

ENTRY RELATED INJURIES AND PORT SITE HERNIAS IN LAPAROSCOPIC PROCEDURES: A REVIEW OF 100 CASES

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ABSTRACT

OBJECTIVE

This prospective clinical trial was conducted to evaluate the incidence of intraperitoneal injuries with the use of closed Veress needle technique in primary port placement, the incidence of Port Site Hernias (PSH) and the efficacy of fascial closure in the prevention of PSH.

METHODS

A total of 100 patients undergoing various laparoscopic procedures were enrolled in the study, which included Cholecystectomy, Appendectomy, Adhesiolysis and diagnostic procedures. All surgeries were done on selective basis. Fascial closure was not done in any of the cases and no Endobag was used to retrieve the specimens. In the event of difficulty in retrieving the specimen, port site was extended by 2 or 3 mm to facilitate easy removal. The period of study was from October 2013 to March 2015 at The Government Chengalpattu Medical College and Hospital. The incidence of injuries to the intraperitoneal structures during the primary port insertion by the closed Veress needle technique and the incidence of PSH were observed.

RESULTS

There was no incidence of bowel or vascular injuries with the use of the closed Veress needle technique or PSH in all the 100 patients (0%). The advantages of fascial closure in preventing PSH is questionable.

CONCLUSION

Closed method of primary port insertion using the Veress needle is a very safe method with the appropriate technique. The efficacy of closure of fascial layer in preventing trocar site hernias is a subject of debate and needs further evaluation since our study was restricted to basic laparoscopic procedures done on elective basis and no comparative analysis was made with the open method.

KEYWORDS

Laparoscopy, Veress Needle, Port Site Hernias (PSH), Complications.

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INTRODUCTION

Abdominal access and the creation of a pneumoperitoneum in the initial stage of any laparoscopic surgery carry a significant risk of bowel and vascular injuries and majority of these complications occur prior to commencement of surgery.^[1,2] This complication rate remains a nightmare, especially for the beginners. Increased morbidity and mortality result when surgeons do not recognise injuries early.^[3] The overall incidence of laparoscopic entry injuries ranges from 1.4 per 1,000 to 5.7 per 1000 cases as reported by various centres. Several techniques, instruments and approaches have been introduced to minimise entry related injuries. These include the classic closed entry, Hasson open method, safety (Sheathed) trocars, Optical Veress and optical trocars.^[4,5,6] Each of these methods enjoy a variable degree of popularity depending on the surgeon's expertise and availability. By far the most common entry related injury is to the bowel followed by vascular injuries. The mortality rate of undiagnosed injuries vary from 5% with bowel injuries to 15% with vascular injuries.^[7]

The incidence of PSH ranges from 0.14% to as high as 22%.^[8,9,10] Though several earlier reports reported an overall incidence of 1.7% with various laparoscopic procedures.^[11,12,13] These hernias can be complicated by obstruction and strangulation.^[14,15,16] The umbilicus was by far the most common port to be associated with incisional hernia, However, hernias were observed at all other sites including the epigastrium, the right and left hypochondrium.^[17,18,19]

The interval between operation and diagnosis of PSH varies between studies and depends on follow-up regimes. The time to diagnosis ranges from 5 days to 3 years with an average of 9.2 months.^[17] Predisposing factors of PSH include pre-existing umbilical fascial defects, obesity, need to extend the incision to retrieve larger organs, trocar diameter, reinsertion of ports, wound infection and older age with comorbid diseases.^[17,20] Gender difference has not been shown to contribute significantly towards the incidence of PSH.^[20,21] Some studies insist on fascial closure to prevent the incidence of PSH, whilst some others have documented unobliterated fascial defects have not been quite effective in preventing PSH.^[21]

MATERIALS AND METHODS

This prospective randomised study includes 100 consecutive cases of laparoscopic procedures done on an elective basis. There were 59 females and 41 males.

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Procedures performed include appendectomies 52, cholecystectomies 38, adhesiolysis 7 and diagnostic procedures 3. The period of study was from October 2013 to March 2015. The mean follow-up period was 13.4 months. The primary port insertion was supraumbilical in 80% of the cases. In the remaining 20% of the cases with history of previous surgeries, the primary ports were placed slightly higher or in a suitable place which included few cms above the umbilicus (12 cases) and other regions including the epigastric (5 cases), left hypochondriac (2 cases) and left lumbar region (1 case). Cholecystectomies were done by the standard 4 port method with two 10 mm ports and two 5 mm ports. We routinely use the subxiphoid port to extract the gall bladder specimen.

In case of large stone hindering easy removal of specimen, a 2 to 3 mm extension of incision was made (11 cases). For appendectomies we use two 10 mm ports, one at the umbilicus (Primary port) and one at the left iliac fossa and one 5 mm port at the right hypochondriac region. We avoid using a right iliac/suprapubic port, because we reckon it is more difficult to manoeuvre the instruments in these sites owing to the proximity to the target organ. Fascial closure was not done in any of the cases and the skin was closed using single mattress sutures for the 10 mm ports and a single simple suture for the 5 mm ports. Extended subxiphoid ports were closed with 2 interrupted mattress sutures. Cases which required conversion into open surgeries were excluded from the study.

DISCUSSION

With the appropriate classic closed technique of the primary port placement using the Veress needle in about 100 cases of laparoscopy, we experienced no bowel or vascular injuries. While entering, the parietes is lifted using the left hand of the surgeon at the umbilicus. This gives a definitive lift of all the layers since all the layers of the parietal wall are fused together in this region. The needle is usually directed 15 to 20 degrees caudally to avoid injury to the aorta or iliac vessels.^[22,23,24] The hand usually rests over the abdominal wall since this prevents overshooting of the needle.

Passing directly through the umbilicus is usually avoided since the umbilicus being a natural scar resists easy entry and needs considerably greater force, which may predispose to injuries. We prefer supraumbilical site for the primary port, though it has a slight theoretical disadvantage than the infraumbilical region due to presence of falciform ligament. But, in our experience it has never been an issue whatsoever. We set the intra-abdominal pressure in adults to a standard 15 mmHg, in children we set a lower value depending on age and build of the patient.

Trocars are introduced in a similar 15 to 20 degrees caudal direction. The first stage of lap surgery should be to inspect the structures underneath the primary entry site for any inadvertent injuries, since late recognition or failure to recognise injuries carry an even worse outcome.^[3] We have never closed the fascial layer in any of the 100 cases, be it 5 mm or 10 mm or ports which needed a further few mms of extension. After a mean follow-up period of 13.4 months, there has been no case of PSH in our study. It is difficult to draw a definitive conclusion on the role of fascial closure in preventing PSH on the basis of our study as the volume of the cases is not too big and was restricted to basic procedures with a mean operating time of 40 minutes.

All procedures have their risks. Complications can occur even in the best of hands and it is vital that these are minimised by scientifically precise techniques and complications recognised promptly and appropriately dealt with. The importance of good training and the value of experience is conspicuous.

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