

# Minimally Invasive Laparoscopic Adrenalectomy in Pakistan

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## Abstract

We describe a case and procedural details of a minimally invasive laparoscopic adrenalectomy in a patient with Conn's Syndrome, done at a tertiary care teaching hospital in Pakistan. The procedure required specifically trained, advanced laparoscopic surgery team and showed remarkable advantages in comparison with open procedure in terms of blood loss, shorter hospital stay, rapid healing and return to normal function. We believe that such minimally invasive laparoscopic procedures should be carried out in other health care centers throughout this country so that patients may benefit from their proven role in patient care.

This Case and Procedure (in Video) was presented at the Meeting of the "Society of Surgeons of Pakistan" in April, 2004 at The Aga Khan University, Karachi, Pakistan.

## INTRODUCTION

Since the wide spread acceptance and practice of minimally invasive laparoscopic technique for cholecystectomy began more than a decade ago, the use of laparoscopy has been expanding to include more complicated and diverse procedures. Among these is the use of laparoscopy in the field of adrenal surgery.

First laparoscopic adrenalectomy was performed and reported by Gagner et al in 1992 and is most often employed for benign diseases of the adrenal glands.<sup>1</sup> The use of minimally invasive laparoscopic adrenal surgery is not widely used, if at all, in the patient care facilities of Pakistan and no such case or case series has been reported from this country as yet to the best of our knowledge.

## CASE REPORT

We report case of a 43 year old female who was referred by an endocrinologist with the diagnosis of Conn's Syndrome, to the general clinics of the Aga Khan University Hospital, Karachi, Pakistan- a tertiary care health facility. She had been experiencing fluctuating hypertension (Blood pressure range=200-250/95-105mmHg) and headaches for the past two years and was on multiple blood pressure control drugs. The investigations showed hypokalemia ( $K^+=2.9$ mmol/L), Alkalosis ( $HCO_3=32.8$ mmol/L), elevated serum aldosterone

(26.4ng/dl) and depressed plasma renin levels (0.04ng/ml/hr). She appeared to be a thin lean lady with unremarkable general physical and abdominal examination. The CT-scan showed a 2.5 cm solid mass in the left adrenal gland.

After carefully reviewing the patient's hemodynamics and complete health record, decision was made to proceed with the minimally invasive laparoscopic adrenalectomy approach for removal of the left adrenal mass. Preoperatively, the patient's hemoglobin (13.9g/dL), hematocrit (39.9%), platelets ( $259 \times 10^3/\mu L$ ) and Leukocyte count ( $5.9 \times 10^3/\mu L$ ) were within normal range and she was on Amlodipine, Atenolol and Aldactone as pre-operative medications. A 7.5 mg/hr of midazolam was given preoperatively as per standard protocol in our hospital. The procedure was carried out under general naso-tracheal anesthesia and the total operative time was 2hours and 40 minutes with additional 2 hours in the recovery room.

## PROCEDURE

Pneumoperitonium was achieved with a 5mm incision in the right mid axillary line through which a verese bore needle was inserted. After obtaining adequate pneumoperitonium, we then introduced a 10mm port blindly into the abdominal cavity. The 10mm camera was then inserted through this port. We then placed an anterior axillary line 5 mm port and a third 10 mm posterior axillary line port in sub-costal area on the same side. Dissection was started by taking down the line of Toldt along the left para-colic gutter and then taking

down the splenic flexure of the left colon, which was mobilized medially all the way till duodeno-jejunal flexure was clearly visualized. We then dissected the inferior wall of the pancreas and elevated it, revealing the left renal vein. The fat overlying the renal vein was dissected cleanly, bringing the left adrenal into view, which had the characteristic orange color suggestive of an adenoma. By care blunt and sharp dissection, the left adrenal vein, which was a tributary of the left renal vein was identified. It was doubly clipped proximally and distally and divided. The left adrenal artery was also identified coming off the aorta and was divided between clips. The remaining arterial branches of the left adrenal could not be clearly visualized. We continued a dissection inferiorly away from the renal vein and then medially until we had dissected all the way to the superior edge of the adenoma, which was also dissected. Finally, the lateral aspect of the adrenal gland overlying the superior pole of the left kidney was identified and it was dissected of completely. At this point we required the placement of another 5 mm port posterior to the posterior axillary port. An endo-bag was placed into the abdominal cavity and the adrenal was placed inside it and removed without undue difficulty after enlarging the port slightly. Abdomen was irrigated out. There was no evidence of any bleeding and complete hemostasis was assured. All the ports were removed under direct vision and pneumoperitoneum desufflated. The patient tolerated the procedure well and was extubated on the table and then transferred to the recovery room in stable condition. The estimated blood loss was 30cc

The above described procedural details depict our technique which can vary in accordance to the individual case and should not be considered absolute standard in laparoscopic adrenalectomy.

Post operatively, the patient remained vitally stable and was started on regular diet 8 hours post-op time. The analgesia requirements were 2 intra muscular injection of narcotics and the patient was discharged after total hospital stay of one day with blood pressure drop up-to 160 mmHg systolic/ 80mmHg diastolic. At one month follow-up, there was further improvement in the blood pressure which was now persistently 145/ 75mmHg, the operative port sites on the abdomen were clean and healing and the patient was completely functional. Further follow-up with the endocrinologist was advised

## DISCUSSION

As far as we know, this is the first case of laparoscopic

adrenalectomy in Pakistan. Though the adoption of laparoscopic procedures has been slower in this country but we believe that laparoscopic procedures can be of significant importance and useful in terms of reducing pain, shorter hospital stay, return to normal activity, reduced blood loss and better post operative pulmonary function tests as compared to the open procedure approach.<sup>2</sup> Initially there were a number of case reports showing port tumor recurrences, and concerns about the adequacy of resection margins and staging, but a review of recent literature by Tizmenezky and Nelson has suggested that margins and nodal resections achieved with laparoscopy are equivalent to open procedures.<sup>3</sup> However, limited data are available in the literature regarding the results of laparoscopic adrenalectomy for malignant adrenal tumors.<sup>4,5</sup> These reports have been limited to case reports or small cohort studies with short follow-up time. . In a recent well accepted retrospective cohort study of 215 patients Kebebew et. al. proved that laparoscopic approach in patients with suspected adrenal metastasis can be both diagnostic and therapeutic, and achieves complete tumor resection. In contrast, laparoscopic adrenalectomy for clinically unsuspected adrenocortical cancer is associated with a high recurrence rate. Furthermore, preoperative fine-needle aspiration cytology for the evaluation of suspected malignant adrenal tumors is unreliable.<sup>6</sup>

There are several factors, mainly the lack of expertise and availability that make laparoscopic adrenalectomy, a relatively un-familiar procedure in Pakistan as compared to now widely utilized Laparoscopic Cholecystectomy. It is suggested that the tertiary health centers in major cities of our country recruit appropriately trained personnel and ancillary staff to carry out such procedures that would result in great benefits including reduced post-operative pain, shorter post-operative ileus, reduced length of stay, reduced cost, lower levels of disability and improved cosmesis.<sup>7</sup>

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