Surgeon-Controlled Study and Meta-Analysis Comparing FlexHD and AlloDerm in Immediate Breast Reconstruction Outcomes

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INTRODUCTION: The use of acellular dermal matrix (ADM) has facilitated immediate prosthesis-based breast reconstruction and holds select applications in cosmetic breast surgery. Despite widespread adoption, there remain concerns regarding the differences in post-operative complication rates among the available ADM products. Few studies directly compare outcomes following ADM-based reconstruction with two of the most commonly available ADM materials, AlloDerm and FlexHD. Those studies that are available often do not adequately control for the surgeon as a variable. We hypothesize that complication rates will not differ significantly between AlloDerm and FlexHD when practice and surgeon variables are properly controlled.

METHODS: IRB approved retrospective review was conducted to identify consecutive implant-based reconstruction procedures performed at a tertiary academic medical institution by a single plastic surgeon over 15 years. Clinical endpoints of infection, seroma, hematoma, delayed wound healing, and explantation were recorded. Univariate analysis was conducted to compare patient characteristics across both ADM groups (AlloDerm/AlloDerm RTU vs. FlexHD Perforated). Potential confounding factors were accounted for in binomial regression.

RESULTS: Of the 233 patients that underwent matrix-based breast reconstruction, eleven (4.7%) developed infection that required IV antibiotic treatment or surgical exploration. Rate of infection was not statistically different between patients who received FlexHD (n=5, 5.0%) vs. AlloDerm (n=6, 4.6%), in both univariate (p=0.89) and binomial regression analysis (p=0.56). Breast-specific data also indicated that the infection rates between AlloDerm and FlexHD did not significantly differ (3.1% v. 2.9%, p=0.92). Likewise, there were no statistical differences in the rates of seroma, hematoma, explantation, and delayed wound healing. Of the patients who developed surgical site infection, a total of 5 (45%) had a history of either pre-operative (n=2) or postoperative (n=3) radiation.

CONCLUSION: Our study indicated no significant differences in infection rate between AlloDerm and FlexHD. Clinical endpoints of infection, delayed wound healing, seroma, explantation, and hematoma were all equivalent between ADM types. History of smoking was confirmed to be a predictor of infection. Nearly half of those who developed infection had a history of either pre-operative or postoperative radiation therapy. This is the only study comparing ADM types where the surgeon factor is adequately controlled.