ISSN: 0975-3583, 0976-2833 VOL15, ISSUE11, 2024

Original Research Article

A study to compare close (veress needle) versus open (hasson's) entry techniques for creation of pneumoperitoneum in patients undergoing laparoscopic cholecystectomy

Dr. Herman Singh[1] (Assistant Professor), Dr. Avneet Singh Setia[2] (Assistant Professor) & Dr. Manpreet Singh[3] (Associate Professor)

Dept. of General Surgery, Gian Sagar Medical College & Hospital, Ram Nagar, Rajpura, Jansla, Punjab.[1&2]

Dept. of Physiology, Gian Sagar Medical College & Hospital, Ram Nagar, Rajpura, Jansla, Punjab.[3]

Corresponding Author: Dr. Manpreet Singh

Abstract

Background & Methods: The aim of the study is to study to compare close (veress needle) versus open (hasson's) entry techniques for creation of pneumoperitoneum in patients undergoing laparoscopic cholecystectomy. Patients visiting Department of General Surgery, AIMSR Bathinda for undergoing laparoscopic cholecystectomy satisfying the study design and presenting during the study period were involved in the study being a time bound study all the consecutive subjects fulfilling selection criteria were included.

Results: In the present study moderate to severe pain was observed after the procedure in all the patients. In group A35 (58%) patients were having severe pain but in group B on 32(53.3%) patients were having moderate pain. Only one patient in each group was having very severe pain.

Conclusion: We can conclude that both the closed (veress needle) and the open (Hasson) method for gaining access into the peritoneal cavity quite safe. The open technique had a time benefit over the closed method. Port site Gas leakage was noted in approximately 40% patients of both the groups. Overall, open technique is as good as closed technique and is a good substitute to closed technique for pneumoperitoneum creation in laparoscopic cholecystectomy.

Keywords: veress, needle, hasson's, pneumoperitoneum, laparoscopic & cholecystectomy.

Study Design: Comparative Study.

Introduction

Laparoscopic cholecystectomy is a minimally invasive surgical technique to remove a diseased gallbladder. Laparoscopic surgery causes relatively less tissue injury than open surgery because of the selective dissection of tissue performed under a magnifying camera[1]. With the advancement in technology and patient awareness, laparoscopic cholecystectomy has become the choice of procedure for cholelithiasis, substituting the conventional open cholecystectomy.

ISSN: 0975-3583, 0976-2833 VOL15, ISSUE11, 2024

As a result, laparoscopic cholecystectomy has emerged as the gold standard technique for treating cholelithiasis.

Jacobeus of Sweden in 1910 performed the first laparoscopy in a human. Since then laparoscopic techniques have been in constant evolution. Laparoscopic cholecystectomy has become the action of choice for uncomplicated symptomatic cholelithiasis worldwide[2].

Since the early 1990s, this method has mostly replaced the open technique for cholecystectomies. Laparoscopic cholecystectomy is presently specified for treating any disease of gall bladders like acute or chronic cholecystitis, cholelithiasis, dyskinesia, gallstone pancreatitis, and gallbladder masses or polyps[3].

Laparoscopic cholecystectomy is the gold standard operation for gallstone disease. Abdominal access and the creation of a pneumoperitoneum are the first important steps in any laparoscopic surgery and carry an expected risk of bowel and vascular injuries[4]. These are unique to laparoscopic surgery and are rarely seen in open surgery.

Laparoscopic cholecystectomy is the type of surgical technique that allows a surgeon to access the the abdomen and pelvis without having to make a large incision on the skin, hence is known as key-hole surgery.

The term took its origin from the Greek word 'laparo' which means abdomen and 'skopein' which means to see. Because of its advantage of decreased postoperative hospital stay, lesser postoperative pain, finer cosmetics results, minor scars, and speedy improvement in the quality of life. It is the preferred choice of a surgery over open cholecystectomy[5]. Several studies have shown that there is reduced postoperative pain, decreased morbidity, reduced hospital stay, early return to work, and cost-effectiveness as compared to conventional open cholecystectomy. Although laparoscopic cholecystectomy is a procedure with improved surgical outcomes, postoperative pain remains the most common complaint in the early postoperative period[6-8].

Material and Methods

Study was carried out in the department of General Surgery, AIMSR Bathinda after getting approval from the Research committee, AIMSR and Ethics committee, Adesh University for a period of 18 months.

Population/ Participants: Patients of either sex presenting to department of General Surgery, AIMSR Bathinda were selected after applying inclusion and exclusion criteria and after obtaining their informed written consent

Group A: using the closed/Veress needle method

Group B: using the open/Hasson’s method.

Inclusion Criteria:

- All the patients of either sex who are undergoing surgery by laparoscopic cholecystectomy.

ISSN: 0975-3583, 0976-2833 VOL15, ISSUE11, 2024

- All the who agree and give consent to get enrolled for the study
- Patients with no history of previous laparotomy.

Exclusion Criteria

- Patients with the age less than 18 years and age more than 70 years.
- Patients who refuse to give consent for enrolment in study.
- Pregnancy
- Patients with history of laparotomy

Result

TABLE 1: DISTRIBUTION OF PATIENTS ON THE BASIS OF AGE GROUPS

	Group A		Group B	
Age (Years)	No of Cases	%age	No of Cases	%age
≤ 30	8	13.3%	17	28.3%
31-40	20	33.3%	16	26.7%
41-50	22	36.7%	13	21.7%
>50	10	16.7%	14	23.3%
Mean±SD	40.73±8.61		39.8±11.08	
P value	0.607			

In the present study minimum age of patient is 22 years and maximum age is 59 years. Mean age was 40.73±8.61 years in group A and 39.8±11.08 years in group B. Which was statistically insignificant (p>0.05).

ISSN: 0975-3583, 0976-2833 VOL15, ISSUE11, 2024

TABLE 2: DISTRIBUTION OF PATIENTS ON THE BASIS OF PRESENTING COMPLAINT

Diagnosis	Group A		Group B		P value
	No	%age	No	%age	
Calculus cholecystitis	31	51.7%	34	56.7%	0.583
Cholelithiasis	29	48.3%	26	43.3%	
Total	60	100.0%	60	100.0%	

In the present study out of 60 patients in group A, 31 (51.7%) were having calculus cholecystitis and 29 (48.3%) were presented with cholelithiasis. Among group B, out of 60 participants, 34 (56.7%) were having calculus cholecystitis and 26 (43.3%) were presented with cholelithiasis

TABLE 3: COMPARISON OF TIME TAKEN FOR ACCESS IN BOTH THE STUDY GROUPS

Time Taken for Access [in mins]	Group A		Group B	
	No of Cases	%age	No of Cases	%age
1-5	27	45.0%	40	66.7%
6-10	32	53.3%	20	33.3%
>10	1	1.7%	0	0.0%
Mean±SD	5.62±2.19		4.55±1.76	
P value	0.004			

In the present study minimum time taken for access is 2min and maximum is 11min. Mean access time was 5.62±2.19 min in group A and 4.55±1.76min in group B. 53.3% patients of

ISSN: 0975-3583, 0976-2833 VOL15, ISSUE11, 2024

group A were in 6-10 min access time and with open method we get access within 1-5 min and 66.7% patients Which is statistically significant

TABLE 4: COMPARISON OF PAIN AFTER THE PROCEDURE IN BOTH THE STUDY GROUPS

Pain	Group A		Group B		P value
	No of Cases	%age	No of Cases	%age	
No pain	0		0		
Moderate	24	40.0%	32	53.3%	
Severe	35	58.3%	27	45.0%	0.337
Very Severe	1	1.7%	1	1.7%	
Total	60	100.0%	60	100.0%	

In the present study moderate to severe pain was observed after the procedure in all the patients. In group A35 (58%) patients were having severe pain but in group B on 32(53.3%) patients were having moderate pain. Only one patient in each group was having very severe pain.

Discussion

Time of access in the close entry group is the time calculated from insertion of the veress needle to insertion of the first port. In the open entry group, it is the time taken from the skin incision to trocar entry. Time of access is significantly lower in open entry group compared to close entry group. Mean access time was 5.62±2.19 minutes in the close entry group and 4.55±1.76min in the open entry group[9]. Maximum patients of close entry group had 6-10 min access time; in open entry group 66.7% patients had 1-5 min access time. Our results were statistically significant and comparable with Chotai NR et al.

ISSN: 0975-3583, 0976-2833 VOL15, ISSUE11, 2024

In contrast, Baruah et al revealed that 127/200 patients had 1-5 min access time with close entry technique(veress needle) and with open method(Hasson cannula)144/200 patients with is maximum had 6-10 min access time. Mean access time was 5.62 ± 2.23 and 7.18 ± 2.52 respectively[10].

Shookar N et al also revealed in their study the mean time taken for access 4.78 ±11.43 and 6.11±4.12 and close and open entry group which is also contrary with our results. After the analysis between the two groups, the access time, we found that using the

open entry technique to access the abdomen was significantly quicker than the close entry technique.

In the present study, moderate to severe pain was observed in all the patients after the procedure. In the close entry group out of 60 patients, 35(58%) had severe pain, while in the open entry group, 32(53.3%) patients had moderate pain[11]. Only one patient in each group was having very severe pain.

Conclusion

Out of 60 patients in group A, 31 (51.7%) were having calculus cholecystitis and 29 (48.3%) were presented with cholelithiasis. Among group B, out of 60 participants, 34 (56.7%) were having calculus cholecystitis and 26 (43.3%) were presented with cholelithiasis. We can conclude that both the closed (veress needle) and the open (Hasson) method for gaining access into the peritoneal cavity quite safe. The open technique had a time benefit over the closed method. Port site Gas leakage was noted in approximately 40% patients of both the groups. Overall, open technique is as good as closed technique and is a good substitute to closed technique for pneumoperitoneum creation in laparoscopic cholecystectomy.

References

1. Harrell AG, Heniford BT. Minimally invasive abdominal surgery: lux et veritas past, present, and future. Am J Surg 2005; 190: 239-43.

2. Cuschieri A, Dubois F, Mouiel J, Mouret P, Becker H, Buess G, et al. The European experience with laparoscopic cholecystectomy. Am J Surg. 1991 Mar;161(3):385-7.

3. Grace PA, Quereshi A, Coleman J, Keane R, McEntee G, Broe P, et al. Reduced postoperative hospitalization after laparoscopic cholecystectomy. Br J Surg. 1991 Feb;78(2):160-2. doi: 10.1002/bjs.1800780209. PMID: 1826624.

ISSN: 0975-3583, 0976-2833 VOL15, ISSUE11, 2024

4. Hassler KR, Collins JT, Philip K. Laparoscopic Cholecystectomy. [Updated 2022 Apr 13]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2022 Jan-. Available from: https://www.ncbi.nlm.nih.gov/ books/NBK448145/

5. Krishnakumar S, Tambe P. Entry complications in laparoscopic surgery. J Gynecol Endosc Surg. 2009 Jan;1(1):4-11.

6. Chotai NR, Choksi BB, Damor S, Bhedi A. Intraperitoneal access by closed method (veress needle) versus open (Hasson's) method in laparoscopic surgery to create pneumoperitoneum. Int Surg J. 2017;4(8):2786-90.

7. Akbar M, Khan IA, Naveed D, Khattak I, Zafar A, Wazir MS, et al. Comparison of closed and open methods of pneumoperitonium in laparoscopic cholecystectomy. J Ayub Med Coll Abbottabad. 2008 Apr-Jun;20(2):85-9.

8. Sasmal PK, Tantia O, Jain M, Khanna S, Sen B. Primary access-related complications in laparoscopic cholecystectomy via the closed technique: experience of a single surgical team over more than 15 years. Surg Endosc. 2009;23(11):2407-2415.

9. Channa GA, Siddiqui AJ, Zafar SN. Open versus closed method of establishing pneumoperitoneum for laparoscopic cholecystectomy. J Coll Physicians Surg Pak. 2009 Sep 1;19(9):557-60.

10. Dunne N, Booth MI, Dehn TC. Establishing pneumoperitoneum: Verres or Hasson? The debate continues. Ann R Coll Surg Engl. 2011 Jan;93(1):22-4.

11. Lal P, Vindal A, Sharma R, Chander J, Ramteke VK. Safety of open technique for first-trocar placement in laparoscopic surgery: a series of 6,000 cases. Surgical Endoscopy. 2012 Jan;26(1):182-188.