Open Abdomen Protocol Utilizing Staged Trans-Abdominal Wall Traction (TAWT) Has Revolutionized the Management of the Traumatic Open Abdomen at the Cook County Trauma Unit

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BACKGROUND

Open Abdomen Protocol (OAP) using staged trans-abdominal wall traction (TAWT) has virtually eliminated the need for biliopancreatic bridging, skin grafts and temporary components separation for our open abdomen patients. OAP-TAWT has successfully achieved primary closure in all patients to which it has been applied.

METHODS

Primary fascial closures of all domain loss abdomens, achieved by staged TAWT. Hook and loop sheets are secured in an underlay to the peritoneal surface by large braided sutures courting through all layers of the abdominal wall, including skin. Known and over padded bedheads. Hydrocolloid sheets protect the skin. A plastic barrier is placed between the peritoneum and boxed and a negative pressure dressing is placed on top.

RESULTS

Using the OAP-TAWT was applied to 21 patients with acute complex open abdominal wounds, all of which demonstrated domain loss precluding closure. Average wound size was 15.4cm width by 5.6cm length. At time of placement, TAWT decreased the initial wound width by an average of 13.2cm (93%). All patients were primarily closed. The mean time TAWT to closure was 2.03 days. The mean time between admission, surgery and TAWT was 9.33 days. Patients returned to the OR for transthoracic/rectal washout on average of 2 times (excluding TAWT insertion and final closure operations). The mid wound wall distance <2cm pre-op. Primary closure of all domain loss abdomens, was achieved by staged TAWT. Hook and Loop Sheets (KCI or Smith and Nephew or Custom)

Sutures

TABLE 1. Domain Loss Patients, Progression to Closure

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<th>Average</th>
<th>Median</th>
<th>Total</th>
<th>Median</th>
<th>Total</th>
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<tbody>
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<tr>
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<td>Post op 3 Length</td>
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Note: No domain recovery and mid wound gap remains constant despite
2) Maximum 14-21 days depending on circumstance.
3) Extubation should be attempted between tightening operations when possible.
4) Exact operational total duration is recommended for minimizing tightening.
5) Mid wound distance recovery and mid wound gap resolution, usually requires two attempts at tightening, considering shifting to accepted neutral form with split thickness skin graft OR biliopancreatic bridge graft.

ACUTE OPEN ABDOMEN

PROCEDURE Description of Staged Trans-Abdominal Wall Traction Technique (TAWT)

FIGURES

FIGURES 1 & 2. Trans-Abdominal Wall (TAWT) System

FIGURES 3 & 4. TAWT Insertion – Skin Protection Hydrocolloid Dressings

FIGURES 5 & 6. TAWT Insertion – Hook and Loop Sheet Placed at Underlay

FIGURES 7 & 8. TAWT Insertion – Hook and Loop Sheet Placed at Underlay

FIGURE 9. Schematic of Forces

FIGURES 10 & 11. Trans-Abdominal Wall Traction – (TAWT) Device inserted, Device Released by 50%

FIGURES 12 & 13. TAWT Tighten Wash Out – Retain T-CR Every 48hrs: Expect Domain Resolution 7-14 days: Each time

FIGURE 14 & 15. TAWT Removal – Primary Fascial Closure

CONCLUSIONS

OAP with TAWT has changed the way we manage our open abdomen patients. TAWT removes lost domain by stretching the overlying muscles, it preserves the leading fascial edge, and it eliminates the need for bridges, components separation and skin grafts.