INTRODUCTION
Implantation of an abdominal wall prosthesis routinely accompanies laparoscopic incisional/ventral hernia (LIVH) repairs. A major concern of surgeons is how the implanted mesh will respond in vivo in terms of adhesion formation, amount of shrinkage, abdominal wall compliance and tissue ingrowth. Shrinkage of mesh has been cited as a possible explanation for hernia recurrence. Multiple animal studies have been performed with variable rates of mesh shrinkage; however, very few human studies have been performed. Expanded polytetrafluoroethylene (ePTFE) is unique in that it can be visualized on computed tomography (CT). Our aim is to determine the rate of mesh shrinkage in patients who have had implantation of ePTFE for LIVH.

METHODS
At our institution, we performed 815 LIVH repairs between January 2006 and August 2009. The majority of those patients had implantation of GORE® DUALMESH® PLUS Biomaterial (W. L. Gore, Newark, DE). We identified 65 patients who had postoperative CT’s of the abdomen with visualized ePTFE and known transverse diameter of implanted GORE® DUALMESH® PLUS Biomaterial (W. L. Gore, Newark, DE). The mesh was measured using the AquariusNet software (TeraRecon, San Mateo, CA) program which outlines the mesh and calculates total length. The technicians who measured the mesh were blinded to the original size of the implanted mesh. The difference in mesh size was determined by subtracting the calculated size of ePTFE in the transverse plane from the measured transverse diameter of the mesh. Mesh shrinkage was defined as any decrease in size of the implanted mesh.

RESULTS
The mean shrinkage rate was 8.4%±7.9%. This result was not statistically different from the previously reported 7.5% rate in the only other human study of ePTFE shrinkage using CT measurements (p=0.36). Duration of implantation ranged from 0.25 months – 78 months with a mean of 17.2 months. The average transverse mesh size implanted was 18 cm. Seroma was seen in 12.3% (8) of patients. No relationship was identified between percentage of shrinkage and original mesh size (p= 0.84), duration of time implanted (p=0.58) or seroma formation (p=0.45). In 27.6% (18) of patients, no shrinkage of mesh was identified. Of the patients who did experience mesh shrinkage, the range of shrinkage was 2.6 % - 25%.

TECHNIQUE
Complete adhesiolysis is performed after safe entry into the abdomen routinely with a 5 mm optical trocar. The hernia defect or defects are identified and measured. The mesh size is determined based upon the size of the defect. A 3-5 cm overlap of the hernia is calculated into the choice of mesh size. The mesh is prepared routinely with CV-0 ePTFE sutures at the superior and inferior boundaries prior to insertion into the abdomen. The mesh is inserted into the abdomen through a 5 mm trocar site and unrolled inside of the abdomen. Transfascial sutures are secured superiorly and inferiorly using a laparoscopic suture passer. The mesh is fixed to the abdominal wall with tackers at 1 cm increments circumferentially around the mesh and a second row of tackers in a double crown technique. Transfascial sutures are placed every 3-5 cm.

REFERENCES

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