RESIDENT'S CORNER

Resident involvement in open radical prostatectomy: a review of urology surgical training

Kevin C. Zorn, MD, Philippe E. Spiess, MD, Phillip L. Ross, MD, Yosh Taguchi, MD, Armen G. Aprikian, MD

Department of Urology, McGill University, Montreal, Quebec, Canada

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Purpose: *The Royal College of Physicians and Surgeons of Canada (RCPSC) and The American Accreditation Council for Graduate Medical Education (ACGME) general objectives mandate that all residents be competent to independently perform select surgical procedures. Unfortunately, no objective standardized measures presently exist for surgical training assessment. Operative logs have been implemented to quantify the number of cases the resident has been exposed to, however, these do not assess their degree of involvement or aptitude. An analysis of what exactly a resident performs, and how well, per case may assist in measuring their training progress. Herein, we evaluate a questionnaire to quantify the level of resident participation in radical retropubic prostatectomy (RRP) and assess whether resident perception of how much involvement in a case correlates with staff surgeons.*

Methods and materials: *Identical, self-administered questionnaires were distributed simultaneously to the resident and staff urologist upon completion of radical prostatectomy. The questionnaire comprised of 14 items, which were completed independently by the resident and the staff urologist. The items assessed which of the 14 specific surgical steps were actually performed by the resident. An analysis was performed to assess the level of agreement.*

Results: *Among all cases performed between June 2002 and July 2003, 64 RRPs performed by two surgeons had completed questionnaires by both resident and staff. Twenty-one (32.8%) cases were performed with a senior resident (R4) and 43 (67.2%) cases were performed with a chief resident (R5). Twenty (31.3%) cases involved pelvic lymph node dissection. Resident performance of key surgical steps, namely dorsal venous ligation, urethral division, lateral pedicle dissection and urethrovesical anastamosis was 59.4%, 62.5%, 84% and 59.4% respectively. Global level of agreement between staff and resident responses was 94.9% (71.4%-100%).*

Conclusion: *Our results suggest that there exists good agreement between resident perception of their level of involvement in RRP and staff validation. As such, a residents' assessment of their participation is likely to be accurate. Designation of performance of key operative steps into logs may be more relevant than recording simple exposure to index cases. Attempts at measuring quality of key operative steps in the future may be beneficial.*

Key Words: prostate cancer, training program, residency, radical prostatectomy

Introduction

One of the primary objectives of a urology residency is to produce well-trained surgeons capable of diagnosing and treating certain fundamental urological conditions. While formal teaching and self-directed learning enhance the clinical knowledge and understanding of the surgical resident, it is only by performing surgical procedures that the necessary skills and dexterity is developed.[1] It is both the Royal College of Physicians and Surgeons of Canada (RCPSC) and the American Accreditation Council for Graduate Medical Education (ACGME) objectives to train all

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Address correspondence to Dr. Kevin C. Zorn, University of Chicago, Section of Urology, 5841 S. Maryland Ave. MC 6038, Chicago, IL 60637 USA

urology residents to be competent to independently perform certain established procedures upon completion of their training. Case logs requested to quantify operative experience assist program directors to evaluate their residents' training. They also are required by the American Board of Urology for board certification.[2] Unfortunately, operative log reports do not assess the level of resident involvement or the degree of progress or surgical aptitude of the resident. Presently, no standardized training assessment measures exist.

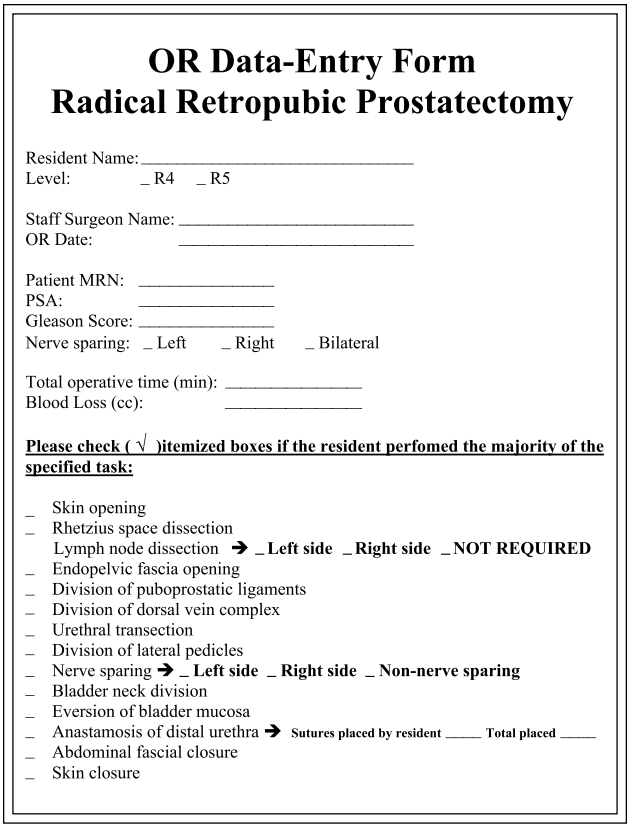
The level of involvement in cases may be valuable in assessing surgical skill rather than overall case numbers. Our study was undertaken to assess and validate resident perception of their involvement level during a given surgical procedure, which in the present study was open radical retropubic prostatectomy (RRP).

Methods

Upon completion of a RRP, identical, self-administered questionnaires were distributed simultaneously to the resident and staff surgeon. The questionnaire comprised of 14 check-box items, which were completed independently by both parties. The 14 items included skin incision, Retzius space dissection, lymph node dissection (if required), opening of the endopelvic fascia, puboprostatic ligament dissection, dorsal vein ligation, urethral division, lateral pedicle dissection, neurovascular bundle preservation, bladder neck division, eversion of the bladder neck mucosa, urethrovesical anastamosis, abdominal fascial closure and skin closure. Figure 1. An item's box was checked if performed completely and independently by the resident. The checked items therefore assessed if specific surgical steps were actually performed by the resident. A comparative analysis was performed to assess the level of agreement on a case for case basis between resident and staff.

Results

Among all RRPs performed between June 2002 and July 2003, 64 performed by two staff surgeons had completed questionnaires by both staff and resident. There were 20 and 44 cases performed with a senior (R4) and chief (R5) resident, respectively. Twenty-five patients (39.1%) required pelvic lymph node dissection. Fifty-one patients (79.7%) underwent cavernosal nerve preservation, 40 of which were bilateral.



OR Data-Entry Form
Radical Retropubic Prostatectomy

Resident Name: _____
Level: _ R4 _ R5

Staff Surgeon Name: _____
OR Date: _____

Patient MRN: _____
PSA: _____
Gleason Score: _____
Nerve sparing: _ Left _ Right _ Bilateral

Total operative time (min): _____
Blood Loss (cc): _____

Please check (√)itemized boxes if the resident perfomed the majority of the specified task:

_ Skin opening
_ Rhetzius space dissection
Lymph node dissection ➔ **_ Left side _ Right side _ NOT REQUIRED**
_ Endopelvic fascia opening
_ Division of puboprostatic ligaments
_ Division of dorsal vein complex
_ Urethral transection
_ Division of lateral pedicles
_ Nerve sparing ➔ **_ Left side _ Right side _ Non-nerve sparing**
_ Bladder neck division
_ Eversion of bladder mucosa
_ Anastamosis of distal urethra ➔ **Sutures placed by resident _____ Total placed _____**
_ Abdominal fascial closure
_ Skin closure

Figure 1. Itemized, self-administered questionnaire simultaneously completed by both the resident and staff surgeon immediately following RRP. A box was only checked if the resident performed the majority of the task. More recently, each task further evaluated the percentage (%) performed by the resident and a subjective score (1-5) to assess the quality of work during that task.

The results of overall resident participation, according to the collective residents' perception is summarized in Figure 2. The residents completed 100% (64/64) skin incisions, fascial closure and skin closure. The percentage performed during Retzius space dissection, endopelvic fascial opening, puboprostatic ligament dissection, dorsal vein ligation, urethral division, lateral pedicle dissection, bladder neck incision, bladder mucosa eversion, urethrovesical anastamosis were 95.3% (61/64), 60.9% (39/64), 59.4% (38/64), 59.4% (38/64), 62.5% (40/64), 84.4% (54/64), 53.1% (34/64), 87.5% (56/64) and 59.4% (38/64), respectively. Of the 25 and 51 patients undergoing a pelvic lymph node dissection and cavernosal nerve sparing technique, 88 (22/25) and 70.6% (36/51) were performed by the resident, respectively.

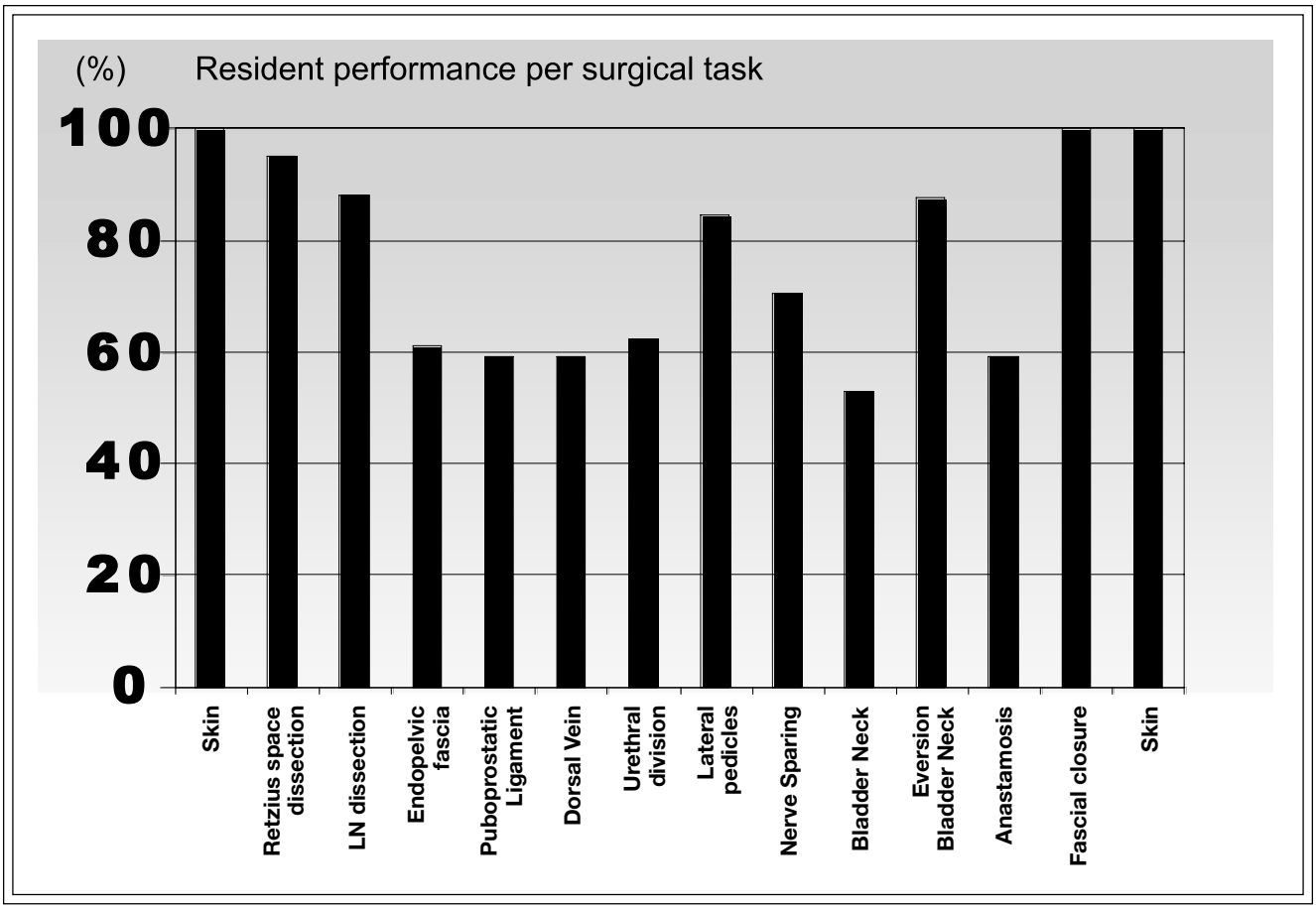


Figure 2. The degree of resident participation (in %), as perceived by the trainee, for each surgical task during all 64 radical prostatectomies.

The level of staff agreement with level of participation of the resident in the surgical case is summarized in Figure 3. There was 100% agreement for the skin incision, fascial and skin closure. There was 93.8%, 96%, 90.6%, 96.8%, 93.8%, 95.3%, 92%, 88.2%, 93.8%, 90.6% and 95.3% agreement for Retzius space dissection, lymph node dissection, endopelvic fascial opening, puboprostatic ligament dissection, dorsal vein ligation, urethral division, lateral pedicle dissection, nerve preservation, bladder neck incision, bladder mucosa eversion, and urethrovesical anastamosis, respectively.

Discussion

Clearly sufficient surgical volume is needed to provide good surgical experience in educating residents in surgical technique and care of the surgical patient.[3] Current assessment of surgical volume for residents is based on surgical logs. In most cases, the resident who performs 50% or more of a case is considered the surgeon,[4] otherwise, they would indicate being first assistant. Unfortunately, it is left at the resident's discretion to decide what components constitute that 50%, as opposed to a priori identification of the critical aspects of a surgical procedure.

In 2003, Dr. Andrew McNeily, urology residency program at the University of British Columbia initiated a PDA-based program that would allow residents to quickly and accurately document daily activities and enable program directors to monitor resident progress. With the aid of a Vancouver-based software company (Resilience Software), T-Res, a Palm OS based, web-enabled application was created, within which exists a detailed operative log component. With each operative log, the resident can further grade their level of competency and comfort.[5] In addition, the centralized database allows for program comparison with nationwide peers. The Canadian Urological Association has decided to implement this program nationally. As such, all 11

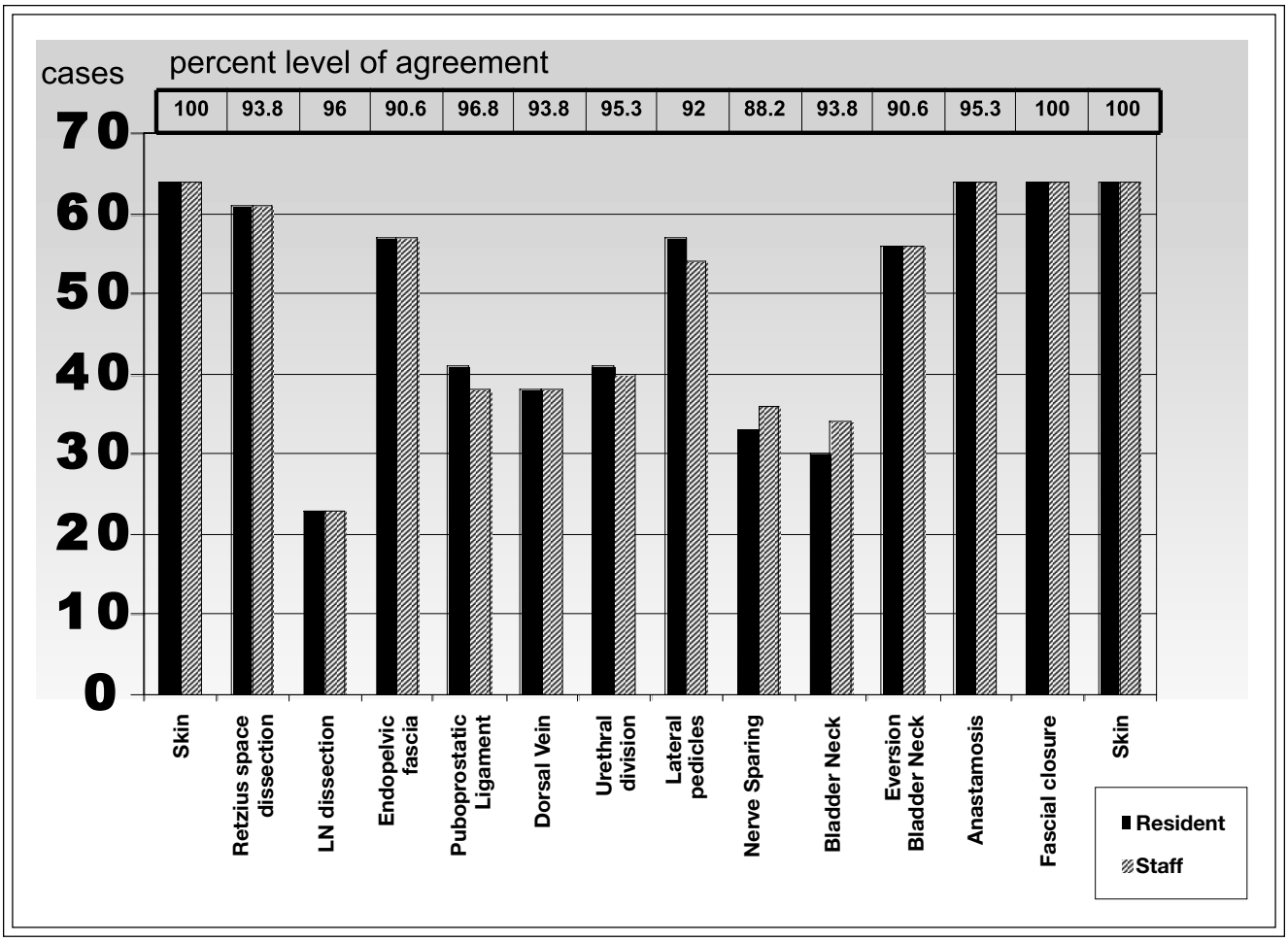


Figure 3. Staff and resident agreement in terms of resident participation in the individual steps of the procedure. The percent of agreement, for each step is indicated in the boxes above.

Canadian urology programs are currently utilizing T-Res. In addition, more than 50 medical programs across Canada are now using Resilience Software's T-Res application with PalmOne handhelds, including two other national programs: Plastic Surgery and Pediatric General Surgery.[5]

In 1996, the CanMEDS roles framework of essential physician competencies was implemented into the RCPSC standards. These seven roles include medical expert, professional, communicator, scholar, collaborator, health advocate and manager.[6] The newly revised CanMEDS framework was launched in September 2005. Under the section of medical expert falls the resident's surgical skills.[7] The list of surgical skills is divided into categories reflecting the frequency with which these procedures are encountered in urological practice and during residency training. All residents must be competent to independently perform the following procedures in List A; these include 10 endoscopic and 35 open surgical procedures.[7]

In the United States, the ACGME residency review committee requirements (RRC) for resident evaluation are case logs. The operative log submitted to the RRC must be countersigned by the program director who will attest to the accuracy of the data submitted. There is current work in progress by urologists at UC-San Diego RRC & Research Dept. Web-based evaluation system is under development by Chris Amling, MD and ACGME Research, RRC, and MIS staff. Their system includes the following: global rating form, operative performance rating form, patient encounter rating form, and a 360-degree assessment form.[4]

Seeing that the goal of residency training is to develop competent surgeons, the relationship of a specific number (or range) of index cases to quality of resident education is extremely difficult to define.[3] Unfortunately, there exists no specific numbers or range

of index cases needed to train a qualified and competent urological surgeon. As seen in our series, the case log merely reflects the number of cases the resident is exposed to, not necessarily what they have performed nor their ability. Key aspects of RRP, such as dorsal vein ligation, lateral pedicle dissection and urethrovesical anastamosis were completed by the resident in 59.4%, 62.5% and 59.4%, of cases, respectively.

There are several limitations to our study. This is a small, single institutional study where only two surgeons participated in resident verification. In light of the lack of a prior validation study, it is possible that the questionnaire (or its format) my not be sensitive enough to discriminate between resident and staff participation rates. Furthermore, there may be issues of reproducibility with other staff and residents, especially if used to assess other procedures where surgical steps may not be as distinguishable.

In summary, current case log reports produced by individual residents serve as the measure of resident surgical experience. No specific guidelines presently exist to define the number of cases required to complete urology training. PDA handheld computer devices have assisted in gathering, with improved accuracy, details of surgical exposure. Unfortunately, surgical logs do not define in necessary detail, the depth of resident involvement per case to assess their surgical abilities and follow their progress. Perhaps, implementation of itemized surgical steps in an operative log, for specific, required surgical procedures may provide more accurate detail of resident participation. Our results indicate that if such detailed assessment of individual surgical step participation is required, the resident's self-reported participation appears accurate.

Conclusion

Our results suggest that there exists good agreement between the resident perception of their level of involvement in RRP and staff surgeon. Itemizing surgical techniques also demonstrates that not all critical components are performed by the resident, despite routinely being logged as a case participated. Further validity testing would be necessary before implementation during residency training. Such quantitative, itemized log reports may be useful in future evaluation of resident performance and progress as well as staff surgeon teaching in an academic program and inter-institutional program assessment. □

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