Improving Outcomes in Complex Abdominal Wall Reconstruction: Primary Fascial Closure with Bioprosthetic Mesh Reinforcement is Superior to Bridged Repair

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Background: The true impact of complete fascial closure on AWR outcomes is currently unknown; however, subset analyses in recent publications have shown bridged repairs to be associated with hernia recurrence.\(^1\) While many surgeons believe primary fascial closure with mesh reinforcement should be the goal of abdominal wall reconstruction (AWR),\(^2\) others have reported acceptable outcomes using mesh to bridge the fascial edges.\(^3\) We hypothesized that bioprosthetic mesh-reinforced repairs with complete fascial coaptation result in lower hernia recurrence rates than bridged repairs.

Methods: Prospectively collected data from consecutive patients who underwent midline AWR between 2000 and 2011 were retrospectively reviewed. Patients with <1 year of follow-up were excluded. Surgical outcomes were compared between patients with bridged and mesh-reinforced fascial repairs. Hernia recurrence was the primary outcome measure. Multivariate logistic regression analysis identified factors predictive of or protective hernia recurrence and other complications.

Results: A total of 222 patients were included (mesh-reinforced, \(N=195\)) with a mean follow-up of 31.1±14.2 months. Patient characteristics were similar between groups. Mean defect width was greater in the bridged group (15.9cm vs. 13.8cm; \(p=0.023\)). Non-cross-linked porcine acellular dermal matrix (NCL-PADM) was used in 54.1% of cases; non-cross-linked bovine acellular dermal matrix (NCL-BADM) in 31.1%. Although not statistically significant, the distribution of mesh types varied between groups: NCL-BADM was used more often in the reinforced group (33.8% vs. 11.1%); NCL-PADM was used more frequently in the bridged cases (74.1% vs. 51.3%). Component separation was performed in 73.4% of the cases, with similar frequency between groups. Although infrequently needed, free tissue flaps were more commonly performed for skin replacement among the bridged repairs (14.8% vs. 4.1%; \(p=0.04\)). The bridged repairs experienced a significantly higher rate of hernia recurrence (56% vs. 8%; HR=9.5; \(p<0.001\)) and overall complications (74% vs. 32%; OR=3.9; \(p<0.001\)). The interval to recurrence was >9 times shorter in the bridged group (HR=9.5; \(p<0.001\)). All bridged repairs with ≥4 years of follow-up experienced hernia recurrence. Multivariate regression analysis identified bridged repair (HR=7.3; \(p<0.001\)) and defect width >15cm (HR=2.5; \(p=0.03\)) to be independent predictors of hernia recurrence.

Figure 1. Kaplan-Meier curves for hernia recurrence over time.

Conclusions: AWRs with primary fascial coaptation and bioprosthetic mesh reinforcement experienced fewer hernia recurrences than bridged repairs. Surgeons should strive to achieve primary fascial coaptation to reduce hernia recurrences.

References
