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JOURNAL of SPECIAL OPERATIONS MEDICINE™



THE JOURNAL FOR OPERATIONAL MEDICINE AND TACTICAL CASUALTY CARE



Inside this Issue:

- › CASE REPORTS: Medical Screening of a Repatriated ANASOC POW
- › *S. algae* Bacteremia During Underwater Training
- › TCCC Critical Decision Case Studies
- › FEATURE ARTICLES: Recommended Limb Tourniquets in TCCC
- › Interoperability in Tourniquet Use
- › Leveraging Combat Casualty Reporting
- › SMART Treatment for Hemorrhage in Trauma
- › Performance Enhancement in US Army Special Operation
- › Review of the Use of the AAJT® in a Military Population
- › TXA via IV, IO, and IM Routes in a Porcine Model
- › ERST-5 Use of Local Whole Blood › Prehospital Whole Blood in SOF
- › Drones in Tactical/Operational Medicine
- › Stop the Bleed Campaign in Italy
- › ONGOING SERIES: Human Performance Optimization, Infectious Diseases, Injury Prevention, NATO Special Operations Combat Medic Research, SOFsono Ultrasound, Unconventional Medicine, Book Review, TCCC Updates, and more!

*Dedicated to the
Indomitable Spirit
and Sacrifices of
the SOF Medic*

A Peer-Reviewed Journal That Brings Together the Global Interests of Special Operations' First Responders



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- › CASE REPORTS: Case Report of *Acinetobacter junii* Wound Infection
- › Unstable Pelvic Fracture Reduction Under Ultrasonographic Control
- › Successful Resuscitative Thoracotomy in an HH-60 Black Hawk
- › Testicular Cancer: Case Report in SOF
- › SPECIAL ARTICLES: NATO Military Medical Exercise Vigorous Warrior 2017
- › Quality of Life Plus Program (QL+)
- › FEATURE ARTICLES: Tourniquet Configuration › Tourniquet Effectiveness Monitoring
- › Improvised Ground Casualty Evacuation Platforms
- › PHTR Experience With Intraosseous Access
- › Comparison of Postexercise Cooling Methods in Working Dogs
- › Psychological Strategies in Navy Explosive Ordnance Disposal Training
- › Integrating PFC Into the Mountain Critical Care Course
- › Battlefield Analgesia and TCCC Guidelines Adherence › EpiNATO-2: 2016 Q Fever Outbreak in Kosovo Force
- › Low-Resource TCCC Training in Remote Areas of Kurdistan › Effect of Marine Exposure on Hemostatic Gauze Efficacy
- › Ranger Athlete Warrior Assessment Performance
- › Ongoing Series: Canine Medicine, Human Performance Optimization, Injury Prevention, SOFsono Ultrasound, Special Talk, Book Review, TCCC Updates, and more!

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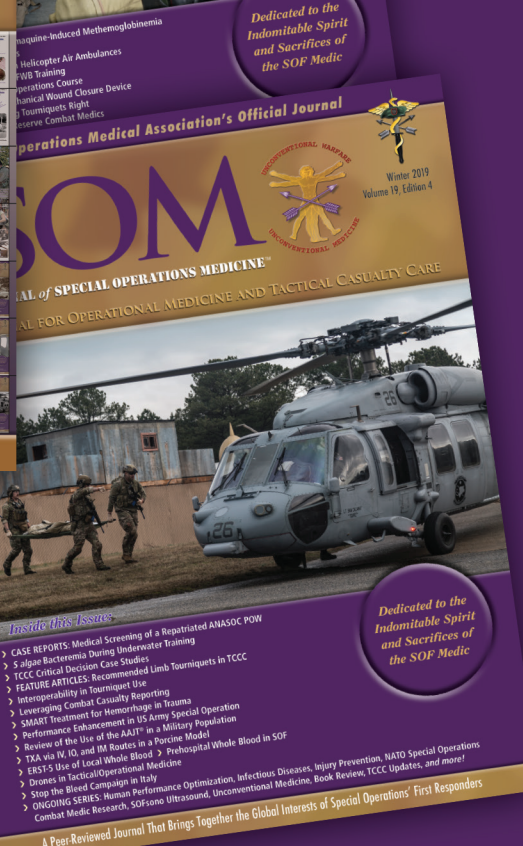
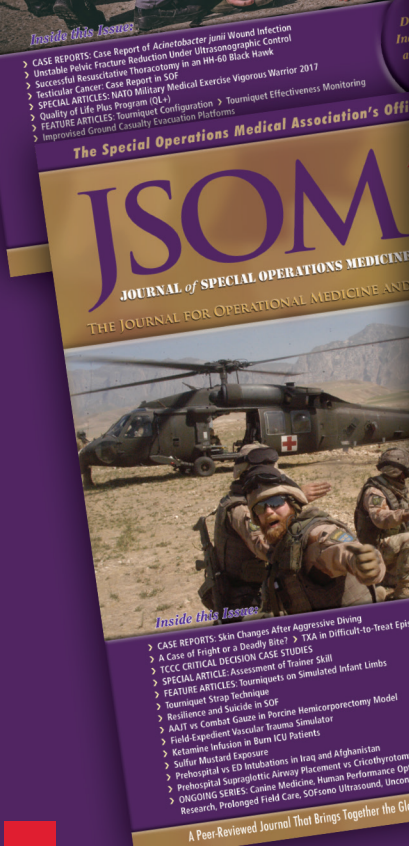
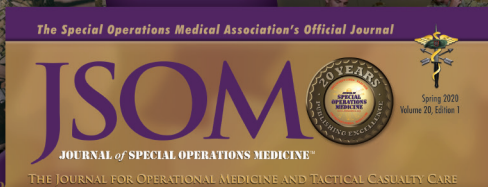
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Media Kit
Effective January 1, 2020

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- Inside this Issue:**
- ▶ CASE REPORTS: Skin Changes After Aggressive Diving
 - ▶ A Case of Fight or a Deadly Bite? ▶ TXA in Difficult-to-Treat Epistaxis
 - ▶ TCCC CRITICAL DECISION CASE STUDIES
 - ▶ SPECIAL ARTICLE: Assessment of Trainer Skill
 - ▶ FEATURE ARTICLES: Tourniquets on Simulated Infant Limbs
 - ▶ Tourniquet Strap Technique
 - ▶ Resilience and Suicide in SOF
 - ▶ AAT vs Combat Gauze in Porcine Hemicolectomy Model
 - ▶ Field Expedient Vascular Trauma Simulator
 - ▶ Ketamine Infusion in Burn ICU Patients
 - ▶ Sulfur Mustard Exposure
 - ▶ Prehospital vs ED Intubations in Iraq and Afghanistan
 - ▶ Prehospital Supraglottic Airway Placement vs Cricothyrotomy
 - ▶ ONGOING SERIES: Canine Medicine, Human Performance Optimization, Infectious Diseases, Injury Prevention, NATO SOCM Research, Prolonged Field Care, SOFono Ultrasound, Unconventional Medicine, Book Reviews, TCCC Updates, and more!
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10TH EDITION

JOURNAL of SPECIAL OPERATIONS MEDICINE™

Advanced Tactical Paramedic Protocols Handbook®



included in this issue:

U.S. SPECIAL OPERATIONS COMMAND's

Tactical Trauma Protocols

Tactical Medical Emergency Protocols

Recommended Drug List

Canine Tactical Combat Casualty Care

NEUROGENIC / SPINAL SHOCK PROTOCOL



SPECIAL CONSIDERATIONS

1. Neurogenic shock refers to the triad of hypotension, bradycardia, and peripheral vasodilation resulting from severe autonomic dysfunction and the interruption of sympathetic nervous system control in acute spinal cord injury. Hypothermia is also characteristic.
2. Neurogenic shock should be considered a diagnosis of exclusion in the setting of trauma.
3. Decreased vascular resistance with resultant warm extremities (depending on surrounding air temperatures) as opposed to cool extremities with hemorrhagic/hypovolemic shock.
4. Neurogenic shock typically occurs with spinal cord injuries at or above T6.
5. Neurogenic shock needs to be differentiated from hemorrhagic/hypovolemic and spinal shock.
 - a. Hemorrhagic/hypovolemic shock tends to be associated with tachycardia.
 - b. Spinal shock is defined as the complete loss of all neurologic function, including reflexes and rectal tone, below a specific level that is associated with autonomic dysfunction. It is a state of transient physiologic (rather than anatomic) reflex depression of cord function below the level of injury with associated loss of all sensorimotor functions. An initial increase in blood pressure due to the release of catecholamines is noted, followed by hypotension. Flaccid paralysis, including of the bowel and bladder, is observed. Sometimes sustained priapism develops. These symptoms tend to last several hours to days until the reflex arcs below the injury level begin to function again.

Signs and Symptoms

1. Presents after spinal cord injury with either complete or incomplete paralysis
2. Hypotension
3. Bradycardia (as opposed to tachycardia) with hypovolemic shock
4. Priapism
5. Altered mental status
6. Oliguria
7. Loss of bowel/bladder control
8. Warm extremities below the point of injury (dependent on environmental air temperature)
9. Hypothermia

Management

1. Obtain IV/IO access.
2. Stabilize spine as required to prevent neurologic deterioration.
3. Oxygen with pulse oximetry monitoring.
4. If respiratory distress exists due to high cervical spinal cord injury, secure airway (NPA, ETT, surgical airway).
 - a. Intubate using in-line stabilization.
 - b. Consider surgical cricothyroidotomy (with local lidocaine) for unstable cervical injury.
5. If patient is hypotensive:
 - a. Give 1L of normal saline or Ringer's lactate IV/IO bolus. Consider additional fluids if still hypotensive to maintain palpable radial pulse or systolic blood pressure > 90mmHg.
 - b. Hextend 500mL boluses may be used if crystalloids are unavailable to maintain palpable radial pulse or systolic blood pressure > 90mmHg.
 - c. Maximum of 2L of IV fluid (or 1L of Hextend®).
 - d. In cases of suspected neurogenic/spinal shock (without evidence of uncontrolled hemorrhage), if there is no blood pressure increase after 2L of crystalloid or 1L of Hextend, give epinephrine as directed in #6.
6.  Push-dose epinephrine:
 - a.  **DO NOT GIVE UNDILUTED (1:1,000) EPINEPHRINE INTRAVENOUSLY.**
 - b. Take a 10mL syringe and draw up 1mL of 1:1,000 epinephrine.
 - c. Then draw up 9mL of normal saline into this syringe.
 - d. Waste 9mL of this mixture, then draw up 9mL more of normal saline into the same syringe.
 - e. Final concentration is 10mL of 1:100,000 epinephrine, 10mcg/mL.
 - f. Administer 0.5–2mL (5–20mcg) IV/IO to maintain radial pulse or systolic blood pressure > 90mmHg.
7. Skin breakdown begins within 30 minutes in the immobilized, hypotensive patient; therefore frequent turning and padding of bony prominences is critical.
8. If available, atropine 0.5–1mg IV/IO push if patient is bradycardic. Repeat as necessary every 3–5min to maximum dose of 3mg.
 - a. Atropine doses < 0.5mg may cause a paradoxical bradycardia.
9. Manage hypothermia.

Disposition

1. Urgent evacuation
2. Maintain spine stabilization throughout transport.

9a EDICIÓN

JOURNAL of SPECIAL OPERATIONS MEDICINE™

Manual De Protocolos Avanzados Para el Paramédico Táctico®



incluido en este suplemento:

U.S. SPECIAL OPERATIONS COMMAND's

Protocolos Tácticos de Trauma

Protocolos Tácticos de Emergencias Médicas

Lista de Medicaciones Recomendadas

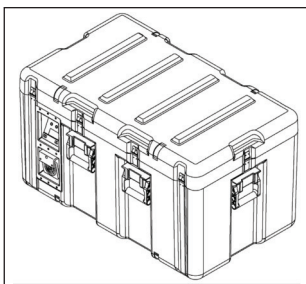
Tactical Combat Casualty Care Canino

Anexo 2 – Lista de Equipamiento Sugerido (cont.)

| Descripción del Ítem | Número de Stock Nacional (NSN) |
|--------------------------|--------------------------------|
| Contenedor Hora Dorada | |
| Camuflaje Bosque Marine | 6530-01-505-5308 |
| Estampado Desierto | 6530-01-505-5306 |
| Camuflaje Bosque Armada | 6530-01-505-5301 |
| Cámara Térmica, Repuesto | 6530-01-505-5311 |



CONGELADOR/REFRIGERADOR
DE HEMODERIVADOS 4110-01-506-0895



PROTOCOLO DE SÍNDROME DE APLASTAMIENTO

CONSIDERACIONES ESPECIALES

1. Estar alerta por el desarrollo del síndrome de aplastamiento que comienza tan pronto como a las 4 horas de producirse la lesión.
2. Estas medicaciones no forman parte del botiquín estándar del ATP y requiere la creación de un kit de lesiones por aplastamiento aparte.

Los principios de reanimación hipotensiva acordes al TCCC NO se aplican en el contexto de lesiones por aplastamiento en extremidades que requieren la extricación.

En el caso de una lesión de aplastamiento asociada a hemorragias no comprimibles (torácicas, abdominales, pélvicas), la reanimación con fluidos agresiva puede aumentar la hemorragia.

Con lesiones en las extremidades, los torniquetes NO deben de colocarse durante la FASE 1 a menos que exista una hemorragia que no pueda ser controlada por otros medios.

Estar alerta para la aparición de arritmias cardíacas debidas a la hiperkalemia producida inmediatamente después de la extricación.

Definición

Las lesiones por aplastamiento masivas, prolongadas, producen un daño profundo en los músculos y en los tejidos blandos, colocando al paciente en un riesgo significativamente mayor de desarrollar complicaciones circulatorias y renales.

Tratamiento

FASE 1: **INMEDIATA** (mientras se intenta la extricación)

1. Mantener la vía aérea permeable (CNF, COF, etc.) y la ventilación adecuada.
2. Monitorizar la Sat O₂ con pulsioximetría y administrar Oxígeno a alto flujo si está disponible.
3. Administrar un bolo inicial de 1–1.5L de SN ANTES de realizar la extricación y continuar con 1.5L/h.
 - No se recomienda el lactato de Ringer debido al contenido en potasio.
4. Mantener una diuresis superior o igual a 200cc/h. Si es posible, colocar una sonda Foley.
5. Evaluar y reevaluar el estado mental.
6. Seguir el *Protocolo de Analgesia (PTEM)*
7. Considerar los antibióticos profilácticos—Ertapenem (Invanz®) 1g IV.

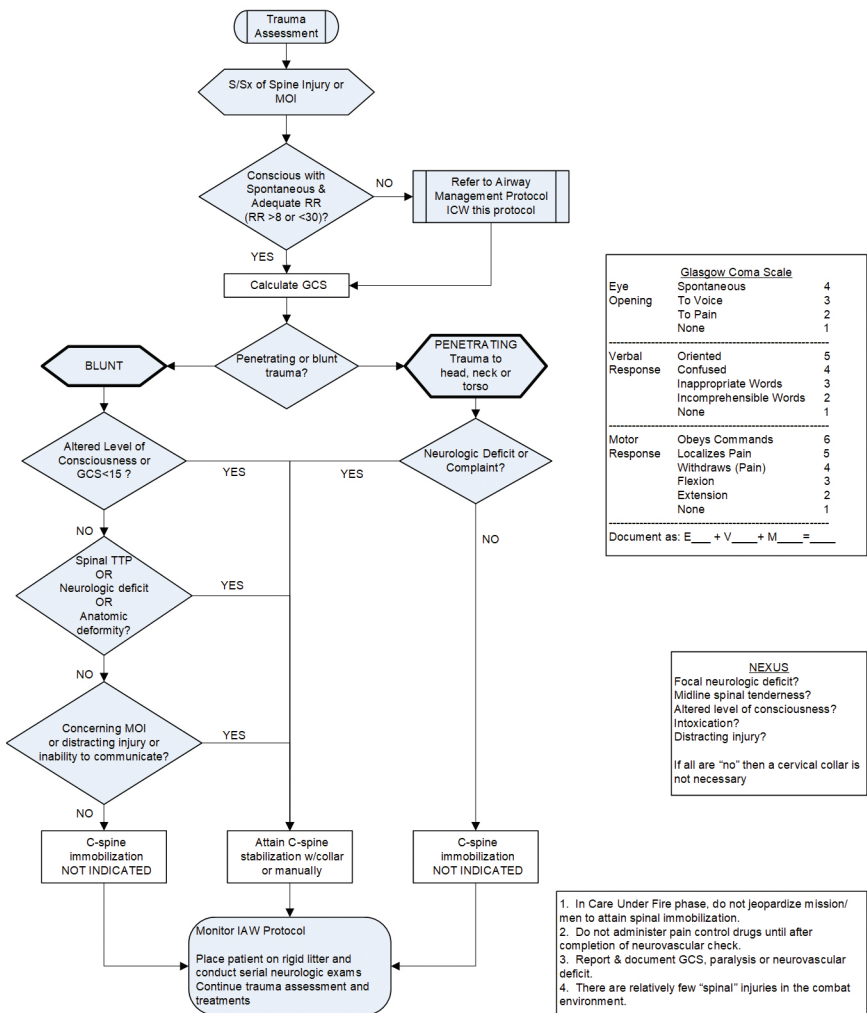


DOMINATUS COMMINUS REMEMDIUM

RANGER MEDIC HANDBOOK

Official 2020 Edition

Spinal Cord Injury Management Protocol



Orthopedic Trauma

Trauma to the extremities is common and can range from simple sprains to massive soft tissue injury and bony destruction associated with explosive devices. The sensation of a "pop" or "crack" is often misleading and should not be relied on. The patient's exam is often the key to diagnosis and initiating proper treatment. Any bleeding, even a small amount, should indicate an open fracture. Examine joints for dislocation and splint any obvious deformity in two planes.

TCCC APPLICATION

Care Under Fire: Control massive life-threatening hemorrhage.

Tactical Field Care: Initially splint any fractures in position of function or immobilize in current position. Generally, splinting in position of function will reduce overall pain to patient. Use traction on indicated fractures but stop if it is causing worse pain. By splinting and reducing fractures, attempt to restore any vascular compromise. If possible, clean and irrigate any gross contaminated wounds/fractures. If conscious, administer combat wound pill pack. Administer antibiotics: ertapenem 1g IV/IM qd **OR** cefazolin 1-2g IV q8hr for open fractures. Reassess neurovascular status every 5-10 minutes and document changes. Dislocations with distal pulse may be reduced based on evacuation time and training/experience in procedure. Consider pain management, local/regional anesthesia, or dissociative agents prior to manipulating dislocations. Splint and/or sling/swathe as appropriate.

Tactical Evacuation: Reassess splints, interventions, and neurovascular status after any evacuation movements. If previously unable to provide traction or adequate splinting, apply as appropriate.

EXTENDED CARE

Orthopedic injuries often accompany other significant injuries. Prioritize patient management based on severity of multiple injuries. Vital signs should be monitored regularly to include color, temperature, motor and sensory function. Conduct repeat motor and sensory exams in conjunction with vital sign checks. IV fluids administered to maintain SBP of 90-100mmHg or as indicated by other conditions. Focus extended care efforts on extremity perfusion. Splinting in anatomical position of function will optimize improved blood flow. If tourniquets have been applied, consider tourniquet conversion if hemorrhage can be controlled through other means.

Consider patient comfort for extended timeframes and re-splint as necessary. Use hematoma blocks, local, or regional anesthesia for pain control. Consider padding points of contact on splinting devices. Treat IAW Pain Management Protocol; consideration of effect on other injury patterns. Contaminated wounds should be flushed with normal saline or clean water. The intent is to remove gross contamination such as dirt and debris.

Monitor for development of compartment syndrome. Be suspicious of compartment syndrome in the following conditions: fractures, crush injuries, vascular injuries, or multiple penetrating injuries (fragmentation). The classic clinical signs of compartment syndrome: pain out of proportion to injury, pain with passive motion of muscles in the involved compartment, pallor, paresthesia, and pulselessness are late findings. Be aware that peripheral pulses are present in 90% of patients with compartment syndrome. Monitor closely and be aware of any pain out of proportion. Compartment syndromes make take hours to develop. For patients with suspected compartment syndrome, reevaluate every 30 minutes for 2 hours, then every hour for 12 hours, then every 2 hours for 24 hours, then every 4-6 hours for 48 hours. Extremity compartment syndromes may occur in the thigh, lower leg/calf, foot, forearm, and hand.

Compartment syndrome management: maintain extremity at level of heart. **Do not elevate.** Loosen encircling dressings. Urgent evacuation. Only attempt fasciotomy if evacuation is delayed 6 hours or longer and with online medical direction. Fasciotomy is not within the independent scope of the Ranger Medic.