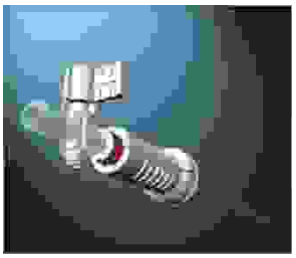
ORIGINAL PROF-837

PNEUMOPERITONEUM;
THE EFFECTIVENESS AND INTRA PERITONEAL EVENTS WHILE USING VERESS NEEDLE



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ABSTRACT... awaisshuja@aol.com **Introduction:** Minimal access surgery has evolved enormously and revolutionised surgical practice. With increasing use of Minimal access surgery, safety of methods of creating Pneumoperitoneum have come under intense scrutiny. **Objectives:** To observe the effectiveness and intra peritoneal events of using veress needle to create pneumoperitoneum in minimal access surgery. **Study design:** Prospective observational study. **Period:** From April to June 2004. **Setting:** Department of Surgery at Norfolk and Norwich University Hospital. **Subject & Methods:** 50 patients with male to female ratio 25:1 Veress Needle 14G was inserted infra umbilically through stab incision at angle of 45 degree. BMI (body mass index) and abdominal thickness was recorded. Intra peritoneal events of flow of insufflated air, intraperitoneal position of needle and intraperitoneal adhesions were recorded. **Results:** (28/50) 56% of patients achieved free flow, (18/50) 36% patients achieved free flow with traction. 44% of patients had free veress needle tip and 44% had tip in omentum, 8% patients showed extra peritoneal air collection. All patients were fit enough to be discharged same day. **Discussion:** Our study has revealed that body mass index (BMI) and skin fold thickness does not effect the position of needle. With skin fold thickness increase free flow of air needs to be assisted by traction of abdominal wall. **Conclusion:** We conclude that Veress needle can be safely used for creating pneumoperitoneum in patients of any BMI and skin fold thickness.

Key words: Pneumoperitoneum, Veress needle, Minimal access surgery.

INTRODUCTION

Veress needle was introduced by Hungarian physician Janos Veress[1]. He used it for thoracocentesis and peritoneal taps. In 1944 French Gynaecologist Raoul Palmer used veress needle to create pneumoperitoneum for laproscopy[2]. Further improvement happened two decades later in 1966 when German Gynaecologist Kurt Semm introduced insufflator to maintain pneumoperitoneum for laproscopy. Since then veress needle is in clinical practice to create pneumoperitoneum for various procedures in minimal access surgery[3]. In 1971 Hasson[9], a Gynaecologist introduced open method of creating pneumoperitoneum[4].

Minimal access surgery has evolved enormously and revolutionised surgical practice. With increasing use of minimal access surgery, safety of methods of creating Pneumoperitoneum has come under intense scrutiny. Hasson technique and Veress needle technique has

been compared and debated for two decades.

The purpose of this study is to observe the effectiveness and intraperitoneal events of using veress needle to create pneumoperitoneum in minimal access surgery.

SUBJECT & METHODS

This study was performed at Department of Surgery at Norfolk and Norwich University Hospital during four months of period upto July 2004.

The study was performed on 50 patients with male to female ratio 25:1 who underwent right, left or bilateral laproscopic hernia repair. All patients had received general anaesthesia and were positioned in Trendelenberg position. Veress needle 14G was inserted infraumbilically through stab incision at angle of 45 degree.

Carbon dioxide was insufflated with flow of 2 l/min and pressure of 12cm of mercury. Patients with a history of multiple abdominal surgery or of significant abdominal sepsis were to be excluded. None presented during the observation. BMI and abdominal thickness was recorded. Intraperitoneal events of flow of insufflated air, intraperitoneal position of needle and intraperitoneal adhesions were recorded. Basic data is recorded in table I.

Table I	
No. of patients	50
M/F ratio	25:1
BMI (body mass index)	26.2±3.09
Skin fold thickness	1.5±0.8
Previous surgery	12

RESULTS

Table II shows flow of insufflated air, which was graded as free flow when flow was >1.5l/min, free flow with traction and problematic when flow was <1.5l/min. On one occasion procedure was converted to Hasson technique. The revelant data is recorded in table II and table III.

Table II	
Type of flow	**%age**
Free flow	56% (28/50)
Free flow with traction	36% (17/50)
Problematic	8% (04/50)

We found out BMI did not effect the flow of insufflated air but skin fold thickness did affect. The median skin fold thickness for free flow with traction is 2.0, which is higher than median skin fold thickness 1.5 in the study.

Table-III		
Flow	**BM (Median)**	**Skin fold thickness (cms)**
Free flow	25.9 (18.6-34)	1.5(0.5-3)
Free flow with traction	25.9 (21.29.6	2.0 (0.75-4)
Problematic	25.8 (19-29.3)	1.5 (0.5-3.2)

Table-IV.	
Position of needle	**%age**
Free	44%
Tip in omentum/mesesntry	44%
Extra peritoneal emphysema	8%
Emphysema of mesentry/omentum	2%
Vascular / visceral damage	-

Intra-peritoneal position of needle was categorised as free intraperitoneal, tip in mesentry/omentum, emphysema of mesentry/omentum ,extraperitoneal emphysema and visceral/vascular damage. Table IV explains the different percentages of intraperitoneal positions of the needle.

The median BMI and median skin fold thickness was

similar with all intraperotoneal positions of needle (Table V).

Table-V		
Position of needle	**Median BMI**	**Median skin fold thickness**
Free	26.2	1.5 cm
Tip in omentum/mesesntry	26.2	1.5 cm
Extra peritoneal emphysema	26.2	1.5 cm

Adhesions were observed in pelvis and at port site in 17/50 patients with previous history of open and laproscopic hernia repair. All patients discharged the same day. No post-operative complication at 24 hours were recorded

DISCUSSION

Our study has revealed that BMI and skin fold thickness does not effect the position of needle. With skin fold thickness increase free flow of air needs to be assisted by traction of abdominal wall. The median skin fold thickness observed in patients with free airflow with traction was 2.0 cm, which is higher than median skin fold thickness (1.5cm) of the study.We found in our study that 80% of patients with restricted flow can be improved with simple methods like lifting anterior abdominal wall with Littlewoods tissue holding forceps, superior to the insertion point of veress needle. This was supported by Roy and Bazzurini[5] which in their study revealed that increased abdominal thickness decreases the distance between parietal peritoneum and viscera.T W Hilgers[6] also concluded that elevation of anterior distance is increased with traction of abdominal wall, which maximises the flow of air and safety.

Our study also shows that emphysema of mesentry/omentum and needle tip in omentum/mesentry did not hamper the free flow of insufflated air and despite of these positions we were able to establish pneumoperitoneum safely and successfully. No vascular and visceral injury was recorded in our study. Florio and Silvestro[7] also noted in their study no major vascular and visceral injury with veress needle technique. Jansen and Kolkman[8] noticed 0.12% vascular/visceral complications with veress needle technique as compared to 1.38% with open method.Molloy and Kaloo[9] also observed 0.9% injuries with veress needle technique and 1.1% with open method.Catarci and Carlini[10] compared closed approach with optical trocar concluding complications rate 0.27% and 0.18% respectively. Hill observed that veress needle is a safe method with no vascular/visceral injuries was observed.

Our experience and literature search concludes that there is no overwhelming evidence for using Hasson technique in all cases. European association of Endoscopic surgery guidelines[7] also recommends veress needle technique as safe method of creating pneumoperitoneum in patients with no history of multiple abdominal surgery. We also recorded adhesion in pelvis and portsites in patients with previous laproscopic hernia repair. These adhesion did not comprise the safety of our method of veress needle for creating pneumoperitoneum.

CONCLUSION

We conclude that Veress needle can be safely used for creating pneumoperitoneum in patients of any BMI and skin fold thickness. This must be aided by traction and trendelenburg position in patients with increased skin fold thickness. Veress needle also has a low percentage of major vascular or visceral injury .Our study has found closed technique safer and simple measures can increase the safety.

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