ORIGINAL ARTICLE

Short term outcome of Adrenal tumors managed surgically at Shaukat Khanum Memorial Cancer Hospital & Research Centre Lahore; a retrospective analysis

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ABSTRACT

Background: Adrenal tumors are rare tumors. Reported prevalence of incidental tumors is increasing with the continued advances in imaging technology. Adrenalectomy remains the treatment of choice for most of functional & malignant adrenal tumours.

Aim: To present our experience of surgical management of adrenal tumors and to evaluate short term outcomes of adrenalectomy.

Methods: We have retrospectively reviewed the data of 29 patients from January 2010 to December 2016 managed surgically by Laparoscopic Adrenalectomy (LA), Open Adrenalectomy (OA), Laparoscopic convertec to Open adrenalectomy (LA converted to OA) at Shaukat Khanum Memorial Cancer Hospital, Lahore, Pakistan.

Results: The most common presentation was incidentaloma (86.2%). 25(86.2%) had primary adrenal tumor and 04(13.8%) had metastasis to adrenal gland. 22 patient were managed with OA, 06 by LA and 01 patient of LA was converted to OA. The median maximum diameters of tumors were 6.5 (5-7cm) in LA patients and 9.5 (2.0-21cm) in OA patients. The postoperative hospital stay was 3(2-7) days in LA patients and 7 (4-9) days for OA patients. Only 02 patients after OA and 1 patient from LA converted to OA had post-op wound infection.

Conclusion: Short term outcome of resectable adrenal tumours is good. LA is a safe, feasible and effective to deal with adrenal tumours.

Keywords: Adrenal tumour, laparoscopic convertec,

INTRODUCTION

Adrenal gland is known to humans since ancient time and first reference was by Professor B Greenblast in his article search the scruptus"[1,2]. But detailed anatomical description was given by anatomist Bathlemas Enstachi[3].

Surgical removal remains the definite treatment modality for most functional and malignant adrenal masses.

The first documented planned surgery for adrenal gland was performed by Sargent in 1914[4]. Multiple surgical approaches were opted by different surgeons depending upon their preference and experience. These open surgical approaches ranged from open transperitonum, thoracolumbar to flank approach[5].

Gangner M was the first one who gave the details of laparoscopic adrenalectomy in 1992. This minimal invasive approach soon became popular[6].

With the recent advancement in diagnostic imaging methods, the discovery of small adrenal incidental tumours has been increasing. So annual number of adrenalectomy is increased over time[7]. Small size of adrenal tumor with relative inaccessible anatomical location and difficulties in open surgery makes adrenal gland more amenable to minimal invasive technique[8]. Laparoscopic surgery has advantages over open adrenalectomy due to better visualization, less surgical trauma and better post op recovery[9,10,11] laparoscopic adrenalectomy are performed through trans peritoneal and retroperitoneal approach depending upon patients factors & surgeons expertise.

Surgical oncology department Shaukat Khanum Cancer hospital started laparoscopic adrenalectomy in 2013. In this paper, we are sharing our experience of laparoscopic adrenalectomy with comparison to our past experience of open adrenalectomy. The purpose of this study is to present clinical data of our patients of adrenal tumors managed surgically and to evaluate surgical outcome of adrenalectomy either performed open or laparoscopically.

MATERIALS AND METHODS

Study Cohort: Between January 2010 and December 2016, all the patients who underwent adrenalectomy at Shaukat Khanum Cancer Hospital & Research Centre Lahore were included and medical record reviewed from prospectively maintained hospital data base.

Demographics, clinical presentations, histopathological type, type of surgery, post op hospital stay and complications were outcome measures. CT with adrenal protocol was used to characterize the adrenal mass and to measure the tumor size, while MRI was used as imaging modality only in selected equivocal cases. All patients underwent complete metabolic workup to see functional status of adrenal gland and optimized accordingly by endocrinology team. Duration of hospital stay and complications were compared according to type of surgery. SPSS 20 was used for statistical analysis. Values are reported as mean, median +/- SD.

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Technical aspects of LA and OA: Adrenalectomy was performed by Urologist & laparoscopic surgeon working as a team. Laparoscopic adrenalectomy was performed using multiple ports through transperitoneal approach. In the open operation, the adrenal gland was approached through approach via transperitoneal midline, anterior subcostal or thoracolumbar incisions

Postoperative follow-up: Systemic follow-up including physical examinations and CT were performed every year for up to 5 years after surgical resection

RESULTS

Patients demographic & clinical characteristics (Table 1)

- Total 29 patients with adrenal tumor were operated in the study period.
- Mean age was 44.76±17.6 with majority of patients were females 20(69%).
- Majority of patients 25(86.2%) belonged to Punjab province.
- Only 1(3.4%) had positive family history of adrenal malignancy.
- 22(75.9%) patients had incidental tumors.
- 25(86.2%) had primary adrenal tumor and 4(13.8%) had metastasis to adrenal gland; 1(3.7%) metastatic mucinous adenocarcinoma, metastatic renal cell carcinoma, metastatic neuroendocrine tumor and metastatic papillary serous ovarian cancer.
- 6(20.6%) patients underwent laparoscopic procedure.
- 3(10.3%) had post-operative complication.
- Mean hospital stay was 5.21±1.6 days.

Characteristics of operative procedures (Table 2): Regarding hospital stay LA patient had shorter hospital stay as compared OA(median 3 days vs 7 days respectively)

Table 1: Demographic & clinical characteristic of patients (n=29)

Characteristics	n
Gender	
Male	9(31.03%)
Female	20(68.96%)
Presentation	
Incidental	22(75.9%)
Symptomatic	7(24.1%)
Adrenal tumor characteristic	
Primary adrenal tumor	25(86.2%)
Metastatic deposit to adrenal	4(13.8%)
Histology of adrenal tumor	
Adrenocortical carcinoma	12(41.4%)
Pheochromocytoma	9(31%)
Metastatic deposit	4(13.8%)
Gangioneuroblastoma	1(03.4%)
Spindle cell neoplasm	1(03.4%)
Gangioneuroma	1(03.4%)
Adrenal mature teratoma	1(03.4%)

Mean Age±SD=44.76 ± 17.6

Short- and long-term outcomes after adrenalectomy (Table 2): There is only 1 case of conversion from LA to an OA during this time period. Wound infection was observed in 02 patients of open adrenalectomy and in another 01 patient in which LA was converted to OA. Only 1 patient after LA and 1 patient after OA presented with recurrent tumors after 6 months and 18 months respectively.

Table 2: Operative Strategy and Clinical Outcome

Variables	n
Type of surgery	
Open Adrenalectomy	22(75.8%)
Laparoscopic Adrenalectomy	06(20.6%)
Laparoscopic converted to Open adrenalectomy	01(03.4%)
Hospital stay	
Open Adrenalectomy	7(04-09) days
Laparoscopic Adrenalectomy	3(02-07) days
Post-Operative Complications	
Open Adrenalectomy	03 (10.0%)
Laparoscopic Adrenalectomy	00
Recurrence	
Open Adrenalectomy	01 (03.4%)
Laparoscopic Adrenalectomy	01 (03.4%)

DISCUSSION

Adrenalectomy is the treatment of choice for functional and malignant tumor of adrenal gland[12]. Open adrenalectomy has been practiced for many years. Open adrenalectomy is performed through large incisions through transperitonium, retroperitoneal or thoracolumbar approaches with are associated significant post operative pain, delayed recovery and prolong hospital stay.

With advent of laparoscopic surgery, there is paradigm shift in surgical management of adrenal tumor from open to laparoscopic surgery. Now laparoscopic surgery has become gold standard for adrenalectomy due to reduce invasiveness without compromising the outcomes .[13,14]Many studies have confirmed that fact that laparoscopic adrenalectomy has fewer postoperative complication and short hospital stay as compared to open surgical excision of adrenal tumor[15].

In the beginning, laparoscopic adrenalectomy was advocated only for small adrenal masses and up to size 6-8 cm was recommended for laparoscopic surgery. But now large radiologically benign looking adrenal tumors can be managed laparoscopically. Ibrahim et all reported successful adrenalectomy in 16 patients with adrenal tumors >8cm and concluded that laparoscopic adrenalectomy is safe &feasible in large adrenal masses.[16] In our study adrenal tumor managed with laparoscopic adrenalectomy has an average diameter of 6.5cm.

Adrenocortical carcinoma is aggressive tumor and usually infiltrating to local organs. Complete surgical resection with enbloc resection of involved adjacent structures is only the curative treatment option. That's why open adrenalectomy is advocated in suspected cases of adrenocortical tumor. In our study, 76% patients underwent open adrenalectomy & adrenocortical carcinoma was the most common pathology (41.4%). Role of laparoscopic adrenalectomy in treatment of adrenocortical carcinoma is still controversial. Kebebew et al reported 20 laparoscopic adrenalectomy operations for suspected and unsuspected malignancy with negative surgical margins and there was no significant difference found regarding overall survival and loco regional recurrence as compared to open adrenalectomy.[17]Zografos in his article suggested that laparoscopy should only be performed for organ confined

disease but large invasive tumor require an open adrenalectomy[18].

In our centre, all laparoscopic adrenalectomy have been performed via the transperitoneal route. Some specialized centres are now performing retroperitoneal laparoscopic adrenalectomy[19]. Zonca P et al in his study concluded that dorsal retroperitoneoscopic adrenalectomy is safe and effective by avoiding an abdominal approach, due to a more favorable postoperative Course regarding quicker recovery and short hospital stay[20].

Currently, robotic surgery has revolutionized the minimal invasive surgical procedures & can perform adrenal surgery on complex large adrenal mass with IVC extension[21]. Now there is trend towards organ preserving surgery like partial adrenalectomy. Partial adrenalectomy are showing promising results when performed on benign metabolically active small adrenal masses[22]. Thus theoretically steroid replacement therapy can be avoided by performing partial adrenalectomy in bilateral adrenals disease.. But there is still little literature available about partial adrenalectomy and there is need for prospective trial to reach a final recommendations.

Limitations of our study are short sample size, retrospective & single center study.

Management of adrenal tumor required a multidisciplinary team consistent of surgeon, endocrinologist, anesthetist and radiologist. We recommend to establish specialized endocrine surgery units in every major cities of Pakistan.

CONCLUSION

The study showed that short term outcome of resectable adrenal tumours is good. LA is a safe, feasible, and effective in the management of small adrenal tumours assisted. Long learning curve is still going up due to less number of adrenal tumours and less number of surgeries.

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