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Recurrence After Robotic Retroperitoneal Lymph Node Dissection Raises More Questions than Answers

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Retroperitoneal lymph node dissection (RPLND) is an integral component of curative treatment for men with testicular cancer. A laparoscopic approach was reported in 1996 [1] to minimize morbidity, speed convalescence, and replicate the open technique [2]. More recently, laparoscopy with robotic assistance has been performed for both early-stage and postchemotherapy dissections [3,4].

In this issue of *European Urology*, authors from a high-volume testicular cancer referral center present a case series of five patients over a 2-yr period with abdominal recurrence following robotic RPLND [5] and advise caution with this approach. We understand the authors' apprehension but feel it is important to assess the totality of the data and experiences with robotic RPLND.

Three patients underwent primary RPLND for stage I/IIA nonseminoma, while the other two underwent postchemotherapy dissection. Before RPLND, tumor markers were normal in all five men, but the timing of staging imaging was not reported. The median time to recurrence was approximately 9 mo and the recurrence locations included invasion into the sigmoid colon, near an undivided paraaortic lumbar vessel, near the celiac axis, liver lesions with a right-sided suprahilar mass, and a perinephric mass with diffuse carcinomatosis.

The authors raise legitimate concern, but the compelling question remains why these recurrences developed and if there is something inherent to the robotic approach that would contribute to these recurrences.

First, without knowing the denominator of how many robotic RPLND procedures are performed nationwide or details on surgeon experience and intraoperative parameters, the incidence of adverse events is unknown and thus reflexive indictment of the technology is speculative. The authors are from a high-volume referral center for testicular cancer, attracting the most complex, unique, and refractory cases, and are likely to see patients with rare clinical situations. On the basis of the available literature, we hypothesize that surgeon knowledge of testicular cancer management, understanding of dissection templates, and handling of tissue are more likely to be the root causes. Despite more than 20 yr of experience in the technique and thousands of laparoscopic/robotic RPLND procedures documented, reports of unique patterns of recurrence have been extremely rare. In a meta-analysis of more than 800 laparoscopic RPLNDs, there was one port-site recurrence and no in-field recurrences [6]. In recent reports of robotic RPLND by Stepanian et al [3], Pearce et al [4], and Rocco et al [7] on 20, 47, and 58 procedures and median follow of 49, 16, and 47 mo, respectively, there have been no in-field recurrences or unusual out-of-field recurrences. Given the number of RPLNDs performed laparoscopically, and now robotically, if surgical approach was the driving force for retroperitoneal recurrences, this would have been seen on a much broader scale.

Second, abdominal recurrences after RPLND are not unique to a particular surgical approach and have been reported for open [8], laparoscopic [7], and now robotic RPLND. Some of the authors of the current study reported on 203 patients over a 25-yr period with local relapse after open RPLND [6], implicating tumor biology and inadequate surgical technique, signified by nondivision of lumbar vessels, as key contributing factors. Details regarding the specific areas of recurrence are not available. Nevertheless, this highlights the relative frequency of poorly performed

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RPLND, since local recurrences at centers of excellence are rare. As experienced testicular cancer specialists, we have witnessed in- and out-of-template nodal recurrences, carcinomatosis, bowel invasion, hepatic recurrences, and Gerota's fascia implants in men who have undergone open RPLND.

Third, it is plausible that a suboptimal surgical technique combined with tissue manipulation during robotic RPLND could lead to unique patterns of recurrence. Guiding principles during RPLND include distinguishing between lymphatic channels and lymph nodes, and proper handling of lymphatic tissue. Unrecognized division of a lymph node with viable germ cell tumor could result in tumor violation and potential recurrence. Passage of affected tissues through insufflating ports, rather than via endoluminal extraction bags, may dispose a patient to unusual patterns of recurrences. Therefore, we advise meticulous handling of tissues and adherence to techniques of RPLND established through decades of open surgery.

While the true cause of these recurrences remains in question, what is unquestionable is that oncologic principles should never be compromised because of surgical approach. Robotic technology has gained wide application in urology and because of its ease of adoption, many surgeons without formal training in urologic oncology are now performing complex oncologic procedures. Familiarity with robotic technology combined with a lack of understanding of oncologic principles could result in improperly performed robotic RPLND. However, the same avoidable recurrences can, and do, occur when the same principles are not followed with an open technique, so it is unlikely that surgical approach is the primary issue. When oncologic principles are properly applied, the robotic platform has the potential to reduce patient suffering and maintain the high standard of cure established by open urologic oncology.

In summary, we believe that the adverse outcomes in this report are related to surgeon experience and technique, and not inherent to robotic technology. Collectively we were trained and believe in the principles of RPLND established through open surgical techniques. Therefore, we recommend that robotic RPLND be performed by surgeons with experience in managing germ cell tumors and expertise in minimally invasive surgery, a concept supported by the recent American Urological Association guidelines [9].

We commend the authors for publishing this important case series and bringing this potentially serious issue to light. We share the same goals of curing men with germ cell tumors and minimizing the morbidity of the disease, and are equally troubled by the reported outcomes. However, we feel it premature and inadvisable to draw conclusions from small case series given the inability to assess contributing factors such as surgical skill and experience and comparative data with other surgical approaches. We will continue to proceed cautiously in our endeavors regarding robotic RPLND and encourage others to critically collect data on this important topic.

Conflicts of interest: James Porter is a speaker for Intuitive Surgical and an advisory board member for Ceevra and CSATs. The remaining authors have nothing to disclose.

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