

## **Minimally Invasive Component Separation Improves Surgical Outcomes for Abdominal Wall Reconstruction in High-Risk Patients**

### **Purpose:**

Abdominal wall reconstruction can be challenging, particularly in patients with complex defects and/or medical comorbidities. The use of bioprosthetic mesh in combination with component separation (CS) has proved to be beneficial in these patients. A new technique, minimally invasive CS with inlay bioprosthetic mesh (MICSIB), was developed in an attempt to minimize some complications of open CS. Using tunnel access to the linea semilunaris, MICSIB preserves the rectus abdominis perforators and limits subcutaneous dead space. We hypothesized that improved skin perfusion and reduced subcutaneous undermining with MICSIB would result in fewer wound-healing complications than open CS.

### **Methods:**

All patients who received CS with an inlay of bioprosthetic mesh during the repair of complex hernia defects at a major cancer center in 2005-2010 were included in this study. Patients were grouped by whether they received MICSIB or open CS. Patient and defect characteristics and surgical outcomes, including complications, were compared.

### **Results:**

One hundred and seven patients (56 MICSIB; 51 open CS) were included. The mean follow-up was  $20 \pm 14$  months for all patients. There were no significant differences in

mean age (63+/-13 vs 61+/-13 yr), mean body mass index (29+/-6.6 vs 29.5+/-6.0), pre-existing medical comorbidities (79% vs 85%), presence of an ostomy (27% vs 34%), preoperative radiotherapy (31% vs 32%), preoperative chemotherapy (53% vs 52%), smoking (41% vs 32%), and previous hernia repair (33% vs 22%) between the MICSIB and open CS groups, respectively. However, the mean fascial defect size was significantly larger in the MICSIB group (466 vs 263 cm<sup>2</sup> in open group). The incidences of skin dehiscence (9% vs. 27%), wound-healing complications (14% vs. 31%), abdominal laxity/bulge (5% vs. 14%), and recurrent hernia (2% vs. 10%) were lower in the MICSIB group.

### **Conclusions:**

MICSIB results in fewer complications and hernia recurrences than open CS for complex abdominal wall reconstructions. These findings are likely due to improved skin vascularity and reduced subcutaneous dead space. MICSIB should be considered for complex abdominal wall reconstructions, particularly in patients at increased risk of surgical complications.