



Indwelling urinary catheter - a boon or bane ?

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Traditions in medicine can become so ingrained and powerful, that the scientific merit of a time-honoured technic may never be fully examined. A paucity of scientific literature on the routine use of indwelling bladder catheter after hysterectomy reflects such a dogma.

Bladder catheter drainage has been around a long time. In 2600 BC Egyptians described catheter drainage of the bladder using Nile River reeds. Sumarian and Roman accounts report the use of gold, lead, bronze, and ceramics for catheter materials. In 1556 Pierre France of Switzerland described suprapubic cystostomy drainage. Ten years after Goodyear developed the vulcanization process in 1844, Auguste Nelaton of France introduced the first rubber catheter. Nelaton's catheter had to be sewn to the urethral meatus. Malecot introduced his four-winged catheter in 1892, making self-retaining urethral catheter practical. Finally Fedrick Foley of St. Paul, Minnesota, introduced his balloon catheter in 1927. Despite this long history according to Cardosi et al ¹, there remain a number of persistent controversies concerning optimal use of bladder catheter drainage in the post-operative setting. The most common problem however is that of infection associated with indwelling catheter drainage ¹.

The great majority of urinary tract infections in hospitalized patients is associated with the use of urinary bladder drainage devices, like bladder catheters. Under normal circumstances, urethral flora, which tends to migrate into the bladder, is constantly flushed out during urination. When a catheter is inserted, this flushing mechanism is circumvented and perineal and urethral flora usually aerobic bowel organisms, can pass up into the bladder, in the fluid layer between the outside of the catheter and the urethral mucosa. As a result of this, bladder colonization is almost inevitable once a catheter is introduced. In addition, bladder infection can be caused by bacterial reflux from contaminated urine in the drainage bag. Almost one million patients acquire a nosocomial urinary tract infection in the United States annually and the most common cause is urinary tract catheterization. Conversely, the incidence of urinary tract infection is very low when a catheter is never used. Although most of these patients will

have asymptomatic bacterinimia that tends to be self-limiting and disappears when the drainage device is removed, some patients may have serious infections, leading to pyelonephritis, septicemia and death. Even less severe urinary tract infections tend to increase the length and cost of hospitalization because of the need for additional diagnostic tests and antibiotic therapy ².

Three events are necessary for successful micturition – i) initiation of the detrusor contraction, ii) simultaneous voluntary relaxation of the striated sphincter mechanism of the urethra and iii) voluntary increased abdominal pressure to augment detrusor contraction.

These three events must be coordinated to effect normal bladder emptying and they rely on the autonomic nervous system. Non-radical pelvic surgery for benign conditions should not interfere with autonomic nerve supply to the bladder and urethra, because there is no dissection of periurethral and perivascular tissues ³.

Traditionally gynecologists have used urinary catheter because of the belief that women could not void satisfactorily in the post-operative period, the need for adequate surgical exposure, and the necessity for adequate monitoring of urinary output following surgery. The most common post-operative problem of the female bladder is atony, which is caused by hypereflexia and over distension, coupled with difficulty in initiating voluntary voiding because splinting of an abdominal incision limits abdominal contractions which assist detrusor contractions. Therefore gynecologists have justified the routine use of indwelling urinary catheter ⁴.

Bartzen and Hafferty ⁵ have shown that 22% of patients require 'distress' catheterization after gynecological laparotomy and Richardson et al ⁶ have shown that 10% require catheterization after abdominal hysterectomy. The incidence of urinary infection was 1% in patients not requiring catheterization compared to 3.97% in patients requiring a catheter.