



RESEARCH ARTICLE

HAND ASSISTED LAPAROSCOPIC REMOVAL OF LARGE RETROPERITONEAL LIPOMAS – A SIMPLE TECHNICAL INNOVATION

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ABSTRACT

This series of 3 retroperitoneal laparoscopic excisions using the alternating hands of the surgeon introduced through Pfannenstiel incision to facilitate traction, retraction and dissection in the surgery of these complex tumours is published to highlight the use of the specimen extraction incision. As these large solid tumors need to be removed through incisions a few inches long, we have used the incisions to insert a hand and facilitate the surgery. Also, a small Pfannenstiel will not affect the post-operative respiratory function as would a large midline / lateral incision. Perhaps in the future, hybrid procedures combining the hand and laparoscope would dominate over either procedure alone.

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INTRODUCTION

3 large retroperitoneal lipomas -bilateral adrenal myelolipoma in one case, giant retroperitoneal, left upper quadrant lipoma in another, were removed consecutively using an identical method. This article discusses the nuances of hand assisted surgery, an alternative technical innovation to make surgery easier. Two consecutive cases involving three hand assisted excisions were done. The case reports are as follows:

Case 1 – 40 year old woman presented to us with history of dragging abdominal pain in the upper half of the abdomen, vomiting and features of gastric outlet obstruction. The routine ultra-sonogram showed two large tumor masses, one occupying the left upper quadrant and one in the Right upper quadrant, in the infra diaphragmatic region with the right mass actually pressing the pylorus. CT scan revealed two huge adrenal tumors, left side 18x14, and right side 15x10 occupying the entire left and right upper quadrants. The space between the lower surface of the diaphragm and the upper pole of the kidneys was completely occupied by this tumor, and both the kidneys were pushed down close to the pelvic brim.

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The tumor was also lifting up the tail of the pancreas and pushing the spleen forward. On the right side, tumor was abutting on to the pylorus of the stomach, with distended stomach, with partial gastric outlet obstruction. There was no evidence of metastatic nodes or nodules anywhere else in the abdomen. The tumor was manifesting a uniform fat consistency, highly suggestive of bilateral adrenal myelolipoma. No obvious evidence of malignancy. A detailed adrenal hormonal workup was normal. PET scan showed no metastasis, with very poor uptake by the large tumor, highly suggestive of a large benign tumor.

Surgical Technique: Based on these findings we proceeded with three periumbilical ports, and with the patient in the left lateral position, we worked on the right adrenal first. A huge tumor was found which corresponded with the findings given above on the CT. The right colon of the hepatic flexure was mobilized as was the duodenum. A plane was created between the lower lobe of the liver and the tumor mass, and this plane was progressively developed in all directions. The complete IVC was freed and the second and third part of the duodenum were mobilized and freed. After initial dissection was performed, we made a Pfannenstiel incision of 6 ½ cm. The left hand of the surgeon (JSR) was inserted through the Pfannenstiel and reached the top of the tumor. The telescope

and the optical trocar occupied the umbilical area and with the right hand of the surgeon in the left sided cannula, the ultrasonic shears was used to mobilize the tumor all around. The tumor was dissected off the remnant of the adrenal, and perfect hemostasis was obtained. The large tumor was then rolled down to the Pfannenstiel incision and was removed in toto by applying pressure to the tumor (like a forceps delivery!). Then the patient was turned to the right lateral position, so that the left adrenal could be addressed. For this side, since the Pfannenstiel incision was already in place, we used the right hand of the surgeon to mobilize the posterior aspect of the tumor from behind the splenic flexure, going up to the left hemidiaphragm behind the spleen. The harmonic shears were used from the patient right side, with the left hand of the surgeon. Progressive dissection was performed, and to our surprise, in a very short period of time, (about 25mts) the entire tumor was dissected out and removed through the Pfannenstiel incision. On the left side, as the tail of the pancreas and the spleen were adherent to the tumor, it was important to preserve the plane of the dissection between the upper border of the tumor and the splenic vein, the pancreatic tail, and the spleen itself. We also avoided injury to the inferior mesenteric vein. The traction and finger dissection made a big difference to the operating field. At the completion of the procedure, we repeated laparoscopy of both the adrenal beds, and found that the tumors had been removed in toto, with no capsular breach. Throughout, the plane of dissection was between the capsule of the tumor and the pseudocapsule formed by the retroperitoneal tissue. The hemostasis was perfect, and with a drain for each side, we closed the Pfannenstiel wound in layers. Post operatively, the patient was found to have a very quick and uneventful recovery, especially in relation to respiratory parameters. Undoubtedly, the Pfannenstiel had a far less negative impact on the post-operative period than what would have been caused by a large roof top incision.

Case 2: A 52 year old lady presented with abdominal heaviness, discomfort of the left loin and left upper abdomen. Investigation done outside had revealed a large space occupying lesion situated above the kidney. A CT scan showed a diffuse lipomatous mass, occupying the space between the tail of the pancreas above and anteriorly, the left hemidiaphragm above and posteriorly, and lifting up the splenic vessels, the spleen and the pancreas anteriorly. Inferiorly it extended up to the kidney and pushed down the left kidney so that the upper pole was at the level of L4. There was also a massive anterior displacement of the transverse colon. The radiological diagnosis at the time of presentation was highly suggestive of a lipoma or a liposarcoma or an adrenal myelolipoma.

Armed with the earlier experience of the two adrenal myelolipomas we decided to proceed with hand assisted tumor removal for this patient as well. A 6 ½ cm incision in the Pfannenstiel incision was helped with the right upper quadrant 5mm and an umbilical 10mm and a left iliac fossa 5mm trocars. The patient was kept in steep right lateral with the reverse Trendelenburg position. The left colon was first taken off from the paracolic gutter by using the traction with the hand and by applying the ultrasonic shears. Medial mobilization of the splenic flexure, the descending colon and

the transverse colon, revealed the capsule of the massive tumor. Subsequent dissection was kept along the left paracolic gutter and left parasplenic area. Then the dissection moved on to the upper pole of the tumor which was situated posterior to the tail of the pancreas and the splenic vessels and all the way above.

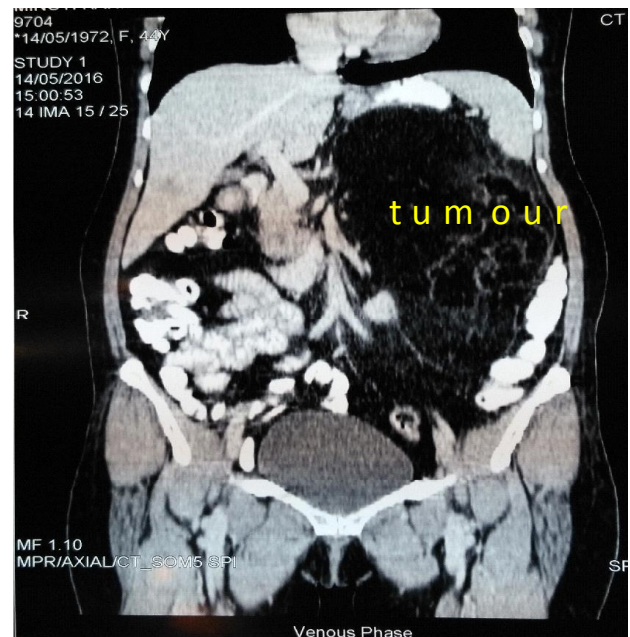


Fig. 1. CT whole abdomen showing Giant left adrenal tumor

Some of this part of the operation was done blind with the right four finger of the surgeon doing all the dissection behind the pancreas. By staying outside the capsular plane, and within the pseudocapsule (formed by the surrounding tissue) we were able to dissect out the bulk of the tumor all around. Medially the tumor was in close relationship to the inferior mesenteric vein, the superior mesenteric vessels and the duodenum. Again by combination of blunt and sharp dissection, and aided by the presence of the palpating and dissecting hand, we were able to dissect out the entire tumor. Then the tumor was gently pulled toward the Pfannenstiel incision and delivered out of the abdominal cavity. This patient, too, made a smooth recovery with no respiratory complication post operatively.



Fig. 2. External view of Hand inserted through the Pfannenstiel incision

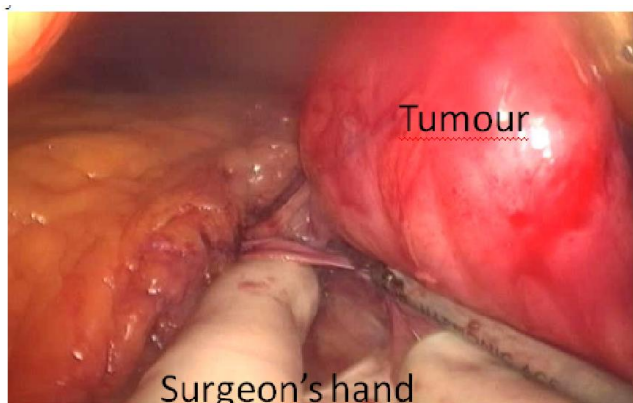


Fig. 3. Internal view of Hand assisted Laparoscopic dissection

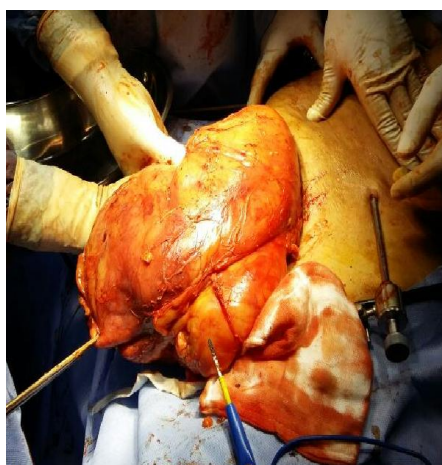


Fig 4. Specimen retrieved through Pfannenstiel incision

DISCUSSION

Surprisingly few articles have been published on laparoscopic resection of large retroperitoneal tumor (Olivers Schindler *et al.*, 2002; Gupta *et al.*, 2012; Nagy *et al.*, 2013) (All 3 tumors removed by us were having a diameter more than 18cm, and would therefore (15x18, 20x14, 18x15) and would certainly be categorized as huge retroperitoneal tumors, if not giant tumors). We ourselves have reported earlier excision of retroperitoneal schwannoma in the psoas muscle using a transperitoneal laparoscopic technique (Rajkumar *et al.*, 2015), but there was no hand assistance in that case. What was unique about these 3 tumors, was that they were all removed by a hand assist, with no hand port device at all. We believe that the hand port devices add no significant value to surgical technique, merely serving to increase the cost. We chose 6 ½ cm as an incision size, because the surgeon wears a 6 ½ size glove, indicating the wrist diameter of 6½. We used the impermeable gowns that we use for HIV positive patients, as the entire forearm of the surgeon was inside the peritoneal cavity. The liberally smeared xylocaine jelly, gave a good lubricant effect. The zero and 30 degree scope were used alternately depending upon the field, and head up or head down and table tilt were used according to the situation. By a combination of these manoeuvres, we were able to take out the tumors using the hand of the surgeon simply inserted into the Pfannenstiel, with two towel clips holding the skin beyond the hand entry on either side. There was no loss of pneumoperitoneum, and the beauty of this technique was that we were able to use the left

hand and right hand alternatively depending upon the side of the tumor, or in the case of second tumor, (i.e the large retroperitoneal lipoma) for the same tumor we used left and right hand at different time periods in the dissection. Thus the overall advantage of bloodless dissection, and safe dissection with visualization through the laparoscope, as well as traction and dissection with the index finger of the dominant hand, all added up to quick and bloodless surgery. Statistically the right adrenal myelolipoma took 120mts, whereas the left adrenal myelolipoma, although it was more complex as it was related to the pancreas and the splenic vessels, took us only 25mts. The adoption of this technique in the next case, namely the giant lipoma also gave us a significant advantage in terms of time, with the entire operation finishing in about 40mts. We have used earlier the lap disc, the glove port (Michihiro Hayashi *et al.*, 2010), etc., for hand port assisted lap surgeries we find that the direct hand assist from the Pfannenstiel incision is probably ergonomically the most satisfactory, when dealing with retroperitoneal tumors in the above cases. Although this is only a series of three tumors, we hope that the lead will be taken up by a large number of surgeons elsewhere across the world. There have been a few Japanese reports (Bong Hee Park *et al.*, 2015; Sata *et al.*, 2006; Doi *et al.*, 2003; Shiraishi *et al.*, 2005) about lap excision of retroperitoneal tumors, but all these used the hand port, and not the hand. Especially in a country like India when the cost of the surgery is always a worry because of inadequate numbers who are insured, to avoid a device to put the hand, and to directly insert the hand will make huge difference in terms of cost to the patient. Although these dissections are all technically feasible totally laparoscopically when there is going to be an incision anyway for specimen removal, it makes sense to utilize the same to make surgery accurate, bloodless & quick. Perhaps this article may not bring in a paradigm shift into laparoscopic surgery, but it will, we believe, re-introduce a new weapon into the armoury of the lap surgeon – the hand.

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