P4HB: The Ideal Mesh for Complex Abdominal Wall Reconstruction?

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Purpose: Use of mesh during repair of ventral hernia reduces recurrence rates compared to suture repair alone, but has been associated with increased rates of infection and seroma. As such, no ideal mesh material for complex abdominal wall reconstruction (CAWR) has yet been identified. Poly-4-hydroxybutyric acid (P4HB, Phasix®) is a degradable biosynthetic polymer, which maintains its tensile strength for at least 6 months and can be woven into a mesh for use in soft tissue reinforcement. We reviewed our experience using a P4HB mesh in CAWR.

Methods: All patients (n=52) undergoing CAWR by the senior author (JAS) between June 2014 and January 2016 were followed prospectively for post-operative outcomes. Surgical repair included components separation with primary repair of the fascial edges in all cases. P4HB mesh onlay was secured to the lateral edge of the released external oblique fascia. Patient demographics and outcomes were followed for up to 18 months following repair.

Results: 52 patients (27 male, 25 female; mean age 57 years, range 22-82) underwent complex abdominal wall reconstruction. Mean BMI was 28 (range 16-43); 20 patients had prior attempted hernia repair and most had medical co-morbidities. Sixteen cases (30%) were either contaminated or infected prior to repair. Indications for surgery included open abdominal wound (2), enterocutaneous fistula (7), open abdomen with exposed viscera (2), mesh infection (1), or stoma reversal (5). Average follow up was 7.4 months (range 1-18). One patient with multiple prior hernia repairs developed a recurrence at 7 months and required re-operation with placement of a new P4HB mesh. Five (9.6%) patients developed localized superficial infection treated with antibiotics and wound care. No patient developed a mesh infection or required mesh explantation. Eight (11.5%) patients had superficial wound breakdown; 7 were treated with local wound care alone. One morbidly obese patient required operative excision of a chronic non-healing abdominal wound after 12 months. Three (5.7%) patients developed seromas requiring aspiration.

Conclusions: These data demonstrate very low rates of hernia recurrence, seroma and other common complications of CAWR. Importantly, no patients developed mesh infection or required explantation, even when placed into a contaminated or infected surgical field. Although follow up length is limited, P4HB appears to be an extremely promising adjunct for soft tissue reinforcement in the setting of CAWR.