

Laparoscopic Entry Technique: New Approach

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Abstract

The establishment of pneumoperitoneum is the first step in laparoscopic surgery. Laparoscopic abdominal surgery requires the creation of successful pneumoperitoneum, as it plays an important role in prevention of complications occurring at the time of entry. Various techniques are used to create pneumoperitoneum of which Direct trocar insertion is one procedure. A study was carried out to decrease the trocar insertion time in turn facilitating the decrease in operative time. In this study 36 patients who underwent different laparoscopic surgeries were included, the time taken for the insertion of first trocar was recorded. The time taken in our series was 12±2 (10 to 14) minutes in open method and 7±2 (5 to 9) minutes in Direct (blind) trocar insertion. Thus the time taken for direct trocar insertion was less when compared to open method. The direct trocar insertion described in our series is faster, requiring less rotatory movements and force and is safe.

Keywords: Pneumoperitoneum; Veress Needle; Direct Trocar Insertion.

Introduction

The establishment of pneumoperitoneum is the first step in laparoscopic surgery [1]. Laparoscopic abdominal surgery requires the creation of successful pneumoperitoneum, in the vast majority of patients with more than half of all complications occurring at the time of entry.

Bleeding, subcutaneous emphysema, gastrointestinal tract perforation, and minor and major vascular injury are the potential complications associated with abdominal access and creation of pneumoperitoneum [2-5].

Therefore, optimizing the entry technique is essential. Therefore we undertook a study with the aim of reducing the time taken for trocar insertion in turn reducing the operative time.

Materials and Methods

Study was carried out for a period of one year from January 2015 to December 2015. All the patients who underwent laparoscopic appendicectomy, Lap cholecystectomy and lap inguinal hernia mesh repair (TAPP), and Diagnostic laparoscopy (1) were included in the group. Out of total 36 patients 22 (11 female+11 male) underwent laparoscopic cholecystectomy, 4 (male) underwent lap appendicectomy and 10 (male) underwent lap hernia repair, one patient underwent Diagnostic laparoscopy. One patient underwent both appendicectomy and cholecystectomy. The time taken for the introduction of the first trocar was recorded.

Operative Technique

The method described here is a blind technique. In this method the sub-umbilical skin incision is

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Table 1: Patient details

	Male	Female
Sex	24	12
Age in years	60±8.5	50±9.5
Comorbiditis		
Diabetes mellitus	8	2
Hypertension	7	1
Cardiac diseases	2	1
hyperlipidemia	1	1

Table 2: Operative details

	Open technique	Direct trocar insertion
No: of patients assigned-36	18	18
Time taken (in minutes)	12±2.0	7±2.0
Complications		
bleeding	2	1
Injury to bowel	nil	nil
Injury to omentum	1	nil
Injury to mesenteric vessels	nil	nil

extended to the underlying fascia, without incising the peritoneum. This helps in reduction of the amount of force required for insertion of the trocar and in turn the consequent injuries. The lower part of the abdomen is lifted with the non dominant hand. This is done to increase the distance between the intestine and the abdominal wall. The pyramidal tip of the trocar is inserted with a an angulation of 45 degrees to the abdominal wall, with the tip directed towards the pelvic promontory. With minimum force and rotating movements the trocar enters the peritoneal cavity, which can be confirmed by the insertion of telescope.

Results

The time taken in our series was 12±2 (10 to 14) minutes in open method and 7±2(5 to 9) minutes in Direct (blind) trocar insertion. There were two minor complications of bleeding in the open and one in the direct trocar entry which were controlled by electrocautery. Time taken for direct trocar insertion is less when compared to open method.

Discussion

Various techniques have been described for the creation of pneumoperitonium, 1) veress needle

technique 2) open laparoscopy 3) optical trocar insertion 4) Direct trocar insertion (DTI), are some of the methods described for establishing pneumoperitonium. Veress needle technique is associated with slow insufflations as the rate of flow is determined by the diameter of the veress needle. Every method has advantages and disadvantages.

In Veress needle insertion technique there are two blind entries one of the veress needle and then the trocar compared to only one blind entry in Direct trocar insertion [6].

DTI was first reported by Dingfielder in 1978 [2]. Direct trocar entry is facilitated by complete relaxation of the abdominal wall muscles, adequate skin incision so that the force required is less, sharp trocar tip, initially Dingfielder described entry of trocar perpendicular to abdominal wall [6].

In the technique described by theodoropoulou et al, the sub-umbilical skin incision is deepened till the peritoneum is cut. This technique is more of open laparoscopy. In the method described Agresta et al. the skin and subcutaneous tissue are cut leaving behind the fascia and peritoneum [7].

The advantages with our technique is that the fascia along with the skin and subcutaneous tissue is incised, peritoneum is the only layer left behind for blind entry. Therefore, the rotatory movements and amount of force used are far less.

Conclusion

Direct trocar insertion (DTI) described in our study is faster, requiring less rotator movements and force and is safe.

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