

Career Resources

Endocrine surgery

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Abstract. The increasing complexity in the management of surgical disorders of the thyroid, parathyroid, adrenal glands, and neuroendocrine pancreas tumors have led to the emergence of endocrine surgery as a surgical subspecialty. Studies showing the relationship between hospital/surgeon volume and patient outcomes highlight the importance of advanced postgraduate training in this field.
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The discipline of endocrine surgery encompasses the surgical management of disorders of the thyroid, parathyroid, and adrenal glands and neuroendocrine tumors of the pancreas and gastrointestinal tract. The management of patients with surgical endocrine disease is intellectually stimulating and often complex, requiring a multidisciplinary team of endocrinologists, radiologists, pathologists, and surgeons. Over the past several decades, as the incidence of surgical endocrine disorders has increased, endocrine surgery has emerged as a recognized specialty within the discipline of general surgery.

The increasing incidence of diseases of the thyroid, parathyroid, and adrenal glands is likely a combination of improved radiographic imaging and diagnostic techniques as well as a true increase in the incidence of disease.^{1,2} Primary hyperparathyroidism affects 1 in 500 women and 1 in 2,000 men older than age 40 years, with an incidence of 100,000 new cases each year.³ Palpable thyroid nodules are present in 4% to 7% of American adults and thyroid cancer, with an estimated 37,000 new cases in 2007, accounts for 1.5% of all new cancers in the United States.^{4,5} Incidental adrenal nodules have been reported in up to 4% of abdominal computed tomography scans and up to 32% of autopsy studies.^{6,7}

There also have been advances in the understanding of the pathophysiology and genetic basis for surgical endocrine diseases. As diagnostic modalities and radiographic imaging techniques have improved, the preoperative, intraoperative, and postoperative management of patients has become more refined and increasingly intricate, involving multimodality preoperative imaging, minimally invasive procedures, intraoperative parathyroid hormone monitoring, radio-guided parathyroid surgery, laparoscopy, video-assisted surgery, and, more recently, robotic surgery. Despite this growing complexity in surgical technique, studies have shown that across the United States, most endocrine procedures (thyroidectomy, parathyroidectomy, and adrenalectomy) are performed by surgeons whose practice is not focused on endocrine surgery. Saunders et al⁸ analyzed data from the National Inpatient Sample between 1988 and 2000 and found that surgeons whose practice was made up of less than 25% of endocrine procedures performed 82% of all thyroidectomies, 78% of parathyroidectomies, and 94% of adrenalectomies. Surgeons with more than 76% endocrine practices made up only 1% of all surgeons performing thyroidectomy, parathyroidectomy, and adrenalectomy.⁸

One possible explanation for these findings is that graduating general surgery chief residents have a highly variable experience in endocrine procedures, with the majority having minimal exposure to endocrine surgery. In a review of data from the Residency Review Committee, Harness et al^{9,10} showed that most residents have inadequate experience in thyroid, parathyroid, and adrenal surgery. The most

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of thyroidectomies performed ranged from 7 to 10 per graduating resident; this decreased to a common number 2 parathyroidectomies and no adrenalectomies or neuroendocrine pancreatetectomies. Sosa et al¹¹ found that graduating chief residents performed just 11% of the average experience of endocrine surgery fellows.

However, surgical volume has been shown to be associated with improved patient outcomes. Birkmeyer et al¹² found that higher hospital volume was linked to decreased mortality for 14 cardiovascular and oncologic procedures. Surgeon volume also is associated with improved outcomes; based on Maryland data, surgeons performing 100 or more thyroidectomies had the fewest complications, with no association observed between hospital volume and outcomes.¹³ High surgeon volume also has been linked to improved outcomes in children and in elderly patients undergoing thyroidectomy and parathyroidectomy.^{14,15}

For all the earlier-described reasons, advanced postgraduate training in endocrine surgery for general surgery residents seeking to develop expertise in the management of surgical endocrine diseases is essential.

Fellowship training in Endocrine Surgery

Endocrine surgery fellowships are sponsored by the American Association of Endocrine Surgeons (AAES). In response to the growing need for advanced postgraduate training and the emergence of endocrine surgery fellowships at several high-volume centers, the Education and Research Committee of the AAES developed a formal fellowship curriculum, which was ratified by the AAES Executive Council in 2005. The curriculum was designed to ensure similar high-quality training across different institutions; overall objectives are as follows:

- Show knowledge and understanding of endocrine gland anatomy and physiology, both the normal and pathologic states;
- Show the ability to diagnose clinical endocrinopathies associated with endocrine surgical diseases;
- Develop knowledge of the inherited endocrine disorders and understand the role of genetic counseling and testing;
- Have an appreciation of the current controversies and current areas of research in the literature within endocrine surgical diseases; and
- Show the ability to apply this knowledge and safely perform the appropriate surgery for a given endocrine surgical disease.

A formal curriculum also has been created for general surgery residents.

At present, there are no Board examinations for graduating fellows. There are 19 clinical fellowships in the United States, most of which are 1 year in length. Fellowship programs participate in the AAES match program. The application process should begin 1 academic year before the

anticipated date of entry to the fellowship. Further information on the fellowship, including a list of programs and requirements, can be found at the AAES web site (available: <http://www.endocrinesurgery.org/fellowships/fellowships.htm>).

Membership in societies

The AAES is the premier organization for this specialty. Established in 1980, its mission is the “advancement of the science and art of endocrine surgery and maintenance of high standards in the practice of endocrine surgery.” Active membership is limited to surgeons who are Fellows of the American College of Surgeons or its international equivalent and who have a major interest and devote significant portions of his/her practice or research to endocrine surgery. Active members must be certified by the American Board of Surgery or its equivalent in Canada, Central, or South America and have attended at least 1 prior meeting of the AAES. Surgeons who have completed their surgical training and are awaiting qualifications to become an active member may apply for candidate membership in the AAES; a letter of sponsorship from an active or senior AAES member is required. Resident/fellow membership is limited to those in a residency, research, or clinical fellowship training program.

The AAES annual meeting is held each spring. The AAES encourages the submission of abstracts by residents and fellows for the annual meeting; prizes are awarded to the best resident/fellow articles in both clinical and basic science research. Prizes also are awarded for the poster competition and interesting case sessions. More information on the AAES can be found at <http://www.endocrinesurgery.org>.

Other surgical organizations of interest include the Society of Surgical Oncology, International Association of Endocrine Surgeons, Australian Endocrine Surgeons, British Association of Endocrine and Thyroid Surgeons, Asian Association of Endocrine Surgeons, and the American Society for Head and Neck Surgery. Nonsurgical societies include the American Association of Clinical Endocrinologists, American Society of Clinical Oncology, the Endocrine Society, and the American Thyroid Association.

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