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Practice Patterns of Recently Fellowship-trained Reconstructive Urologists

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Abstract

OBJECTIVE—To analyze the practice patterns of recently fellowship-trained reconstructive urologists to help guide fellowship program curriculum development and to evaluate the impact that formal reconstructive urology training has on academic urology programs.

METHODS—We evaluated the case logs of 7 recently fellowship-trained reconstructive urologists affiliated with US academic institutions from August 2009 to August 2011 (median years in practice = 2, range 1–6 years). We categorized cases into endoscopic, oncological, female, general (nononcological), and reconstructive. Our primary outcome was the volume of reconstructive procedures as a percentage of all procedures. Our secondary outcome was the correlation between years in practice and reconstructive volume and case complexity.

RESULTS—A total of 3561 cases were analyzed, representing 12 surgeon-years. Endoscopic surgery was most common (42.7%), followed by reconstructive (36.1%), general urologic (10.5%), and oncological (3.7%). The most common type of reconstructive procedure performed was anterior urethroplasty (mean 42.8 per year) followed by bladder reconstruction (mean 17.7 per year). The percentage of yearly cases considered reconstructive was positively associated with total years in practice ($r = .688$, $P = .013$) as was the complexity of artificial urinary sphincter cases ($r = .857$, $P = .0004$), but not urethral reconstructive complexity ($r = .40$, $P = .197$).

CONCLUSION—The demand for services delivered by fellowship-trained reconstructive urologists is high, as evidenced by the large percentage of reconstructive procedures in this cohort even early in practice. With additional years in practice comes further specialization.

The past decade has seen significant changes in the training for all surgical residents.¹ Residents are working fewer hours and spending less time in the operating rooms. Of the hours spent operating, a greater percentage of them are being focused on learning robotic and laparoscopic skills than ever before, especially in urology, as these are the skills often coveted by the private practice jobs being pursued by nearly 90% of graduates.^{2,3} This means that by default, less time will be spent during training performing complex open

procedures. It is perhaps not surprising, that the decade has also seen an increase in fellowship training of all surgical subspecialties. Proposed reasons for this trend are many,⁴ but it has been postulated that with less operating room exposure, graduating residents are more commonly feeling they need more training before starting their careers.⁵

Until recently, few residents pursued formal postgraduate training in adult reconstructive urology, a specialty that performs many complex open procedures, but there are now 15 single-year positions available for postresidency training,⁶ prompting the Genitourinary Reconstructive Society to begin a formal matching process for reconstructive fellows beginning in the year 2013. As this fellowship becomes more formalized and learning objectives are outlined, it is important to better understand the scope of practice required of potential fellows upon fellowship graduation.

The purpose of this study was to examine the early practice patterns of recently trained reconstructive fellows. We hypothesized that the practice patterns will vary widely depending on the respective fellows' home institution, but that reconstructive procedures will make up a large percentage of their practice. Additionally, we hypothesized that with increased years in practice, the number and complexity of reconstructive cases will increase.

MATERIAL AND METHODS

We evaluated the case logs of 7 recently fellowship-trained reconstructive urologists affiliated with US academic tertiary care institutions from August 2009 to August 2011 (median years in practice = 2, range 1-6 years). All authors entered fellowship directly out of residency training; 2 authors (Bradley A. Erickson and Christopher D. McClung) contributed only 1 year of data) in conjunction with an institutional review board approved, multi-institutional, prospective project. Fellowships represented by study participants included the University of California, San Francisco (n = 4) and University of Washington (n = 3), which are both single fellow, 1-year fellowships that emphasize, but are not limited to, the clinical and operative management of male urethral stricture disease, male incontinence, prosthetics, urinary diversion, and urologic trauma.

Cases were categorized into endoscopic (all urologic procedures performed using endoscopy, including visual internal urethrotomy), oncological (open/laparoscopic cancer procedures), female (all female procedures not involving reconstruction of the ureter or bladder), general (nononcological open procedures), and reconstructive (open or laparoscopic). Reconstructive cases included male urethral reconstruction, male incontinence (sling and sphincter procedures), bladder reconstruction (cystectomy for benign indications, urinary diversion, and bladder augmentation), urinary fistulas (ie, rectourethral, vesicovaginal), ureteral reconstruction, and external genitalia reconstruction. Surgical management of acute trauma cases were also analyzed, but categorized separately.

Our primary analysis was on the practice patterns of the 7 reconstructive surgeons, including the overall number of cases and breakdown by operative category. Reconstructive cases were then further stratified by categories described previously. Our secondary analysis was on the relationship between total years in practice and the reconstructive case-load and case complexity.

To designate complex reconstructive cases, we analyzed 2 commonly performed reconstructive cases, urethral reconstruction and artificial urinary sphincter placement. The percentage of urethral reconstructive procedures requiring tissue flaps and/or grafts and the percentage of artificial urinary sphincter (AUS) placements that were revisions in a given academic year were used as markers for reconstructive complexity within each surgeon's practice.

Data were analyzed using SAS, v. 9.2 (Cary, NC). Descriptive statistics were used to report the case-load percentages and practice breakdowns. Pearson correlation coefficients were used to describe the relationship between years in practice and reconstructive case-load and complexity, with statistical significance being defined as a $P < .05$.

RESULTS

A total of 3561 cases were analyzed, representing 12 surgeon-years (Table 1). The most common category of surgical procedure performed was endoscopic (42.7%, range 26.7%-57.9%) followed by reconstructive (36.1%, range 19.7%-53.4%), general urologic (10.5%, range 5.0%-23.1%), oncological (3.7%, range 1.0%-9.6%), and female urology (2.3%, range 0-5.8%). When only open surgery is considered, the mean percentage of reconstructive cases was 67.7% (range 40.7%-88.7%). The mean number of surgically managed acute trauma cases per year was 9.8 (range 0-24).

The most common type of reconstructive procedure performed was an anterior urethroplasty (mean 42.8 per year, range 10-75 cases) followed by bladder reconstruction (mean 17.7 per year, range 5-55 cases; Table 1). The percentage of yearly cases considered reconstructive was positively associated with total years in practice ($r = .688$, $P = .013$). Of authors reporting 2 years of data, the number of reconstructive cases increased in the second year by an average of 18 ± 46.2 cases.

The mean percentage of complex urethroplasty was 47.1% (range 21.2%-63.5%) and mean complex sphincter placement was $36.6\% \pm 34.8\%$ (range 0%-100%). The complexity of AUS cases was strongly positively correlated with total years in practice ($r = .857$, $P = .0004$), but urethral reconstructive complexity was not ($r = .40$, $P = .197$).

COMMENT

The results from the study indicate that fellows trained in reconstructive urology enter busy reconstructive practices; even early in their careers, with nearly 70% of all open surgical cases performed yearly being classified as reconstructive. The percentage of reconstructive volume also seems to increase with years in practice, although it is unknown how sustainable this increase will be and where it will plateau. The most common open procedure performed was anterior urethral reconstruction with the 7 urologists performing nearly 40 per year, far exceeding the number performed yearly by the average general urologist.⁷ Although anterior urethral reconstruction seems to be the signature case of this specialty, the breadth of reconstructive cases performed by these urologists highlights the heterogeneity of this urologic sub-specialty and the need for a diversity of surgical exposure during fellowship.

We used 2 commonly performed procedures, the anterior urethroplasty and the AUS, to gauge the complexity of cases the surgeons were facing early in their careers. We hypothesized that as practices matured the difficulty of the stricture and sphincter cases would increase, necessitating the use of more flap/graft procedures for urethral reconstruction and ancillary maneuvers for sphincter placement. With increased time from fellowship, the number of complex AUS placement cases increased as we expected. Because AUS placement is common in many community based practices, we hypothesized that most urologists will only need to refer to tertiary care centers when revision surgery is required. Therefore, as new reconstructive urologists enter a community and their referral practice grows, complex AUS referrals will increase. However, the same complexity pattern was not seen with urethral reconstruction. The reasons for this were not clear, but we hypothesize 2 complementary explanations. One, urethral stricture disease is often managed in the

community by repeated urethral dilation and urethrotomy.⁸ If a reconstructive urologist enters a community without anyone with previous expertise in urethral reconstruction, the early referrals may include many of these patients that have undergone repeated dilations, which increases the complexity of the subsequent urethroplasty.⁹ Two, as these early, complex referrals are made, education is often disseminated to the referring urologists about the need for early surgical intervention for stricture disease and the poor outcomes of repeated dilation.⁸ As the surgeon's presence in the community matures, the referrals may come earlier in the disease course, leading to simpler repairs; thus explaining the lack of the association seen in this study.

Given the heterogeneity and complexity of the disease processes expected to be managed by the reconstructive urologist, the adequacy of a 1-year fellowship in reconstruction has been questioned by some who feel that a longer training period is required to reach proficiency. Andrich and Mundy¹⁰ recently reported their experience with a 3-year reconstructive fellowship in England and concluded that even with 3 years of training, the mentee was not necessarily ready to take on all complex reconstructive cases independently. These authors stressed the need for a career-long mentee-mentor relationship, preferably in an academic center in which ancillary colorectal and plastic surgery staff would also be available. Although their concern is certainly a valid one, it is unlikely that reconstructive urologic fellowships in the United States will change soon. The training model in the United States assumes that trainees will not be as proficient as their mentors at the completion of training, and that skills and proficiency will continue to accrue during their individual practices. Practicing with a seasoned reconstructive urologist early in one's career could certainly augment this continued learning process, although this arrangement is not generally possible. What is interesting to note about the cohort of surgeons in this study, however, is that 7 of 8 surgeons included had a faculty mentor during their respective residency training periods who was formally trained in reconstructive urology. This fact brings up 2 important points: (1) it is possible and perhaps necessary to gain some proficiency in many of these surgical techniques before starting a reconstructive fellowship and (2) an early mentor is likely important in ultimately choosing a career in reconstructive urology. This phenomenon has been described for other specialties before and is likely an important aspect of reconstructive urology that deserves further study.^{4,11,12}

There are limitations to this study that deserve mention. First, the 7 urologists included in this study all trained at 1 of 2 very similar reconstructive urology fellowships, meaning practice patterns may not be representative of those expected of trainees from other reconstructive fellowship programs, especially those that include female urology. However, it should be emphasized that although some traditional reconstructive fellowship programs included female reconstruction, female urology is now represented by its own separate fellowship program and matching process conducted by the Society for Uro-dynamics and Female Urology, that often includes gynecology residents.¹³ Second, the authors all practice at academic institutions, meaning that patterns described here may not apply to fellows entering a private practice setting—something that may become more common as more reconstructive fellows enter the workforce and are recruited by large urology group practices. Third, reconstructive endoscopic cases, such as urethral dilation and bladder neck incision, were not prospectively catalogued, although analysis of these cases may have offered additional insight into early practice patterns. In addition, some of these surgeons entered practices with existing reconstructive urologists ($n = 3$), although we could not easily determine what affect this had on early case load or case complexity. Finally, the surgical outcomes from these cases were not addressed in this article. Early outcomes of reconstructive trainees will certainly be important when studying the adequacy of 1-year training programs in the management of these disease processes. However, as was demonstrated by the breadth of cases, these surgeons performed early in their career on a

yearly basis, a 1-year training period did not prohibit the surgeons from comfortably managing the entire range of reconstructive urology, including complex disease processes such as posterior urethral distraction defects and urinary fistulas. Future publications from our coordinated research database will examine these early outcomes.

CONCLUSIONS

The results from this study show that surgeons formally trained in reconstructive urology have diverse and complex reconstructive practices even early in their careers, with the amount of reconstructive cases increasing with years in practice. Urethral reconstruction was the most common open procedure performed by these surgeons, but the diversity of their practices highlights the need for a wide range of training during fellowship that includes not only urethral reconstruction but also urologic prosthetics, bladder augmentation, urinary diversion, and urologic fistulas.

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Table 1

Volume and variety of reconstructive procedures by recently fellowship trained reconstructive urologists per surgeon year

Case Type	Mean (n[*])	SD	Min (n[*])	Max (n[*])
Endoscopic	137.3	55.6	66	252
General	32.4	16.4	11	69
Oncology	11.9	9.4	2	34
Female	7.2	6.2	0	19
Reconstructive	107.9	25.8	59	145
Anterior urethroplasty	42.8	19.0	10	75
Posterior urethroplasty	5.8	3.4	2	12
AUS	8.3	5.6	1	18
Male sling	3.6	3.6	0	13
Penile prosthesis	5.8	6.3	0	20
Ureteral reconstruction	5.8	3.3	0	13
Peyronie	4.6	7.0	0	19
Bladder reconstruction	17.7	17.0	5	55
External genitalia reconstruction	11.8	8.0	5	29
Rectourethral fistula repair	1.7	1.5	1	6
Trauma	9.8	8.4	0	24

*
n = of cases per surgeon year.