MANAGEMENT OF OPEN ABDOMEN USING COMBINATION THERAPY WITH ABRA AND ABTHERA SYSTEMS
Mukhi, Alfin
1QEII Health Sciences Center, Critical Care, Halifax, Canada

Introduction: The open abdomen is an increasingly utilized technique that is applied in a wide variety of clinical situations including treatment and prevention of abdominal compartment syndrome, damage control laparotomy, and severe intra-abdominal sepsis. Once the abdominal fascia has been opened, the viscera must be contained by a temporary abdominal closure (TAC). The ABThera Open Abdomen Negative Pressure Therapy System (KCI USA, San Antonio, TX, USA) is one of the most common and successful TAC systems but it has limited ability to close the fascia in approximately 30% of patients. Failure to close the fascia primarily results in an increased risk of enteroatmospheric fistula, requirement for skin grafting of the visceral mass and a large ventral hernia. Furthermore, early primary closure of the open abdomen has been associated with improved patient survival. The use of mechanical traction in conjunction with the ABThera, has been shown to significantly increase primary fascial closure rates. The abdominal re-approximation anchor system (ABRA, Canica Design, Almont, ON, Canada) is a dynamic closure system that utilizes elastomers through the full thickness of the abdominal wall that slowly pulls the fascia together under continuous variable tension. Although combined therapy of the ABThera with the ABRA seems ideal to manage patients who may not achieve primary fascial closure with ABThera alone, this technique has not been previously described.

Objectives: To describe the rate of primary fascial closure in patients with an open abdomen managed with combination therapy using the ABThera and ABRA.

Methods: This is a retrospective analysis of patients with an open abdomen, managed with the ABThera and ABRA from between January 2007 to December 2012 at the Halifax Infirmary, QEII Health Science Centre, Halifax, Nova Scotia, Canada

Results: There were 16 patients identified who had combination therapy using the ABRA and ABThera for treatment of the open abdomen. In this cohort, the most common reason for utilizing an open abdomen was for the management of abdominal compartment syndrome (38%) and severe intra-abdominal sepsis (38%). Severe pancreatitis accounted for the majority of abdominal compartment syndrome cases. Damage control surgery, in the setting of trauma, accounted for 25% of cases. Overall survival was 75%, with 3 of the 4 deaths occurring before primary fascial closure was achieved. Sepsis and multi-system organ failure was the etiology of death in all cases, including the patient that died after primary closure from an anastamotic leak and ensuing sepsis. The ICU length of stay was a median of 30 days (range 5-47 days). Excluding the four patients who died, the hospital length of stay was a median of 43.5 days (range 27-146 days). Primary fascial closure was achieved in 12 of the 13 surviving patients (92%). The number of days required for fascial closure after the addition of the ABRA was a median of 17 days (range 3-31 days). The one patient who did not achieve primary fascial closure was because the surgeon elected to remove the ABRA and bridge the fascial gap with a Vicryl mesh, after 31 days of having an open abdomen, and after 24 days of treatment with the ABRA and ABThera.
