Abstracts
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Background: The post traumatic open abdomen presents as either acute, or chronic. Options for the acute management include negative pressure therapy, components separation, bridging mesh, bridging prosthetics, or acceptance of the hernia and skin grafting over the defect. Trans-abdominal wall traction (TAWT) is a method whereby midline fascial closure is obtained by applying medial traction using hook/loop sheets and skin protecting. Bolders.

Methods: Primary fascial closure of the reported giant abdominal her- nias was achieved by staged trans-abdominal wall traction using hook/loop sheets placed into the abdomen similar to an underlay mesh. The sheets are secured to the peritoneal surface by large braided sutures coursing through all layers of the abdominal wall, including skin. Knots are tied over padded aluminum bolsters and hydrocolloid sheets protect the skin. A plastic barrier is placed between the peritoneum and bowel and a negative pressure dressing is placed on top. Primary fascial closure is re-enforced by a biologic mesh or a synthetic absorbable mesh (BioA).

Results: TAWT was applied to 16 patients with acute complex open abdominal wounds, with an average wound size of 632.7 cm². TAWT decreased the initial wound size by an average of 372.2 cm². All sixteen patients were closed within 21 days of TAWT. The mean time to closure was 9.9 days. The mean time between initial-op and TAWT was 9.1 days. TAWT was applied to 3 patients with chronic complex open abdomens. All 3 patients had previously been managed by skin graft to viscera. The average wound size was 641.33 cm². TAWT reduced initial wound size by an average of 381.33 cm². OR returns for tightening averaged 2.66 times with wound size decreasing an average of by 42.9 cm².

Conclusion: TAWT is a superior technique to other options for managing and closing acute and chronic giant ventral hernias. TAWT preserves the leading fascial edge, recaptures domain by stretching the oblique muscles, protects from ACS, and eliminates the need for bridges, components separa- tion and large skin flaps. In our practice, it has virtually eliminated the acceptance of skin grafted ventral hernias as the means of open abdomen management, and is changing the way we manage all ventral hernias.

A NOVEL DIGITAL TRANSDUCER FOR DIRECT INTRA-ABDOMINAL PRESSURE MONITORING

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Introduction: Accurate serial measurements of intra-abdominal pressure (IAP) are necessary to guide resuscitation and improve patient survival from intra-abdominal hypertension (IAH) / abdominal compartment syndrome (ACS). A digital pressure transducer (Compass trademark superscript Pressure Access, Mirador Biomedical, Seattle, WA), designed for intra-vascular pressure assessment during central venous catheter insertion, is easily utilized for continuous IAP monitoring by attaching it to any percutaneous drainage catheter or surgical drain while still facilitating drainage of intraperitoneal fluid. The device is disposable and will measure IAP continuously for up to 28 days.

Methods: A comparison of the Compass trademark superscript pressure transducer to the reference standard intravascular pressure monitoring was performed. A 58 year-old male developed ACS due to retroperitoneal hematoma with an IAP of 30 mmHg. Ultrasound-guided percutaneous catheter drainage (PCD) was performed using a 14 F catheter to drain free intraperitoneal fluid. The Compass trademark superscript was connected inline between the catheter and drainage bag. IAP measurements were performed every four hours over the next 60 hours as PCD was utilized to treat the patient’s ACS. Data are reported as either median (interquartile range) or bias ± limits of agreement and were analyzed using both Mann Whitney U-test and Bland & Altman analysis.

Results: IAP was easily determined using the Compass trademark sup- er script pressure transducer and required significantly less time than did intrave- sicular pressure monitoring [18 (15–22) vs. 74 (62–87) sec; p < 0.0001]. The bias between the two techniques was 0.06 with limits of agreement of 3.4.

Conclusion: The Mirador Biomedical Compass trademark superscript pressure transducer facilitates continuous IAP monitoring in IAH/ACS patients who have an indwelling intra-abdominal drain. Compass trademark superscript IAP measurements are comparable to intravesicular pressure monitoring in accuracy, but are more rapidly performed and less subject to operator-induced measurement artifacts. Our assessment of this device is ongoing.

AIRWAY PRESSURES AS A SURROGATE FOR INTRA-ABDOMINAL PRESSURE MEASUREMENT IN PATIENTS AT RISK FOR INTRA-ABDOMINAL HYPERTENSION

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Introduction: Intra-abdominal pressure (IAP) measurements are essential to the diagnosis and management of patients with intra-abdominal hypoten- sion (IAH) and abdominal compartment syndrome (ACS). Airway pres- sures, including peak inspiratory pressure (PIP), plateau pressure (Pplat), and mean airway pressure (Paw), are used by some clinicians as surrogate esti- mates of IAP. This study was performed to evaluate the clinical inter- changeability of airway pressure measurements and IAP in patients at risk for IAH/ACS.

Methods: Mechanically ventilated surgical/trauma patients over 18 years of age with risk factors for IAH/ACS and indwelling urinary catheters underwent simultaneous triplicate measurements of PIP, Pplat, Paw, and IAP. IAP was determined using the intravesicular technique as advocated by the WSACS consensus recommendations. The triplicate measurements were averaged. PIP, Pplat, and Paw were compared to IAP using both co- efficient of determination (R²) and Bland & Altman analysis. Data are presented as either percentage or bias ± limits of agreement.

Results: Twenty patients were evaluated. Ninety percent were male and 65% were traumatically injured. Mean age was 51 ± 17 years. Mean posi- tive end-expiratory pressure was 7 ± 3 cm H2O. The coefficient of de- termination for each airway pressure in predicting change in IAP was as follows: PIP - 10.4% (p = 0.17), Pplat - 16.5% (p = 0.08), and Paw - 22.9% (p = 0.03). Bland & Altman analysis yielded the following results: PIP 19.32 ± 18.69, Pplat 11.13 ± 13.67, and Paw 1.95 ± 9.89.

Conclusions: Airway pressures are poor surrogate measurements for IAP. Of the three, Paw most closely estimates IAP although with marked variability. IAP measurements should be performed in patients with or at risk for IAH/ACS.

THE INCIDENCE OF ABDOMINAL COMPARTMENT SYNDROME IN PATIENTS WITH ABDOMINAL GUNSHOT WOUNDS MANAGED WITH AN OPEN ABDOMEN IN THE SETTING OF DAMAGE CONTROL LAPAROTOMY

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Background: The management of abdominal compartment syndrome (ACS) includes performing an immediate decompression laparotomy and...