Complication of Endoscopic Surgery

台北慈濟醫院
羅啟文　醫師

Complication of transperitoneal abdominal surgery

	894 (100% abdominal)[1]	1311 (84% pelvic)[2]
Overall Complication	13.2%	22.6%
Intraoperative/postoperative	5.7%/ 7.5%	3.6%/ 19%
Death	0.2%	0.0%
Vascular injury	2.8%	0.5%
Bowel injury	1.1%	1.2%
Adjacent organ injury	1.1%	0.8%
Conversion	1.7%	1.7%

The overall complication rate about 4%

The overall mortality rate about only 0.03~ 0.08%

Half happens while **abdominal access** for camera/ port placement

1 Parsons JK et al. Urology 2004;63: 27-32

2 Vallancien G. et al. J Urol 2002;168:23-26

Why LPS surgery

Better Convalescence

Less metabolic changes

Post OP blood sugar elevation ↓

Insulin sensitivity decrease ↓

Hepatic stress response ↓

Less Immunosuppression suppression

Better Oncology Outcome (?)

Obtain the Pneumoperitoneum

Insufflation and Pneumoperitoneum

Trocar Access

Surgical Procedure

Exiting the abdomen

Obtain the Pneumoperitoneum

Transperitoneal Placement

distention, tympanic sound on percussion

Preperitoneal Placement

Step rise in pressure with only 500 ml of CO_2

if more CO_2 instilled, unequal distention of abdomen

Obtain the Pneumoperitoneum

Transperitoneal Placement

distention, tympanic sound on percussion

Preperitoneal Placement

Step rise in pressure with only 500 ml of CO_2

if more CO_2 instilled, unequal distention of abdomen

How to avoid?

What's Next?

Obtain the Pneumoperitoneum

Warning signs of preperitoneal placement

- the initial pressure is usually more than 10mm
- the Veress needle met resistance while advance 0.5~ 1 cm

Widened the initial incision

Hasson cannula is placed

Obtain the Pneumoperitoneum

Vascular injury

blood appearing in the hub of the needle

bowel injury

aspiration of blood/ bowel content or high pressure

What's Next?

Obtain the Pneumoperitoneum

Vascular injury

blood appearing in the hub of the needle

bowel injury

aspiration of blood/ bowel content or high pressure

Usually can be withdrawn without excessive bleeding

Another site for Veress needle placement or Hasson procedure

Trace the initial needle passage and inspect at low pressure

Insufflation and Pneumoperitoneum

CO_2 Pneumoperitoneum

(under adequate fluid status)

Heart rate	↑
MAP	↑
SVR	↑
Cardiac output	↑ → ↓
Renal Flow/ Urine	↓
End-tidal CO_2	↔ / ↑
Arterial pH	↓

Campbell 11 edition

The optimal pressure setting

IAP should not exceed 20 mmHg, and

10~ 12 mmHg is recommended

Campbell 11 edition

	SV	Preload	SVR
12mmHg	=	=	=
20 mmHg	↓	↓	↑

Mertens zur Borg, Surg Endosc 2004

Physiology effects

	10 mmHg	20 mmHg	40 mmHg
HR	↑	↑	↓
MAP	↑	↑	↑
SVR	↑	↑	↑
CO	↔ / ↑	↔ / ↓	↓
Urine	↓	↓↓	↓↓
EtCO2	↔ / ↑	↑	↑
PCO2	↑	↑	↑
pH	↔ / ↓	↓	↓

Campbell 11 edition

Cardiac Arrhythmias?

Possible of WARNING sign:

Pneumothorax/ Hypoxia

Gas Embolism/ Thrombus

Hypercarbia → Tachycardia and VPC

Peritoneal irritation (Vagal stimulation)

→ Bradycardia

Campbell 11 edition

Trocar Access

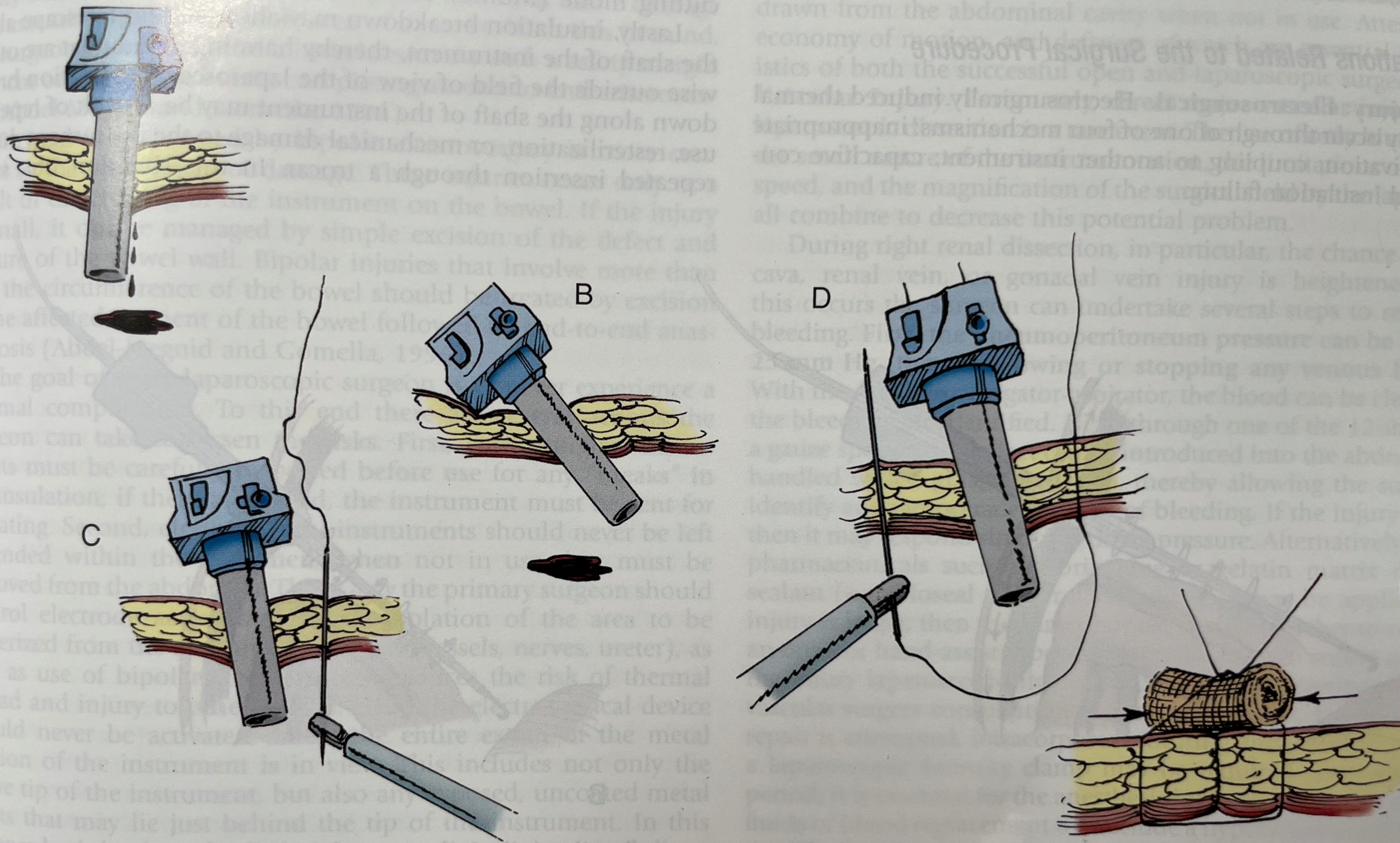

Figure 10-30. A, Bleeding at the cannula site. B, Cannula can be cantilevered into each of the four different quadrants to identify the source of bleeding. C and D, Straight Keith needle may be used to traverse the site of bleeding. E, Suture is tied down over a gauze bolster. (From Clayman RV, McDougall EM, editors. Laparoscopic urology. St. Louis: Quality Medical Publishing; 1993.)

Surgical Procedure

Bowel injury: electrosurgical

Post operation, patient with unrecognized bowel trauma may not develop fever, nausea or peritoneal signs for several daises the full extent of bowel necrosis may take up to 18 days to full develop

Bowel injury must be rule out for patients who develops a fever beyond postoperative one day or complains increasing abdominal discomfort

patient may have low grade temperature, leukopenia, **persistent or relatively extreme pain** at trocar site closet to the bowel injury

Bowel injury: electrosurgical

Minor thermal injury would discover late in post op period (5~ 7 days later) can be managed conservatively, aided by antibiotics and elemental diet.

The goal of every surgeon is to never experience a thermal complication

carefully inspected before use

never be left untended within abdomen

only primary surgeon control

isolation of the area from surrounding tissue

all the device (mental part) should be in view while use