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Research Article

A Twenty-five to Fifty Year Follow-up of Twenty-seven Pediatric Surgical Residents

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Abstract

This survey of 27 pediatric surgeons who were residents at the Children's Memorial Hospital in Chicago from 1970 to 1996 correlates their education, general surgery residency, extra training and research with their practice, publications and leadership positions. This study also reviews health issues, family life, continuing education, proficiency in index cases, intrusion of subspecialties and opinions on surgical education.

Keywords: pediatric surgery residencies**;** thoracic surgery; tumors

Introduction:

This survey of 27 pediatric surgeons who were residents at the Children's Memorial Hospital in Chicago from 1970 to 1996 correlates their education, general surgery residency, extra training and research with their practice, publications and leadership positions. This study also reviews health issues, family life, continuing education, proficiency in index cases, intrusion of subspecialties and opinions on surgical education.

Materials and Methods

Twenty-eight surgeons commenced the two-year residency at the Children's Memorial Hospital in Chicago from 1970 to 1995. One was never recommended for board certification and to the senior author's knowledge never practiced pediatric surgery. The remaining twenty-seven are the basis for this report. Nineteen surgeons responded to questions concerning their experience and opinions. Information on the remaining eight was obtained from obituaries, colleagues and the internet.

Tables 1 and 2 list the resident's gender, race, ethnicity, education and type of residency.

White males	18
White women	6
Asian-American	1
African-American	1
Middle Eastern	1

Table 1: *Gender, race, ethnicity*

Medical School		Residency	
State supported	18	University	13
		City/county	4
Private	9	Private/academic affiliation	9
		Military	1

Table 2: *Education/ residency*

Research or Extra Clinical Training and Eventual Practice

Two spend a year and another six months in medical pediatrics prior to their general surgery residencies. Two trained in thoracic surgery and became board certified and another became certified in plastic surgery after their pediatric surgery residencies. This group with extra clinical training all remained in an academic practice and two became directors of pediatric surgery programs.

Three spent one year and another six months doing basic research during their general surgery residency. They did not continue with research in their practice. One produced 30 and the remainder fewer than ten publications. Three others had three months of 'protected time' for research during the general surgery residency; two became pediatric surgery program directors and the third has been in a full time academic practice for his entire career. All are full professors. This group published from 15 to 145 articles or book chapters for an average of 75.

Eight residents spent a year between the general and pediatric surgical residencies. Four combined research with work on ECMO. Two did clinical pediatric surgery in unapproved programs and one combined pediatric and adult surgery. One had a year of research and a second year in a transplantation fellowship.

Six of this group initially chose full time academic practice but one left after ten years for private practice. Two of these became pediatric surgery program directors. Another became the chief of a pediatric surgery division in a university hospital and two chose private practice. The numbers of publications in this group ranged from 6 to 190 with an average of 42.

Ten surgeons had neither research nor extra clinical experience prior to their pediatric surgery residency. Five of them practiced 'full time' in academic children's hospitals throughout their careers and four of these were program directors and surgeons in chief. Two initially were in full time positions; one left because of ill health and another for personal reasons. Three remained in private practice throughout their careers.

The numbers of publications in this group ranged from five to 128, one wrote 71 papers plus a textbook. The average number of publications was 43. Two, who were very productive died early in their careers.

Table three correlates research, extra clinical training and the publications of directors of pediatric surgery training programs and university divisions.

	Res/gen surg	Int year/clinical	int year/res	extra train after ped surg	publications
1.pd	no	no	no	thoracic	114
2.pd	no	no	no	no	128
3.pd	no	no	no	no	61+book
4.pd	no	no	no	no	54
5.pd	3mon	yes	yes	no	190
6.pd	no	no	yes	no	175
7.pd	3mon	no	no	plastic	20
8. divhd	no	yes	no	no	72
9.surch	3mon	no	no	no	22
10. divhd	1 yr	no	no	no	30

Table 3: *Leadership Positions*

Pd/program director divhd/head, university division surch/surgeon in chief, childrens hospital; int/interim year

Health, Family and Retirement

Five residents who trained between 1970 and 1980 died with cancer and two more from the same decade survived cancer. There was one death due to biliary sepsis following a cholecystectomy. One survived a cerebral hemorrhage and retired at age forty. Another retired at age 60 after having a dissecting aortic aneurism, testicular cancer and debilitating back pain. Two surgeons have had coronary artery stents. One surgeon had an episode of depression requiring a six months leave from practice. Two others reported stress, especially after a night on trauma call. The remainder are in good health. One retired at age 69 but continued to work in locum tenens until age 78. Others are in active practice at ages 73, 70 and two at age 67. The remainder plan on working beyond age 65.

Four of the twenty-seven were divorced, two never married. Although four felt that practice had not interfered with their family life, the remainder indicated that work had taken a toll on their children, especially during their early years. The daughter of one surgeon asked, "Is daddy going to visit tonight?" One surgeon summed the problems of family life, "There is not enough time in the day to be a pediatric surgeon, husband and father." Another commented; "excessive work hours and sleep deprivation affects one's immune system and when extremely exhausted one is more likely to become ill."

Technology and Continued Education

Those who first learned open surgery felt that their knowledge of anatomy and pathology eased adaption to minimally invasive techniques. There was one dissenting opinion: "it was a huge paradigm shift from open to minimally invasive surgery. The knowledge of anatomy learned during open operations is invaluable but the muscles used and the hand-eye coordination required is vastly different. I referred the complex procedures to my colleagues."

Most respondents took short courses and learned from journals, textbooks and local hospital conferences. Only two thought that surgical meetings met their educational needs. One commented: "too much of the meeting is devoted to basic science. The clinical presentations are useful, but the basic science papers are of interest only to others in the same niche."

One senior surgeon summed up continued education as follows; "Ongoing patient care with daily challenges and helping surgical residents present their patients at conference made me smarter. Younger, driven surgeons helped keep me up to date. These factors were more compelling than national meetings or texts."

Index Cases

These surgeons saw no decrease in the incidence of birth anomalies and had enough index cases to remain proficient. Four directors of pediatric surgery programs in large institutions said their fellows had 'plenty' of index cases.

Unfortunately, pediatric surgery has lost important cases to other specialists. In one children's hospital, the liver tumors, biliary atresia and choledochal cysts were referred to a transplant center, and two more mentioned a decrease in oncology patients. The Ear, Nose and Throat service, in all but four institutions, have taken over thyroid surgery as well as cysts and sinuses of the neck. Pediatric orthopedists now care for children with soft tissue extremity tumors. One surgeon stated, "Pediatric ENT does all the tracheotomies. We do no thyroidectomies and we must compete for branchial cleft anomalies, thyroglossal cysts and neck biopsies." In one instance, thyroids were referred to the endocrine surgeons.

Five respondents mentioned sharing hernias, orchidopexys and Wilms tumors with the urology service and in one instance the urology service did all intersex cases and testicular tumors. "The pediatric urologists had bad results with Wilms tumors, so we do all of them now. I did duct ligations for years, but now the cardiothoracic surgeons do all of them."

Postoperative Care

Eight respondents controlled postoperative care, but most said care in the NICU and PICU was shared with intensivists. Comments included the following "The team approach is here and will probably stay. We round together in the morning and the fellows are highly involved in the NICU by writing orders. This is less so in the PICU." "Care is largely led by surgeons, but shared in the NICU and PICU. A collegial cooperative team seems essential given the array of modern technology."

There were two specific comments on 'team' care. "I have not seen improvement in patient care by the team approach." "The team approach has unequivocally improved care."

Perhaps, the best summary is: "It depends on how things are done in a given practice setting. Some are more cooperative than others. The ICU became controlled by intensivists and they consulted surgeons."

Corporate Medicine and Administration

There was concern about obtaining insurance approval for certain operations and issues with the length of postoperative stay. One surgeon mentioned spending increased time on financial matters and that patient satisfaction surveys were irritating distractions. Another said, "Corporate medicine and hospital administration infringe on my practice in several respects, but I am a strong advocate and always fight for my patients."

"Corporate medicine tells you when to send a patient with a TEF home until you talk to them. We spend a lot of time doing peer reviews that is extremely frustrating.

If I don't code an operation properly or don't submit it within 24 hours, the insurance companies won't pay."

One surgeon, in a large multispecialty group felt little or no restriction on his work but he commented on electronic records. "The electronic medical record which initially looked like a big advance became more time consuming and burdensome than the paper record.

Extracurricular

All of the reporting surgeons had additional duties, such as director of a trauma program or of student education; others served on surgical society committees. One became the associate chief medical officer of a children's hospital. Another became the CEO of a consortium of children's hospitals. Two have served tours of duty with the army in Iraq or Afghanistan. One surgeon has been a lay minister for ten years and had served as chief of surgery at a county hospital; another completed law school and is a published author.

Discussion

Research during the general surgery residency is an important factor for residents to match in pediatric surgery and it is commonly thought that residents need research to learn experimental design and to understand scientific techniques [1-3].

However, in this study residents who spent six months to a year in research during general surgery did not include research in their practice, had fewer publications and were less likely to have leadership positions. One commented; "I do not regret the year, but I think the biggest thing I learned was that I didn't want to do research in my career."

The residents who matched on their first application and the residents who spent time in either a clinical or research year between residencies had more publications and were more likely to assume leadership positions. The extra experience with ECMO was helpful in practice. The resident who had a year of transplantation commented on the increased practice opportunities.

In this study, surgeons in private practice were happy with their choice, provided great service to their communities and often were the only surgeons who saw children without insurance. They taught students and residents, yet lack the prestige, faculty advancement and recognition by surgical societies. One respondent, who had been in a full time academic position, but left for private practice said this, "Working with APSA and the surgical section has been less than rewarding if you are not an insider. That goes double if you are not in academic medicine."

There is no apparent explanation for this cluster of residents from a single decade who developed cancer. Halothane, a popular anesthetic agent was once suspected of being carcinogenetic in OR personnel, but further evidence for the health hazards of anesthetics are inconclusive [4-6].

Nearly all of the reporting surgeons expressed stress as a result of their practice although the incidence of stress, 'burnout' and divorce was less in this group than among general surgeons [7]. The four surgeons who reported minimal family stress suggested the importance of religious faith, a supportive spouse and strong family ties.

One surgeon added: "My wife and I tried to take the time to have dinner with each other at least once a week. I think spirituality is extremely important. I read my bible and always kept my mind focused. I also sacrificed sleep to exercise. If you have commitment you will survive the tough times."

Loss of Patients

Dr. Robert Gross in the first chapter of "The Surgery of Infancy and Childhood", published in 1953 defined pediatric surgery as an age related specialty, not limited to any organ system [8].

"The Surgeon and the Child" by Willis Potts also described a 'new' specialty that encompassed cardiac, urology, head and neck, thoracic and abdominal surgery [9].

The surgical subspecialists, alarmed by these upstarts, initiated programs in pediatric cardiac, urology, orthopedics and ENT and have gradually taken over patients that were once considered in the domain of pediatric surgery.

The surgeons in this group as well as previous authors have expressed concern about newly trained pediatric surgeons who do not perform enough complex operations to maintain competence [10]. This may be due to the increased numbers of pediatric surgeons, the intrusion of specialties and pre-natal diagnosis with abortion. The eighty-hour week has decreased residents operative experience as well as participation in conferences, rounds and post-operative care without reducing 'burnout' in surgical residents [11].

There was near unanimous agreement to keep the length of general surgery residency at five years, to lengthen pediatric surgery to three years and to reduce the number of pediatric surgery training programs. It may be advisable to replace time spent in research with clinical rotations.

Conclusion

Surgical educators should consider replacing research during the general surgery residency with more clinical time to make up for the decreased work load imposed by the 80-hour week rule. The pediatric surgical residency could be extended to three years, perhaps by retaining senior residents as junior attendings. They could assume responsibility, rotate on night call, and if desired, pursue research interests.

Setting aside more time for family, religion and outside activity may reduce stress on surgeons in practice.

We must maintain technical excellence, good clinical judgement, compassion and devotion to sick children that are the hallmarks of pediatric surgery if pediatric surgeons are to regain patients lost to other specialists.

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