



Research Article

A SAFE METHOD OF OPEN LAPAROSCOPY BY INTRODUCING BLUNT CANNULA INTO THE PERITONEAL CAVITY INSTEAD OF INSERTION OF DISPOSABLE SHIELDED TROCAR INTO THE PERITONEAL CAVITY

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ABSTRACT

Objective: To do a safe technique of open laparoscopy by using a blunt cannula without the sharp trocar to introduce into the peritoneal cavity instead of insertion of disposable shielded trocar into the peritoneal cavity.

Methods: From 13th October 2015 to 18th December 2019 for a period of 4 years and 1 month, open laparoscopy was done by the technique of using a blunt cannula without the sharp trocar to introduce into the peritoneal cavity while doing laparoscopic operations like laparoscopic appendectomy and laparoscopic cholecystectomy instead of insertion of disposable shielded trocar into the peritoneal cavity.

Results: From 13th October 2015 to 18th December 2019 for a period of 4 years and 1 month, while following the technique of open laparoscopy by using a blunt cannula without the sharp trocar to introduce into the peritoneal cavity while doing laparoscopic operations like laparoscopic appendectomy and laparoscopic cholecystectomy instead of insertion of disposable shielded trocar into the peritoneal cavity, no patient had injury to the intra-abdominal organs, viscera and blood vessels.

Conclusion: Hence the technique of open laparoscopy by using a blunt cannula without the sharp trocar to introduce into the peritoneal cavity while doing laparoscopic operations instead of insertion of disposable shielded trocar into the peritoneal cavity is extremely useful since it avoids the complications of injury to the intra-abdominal organs, viscera and blood vessels.

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INTRODUCTION

The technique of open laparoscopy by using a blunt cannula without the sharp trocar to introduce into the peritoneal cavity under direct vision while doing laparoscopic operations instead of insertion of disposable shielded trocar into the peritoneal cavity is extremely useful since it avoids the complications of injury to the intra-abdominal organs, viscera and blood vessels.

MATERIALS AND METHODS

This study was conducted in the department of General surgery, Indira Gandhi Medical College and Research Institute, Puducherry. From 13th October 2015 to 18th December 2019 for a period of 4 years and 1 month, open laparoscopy was done by a technique of using a blunt cannula without the sharp trocar to introduce into the peritoneal cavity under direct vision while doing laparoscopic operations like laparoscopic appendectomy and laparoscopic cholecystectomy

instead of insertion of disposable shielded trocar into the peritoneal cavity.

RESULTS

From 13th October 2015 to 18th December 2019 for a period of 4 years and 1 month, while doing 102 laparoscopic operations which included 42 laparoscopic appendectomies, 28 laparoscopic cholecystectomies, 18 laparoscopic hernia repair (TAPP) and 14 diagnostic laparoscopic procedures by a technique of using a blunt cannula without the sharp trocar to introduce into the peritoneal cavity under direct vision instead of insertion of disposable shielded trocar into the peritoneal cavity, no patient had injury to the intra-abdominal organs, viscera and blood vessels.

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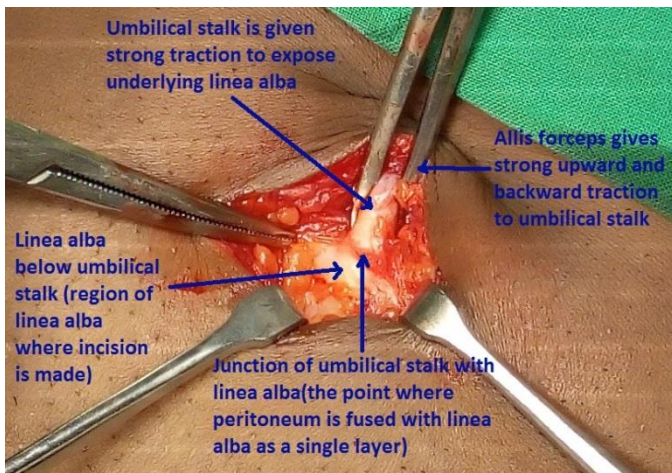


Fig 1: Umbilical stalk is given strong traction with Allis forceps to expose junction of the umbilical stalk with the linea alba (the point where peritoneum is fused with linea alba as a single layer) where incision is started.

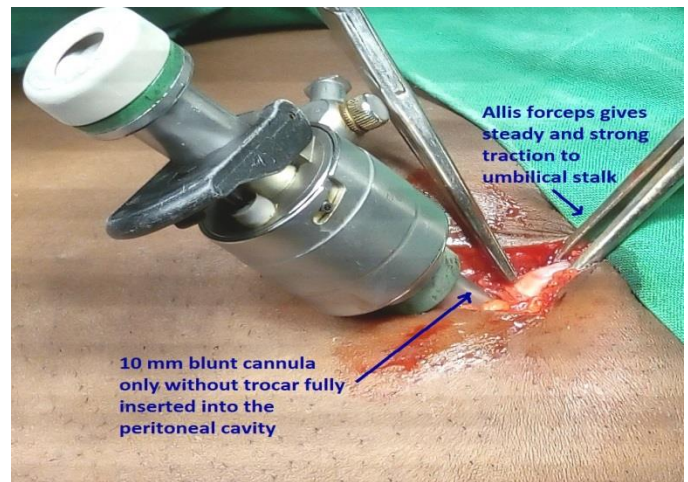


Fig 4: Abdominal wall is kept away from the underlying viscera at all times by grasping the umbilical stalk at the depth of wound with Allis forceps and only the 10mm blunt cannula without sharp trocar is inserted into the peritoneal cavity

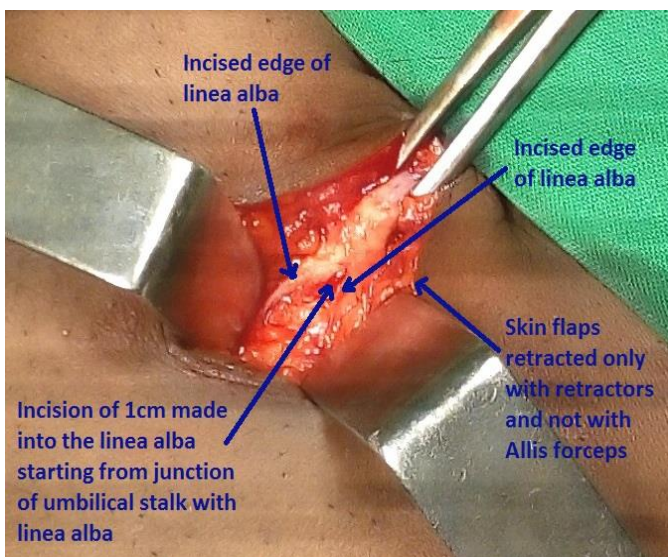


Fig 2: Incision of 1cm is made into the linea alba starting from the junction of the umbilical stalk with the linea alba.

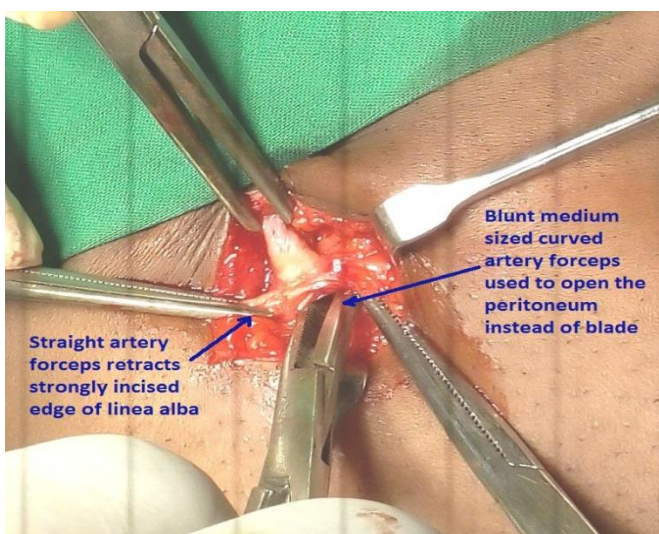


Fig 3: The incised edges of the linea alba are held with straight artery forceps and retracted to expose the underlying peritoneum. The peritoneum is opened with the help of blunt tipped medium sized curved artery forceps and not with the help of the knife or blade .

DISCUSSION

Technique of our open laparoscopy:

1. Umbilical stalk is given strong upward and backward traction with Allis forceps to expose the junction of the umbilical stalk with the linea alba (Fig 1).
2. The junction of the umbilical stalk with the linea alba is the thinnest part of the abdomen and at this point peritoneum is fused with linea alba as a single layer (Fig 1). Hence incision of 1cm is made into the linea alba starting from the junction of the umbilical stalk with the linea alba (Fig 2).
3. The incised edges of the linea alba are held with straight artery forceps and retracted to expose the underlying peritoneum (Fig 3). The peritoneum is opened with the help of blunt tipped medium sized curved artery forceps and not with the help of the knife or blade (Fig 3).
4. Abdominal wall is kept away from the underlying viscera at all times by grasping the umbilical stalk at the depth of wound with Allis forceps (Fig 4). Now the 10mm trocar is removed from its underlying cannula. Then only the blunt cannula without the sharp trocar is inserted into the peritoneal cavity under direct vision (Fig 4).
5. Since incision is made only at the junction of the umbilical stalk with the linea alba where peritoneum is fused with linea alba as a single layer, peritoneum is opened only with the help of blunt medium sized curved artery forceps and only the blunt cannula without the sharp trocar is inserted into the peritoneal cavity under direct vision, none of the 102 patients who underwent open laparoscopy by our technique had injury to the intra-abdominal organs, viscera and blood vessels.

Discussion of advantages and complications of insertion of disposable shielded trocar into the peritoneal cavity:

1. Disposable shielded safety trocars were introduced in 1984 (1, 2). These trocars are designed with a shield that partially retracts and exposes the sharp tip as it encounters resistance through the abdominal wall (1). As the shield enters the abdominal cavity, it

springs forward and covers the sharp tip of the trocar (1).

2. These trocars were intended to prevent the sharp tip from injuring intra-abdominal contents (1). However, it must be pointed out that even when a shielded trocar functions properly and is used according to the specifications, there is a brief moment when the sharp trocar tip is exposed and unprotected as it enters the abdominal cavity (3,4). In the presence of pneumoperitoneum, disposable shielded trocars have been shown to require half the force needed for a reusable trocar (1).
3. Champault *et al* found that 10 out of 36(28%) serious injuries and two out of seven (29%) deaths involved shielded trocars(5).
4. Saville and Woods reported four major retroperitoneal vessel injuries in 3591 laparoscopies, all of which involved shielded trocars (6).
5. Marret *et al* reported 47 complications due to trocar insertions between 1994 and 1997. Half of the trocars used were disposable and this type of so-called safety trocar was responsible for half of the large blood vessel injuries (7).
6. Bhoirul *et al* analyzed 629 trocar injuries from 1993 to 1996. There were 408 injuries to major vessels, 182 injuries to other viscera (mainly bowel), and 30 abdominal wall hematomas (8).
7. Of the 32 deaths, 26 (81%) resulted from visceral injuries and 6(19%) resulted from vascular injuries. Eighty-seven percent of deaths from vascular injuries involved the use of disposable trocars with safety shields (8).
8. Ninety-one percent of bowel injuries involved trocars with safety shields. The diagnosis of bowel injury was delayed in 10% of cases and the mortality rate in this group was 21 %(8).
9. The authors concluded that safety shield trocars cannot prevent serious injuries during laparoscopic access (8).
10. Corson *et al* reviewed 135 entry-related litigated cases in the United States. There were 12 (9%) injuries with shielded trocars (9).
11. A trocar use survey of 62 health care facilities reported that shielded trocars were used for primary trocar entry by 37% of surgeons for 100% of procedure, by 59% for at least 90% of procedures, and by 79% for at least 80% of procedures (10).
12. Shielded trocars may be used in an effort to decrease entry injuries. There is no evidence that they result in fewer visceral and vascular injuries during laparoscopic access (1).

CONCLUSION

1. Since incision is made only at the junction of the umbilical stalk with the linea alba where peritoneum is fused with linea alba as a single layer, peritoneum is opened only with the help of blunt medium sized curved artery forceps and only the blunt cannula without the sharp trocar is inserted into the peritoneal

cavity under direct vision, none of the 102 patients who underwent open laparoscopy by our technique had injury to the intra-abdominal organs, viscera and blood vessels.

2. Hence the technique of open laparoscopy by using a blunt cannula without the sharp trocar to introduce into the peritoneal cavity under direct vision while doing laparoscopic operations instead of insertion of disposable shielded trocar into the peritoneal cavity is extremely useful since it avoids the complications of injury to the intra-abdominal organs , viscera and blood vessels.

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