

Letter to the Editor

Possible use of BioDerm External Continence Device in selected, adult, male spinal cord injury patients

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The use of conventional penile sheaths is associated with adverse events, for example, ulceration of skin, pressure necrosis and consequent urethral fistula or, very rarely, gangrene of the penis. BioDerm External Continence Device (BioDerm Inc., Largo, FL, USA) is a hydro-colloid wafer that makes a complete parameatal seal and directs urine into a collection bag. In contrast to the conventional penile sheath, which is applied to the penile shaft, BioDerm External Continence Device (BECD) attaches only to glans penis. Spinal cord injury patients, who have difficulty in wearing a conventional penile sheath due to inadequate length of penile shaft, or retraction of the penis especially when sat up, may prefer BECD. As BECD is applied exclusively to the glans penis, patients with ulceration, inflammation, irritation or allergic reaction (skin sensitisation) of the penile shaft secondary to application of the penile sheath may well try BECD before deciding to have long-term indwelling catheter drainage. Spinal cord injury patients who have phimosis, catheter-induced hypospadias, ulceration of the external urethral meatus, or infection of the glans penis or prepuce should not use BECD.

Before applying BECD, the glans penis must be clean and dry. We recommend washing the glans penis with soap and water and then drying the area with a hair dryer. The foreskin is pulled back and the BECD is positioned by aligning the central hole over the external urethral meatus. The small bottom leaf of BECD is pressed down avoiding wrinkles. The remaining leaves of BECD are then pressed over the glans penis and held firmly for 20 s. The wafer seal is then applied by placing the notch on the underside of the penis over the frenulum. The wafer seal is wrapped around the glans penis and held firmly for 20 s (Figure 1). The connecting tube is then attached to BECD. When the foreskin is brought forwards, prepuce covers the leaves of BECD and only the outlet channel is visible (Figure 2). A new BECD, when applied to the glans penis, is translucent. As the BECD absorbs water and other discharge from the skin, it gradually becomes opaque. When there is a change in the appearance and texture of BECD, it is likely to get dislodged and therefore should be replaced. BECD can be removed by loosening the adhesive with warm, wet cloth and then gently rolling off the wafer.

BECD is available in two sizes. The standard size BECD is indicated in the patients who have normal anatomy of the external urethral meatus. In case of spinal cord injury patients, who have enlarged urinary meatus as a result of long-term use of indwelling catheters, the XLS model of BECD should be applied, as the XLS model has a larger outlet channel. Patients should use either a BioDerm Tube Holder or a conventional thigh strap to secure the urinary drainage tubing to the leg so that undue traction is avoided on the BECD application site.

Our spinal unit purchases BECD from CliniMed Ltd, Cavell House, Knaves Beach Way, Loudwater, High Wycombe, Bucks HP 10 9QY. One piece of BECD costs six pounds in United Kingdom. The wear time of BECD varies between 12 and 72 h. To our knowledge, BECD is not yet available on FP-10 prescription. We have been using BECD in selected patients who had ulceration of skin of the penile shaft caused by application of the conventional sheath (Figure 2). We do not use BECD in the patients who have ulceration of the glans penis (Figure 3). We have been using the XLS model in a patient with an enlarged urethral meatus, which was



Figure 1 Photograph of penis of a 31-year-old patient with spina bifida: in contrast to a conventional penile sheath, BECD is applied exclusively to the glans penis after pulling the foreskin back



Figure 2 Same patient as shown in Figure 1: there is extensive ulceration of skin over the shaft of the penis, which was caused by application of a conventional sheath. This was the indication for the use of BECD in preference to a conventional penile sheath. If BECD is not available, this patient will require long-term indwelling catheter drainage, which is associated with complications such as urethral split, urinary infection, etc



Figure 3 Photograph of penis of 76-year-old male with paraplegia and long-term indwelling catheter drainage: there is ulceration of the glans penis. BECD should not be used in this patient

caused by a long-term indwelling catheter. One particular advantage of BECD is that the application of BECD facilitates greatly the introduction of a catheter through the meatus for the purposes of intermittent catheterisation.

In conclusion, as BECD adheres only to the glans penis, urine contact with the skin is reduced, thereby lessening the opportunity for skin breakdown or maceration over the penile shaft. BECD is made of hydrocolloid, which is a skin-friendly adhesive that supports skin integrity. Therefore, BECD may provide effective continence management for selected spinal cord injury patients who are unable to tolerate conventional penile sheaths. Like any other medical device, BECD is not totally free of adverse effects. It is possible that BECD may cause injury to the glans penis (redness, maceration of skin, or ulceration of skin), similar to ulceration of skin over the shaft of the penis caused by a conventional penile sheath. Since BECD is not available on FP-10 prescription, spinal cord clinicians need to apply for special funding to obtain regular supply of BECD to patients. If a patient changes BECD every other day, a month's supply of BECD will cost £90. But if the wear time is reduced to 24 h, the cost of BECD will increase to £180 per month.

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Note from the Editor

The authors have declared that they have no competing financial interests. The authors have assured me that they approached the commercial firm only after the manuscript was submitted to the Journal and accepted for publication. Thus, the commercial firm was not aware of the publication or its contents before submission. The commercial firm agreed to pay towards the cost of printing the colour illustrations

Dr LS Illis
Editor, *Spinal Cord*