

Bricker E M. Bladder substitution after pelvic eversion.

Surg Clin N. Amer. 30:1511-21, 1950.

[Department of Surgery, Washington University School of Medicine, and Barnes Hospital, St. Louis, MO]

The need for a satisfactory substitute for the urinary bladder increased following the development of radical operations for pelvic cancer that involved the removal of the rectum as well as the bladder, thus making a standard diversion of urine to the intact colon with rectal control impossible. The development of an intestinal conduit to convey urine from both kidneys to a watertight external appliance was a logical solution [The SC¹® indicates that this paper has been cited in over 345 publications since 1955 and is the most-cited paper for this journal]

Eugene M. Bricker
Department of Surgery
Washington University
School of Medicine
St. Louis, MO 63110

September 17, 1985

The idea of using a segment of ileum to act as a conduit of urine from both kidneys to a watertight external appliance did not occur to me until I was introduced to such an appliance in 1950. This appliance was made by Rutzen of Chicago, an ileostomy patient himself. It consisted of a rubber bag, a flange, and glue for attachment of the flange to the skin of the abdomen. If properly applied, it remained watertight for several days. Some of my prior patients with intra-abdominal reservoirs consisting of the isolated cecum were disappointed because of our inability to provide satisfactory continence. Use of the new appliance over their urinary fistulae made them dry and happy. Thus we discarded the idea of an intra-abdominal reservoir and switched to the simplest method of conveying urine from both kidneys to an external abdominal stoma in a convenient location for application of the watertight appliance.¹

This publication, after four patients had been operated upon by this method and followed for only a few months, was the result of a request by my chief, Everts Graham, chairman of the Department of Surgery, Washington University School of Medicine. Graham was editor of an upcoming issue of *Surgical Clinics of North America*, and his request of me had the same effect as an order. Thus, the paper was published after little preliminary ex-

perience or study. It has always been an embarrassment to me subsequently to read some of the brash statements and prognostications contained in it. The fact that we proceeded with the operation without preliminary laboratory investigation seemed justified in view of the extent to which the intestinal tract (colon) had already been used for bladder substitution.

There were several reasons why the technique described was adopted so rapidly and so widely. It provided an acceptable method of bladder substitution in patients undergoing surgery for advanced pelvic cancer, which, at that time, was being done relatively frequently. In addition, the operation of ureterosigmoidostomy, which was the standard diversion following cystectomy, was disappointing in the frequency of both early and late complications. And finally, urologists were encouraged to use the operation after the initial favorable reports of Justin Cordonnier, chief of our Division of Urologic Surgery, who quickly adopted the technique.

The procedure had such an impact on the specialty of urology that Cordonnier and I shared the Amory Prize of the American Academy of Arts and Sciences in 1962, and I received the Valentine Award of the New York Academy of Medicine in 1977. The subject of substitution for the urinary bladder is a very important one and, as a result, the 1950 paper in *Surgical Clinics* has been frequently referred to by subsequent authors. The operation as originally described has undergone various modifications, but the basic concept of an intestinal conduit to an external appliance is still valid and is the procedure of choice in the majority of patients requiring urinary diversion. However, important modifications including nonrefluxing ureteral anastomoses,² continent ileostomies,^{3,4} and use of ileum anastomosed to the uretra to more nearly preserve normal micturition⁵ are all under investigation and are an indication of continuing progress.

I learned two or three years after doing this operation many times that the concept was not new. In 1935, L. Seiffert, a German surgeon, described diversion of the urine from both kidneys through a jejunal segment to a primitive external appliance.⁶ It is difficult to find anything really new in technical surgery, short of transplantation of heart, liver, and various other viscera.

1 Bricker E M. The evolution of the ileal segment bladder substitution operation. *Amer J Surg* 135 834-41, 1978

2 Hendren W H. Nonrefluxing colon conduit for temporary or permanent urinary diversion in children. *J Pediatr Surg* 10 381-98, 1975

3 Kock N G, Nilsson A E, Nilsson L O, Norlen L J & Philipson B M. Urinary diversion via a continent ileal reservoir. Clinical results in 12 patients. *J Urology* 128 469-75, 1982

4 Skinner D G, Leskovsky G & Boyd S D. Technique of creation of a continent internal ileal reservoir (Kock pouch) for urinary diversion. *Urol Clin N Amer* 11 741-9, 1984

5 Lillem O M & Camey M. 25-year experience with replacement of the human bladder (Camey procedure). *J Urology* 132 886-91, 1984

6 Seiffert L. Die "Darm-Siphonblase". *Arch Klin Chir* 183 569-74, 1935