Wound Contamination Does Not Affect Outcomes with Acellular Dermal Matrix in Abdominal Wall Reconstruction: Evidence from Propensity Score Analysis

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INTRODUCTION: Abdominal wall reconstruction (AWR) can be a challenging procedure, especially in the case of contaminated wounds. Prior studies have shown wound contamination to be associated with a higher risk of complications in AWR. However, no study [of wound contamination and complication risk?] has adequately controlled for differences in patient characteristics.

MATERIALS AND METHODS: In this retrospective study, we investigated the efficacy and safety of AWR using acellular dermal matrix (ADM) in contaminated and non-contaminated wounds. We classified reconstructions according to the Centers for Disease Control Wound Classification. Propensity score analysis was used for risk adjustment of baseline characteristics in multivariate analysis and for one-to-one matching to control for differences between the groups.

RESULTS: Between March 2005 and October 2015, we included 519 AWR patients: 420 patients with class I or II wounds (clean/clean contaminated) were compared to 99 patients with class III or IV wounds (contaminated/dirty-infected). Patients with contaminated wounds had longer operative times (464 vs 354 minutes, $p<0.001$), longer hospital stays (15.1 vs 9.5 days, $p=0.008$), and higher rates of surgical site occurrences (33.3% vs 21.4%, $p=0.012$), wound dehiscence (22.2% vs 14.0%, $p=0.044$), anastomosis leakage (6.1% vs 0.7%, $p<0.001$), and re-operations (15.2% vs 7.4%, $p=0.014$). Despite these differences in immediate complications, no differences were observed in hernia recurrence and mesh removal rates between the two groups. When the wound groups were adjusted for propensity score (in addition to the propensity score matched pairs), we no longer observed any differences in complications.

CONCLUSION: When the baseline characteristics were controlled, complex abdominal wall reconstructions using ADM demonstrated similar rates of complications in patients with contaminated/dirty wounds compared with those with clean/clean contaminated wounds. Wound contamination does not affect short-term or long-term outcomes in complex AWR when ADM is used.