

Clinical results of Self-Ligating Loops versus Thoracoabdominal Staplers for Lung Lobectomies in Small Animals

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Objectives

The purpose of our study is to compare clinical outcomes between the use of self-ligating loops (SLL) versus traditional thoracoabdominal (TA) staplers for lung lobectomies. We hypothesized that there would be no difference in the outcomes of patients having a lung lobectomy performed with a SLL versus TA stapler.

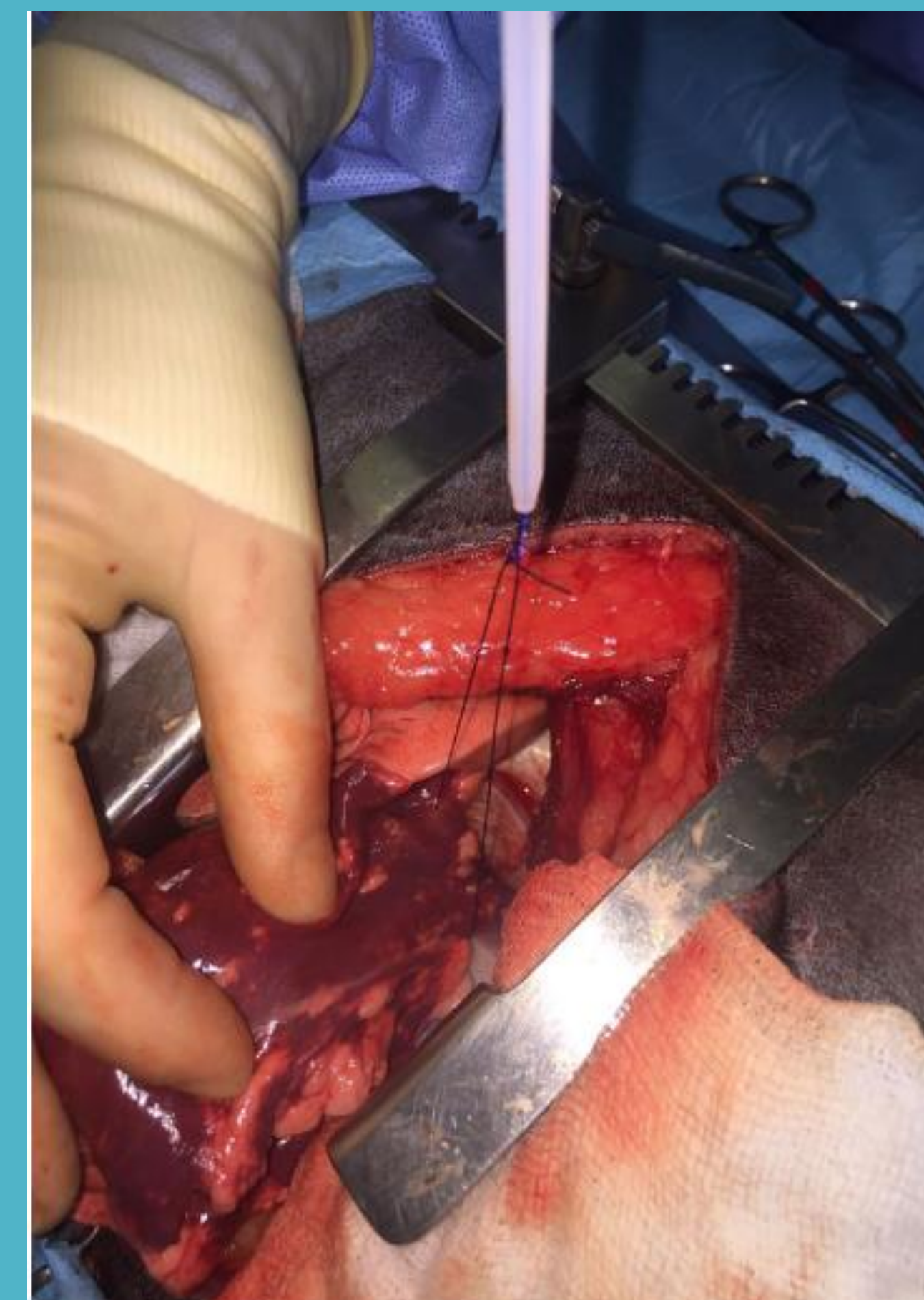
Methods

Case records from a single referral institution over a 20-year period were reviewed. Cases in which a lung lobectomy was performed with either a TA stapler or SLL were included (Figure 1). Data outcome points collected include intraoperative or postoperative air leakage, intraoperative or postoperative hemorrhage, and length of hospitalization. Cases were excluded if a complete medical record, surgery report, post-operative care, monitoring and/or outcomes were not available for review.

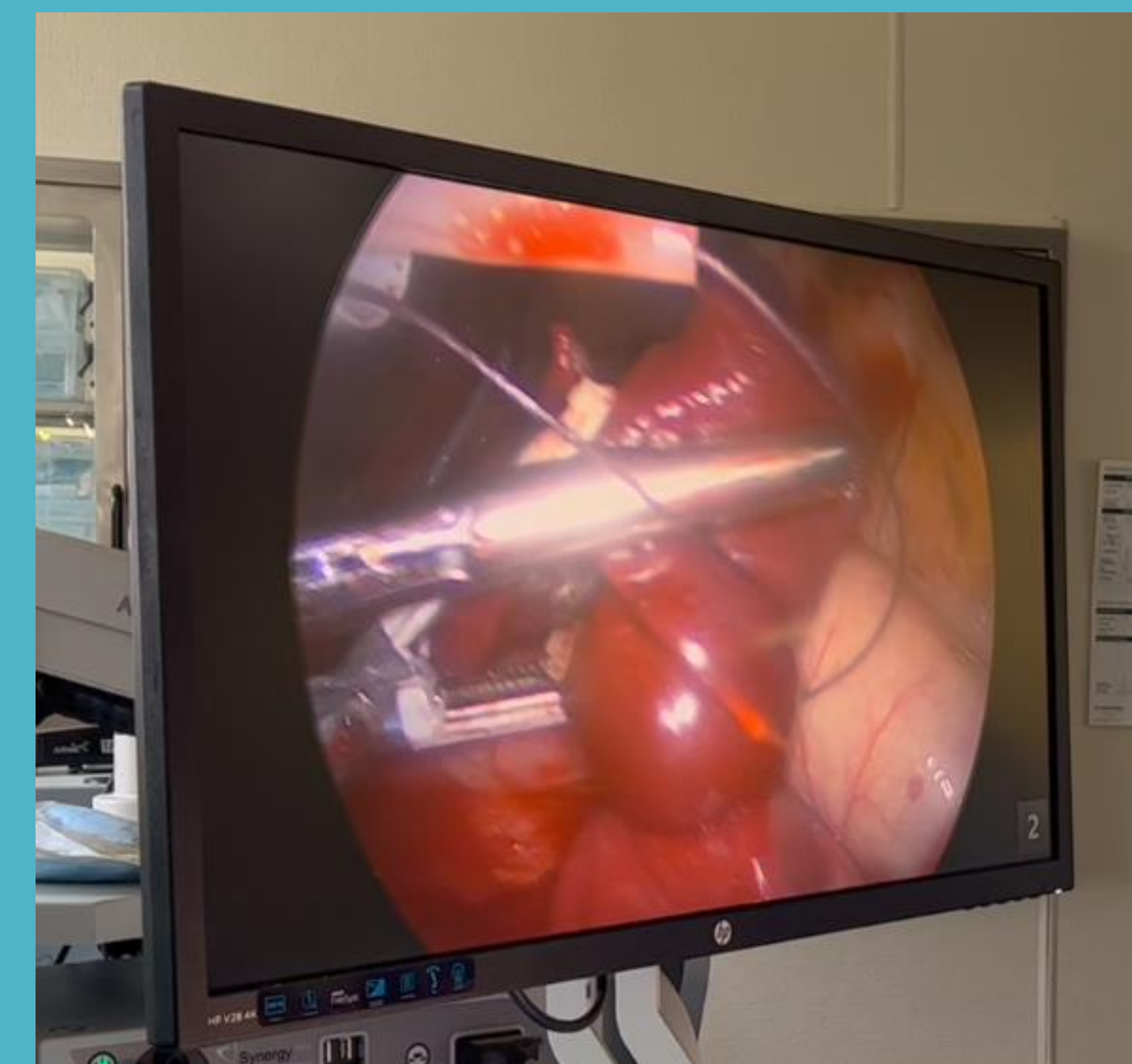
Results

Over the 20-year period, 84 feline and canine lung lobectomies were included; a stapled technique was performed in 69 surgeries whereas a SLL technique was performed in 15 cases. Complications were identified only within the stapled technique, including 2/69 (2.9%) cases with intraoperative air leakage, 11/69 (15.9%) cases with intraoperative hemorrhage, and 1/69 (1.4%) cases with postoperative hemorrhage. No differences were identified between surgical technique and either intraoperative air leakage ($p=1.000$) or intraoperative hemorrhage ($p=0.200$). (Table 1)

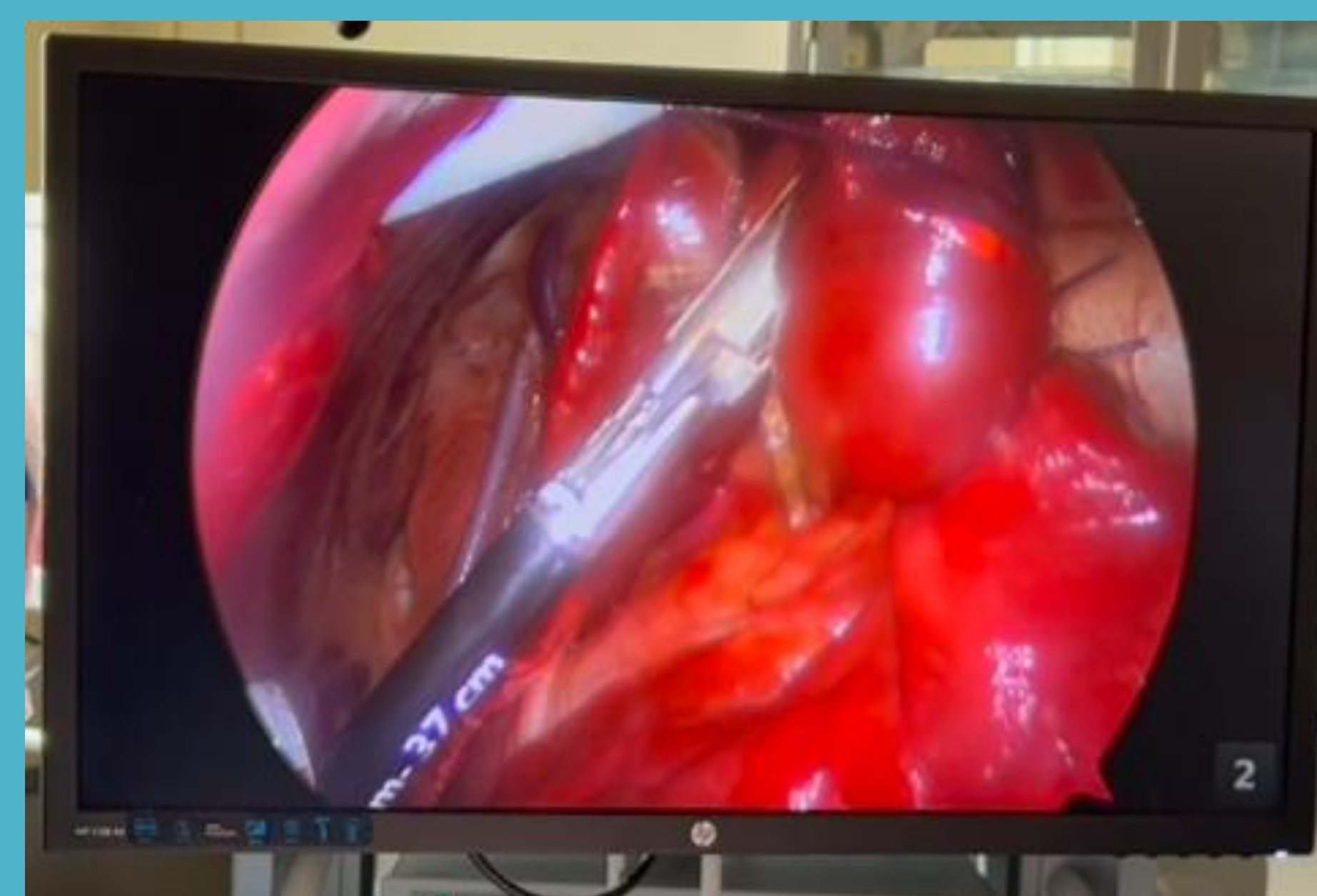
The median duration of chest tube placement was 1 day [1-2 days]; no difference was noted between technique and duration of chest tube placement ($p=0.973$). The median duration of hospitalization was 2 days [2-3 days]; no difference was noted between technique and total time of hospitalization ($p=0.0861$). In terms of product cost, the SLL was one-third of the cost when compared to the TA stapler.



A



B



C

Figure 1: (A) Peri-operative photograph of a self-ligating loop used for lung lobectomy (Photo courtesy of Dr. Cronin DVM, DACVS. (B and C) Peri-operative photographs of a self-ligating loop used thoracoscopically for lung lobectomy

Complication	Cases Affected	Treatment
Intra-operative Hemorrhage	11	Hemoclips (8), Suture (1), Monopolar electrocautery (1), Bipolar vessel sealing device (1)
Intra-operative Air Leakage	2	Hemoclip (1), Suture (2)
Post-operative Hemorrhage	1	Autotransfusion (1)
Cardio-pulmonary Arrest	4	Defibrillation (1), Cardio-pulmonary resuscitation (4)
Incisional Dehiscence	2	Surgical debridement (1), Topical antibiotic ointment (1)

Table 1: Complications

Discussion

This study demonstrates that SLL lung lobectomy is both safe and effective when compared to the traditional TA stapler for lung lobectomies in small animals. Intra-operative complications of bronchus leakage and hemorrhage were only noted in the TA stapler cases. These findings are in support of previous studies evaluating the safety of SLL procedures. No differences were identified between surgical techniques; however, this study is significantly underpowered to evaluate technique superiority.

Clinically, not only are the ligating loops significantly more affordable, but feasibility also to manipulate and place an SLL was subjectively easier intra-operatively when compared to the use of a TA stapler, especially in smaller patients.

References

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