Long- Term Outcomes in Complex Abdominal Wall Reconstruction Repaired With Absorbable Biologic Polymer Scaffold (Poly-4-Hydroxybuyrate)

Article Summary

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Setting
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Objectives
The goal of the study is to provide long term data with adequate follow up in the use of P4HB for abdominal wall reconstruction following resorption.

Study design
Consecutive contiguous groups

Subjects and methods
Longitudinal long term follow up (5-year) of patients undergoing abdominal wall reconstruction by the same surgeon. The first group used porcine cadaveric biologic mesh scaffold, Strattice (Lifecell) and the second group used P4HB during the abdominal wall reconstruction. Four surgical drains were placed in all cases, the drains were only removed when output was less than 25mL/d/drain. The patients were educated on how to measure and record daily drain out; they were also told to communicate with the primary clinic nurse when the 25mL/d/drain criteria was met. Patient demographic data and risk factors including age, sex, race, obesity, diabetes, smoking history, drinking history, immunosuppressed state, and prior hernia operation were collected. Risk factor was calculated by the addition of relevant risk factors include obesity, diabetes, current smoker, current drinker, and immunosuppression.

Results
73 patients underwent abdominal wall reconstruction between June 2010 and June 2015. 42 patients received reconstruction with the porcine cadaveric mesh, Strattice (Lifecell) and 31 received repair with P4HB, Phasix (Bard). In the long term 5- year follow up period analysis the P4HB group (n=31) had a lower retention rate of (12.9 vs 38.1 P=0.017) compared to the porcine cadaveric mesh group (n=42). The median interval of moths to recurrent herniation was found to be similar among both groups (24.3 vs 20.8 P=0.700). Multivariate logistic regression analysis on long term outcomes revealed smoking (P=0.004), African American race (P=0.004) and using cadaveric grafts (P=0.003) as risks for complication while smoking (P=0.034) and the usage of cadaveric grafts (P=0.014) are risks of recurrence. The long-term cost analysis displays that P4HB had $10,595 for each case cost savings over porcine cadaveric mesh.

Conclusion
This study found that there were superior outcomes in clinical performance and value-based benefits in absorbable biologic P4HB scaffold after the resorption time. Data shows that usage of porcine cadaveric grafts contribute to the incidence of complications and recurrences independently.