1. **Exp Clin Endocrinol Diabetes. 2019 May 15. doi: 10.1055/a-0885-1568. [Epub ahead of print]**

Early Basal Cortisol Level as a Predictor of Hypothalamic-Pituitary-Adrenal (HPA) Axis Function After Pituitary Tumor Surgery.

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PURPOSE: The purpose of this study was to evaluate the clinical relevance of the early postoperative basal cortisol level in assessing the postoperative hypothalamic-pituitary-adrenal (HPA) axis function after pituitary tumor surgery.
METHODS: We performed a prospective observational study that enrolled 83 patients operated for pituitary adenoma or other sellar lesions at the University Hospital Center Zagreb between December 2013 and April 2017 (44 nonfunctioning pituitary adenomas, 28 somatotropinomas, 5 craniopharyngiomas, 2 prolactinomas resistant to medical therapy and 4 other lesions - Rathke's cleft cyst, arachnoid cyst, chondroma and gangliocytoma). Exclusion criteria were Cushing's disease, chronic therapy with glucocorticoids prior to surgery and preoperative adrenal insufficiency. Early postoperative basal cortisol levels (measured on the second postoperative day) and the Synacthen stimulation test (performed 3 months after the surgery with the peak cortisol level of>500 nmol/L considered as a normal response) were analyzed to assess HPA axis function during follow-up.
RESULTS: ROC analysis showed a cut-off of the basal cortisol level of ≥300 nmol/L measured on the second postoperative day to predict normal postoperative HPA axis function with the sensitivity of 92.31%, specificity of 87.14% and positive predictive value of 57.14%.
CONCLUSION: The basal cortisol level on the second postoperative day is a valuable tool to predict integrity of the HPA axis after pituitary tumor surgery. Our data suggest that the cortisol level of ≥300 nmol/L accurately predicts adrenal sufficiency and that in these patients glucocorticoid therapy can be withdrawn.

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Conflict of interest statement: The authors declare that they have no conflict of interest.

2. **J Visc Surg. 2019 May 11. pii: S1878-7886(19)30054-2. doi: 10.1016/j.jviscsurg.2019.04.008. [Epub ahead of print]**

Is it permissible to undertake surgery for adrenal metastases of esophageal adenocarcinomas?

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3. **BMC Surg. 2019 Apr 24;18(Suppl 1):123. doi: 10.1186/s12893-018-0457-5.**
The impact of the ultrasonic, bipolar and integrated energy devices in the adrenal gland surgery: literature review and our experience.
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BACKGROUND: The gold standard approach for surgical treatment of benign and malignant adrenal lesion is considered the laparoscopic one, due to a lot of advantages compared to open approach. The rapid propagation of this surgical technique is due to the diffusion of haemostatic devices in laparoscopic adrenal surgery. The principal aim of this study is to analyze the outcome of LA using each energy modality, evaluating the eventual superiority of an instrument over the others.
METHODS: A retrospective study, involving 75 consecutive patients submitted to LA by transperitoneal lateral approach from January 2013 to June 2017, was performed. Age less than 70 years old, adrenal adenomas less than 8 cm in diameter, incidentalomas < 6 cm, myelolipomas < 13 cm, adrenal metastases < 7 cm and ASA score ≤ III were the main surgical inclusion criteria. All involved patients were divided into three group, one for each energy device: group 1 - Harmonic Scalpel, group 2 - Ligasure vessel sealing system and group 3 - Thunderbeat. In each group only one device was applied for dissection and haemostasis during the whole operation. Each group consisted of 25 patients, well matched for histology, tumor size and site, gender and age. The following parameters were collected: age, gender, size of the tumor, side of the affected gland, pathology, operating time, intraoperative blood losses, hospitalization time, complication and conversion rate.

RESULTS: There was no significant statistical difference between groups regarding the relationship between male/female, right site/left site, the mean age, hospitalization time and the tumor size ($p > 0.05$). Significant statistical difference are detectable in operation time and intraoperative blood losses. Thunderbeat, compared respectively with Ligasure and Harmonic Scalpel, is the fastest device ($p < 0,001$). The second faster device resulted Harmonic Scalpel, which meanly reduced the operation time compared to Ligasure ($p = 0.048$). intraoperative blood losses are reduced using Thunderbeat ($p < 0,001$) and HS ($p = 0.006$) compared to Ligasure, but between Thunderbeat and Harmonic Scalpel there isn't significant statistical difference ($p = 0.178$).
CONCLUSIONS: Analyzing the results, laparoscopic adrenalectomy carried out using Thunderbeat appeared to show a statistically significant decrease in operation time and intraoperative blood losses compared with laparoscopic adrenalectomy performed using Harmonic Scalpel and Ligasure, while hospitalization time was superimposable in all groups. According to our data, a responsible use of advanced energy devices can improve surgical outcomes guarantying a cost savings and patient's satisfaction.
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PMID: 31074403

4. **BMC Surg. 2019 Apr 24;18(Suppl 1):128. doi: 10.1186/s12893-018-0456-6.**
Laparoscopic adrenalectomy: preoperative data, surgical technique and clinical outcomes.
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BACKGROUND: laparoscopic adrenalectomy has become the standard treatment for adrenal lesions. The better clinical outcoms of laparoscopic technique are valid for treatment of small benign masses (< 5-6 cm), instead there are still open questions in literature regarding the correct management of larger lesions (> 6 cm) or in case of potentially malignant adrenal tumors. The aim of this study is to evaluate the outcomes of laparoscopic adrenalectomy in a referral surgical department for endocrine surgery.
METHODS: at the University Hospital Policlinico "P. Giaccone" of Palermo between January 2010 and December 2017 we performed a total of 81 laparoscopic adrenalectomy. We created a retrospective database with analysis of patients data, morphologic and hormonal characteristics of adrenal lesions, surgical procedures and postoperative results with histological diagnosis and complications.
RESULTS: Mean size of adrenal neoplasm was 7,5 cm (range 1.5 to 18 cm). The mean

operative time was 145 min (range 75-240). In statistical analysis lenght of surgery was correlated to the lesion diameter ($p < 0.05$) but not with pre-operative features or histological results. 5 intraoperative complications occurred. Among these patients 4 presented bleeding and 1 a diaphagmatic lesion. No conversion to open surgery was necessary and no intraoperative blood transfusion were required. Mean estimated blood loss was 95 ml (range 50-350). There was no capsular disruption during adrenal dissection. Mean length of hospital stay was 3.7 days (range 3-6 days).
CONCLUSIONS: Laparoscopic adrenalectomy is a safe procedure with low rate of morbidity. An accurate preoperative radiological examination is fundamental to obtain a stringent patients selection. The lesion diameter is related to longer operative time and appeares as the main predictive parameter of intraoperative complications but these results are not statistically significant. On the other side secreting adrenal tumors require more attention in operative management without increased rate of postoperative complications.
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5. **Endocrine. 2019 May 9. doi: 10.1007/s12020-019-01948-3. [Epub ahead of print]**
Non-surgically treated case of nonfunctioning ruptured adrenal adenoma in a patient on hemodialysis.
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OBJECTIVES: Herein, we report a case of rupture of nonfunctional adrenal adenoma treated by nonsurgical supportive management due to high risk for operation.
METHOD AND CASE: A patient with end stage renal disease (ESRD) who was on hemodialysis visited our emergency room and complained of a sudden abdominal pain after a fall. A retroperitoneal hemorrhage with hematoma formation around the adrenal adenoma, which was caused by rupture of the adrenal adenoma, was detected by abdominal computed tomography (CT).
RESULTS: Supportive management was performed, with serial CT follow-up instead of surgical adrenalectomy treatment because of high operative risk, due to hemodialysis. After 1 week, the patient's vital signs stabilized and the patient did not further complain about abdominal symptoms. However, supportive embolization was performed and the size of hematoma was more decreased.
CONCLUSION: We report a case of a patient on hemodialysis who experienced a rupture of a nonfunctioning adrenal adenoma, which was caused by low-energy trauma. The patient's conditions improved with nonsurgical supportive management including embolization.
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6. **Ann Surg Treat Res. 2019 May;96(5):223-229. doi: 10.4174/astr.2019.96.5.223. Epub 2019 Apr 24.**

Surgical outcomes of laparoscopic adrenalectomy for primary hyperaldosteronism: 20 years of experience in a single institution.

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Purpose: Recently, posterior retroperitoneoscopic adrenalectomy (PRA) has been reported to have some advantages over laparoscopic transperitoneal adrenalectomy (LTA). The objectives of this study were to report our experience over 12 years with laparoscopic adrenalectomy for primary hyperaldosteronism (PHA) and to examine surgical outcomes of PRA compared with LTA in patients with PHA.
Methods: The medical records of 527 patients who underwent minimally invasive adrenalectomy, including LTA or PRA, from January 2006 until May 2017 were reviewed at Severance Hospital (Seoul, Korea). Clinicopathologic characteristics and surgical outcomes of 146 patients with PHA who underwent LTA (19 patients) or PRA (127 patients) were analyzed retrospectively by complete chart review.
Results: The overall rates of biochemical and clinical cure were 91.1% and 93.1%, respectively. The mean operation time of the PRA group was significantly shorter than that of the LTA group (72.3 ± 24.1 minutes vs. 115.7 ± 69.7 minutes, P = 0.015). The length of hospital stay in the PRA group was significantly shorter than in the LTA group (3.5 ± 1.3 days vs. 4.2 ± 1.6 days, P = 0.029), and the first meal after surgery came earlier in the PRA group (0.3 ± 0.5 days vs. 0.6 ± 0.5 days, P = 0.049). The number of pain-killers used was also significantly smaller in the PRA group (2.3 ± 2.1 vs. 4.3 ± 2.3, P < 0.001).
Conclusion: PRA offers an alternative or likely superior method for treatment of small adrenal diseases such as PHA, with improved surgical outcomes.
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7. **J Surg Oncol. 2019 May;119(6):801-806. doi: 10.1002/jso.25364. Epub 2019 Jan 30.**

Retrospective analysis of variant venous anatomy in 303 laparoscopic adrenalectomies and its clinical implications.

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BACKGROUND AND OBJECTIVES: To clarify the correlation of variant venous anatomy with adrenal tumor phenotype and surgical outcomes.
PATIENTS AND METHODS: This retrospective study included 303 consecutive minimally invasive adrenalectomies from 301 patients. All adrenal veins were identified. We compared the preoperative, intraoperative, and postoperative data between patients with and without variant adrenal venous anatomy. We also explored the factors associated with venous variants.
RESULTS: We found variant venous anatomy in 62 of 303 adrenalectomies (20.5%). Compared with patients with normal anatomy, those with variant anatomy were associated with larger tumor size, larger adrenal veins, more adrenal medullary tumors, longer operation time, more estimated intraoperative blood loss, longer length of hospitalization, and more transfusion. Computed tomography (CT) images may improve the identification of venous anatomy. Tumor size and diagnosis of pheochromocytoma were independently related to variant venous anatomy, whereas sex, tumor size, and venous variant influenced hemorrhage. For pheochromocytoma with variant venous anatomy operated on by a single surgeon, robot-assisted laparoscopic adrenalectomy was associated with shorter postoperative hospitalization.
CONCLUSIONS: Adrenal vein variants are associated with worse outcomes in adrenal tumors and an optimized surgery strategy should be applied to this group of patients.

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8. **Eur Urol. 2019 May;75(5):811-816. doi: 10.1016/j.eururo.2018.07.030. Epub 2018 Aug 1.**

Robot-assisted Partial Adrenalectomy for the Treatment of Conn's Syndrome: Surgical Technique, and Perioperative and Functional Outcomes.

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BACKGROUND: In the era of minimally invasive surgery, partial adrenalectomy has certainly been underused. We aimed to report surgical technique and perioperative, pathologic, and early functional outcomes of a two-center robot-assisted partial adrenalectomy (RAPA) series.
OBJECTIVE: To detail surgical technique of RAPA for unilateral aldosterone-producing adenoma (UAPA), and to report perioperative and 1-yr functional outcomes.
DESIGN, SETTING, AND PARTICIPANTS: Data of 10 consecutive patients who underwent RAPA for UAPA at two centers from June 2014 to April 2017 were prospectively

collected and reported.
SURGICAL PROCEDURE: RAPA was performed using a standardized technique with the da Vinci Si in a three-arm configuration.
MEASUREMENTS: Baseline and perioperative data were reported. One-year functional outcomes were assessed according to primary aldosteronism surgery outcome guidelines. A descriptive statistical analysis was performed.
RESULTS AND LIMITATIONS: All cases were completed robotically. Median nodule size was 18mm (interquartile range [IQR] 16-20). Intraoperative blood loss was negligible. A single (10%) postoperative Clavien grade 2 complication occurred. Median hospital stay was 3 d (IQR 2-3). Patients became normotensive immediately after surgery (median pre- and postoperative blood pressure: 150/90 and 120/70mmHg, respectively). At both 3-mo and 1-yr functional evaluation, all patients achieved biochemical success (aldosterone level, plasmatic renin activity, and aldosterone-renin ratio within normal range). Complete clinical success was achieved in nine patients, but one required low-dose amlodipine at 6-mo evaluation. At a median follow-up of 30.5 mo (IQR 19-42), neither symptoms nor imaging recurrence was observed.
CONCLUSIONS: We demonstrated feasibility and safety of RAPA for UAPA; this technique had very low risk of complications and excellent functional results. Increased availability of robotic platform and increasing robotic skills among urologists make RAPA a treatment option with potential for widespread use in urologic community.
PATIENT SUMMARY: Robot-assisted partial adrenalectomy is a safe, feasible, and minimally invasive surgical approach. Promising perioperative and functional outcomes suggest an increasing adoption of this technique in the near future.

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