Evaluation of a Cordless Energy Device in General, Metabolic and Bariatric Surgery

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INTRODUCTION

Ultrasonic energy devices utilized for laparoscopic dissection and transection of tissue are typically constrained by cords. Corded energy devices are attached to generators that take up space in the operating room and require attention from the circulating nurses. Corded devices can potentially restrict and interfere with the ability to move the device efficiently throughout the surgical field.

Energy devices are often used in conjunction with surgical clips to maintain hemostasis. Application of clips requires additional surgical dissection and transection of vascular structures. We hypothesized that a cordless energy device, Sonicision™ 7 (Medtronic) would eliminate the use of surgical clips to achieve and maintain hemostasis during common laparoscopic operations while at the same time maintaining the necessary freedom of movement and operative efficiency necessary during laparoscopic operations.

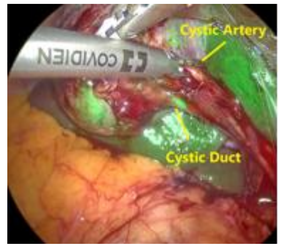


Figure 1
Ligation of cystic artery

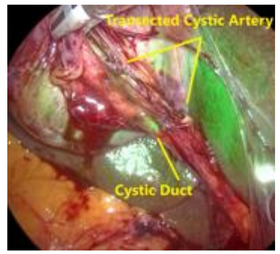


Figure 2
Transected, hemostatic cystic artery

METHODOLOGY

A total of 23 consecutive laparoscopic surgical procedures were performed over a 4 week period. The Sonicision™ 7 (Medtronic) cordless vessel sealer was used in all procedures to achieve surgical dissection. Operations where named vessels were ligated included laparoscopic appendectomy, lap cholecystectomy, laparoscopic single anastomosis duodenal switch and laparoscopic sleeve gastrectomy. Ligations of the cystic artery, short gastric arteries and appendiceal artery were performed using the cordless Sonicision™ 7 device.

Data points examined included the following:

A. Utilization of vascular clips to complete the operation
B. Pre-operative hemoglobin
C. Post-operative hemoglobin - (POD1).

Patients were followed throughout their hospital stay and evaluated for bleeding complications.

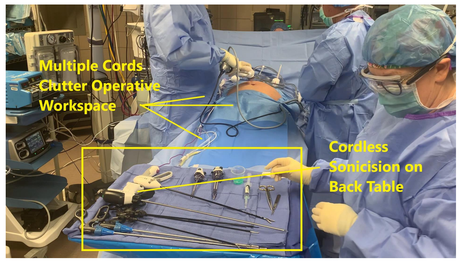


Table 1. Summary Statistics (N=23)

Procedure	Percent (%)
Diagnostic laparosopy	4%
Lap appy	4%
Lap chole	57%
Lap duodenal switch	4%
Lap gastric band removal	4%
Lap gastrojejunostomy + partial gastrect	4%
Lap hiatal hernia repair	13%
Lap pyloroplasty + partial gastrectomy	4%
Lap roux en y	9%
Artery Sealed	
Appendiceal	4%
Cystic	48%
Short gastrics	48%
Continous Variables	Mean (SD)
Length of Case (min)	93.17(10.9)
Pre-Op Hgb	12.3 (3.3)
Post-Op Hgb	11.9(2.7)

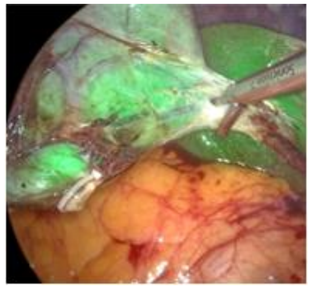


Figure 3
Dissection of gallbladder off liver bed

RESULTS

Bivariate analyses reveal no significant difference among average pre-operative (12,3; sd3.3) and post-operative (11.9; sd2.7) hemoglobin on POD0 and POD1 (p=0.43). Of the 23 cases recorded, 48% ligated cystic artery, 48% short gastric arteries, and 4% appendiceal arteries. There were no intra-operative or post-operative complications observed. None of the operative procedures required utilization of vascular clips to maintain hemostasis. None of the 23 laparoscopic surgical procedures used vascular clips for control of bleeding during vessel coagulation. There were no re admissions in the 30 days following surgery and there were no reoperations or intrabdominal complications related to the use of the ultrasonic device.

CONCLUSIONS

Utilization of the ultrasonic cordless Sonicision™ 7 was, effective for vessel coagulation in the 23 patient during which it was deployed. In all 23 cases significant, named vascular structures were transected in order to complete the operation. Supplemental vascular clips were not needed in order to maintain hemostasis and the procedures were completed without surgical complications related to bleeding or other abdominal complication.

Procedure		Number of Cases	Clips Deployed	Sonicision 7	Clips Used	Stapler Used	Suture Used
Appendecomy		4	**0**	X	None	Appendix	None
Chlecystectomy		6	**0**	X	Cystic Duct	None	None
Roux Y Gastric Bypass		4	**0**	X	None	Anastomosis	None
Partial Omentectomy		2	**0**	X	None	None	None
Sleeve Gastrectomy		2	**0**	X	Staple line	Staple Line	None
Wedge Resection Liver		2	**0**	X	None	None	None
Hiatal Hernia Repair		3	**0**	X	None	None	None
Braun Entero-Enterostomy		2	**0**	X	None	Anastomosis	None
OAGB		1	**0**	X	None	Anastomosis	None