

# Laparoscopic Retroperitoneal Lymph Node Dissection in the Extremely Obese Patient: Technical Insight Into Access and Port Placement

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## ABSTRACT

**Purpose:** We report on laparoscopic retroperitoneal lymph node dissection (RPLND) in a morbidly obese patient to discuss the associated technical steps for satisfactory completion of staging lymphadenectomy.

**Methods:** A laparoscopic RPLND was performed using a modified template on the left side. Initially, 4 ports were placed with the patient in the supine position. Three were placed 3 cm to the left of midline and one in the anterior axillary line, at the level of the umbilicus. During the operation, successful bowel retraction necessitated placement of 2 additional ports in the anterior axillary line (just above the pelvis and off the tip of the 12th rib). Using these 6 trocar sites, the dissection was completed, and 44 lymph nodes were obtained.

**Results:** Laparoscopic retroperitoneal lymph node dissection was accomplished in an extremely obese patient with acceptable morbidity by using prudent modification of standard techniques.

**Conclusion:** If access and port placement limitations are overcome, the benefits of laparoscopy in the obese are clear. This report serves as a signpost that laparoscopic retroperitoneal lymph node dissection for testes cancer can also be accomplished using modification of standard techniques.

**Key Words:** Laparoscopy, Retroperitoneal lymph node dissection, Testes cancer.

## INTRODUCTION

Laparoscopic retroperitoneal lymph node dissection (RPLND) for clinical stage I nonseminomatous germ cell testicular tumors (NSGCT) is an accepted technique in the armamentarium of the urologist. In the obese patient, laparoscopic procedures are inherently more challenging. We report on laparoscopic RPLND in a morbidly obese patient to discuss the associated technical steps for satisfactory completion of staging lymphadenectomy.

## CASE REPORT

A 26-year-old Hispanic male presented with a firm nodule in the lower pole of the left testicle. A sonogram confirmed a lobulated mass in the left testicle, suggestive of neoplasm. No clinical evidence of metastatic disease by computed tomography (CT) scan or chest x-ray was noted, and serum markers Alpha-fetoprotein and Beta human chorionic gonadotropin (hCG) were normal. Left inguinal orchiectomy was completed without complications. Pathology of this 3.5x3.0x4.1-cm tumor revealed a classic seminoma with a 5% focal embryonal component. The epididymis was normal, and neither tunica albuginea invasion nor lymphovascular invasion was identified. The patient was otherwise healthy, only having previously undergone a laryngeal procedure for sleep apnea. However, he weighed 350 lbs and was 5'9" tall (BMI 57).

Postoperatively, he was counseled on management options for a mixed germ cell tumor including observation, chemotherapy, and surgery. The patient desired treatment, but due to fertility concerns, he opted against chemotherapy. Because standard open RPLND was believed to pose an unacceptably high perioperative risk in this obese patient, he underwent laparoscopic RPLND.

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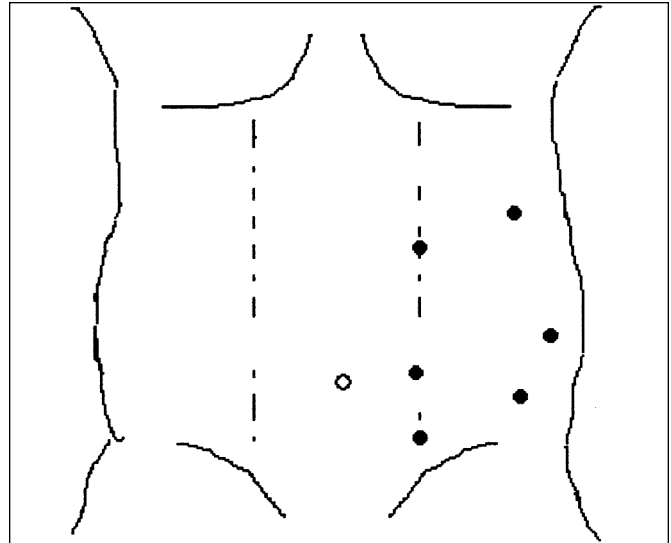
the 12th rib). Using these 6 trocar sites (**Figures 1 and 2**), the dissection was completed, and 44 lymph nodes were obtained. All were negative for tumor metastases. The postoperative course was uneventful, and the patient was discharged on the second postoperative day. Recovery was unremarkable, serum markers remain negative, and antegrade ejaculation was preserved. Follow-up abdominopelvic CT scan, chest x-ray, and serum markers at the 4-month postoperative visit revealed no evidence of disease.

## DISCUSSION

Retroperitoneal lymph node dissection provides useful pathologic staging information and is accepted practice for Stage I NSGCT. Although its oncologic efficacy in this setting has not been proven definitively, published series report very low tumor recurrence rates.<sup>1</sup> In addition, in those with normal anatomy, laparoscopy is less morbid than is laparotomy, with a similar number of lymph nodes harvested. Despite the technical challenges in the obese patient, laparoscopic RPLND is feasible. The few reports in the literature however are limited to those patients weighing less than 180 lb (BMIs 30 to 40), and do not specify nodal sampling versus complete lymphadenectomy.<sup>2,3</sup> Some series conclude that 180 lb may be the weight cutoff point for satisfactory completion of laparoscopic RPLND.<sup>2</sup>

Laparoscopy traditionally has been a relative contraindication in the obese patient due to technical difficulties related to access, trocar insertion, and port stability. Given these potential concerns, specific considerations are advisable when performing minimal access surgery in this population.<sup>4</sup> For intraperitoneal access, if needle entry is desired, the skin incision should be created deeply in the umbilicus possibly extending to fascia. A 90-degree insertion angle rather than the standard 45 degrees, while associated with a higher risk of vascular injury, will also help avoid preperitoneal insufflation. Alternate insertion sites like the left or right upper quadrant routes may be used if umbilical access is unsuccessful. The open Hasson technique may also be attempted, with care to avoid an excessively large skin incision that might result in leakage of the pneumoperitoneum.

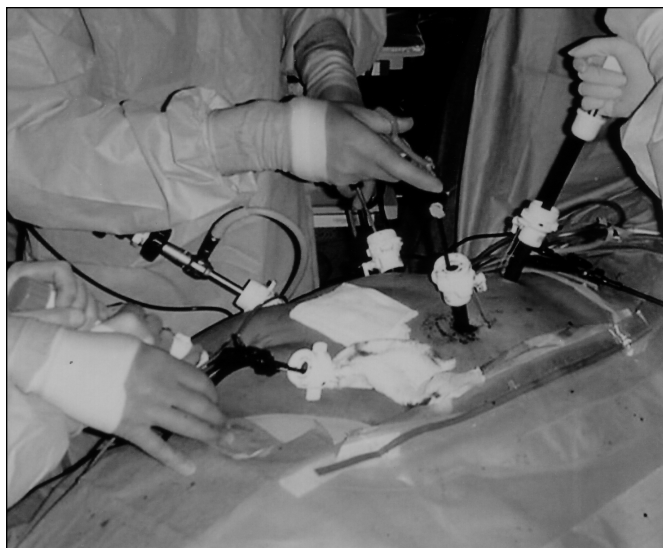
Port insertion and stability may be facilitated by supraumbilical placement of the endoscope trocar in situations where the umbilicus is displaced caudally by a large pannus. The remaining ports are placed under direct vision



**Figure 1.** Laparoscopic port placement. Port sites indicated by •.

and can occasionally be sutured in place to prevent slippage. Of extreme importance is the placement of all canulas at appropriate angles to the abdominal wall, in an effort to decrease the distance from the trocar to the operative site.<sup>5</sup> This maximizes the surgeon's tactile sensation, while minimizing force on the abdominal wall that may be necessary to reposition the operative end of the instrument. The correct trocar angle is naturally determined by the relative distribution of body fat of that individual patient.

Once access is secured, exposure can be optimized with a steep Trendelenburg position, a higher level of pneumoperitoneum, or both of these. In fact, some advocate increasing the intraabdominal pressure from 15 mm Hg to 20 mm Hg.<sup>6</sup> This must be done with caution, however, to avoid the associated hemodynamic changes of decreased venous return and hypotension. In our laparoscopic nephrectomy experience, this has not been the case, and we routinely use 20 mm Hg pressure in the morbidly obese. Ensuring complete relaxation of the abdominal wall with anesthetic agents will allow adequate elevation at the lower insufflation pressures. Finally, if maintaining pneumoperitoneum is difficult due to rapid loss of gas during instrument exchange or around a Hasson trocar, 2 high-flow insufflators can be used simultaneously to compensate.



**Figure 2.** Laparoscopic retroperitoneal lymph node dissection on obese patient demonstrating location of 6 trocars.

If access and port placement limitations are overcome, then the benefits of laparoscopy for the obese are clearly delineated in the literature across specialties.<sup>1,3,4,6</sup> Just as with the nonobese, postoperative sequelae are dramatically reduced. In particular, pulmonary morbidity, such as atelectasis and pneumonia, and wound complications of infection, hernia, and dehiscence are significantly reduced.

Our procedure was initiated with 4 trocars, as described in most series.<sup>1,2</sup> During our dissection, however, it was apparent that 4 laparoscopic ports were inadequate for retraction. Due to the weight and redundancy of the fatty bowel mesentery, simple instruments were not sufficient retractors. Therefore, despite the added exposure, we found that the paddle retractors were necessary. Furthermore, the patient's supine position, which in the nonobese is the preferred position, clearly was a disadvantage. Despite tilting the bed to elevate the surgical side, a fifth and sixth lateral trocar were necessary. As a

result, we now recommend a moderate exaggeration in positioning obese patients to allow the bowel contents and pannus to "fall away" from the operative field. For example, we routinely use a 30-degree modified flank position for laparoscopic nephrectomy, which we change to a 60-degree angle in the morbidly obese. Similarly for laparoscopic RPLND, it is clear to us that a supine position does not suffice for the morbidly obese and therefore recommend starting at a 30-degree modified flank position.

Morbidly obese patients, once considered inappropriate candidates for laparoscopy, have been shown to benefit in multiple studies from a minimally invasive surgical approach. In a patient subgroup at significant risk for postoperative morbidity, laparoscopy is associated with a lower risk of both pulmonary and wound complications than is laparotomy. Anticipation of variations in anatomy, body fat distribution, and mechanics of instrument positioning, allows for the safe and effective performance of extensive laparoscopic dissection in the obese patient.

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