
LEGENDS IN UROLOGY

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When I received the invitation to contribute an article to this series about “*personal accomplishments I am proud of and which could be inspiring for young urologists*,” I felt flattered, but turned it down. I really do not feel like a “legend,” and trying to find arguments for my case appeared prohibitive. The Editorial Board of CJU, after considering my excuses, determined that they do not meet (their) standards for releasing me from this “*responsibility to the future generations of urologists*.” I gave in, and the following look back at a life in academic urology attempts to meet this challenging invitation.

I was born in then war-torn Central Europe. The hardships of the situation left only a minor impact on a youngster who had never known anything else, and even the iron curtain dividing everything into a “good” or “bad” world in the near vicinity appeared acceptable. Dominating everyday life was the multiethnic and multicultural character of the region. Already as a child I became accustomed to people speaking different languages and living in different cultural environments. I learned Italian and French in school and used it freely in many visits to these nearby countries. My father was an academic urologist. From 1953 to 1955 he worked at the University of Iowa Medical School. His family was with him and I attended a public junior high school in Iowa City. A good command of the English language as a result of this schooling proved to be a key element for success in my professional life (and may also be the reason why I am married to an American today). My father later became Chairman of the Department of Urology at the University of Innsbruck, and many of his American urology colleagues also became close family friends. Willet Whitmore, Willard Goodwin, Harry Spence, and Victor Marshall were among them. Their views, which often seemed to contradict common local opinion, also left a mark on an impressionable student still far from studying or practicing medicine. The lesson learned -- the first of several life lessons: Be aware of variability of ideas throughout the world, the need to be able to communicate, and the need to understand that others speaking a different language and having different views may very well be right. In a broader sense, this is underlined by the rapid change of urology seen in Eastern Europe after the fall of the iron curtain, and perhaps even more with the dramatic development of the field in Asian countries today.

With my early exposure to urology it was a never a question for me that I would become anything other than a urologist. I completed my residency at the Department of Urology, at the University of Mainz, in Germany, under the leadership of Rudolf Hohenfellner. Rudi was the ideal chairman. A brilliant surgeon who had pioneered new approaches to urinary diversion and bladder reconstruction, he always considered that his core objective in training residents was to provide them with clinical expertise. This resulted in a demanding patient load and gave residents abundant exposure to the field under expert mentorship. In parallel, he was always open to innovative suggestions, and he expected all members of the team to continuously contribute. New ideas, new technologies, and an impressive influx of third-party funding created an aura of ongoing change. A growing number of visitors from around the world and invitations to present and publish internationally resulted in global networking. The stage was the world. I was thrilled when I became a staff member in the department in 1976.

At the time, upper-tract urolithiasis accounted for about one fourth of all incisional surgery in urology, and at a tertiary-care center such as Mainz, most of the procedures were for recurrent stones. Nephron-sparing nephrolithotomy techniques were state-of-the-art at the time, and avoiding ischemia-induced renal damage became a major challenge. Slush-ice cooling was being developed, but in “redo” procedures it proved difficult because of perirenal scarring. In 1974 I was awarded a scholarship to visit Folkert Belzer at the University of California, San Francisco (UCFS) and

Stephen Sacks at the University of Southern California, Los Angeles (USC) to study their techniques of perfusion cooling of kidneys harvested for transplantation. We subsequently developed a method of in-situ hypothermic perfusion of kidneys that in canine kidneys provided better ischemia protection than surface cooling. The clinical challenge was avoiding the need to directly dissect and manipulate the renal vessels. In collaboration with two ingenious pioneers of interventional radiology from Mainz, Max Georgi and Rolf Günther, we developed a technique of in-situ transarterial balloon occlusion of the renal artery and simultaneous hypothermic perfusion of the ischemic kidney. It solved the problem efficiently and received immediate attention from specialists around the world. In fact, it is being revived again today for ischemia protection in laparoscopic partial nephrectomy. The lessons learned: Scrupulous evaluation of existing knowledge and joint efforts by experts on various aspects of a problem are keys to successful solutions. We observed some dilatation of the renal artery after balloon occlusion, but we had not anticipated using the technique for dilating stenosed renal arteries. It was Andreas Grüntzig who applied this only a year later and established balloon dilatation of renal artery stenoses as a breakthrough development. What this also demonstrated was that only small variations in the use and methodology of similar techniques may have a profound clinical impact, or, in simpler words, the road to fame is narrow and easily missed.

My renal perfusion work was the basis of a successful thesis, and I was awarded the prestigious Theodor Billroth Award from the Austrian Society of Surgery. More important, it brought me in close contact with urologists from all over the world working on similar projects, mainly John Wickham and John Fitzpatrick from the Institute of Urology in London, Bill Boyce and Marty Resnick from Wake Forest University in North Carolina, Bitz Eisenberger and Christian Chaussy from the University of Munich Grosshadern, and Lars Gelin and Silas Pettersson from the University of Gothenburg. In 1976 we and some other enthusiasts formed the European Intrarenal Surgical Society (EIRSS) to concentrate on aspects of this segment of urology. In the following 10 years the society changed the face of renal surgery – shock wave lithotripsy (SWL), percutaneous renal surgery, and ureteroscopy were first presented at its annual meetings, and the close networking of its members contributed decisively to the rapid acceptance of these surgical techniques. Most of the founding members of the EIRSS were surgeons who were renowned for their expertise in complex nephrolithotomy. Ironically, within a decade, largely as a result of this international networking, the procedure became obsolete. Another lesson learned: Complex surgical procedures with a steep learning curve may rapidly become outdated, and are an unreliable sole pillar upon which to build a surgical lifetime. This was also underlined by another key activity of the EIRSS. In a first multicenter analysis of a large number of patients with renal cell cancer in one or both kidneys, nephron-sparing tumor excision was shown to achieve oncological results comparable to those from classical tumor nephrectomy in the presence of a normal contralateral kidney. It initiated a new era in the surgical therapy of renal cell cancer, and has kept “intrarenal” surgeons in business, more than ever.

In 1980 I was appointed urologist-in-chief of the Department of Urology at Rudolfstiftung, Vienna. This highly respected institution was founded in 1902. In 1980, it had a large patient base, but no academic connection. The staff consisted of well trained and experienced urologists, all older than 50, and me – aged 38. The challenge was to lead a department focused on pure clinical urology, and everyone expected changes with my appointment. Traditionally, Rudolfstiftung was a “stone” center and this was the obvious reason why I had been brought in. Already in 1976, I. Fernström had removed a renal stone in a patient through a pre-existing nephrostomy. While I was in Mainz, a colleague there, Karl Heinz Kurth, had used an ultrasonic lithotrite developed for bladder stones, with the same access, to disintegrate a renal stone that was too large for extraction in one piece. Peter Alken, also from Mainz, refined the approach further to a one-stage procedure with a purpose-placed nephrostomy, rapid dilatation of the nephrostomy tract, and ultrasonic lithotripsy. The main problems at the time arose from insufficient instruments. In Vienna we were able to develop the first, purpose-built nephroscope and ultrasonic lithotrite, which led to the breakthrough of percutaneous nephrolithotripsy (PCNL). The technique became an immediate success. Whereas Christian Chaussy’s abstract on the first clinical experience with SWL was rejected for the 1982 AUA convention, our presentation made it to a podium session. PCNL had a rapid and profound impact on kidney-stone management. In 1980 we treated 77% of all patients with upper urinary tract stones at Rudolfstiftung by incisional surgery. Only 3 years later, this was down to 13%, and 75% of patients were treated with PCNL. At this time we acquired our first SWL unit and retrograde ureteroscopy was introduced. By 1988 SWL was the dominating approach, and PCNL was down to 9%, but it was the main reason why incisional surgery had virtually disappeared. Over the same 8 years the “stone center effect” had increased the number of stone patients coming for treatment almost 10-fold. The unexpected side effect of this development was that the availability of less invasive therapy resulted in earlier treatment, and hence smaller stones. From 1990 to 1998, stones > 2.5 cm in diameter in the stone population decreased from 12.4%

to 4.5%. Complex stones usually take years to develop, and the “pond was being overfished.” The typical stone patient today comes to the emergency department with renal colic from a small stone impacted in the ureter, which is taken care of by immediate SWL or ureteroscopy in a day-care setting. In 2009, only 23 of 11,690 stone procedures performed in Austria were open stone procedures, mainly nephrectomies. Urolithiasis has lost much of its role as a life-threatening problem and, as a consequence, also its role as a major specialty in urologic surgery. This has implications for surgical training – centers with a large volume of complex stone disease are today almost entirely located outside of Europe and North America. In parallel, this change has also dramatically reduced interest in metaphylaxis and stone prevention – formerly a traditional field of urologic research. The message to the aspiring urologist is: Do not only rely on one specific clinical condition. However common it may appear to be, it may disappear within a short period of time. Be open to change.

In 1990, I became Chairman of the Department of Urology of the Medical University of Vienna, a position I hold to this day. By now, with rapidly increasing numbers in prostate, bladder, and renal cancer, uro-oncology had become the dominating focus of clinical practice. Earlier diagnosis generated more patients with localized disease, and less invasive therapy appeared to be a logical new spearhead. Laparoscopic surgery was an obvious approach for this. I was able to recruit Günther Janetschek, one of the pioneers in laparoscopy, and within 5 years we were providing the entire spectrum of ablative and reconstructive laparoscopic urological surgery. I personally had a novel experience with this development: for the first time, routine procedures were being done at our institution where I felt the learning curve was too steep for me to get involved personally. In 2003 a da Vinci robot became available, but it also appeared too complex for me. Today I am the only one in our institution still doing open radical prostatectomies. Although I still believe the results are just as good as with laparoscopic radical prostatectomies, it reflects the experience of becoming a dinosaur, and the personal lesson learned is that the complete spectrum of modern urology can only be offered by a team, with younger colleagues continuously joining in.

Based on my previous experience with the development of SWL, I became more interested in less invasive energy ablative therapy. Percutaneous and laparoscopic radiofrequency ablation proved to be fairly unreliable because of inconsistent temperature distribution and the inability to monitor the treatment effect. Cryoablation is more satisfactory, especially for ablating small renal masses, but it still involves perforating trauma with substantial morbidity. The ideal approach appeared to be tissue ablation using high intensity focused ultrasound (HIFU). After > 15 years of experimental and phase I/II clinical studies and the development of a tissue-change recognition system permitting reliable on-line thermometry, we can today precisely destroy prostate, testis, and renal cancer in a targeted, minimally invasive manner. This opens a new dimension – focal ablation of only the tumor-bearing segment of the organ. The ideal indication would appear to be ablation of localized prostate cancer through a transrectal approach. We have shown this procedure can be performed with minimal morbidity. The challenge today comes from localizing the cancer reliably within the prostate, especially in view of common multifocality. We are slowly beginning to solve this problem with the help of reproducible biopsy techniques and sophisticated fused imaging, but are now challenged with a new dilemma. Ideal candidates for focal ablation are patients with low-risk, low-volume cancers. Increasing evidence suggests that these patients can also safely be managed by active surveillance alone, which is even less invasive. The somber message is: Convincing experimental and early clinical data do not automatically spell success in real life.

What are my “*inspirations*” for young urologists, after 40 years of intense involvement with our specialty?

Communicate, listen, and also consider arguments and opinions that contradict your own convictions.

Professional success today requires expertise in subspecialties, but with ever more rapid change the significance of this expertise may rapidly evaporate. Do not rely on too narrow a focus.

Change is certain. The challenge is to remain abreast with the transitions in an open-minded manner with the readiness to change even dogmas that may have previously been considered “gold standards.”

The most important message I want to convey, however, is that despite ups and downs, 40 years in urology has been fun. Urology is a great field. It has been changing continuously for the better, and I firmly believe it has a bright future.

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