



# A Comparative Study of Two Methods for Laparoscopic Port Entry

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## Abstract:

**Background:** Laparoscopy involves insufflations of the abdomen by gas, so that the endoscopist can view the intra-abdominal contents without being in direct contact with the viscera or tissues. The modern age of laparoscopic surgery ushered the incorporation of a miniature video camera attached to the eye piece of a laparoscope allowing many assistants to view the operative field from the same vantage point. The number of vascular injuries in laparoscopy is 2 in 10,000 procedures and a serious complication associated with mortality occurs in 3.3 per 1,00,000. Finding a safe entry technique is a priority to decrease the rate of complications. During the last three decades, rapid strides in laparoscopic techniques became invaluable part of general surgery, however there remains no clear consensus for optimal method of entry into the peritoneal cavity. The most commonly employed technique for gaining access are the closed veress needle technique and the open Hasson technique. Although there is no consensus regarding the best method of gaining access to the peritoneal cavity to create a pneumoperitoneum, the Veress needle insertion is the most frequently used technique. Hence we conducted the present study keeping these issues in mind

**Methods:** Patients were randomized by drawing lots into the following groups.

Group –P with 50 patients in whom the entry was by open Hasson method

Group –S with 50 patients in whom the entry was by closed Veress needle method

**Results:** The mean time needed to create pneumoperitoneum was 273 seconds in veress needle technique (S group) and in 168 seconds in open Hasson canula method (P group).

**Conclusion:** The use of Hasson technique has advantages over the Veress needle technique in aspect of the following

- 1.No major difference in the major complications between both the P and S groups irrespective of the entry technique, however minor complications like port site infection were more in P group.
- 2.Time taken to establish pneumoperitoneum was more in the S group.

## I. INTRODUCTION

Laparoscopy involves insufflation of the abdomen by gas, so that the endoscopist can view the intra-abdominal contents without being in direct contact with the viscera or tissues. Gynaecologic laparoscopic surgery has been routinely performed since 1970.<sup>1,2</sup> Establishing the pneumoperitoneum is the first and most critical step of a laparoscopic procedure and is associated with injuries of gastrointestinal tract and major blood vessels and at least 50% of these major complications occur prior surgery. Complications arising from laparoscopic surgery are rare and commonly occur when attempting to gain access to the peritoneal cavity through the first puncture which is often blind.<sup>3,4</sup> This complication rate has remained the same during the past 25 years.<sup>3,4</sup> The most commonly employed technique for gaining access are the closed veress needle technique and the open Hasson technique. The number of vascular injuries in laparoscopy is 2 in 10,000 procedures and a serious complication associated with mortality occurs in 3.3 per 1,00,000.<sup>7</sup> Finding a safe entry technique is a priority to decrease the rate of complications.

## II. AIMS AND OBJECTIVES

### Aim:-

The comparison of two techniques of entry to peritoneal cavity, namely, the open puncture technique with Hasson canula and closed puncture technique with Veress needle.

**Objective:** To compare the efficacy of both the techniques in terms of time taken for entry and the complications associated with each technique

## MATERIAL AND METHODS

The study was conducted at Narayana Medical College Hospital for a period of two years from December 2015-2017 on 100 consenting patients undergoing laparoscopy for various indications, who fulfilled a pre-determined inclusion & exclusion criteria. The study was initiated after obtaining an ethical clearance from the institutions ethical clearance committee. Patients were randomized by drawing lots into the following groups.

Group –P with 50 patients in whom the entry was by open Hasson method

Group –S with 50 patients in whom the entry was by closed Veress needle method. Informed consent was taken from all included patients

### INCLUSION CRITERIA

Age: -  $\geq 16$  years,  
 $\leq 65$  years

### EXCLUSION CRITERIA

Patients with contraindications for laparoscopic surgeries  
Patients not willing for participation in the study  
Patients with anesthetic risk of ASA grade 3 and 4  
Patients whose BMI was more than 25

## III. RESULTS OF THE STUDY

The study was a prospective, randomized, double blind, comparative study conducted on 100 consenting patients who underwent laparoscopic surgeries at Narayana Medical College Hospital for a period of two years from December 2015- 2017 for various conditions needing laparoscopy and who fulfilled a pre-determined inclusion & exclusion criteria

#### IV. DISTRIBUTION OF CASES IN THE STUDY

**Table.1. Distribution of Cases in the Study**

	P group	S group
No of Patients	50	50

**Table.2. Access Time in Sec for P Group**

ACCESS TIME (SEC)	P group
140 - 160	30
161 – 180	1
181 – 200	16
> 200	3

**Table.3. Access Time in Sec For S Group**

ACCESS TIME (SEC)	S group
240 - 260	24
261 –280	4
281 – 300	19
> 300	3

#### V. DISCUSSION

Though there are variety of sites and techniques that establishment of pneumoperitoneum the most commonly preferred site worldwide has remained the umbilicus and the most commonly preferred techniques' to create pneumoperitoneum are the Hassons or the open technique and the Veress or the closed technique. Traditionally adequacy of pneumoperitoneum has been defined by an arbitrary volume of 1 L to 4 L of CO<sub>2</sub> or an arbitrary intraperitoneal pressure of 10 to 15 mm Hg.<sup>5</sup>

#### VI. CONVERSION OF TECHNIQUE

In the present study we did not need to convert any technique. This is similar to study done by Rakesh Kaul who had no problems to create pneumoperitoneum with either technique.<sup>6</sup> Sangrasi<sup>7</sup> in his study showed that intraabdominal access was successfully achieved in all cases without any vascular or solid organ injury except in 3 (0.24%) cases. In these 3 cases, the procedure failed due to severe adhesions, because of previous abdominal surgeries. Ghulam AC et al showed that the mean time taken to induce pneumoperitoneum in Veress needle technique was 6.30±1.36 minutes where as in DT technique mean time was 3.18±0.66 minutes (p value= 0.001).<sup>8</sup> Rakesh Kaul<sup>6</sup> in his study showed that mean time taken to induce pneumoperitoneum in Direct trocar technique was 3.18±0.66 minutes where as in veress needle technique it was 6.80±1.36 minutes (p value = 0.0001). Sangrasi in his study showed that mean time taken to induce pneumoperitoneum was 4.0 minutes (range, 2 to 9.5), while time required to close the first access port was 4.5 minutes (range, 3 to 8)<sup>7</sup> Hasson also showed that mean time taken to induce pneumoperitoneum was lesser in the open direct trocar technique<sup>9</sup>. In another study conducted by Ertgrul I et al<sup>64</sup>, 39 patients were placed in Direct trocar group and had insertion time of 79.6 ±94.6 seconds compared to 217±111 seconds in Veress needle group( with p value = .0001).<sup>10</sup> In our study the mean time taken to create

pneumoperitoneum (access time) in P group 2 minutes 48 seconds and in S group is 4 minutes 33 seconds. Hence our findings are in agreement with all the above studies. The overall rate of complications in the present study is 9 times the other studies this is due to the fact that in our study we took all the minor complications most of them were *Gas leakage* that accounted for 4% of the cases and *port site infection* accounted for 5% of the cases. However port site infection is not related to mode of access. Hasan Altun<sup>11</sup> in another study showed that pneumoperitoneum was created using the Veress needle in 135 patients and using direct trocar insertion technique in 148 patients during a 3-year period. Although no major complication was seen in the Direct trocar group, three major complications were seen in the Veress needle group, but there was no statistically significant difference between both groups. Nezhat et al<sup>11</sup> they showed fewer minor complications with Direct trocar insertion. In contrast to our study, Byron et al<sup>10</sup> in their study noted fourfold increase in minor complications using Veress needle. These findings are contrast to the present study. Rakesh Kaul<sup>6</sup> in his study showed that Port-site infection occurred in 6 (0.48%) cases, and port-site hematoma in 4 (0.32%) cases. Gas spillage was recorded in only 6 (0.48%) cases.

#### VII. CONCLUSION

The use of Hasson technique has advantages over the Veress needle technique in aspect of the following -No major difference in the major complications between both the P and S groups irrespective of the entry technique, however minor complications like port site infection were more in P group. - Time taken to establish pneumoperitoneum was more in the S group.

#### VIII. REFERENCES

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