Commentary: Conquering “nonesmanneslond”

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Left, map of England. Modified with permission.*

Right, the retrocrural space.

Central Message

Postchemotherapy retrocrural dissection for metastatic testicular cancer is challenging. Several approaches exist and should be individualized with coordination between urologic and thoracic surgeons.

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In the 11th century, King William the Conqueror commissioned an extensive survey of all territories in England and parts of Wales, which was chronicled in the *Domesday Book* (Figure 1). Strips of land “beyond the rule of the church or different fiefdoms,” where travel could be risky, were categorized as “nonesmanneslond.” The *Domesday Book* is believed to record the first use of this term. The treatment of metastatic testicular nonseminomatous germ cell tumors (NSGCTs) with cisplatin-based chemotherapy regimens, followed by surgical resection of residual disease, is considered one of the most successful models for multimodality cancer therapy, with greater than 80% overall long-term survival. Metastatic NSGCT follows 2 patterns of dissemination, lymphatic, through the retroperitoneal lymphatics, cisterna chyli, then thoracic duct at the diaphragm; and hematogenous, most frequently to the lungs. Although the vast majority of residual masses after chemotherapy pathologically demonstrate “benign” teratoma, teratoma has growth potential and potential for malignant degeneration with possible involvement of adjacent organs, making early and complete resection important. Although affecting a small fraction of patients with NSGCT, postchemotherapy retrocrural dissection represents a surgical challenge. The retrocrural space is difficult to access, and dissection typically involves peeling metastatic teratoma from the aorta, carefully ligating involved intercostal arteries from their aortic origin and major lymphatics in a deep, contained area. In addition to the technical challenge, the relative infrequency of retrocrural dissections, even in high-volume centers, may understandably make surgeons a bit uncomfortable removing residual disease in this anatomic compartment.

Sponholz and coauthors¹ are to be commended for describing in this issue of the *Journal* 2 surgical approaches that are based on specific retrocrural location and the frequent need to additionally remove retroperitoneal, higher mediastinal, or pulmonary disease after chemotherapy. The outcomes of 44 patients operated on at their institution during an 18-year interval are excellent, including no incidence

of spinal cord ischemia or mortality. Of note, the relatively large number of patients who underwent retroperitoneal lymph node dissection at outside hospitals before being referred to the institution of Sponholz and coauthors¹ for a separate retrocrural dissection arguably reflects the reluctance of surgeons to approach this area. Historically, the most commonly used approach to remove retrocrural disease was through a thoracoabdominal incision extending a midline laparotomy across the costal arch at the time of retroperitoneal lymph node dissection, which not only is associated with significant morbidity but does not provide optimal exposure of the posterior retrocrural space. Although specific data are lacking, transabdominal and transdiaphragmatic approaches to the lower retrocrural space during retroperitoneal lymph node dissection with either the lateral approach, as described in this report, or the more direct approach, as described by Fadel and colleagues² have become the approaches of choice in most high-volume centers. The lateral approach does provide excellent exposure for the more common right-sided retrocrural disease; however, it requires extensive liver and kidney mobilization as well as a chevron laparotomy dividing the rectus muscles, which can be associated with morbidity. For most cases at my institution, we have been using the approach described by Fadel and colleagues² through the

* Map of England modified from *Domesday Book*, 1086 AC, North Wind Picture Archives with permission.

FIGURE 1. A, Map of England at the time of the Norman conquest, 1066 to 1081, modified from the *Domesday Book*, 1086 AC, North Wind Picture Archives, used with permission. B, The retrocrural space.

lesser omentum, dividing the right crus longitudinally, which admittedly does not provide the wide exposure of a lateral approach but does not require liver or kidney mobilization and is optimally accomplished through a midline laparotomy. A longitudinal incision in the left crus can similarly access left-sided retrocrural disease. Both transabdominal and transdiaphragmatic approaches typically allow resection of disease to the top of the diaphragm when needed without the morbidity of an anterior thoracoabdominal incision. If there is mediastinal disease higher than the top of the diaphragm, then initial dissection of the lower retrocrural disease with a transabdominal or transdiaphragmatic approach can facilitate removal of higher mediastinal disease through a separate thoracotomy. There is little debate that a posterolateral thoracotomy is optimal to remove higher retrocrural disease, as Sponholz and coauthors¹ demonstrated. In addition to transabdominal, transdiaphragmatic, and transthoracic approaches, we have found that extrapleural and extraperitoneal approaches through the resected 11th rib for rare cases of isolated retrocrural disease minimize pulmonary morbidity and ileus, facilitating recovery, approaches that are cited by Sponholz and coauthors¹ in their discussion section.

The limitations of this study are clearly defined. Relatively low patient numbers may have prevented chemorefractory disease, such as late relapse or malignant transformation, from being identified as an adverse factor for survival.³ The number and levels of lower intercostal and upper lumbar arteries requiring removal in this series are not provided, which may be more important with respect to the risk of spinal cord ischemia relative to the surgical approach (lateral vs direct transabdominal or transdiaphragmatic). During the past 6 years, we have been using perioperative cerebrospinal fluid drainage and maintaining high mean systemic blood pressures in patients with NSGCTs requiring retrocrural dissection where multiple levels of lower intercostal and high lumbar arteries are anticipated to be removed, similar to the strategy used for thoracoabdominal aneurysm repair. To date, this has been a successful strategy; however, further study is needed.

In the surgical management of NSGCT, several approaches exist to remove retrocrural disease. The point of Sponholz and coauthors¹ regarding individualizing the approach on the basis of location, more

unusual cases of invasive disease, the presence of retroperitoneal, mediastinal, or lung disease requiring removal with close coordination between urologic and thoracic surgeons is an important one. All approaches to the challenging retrocrural space should be in the armamentarium of thoracic surgeons aiming to “conquer” NSGCT in these otherwise young and healthy patients.

References

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