

OVER 500 CASES OF SINGLE-PORT ROBOTIC SURGERY: A COMPREHENSIVE EXPERIENCE FROM A GENERAL SURGERY CENTER

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INTRODUCTION

The daVinci SP robotic platform represents a major step forward in minimally invasive surgery. The system combines the advantages of a fully robotic platform with the advantages of a single incision approach. We present our experience with the Da Vinci SP system in general surgery across more than 500 cases, highlighting its versatility, safety, and application across a wide variety of general surgical procedures.

MATERIALS AND METHODS

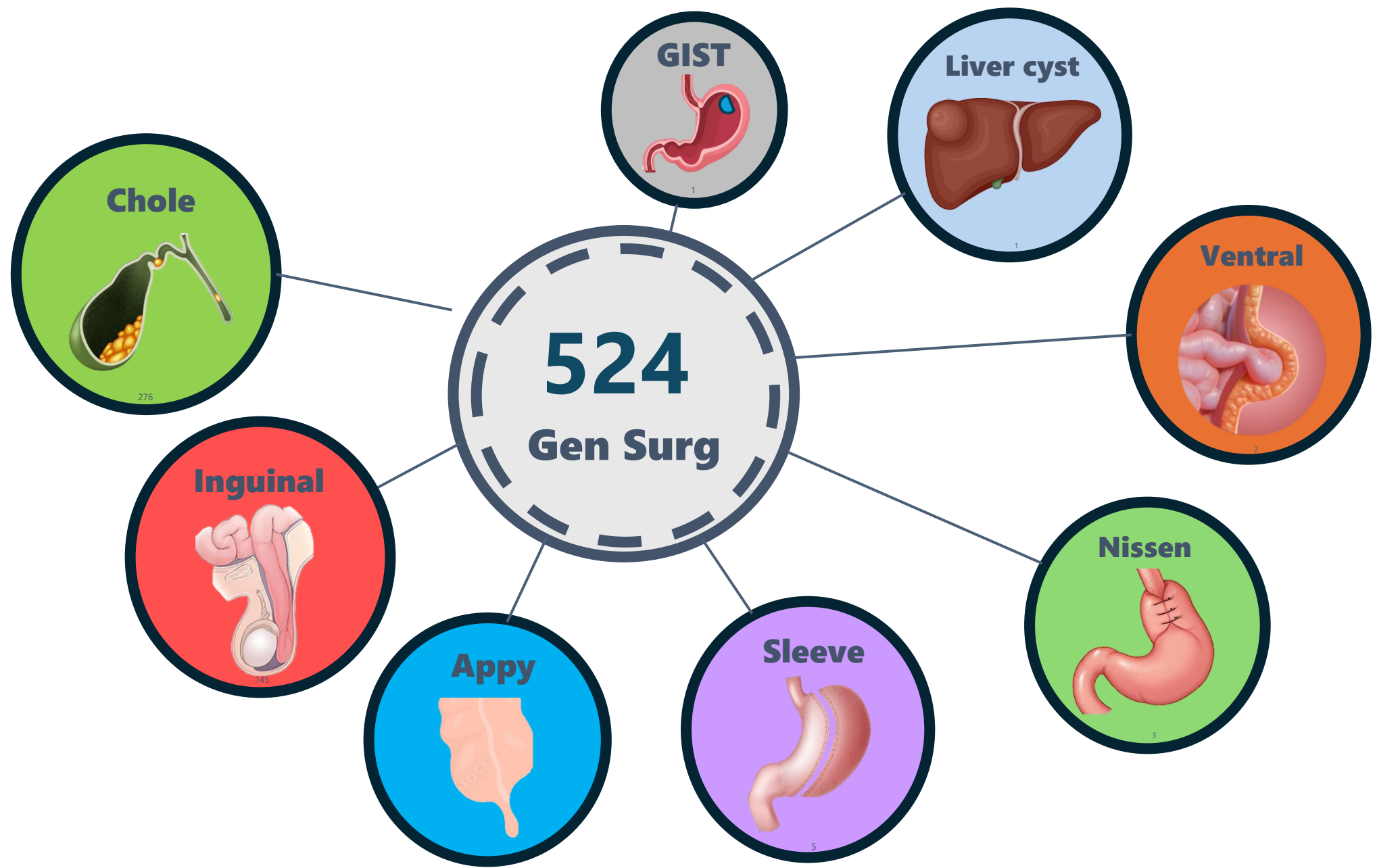
A retrospective analysis was conducted on consecutive procedures performed with the da Vinci® SP robotic platform between July 2019 and February 2026. The main procedures were transabdominal preperitoneal (TAPP) inguinal hernia repair, cholecystectomy, Nissen fundoplication, sleeve gastrectomy, appendectomies, and other general surgical interventions as detailed in Figure 1. Outcomes were assessed in terms of conversion to laparoscopy or open surgery, intraoperative and perioperative complications, postoperative adverse events, and the incidence of incisional hernia during follow-up.

RESULTS

During the study period, 524 patients underwent single-port robotic surgery. Most of cases were single-port robotic cholecystectomies (n=325), followed by inguinal hernia repairs (n=177). Other procedures included Nissen fundoplication for hiatal hernia, sleeve gastrectomies, hepatic cyst fenestrations and various additional abdominal procedures. All the procedures were performed at the University of Illinois. 405 in the main OR and 109 procedures performed in the outpatient surgery center part of the same institution. The overall complication rate was 3.05% (n=16). Most complications were low-grade, with 11 of 16 events (68.8%) classified as Clavien-Dindo grade I, predominantly seromas (n=4) and superficial surgical site infections (n=7); 3 events were grade II (urinary retention n=2, umbilical abscess n=1) and 2 were grade IIIb (biliary leaks requiring stent placement and ERCP, n=2). New incisional hernias developed in 3 patients (0.57%) during a mean follow-up period of 487 days and 87% adherence to the follow up.



	Cholecystectomy	Inguinal hernia
Mean console time (min)	23	27
Mean operative time (min)	67	66
Additional ports, n (%)	-	-
Conversion rate, n (%)	0	0



CONCLUSION

The robotic single-port (SP) platform offers a safe and feasible approach for a broad spectrum of general surgical procedures. While well established in routine operations such as inguinal hernia repair and cholecystectomy, our experience supports its effectiveness in more complex procedures, including Nissen fundoplication and bariatric surgery. As surgical expertise and instruments availability continues to grow, its application is expected to expand further, making increasingly complex procedures accessible through a single-port robotic approach.