

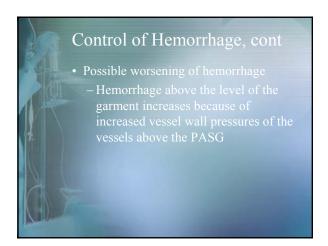
Objectives Upon completion of this lecture, the learner should be able to: Review the determinants of cardiac output and blood pressure and the physiological principles that account for PASG raising of measured BP. List indications and contraindications for PASG in trauma. Discuss problems and complications of PASG, including deflation and compartment syndrome.

Cardiovascular Physiology Factors affecting cardiac output and blood pressure • BP ≈ HR x SV x PVR Factors affecting stroke volume • Positive - Preload (primarily: IV NS, and slight: PASG) • Negative - Afterload (PASG)

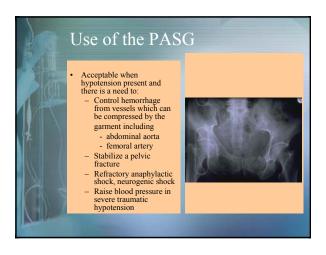
PASG Controversies • Mattox, et al found no advantage to MAST application in hypotensive *urban* patients with mostly penetrating injuries to the chest with *short* transport times. • However, the removal of PASG from ambulances is controversial. – particularly for services with long transport times

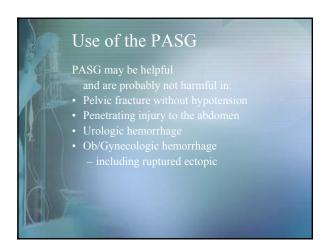
Biomechanics of the PASG - Cardiac Output and Blood Pressure - Autotransfusion - Slight effect: ≈ 250cc to preload - Increased afterload - increases blood pressure - may increase flow to vital organs - Adverse biomechanics - CO declines over time with PASG (baroreceptors and afterload) - Increased BP may accentuate bleeding

Control of Hemorrhage • If external pressure lowers vessel wall pressure, then the rate of flow into the injured area should slow. (Bernoulli's law) • An injured vessel wall allows pressure to force the laceration open. (Laplace's law) - Externally compressing the vessel wall tension should decrease the size of the laceration and the bleeding

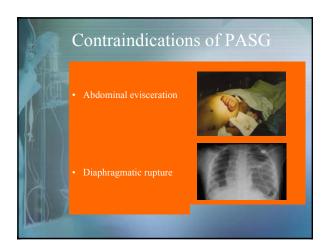


Immobilization of Fractures Effective air splint • Stabilizes fractures • Improves fracture alignment (pelvic) • Reduces tissue damage • Tamponades venous bleeding





Contraindications of PASG • Known or suspected bleeding or injury above the level of the garment including – penetrating chest trauma – non-penetrating, blunt chest trauma – cardiac tamponade • Limited lower extremity trauma with no hypotension • Pulmonary edema



Deflation Procedure - Release 10 mm Hg * of pressure from abdominal compartment. - Reassess vital signs. If heart rate increases by 5-10 bmp or if BP decreases by 5 mm Hg, discontinue deflation. Provide 200-250 cc fluid challenge. If ineffective re-inflate section. - Repeat until abdominal section is deflated. - Repeat procedure for each leg separately * * 110 mmHg/10 = 11 minutes x 3 = 33 minutes

Complications • Environmental effects - To and Pressure • Complications of use - Decreased tidal vol. (diaphragmatic excursion) - Nausea, vomiting, or incontinence from compression of abdominal organs - Compartment syndrome, especially if application > 2 hours and > 30 mmHg - Inadvertent rapid deflation

Summary We have discussed: Determinants of CO and BP and the principles that account for PASG raising of measured BP. Indications and contraindications for PASG. Complications and problems of PASG, including deflation and compartment syndrome.