LEGENDS IN UROLOGY

Richard E. Hautmann, MD, MD hon
Professor of Urology, Chairman Emeritus
Department of Urology, University of Ulm, Germany
Senior consultant,
Department of Urology
Klinikum Lüdenscheid, Germany

The Early Years

I was born in war torn Germany in the winter of 1943. On March 16, 1945 my hometown and birthplace Würzburg, like Dresden and many other German cities, was wiped off the map by a massive allied forces airstrike with 7,000 casualties in that night alone. My family was evacuated to a small village, where a farmhouse provided three rooms for eleven family members. A blind teacher held school for grades one to four in one room. She was 80 years old at the time and being who she was, gave me the instructions on what to write onto the blackboard! The only child out of 40 in the class, who´s father was not killed or missing in action was I. The dark era of the Nazi regime also significantly impacted my immediate family. Our family was of two major groups: physicians and soldiers. The star of the physicians was the brain anatomist and psychiatrist at the University of Munich, Professor Eduard Beck, my grand uncle. He was awarded this position on the condition of a divorce from his Jewish wife. He was involved in the post mortem examination of Lenin's brain. In 1939 he was awarded the position as chairman in Munich just after being divorced from his Jewish wife, Professor Elizabeth Bauer, also a psychiatrist who was forced to immigrate to London and became a world renowned psychiatric authority later on. The "leader" of the soldier group was my grandfather, a submarine technician, who served on the glorious U1 U-boat in World War I. For us children it was fascinating to hear and understand that at the time, life under water itself was way more dangerous than the enemy above. The family tradition of soldiers and doctors continued. One of my younger brothers serves as lieutenant colonel in the German Special Forces and both my sons are Professors of Medicine, the older one for urology, the younger one for trauma surgery and emergency medicine. The question whether I managed to look after them properly while they grew up is somehow debatable. However, my wife Renate, a teacher, whom I have known since I was holding on to not much more than a sand shuffle, with her omni present care supported by all four grandparents gave her very best. And that was not easy. The trauma surgeon decided, after graduating as a doctor, against his parents' wish, to first train as a car mechanic at the local AUDI dealership, and then to start his career as a trauma surgeon, but in Liberia, West Africa, England, Cape Town and Kuala Lumpur to only then resurface, and return as a medical director to Germanys biggest emergency room and trauma center in Stuttgart, Germany.

Way into Medicine

My way into medicine was rather painful. As a dedicated triple jump athlete I was well underway to becoming a track and field star in Germany. Germany always sends the most promising youngster of each discipline as an observer to the upcoming Olympic games. At the age of seventeen I was fortunate enough to be one of these candidates at the Olympics in Rome in 1960. The same year I suffered from a serious weight lifting accident while trying to improve my fast power as a triple jumper. Under heavy weights I fell over backwards and the dumbbell bar destroyed my left thigh rupturing all the left knee ligaments. During my admission to Germanys first sports hospital and because being immobilized for a long time, I first suffered and survived three major pulmonary embolisms. After 6 months in the intensive care unit and 11 months in the hospital I walked out of the hospital and into my new career. I knew I could do much better than athletics and that is when I decided to become a physician.

Why Urology?

Upon completion of high school and before admission to a medical college, one precondition in Germany is a 6 weeks elective as an auxiliary nurse in a hospital. Out of a group of 16 applicants the head nurse assigned the

final three students including me to U for Urology. The head of Department of Urology, Dr. Hans Gumbrecht, appeared and informed us, that one of us had to temporarily replace the TUR/cystoscopy nurse who, as we spoke, underwent emergency gallbladder surgery. Candidate #1 reappeared after 1 hour on the ward, tears in his eyes, and said: "I was told to have 10 thumbs". The same happened to candidate #2. The very same evening, before going home, I went down to an old scrub nurse and asked her to show me what I would have to do the next morning: cleaning catheters, cystoscopes, resectoscopes etc. It was a stressful time for me, but I mastered the job. Four weeks later, after the nurse had recovered from surgery, Dr. Gumbrecht, in appreciation of my work, took me to the operating theatre (OR). For the first time in my life, at the age of 18, I saw open surgery, the removal of a big kidney tumor. I fainted, and I was brought to the recovery room. My disappointed mother transported me back home and feared to have witnessed the end of my career before it had really started. At the end of the 6 weeks Dr. Gumbrecht took me to the OR again and said: now you do surgery for the first time. I was shocked! He was holding both of his hands parallel in a distance of 2 cm forming the intended incision line. The choices were, to perform a correct skin incision followed by fascia and muscles, or to cut into his hands. I owe a great debt of gratitude to Hans Gumbrecht, who so elegantly guided me into urology. With this dramatic exposure to urology it was never again a question that I would become anything other than a urologist.

Medical School, Residency, Fellowship, Faculty Position

I was most fortunate to be admitted to the Faculty of Medicine at the University of Würzburg. I am still wondering how I managed to achieve this, after I had missed the final year at school before graduation due to my triple jump injury. Because of my long absences and because of my sport activities, I was, after all, only an average student. I finally became a house officer in Würzburg before graduating from University in 1967. I completed my residency training in the Department of Urology at the University of Aachen, Germany under the leadership of Professor Wolfgang Lutzeyer, Professor of Surgery and Urology. For me, he was the ideal chairman. His international reputation and his friends from the US (David Utz, Paul Zimskind, Paul Peters, Jim Glenn) and Europe (Peter Donker, Willy Gregoir, just to name a few) who were all frequent visitors in Aachen, opened numerous doors around the world for his residents. At that time learning in America was a sign of quality in German Urology, due to Germany's almost 30 year absence from the international research and clinical care community. A good example of this is my former resident Johannes W. Vieweg, fellow at the MSKCC, later at Duke, who was Chairman in Gainesville, and is now in Fort Lauderdale, Florida.

I completed my residency program in 1973. Shortly thereafter something unusual happened in Germany that raised nationwide attention. At the general hospital in Düren (between Aachen und Cologne) within 1 week the heads of Departments of Gynecology, Urology and the chief of the tax office committed suicide. Until today, the circumstances are still unclear. Prof. Lutzeyer, at that time President of our national urological association, was asked to send a board certified urologist immediately, as temporary chief, for 1 year. All of our associates refused. Finally I was asked, and agreed. I was given the instructions to only do TUR work and scrotal surgery and to send the big cases to Aachen. However, I did it differently. As a result, I fell into disgrace in Aachen temporarily, but finally, I was considered a hero. In 1983, Lutzeyer called me, and said: "now you have to learn how to apply for a Chair. Ulm is open". I was not very fond of this idea, since I felt too young for this big institution, and was concerned about 32 applicants, among them established candidates like Horst Zincke, Christian Chaussy, and Peter Alken. However, it turned out to be one of my best decisions, ever.

Basic Research: Oxalate

For more than a decade (1974-1984) Oxalate was my main research interest. Oxalate is an extraordinary difficult and stubborn research material, mainly because it is transported in gut and kidney only in its ionized form and because of the small concentrations (plasma: 10 -6 molar) and the ubiquitious nature of calcium (including in lab materials like glass etc.) which leads to insoluble CaOx whenever oxalate hits calcium. All my studies were done in the Institute of Pharmacology under the guidance of Associate Professor Hartmut Osswald, who later became the Chairman of the Pharmacologic Institute at the University of Tübingen. We were most fortunate to get a 1 million US $ grant from the Brinkmann Foundation, Bremen, Germany (cigarette industry) as they prefer to sponsor non-oncological research, for my clearance and pharmacokinetic studies of oxalate. In 1974 and 1975 I operated from 07:00 am to 01:00 pm and was a part time research fellow from 02:00 pm till after midnight with Professor Osswald. He said at least once a day "in a good institute, the lights never get switched off after night falls". He had

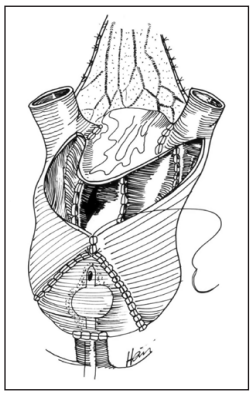
a major interest in renal physiology and was an expert in micropuncture of the kidney tubules. It took me 2 years of training until - to the best of my knowledge - I was the only urologist ever who could do kidney micropuncture work. Finally, I needed only 21 rats and 2 weeks of time to get the scientific data for my thesis: "Renal handling of oxalate. A micropuncture study in the rat".[1] These results initiated an excellent exchange with the Department of Physiology of the Mayo Clinic at Rochester (Professor Franklyn Knox), where Professor Osswald and myself went, as one of the research technicians for micropuncture (John Haas) came from Rochester to Aachen. In the morning I watched surgery with Horst Zincke, MD and I also met with Lynwood Smith, the father of urolithiasis research at the Mayo Clinic. The next research step was to study calcium and oxalate concentrations in human renal tissue. These studies I did at the Institute of Organic Chemistry and Clinical Chemistry.[2,3] In my opinion these ground breaking data have been the last major step toward the understanding of the pathogenesis of calcium oxalate stone formation over almost 40 years. The renal papilla in man has been shown to contain a high concentration of oxalate (5·5 ± 0·8 mmole/kg wet weight, mean ± SEM and that there is a significant concentration gradient between oxalate in the papilla and that of the medulla and the cortex. Significant calcium and sodium gradients between renal papilla and medulla and cortex were confirmed and parallel that of oxalate. Potassium showed a significant decrease in the papilla as compared to the medulla. The concentrations of oxalate and calcium in the papilla were respectively 25 fold and 6-fold higher than the urinary concentrations of oxalate and calcium. It is concluded that these high concentrations of oxalate and calcium in the renal papilla are related to the formation of Randall's plaques and may be an essential factor in the pathogenesis of renal stones.

The Ileal Neobladder

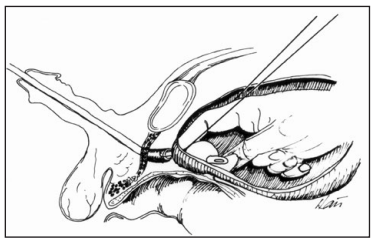
The main focus of my personal surgical interest between 1984 and 2009 was the development of the Ileal Neobladder[4]:

1) In 1985, Rudi Hohenfellner, at that time president of the German Urological Association (DGU) asked me to present the state of the art lecture on urinary diversion at our annual meeting. In preparation of that lecture I was studying the history urinary diversion. I made two important observations: First: The history of urinary diversion was overshadowed by enthusiastic reporting of preliminary results and withholding of adverse long term outcomes. Second: Mistakes were repeated over and over again by others rather than being prevented.
2) The era of modern orthotopic reconstruction began in 1986 almost simultaneously at the pioneering centers in Ulm, Bern and Mansura, Egypt. The key to the success in Ulm was a compliant low pressure reservoir, made from ileum, with maximum detubularization, crossfolding and freely refluxing ileoureterostomy. Until that time and for more than a century (almost) every orthotopic reconstruction ended in incontinence, particularly during night time, which has to be be considered a failure. Because of the functional complexity of storing and voiding, urine animal experiments are not really meaningful. The first human volunteer in 1986 was a 34 years old, very intelligent man, refusing any stoma, bag or anal diversion. He was referred to me from Munich, insisting on an orthotopic reconstruction. Of the more than 2,000 neobladders that I did over the years, his case was the most difficult one. He had malrotation of the gut and it took me almost 12 hours (!!) to find a way to get the ileum down to the urethral remnant. His case was a complete success, oncologically as well as functionally and a very good advertisement. Several times our regional and national TV showed him playing tennis with me.
3) The Department of Urology in Ulm was ideal for high volume major surgery. It as a 120 bed unit, one of the largest departments worldwide, had 5 ORs and an intensive care unit of its own. Bill Fair (MSKCC) once called it "a urological kingdom". I am well aware of the immense amount that I owe to my 22 associates for the development of the neobladder. With Kurt Miller (now chairman Charité, Berlin) and Jürgen Gschwend (now chairman Munich) the first female neobladder was done in 1986.[5,6] The unnecessary, non-refluxing Le Duc ileoureterostomy was replaced by a freely refluxing ileoureterostomy with two 3 cm chimneys on each side of the W. This was Klaus Kleinschmidt's idea, (now head of the Department of Urology in Wiesbaden, Germany). Nerve sparing RC was started with Detlef Frohneberg (later head of the Department of Urology in Karlsruhe). A neobladder is metabolically not inert: The first study of the resorptive and excretory capacity of the ileal neobladder was done by my associate E. Braendle.
   Surprisingly a neobladder can secrete or reabsorb creatinine, which has a significant impact on renal clearance and GFR.[7] This phaenomenon is frequently ignored by urologists! The first detailed study on metabolic long term follow up of the ileal neobladder was published in 1993.[8]
   A treasure and the basis for over 100 neobladder publications is our data bank with over 1,500 neobladders. It had and still has in Bjoern Volkmer (Head of Urology, Kassel) as a dedicated manager.

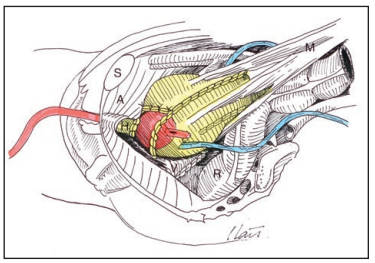
4) Two personalities of the department saw me come in 1984 and go in 2009: First, my chief administrator and head secretary Hildegunde Kreitmeier, who still runs my office in 2019. By carrying a tremendous administrative work load she gave me the maximum possible time for research, surgery and teaching. The second was Robert Charles Guillome de Petriconi, MD, a Frenchman, born in Corsica. He was a superb surgical working horse and the surgeon for everything. Despite having more than 100 highly ranked publications, he notoriously refused any academic or faculty position.
5) In a sleepless night in 1986 I coined the term "ileal neobladder". Scientifically there is only one original neobladder. All the others like the ileal bladder substitute by Studer or Vesica ileale Paduana, etc. were established to avoid the term neobladder through all the years. However, meanwhile all orthotopic reconstructions are called "neobladder". This is a misnomer and has significant implications! Orthotopic replacements have major functional differences (continence!) and the function of the ileal neobladder is very different from all other "neobladders".[9]
6) The ileal neobladder quickly got popular and the diffusion was easily done by individual visits of more than 200 surgeons mainly from the US (Marc Soloway, Mani Menon, Bill Fair, Michael Koch, Marty Resnick, Tom Stamey, Paul Peters, and many others) or our popular annual seminars with live broadcasting from our OR to more than 300 participants.



Neobladder



Male neobladder



Female neobladder

The Outlet Laps

I do not like administrative work and also I do not like to be in someone's fault. The latter are why I accepted the challenge of being the Dean of our medical faculty (1989-1991), CEO of the University Hospital (1998-2004) and as President of our German Urological Association, DGU (1993-94).

Despite initial resistance, finally, it was with pleasure to contribute this article. In closing, I would like to use the words of the most prominent son of the city of Ulm, where I have been practicing since 1984:

The purest form of insanity is
to leave everything the same
and hope that things will change.
Albert Einstein.

Richard E. Hautmann, MD, MD hon

References

1. Hautmann R, Osswald H. Renal handling of oxalate. A micropuncture study in the rat. *Naunyn Schmiedebergs Arch.Pharmacol* 1978;304(3):277-281.
2. Hautmann R, Lehmann A, Komor S. Calcium and oxalate concentrations in human renal tissue: the key to the pathogenesis of stone formation? *J Urol* 1980;123(3):317-319.
3. Hautmann R, Lehmann A, Komor S. Intrarenal distribution of oxalic acid, calcium, sodium, and potassium in man. *Eur J Clin Invest* 1980; 10(2 Pt 1):173-176.
4. Hautmann RE, Egghart G, Frohneberg D, Miller K. The ileal neobladder. *Urologe A* 1987;26(2):67-73.
5. Hautmann RE, Egghart G, Frohneberg D, Miller K. The ileal neobladder. *J Urol* 1988;139(1):39-42.
6. Hautmann RE, Paiss T, de Petriconi R. The ileal neobladder in women: 9 years of experience with 18 patients. *J Urol* 1996;155(1):76-81.
7. Rinnab L, Straub M, Hautmann RE, Braendle E. Postoperative resorptive and excretory capacity of the ileal neobladder. *BJU Int* 2005; 95(9):1289-1292.
8. Matsui U, Topoll B, Miller K, Hautmann RE. Metabolic long-term follow-up of the ileal neobladder. *Eur Urol* 1993;24(2):197-200.
9. Hautmann RE. Declining use of orthotopic reconstruction worldwide-what went wrong? *J Urol* 2018;199(4):900-903.