

Robert Lich, Jr., M.D.: Innovator in Pediatric and Adult Urology

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Purpose: Dr. Robert Lich, Jr. (1909 to 1987) advanced the foundation of knowledge in many areas in the field of urology. He is best known for his contributions to our understanding and management of vesicoureteral reflux.

Materials and Methods: We reviewed the many articles published by Dr. Robert Lich, Jr., focusing on his work with vesicoureteral reflux. We describe the contributions made by a pioneering urologist who helped advance the foundation of knowledge concerning the etiology of vesicoureteral reflux and its surgical management. We discuss his novel ideas within the framework of surgical techniques of his time, and relate personal experiences from his colleagues and his wife.

Results: Doctor Lich was a pioneer in adult and pediatric urology. He is remembered most for his innovative ureteral reimplant technique for the surgical management of vesicoureteral reflux.

Conclusions: Doctor Lich enriched the fields of adult and pediatric urology through a lifelong pursuit of scientific investigation and refinement of surgical practice. It is appropriate to review his innovative contributions to the management of vesicoureteral reflux as we experience yet another paradigm shift in our understanding and management of this condition.

Key Words: vesico-ureteral reflux; ureter; replantation; history, 20th century; urologic surgical procedures

Vesicoureteral reflux is a condition that has been known to plague children for many decades. Until recently the mainstay of treatment was antibiotic prophylaxis and open ureteral reimplantation. However, with the advent and increasing popularity of an endoscopic treatment for reflux, we are seeing a significant shift in the treatment of children with reflux. Therefore, as we consider the advances we are making with new treatment modalities, this is an appropriate time to acknowledge the innovative thinking of one of urology's many great leaders. We report on the life and many contributions of Dr. Robert Lich, who will forever be remembered for his eponymous contribution to the treatment of children with vesicoureteral reflux.

Robert Lich, Jr. was born in Sutton, Nebraska on February 8, 1909. He was the only child of Robert Lich and the former Amalia Scheidt. The young Lich and his parents moved to Fresno, California when he was a boy so his father could pursue a career as a druggist.

Doctor Lich attended the University of California at Berkeley from 1927 to 1931. He then pursued a fellowship in bacteriology from 1931 to 1932. He enrolled in the Long Island College of Medicine on full scholarship from 1932 to 1936, obtaining his MD in 1936.

He interned at the Norton Hospitals in Louisville, Kentucky from 1936 to 1937. He then entered his urological residency under the stewardship of Dr. Owsley Grant. While pursuing his urological training, Lich also obtained his master's degree in pathology from the University of Louisville

from 1940 to 1942. His master's thesis was on the topic of renal dysfunction in prostatism.

Doctor Lich served as a Lieutenant Commander in the Navy from 1942 to 1946 aboard the USS Greeley. It was during this time that he published his description of a unique method of performing a rapid hernial sac ligation.

When he returned to the University of Louisville, he directed the urology service and the urology training program until he retired in 1973. He also published more than 145 articles which covered a wide range of topics. His first publication at the university was on the topic of sulfanilamide therapy in acute Neisserian urethritis. The article was published in 1939 in the esteemed *American Journal of Syphilis, Gonorrhoea, and Venereal Diseases*. The subjects in this study were indigent patients treated at the Louisville City Hospital. As illustrated by this publication, Lich combined his early interest in microbiology with his developing practice of urology.

As his interests evolved he described the use of local anesthetics for urological procedures in "Rectal Evipal Soluble Anesthesia in Urological Procedures." He also pursued topics such as chronic prostatitis, benign prostatic hyperplasia and stress urinary incontinence in women. In May 1948 he wrote on the significant improvement in results with retropubic prostatectomy for the treatment of benign prostatic hyperplasia. In his 1952 article "Surgical Correction of Female Stress Incontinence," Lich described a bladder neck suspension technique similar to the latest state-of-the-art techniques used today. He also published on the use of pneumopyelography for better delineation of renal calices, and hematuria associated with benign prostatic hyperplasia and calculi.

His interest in congenital urological anomalies became apparent in his 1955 *Journal of the American Medical Association* article "Congenital Hydronephrosis." In this state-of-the-art review Doctor Lich described the congenital anatomy which contributes to ureteropelvic junction obstruction

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and raised many of the same insightful questions about the nature of obstruction that we still debate today.

It was in 1961 that Doctor Lich, in collaboration with Dr. Lonnie Howerton, published his report on childhood urosepsis and provided the first description of his unique ureteral reimplantation technique.¹ It would be this article and the Lich reimplant for which he is remembered best by those in his field. Lich and Howerton had been searching for a means of correcting vesicoureteral reflux without causing the concomitant hemorrhage and bladder spasms associated with intravesical reimplantation surgery. In personal conversation with Doctor Howerton he stated that they had been dissecting around the ureter and saw that it naturally fell forward toward the bladder neck. This seemed like a natural way to elongate the ureteral tunnel. In their report Lich states, "the interruption of ureterovesical reflux has been, in our hands, accomplished most effectively both technically and clinically by re-embedding the ureterovesical area of the ureter in the bladder muscle to restore the normal obliquity of the intramural ureter. This method, as opposed to re-implantation of the ureter, provides the advantages of surgical simplicity and an unexplainable but striking reduction in postoperative morbidity."¹

While teaching at the University of Louisville, Lich also served on the American Board of Urology from 1958 to 1976. He was President of the Board in 1967 and 1975. He is one of the few members to serve as president for 2 terms. Due to his prolific writing and breadth of interests, he was elected to membership in the American Association of Genito-Urinary Surgeons in 1951. He was also a member of the American Urological Association, American College of Surgeons, American Medical Association, the Société Internationale d'Urologie, the Central Surgical Association, the Clinical Society of Genitourinary Surgeons, the Kentucky Medical Association, the Kentucky Surgical Society, the Cincinnati Urological Society, Who's Who in America as well as Men of Science in America (fig. 1).

Doctor Lich retired from the University of Louisville in October 1973. His colleagues tell the story that while leaving the office one Friday afternoon, he placed his office keys on his desk. He then called in that Monday and told the staff that he would not be returning, and that his keys could be found on top of his desk. However, throughout his life he continued to counsel his patients via telephone. They would often call him at home after a visit with one of his former partners to confirm their diagnosis and treatment.

Doctor Lich was able to pursue many interests outside the field of medicine during his retirement. He was an avid automobile fan and restored several vintage automobiles. He was also interested in the fields of architecture and gardening. One of his favorite pastimes was tending to his rhododendrons.

Doctor Lich died of pneumonia after undergoing a colon resection for colon cancer on December 22, 1987. He was survived by his wife, Martyne, as well as his 3 children, Robert III, Jonathan and Nancy.

DISCUSSION

Doctor Lich's foray into the surgical treatment of vesicoureteral reflux came less than a decade after the clinical significance of reflux became widely acknowledged in the literature.² However, as far back as 1903 Sampson recog-



FIG. 1. Robert Lich, Jr., M.D., 1909–1987

nized that reflux and urinary tract infections were somehow correlated.

The normal competence of the ureterovesical junction is believed to have been at least loosely understood as far back as the medieval era, when it was discovered that footballs made of pig bladders did not leak air even if the ureters were not ligated. More formal investigations of the ureterovesical junction began in the early 1800s when Bell described the continuity of the longitudinal muscle fibers of the distal ureter with those of the trigone, and posited that trigonal contraction provided for the requisite obliquity of the ureters and, thus, prevented reflux. By 1903 it became understood that the length of the intravesical ureter was a critical factor in preventing reflux via a passive flap valve mechanism, a notion supported by the bulk of literature published in the following decades.^{2,3} However, this point remained somewhat contested especially by Tanagho and Pugh, who asserted that trigonal tone, not just contraction as described by Bell, actively occludes the distal ureter, and that the passive flap valve mechanism has at best only a minor role in preserving ureterovesical junction competence.⁴ However, the most successful antireflux procedures are predicated on the creation of a longer intravesical ureteral segment, classically stated as a length-to-caliber ratio of 5:1, thus lending credence to Lich and others who supported the flap valve theory.²⁻⁴

Another prevailing theory of Lich's time was that high voiding pressures induced reflux and that relief of bladder outlet obstruction would cure reflux.⁵ This theory led to a spate of common procedures that most would consider unnecessary by today's standards. Chief among these were urethral dilation and urethrotomy, especially in young pre-

pubertal girls who were thought to have bladder outlet obstruction from stenotic distal urethra. Often dilation or urethrotomy up to 45Fr were used to curb reflux. Lich, like many of his colleagues, was a believer in the idea that bladder outlet obstruction was frequently associated with reflux. In 1961 he stated that "the specific cause of this abnormality in the urethra is under study, but in our opinion it is due to post-stenotic dilation in which the stenotic area is represented by the vesical neck."⁶

By the 1950s radiographic evaluation of the urinary tract had evolved and become more commonplace in urological practice, thus allowing for more widespread diagnosis of reflux. The 1950s saw the first renaissance of reflux treatment with the introduction of numerous surgical procedures to increase the length of the intravesical ureteral segment. The first procedures focused primarily on the creation of a new hiatus through which the reimplanted ureter would enter the bladder. Hutch described his reimplant in 1952, in which the ureteral orifices were left undisturbed and a larger proportion of ureter was brought inside the muscle layer, effectively creating a more superiorly and laterally positioned hiatus.² In 1958 Politano and Leadbetter modified another reimplant technique to create not just a new hiatus, but also new, more inferiorly and medially positioned ureteral orifices using a combination of intravesical and extravesical dissection.^{4,7} In 1959 Paquin advocated a technique whereby the ureters were divided extravesically.³ The defunctionalized distal ureter was left intact and the ureteral stumps were reimplanted, creating an intravesical nipple. The Politano-Leadbetter reimplant was the clear success story of the 1950s, garnering a reputation for success despite the potential complications posed by blind extravesical dissection.

In 1960 at a German congress in Munich, Professor Gregoir, Chef du Service Universitaire d'Urologie in Brussels, presented a new extravesical technique for ureteral reimplantation. His operation, which he started performing in 1959, involved incising the posterior bladder wall down to, but not through, the bladder mucosa. After the detrusor muscle fibers were divided, he laid the ureter into the trough of detrusor muscle and over sewed the detrusor fibers.⁸

In 1961 Lich et al independently published a similar but different method for increasing the length of the intravesical ureteral tunnel.^{1,6} Although they did not communicate across the Atlantic about their techniques, the Lich and Gregoir techniques were similar. The Lich repair differed from the Gregoir repair in that its extravesical, periureteral dissection was more extensive than in the Gregoir repair. Whereas Gregoir simply incised the posterior bladder wall down to the ureter, Lich incised the detrusor fibers anterior and posterior to the ureter and, thus, created a longer space for tunneling the ureter. These techniques effectively created a new, more superior and lateral ureteral hiatus, and a longer intravesical segment.^{1,8} The end result of both techniques was akin to the Hutch method described nearly a decade earlier, but without the need for extensive intravesical dissection.^{1,6,8} Data concerning the actual results from each surgeon are no longer available. However, in general the results were considered to be similar between the Lich and Gregoir techniques. In fact, many mistakenly believed they were the same technique and named it the Lich-Gregoir reimplant. These newer techniques allowed for increased patient comfort and obviated the need for prolonged postoperative catheterization or suprapubic drainage (fig. 2).^{1,6,8}

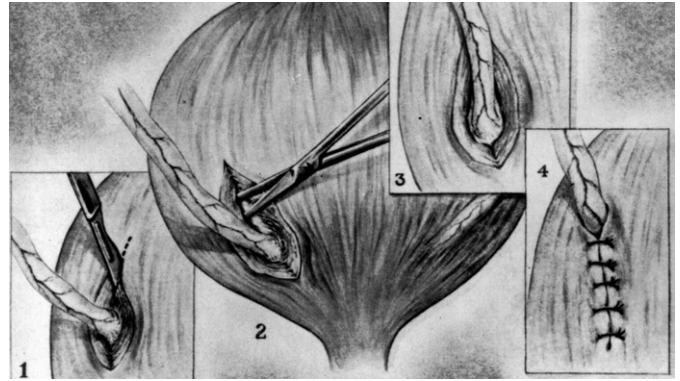


FIG. 2. Lich reimplant technique. Reprinted with permission⁶

The 1960s marked the beginning of the golden age of surgical antireflux procedures, an age which lasted for nearly a quarter century before attractive alternatives to open surgery began to surface. During this time the Lich repair emerged as the favored antireflux repair at a number of institutions. However, the innovative Lich repair began to fall into disfavor when long-term data began to demonstrate that perhaps it was not the most effective treatment. While extravesical repairs are highly successful for grade I to III reflux, the success rates for grades IV and V have been reported to be 92% and 67%, respectively, far lower than those of the Politano-Leadbetter.⁹ In addition, the Lich repair, like other extravesical techniques, was found to be associated with a higher incidence of postoperative voiding dysfunction when implemented for bilateral repairs. This finding was thought to be because the repair required dissection of the vesical wall, which likely weakened the bladder not just focally, but also globally via detrusor denervation.⁹

The pendulum swung even further back toward intravesical repair with the later introduction of infrahilar repairs that reduced complications from neohiatal stenosis. Most notable was the Cohen cross-trigonal reimplant, introduced in 1975.¹⁰ The Cohen repair boasted some of the best success rates with low complication rates due to the preservation of the native ureteral hiatus and completely intravesical dissection.¹⁰ Today the Politano-Leadbetter and Cohen repairs are considered gold standards for open antireflux surgery, and the once popular Lich-Gregoir repair has become more of a historical entity at most institutions.

Today the management of reflux is undergoing a second renaissance with the increasing popularity of endoscopic treatments for low to medium grade reflux. Beginning in the mid 1980s with subureteral polytetrafluoroethylene injections, followed by collagen, and continuing through today with the advent of advanced synthetic injectables such as dextranomer/hyaluronic acid, the treatment of a substantial number of children with reflux has evolved into a minimally invasive outpatient procedure. As it is further refined, this new wave of endoscopic treatment may render open surgical reimplantation obsolete for all but the most severe cases of reflux.

CONCLUSIONS

Doctor Lich was an innovative urologist who enriched the fields of adult and pediatric urology through his lifelong pursuit of scientific investigation and refinement of surgical practice. His interests within the field of urology were broad,

and evolved through experience, innovation and inquisitive experimentation. These are the same forces that continue to help urological knowledge and practices evolve. Although he published more than 145 scientific articles during his career, he is best known for his role in the development of the Lich-Gregoir ureteral reimplant. It is particularly appropriate to review his contributions to the field as our current thoughts on the management of vesicoureteral reflux are undergoing evolution.

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