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# Quantifying the Educational History of the Endourological Society Fellowship Programs in the United States

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## Abstract

**Introduction:** We examined the history of the Endourological Society through the lens of its fellowship programs in the United States (U.S.).

**Methods:** A review of the list of fellowship programs published annually in the *Journal of Endourology* from 1987 to 2015 allowed us to track the growth in fellowship programs over time. We reviewed the Endourological Society fellowship database and the websites for each of the fellowship programs for the names of graduates from each program. A survey was sent to each fellowship program director with a list of their graduates asking them to verify the names and to identify those graduates who had pursued a career in academic urology, and whether they had served as fellowship program director, residency program director or department chairperson. Seventeen of the 52 U.S. program directors (33%) responded to the survey. For those programs that did not respond to the survey each graduate's name was searched via Google, LinkedIn, and/or Doximity to determine if they had pursued a career in academic urology and served in a leadership position.

**Results:** The number of U.S. Endourological Society fellowships has increased from 11 in 1987 to 52 in 2021. Five hundred and seventy-seven fellows have graduated from an Endourological Society Fellowship in the United States from 1987 to 2021. Two hundred and fifty fellows have pursued a career in academic urology (43.3%), 46 have served as fellowship program director (8.0%), 9 as residency program director (1.6%), and 13 have served as department chairperson (2.3%).

**Conclusions:** The progress of the Endourological Society can be directly tied to the historical growth of its fellowship programs and the pursuit of an academic career by many of its graduates leading them to become the current and future educational leaders in the field.

**Keywords:** Endourological Society fellowship program, academic career, department chairperson, history

## Introduction

IN 1978, DR. ARTHUR SMITH described the first antegrade stent placement when he introduced a Gibbons stent through a percutaneous nephrostomy in a patient with a reimplanted ureter with a urine leak to allow the urinary leak to seal.<sup>1</sup> Dr. Smith would coin the term “endourology” to describe closed, controlled manipulation of the genitourinary tract. At the University of Minnesota, he would work with Dr. Kurt Amplatz, an interventional radiologist and medical inventor, with their collaboration leading to many

innovations, including dilators and wires, which would form the early tools of endourology. In 1982, Dr. Ralph Clayman developed a porcine model for nephroscopy and ureteroscopy which led to numerous courses in endourology throughout the United States (U.S.) and internationally to further teach practicing urologists how to perform the newer procedures.<sup>2</sup>

The Endourological Society was founded after three successful annual meetings held in London (1983, organized by Dr. John Wickham), Germany (1984, organized by Dr. Peter Alken), and the U.S. (1985, organized by Dr. Arthur Smith). The Society was officially instituted on May 1, 1984, before

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the third meeting in New York and its leadership consisted of Dr. Arthur Smith—president, Dr. Joseph Segura—vice president, Dr. Ralph Clayman—secretary, and Dr. Gopal Badlani—treasurer.<sup>2</sup>

The mission of the Endourological Society is to improve the lives of patients with both benign and malignant urologic conditions through novel technology, innovative techniques, and noninvasive medical management. A key aspect of its mission is the promotion of research, education, and the evidence-based medical and surgical practice of endourology and minimally invasive surgery.<sup>3</sup> Dr. Smith would write “part of the original aim of the Endourological Society was to train people in minimally invasive urology techniques, which took the form of fellowships for both American and foreign graduates.”

We examined the history of the Endourological Society through the lens of its fellowship programs in the U.S. and attempted to evaluate the growth of its fellowship programs and the educational spread of fellowship graduates by determining how many pursued an academic career and became educational leaders in the field.

### Materials and Methods

We reviewed the list of fellowship programs published annually in the *Journal of Endourology* from 1987 to 2015 to track the number of fellowship programs present over time. We reviewed the Endourological Society fellowship database and the websites for each of the fellowship programs for the names of graduates from each program.<sup>4</sup> Our study received an Institutional Review Board exemption. An e-mail survey was sent to each fellowship program director with a list of their graduates asking them to verify the names and to identify those graduates who had pursued a career in academic urology and whether they had served in an academic leadership position, which we defined as fellowship program director, residency program director, or department chairperson. Gender was determined based on pronouns used on websites or in person. Fellowship program directors were also queried for what they believed was the most important goal of their fellowship. Seventeen of the 52 U.S. program directors (33%) responded to the survey. For those programs that did not respond to the survey each graduate’s name was searched via Google, LinkedIn, and/or Doximity to determine if they had pursued a career in academic urology and served in a leadership position. Descriptive analysis was performed on the collected variables.

### Results

The number of U.S. Endourological Society fellowships has increased from 11 in 1987 to 52 in 2021. Five hundred and seventy-seven fellows have graduated from an Endourological Society Fellowship in the U.S. from 1987 to 2021. Two hundred and fifty fellows have pursued a career in academic urology (43.3%), 46 have served as fellowship program director (8.0%), 9 as residency program director (1.6%), and 13 have served as department chairperson (2.3%). In dividing the fellowship training years into three eras (1987–1999, 2000–2009, 2010–2021), there was an increase in total fellows over each era, but the percentage of fellows pursuing an academic career was relatively stable (42.6%, 44.7%, 42.6%, respectively). Forty-seven Endouro-

logical Society Fellowship graduates were women (47/557, 8.4%) with 28 (28/47, 59.6%) pursuing an academic career (Table 1). When examining academic leadership positions, 6.4% (3/47) and 14.9% (7/47) of female graduates served as residency program directors and fellowship program directors, respectively, with no women as department chairpersons. Of the fellowship program director survey respondents (17/52), when queried about the most important goal of fellowship: 76% stated it was to teach endourology and minimally invasive surgical skills, 18% believed it was to develop future leaders in the field, and 6% stated it was to train future academicians.

### Discussion

Our compilation of the fellowship programs listed in the *Journal of Endourology* allowed us to illustrate the growth of fellowship programs both in the U.S. and internationally (Fig. 1). The U.S. Endourological Society fellowship programs increased from 11 in 1987 to 52 in 2021 and the international fellowships increased from 0 in 1987 to 20 in 2021 (Fig. 2). Though no longer listed in the *Journal of Endourology*, we would recommend that a list of the active fellowship programs should be recorded in one issue of the *Journal of Endourology* each year. This will thus serve as a historical record to help chart the continued growth of the society.

Our study also focused on quantifying the fellowship graduates of the Endourological Society that pursued an academic career and served in an academic leadership position. We found that a significant percentage of Endourological Society fellows (43%) pursue an academic career and when dividing the fellowship training years into three eras (1987–1999, 2000–2009, 2010–2021) that percentage has remained stable over time (Table 1). In the past, the classic assumption was that to become a department chairperson one must pursue a subspecialization in urologic oncology. Farber et al. in 2016 showed that 75% (85/113) of urology department chairpersons were fellowship trained and that of these 43 (51%) specialized in urologic oncology, followed by 12 (14%) in endourology.<sup>6</sup> Our study showed that of the 577 endourology fellows trained through 2021, 13 (2.3%) went on to serve as a department chair. Thus, an endourology fellowship along with an academic career can provide a viable pathway for one to rise to the position of department chairperson. Furthermore, fellowship graduates have also served in multiple other leadership positions including fellowship and residency program directors (10%). In our survey of fellowship program directors, the majority (75%)

TABLE 1. ENDOUROLOGICAL SOCIETY FELLOWS AND FEMALE FELLOWS THAT PURSUED AN ACADEMIC CAREER

Years	Total no. fellows	Total no. fellows in academics	No. female fellows	No. female fellows in academics
1987–1999	61	26 (42.6%)	2 (3.2%)	2 (100%)
2000–2009	190	85 (44.7%)	13 (6.8%)	8 (61.5%)
2010–2021	326	139 (42.6%)	32 (9.8%)	18 (56.3%)
Totals	577	250 (43.3%)	47 (8.4%)	28 (59.6%)

## Fellowship Programs with Emphasis on Endourology and ESWL

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University of Arizona Health Sciences Center  
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**Ralph V. Clayman, M.D.**  
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Washington University  
4960 Audubon  
St. Louis, MO 63110  
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**E. Darracott Vaughan, Jr., M.D.**  
Brady Foundation  
New York Hospital/Cornell University Medical  
Center  
525 East 68th Street, Box 94  
New York, NY 10021  
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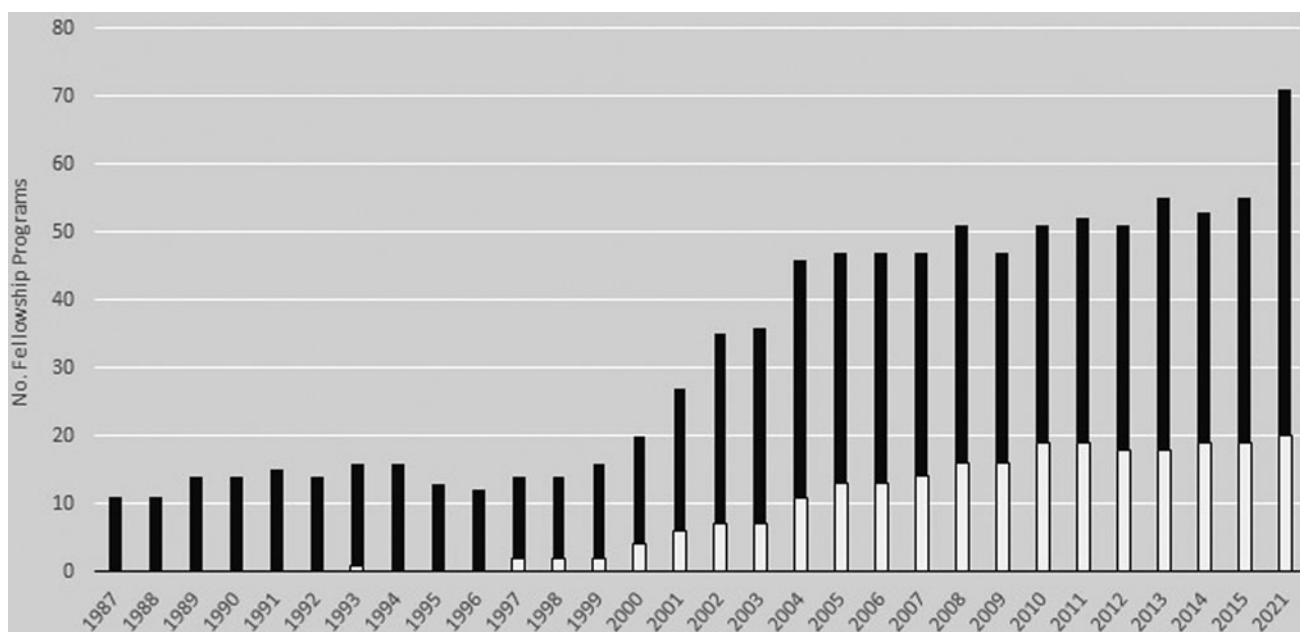
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**FIG. 1.** The original 11 Endourological Society fellowship programs.<sup>5</sup>

believed that the primary goal of the fellowship program was to teach surgical skills. Even though only a combined 24% felt that the primary goal was to develop future academicians and leaders in the field, our study shows that fellowship graduates achieve both goals.

Approximately 8% of Endourological Society Fellowship graduates were women (47/557, 8.4%) with 59.6% (28/47) pursuing an academic career. We noted an increase in the number of women fellowship graduates over roughly each of the first three decades (1987–1999, 2000–2009, 2010–2021) since the establishment of the Endourological Society Fellowship (Table 1). We also found that a significantly larger percentage of female graduates pursued an academic career compared to males (59.6% vs 35.1%,  $p < 0.001$ ). Netter et al. looked at gender representation in all urologic subspecialties from 2004 to 2015 via urologists applying for new certification or recertification for the American Board of Urology and found that of the 9140 applications, 8.9% of all applicants were women.<sup>7</sup> They found that the percentage of women that

subspecialized in female urology and pediatrics (34.0% and 24.5%) were higher than those in Andrology/Infertility (9.6%), Endourology (6.9%), and Oncology (5.3%).<sup>7</sup> The percentage of women subspecializing in endourology appears to have increased from the time of Netter et al.'s study (2004–2015, 6.9%) to our study (1987–2021, 8.4%). Spencer et al. in a survey of 733 practicing urologists found that 56.2% of female urologists compared with 37.9% of male urologists were fellowship trained, with more women working in academics compared with men ( $p < 0.008$ ).<sup>8</sup> In regard to academic leadership positions, 6.4% (3/47) and 14.9% (7/47) of female graduates served as residency program directors and fellowship program directors, respectively, and no women were department chairpersons. A study distributing the Culture Conducive to Women's Academic Success questionnaire to the Endourological Society listserv showed that male endourologists' perceptions of gender equity were incongruent with the reported experiences of their female colleagues.<sup>9</sup> Despite the rising number of



**FIG. 2.** The rise in U.S. and international Endourological Society fellowship programs. (Black bars are U.S. fellowship programs, white bars are international fellowship programs). U.S. = United States.

women in urology, there continue to be concerns about the lack of women in higher leadership positions.<sup>10</sup>

Despite our results, there were several limitations to our study. Our survey to fellowship program directors had a low response rate likely due to the complexity and time required to fill out the survey. We tried to mitigate this by listing all of the known fellows for each program in the survey such that the program director had only to verify the names and add any missing names as well as comment on the leadership positions of each fellow. However, we were able to overcome the low response rate by using the Endourological Society website (29% of programs listed former fellows, though the list was generally incomplete), by using the Endourological Society's fellows database, and through Google/LinkedIn/Doximity queries. We were unable to provide further descriptive information about the graduating fellows (including age, diversity, and length of fellowship) as these were not a part of the database but would serve as important future aspects to study. Our measure of fellows that go into academics and educational leadership roles may be an underestimation as we did not include adjunct faculty and did not include the department roles of vice chairs and associate program directors. Furthermore, we only looked at academic leadership positions (department chair, residency, and program director) which does not account for fellows that hold leadership positions outside of academia (private practice or industry). Finally, though our study focused solely on U.S. fellowship programs, it will be important to study the growth of international fellowship graduates and the effect they have in the educational spread of endourology and minimally invasive surgery.

## Conclusions

The progress of the Endourological Society can be directly tied to the historical growth of its fellowship programs and

the pursuit of an academic career by many of its graduates leading them to become the current and future educational leaders in the field.

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## Authors' Contributions

The authors confirm contribution to the article as follows: study concept and design: S.R.P., S.Y.N. Data collection: S.R.P. Analysis and interpretation of the results: S.R.P., M.A.K., S.L.B., S.Y.N. Article writing/editing: S.R.P., M.A.K., S.L.B., S.Y.N.

## Author Disclosure Statement

Sara L. Best is a salaried medical director at Labcorp.

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**Abbreviation Used**

U.S. = United States