Surgeon and Hospital Factors in Open Ventral Hernia Repair

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INTRODUCTION: Open ventral hernia repair (OVHR) is performed by surgeons of differing training and with supplemental techniques such as mesh or components separation. Although general surgeons perform most OVHRs, plastic surgeons also participate in ventral hernia repair. The impact of specialty training upon OVHR practices is not well understood. Moreover, there has been significant cross-pollination of repair techniques across specialties. We hypothesized that surgeon specialty, surgeon volume, and hospital volume would be predictors of surgical complications, mortality, extended hospital stay, and total charge.

METHODS: Retrospective analysis was performed using data from the National Inpatient Sample (NIS) from 2001 to 2009. Patients undergoing open ventral hernia repair (OVHR) were identified using ICD-9 codes. Physician identifiers in the database were used to quantify surgeon OVHR case volume. Surgeon specialty was identified utilizing specialty specific case examples. Plastic surgeons (PS) and General Surgeons (GS) were selected. Non-elective cases or those involving the repair of an inguinal, umbilical, femoral, or diaphragmatic hernia or any type of GI resection were also excluded.

Multivariate regression modeling was used to characterize the association between patient, hospital, and surgeon factors with surgical complications, total charge, length of hospital stay, and in-hospital mortality. Surgical complications were defined using previously described surrogates. Patient age, gender, obesity status, Charlson comorbidity score, payment type, admission source, location, hospital teaching status and region, and total number of concurrent diagnosis and procedure codes were included as covariates in the multivariate models. All tests were two-sided and significance was set at $p<0.05$.

RESULTS: A total of 77,572 open ventral hernia repairs were included in the analysis. 7.1% (n=5,494) of cases were performed by PS and 92.9% (n=72,078) were performed by GS. PS was associated with decreased odds of extended length of stay (OR=0.72, $p<0.001$), surgical complications (OR=0.71, $p<0.01$), and death (OR=0.40, $p<0.05$). PS was also a significant predictor of lower total hospital charge (Beta=-3151.3, $p<0.001$). High volume hospitals were associated with greater total charge (Beta=1709.7, $p<0.001$) and increased odds of extended LOS (OR=1.09, $p<0.01$), but lower risk for complications (OR=0.90, $p=0.001$).

CONCLUSIONS: In this analysis, we found that PS patients had shorter hospital stays, fewer surgical complications or deaths, and lower total charge, despite the fact that GS performs the vast majority of OVHR cases. High volume surgeons and hospitals were both associated with reduced risk for complications of surgery. We identified PS as a predictive factor in the quality and efficiency of OVHR.