Laparoscopic adrenalectomy has gained popularity and several institutions have expanded the indications for this procedure. Potentially malignant primary adrenal tumors and solitary adrenal metastases, once considered contraindications for the laparoscopic approach, are currently being removed laparoscopically in several institutions. Given that no reliable and accurate preoperative diagnostic test to confirm the diagnosis of primary malignant adrenal tumor or local invasion exists, it is often difficult to decide if the laparoscopic approach can achieve a curative resection.

Despite the considerable experience gained in laparoscopic adrenalectomy, controversy remains as to the management of adrenal tumors with high suspicion or evidence of malignancy. A curative laparoscopic resection incorporates the oncologic principles of the open technique such as resection of the totality of the adrenal tumor including the periadrenal adipose tissue, avoiding fracture of the tumor capsule.

Laparoscopic surgery can be an accepted method in the surgical management of cancer if it fulfills a number of parameters. It is of paramount importance to have data demonstrating that the operative morbidity and mortality of laparoscopic surgery is equally safe or safer compared to conventional open operation. In addition, it should be as radical as conventional open surgery.

The role of laparoscopic surgery for malignant or potentially malignant adrenal tumors is controversial because there are few series in the literature on this relatively rare disease (Table 3). Furthermore, there have been concerns regarding local recurrences and port-site metastasis after apparently curative resections. The pathogenesis of port-site metastasis remains unknown but is probably multifactorial. Direct wound implantation of tumor cells plays a major role in the development of port-site metastasis. However, this does not explain the development of metastases at non-extraction port-sites. Other etiological factors are contamination of instruments, aerolization of tumor cells, the “chimney effect”, poor surgical technique, improper handling of the tumor, pneumoperitoneum, the effect of carbon dioxide on tumor cells and lack of preventive measures against local recurrence and port-site metastasis. Several strategies have been...