

Pneumo Peritoneum Aided Access into Abdomen for Re-relaparotomies: A New Technique

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Abstract Introduction: Dealing with patients with multiple laparotomies is always a difficult task due to the fear of injuring the bowel or internal organs. In this study we found out a new technique (Vikas technique) in order to minimise injuries during laparotomy using pneumo peritoneum in open method. This is one of the novel technique, where in we create pneumo peritoneum and proceed with laparotomy in order to prevent inadvertent injury to the internal organs while gaining access into the abdomen in patients with previous multiple laparotomies. **Methods and materials:** This study includes 15 patients to undergo re-relaparotomy for various reasons attending to surgical oncology department in Yashoda Hospitals Secunderabad, during a period of 9 months. **Results:** By this technique, there was no case with injury to the bowel or any other abdominal organ. Not even a single patient had complications related to creation of pneumo peritoneum. **Conclusions:** This is one of the novel technique were in many complications of injury to the abdominal organs can be avoided and a safe entry to the abdomen can be achieved even in a presence of very bad adhesions to the previous scars.

Keywords: multiple laparotomies, pneumo peritoneum, open method, re-relaparotomy

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1. Introduction

Dealing with patients with multiple laparotomies is always a difficult task. We always have a fear of injuring the underlying bowel or abdominal organ due to the dense adhesions to the previous scars, however experienced the surgeon is. In this study we found out a new technique (Vikas technique) in order to minimise injuries during laparotomy using pneumo peritoneum in open method. This is one of the novel technique, where in we create pneumo peritoneum and proceed with laparotomy in order to prevent inadvertent injury to the internal organs while gaining access into the abdomen in patients with previous multiple laparotomies.

2. Methods and Materials

This study includes 15 patients to undergo re-relaparotomy for various reasons attending to surgical oncology department in Yashoda Hospitals Secunderabad, during a period of 9 months. We include patients for whom a minimum of 2 previous laparotomies were done. Most of the patients were having malignancies of some or the other abdominal organs. The reason for a re-laparotomy may be due to recurrence, obstruction or anastomotic leak.

The patients with extremes of ages and those with severe cardio pulmonary disorders are excluded from the study.

3. Procedure

After taking consent, the patient is intubated, naso gastric tube passed to deflate the stomach and the abdomen is draped and painted. Depending upon the previous scars i.e., either transverse or vertical, the incision is given ½ -1 cm parallel to the previous one through-out its length. The abdominal wall up to the anterior layer of the rectus sheath is opened layer by layer. Now in the Palmer's point, a veress needle is introduced assuming that there are minimal adhesions in this area. Pneumo- peritoneum is created by insufflating CO₂ at 4-6 litres/min and maintaining the pressures at 12-14mmHg. Because of this most of the bowel falls back, few flimsy adhesions between the bowels and the anterior abdominal wall and inter-loop adhesions are already released. Now, the incision is attended and the other layers of rectus are opened layer by layer up to the peritoneum. Now, one can see bulging of the peritoneum through the incision. There are certain areas which gives a blue dome appearance through-out the length of the incision. This area signifies the point of no adhesions. This is the point where the peritoneum should be opened and the gas leaks with a hissing sound. Once the peritoneum is opened in the safer

point then injuring the bowel is less likely in the hands of an experience surgeon. After opening the peritoneum, peritoneal incision is extended under vision. Veress needle is removed and rest of the procedure is carried out in the regular conventional method.

4. Results

This is a novel technique (Vikas technique) introduced to minimise injuries to the bowel or other abdominal organs while opening the abdomen.

Out of 15 patients who underwent laparotomy by this method none of them had any bowel or organ injury. There were no side effects related to creation of pneumoperitoneum in any of the subjects. All the patients had an uneventful intra op and post op period. Time taken from start of the incision to entry into the peritoneum was around 10-15 mins. Therefore overall operative time has increased by 10-15mins in every case which can be reduced by further experience. There is no increase in bleeding or any other intra-op complications. None of the patients had increased in incidence of wound infection, respiratory complications, prolonged ventilation or hospital stay.

5. Discussion

Adhesions are one of the most common complications after a laparotomy. There is a tendency for scarring if the tissues are traumatized, which results in formation of adhesions. No matter what ever precautions we take or what- ever methods we follow, we cannot prevent or stop the formation of adhesions completely. The pathophysiology of adhesion formation has recently been elucidated to an unprecedented degree [1]. All the factors resulting in the formation of adhesions are yet to be defined but the pathogenesis is some-what clearly understood. These include serosal and subserosal trauma accompanied by an inflammatory cell infiltrate, fibrinous exudation, formation of filmy, fibrinous adhesions between serosal surfaces, and, unless resolved, progression to fibrous adhesions [2].

The incidence of scarring and adhesion formation increases with every laparotomy. After multiple laparotomies, the incidence of adhesions may even be as high as 93% [3]. 71% of the times the adhesions involves and includes the previous scar [4]. Adhesions increase the technical difficulty of subsequent intraabdominal procedures [4]. Due to the adhesions between the abdominal wall and the intra abdominal organs or bowel, it is very difficult to gain access into the abdomen without causing injury to any one of these. There-fore it is always a difficult task for the surgeon to operate on a patient with prior laparotomy especially if it is multiple times. Adhesions are more common with midline scars than the pfannenstiel incision [5]. Patients with midline incisions done for gynecologic

indications had more adhesions (42%) than did patients with any abdominal incisions performed for obstetric indications (22%). The type of incision did not affect the presence of adhesions in patients with previous obstetric operations [6]. Most of the difficulty during re-laparotomy occurs during the entry into the abdomen. 6% of the laparotomies were complicated directly because of the previous incision according to a study [7]. Most of the bowel or organ injuries occur more frequently at this point. Once the access into the abdomen is clear then there is less likely that the bowel or organs are injured in the hands of an experienced surgeon. There-fore it is always safe to enter the abdomen from a virgin site i.e., adjacent to the previous scar or away from it. In our study we introduce the veress needle in the left hypochondrial region assuming this site is free from adhesions as it is away from the previous scars. By following these methods of entry we will prevent unnecessary damage to the internal organs. Creation of pneumoperitoneum from a distant site, decreases injury to the internal organs by the needle, as well as distension of the abdomen allows the bowels to fall back and release of flimsy adhesion will occur.

6. Conclusions

This is a novel technique which can aid the surgeon for entry into the abdomen and prevent unnecessary injuries to the bowel and internal organs during re-relaparotomy. A safe entry to the abdomen can be achieved even in the presence of very bad adhesions to the previous scar. Though the sample size is small, we have achieved very good results. Further clinical work and study is always appreciated on a larger sample size to come out with more inferences.

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