

The Use of Intraoperative Indocyanin-Green Angiography to Minimize Wound Healing Complications In Abdominal Wall Reconstruction

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BACKGROUND:

Complication rates following complex abdominal wall reconstruction remains high. Early complications are usually related to skin necrosis and delayed healing; whereas, late complications are usually related to recurrence. When concomitant body contouring procedures are performed, complication rates can be further increased. It is hypothesized that, fluorescent angiography using indocyanin green (ICG) will identify poorly perfused tissues and thus reduce the incidence of delayed healing.

METHODS:

An IRB-approved, retrospective review was conducted of all patients who underwent abdominal wall reconstruction with concomitant panniculectomy from 2007-2012. Intraoperative ICG angiography with the SPY system (LifeCell Corp.) was used to determine amount of resection for body contouring in patients who underwent reconstruction from 2011-2012. SPY-Q was used to assess relative perfusion of analyzed areas. Preoperative, postoperative, and operative details were analyzed.

RESULTS:

17 patients met inclusion criteria; 12 patients were included in the non-ICG cohort, while 5 patients were included in the ICG cohorts. Demographic variables were similar between groups. Wound-healing related complications occurred in 5/12 (42%) patients in the non-ICG cohort versus 1/5 (20%) of the ICG cohorts. In the sole patient with delayed healing in the ICG cohort, SPY-Q system predicted poor tissue perfusion but the results were ignored based on visual tissue appearance. Operative debridement and wound infection development occurred more frequently in the non-ICG cohort compared to the ICG cohort (17%, 17% versus 0%, 0%, respectively). Average time to complete wound healing was 41.1 days. Non-wound healing complications occurred in 3/12 (25%) vs. 1/5 (20%) in the non-ICG and ICG cohorts, respectively.

CONCLUSIONS:

Intraoperative ICG angiography can accurately detect perfusion abnormalities and can decrease wound healing related complications in complex hernia repair with concomitant panniculectomy. Assessing and ensuring skin viability can decrease the need for operative debridement.