What is Urology?

Historically, the subject, which clearly established the specialty of urology as being distinct from general surgery, was the treatment of obstructive uropathy. This treatment ranges from the correction of obstructing posterior urethral valves or ureteropelvic junction obstruction in the infant to the correction of bladder outlet obstruction from benign prostatic hyperplasia in the older male. Through the decades, we have witnessed a tremendous increase in our general understanding of the diverse functional disorders of urine transport associated with various overt and covert forms of neuromuscular dysfunction. The rapidly evolving discipline of urodynamics has established itself as a major resource in the diagnosis and therapy of such disturbances.

Stone disease of the urinary tract has always provided a substantial portion of general urologic practice. The recent introduction of rigid and flexible ureteroscopy has greatly improved the capacity of the urologist to deal with the problem while the management of stones in the kidney has been revolutionized twice in the immediate past: first with the introduction of percutaneous methods for stone disintegration and extraction, and secondly by the application of shockwave lithotripsy. Collectively these techniques have largely rendered open surgical procedures for dealing with kidney and ureteral stones obsolete. These new technologies remain under urological stewardship. In addition, advances in the diagnosis and metabolic management of recurrent nephrolithiasis allow urologists to reduce the risk of recurrent stone formation.

Another area of major urologic concern is that of congenital anomalies. The urinary tract is affected by congenital anomalies more than any other organ system. These congenital abnormalities run the gamut from the relatively common problem of cryptorchidism to the complex area of intersexuality. These patients are usually cared for by pediatric urologists.

Involvement of the urologist in the problems of renal insufficiency and end-stage renal disease has been necessitated by an enormous increase in the number of patients on dialysis and requiring transplantation. In a number of centers, urologists are the prime surgical arm for renal transplantation and, in others, serve as members of the surgical team. This practice has tended to increase the experience of the urologist in vascular surgery, which has been beneficially incorporated into other areas such as renal vascular reconstruction and in the new microvascular surgical procedures performed for certain cases of impotence. The enhanced communication between nephrologist and urologist often leads to involvement in the general area of hypertension and adrenal disorders.

The treatment of malignant disease is a very large portion of urologic practice. Some of the most encouraging results in the medical and surgical management of solid tumors have involved genitourinary tumors, namely testis tumors and Wilms tumors. The development of multimodal therapy, in which chemotherapy, radiation therapy, and surgical treatment are used in conjunction, will hopefully improve the results of the treatment of other genitourinary malignancies. Newer diagnostic methods for the

detection of prostate cancer have recently emerged and currently the diagnosis and treatment of prostate cancer occupies much of many urologists' time.

Urinary tract infections affecting every age group in both sexes comprise a significant fraction of urological practice. While urinary tract infection may be the obvious and definitive clinical symptom at presentation, it may also reflect other disorders of the urinary tract such as obstructive uropathy. Much recent interest has been focused on the characterization of pathogenic bacteria that are particularly prone to cause persistent urinary tract infections, specifically pyelonephritis. Bacteriuria is such a common clinical problem that there is inevitably a large cross-disciplinary approach to this problem. Urologists often interact with internists, pediatricians and gynecologists in the management of patients with bacteriuria.

The importance of urologic problems seen primarily in women (stress urinary incontinence, interstitial cystitis, urethral diverticuli, etc.) is being increasingly recognized. The diagnosis and therapy of urinary incontinence constitute a significant portion of most urology practices. New therapies, both surgical and non-surgical, are being constantly developed. The number of female patients treated by urologists is substantial, and urologists need to understand gender differences in the medical and surgical approaches to these patients.

Male sexual dysfunction and infertility have become virtual subspecialties. The management of impotence has been revolutionized first by the introduction of prosthetic devices in urology. The area of prosthetics in urology has gradually expanded to encompass not only the various forms of penile prostheses, but also the use of the artificial urinary sphincter. The management of infertility in the male has generally focused on the surgical correction of various acquired and congenital obstructions within the genital system, and increasingly sophisticated efforts to diagnose and treat the problem of coexisting male subfertility and varicocele. Continued improvements in the medical management of male infertility require a high level of expertise in the area of reproductive physiology and endocrinology.

Trauma to the genitourinary system involves the urologist as one member of the trauma team during the initial evaluation of the multiply injured patient. Recent improvements in imaging techniques for the evaluation of renal trauma and standardization of approaches to the problem of lower urinary tract trauma have significantly improved the care of such patients. There are a vast number of operative approaches to the problem of the late correction of injuries to the lower urinary tract, which fall under the general heading of reconstructive surgery.

The specialty of urology is constantly changing. Much of this change has been the result of improved technology. Refinements in the area of ureteral and renal endoscopic surgery have already revolutionized the therapy of urinary tract stones and, working in conjunction with the new generation of extracorporeal lithotriptors, many of the traditional surgical and even endoscopic approaches to the problem of renal and ureteral calculi are now largely obsolete. Other traditional urologic procedures, specifically vasovasostomy and hypospadias repair have improved results in selected

cases with the use of the surgical microscope. Skill and experience using the surgical microscope will undoubtedly be an important part of urologic practice in the future. Lasers are in their infancy, but will influence the practice of urology in the management of neoplasms and, in a somewhat different context, the management of ureteral calculi. Much recent research effort has evolved in the area of laparoscopic surgery. Many urologic operations, which have been done by open surgery in the past, can now be performed through the laparoscope. The development of new cancer chemotherapeutic agents has significantly altered therapy for some urologic cancers. In summary, urology is a rapidly changing and exciting area of medicine, which requires practicing urologists to be actively involved in continuing education.

(Borrowed from the AUA website)