

Our Initial Experience: Laparoscopic Adrenalectomy

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ABSTRACT

Objective: To evaluate our experience of laparoscopic adrenalectomies at the Surgical Unit II, Services Hospital, Lahore over a period of eighteen months.

Design: A prospective case series study.

Setting: The Services Hospital, Lahore.

Methods: Eleven patients operated from June 2011 to December 2012. Main outcome measures: Clinical presentation, age and sex demographics, average hospital stay, intraoperative and postoperative complications and outcome.

Results: Eight of the patients were male whereas three were female. Nine underwent left sided adrenalectomy and two right sided adrenalectomy were carried out.

Conclusion: The results obtained in our experience were comparable to those reported in the international literature, confirming the reproducibility and feasibility of this type of surgical procedure in our national setup.

Keywords: Adrenalectomy, laparoscopy,

INTRODUCTION

The adrenals are a pair of triangular –shaped glands, about 2in. Long and 1 in. wide. They are located on top of the kidneys. They are responsible for the release of hormones that regulate metabolism, immune system function and the salt-water balance in the bloodstream as well as the body's response to stress. Indications for carrying out adrenalectomy include tumors of size greater than 6cm, primary hyperaldosteronism, pheochromocytoma, neuroblastoma, Cushing's syndrome and adrenocortical carcinoma. Laparoscopic adrenalectomy has been reported as a safe alternative to the open procedure in selected patients. We describe early results with our experience of laparoscopic adrenalectomy in Pakistani population.

METHOD AND MATERIAL

Data was collected prospectively for patients undergoing laparoscopic adrenalectomy at our unit and evaluated retrospectively. The majority of our patients have been referred from the Endocrinology unit at Services Hospital. A complete baseline workup and endocrinology workup was carried out prior to the operation. Ultrasonography and CT Scan Abdomen was done in all cases. Patients were placed in supine position and subjected to general anesthesia. Following the induction of anaesthesia

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patient is placed into the right or left lateral decubitus position, depending upon the side to be operated. All pressure points are adequately padded. The kidney rest is elevated just at the level of the iliac crest. The arms are secured into the anatomic position with adequate padding. The patient is secured to the table.

Following the positioning of the patient pneumoperitoneum is created by insertion of Versess Needle. Versess needle is inserted at Palmer's point in case of left adrenalectomy and just below the costal margin in case of right adrenalectomy. In case of right adrenalectomy a 10 -mm trocar is placed in the subcostal region at the anterior axillary line, a 10-mm trocar in the subcostal region at the midclavicular line, a 5-mm trocar in the subcostal region just to the right of the umbilicus and a 5-mm trocar in the posterior axillary line subcostally.

Incase of left adrenalectomyr two 5-mm ports placed in the midclavicular line with a third 12-mm trocar placed in the anterior axillary line superior to the plane of the umbilicus.

Procedure: In left adrenalectomy after dividing the peritoneal adhesions, splenic flexure and descending colon are mobilized medially. Lateral attachments of spleen are divided. Renal vein and adrenal vein are identified by dissection. Adrenal vein is clipped and divided. Adrenal gland is dissected out from its bed and the adrenal arteries are divided. After complete mobilization the gland is removed via endo-bag. Drain is placed.

In right adrenalectomy mobilization of liver is followed by retraction of liver to enable dissection of

inferior vena cava. Adrenal vein is identification and clipped. Dissection of adrenal gland is done and specimen removed via a specimen bag.

RESULTS

In the past eighteen months we have had the opportunity to carry out laparoscopic adrenalectomy in eleven patients. Eight of the patients were male whereas three were female. Nine underwent left sided adrenalectomy and two right sided

adrenalectomy was carried out. The mean age of patients was 34.9 years. The mean operating time was 235 minutes. The mean hospital stay was 6.7 days. There were no conversion to open. No post-operative complications were reported in four patients. One patient in whom the procedure had been carried out for Cushing's Syndrome developed post-operative abscess which had to be drained surgically. There was complete resolution of hypertension in the patients of pheochromocytoma.

Table 1. Summary of cases

Pts	Age (years)	Hospital stay (days)	Duration(min)	Blood transfusion	Painscore	Complications
1	52	6	260	NONE	5	None
2	45	6	255	NONE	5	None
3	21	5	264	NONE	4	None
4	17	6	246	NONE	5	Abscess formation
5	24	5	240	NONE	4	None
6	33	5	230	NONE	3	None
7	36	4	222	NONE	4	None
8	28	5	215	NONE	3	None
9	44	4	220	NONE	3	None
10	50	5	215	NONE	3	None
11	34	4	215	NONE	4	None

DISCUSSION

Adrenalectomy has undergone a significant transformation since the first report of a laparoscopic adrenalectomy was published in 1992. Since that time; there has been a paradigm shift from open to laparoscopic approaches for both malignant and benign adrenal pathologies. Numerous studies have shown a decreased blood loss, shorter hospital stay, shorter convalescence, and diminished patient morbidity in the laparoscopic approach when compared to open surgery. The use of laparoscopy in adrenal surgery is currently the standard of care.

Along with the popularization of laparoscopic adrenalectomy, there has been a surge in adrenal surgery. Whereas patients with adrenal pathology previously presented with symptomatic disease; the diagnosis is now most commonly made after an adrenal lesion is diagnosed on a computed tomography (CT) study. It is estimated that adrenal lesions are found in up to 5% of CTs obtained for unrelated indications. As a result of this increase in detection, the number of adrenalectomies increased 43% between 1988 and 2000.

Considering these it is a matter of time before this will also become a requirement in our country. CT-SCAN now being widely available and greater interest endocrinology will mean that many diseases that previously went unexplained and therefore untreated will be diagnosed. Hence option for treatment will be there.

In the past eighteen months twelve of our patients were treated with laparoscopic procedures without any untoward effects. Although our experience is limited, minimally invasive procedures appear to be safe and effective. Laparoscopic adrenalectomy should be considered as the treatment of choice in the management of symptomatic adrenal masses.

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REFERENCES

- Gagner M, Lacroix A, Bolte E. Laparoscopic adrenalectomy in Cushing's syndrome and pheochromocytoma. N Engl J Med. Oct 1 1992; 327(14):1033.
- Brunt LM, Doherty GM, Norton JA, Soper NJ, Quasebarth MA, Moley JF. Laparoscopic adrenalectomy compared to open adrenalectomy for benign adrenal neoplasms. J Am Coll Surg. Jul 1996; 183(1):1-10.
- Hazzan D, Shiloni E, Golijanin D, Jurim O, Gross D, Reissman P. Laparoscopic vs open adrenalectomy for benign adrenal neoplasm. Surg Endosc. N5 (11):1356-8.

4. Assalia A, Gagner M. Laparoscopic adrenalectomy. *Br J Surg*. Oct 2004; 91(10):1259-74.
5. Schell SR, Talamini MA, Udelsman R. Laparoscopic adrenalectomy for nonmalignant disease: improved safety, morbidity, and cost-effectiveness. *Surg Endosc*. Jan 1999; 13(1):30-4.
6. Winfield HN, Hamilton BD, Bravo EL, Novick AC. Laparoscopic adrenalectomy: the preferred choice? A comparison to open adrenalectomy. *J Urol*. Aug 1998; 160(2):325-9.
7. Yoshimura K, Yoshioka T, Miyake O, Matsumiya K, Miki T, Okuyama A. Comparison of clinical outcomes of laparoscopic and conventional open adrenalectomy. *J Endourol*. Dec 1998; 12(6):555-9. .
8. Saunders BD, Wainess RM, Dimick JB, Upchurch GR, Doherty GM, Gauger PG. Trends in utilization of adrenalectomy in the United States: have indications changed?. *World J Surg*. Nov 2004; 28(11):1169-75.
9. Murphy MM, Witkowski ER, Ng SC, et al. Trends in adrenalectomy: a recent national review. *Surg Endosc*. Oct 2010; 24(10):2518-26.
10. Schteingart DE, Doherty GM, Gauger PG, et al. Management of patients with adrenal cancer: recommendations of an international consensus conference. *Endocr Relat Cancer*. Sep 2005; 12(3):667-80.