

Laparoscopic Surgery: Results of a Modified Open Technique of Umbilical Port Insertion

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ABSTRACT

Insertion of first port and creation of pneumoperitoneum is a key step in laparoscopic surgery. A significant number of complications can be avoided by safe insertion of primary port. Various techniques of umbilical port insertion and their safety have been mentioned in literature. Closed method by using Veress needle is a blind procedure. Studies have shown that vascular injuries are more common with the Veress needle. Hasson first introduced the open technique of port insertion under direct vision. We used a modified open technique and analyzed the safety and efficacy in 80 cases.

Keywords: Laparoscopic surgery, Open technique, Umbilical port.

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INTRODUCTION

In laparoscopic surgery, open method of primary port insertion was first described by Hasson in 1971.¹ The port is inserted under direct vision. Another technique is by blind insertion of Veress needle, which is associated with some serious complications, such as gas embolism, vascular injury and injury to hollow viscus.²⁻⁷ So, Hasson's open method is considered superior to closed method because of lower rate of complications associated with former.⁸ In literature, various open techniques for creation of pneumoperitoneum are mentioned. In present study we practiced a modified technique of open method of creating pneumoperitoneum with the objective of evaluating its complications and efficacy.

METHODS

A prospective study was conducted upon 80 consecutive cases in the department of general surgery during

a period from 2011 to 2012. A modified technique of open method of creating pneumoperitoneum in laparoscopic surgery was performed in these patients after taking detailed informed consent. Indication for laparoscopy in these patients was cholecystectomy (90%), diagnostic laparoscopy (8%), laparoscopic liver abscess drainage (2%). Patients with cardiac diseases, chronic respiratory diseases, bleeding disorders, extensive abdominal scars, suspected cases of malignancy and adhesions due to previous surgery or peritonitis and pregnant patients were excluded from the study. Results were analyzed in terms of technical difficulty, time taken for umbilical port insertion, intraoperative gas leak, port closure time and complications, such as vascular injury, visceral injury, postoperative incisional hernia and umbilical sepsis.

TECHNIQUE

After paint and drape, surgeon stands on right side of patient. A semicircular, skin incision about 1.5 cm is made in infraumbilical crease and skin is retracted with langenback retractors. Umbilical skin is held with a towel clip and lifted up. Subcutaneous fat is dissected to expose umbilical stalk and its junction with rectus sheath (Fig. 1). Umbilical stalk is stretched by pulling the towel clip up. using no. 11 surgical blade, a vertical incision, about 1 cm is made on umbilical stalk, starting from its junction with rectus sheath and extending upward. While maintaining upward traction on anterior abdominal wall, using tip of



Fig. 1: Dissection of umbilical pillar

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an artery forceps peritoneum is carefully breached, cavity is entered and jaw of artery forceps opened. By keeping the blades of artery forceps open, assistant shows opening in umbilical stalk and surgeon introduces tip of blunt trocar-cannula (Hasson trocar) through the opening in the stalk, applying little pressure with right hand and lifting the abdominal wall with left hand (Figs 2 and 3). Trocar is removed from cannula, carbondioxide gas is insufflated and pneumoperitoneum is created. After completion of procedure, umbilical stalk is everted by holding with an allis forceps and a nonabsorbable suture is applied to close the opening.

RESULTS AND DISCUSSION

All patient were in adult age group, age varying from 28 to 62 years. Average time taken for umbilical port insertion was 40 to 50 seconds. Intraoperative gas leakage around the umbilical port occurred in five cases which was corrected by applying sutures around skin incision. In one case, umbilical port was wrongly directed in extraperito-

neal space leading to extraperitoneal gas insufflations. It was immediately detected and corrected. No complication of vascular injury or visceral injury occurred by this technique. None of the patients developed umbilical hernia at 6 months of follow-up. Closure of rectus sheath incision at umbilical port site could be easily done in all cases. Average closure time for umbilical port was 1 minute. Intraoperatively no other technical difficulty was encountered. Minor umbilical sepsis developed in seven cases. It was due to application of towel clip to umbilical skin.

Insertion of first port and creation of pneumoperitoneum is a key step in laparoscopic surgery. Closed method by using Veress needle is a blind procedure.⁹ Studies have shown that vascular injuries are more common with the Veress needle.¹⁰ To avoid these complications, Hasson introduced the open technique of port insertion under direct vision.¹ In the conventional open technique, an umbilical skin crease incision is made after making a skin stab with surgical blade no. 11 and subcutaneous fat is dissected. A transverse incision is made in the rectus sheath. Anterior abdominal wall is lifted by grasping between fingers and thenar eminence of one hand of operating surgeon and assistant on the other side. Operating surgeon using his dominant hand inserts the blunt Hasson trocar through the opening in rectus sheath.¹¹ Studies have shown that open technique is faster and has lesser complication rate than Veress needle. As a blunt cannula is used for creating pneumoperitoneum and surgeon can also insert his index finger through umbilical incision to confirm the peritoneal space and to break minor adhesions. There is decreased risk of gas embolism, bowel and vascular injury.¹² Risk of complications of in laparoscopic surgery can be further minimized by this modified technique. In modified open technique, it is easier to hold the anterior abdominal wall by grasping the everted umbilical cicatrix with the help of a towel clip and to lift the anterior abdominal wall by pulling umbilical stalk which is a tough structure. It gives adequate traction for safe introduction of port. As umbilical stalk contains obliterated umbilical vessels so, a safe stab incision can be made through. Length of incision in umbilical stalk is adequate to accommodate the size of 10 mm cannula. Junction of umbilical stalk and linea alba is the thinnest part of anterior abdominal wall and peritoneum at this point is fused in a single layer. So port is easily inserted after minimal dissection and without much tissue resistance. After removal of port on completion of the procedure, spontaneous apposition of margins of umbilical stalk occurs and makes the port closure easier. So, modified open technique is an easy and safe technique of primary port insertion and creation of pneumoperitoneum.



Fig. 2: Lifting the abdominal wall and insertion of blunt trocar



Fig. 3: Blunt trocar inserted through umbilical stalk

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