Abstract—The relatively new innovative SPIDER® Surgical System is creating the pathway for more technologically advanced forms of laparoscopic surgeries.

I. INTRODUCTION

The SPIDER® Surgical System, developed by medical device company TransEnterix, is a laparoscopic platform that is used to perform minimally invasive surgery. Developed by Dr. Richard Stac of Duke University, SPIDER® utilizes flexible instruments and one incision in the navel to allow for quicker healing for patients. The system was granted FDA approval in October 2009, and since then has been used in various countries around the world. It provides intra-abdominal triangulation via a single site with 360-degree motion. SPIDER® is most commonly used to treat obesity and colon cancer, while also used to remove kidneys and gallbladders.

II. METHODS

To perform the surgery, an incision is made around the patient’s navel area, and the SPIDER® device is inserted where it then opens up within the abdomen. This capability for 360-degree motion gives the surgeon ability to perform a variety of abdominal procedures. The outer diameter of the device is 18mm, with a 5mm bariatric length scope used through the device for visualization. Utilizing four channels of the device both rigid and flexible, only a single incision needs to be made as opposed to multiple incisions of typical laparoscopic surgical procedures.

In a case study of using SPIDER® technology to perform cholecystectomies, 4 patients underwent this surgery. A Hasson cut down method was used to make the incision and to gain access to the peritoneal cavity, and the SPIDER® device was inserted into the umbilicus of each patient under visualization. A grasper was utilized through the device to remove the gallbladders of each patient, and flexible instruments were introduced to complete the cholecystectomies.

III. RESULTS

The results of the case study indicated that all cholecystectomies performed were successfully completed with the SPIDER® system. There was neither apparent inflammation nor any apparent trauma at the level of skin with the single-port sections. The wound healing after the operations indicated appropriate for incisional healing at 7 days. Overall, results demonstrated minimal local tissue trauma after using the TransEnterix SPIDER® Surgical System.

IV. DISCUSSION

The SPIDER® System has proven to maintain the principals of gold-standard laparoscopic surgery while addressing the problems surgeons have encountered using other devices more minimally invasive procedures. The key attribute of the SPIDER® device is its ability to be flexible and expansive while utilizing various devices. Advantages of using SPIDER® include lower morbidity, faster recovery, and improved cosmetic results, while disadvantages include the possibilities of direct injury to abdominal muscles and more local tissue injuries. It is possible that SPIDER® will pave the pathway for more simple, yet advanced forms of minimally invasive surgical procedures.

REFERENCES