

## SAFETY OF HASSON'S TECHNIQUE IN LAPAROSCOPIC CHOLECYSTECTOMY

Farhan Ahmed Majeed, Hassan Shabbir, Tehmina Rehman, Muhammad Nadeem, Ch Muhammad Qamar-Ul-Haq, Umar Bashir, Ayema Shabbir

Combined Military Hospital, Multan/National University of Medical Sciences (NUMS) Pakistan

### ABSTRACT

**Objective:** To evaluate the safety profile of Hasson's technique of laparoscopic port access in patients undergoing laparoscopic cholecystectomy.

**Study Design:** Cross-sectional study.

**Place and Duration of Study:** Department of general surgery, Combined Military Hospital Lahore, from Oct 2014 to Aug 2018.

**Methodology:** A total of 1037 patients with acute or chronic cholecystitis who were scheduled for laparoscopic cholecystectomy were included. Hasson (open) technique was used to insert first laparoscopy port for creation of pneumoperitoneum. Following laparoscopic cholecystectomy, data of intra-operative and post-operative complications was noted. Patients were followed during hospital stay to evaluate any procedure related injury. Follow-up was done at up-to six months to determine wound infections and formation of umbilical hernia.

**Results:** Mean age of the patients was  $44.65 \pm 8.98$  years. Out of 1037 patients, procedure was simple in 655 (63.16%) patients and complex in 382 (36.83%) patients due to the presence of inflammatory adhesions and anatomic access. There was no intra-abdominal injury, omental injury, vascular injury or gut perforation. Port-site infections were diagnosed in 6 (0.57%) patients during 06 months' follow-up. Umbilical hernia was diagnosed in only 1 (0.09%) patient.

**Conclusion:** We found that Hasson technique of first laparoscopy port access for creation of pneumoperitoneum was a safe technique with minimum number access related complications.

**Keywords:** Hasson technique, Laparoscopic cholecystectomy, Pneumoperitoneum.

---

This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

---

## INTRODUCTION

Laparoscopic procedures have become standard of care during intra-abdominal procedures. Laparoscopy carries several advantages over open surgical procedures in-terms of shorter recovery time, hospital stay and better cosmetic concerns and lower incidence of surgical adhesions.<sup>1</sup> But laparoscopy is not without complications and most complications occur during access to the peritoneum. Port-site injuries can even result in high mortality rate as compared to the laparotomy<sup>1,2</sup>.

Therefore, the prime concern of laparoscopic surgeons is to prevent port-site injuries during access to peritoneum. In last decades, due to remarkable improvements in laparoscopy related instruments, and expertise of surgeons, port-site

and other complications of laparoscopy have been greatly reduced but not diminished<sup>3-5</sup>.

Similarly, advancements in laparoscopic access have also been made and different methods of entry to the abdomen have been tried. Two main techniques are open and closed entry technique<sup>6</sup>. In closed entry, a veress needle is first inserted into the peritoneal cavity, after that pneumo-peritoneum is created and port is then inserted. Due to blind procedure, there is always a risk of bowel, bladder and other abdominal organs injury<sup>7,8</sup>. Keeping in view the complications of closed access, Hasson developed the open technique. In this technique, the first port is inserted after opening the abdominal cavity under direct vision using a special cannula, an obturator<sup>9</sup>.

In present study, we have evaluated the safety profile of Hasson's technique of laparoscopic port access in patients undergoing

---

**Correspondence:** Dr Farhan Ahmed Majeed, Professor of Surgery, Combined Military Hospital, Multan Pakistan

Received: 14 Jul 2020; revised received: 09 Sep 2020; accepted: 21 Oct 2019

laparoscopic cholecystectomy. Although Hasson's technique is an old one but it is still not widely practiced. This present study results will help to evaluate the safety of this technique in a population with good sample size.

## METHODOLOGY

This study was carried out at department of general surgery, Combined Military Hospital Lahore, from October 2014 to August 2018. A total of 1037 patients with acute or chronic cholecystitis who were scheduled for laparoscopic cholecystectomy were included regardless of their age and gender. Patients were recruited using non-probability consecutive sampling. Patients who had any previous abdominal surgery or those with paraumbilical hernia were excluded. Written consent from patients regarding participation in this study was taken. The sample size of this study was calculated by taking estimated frequency of gas leakage in 12% patients using Hasson entry technique<sup>10</sup>, and desired precision level 3%, the calculated sample size was 385 patients. We took more than double patients to make study results more reliable.

For port access using open technique, an infra-umbilical incision about 1.5cm to 2cm was given in a transverse manner using scalpel No.11. After incision, skin edges were retracted and fatty contents were separated from scar site, further blunt dissection was done at the scar site to dissect the fascia and rectus sheath. Rectus sheath was lifted using Kocher's forceps and holding stitches using vicryl 1 suture were applied 1cm apart. Rectus sheath is cut using scalpel no. 11 between the holding stitches, after that a 5mm port was inserted into the incision site. Port cannula was fixed with the abdominal wall by applying stitches. After than pneumoperitoneum was created using CO<sub>2</sub> insufflation. When intra-abdominal pressure reaches 7-10 mmHg, a 10mm blunt trocar was passed. Postoperatively the vicryl holding stitches were knotted together to close the defect in linea alba. In all of the surgeries gallbladder was removed through the epigastric port.

Following laparoscopic cholecystectomy, data of intra-operative and post-operative complications was noted. Patients were followed during hospital stay to evaluate any procedure related injury. Follow-up was done for up-to six months to determine wound infections and formation of umbilical hernia.

Data was entered prospectively in SPSS-23. Mean and standard deviation was used to present age. While qualitative variables were presented as frequency and percentage.

## RESULTS

Out of 1037 patients, 695 (67.03%) patients were females and 342 (32.97%) were male, with female predominance. Mean age of the patients was  $44.65 \pm 8.98$  years.

Procedure was simple in 655 (63.16%) patients and complex in 382 (36.83%) patients due to the presence of inflammatory adhesions and anatomic access. 49 cases were difficult due to anatomical causes such as due to the position of gallbladder and common bile duct (CBD).

There was no incidence of intra-procedural complications. There was no incidence of intra-abdominal injury, omental injury, vascular injury or gut perforation (table).

Regarding post-operative complications,

**Table: Data of intra-operative and post-operative complications.**

<b>Intra-operative</b>	
Abdominal Injury	-
Omental Injury	-
Vascular Injury	-
Gut Perforation	-
<b>Post-operative Complications</b>	
Port-site Infections	6 (0.57%)
Umbilical Hernia	1 (0.09%)

port-site infections were diagnosed in 6 (0.57%) patients during 6 months' follow-up, out of which infection occurred in 5 patients before 3 months and in remaining 1 patient after 3 months' follow-up. Umbilical hernia was diagnosed in only 01 (0.09%) patient till the end of follow-up (table).

## DISCUSSION

Many modifications have been made in last decades in instruments and techniques of laparoscopy. However, there is still controversy regarding the best technique for creation of pneumoperitoneum. Traditionally closed methods are used for creation of pneumoperitoneum, but blind access in closed procedures is associated with the risk of organ injuries that can be life threatening in some cases. To overcome these complications different entry techniques such as direct trocar insertion, radically expanding trocars, Hasson's open technique and shielded trocars are developed<sup>11-13</sup>. The open technique overcome many of the complications of closed methods but this method did not gain widespread popularity because of risk of air leak and longer procedural time<sup>14</sup>. Moreover, the open tech. also has some risks; like more dissection of tissues during port-placement, post-surgery seroma/hematoma formation, infections, and risk of conversion to veress needle to achieve peritoneal access.

In present study, there was no intra-abdominal injury, omental injury, vascular injury or gut perforation. Port-site injections occurred in 06 (0.57%) patients and umbilical hernia occurred in only 01 (0.09%) patients.

A study conducted by Khan *et al* on 100 patients regarding the safety of Hasson's technique. The authors did not found any incidence of bowel, omental or vascular injury in any patient. In their study, gas leakage occurred in 12% patients. In our study, there was no incidence of air leakage<sup>10</sup>.

Another study by Chotai *et al* on evaluation of safety of open entry technique, reported omental injury in 4.12% patients, gas leakage in 42.27% patients, extra-peritoneal insufflation in 2.06% patients and entry in wrong plane in 5.15% patients<sup>15</sup>.

Study by George *et al* made some changes in the original Hasson technique and determined the complications rate in the follow-up period.

They reported port-site seroma in 0.6% patients and infections in 0.6% patients<sup>16</sup>.

One recent study by Ali *et al* compared the complications rate of Hasson method with veress needle, the authors concluded that there are minimum chances of complications in open (Hasson) technique and reported that Hasson tech. is safer than veress needle<sup>17</sup>.

A recent meta-analysis by Ahmad *et al* compared the complications rate of different entry techniques during laparoscopic cholecystectomy, the authors reported insufficient evidence to report significant difference regarding incidence of bowel injury, and vascular injury in open versus closed entry (veress needle) technique for laparoscopic access<sup>18</sup>.

A review by Hasson including 19 researches evaluated the outcomes of closed entry technique including 660,110 patients, and compared the data with 17 researches on open entry technique involving 579,510 patients. Hasson reported umbilical infections in 0.4%, bowel injury in 1.0%, and no vascular complication in open group, while the rate was 1.0%, 0.2% and 0.2% respectively in closed group. Hence Hasson concluded that open technique should be adopted as a preferred method of laparoscopic access<sup>19</sup>.

A recent review by Vilos *et al* on safety, and complications of entry techniques of laparoscopic access, the authors reported clinical directions on the best available evidence and gave the following remarks; open entry access can be adopted as an alternative to veress needle, however veress needle is still the most widely used technique. The existing literature failed to produce superiority or inferiority of open technique over other available techniques<sup>20</sup>.

## CONCLUSION

We found that Hasson technique for first laparoscopy port access for creation of pneumoperitoneum was a safe technique with minimum number access related and postoperative complications.

## CONFLICT OF INTEREST

This study has no conflict of interest to be declared by any author.

## REFERENCES

1. Cuss A, Bhatt M, Abbott J. Coming to terms with the fact that the evidence for laparoscopic entry is as good as it gets. *J Minim Invasive Gynecol* 2015; 22(3): 332-41.
2. Nuzzo G, Giuliante F, Tebala GD, Vellone M, Cavicchioni C. Routine use of open technique in laparoscopic operations. *J Am Coll Surg* 1997; 184(1): 58-62.
3. Hashimoto DA, Sirimanna P, Gomez ED, Beyer-Berjot L, Ericsson KA, Williams NN, et al. Deliberate practice enhances quality of laparoscopic surgical performance in a randomized controlled trial: from arrested development to expert performance. *Surg Endosc* 2015; 29(11): 3154-62.
4. Subido ED, Pacis DMM, Bugtai NT. Recent technological advancements in laparoscopic surgical instruments. *AIP Conference Proceedings*; 2018: 04007.
5. Lee WJ, Chan CP, Wang BY. Recent advances in laparoscopic surgery. *Asian J Endosc Surg* 2013; 6(1): 1-8.
6. Ogaick M, Martel G. Advances in abdominal access for laparoscopic surgery: a review. *Open Access Surg* 2014; 7(1): 81-88.
7. Krishnakumar S, Tambe P. Entry complications in laparoscopic surgery. *J Gynecol Endosc Surg* 2009; 1(1): 4-11.
8. Vindal A, Lal P. The Veress needle causes most laparoscopic injuries and should be abandoned: FOR: The open technique is safer and saves time. *BJOG* 2015; 122(1): 141-41.
9. Hasson HM, Rotman C, Rana N, Kumari NA. Open laparoscopy: 29-year experience. *Obstet Gynecol* 2000; 96(5): 763-66.
10. Khan HM, Chohan MZA, Rizvi MB, Khan U. Open access technique in laparoscopic surgery-our experience of initial 100 cases. *Pak J Med Health Sci* 2017; 11(4): 1384-86.
11. Zachariah SK. Laparoscopic entry: Current perspectives of safe access techniques. In Khana S, recent advances in minimally access surgery 2019: 40-53.
12. Kaistha S, Kumar A, Gangavatiker R, Sisodiya N. Laparoscopic access: direct trocar insertion versus open technique. *J Laparoendosc Adv Surg Tech* 2019; 29(4): 489-94.
13. Ciravolo G, Donarini P, Rampinelli F, Visenzi C, Odicino F. Laparoscopic access with optical gasless trocar: a single-centre experience of 7,431 procedures. *J Minim Invasive Gynecol* 2019; S1553-4650(19): 30299-7.
14. Lal P, Sharma R, Chander J, Ramteke V. A technique for open trocar placement in laparoscopic surgery using the umbilical cicatrix tube. *Surg Endosc* 2002; 16(9): 1366-70.
15. Chotai NR, Choksi B, Damor S, Bhedi A. Intraperitoneal access by closed method (veress needle) versus open (Hasson's) method in laparoscopic surgery to create pneumoperitoneum. *Int Sur J* 2017; 4(8): 2786-90.
16. George R, Radhakrishna V, Mathew M, Thenamangalath A, Rahman A. Modified Hasson technique: a quick and safe entry of first port into the abdomen. *Int Surg J* 2019; 6(8): 2802-05.
17. Ali AI, Abbasi S, Hussain SM. Comparison of open (hasson) and closed (veress needle) methods of creating pneumoperitoneum in laparoscopic surgeries. *Pak Armed Forces Med J* 2019; 69(2): 255-61.
18. Ahmad G, Baker J, Finnerty J, Phillips K, Watson A. Laparoscopic entry techniques. *Cochrane Database Syst Rev* 2019; 1: CD006583.
19. Hasson HM. Open laparoscopy as a method of access in laparoscopic surgery. *Gynaecol Endosc* 1999; 8(6): 353-62.
20. Vilos GA, Ternamian A, Dempster J, Laberge PY. No. 193- Laparoscopic entry: a review of techniques, technologies, and complications. *J Obstet Gynaecol Can* 2017; 39(7): e69-84.