Editorial

Challenges facing regionalization of radical cystectomy

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Neoadjuvant chemotherapy followed by radical cystoprostatectomy (RC) or anterior exenteration represents the gold standard for management of muscle invasive bladder cancer. Despite clear best practice guidelines (1,2), utilization of RC varies widely across centers and regions nationwide, likely due to the significant morbidity associated with a major extirpative surgery. As centralization of complex oncologic procedures has gradually occurred in the United States, the influence of treatment at high-volume centers on perioperative and oncologic outcomes, as well as cost, remains unclear. The growing body of evidence, consisting mostly of retrospective observational cohort studies using national or tumor registry data, illustrates that this challenging debate remains contentious.

In the February 2018 issue of the *Journal of Urology*, Ryan *et al.* utilized the National Cancer Database (NCDB) to evaluate the relationship between 'distance to treating facility' and 'overall mortality' in more than 30,000 patients with muscle invasive bladder cancer. Following adjustment, in patients with muscle invasive cancers, traveling farther for treatment was associated with a lower 5-year overall mortality (reference group <12.5 miles; 12.5–49.9 miles: HR 0.96, 95% CI, 0.92–0.99; 50–250 miles: HR 0.91, 95% CI, 0.86–0.96). When stratified by clinical stage, only patients who were cT2, and not cT3–4 (P>0.05), had a lower probability of death when traveling an intermediate or long distance for care (intermediate: HR 0.96, 95% CI, 0.92–0.99; long: HR 0.88, 95% CI, 0.83–0.93). Although patients who underwent radical cystectomy and traveled farther for treatment were more likely to receive neoadjuvant chemotherapy (intermediate: 1.15, 95% CI, 1.03–1.29; long: OR 1.21, 95% CI, 1.05–1.41) and have surgery at a high-volume center (all P<0.005), there was no statistically significant reduction in mortality risk (P<0.05). The authors concluded that these findings may reflect a complex association between regionalization of bladder cancer care with patient individual health and health care seeking behavior (3).

Regionalization of bladder cancer and all surgical oncologic care is a controversial topic met with both advantages and shortcomings (4,5). Multiple studies have correlated cystectomy volume with short term (30 or 90 day) improvement in peri-operative mortality outcomes, and as a result of these improvements (which are shared across complex cancer procedures) there has been a push by regulatory agencies, advocacy groups, and policymakers to centralize care (4,6). In fact, performance of RC at a high-volume center has been proposed as a potential quality indicator for performance measurement (7). In the UK, the National Institute for Clinical Excellence (NICE), has established the precedent at the national level for regionalizing urologic cancer care (most notably radical prostatectomy and radical cystectomy) to teams who serve populations of one million or more and carry out a cumulative total of at least 50 procedures per year. Furthermore, it is recommended that surgeons with very low procedural volumes (<5/year) transfer surgical care to more experienced high-volume colleagues (8). In the United

States however, there is evidence that regionalization to a large degree has already occurred (9). This may be due, in part, to the increasing sub-specialization of providers, changing referral patterns, improved information dissemination, and changes in procedure reimbursement (10).

Nevertheless, understanding the potential impact of regionalization requires improving quality metrics for comparative effectiveness assessment. Even to clarify definitions, identification of "high-volume hospitals" is fraught with logistical challenges (11). To date, there is no consistent definition of a high RC provider, and there is considerable disagreement between volume thresholds employed in retrospective analyses (ranging from 3–50 procedures per year) and expert opinion as to a reasonable number of procedures performed per year to achieve optimal outcomes (12). Moreover, the relative influence of individual surgeon and hospital volume is difficult to ascertain and the association between surgical volume and short term perioperative mortality appears to be driven more by hospital rather than surgeon effects (13). While associations between hospital volume and process measures that may be indicative of quality of care have been demonstrated (14,15), it is possible that differences in hospital structural characteristics and the breadth of consultative, diagnostic, and ancillary services available at tertiary or higher volume centers may in part explain observed differences in mortality.

In this study, while the authors reported a survival benefit in patients that traveled further distances for care, these findings were not duplicated in patients undergoing RC (3). The reasoning for this is likely multifactorial. Previous NCDB analyses have documented increased receipt of proposed quality of care metrics at higher volume hospitals (including receipt of neoadjuvant chemotherapy and an adequate lymph node dissection) (14). However, it is concerning that patients who transition between hospitals or health care systems for their care are more likely to undergo a treatment delay of >3 months (16). While the authors propose that traveling greater distances may be due to health seeking behavior, it is unclear if the travel distance to treatment provider metric captured in the NCDB is truly a surrogate for regionalization, or if it more reflective of inadequate access to care in more rural areas (3,14).

While the short-term benefits of regionalization of surgical care are indisputable, an untoward effect of regionalization of care may be exacerbation of existing access disparities for the disadvantaged, increased travel burden for patients from rural areas, and overwhelming the existing workforce capacity of referral centers (10,17). It is clear that for patients undergoing major cancer surgery, the benefits of volume-based referral depend on the interplay between procedure utilization, the magnitude of effect, and the outcome chosen (18). While simply adopting a national regionalization strategy for RC is unlikely to be feasible, focusing increased attention on improving care coordination for patients transitioning between health care systems at the time of regionalization for complex cancer surgery may be the most efficient means to reduce treatment delays or duplication of services, establish timely follow-up, and avoid preventable hospital readmissions (19). Inherent to contemporary healthcare reform efforts, implementation of health information technology, remote teleconferencing, and patient navigation programs may be effective tools to improve communication between providers during the pre- and post-surgical transition periods during which elderly patients are the most vulnerable (20,21). Given that randomized prospective evaluation comparing perioperative, oncologic, and economic outcomes between low and high-volume hospitals are unlikely to occur, careful consideration of potential negative down-stream effects of regionalization remains critical as centralization strategies are implemented.

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Footnote

Conflicts of Interest: The authors have no conflicts of interest to declare.

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