Challenges of Training General Surgery Residents to Do Urology in the Developing World

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NEUROGENIC BLADDER (C POWELL, SECTION EDITOR)

Challenges of Training General Surgery Residents to Do Urology in the Developing World

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Abstract

Purpose of Review The purpose this manuscript is to describe the work of one program in Kenya, East Africa, to train general surgery residents in urology to make available the much needed service to the underserved rural population.

Recent Findings People in developing countries continue to face the challenge of accessing surgical care with a ratio of 1 surgeon to 20,000 people. This is due, in part, to the inadequate number of trained surgeons. The availability of specialized surgical care such as urology is even more unlikely due to fewer numbers of specialists in urology. Such disciplines take many years of training before a person qualifies as a specialist. This requires highly motivated and suitable candidates who are willing to spend time in training and acquiring skills as well as proper infrastructure for training. There is an effort to train general surgical residents in enhanced skills to make available urology services to the wider population. This involves equipping them with skills in general urology, basic skills in handling endoscopic equipment, and basic endo-urology procedures such as diagnostic cystoscopy with or without biopsy and direct vision urethrotomy (DVU). The residents are also exposed to visiting faculty through international collaborations, surgical camps, and workshops to enhance their skills and knowledge.

Summary Equipping general surgical residents with urology skills will greatly reduce the shortage of these services to the people of developing countries.

Keywords Urology training · General surgical residents · Surgical skills · Specialized surgical care · Skills transfer · International collaboration

Introduction

Surgical care is not available for most of the world's people. The Pan-African Academy of Surgeons (PAACS) overview of the situation in Sub-Saharan Africa estimates that on average, there is 1 surgeon for every 250,000 people in sub-Saharan Africa [1••], and in most underserved rural areas, this falls to 1 surgeon per 2.5 million people. In view of this huge challenge, PAACS has come up with a training program which trains African doctors who are willing to remain in Africa to help solve this deficit [1••]. The need for well-trained surgeons is great. To put this in perspective, the World Health Organization estimates that to achieve quality care you need 1 surgeon for 20,000 people [2••]. However, the cost of training surgeons remains high whether in wealthy of impoverished countries [2••]. In addition to lack of trained surgeons, infrastructure also contributes to this problem, and it has been noted that among five Sub-Saharan countries (Kenya, Ghana, Rwanda, Tanzania, and Uganda), 22–46% have reliable electricity and running water, while as few as 14% have training and supervision in place. (Hsia, R. Y et al. [3••]). Yet, none of the hospitals had the infrastructure that met the minimum standards by the World Health Organization that are necessary for provision of emergency surgical care [3••]. In addition to workforce and infrastructure problems, there is unequal distribution of trained surgeons such that while 75% of the population lives in rural areas, surgeons tend to concentrate in urban, highly populated areas. In these countries, there is a problem of retaining skilled health force in rural areas. This has been attributed to several factors including poor working conditions, disabling work environment, and unavailability of further training (Bergstrom, S et al.) [4••] The current

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availability of surgeons for the underserved rural African would be comparable to having four surgeons in the US city of Chicago. Many solutions have been proposed to remedy this problem, and since the causes are multi-factorial, effective solutions will be as well. Global poverty is one of the root causes of the lack of surgical care, and the solutions to global poverty will not be forthcoming anytime soon. Many proposed solutions to lack of surgical care, therefore, involve accessing resources from materially rich regions of the world to provide care and programs to poor regions. This is noble, but one criticism to this approach is that it may not be sustainable and must be backed with evidence to prove that such development and relief efforts achieve specific goals [5•, 11•]. Another solution is for the indigenous surgeons to train medical students and residents to fill these needs. Since there is a lack of general surgeons, there is also a lack of surgical sub-specialists. This includes urologists. The purpose this manuscript is to describe the work of one program in Kenya, East Africa, to train general surgery residents to gain skills in urology.

The current population of Kenya is projected to soon reach 47 million people in 2017 (United Nations Department of Economic and Social Affairs) [6•]. The number of urologists in Kenya number about 30. The Moi Teaching and Referral Hospital (MTRH), the second largest referral hospital in Kenya, is in the western region of the country which serves about 24 million people from western region of Kenya, part of eastern Uganda and South Sudan. MTRH is the home of Moi University School of Medicine and the two combined institutions are served by only three urologists. Most patients travel from far seeking urological services at this institution. Delays in timely services are therefore bound to occur due to a long waiting list; therefore, the need for training of more urologists is of great importance.

Urology Training

Training urologists in Kenya is a long and tortuous journey. After undergraduate training, one is expected to do 1 year on internship, followed by 2 years of working to gain experience in surgery. After this, the most fortunate, but not all, join residency in general surgery for a period of 4 years. Suitable candidates are selected after an interview. This is important in picking residents with basic surgical skills and experience for training. A study by Neely David et al. showed that there is a need for a predictive algorithm helps rank the applications and most suitable ones are selected for training (Neely, D et al. [7•]). Four main factors that help rank the applicants include school quality, overall medical school performance, medicine performance, and licensing examination score [7•]. It is only after completion of the surgery residency that one has the chance to do a fellowship in urology, which in most cases is in a foreign country. The trend currently is to equip surgery residents with urology skills during the 4-year training.

Moi University Department of Surgery started a residency in general surgery in 2011. The training takes an average of 4 years. So far, four residents have graduated with a Masters in Medicine (MMED) degree in general surgery. Currently, we have 42 residents in training. During their training, they do an exclusive urology rotation for 8 weeks. Those that do not graduate in time may get additional rotations in the urology unit. They participate in the preparation of patients and assisting in the operating theaters and being allowed to do some of the surgical procedures by themselves. Skills in general urology are passed along during training. Basic skills in endoscopic work such as diagnostic cystoscopy and direct vision urethrotomy are taught. Two of the commonest conditions at MTRH are benign prostatic hyperplasia (BPH) and urethral strictures. With the changing trends in etiology and complexity of urethral strictures (Jibril Oyekunale [8•]), there is need to equip the residents with skill in managing urethral strictures by offering a lasting solution to the patients compared to dilatations and urethrotomies which have 18 fold increase in recurrence in the above study. Residents are taught how to perform simple anastomotic urethroplasty in addition to open prostatectomy [8•]. The residents are also exposed to common pediatric urologic surgical procedures for common conditions such as hypospadias, testicular torsion, undescended testes, and hydrocele/hernia repair. Residents can learn how to handle and assemble endoscopic equipment and taught how to perform cystoscopy for diagnostic purposes and direct vision urethrotomy (DVU). During transurethral resection of the prostate (TURP), they can learn the anatomy of the lower urinary tract and the basic principles of performing a TURP. However, they are unlikely to practice this due to lack of equipment at most Kenyan hospitals. These telescopes and resectoscopes are expensive, get damaged often, and most county government hospitals would be unwilling to buy them. Like in many third world countries, urethral strictures remain one of our commonest urological surgical problems (Mugalo, EL et al. [9•]) with urethritis and accidental trauma being the commonest etiological factors at 51% and 47% respectively [9•]. We therefore endeavor to equip our residents with understanding of the principles and to master the technique of repair of simple urethral strictures. Training surgery residents on how to do simple anastomotic urethroplasty would greatly add to skilled manpower that can handle such conditions, allowing only the complicated ones to be referred to our center.

International collaboration helps bring skills to the environment of practice making it the most cost-effective method of training and skills transfer. The collaboration between Moi University and Indiana University dates to 1989. There exists an exchange program for both students and faculty between the two institutions. This collaboration is not

specific to urology which currently exists as a unit under general surgery. However, every year, a team from Indiana University comes to Kenya for a period of about 1 week for a surgical camp at which time several urological procedures are performed. The team usually consists of a urologist and a nurse and urology residents. These visits serve a dual purpose. The urologists in Kenya gain by learning new skills and use of equipment brought along by the visitors, while our urology residents get a chance to assist and interact with the visitors. This helps fill knowledge and skills gaps that may be existing locally. Senior residents that may have rotated through urology earlier may be recalled during this time for purposes of working with the visitors. Actual skills transfer has been gained in urology through this collaboration. Future arrangements involving short trainings in highly specialized areas like endo-urology with the help of external faculty will lead to further skills enhancement and improvement of service delivery. Such a program may be strengthened with the development of a curriculum and certification after assessing for competency [10•]. A review in assessment for competence of trainees concludes that this ensures improved patients' safety and outcomes [10•].

One of the major challenges in training is lack of equipment or a delay in replacement of broken-down equipment. This is due to budgetary constraints and stringent procurement procedure. Replacement of worn-out equipment or those that may have broken down may take a very long time leading to delay in the availability of these equipment. During such a period, our residents may miss the opportunity to learn certain surgical procedures that require such important piece of equipment. This leaves a gap in skills acquisition which disadvantages them upon graduation. Our resident also luck opportunities to attend conferences and workshops either locally or internationally. Many of these activities require financial resources well beyond their reach. Early in 2018, we facilitated two of our senior residents in General Surgery to attend a 1-week urology camp and annual Kenya Association of Urological Surgeons (KAUS) annual scientific conference. Their expenses were fully paid for by the East African Kidney Institute (EAKI). This gave them an opportunity to work with other urologists from the country and participate in a wide range of urological operations including endo-urology. Such an exposure improves their skills and creates interest in the practice of urology and further training.

Conclusion

There are many approaches to meeting the lack of urologic care in resource poor regions of the world. Our program in Kenya at Moi University Teaching and Referral Hospital employs Kenyan surgeons to train Kenyan general surgery residents to treat the most common urologic conditions in Kenya. This has been done in collaboration with Indiana University, but is not dependent on the collaboration. Challenges highlighted may affect the training of our general surgical residents in equipping them with skills in urology. International collaborations are very cost-effective method in skills transfer to third world countries.

Compliance with Ethical Standards

Conflict of Interest Dr. Edward Mugalo and Dr. Charles Powell declare that they have no conflict of interest.

Human and Animal Rights and Informed Consent This article does not contain any studies with human or animal subjects performed by any of the authors.

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