A New Tool for Initial Stabilization of Pelvic Fractures: The TPOD® Trauma Pelvic Orthotic Device

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In the field of trauma care one of the more challenging injuries encountered is the severe pelvic fracture. These injuries often occur in combination with other injuries and characteristically are associated with significant internal blood loss. Trauma centers have struggled with approaches to initial stabilization of pelvic injuries. Measures to quickly minimize or tamponade blood loss from severe pelvic fractures are limited. One of the more popular methods is the “sheeting” technique. This approach involves wrapping the pelvic girdle with a bed sheet and then tightly securing the sheet in a circumferential manner to slow/stop internal bleeding. Use of pneumatic antishock garment is a clinical device that has been indicated in the initial stabilization of pelvic fractures. Pneumatic antishock garment use in general have decreased in recent times and accessibility to these devices is limited in some areas.

More recently some trauma centers have instituted application of external fixation devices during the initial resuscitation phase in the emergency department. Ideally this procedure requires the immediate presence of an Orthopedic Surgeon. The equipment costs and complication risks with this procedure in the setting of the emergency department may be significant. In addition the time for application is vari-

Figure 1. X-ray of pelvic fracture pre-application of TPOD® device.

Figure 2. Placing TPOD® device with pulley in place.

Figure 3. Device applied with circumferential tension.

Figure 4. X-ray of pelvis post-application of TPOD® device.
able and may limit ability for some radiographic studies. Pelvic C-
Clamps are also one of the options successfully employed by trauma
centers in the initial management of pelvic fractures.

In 1999, under the development leadership of Dr. Charles Reinert,
MD, Vice Chairman of the Department of Orthopedic Surgery at the
University of Texas, a company called Bio-Cybernetics International,
developed a pelvic corset device called the TPOD® (Trauma Pelvic
Orthotic Device). This device is a simply designed two piece unit; one
piece is a support binder made of radiolucent fabric that has velcro
attachment points; the second piece of the device is the power unit.
The power unit is a hard plastic device that is essentially a string pul-
ley system. The power unit/pulley system affixes to the support binder
at the velcro attachment points. Once the support binder is properly
sized to the patient and positioned properly, the pulley system is
attached and then tightened over the pelvis to the desired tension to
stabilize the pelvic girdle. (See Figure 3) The TPOD® will not interfere
with evaluation of the trauma patient. X-rays, CT scans, angiography,
adimal ultrasound, and peritoneal lavage can all be safely comple-
ted with the TPOD® in place. In most situations the TPOD® can be left
in place until evaluation is complete and definitive open reduction
and internal fixation of the fracture can be accomplished.

The University of Pennsylvania, in cooperation with the TPOD® in
early 2000. After the units were received we invited a representative
from the Bio-Cybernetics International company to lead staff in-serv-
ice education programs on all of our trauma designated inpatient units.
We also determined that to assure consistency, a written guideline for
proper TPOD® usage needed to be developed. (see Appendix) The
development of this guideline was a multidisciplinary effort that
included trauma nursing, orthopedic surgery and trauma surgery.
Specific nursing considerations to be aware of when using the TPOD®
are food in the guideline. The device is meant to be a temporary
measure and if left on greater than 48 hours it requires routine skin
integrity evaluation as discussed in our guideline.

To date we have successfully placed the TPOD® on approximately
15 trauma patients. Figures 1-4 are photos pre and post TPOD® appli-
cation on a patient treated at the Hospital of the University of
Pennsylvania. These show the dramatic results that this device pro-
vides.

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