 4%. **Conclusion:** Radical nephrectomy is still the best option for treatment of renal cell carcinoma. There are various surgical approaches, however, anterior subcostal transperitoneal approach is more effective with early control of renal pedicle, less blood loss and minimal manipulation of the kidney thus minimizing the risk of embolism.

Keywords: Radical nephrectomy; Anterior subcostal; Transperitoneal.

INTRODUCTION

Malignant tumours of kidney are estimated to represent approximately 2.5% of all the new cancer cases in the United States of America, each year.[1] Most of these diagnosis are related to malignant renal epithelial tumours or renal cell carcinoma (RCC), which comprises 85% of all renal neoplasms.[2] Males show more than twice the incidence in females in studies of RCC, with most patients presenting in seventh and eighth decade of life. The only hope for cure of patients with RCC is radical nephrectomy, which was introduced by Robson[3] in 1960, has resulted in improved survival. Radical nephrectomy is the treatment of choice for tumour confined to Gerota's fascia or growing intraluminally in inferior venacava.

Several surgical approaches have been used for radical nephrectomy. The surgical approach depends upon the size and location of tumour and patient's habitus. It is also guided more by the surgeon's preference and varies from center to center.

We present five years experience, 1999 to 2004, of radical nephrectomy, through transperitoneal approach in the Urology Department at Pakistan Institute of Medical Sciences (PIMS), Islamabad, Pakistan, from 1999 to 2004.

MATERIAL AND METHODS

The prospective and descriptive type of study was conducted in Urology Department, PIMS. Numerical data was used and sampling technique was convenient non-probability.

100 patients of RCC, planned for radical nephrectomy, who were fit for surgery, were included. Children below 15 years of age, those who had co morbidity and patients unfit for surgery, were excluded from study.

All the patients admitted to Urology ward, with diagnosis of RCC, fulfilling the above-mentioned criteria were selected for study. Complete history and physical examination along with relevant investigations were carried out, preoperatively. Radical nephrectomy was performed transperitoneally through an anterior sub-costal incision (unilateral or bilateral, depending upon the size of tumor and involvement of renal vein and inferior vena cava.)

Patients were assessed for the time taken from the skin incision to the control of renal pedicle, total operative time, blood loss and intraoperative complications. Immediate postoperative complications were noted and corrected. After

discharge from hospital, patients were called for first follow up after 15 days, and then after three months for second follow-up, to see the late complications. The observations were noted on a proforma and analysed on SPSS version 10.

RESULTS

Out of 100 patients, 64 were male and 36 were female with male to female ratio of 1.7: 1. Age ranged between 35 to 75 years, with mean of 58.28± SD 10.79 years.

60 patients presented with pain, 8 presented with mass, 4 presented with pain, mass and haematuria (triad), 8 were symptom free as they were diagnosed incidentally while investigating for some other disease. 12 patients presented with metastasis.

Laboratory investigations showed that hemoglobin concentration ranged between 7 to 14 grams/dl, in whom 72 patients had haemoglobin concentration of more than 10mg/dl and required no pre operative blood transfusion. Serum creatinine levels were within normal limits, i.e. < 1.2 mg/dl in 88 patients while it was deranged in 12 patients who were cases of chronic renal failure. LFTs were normal in 92 patients, while they were deranged in 8 patients.

Color Doppler ultrasound showed 56 patients had left sided tumor while 44 patients had right-sided tumor. 20 had tumor extending into the renal vein or IVC. Tumor size ranged between 5 and 13cm, and average tumor size was 7.9cm ± SD 9.78cm.

40 patients had upper pole tumors while 60 patients had lower pole tumors, with ratio of 1:1.5. 88 patients had other kidney normal while 12 patients had feature of chronic renal disease with increased ecogenicity and loss of corticomedullary differentiation.

CT scan abdomen confirmed the findings of color Doppler USG and it also showed hilar lymphadenopathy, which was missed on ultrasound in 8 patients. X-ray chest was normal in 91 patients while 9 patients had 'cannon ball' opacities in lungs showing metastasis.

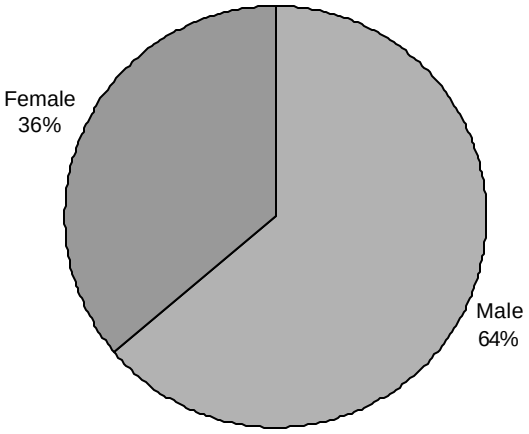
Intra-operative time to get control of renal pedicle, ranged between 50 to 110 minutes and mean was 73.2±SD 9.78 minutes.

Operative findings were suggestive of tumor limited to Gerota's fascia in 64 patients and in 20 patients tumor was extending into renal vein or inferior vena cava. In these cases, venacavatomy had to be performed. Lymphadenectomy was performed in 8 patients who were having enlarged hilar lymph nodes.

No intra-operative intestinal or splenic injuries were seen. The mean operative time was 129.44 ± SD 9.78 minutes, while total operative time ranged between 110 to 160 minutes.Average blood loss was 274.2 ml ±SD 7.94 ml while range was from 150 to 500 mls.

Patients were observed during their immediate postoperative period. They were kept fasting till their bowel sounds were audible. 88 patients were allowed oral diet within 36 to 48 hours after surgery while 8 patients were kept fasting for more than 48 hours due to paralytic ileus.

Figure 1. Sex incidence or renal tumours



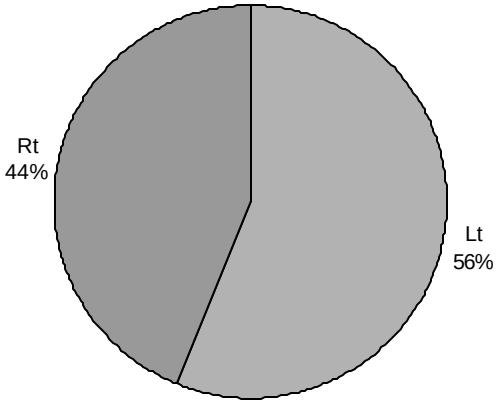


Figure 2. Site of Tumour

04 patients died within 72 hours of surgery. Hospital stay ranged from 10 to 16 days with mean of 13.68± SD10.1 days. Patients were called for first follow up 15 days after the discharge. 8 patients had wound infection while other remained infection free.

They were called 3 months after the surgery to see the late complications. None of the patients developed incisional hernia in the scar. Scar was

acceptable aesthetically to majority of the patients. Fresh investigations were done, i.e. liver function test, X-ray chest and ultrasonography to see the progression of disease and metastasis to other sites.

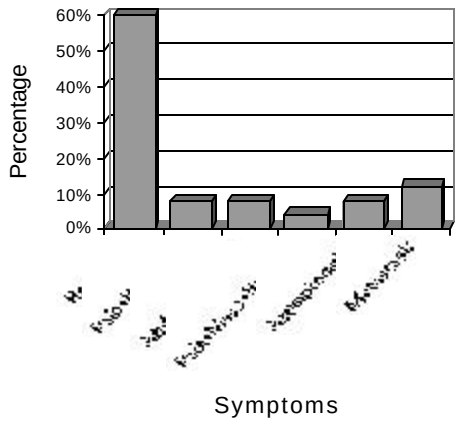


Figure 3. Presentation of Renal Tumour

DISCUSSION

Renal cell carcinoma accounts for approximately 3% of adult malignancies. Radical nephrectomy is the treatment of choice for stage I, II, and some stage III tumours. The surgical approach includes either a transperitoneal incision extended or bilateral subcostal and thoracoabdominal (or an extraperitoneal incision), depending on the size and location of the tumour.

In our study 100 patients were in which 64 were male and 36 were female. The age ranged between 35 to 75 years. The study conducted by Amanullah[4] and associates showed that out of 25 patients 15 were male and 10 female with age ranging from 22years to 71years with mean age of 51.7 years. In our study, 60% of patients presented with pain, 8%with pain and haematuria and 8% were diagnosed incidentally. 12% patients presented with metastasis, while in his study 48% presented with haematuria, 16% with abdominal mass and 36% with lumbar pain. Another study conducted by Eggner SE and associates[5] had 114 patients with a mean age of 37.1years. 56,1% were male and 43.9% were female, with male to female ratio of 1.3:1. in their study, 55.9% were symptomatic and 35.5% were diagnosed incidentally. regarding laboratory investigations in our study, serum creatinine was within normal limits,i.e. <1.2 mg/dl in 88% patients while 12% had deranged renal function tests due to chronic renal failure. In a study conducted by Khuali RB[6], all the patients had a preoperative creatinine level of 1.08 mg/dl.

Average tumour size in our study was 7.93cm (Range: 5 to 13 cm) while in the study by Khuali RB, tumour size was 6.95 cm on average. In another study conducted by Kageyma and associates,[7] patients had stage T1 – T3 tumours and less than 6 cm in maximum diameter.

We used transperitoneal approach through anterior subcostal or extended subcostal incision. Average time taken to get control of the renal pedicle was 73.2minutes with a range of 50 to 110 minutes. No reference has been found in the international literature to substantiate our claim. 20% of our patients had T3b disease with renal vein or inferior vena caval involvement below the diaphragm and in those cases venocavatomy and thrombectomy was performed after achieving proximal and distal vascular control. 16% of these patients had tumour on left side in which subcostal incision was extended so that the control of inferior venacava can be taken from right side without great manipulation of the tumour. In the study conducted by Suggs WD,[8] patients underwent radical nephrectomy and venacaval thrombectomy, in which 10 patients had tumour thrombus confined to infra hepatic vena cava. Another study by O Donohoe MK,[9] 10 patients were treated with radical nephrectomy and venacaval thrombectomy. There were no intraoperative complications. While in the study by Arnaud Mejean,[10] complication rates were 6.4%, including the intestinal and splenic injuries, whereas, Heranz MO[11] intraoperative complications in 10% cases.

The mean operative time in our study was 129.44minutes with a range of 110 to 116 minutes which is same as has been reported by Arnaud Mejean,[10] While in the study conducted by Repassy DM,[12] the mean operating time was 170 minutes. Average estimated blood loss in our study was 274.2 ml with a range of 150 to 500 ml. Other studies have reported figures of 355,3 ml and 175 ml.[6,13]

Post operatively, 88% of our patients were started orally after 36 to 48 hours, while 64% patients were started orally after 48 hours in the series of Khuali RB.

Mortality rate in our study was 4% while other studies have reported figures of 3%[10] and 8%.[14]

Wound infection was noticed in 4% of our patients as compared to 6.4% patients in the study by Harranz MO.[11] However, no patient had wound infection in the study by Amanullah and associates.[4] Not all studies favour transperitoneal radical nephrectomy like the one conducted by Kageyama y and associates, in which they performed some radical nephrectomies through modified translumbar approach and some through transperitoneal approach and they concluded shortened operative time, decreased blood loss and quickened recovery, postoperatively in patients who were operated by translumbar approach.

CONCLUSION

Radical nephrectomy is still the best option for treatment of renal cell carcinoma, however, it fails to prevent death and disease recurrence within five years, in almost 50% of patients. Although there are various approaches for radical nephrectomy in patients of RCC, transperitoneal anterior subcostal incision is effective especially for larger tumours. It gives excellent exposure in the area of renal pedicle with early control of renal vessels. The whole surgery takes place under direct vision without great manipulation of kidney, thus minimizing the risk of tumour embolism. It also allows better access for inspectionj of the abdominal viscera and peritoneal cavity. Unilateral subcostal incision can be extended across the midline to provide better exposure of both kidneys, aorta and inferior venacava, especially for left sided tumours extending into the renal vein and inferior vena cava, where it is easy to get on the other side and take proximal and distal vascular control of inferior vencava for thrombectomy. Total oerating time is less while hospital stay is shortened by this approach. Morbidity and mortality is also minimal.

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