

# A Case Series of a Successful external urine collection method in Male Spinal Cord Injured Patients

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## ABSTRACT

**Purpose:** Many spinal cord injured patients rely on external urinary collection. Both absorptive and presently available direct collection methods represent inadequate and uncomfortable means in accomplishing dryness. Technologic advances in pump dynamics as well as external collection designs now make it possible for these patients to reintegrate without the problems of skin irritation and soiling so prevalent in the past. The Omni URINCare® System is a specialized auto sensing urinary collection device. We present three case studies: Three men are under the age of 25, have an ASIA rating of A, and who previously relied primarily on intermittent self catheterization but whom, when in social situations that preclude catheterization, used to rely on absorptive options with frequent soiling and resultant embarrassment. All three men have since utilized the Urincare® system with the successful experience described.

**Materials and Methods:** Three healthy male volunteers with a spinal cord injury used the system for a period of one month, up to 8 hours per day, during awake hours. Participants reported directly to their prescribing physician issues related to comfort and dryness. Data was tabulated and analyzed.

**Results:** Subjects reported no occurrences of soiling. The perceived comfort of the system was 100% acceptable. In addition, subjects' level of activity markedly increased.

**Conclusions:** The Omni URINCare® system is a reliable, effective and comfortable system for extracorporeal urinary collection. The technologic improvements as compared to presently available and established options were supported by the aggregate study subject experience.

KEY WORDS: urine, collection, spinal cord injury, social reintegration

Spinal cord injury represents an underlying dysfunction with a myriad of urinary conditions and complaints; the ultimate necessity of external urinary collection. Presently available options include absorptive options and external collection using a Texas Foley catheter in male patients.

Absorptive options suffer from several problems notwithstanding the inability to collect all the urine over the day with resultant overflow and soiling, ultimately impeding social integration. Further, although advances have been made, the constant exposure of the perineal skin to the humidity and direct contact with urine make inflammation and skin breakdown an important problem that must be mitigated at all costs.

Texas Foley catheter systems utilizing a condom catheter also represents an inadequate solution in that penile skin is constantly exposed to the humidity and direct contact with urine. Resultant skin breakdown and loss represents a potentially devastating

complication with serious psychological detriment and again, impeded social integration.

## BACKGROUND

Omni Medical Systems, Inc., has developed several important advancements to allow for the collection of urine in male patients using a specially designed urinary collection device, a self priming impeller pump as well as improved urinary collection bags. These three facets work to better protect patients while collecting and evacuating urine and allow for better social integration. Technology aimed at creating a solution for female patients is being developed at present. Both platforms, male and female, are evolutions from existing devices that are used in the United States Air Force, Air Guard and Navy for fighter pilots in a closed cockpit environment and all are FDA approved.

## PRESENTATION

The urinary collection device, similar to a protective 'cup' used by many athletes in many sports (Fig. 1) is made of soft polyethylene, is

\*Financial Interest and/or other relationship with Omni Medical Systems

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formed and best worn with a specialized undergarment that better opposes the device to the male groin with a soft rubber flange as the interface. Within the device is an auto-sensing switch that activates the pump when connected to evacuate the urine expelled. The penis is therefore isolated from the urine with no direct contact nor enveloping as with the condom catheter.

The pump, which is the size of a small MP3 player (Fig. 2) is self priming and rapidly evacuates urine from the base of the cup into the collection bag. Rechargeable batteries are the energy source with each battery pack lasting for more than one day's use and is easily replaced and charged as necessary.

The urinary collection bag (Figure 2) has built in collection tubing allowing for greater comfort and is attached to the lower leg by only one strap with greater comfort compared those using two. Further, the bag is attached by one superior strap rather than the more common two, superior and inferior, found with other presently available options. Lastly, the volume is greater at approximately 1000 cc's as compared to approximately 500 cc's for conventional bags.

All the above concepts having been developed again from the existing military platform, the system was evaluated by three male users. The first user is 21-years old and sustained a T12 injury in February of 2010; the second user is 23 years old and sustained a T4

injury in February of 2010 and the third user is 25 years old and sustained a C6 injury in 2004. Since that time, all three men have performed intermittent self catheterization and have used absorptive undergarments for times when they were in public and in situations not allowing for intermittent catheterization to be easily performed.

For one month the system was utilized during different activities including social situations, normal daily activities and outdoor activities such as skiing and fishing. No failures of the system were reported over this time. During 30 days of intermittent use, the users were able to use the system without any reported failure. No episodes of soiling occurred and urine collected was discarded without incident. Neither penile erosion nor irritation was reported pursuant to the system's use. The perineum was also reported to be without abnormality. No perineal discomfort nor interruption of normal bowel maintenance program occurred.

#### CONCLUSION

Overall, the three users' perceived quality of life was felt to be greatly improved as a result of the system's availability and the breadth as well as daily activities was extended as a result of the benefits afforded by the ability to more safely, reliably and effectively accomplish urinary collection extra corporeally.

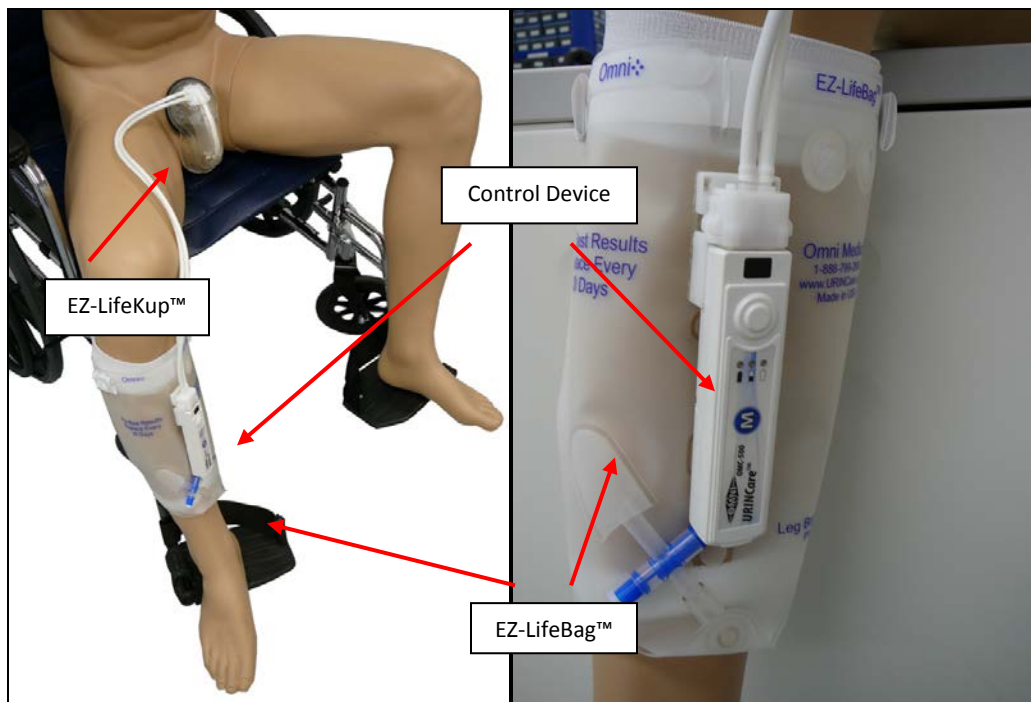


Figure 1. The URINCare® System

Figure 2. Control Device w/Collection Bag