

Laparoendoscopic single-site retroperitoneoscopic adrenalectomy: bilateral step-by-step technique

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Abstract

Background Laparoscopic adrenalectomy is the gold standard surgical approach for small benign adrenal tumors [1]. Several surgical approaches were developed in order to overcome the difficulty to access the adrenal glands, located in the upper retroperitoneum space [2–4]. Laparoendoscopic single-site posterior retroperitoneoscopic adrenalectomy (LESS-PRA) is an emerging technique that reduced the multiple trocar-related trauma and improved cosmetic outcomes while minimizing postoperative morbidity [5–8]. The aim of this study was to describe our step-by-step technique for LESS-PRA and to compare our perioperative outcomes with the conventional 3-port lateral retroperitoneoscopic adrenalectomy (LRA). **Methods** A retrospective review was carried out from February 2008 to January 2016 that included 100 patients

with adrenal tumors smaller than 4 cm. Study exclusion criteria were defined as tumor size greater than 4 cm, patients older than 80 years, and body mass index (BMI) greater than 40. A total of 20 patients underwent LESS-PRA and 80 patients underwent 3-port lateral retroperitoneoscopic laparoscopic adrenalectomy. Patient's demographic data and perioperative outcomes were compared and statistically analyzed. The cosmetic satisfaction was evaluated with a visual analog scale.

Results Estimated blood loss was higher in LRA (100 vs. 50 ml; $p = 0.35$). Operative time was longer in LESS-PRA than LRA (100.0 vs. 60 min; $p < 0.001$). Analgesic time necessary for LRA was longer than LESS-PRA (40 vs. 24 h; $p < 0.001$). Cosmetic satisfaction score was higher in LESS-PRA (9.5 vs. 8.6; $p = 0.03$). There were no significant differences in perioperative complications and length of hospital stay. No conversion to conventional laparoscopic or open surgery was necessary.

Conclusion LESS-PRA presented comparable functional and perioperative outcomes to LRA for small adrenal tumors. Although LESS-PRA was associated with longer operative time, it provided inferior estimated blood loss, analgesic time, and improved cosmetic satisfaction.

Marcos-Tobias Machado and Igor Nunes-Silva had the same position as first authors in this paper.

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Keywords Adrenalectomy · Laparoscopy · Laparoendoscopic · Single-site surgery · Single-port surgery · LESS

Compliance with ethical standards

Disclosures Marcos-Tobias Machado, Igor Nunes-Silva, Eduardo Fernandes da Costa, Alexandre Kyoshi Hidaka, Eliney Ferreira Faria, Hamilton Zampolli and Carlos Alberto Bezerra have no financial interest in any of the products, devices, or drugs mentioned in this manuscript.

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