metastases of malignant GISTs are the liver, peritoneum and lungs. Although, these metastases usually take as long as 30 years to develop after removal of the primary tumour\textsuperscript{1}, in our case metastasis to liver occurred within a short period of 3 years.

In recent years it has been found that most of the GISTs are positive for CD117 (C-kit protein) and therefore considered by some as the defining feature of GIST.\textsuperscript{4} Further, stromal tumours with smooth muscle differentiation are strongly positive for smooth muscle action whereas the gastrointestinal autonomic nerve tumours are positive for S100 and vimentin.\textsuperscript{1,4} In our case, the tumour cells were strongly positive for S100 and vimentin. Thus, immunohistochemistry is mandatory for further subtyping and for determining the malignant potential as these tumours may look absolutely benign on morphology.

The treatment of GIST is primarily surgical. The high rate of local and distant recurrence warrants the need for adjuvant therapy. Radiation therapy is of limited value.\textsuperscript{3} Systemic chemotherapy in the form of KIT Tyrosine Kinase inhibitor drug STI-571 (Gleevec; Novartis, Basel, Switzerland), has been proposed for treatment of metastatic GIST.\textsuperscript{5}

REFERENCES

Hand assisted laparoscopic radical nephrectomy for large renal cell carcinoma with renal vein involvement

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ABSTRACT
A 45-year-old male with a 12 cm by 10 cm grade 2 left renal cell carcinoma involving the proximal half of the renal vein was successfully treated by hand assisted laparoscopic radical nephrectomy. To minimize the risk of tumor embolism, the renal vein was dissected only after hooking it up with the index finger just beyond the tumor thrombus.
after ligating and dividing the renal artery.

KEY WORDS
Hand assisted, Radical nephrectomy, Renal cell carcinoma, Laparoscopic nephrectomy.

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INTRODUCTION
Though, numerous articles on laparoscopic radical nephrectomy have recently appeared in the medical literature, there is only a single report of the procedure having been performed for a renal vein involvement.1 During laparoscopic surgery, due to the renal pedicle control being less reliable, there is a greater risk of tumor embolism compared to an open procedure. Though, the usefulness of hand in laparoscopic surgery has been well established since it was first reported by Wolf et al in 1997, not more than half a dozen papers have been published so far on its use for laparoscopic radical nephrectomy.2-4 However, none of these patients in these series had any tumor thrombus extending into the renal vein. We herein, describe our successful experience of the use of hand for doing laparoscopic radical nephrectomy in a patient with a large tumor involving the proximal half of the renal vein.

CASE REPORT
A 45-Year-old male presented with gross painless recurrent hematuria of 1 month’s duration and a bimanually palpable mass in the left lumbar region. CT scan of the abdomen showed a normal right kidney and a 10 by 12 cm mass involving the whole of the left kidney except for the upper pole. There was bulbous dilatation of the proximal half of the renal vein due to tumor invasion, but the distal half of the renal vein and the inferior vena cava were normal (Figures 1a & b). There were no lymph nodes and no extra-Gerotal invasion. Bone scan and X-ray chest showed no evidence of metastatic disease.

After an informed consent had been taken, it was decided to perform a hand assisted laparoscopic radical nephrectomy because of the size of the tumor and the renal vein involvement. The bowel preparation was limited to a simple enema in the morning of the surgery. After general anesthesia had been administered cefotaxime 1 gm was given intravenously and a nasogastric tube and an indwelling urethral catheter were passed. He was then placed in a 45-degree lateral tilt, was prepped and draped.

A 7.5 cm long oblique hand port incision was made in the left para-umbilical area, in such a way that the medial rim of the Dexterity ring would overlie the umbilicus. After the Dexterity hand port had been established, a subcostal 10 mm camera port was established in the mid-clavicular line by digital guidance. A 12 mm anterior working port near the McBurney’s point and a 10 mm posterior working port in the anterior axillary line midway between the iliac crest and the costal arch were established under vision.

Figures 1a & b: CT scan showing the left renal mass and tumor in the proximal renal vein
The parietal peritoneum was incised along the line of Toldt with scissors passed through the anterior working port and the incision was extended up around the tumor by a combination of sharp and blunt dissection. The hand was very helpful in this dissection and within half an hour the tumor was almost completely mobilized. The posterior working port was used to lift up the diaphragm during the dissection of the upper pole. The adrenal gland was left in place and was not removed. The kidney was gently lifted up by the left hand and care was taken not to compress it during its dissection.

There was bleeding from the lumbar vein, which could not be controlled laparoscopically. A large sponge was passed through the hand port for applying manual pressure and the bleeding stopped within 5 minutes. The dissection, clip ligation and division of the ureter and the gonadal vein were then carried out.

The laparoscope was shifted to the posterior working port at this stage to allow a better view of the renal vessels. Going from the top of the tumor the renal artery was hooked by the index finger and was then dissected. As it was more than a centimeter wide, endo-GIA was used to clip ligate and divide it. The renal vein was dissected only after hooking it up with the index finger just beyond the tumor thrombus after the renal artery had been divided. The vein was palpated between the thumb and the index finger to keep it compressed to prevent any tumor migration. The rim of the Dexterity ring was made to overlie the umbilicus to provide some extra space for the other ports. The adrenal gland was not removed in this case as the upper pole of the kidney was not involved by the tumor.

The operative time was 150 minutes and the estimated blood loss 300 ml. He accepted oral feeds the next day and was discharged on the 6th post-operative day. The specimen weighed 680 gm and histological examination showed a grade 2 renal cell carcinoma with tumor free surgical margins.

DISCUSSION

Review of world literature shows that laparoscopic radical nephrectomy is recommended for T1-2 tumors up to 10 centimeters in the largest diameter. However, a recent report by Gill et al has shown that using proper precautions, it can also be performed in patients with level I renal vein involvement. But this would not have been possible in the present case without hand assistance due to the large size of the tumor. Even with hand assistance the laparoscopic procedure could have been difficult and a bit unsafe, if the tumor was on the right side. However, due to the extra length of the renal vein on the left side, we decided to go ahead with hand assisted laparoscopic radical nephrectomy.

The paper shows how the hand can be used to occlude the renal vein distal to the tumor thrombus by hooking it up with the index finger to minimize the risk of tumor embolism. During process of hooking it was kept compressed between the thumb and the index finger to prevent any tumor migration. The rim of the Dexterity ring was made to overlie the umbilicus to provide some extra space for the other ports. The adrenal gland was not removed in this case as the upper pole of the kidney was not involved by the tumor.

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