

Pelvic Stabilization Devices

5 Reasons to Choose T-POD Responder for Your EMS or Hospital Critical Care Team



a pelvic stabilization e-book by
Dr. Alan Moloff

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Why is Pelvic Stabilization Important?

For thousands of years, the recognized, traditional and successful treatment of fractures has been immobilization and stabilization.

Immobilization and stabilization are effective to:

- Reduce pain
- Prevent additional damage to veins and arteries in the area of the fracture
- Prevent additional damage to nerves in the area of the fracture
- Prevent additional movement of the bones near the fracture site

Traditional Immobilization and Stabilization Treatment is Difficult to Perform on Pelvic Fractures:

While immobilization and stabilization are relatively easy to perform on the “long bones”, they are much more difficult to perform on other types of fractures. This is especially true when it comes to the treatment of pelvic fractures. Pelvic fractures are usually caused by significant force that fractures multiple bones, may lacerate large arteries and veins, and cause substantial damage to a number of highly vascular organs located in the pelvis.

The initial treatments for pelvic fractures must include:

- Stabilization of the bones to prevent additional damage
- Compression to produce indirect pressure to minimize additional hemorrhage
- Normal life-saving procedures performed for severe trauma.

Pelvic stabilization is important because while pelvic fractures are not common, they can be deadly and present a clinical treatment challenge.

Why is Pelvic Stabilization Important?

Pelvic fractures can be deadly, with a mortality rate as high as 50%. They also present a clinical treatment challenge in both the prehospital environment as well as in early stage treatment at most emergency departments.

Why is the mortality rate for pelvic fractures so high?

There are a number of different factors, but the main reason the mortality rate for pelvic fractures is so high is due to the major hemorrhage that can occur secondary to pelvic fracture.

Blunt force trauma, a major cause of many pelvic injuries, can fracture the highly vascular pelvic bones, disrupting a variety of major arteries in the pelvis and rupturing or lacerating pelvic organs such as the bladder, urethra, vagina and rectum.

And often, this hemorrhage exhibits minimal early external signs because it is internal, in the pelvis or retroperitoneal. It is important to remember that because of the significant force required to fracture or dislocate the pelvis, other traumatic injuries should always be suspected.

Common Causes of Pelvic Fractures:

The most common causes of pelvic fractures are:

- Motor vehicle collisions
- Pedestrians hit by motor vehicles
- Motorcycle accidents

Other common causes include contact sports, winter sports and equestrian events.

The Evolution of Pelvic Stabilization Devices

When a pelvic fracture occurs, a complete exam is required as part of a secondary survey to assess further injuries. As part of this secondary survey, the mechanism of injury and index of suspicion for a pelvic fracture should be taken into account. While it is difficult to determine the severity of a potential hemorrhage it is relatively easy to make an initial diagnosis of pelvic trauma, pelvic fracture or pelvic dislocation.

Classically, the initial management of suspected pelvic fractures or pelvic dislocations is splinting and stabilization in addition to establishing vascular access and securing an airway if indicated. Rapid assessment, stabilization and compression are critical to reduce mortality in pelvic fractures and dislocations.

Prior to the development of pelvic stabilization devices specifically designed to stabilize and



The mortality for pelvic fractures is very high due to the major hemorrhage that can occur secondary to pelvic fracture.

Recent studies indicate that pelvic stabilization devices improve pelvic fracture outcomes as compared to bed sheets.

Read More in the Clinical Review Paper:

Not All Pelvic Fracture Treatments are Equal

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compress the pelvic region, common bed sheets were used in the hospital and pre-hospital environments for stabilization and compression.

Pyng Medical's T-POD Pelvic Stabilization Device has been used by United States Military for more than seven years, and T-PODResponder a new, more compact and lightweight version of T-POD specifically designed for civilian EMS and hospital use was launched in 2013.

Even after the introduction of pelvic stabilization devices, bed sheets continue to be used. While bed sheets have now been clinically proven to be much less effective than pelvic stabilization devices, they are cheap and easily available. Also using bedsheets are what has been traditionally done, and there is often a cultural resistance to change.

In this eBook, Dr. Alan Moloff will review the five main reasons that pelvic stabilization devices are the right choice for civilian EMS and hospital critical care teams, and outline the clinical evidence that supports their use, and indicates that bed sheets are no longer an effective choice.

Clinical Evidence Supports the Use of Pelvic Stabilization Devices

In a new clinical review paper, "Not All Pelvic Fracture Treatments are Equal", Dr. Alan Moloff reviews four independent studies that demonstrate the effectiveness of pelvic stabilization devices in improving outcomes for pelvic fracture patients.

The studies indicate that using pelvic stabilization devices is beneficial in terms of:

- Stabilizing the pelvis
- Increasing critical mean arterial pressure
- Reducing the need for pain medications
- Reducing the need for blood products
- Reducing length of hospital stays
- Reducing mortality

One study found that separation of the pubic bones (symphyseal diastasis) was reduced by 60% when using pelvic stabilization. More importantly for the pre-hospital provider, mean arterial pressure increased from 65.3 to 81.2 mm/hg (about 25%), and heart rate beneficially declined from 107 bpm to 94 bpm. (1)

Another study found that before protocol implementation, 32 of 65 patients (49%) in shock on arrival or within the first 24 hours of hospital stay died, whereas 18 of 80 (23%) in shock died after protocol implementation, a 53% and statistically significant drop in mortality ($p < 0.001$). (2)

Read more in the clinical review paper: go.pyng.com/pelvic

Pelvic Stabilization Devices are More Effective Than Bedsheets

If you are still using bedsheets to stabilize your pelvic trauma patients, it may be time to consider another option: Pelvic Stabilization Devices.

So why is it time to say goodbye to the bedsheet? The simple answer is because they just don't work as well as pelvic stabilization devices. In fact, clinical data from four recent studies strongly indicates that your patient outcomes will improve if you throw those bedsheets away and invest in new devices that are specifically designed to stabilize the pelvic region.

So while bedsheets have been used by EMS and hospital critical care teams for many years because of their low cost and easy availability, recent clinical data indicates that they do not provide adequate stabilization of compression for pelvic fractures and are difficult to apply.

Bed sheets do not provide adequate stabilization or compression and are difficult to apply.

A 2008 study compared the effectiveness of Pyng Medical's T-POD Pelvic Stabilization Device (T-POD) and a bed sheet in providing compression of a simulated pelvic fracture on cadavers. The objective measurements in this study compared the separation (symphyseal diastasis) of the normally joined pubic bones as a measure of effective pelvic compression.

The results of the study indicate that:

- T-POD was able to return the separation to normal in 75% of the cadavers.
- On average, bed sheets were able to reduce the separation by about 44% while T-POD reduced the separation by over 70%. (3)

"T-POD reduced the separation of the normally joined pubic bones by over 70% compared to bed sheets at 44%"

A study in the Netherlands was performed on 15 patients with unstable pelvic fractures presenting to the emergency department with signs of hypovolemic shock. Vital signs were measured just before the application of the T-POD and two minutes after application of the T-POD. X-Rays were also taken after T-POD application.

In this study, the separation of the pubic bones (symphyseal diastasis) was reduced by 60% when using pelvic stabilization. More importantly, for the pre-hospital provider the mean arterial pressure increased from 65.3 to 81.2 mm/hg with pelvic stabilization (about 25%), and the heart rate beneficially declined from 107 bpm to 94 bpm. (1)

Why Are Bed Sheets Not As Effective as Pelvic Stabilization Devices?

1. Sheets are difficult to apply, often requiring the efforts of two or more people.
2. Sheets do not provide even compression around the pelvis and can rarely be tightened enough to exhibit any level of effectiveness.
3. Sheets are not secure; they will slip, gradually loosen and will not remain in the proper position during transport and patient movement.

Bed Sheets are For Sleeping.

Pelvic Stabilization Devices Save Lives.



The T-PODResponder Pelvic Stabilization Device is designed to:

- 1. Quickly and effectively stabilize the pelvic region.
- 2. Provide even, circumferential compression with enough force to actually stabilize the pelvis and provide the requisite pelvic compression.
- 3. Remain in place and maintain constant pressure during all forms of patient transport.
- 4. Be applied easily by one person in the field.

A number of additional studies have been performed regarding pelvic orthotic devices (POD) that provide stabilization and compression of pelvic fractures.

The largest study, published in 2007 by Dr. Croce, involved more than 3,300 patients over 10 years.

This study demonstrated that the use of POD's for pelvic fractures reduced the need for transfusions and blood products and decreased the length of hospital stays. Both of these are critical in today's world of managed healthcare. (4)

“The use of pelvic orthotic devices improved patient outcomes by reducing the need for transfusions and blood products – and decreasing the length of hospital stays.”

Additionally, a paper presented at the annual meeting of the American Academy of Orthopedics in 2006, indicated that the use of POD's demonstrated a significant decrease in mortality from pelvic fractures. (4)

“The use of POD's demonstrated a significant decrease in mortality.”

5 Reasons to Use the T-PODResponder Pelvic Stabilization Device

How do you know which pelvic stabilization device to choose? First, you need to assess your needs, and then choose the device that best fits the requirements of your medical team.

The T-PODResponder Pelvic Stabilization Device was specifically designed for the unique needs of civilian medical professionals. Here are five reasons why you should choose T-PODResponder for your EMS or hospital critical care teams:

1. Evenly Distributed Symmetrical, Circumferential Compression

The T-PODResponder Pelvic Stabilization Device is designed using a unique pulley system spanning nearly the width of the belt. As a result, the device offers compression that is evenly distributed on both sides of the pulley system and across the width of the binder.

Unlike a buckle system where compression can only be applied at certain settings, this pulley system allows for modulated compression, where infinite adjustments can be made.

This means that medical professionals in the field or in the hospital have the ability to provide the exact amount of compression the patient needs.

In addition, the pulley system featuring a 6-8” gap ensures that T-PODResponder cannot be over-tightened.



T-PODResponder can stay on for all radiological scans



T-PODResponder is Designed for EMS:

- One size fits all
- Small, lightweight and compact
- One person can apply in the field

2. 100% Radiolucent – No Need to Remove for X-Ray, CT or MRI Scans

One concern about some pelvic stabilization devices is that they contain metal or other components that make them incompatible with radiological procedures, such as MRI, X-Ray and CT scans.

These components can cause the screen on a scan to blur and be difficult to read. For this reason, some pelvic stabilization devices need to be removed for these scans, and then reapplied following the scan.

Removing and reapplying a pelvic stabilization device is not ideal. It not only takes up valuable extra time in an emergency situation where seconds or minutes may count. It could also reduce patient outcomes by leaving the pelvic region not stabilized or immobilized for a certain period of time.

T-PODResponder is unique in that the device is 100% radiolucent. This means that medical personnel do not have to remove and reapply the device for radiologic procedures. T-PODResponder can stay on and keep the patient's pelvic region stable during MRI, X-Ray and CT scans.

3. One Person Can Apply T-PODResponder in the Field

Most pelvic stabilization devices require two people to apply. Designed using a unique easy-to-tighten pulley system, the T-PODResponder Pelvic Stabilization Device can be easily applied by just one person in the field, and still provide even, symmetrical, circumferential compression.

4. One Size Fits All

Some pelvic stabilization devices come in different sizes to fit different sizes of people. This is not ideal for Emergency Medical Services, as they would need to carry up to three different devices at one time, in a situation where room is already limited.

Additionally, when seconds count, you would have to measure the patient's waist circumference prior to selecting the right device. Other pelvic stabilization devices, such as T-PODResponder, are designed as one-size-fits-all.

So whether your patient is a child, or is morbidly obese, you only need to carry the one size of device with you.

5. Small & Lightweight Design

Pelvic Stabilization Devices specifically designed for EMS and hospital medical personnel are small, compact and lightweight so they can fit in an emergency bag or on a crash cart.

T-PODResponder is just 3-4mm thick, and uses 100% polyurethane material which is breathable, durable, latex-free and contains moisture wicking capability. This material will not fray, even when cut to size.

About the Author

Dr. Alan Moloff:

Colonel (US Army, Retired), DO, MPH - Medical Director, Pyng Medical

Dr. Alan Moloff brings over 30 years of operational military medical experience. He is Board Certified in aerospace, undersea and disaster medicine.

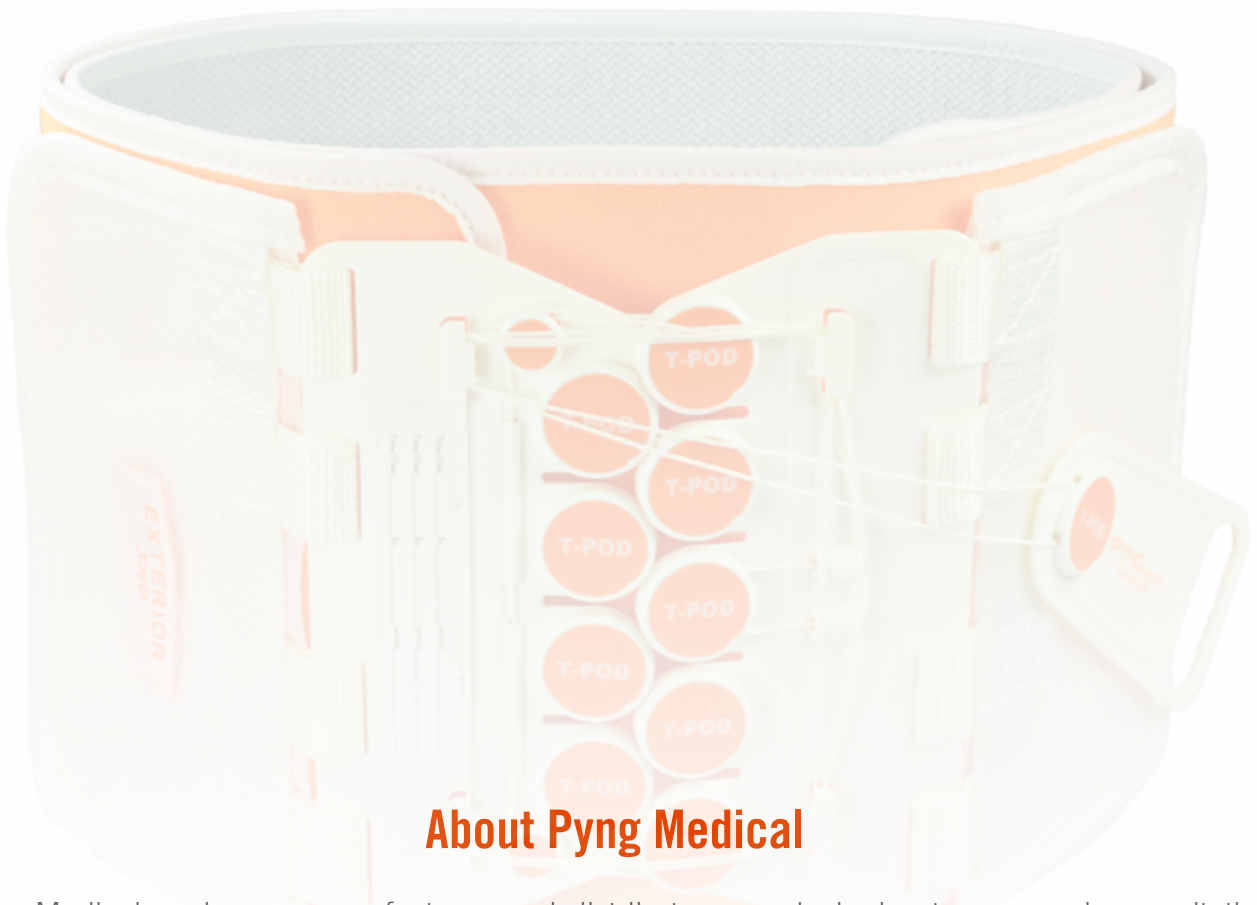
Dr. Moloff's final assignment encompassed four years as Commander of the Defense Medical Readiness Training Institute (DMRTI) where he focused on joint medical readiness, combat casualty care and the medical aspects of Homeland Security planning and training focused on CBRNE and complex disasters.

“If you want to reduce the volume in the pelvis, I have never seen nor used anything that works as well as the T-POD.”

- Captain Peter Rhee, MD, MPH, FACS, DMCC Director, Naval Trauma Training Center, Professor of Surgery, Molecular Cellular Biology, LA/USC Medical Center

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About Pyng Medical

Pyng Medical engineers, manufactures and distributes award-winning trauma and resuscitation products for front-line critical care personnel world-wide. Pyng's product portfolio includes innovative Sternal Intraosseous (sternal IO), pelvic stabilization and tourniquet devices specifically designed and customized for both the military and civilian markets.

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