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Laparoscopic entry in obese patients: Jain point

Abstract

Objectives: The study aims to analyze the safety of a novel entry port, the Jain Point for first blind laparoscopic entry port in obese patients, which is non umbilical in position, located in mid abdomen, applicable in patients with or without previous surgery.

Methods: The study was conducted at an advanced laparoscopy center between **January 2011 to December 2023**. Total **9715** patients underwent laparoscopy and out of these, **1362** were selected and categorized as per WHO criteria for obesity. The selection criteria were solely based on BMI. All first blind entries were made by Jain point. The entry related complications were compared with other conventional techniques.

Results: In the study period, 1362 obese patients were operated. Time spent in establishing the pneumoperitoneum and trocar entry was comparable to other conventional approaches with a short learning curve. Major complications in the form of MRV (major retroperitoneal vessel) injury was not noted in our series. No injury to stomach and any other viscera noted. Minor complications in the form of prepertioneal insufflation and omental emphysema in 2.7% and failed entry were noted in 1% cases. All surgeries were completed laparoscopically and majority of patients were discharged in 24 to 48 hours.

Conclusions: Keeping in context the safety of non umbilical entry ports, this study proposes Jain Point a, lateral, non-umbilical, primary blind entry port, as a viable option in obese patients, with or without previous surgeries.

Keywords: laparoscopic entry, obesity, abdominal wall, umbilicus

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Introduction

According to the WHO, obesity is defined as a body mass index (BMI) equal or higher than 30, and it is classified according to the value of BMI in class 1 (30 - 34.9), class 2 (35 - 39.9), and class 3 (BMI> 40).[1] In obese patients minimally invasive surgical approach is preferred over open surgery,[2,3] but primary access into the abdomen is still challenging due to large amount of abdominal wall fat and higher incidence of previous surgical scars; as there is a clear correlation between obesity and multiple gynecologic conditions.[4–10] Most commonly laparoscopic entry in obese patients is made through umbilicus, which requires entering abdomen in a vertical direction contrary to the 45° degree inclination towards pelvis in normal individuals, raising the incidence of major retroperitoneal vessel (MRV) injury;[11] as umbilicus lies just 4-5 cm from the great vessels. For umbilical entry we need to raise the abdominal wall which becomes difficult in obese patients, and if surgeon and assistant are trying this together, unequal forces are applied, increasing risk of wrong placement[12] or MRV injury. In patients with history of previous surgery, laparoscopic entry becomes more challenging due to risk of adhesions under the umbilicus. Gomel et.al in their prospective single-center study found umbilical adhesions in 9.82% of the 814 cases.[13] The incidence of paraumbilical adhesions were 0.68% in no previous surgery, 1.69% in previous laparoscopy, 19.8% in transverse suprapubic incision and 51.7% in midline incision. Thus umbilical access can make primary blind port entry hazardous,[14] making way for a lateral port[15] which avoids MRV injury and peri umbilical adhesions that could exist in previous surgery cases. To overcome this, we have been using an alternate, lateral point, which is 10–13 cm away from umbilicus which can also be used in cases with history of previous surgeries. We call this entry point as, JAIN POINT.[16] In this study we analyze the safety of this point vis-à-vis reduced complication rates in obese patients. The value of our study increases as we are evaluating a viable, non-umbilical entry point in obese patients which is also applicable in patients with history of previous surgeries.

Materials and methods

This study was conducted at a tertiary referral center for advanced laparoscopy with active fellowship programs. Out of 9715 patients operated between January 1, 2011 and December 31, 2023 at this center, a total of 1,362 patients met the criteria for obesity. Obese patients requiring laparoscopic surgery for various indications with or without previous surgery were included. After signing of informed consent, demographic data, height, weight and body mass index (BMI) were collected and documented. Neck circumference, width of mouth opening, sternomental distance, and thyromental distance were recorded.

Proper evaluation of patient's panniculus and body type was done. Special attention was paid to distribution of patient's weight and waist hip ratio (i.e., increased waist versus hip circumference). Patients with large adipose tissue centered on their waist are technically more challenging than those centered on the hips. During preoperative evaluation, panniculus was lifted to identify the ischial spines, and bifurcation of aorta in relation to patient's umbilicus in standing and supine positions. These cases were evaluated by a multi-disciplinary team including clinician, physician, anesthetist, intensivist and surgical and post-operative plans were formulated. Pre-operative optimization of medical co-morbidities done and mechanical bowel preparation done the night before surgery. Pre-operative weight-based dosing of prophylactic antibiotics, and thromboprophylaxis given according to Caprini scoring[17] to reduce venous thromboembolism.[18]

Proper patient positioning and padding done to reduce the chances of nerve injuries. Surgical mattress and chest strapping are employed to prevent slippage, while the legs are adequately supported to avoid any

potential trauma. Proper padding of the knees and calves is ensured, and leg stirrups are utilized to minimize the risk of nerve injuries. Measures such as shoulder blade and arm extenders, along with padding pressure areas like the elbows and wrists, are implemented for the same purpose. Additionally, leg stockings or sequential compression devices are utilized to mitigate the risk of deep venous thrombosis. Preoxygenation of sufficient duration in 25-degree head-up position given before induction to reduce hypoxemia. Application of positive pressure ventilation is ensured during pre-oxygenation.

Jain point was used as primary entry port irrespective of patient's BMI, size of mass and previous abdominal scars. 5mm port introduced and 10mm telescope optimized as per mandate of the case. Final port position is shown in Figure 1. In case of failed entry (2 attempts), or scars/burns/previous drain sites/ displaceable large mass at Jain point, the mirror image to Jain point on right side was used for entry with similar technique. Ports more than 10 mm were closed using port closure device.

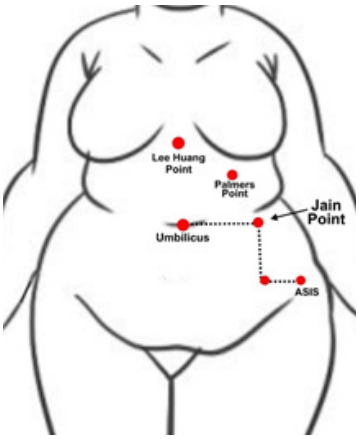

Figure 1 Relative port positions. Jain point is located by a single prominent bony landmark in the sterile surgical field, anterior superior iliac spine (ASIS).

Post operatively expert care given strictly adhering to Enhanced Recovery After Surgery (ERAS) protocols[19] with early ambulation, expedited with active breathing and leg exercise to increase positive outcomes. Pain management done with non-opioid, NSAIDS. Intensive care offered in morbidly obese patients. Thromboprophylaxis with compression stockings and subcutaneous heparin continued until the patient spent most of her time out of bed.

Technique of Jain point entry: Jain point is located by anterior superior iliac spine which is a single very prominent bony landmark and is accessible despite obesity.

To make surface marking of Jain Point, firstly ASIS is palpated. Jain point lies at the junction of two straight lines, first is a horizontal line drawn at the level of umbilicus and another line drawn vertically 2.5 cm medial to ASIS. The point where these two lines meet is 'Jain point', located 10-13cm lateral to umbilicus. The point is located in a similar way, irrespective of the abdominal fat, panniculus or shift in position of umbilicus in relation to aorta or increasing BMI. Figure 2a & Figure 2b. To overcome increased abdominal fat Figure 3, we use larger Veress needle of 150mm length, long trocars and instruments to reach deepest part of pelvis. A small 1-2mm nick is made just enough for Veress needle entry. There is no need to lift abdominal wall or change angle of Veress insertion with change in BMI. Veress needle inserted directly perpendicular to abdominal wall and two pops appreciated, first at external oblique and second at fused aponeurosis of transversalis and internal oblique; and then finally the giveaway of resistance as Veress needle enters the peritoneal cavity.

Figure 2a Long Veress needle at Jain point which lies at the left para-umbilical region, 10-13 cm from midline, in a straight line drawn vertically upward from a point 2.5 cm medial to anterior superior iliac spine (ASIS).

Figure 2b 5 mm telescope inserted with 5 mm long trocar at Jain Point.

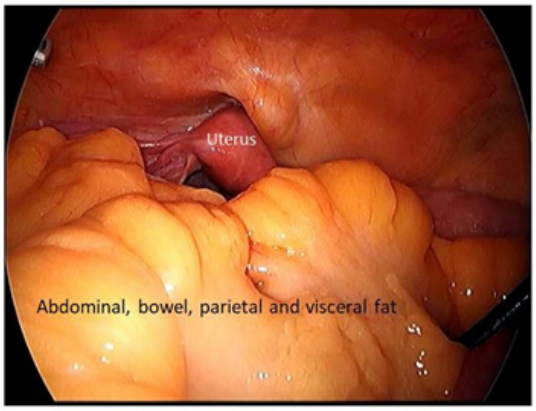

Figure 3 Laparoscopic picture of sentinel lymph node sampling with Jain Point becoming main ipsilateral working port.

Safety check done and 5mm port and telescope inserted at Jain point. Abdomen thoroughly inspected immediately below the entry point and in all quadrants of abdomen. Then a 10mm, 30-degree scope inserted as per need of the case from umbilicus to xiphisternum, under direct vision of the 5mm telescope. Jain Point port continues as main ergonomic working port in rest of the surgery (Figure 4).

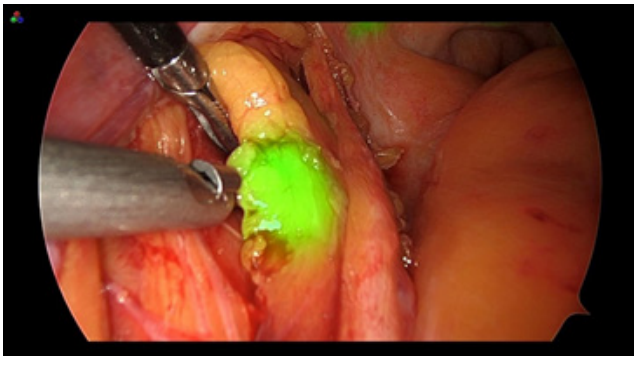

Figure 4 Laparoscopic view showing initial picture of pelvic cavity with fat.

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Statistical analysis

Data was collected from medical records of the patients and entered in Statistical Package for Social Sciences (SPSS). Data analysis was done using SPSS Version 21.

Results

A total of 9,715 patients underwent laparoscopy using Jain Point entry technique from January 2011 to December 2023. Of these, 1,362 (14%) fall under criteria of obese with majority (92.58% i.e., 1,261) having BMI between 30 to 40, while (7.41% i.e., 101) patients being morbidly obese. The demographic profile of patients including age, parity and BMI distribution according to WHO scale is mentioned in Table 1.

Table 1 Distribution of cases according to Demographic profile: (T= 9715)

Characteristics	Values
Age (years)	1 to 76 yrs
BMI (kg/m^2)	
<18.5	510
18.5 - 24.99	4474
25 - 29.99	3369
≤30- >40	1261
≤40 - >50	91
≤50	10

Table 2 depicts distribution of obese cases according to indication of surgery. Out of 1,362 obese patients in our study, 25.11% (342) patients underwent total laparoscopic hysterectomy, 12.26% (167) underwent complex endometriotic surgery, 11.67% (159) underwent laparoscopy for Koch's abdomen, 9.39% (128) had tubal block, 9.47% (129) myomectomy, 9.10% (124) had polycystic ovarian disease (PCOS), and 7.63 % (104) patients underwent diagnostic video laparo-hysteroscopy. Variety of other surgeries were also significant and have been mentioned in the table.

Table 2 Distribution of obese cases according to indication of surgery (n= 1362)

Cases	Total (N-)	Previous surgeries
TLH (Total Laparoscopic Hysterectomy)	342	165
Myomectomy	129	35
Endometriosis	167	57
Adenomyoma	13	5
Ovarian Cyst	68	24
Urogynec Surgries	23	5
Koch's Abdomen	159	72
Mullerian Anomalies	24	5
Pelvic Pain	19	10
VLH(Video Laparo-hysteroscopy)	104	13
PCOS(Poly Cystic Ovarian Syndrome)	124	22
Ectopic Pregnancy	40	18
Tubal Block	128	47
Others	20	13

Many patients had history of previous surgeries, few with multiple abdominal scars in Table 3. In case of multiple scars, the scar with higher probability of adhesions and possible complications was counted; like vertical was considered over transverse scar. 62.04% i.e., 304 patients had laparotomy scars while 37.96% i.e., 186 patients had laparoscopy scars. In laparotomy category, majority patients (62.82% i.e., 191) had transverse scars, (30.92 % i.e., 94) had vertical scars; while Mc Burney, Kocher's and renal surgery scars were in 5, 13 and 1 patients respectively. Obese patients with previous upper abdominal scars, which could be contraindication for Palmer's point entry were also entered safely through Jain Point port.

Table 3 Details of previous surgeries and scar status (n = 490)

Total cases	Total open	Transverse	Vertical/Midline	Mc- burney	Kocher's	Renal surgery	Previous laparoscopy
TLH	129	68	50	3	7	1	36
Myomectomy	22	17	4	-	1	-	13
Endometriosis	26	18	7	-	1	-	31
Adenomyoma	1	1	-	-	-	-	4
Ovarian Cyst	16	12	4	-	-	-	8
Urogynae Surgeries	2	-	1	-	1	-	3
Koch's Abdomen	42	30	8	1	3	-	28
Mullerian Anomalies	3	3	-	-	-	-	2
Pelvic Pain	10	6	4	-	-	-	-
VLH	3	1	2	-	-	-	10
PCOS	11	9	1	1	-	-	11
Ectopic Pregnancy	13	12	1	-	-	-	5
Tubal Block	15	10	5	-	-	-	32
Others	11	4	7	-	-	-	2

The surgeries performed were classified as per their severity into mild, moderate and severe on basis of a defined criteria which included weight of specimen, preoperative ultrasound denoting size of ovarian cysts, per operative staging of endometriosis and number of previous surgeries (Table 4). Out of 483 gross surgical specimens, 59.21% (286) had weight <300gm and 34.16% (165) specimen > 300gm, out of which 6.62% (32) weighed >1000gm. In our study, 490 patients had history of previous surgeries with 66.93% (328) having previous 1 surgery and 33.06% (162) previous 2 or more surgeries; with 22.65% (111), 7.95% (39) and 2.44% (12) patients having history of previous 2, 3 and >3 surgeries, respectively. Looking at size of adenexal cysts, majority (75%) i.e., 51 patients had cyst size >8 cm. 11.67% (159) patients in our study had tubo-ovarian mass with frozen pelvis and Koch's which are very formidable surgeries for entry. The endometriosis spectrum in our study represented maximum patients, 65.86% i.e., 110 patients with Stage 4 and deep infiltrating

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endometriosis according to, ENZIAN[20] and another endometriosis classification, based on surgical complexity.[21] Associated co-morbidities were diabetes mellitus, hypertension, atherosclerosis, angina, chronic obstructive airway disease, hypothyroidism, cardiac and respiratory decompensation. Significant number of patients had Koch's abdomen, PCOS, endometrial hyperplasia. We evaluated primary entry though Jain point across the spectrum of clinical situations and comorbidities (Table 5).

Table 4 Distribution of cases on basis of severity

Weight of Specimen (Myoma + TLH)	**<300gm**	**300-999gm**	**>1000gm**	**-**
483	286	165	32	
No. of Previous Surgeries	Previous 1 Surgery	Previous 2 Surgery	Previous 3 Surgery	>3 Previous Surgery
490	328	111	39	12
Size of Adnexal Cysts	< 8cm	>8cm without adhesions	>8cm with adhesions	TO mass with frozen pelvis (Kochs)
68	17	35	16	159
Endometriosis	Grade I/II	Grade III	Grade IV / DIE	
167	51	6	110	

Table 5 Total number of obesity cases associated with comorbities (n=1362)

Cases	**Total**
Diabetes	375
Hypertension	490
Hypothyroid	340
Sleep Apnoea	11
Deranged Kidney Function	11
Cardiac Decompensation	30
Previous Coronary Stenting	4
Hashimoto Disease	1
Koch's Abdomen	143
Known Drug Allergies	16
PCOS	113
Endometrial Hyperplasia	40
Past history of ICU Admission in Post Operative Period	5
Past history of Covid	10
Bleeding Disorder (Raised Pt/Inr)	7
Past History of Thromboembolic Phenomena	8
Past History of Stroke	4
Hernia Repair	6
Respiratory Allergic Disease	22
Dyslipidemia	489
Gall Stones	20
Varicose Veins	3

Of 1362 obese cases, all were successfully completed without any major complication of vessel or visceral injury and no mortality reported. None of the surgeries were converted to laparotomy. In few cases, mirror image of Jain point was used from right side as an entry port at the beginning of surgery, if contraindications to left side entry existed. There were minor complications including pre-peritoneal insufflation, skin emphysema and omental insufflation (2.7%), which subsided on their own and did not alter the course of surgery. Failure to entry occurred in 1% patients, which was noted in cases with flabby abdomen. Most patients were routinely discharged within 24 hours. 3.9% patients with obesity and complex pathologies like, mesh repair for ventral hernia and cases with TLH with gall bladder removal with co-morbidities were admitted for more than 48 hours being discharged on post-operative day 4**.** One patient with concomitant hernia repair and prolonged surgical time, had drop in spo2 (82%) in post-operative period and needed ICU care, spirometry and active breathing exercise for 2 days and then discharged normally. All patients were followed up after 10 days and again after 4 weeks. Immediate and delayed post-op complications as per records show that there was no port site hematoma. This can be explained by the anatomical location of Jain point, which is located out of danger zone, for superficial epigastric or MRV injury. One patient had deep venous thrombosis (DVT) and two patients had pulmonary complications; however, only 1 patient had febrile morbidity. No postoperative ileus was noted. Delayed healing at morcellator site, which is lower left lateral in our unit was noted in 3 myomectomy patients.

Discussion

The present study focuses on a novel laparoscopic entry technique in obese patients, highlighting gross benefits and proposing it as a safe alternative to umbilical entry. The first step in any laparoscopic surgery is primary access through the abdominal wall and the process is not without danger. Literature reveals that 25% of all injuries that occur in laparoscopic surgeries are during first blind port placement.[22] In obese patients entry is more challenging. Major complications can occur during laparoscopic entry with the incidence of bowel perforation reported as 1.8 per 1000 and major abdominal vessel injury as 0.9 per 1000 cases.[23] Hence, first blind entry port and in previous surgery cases is most crucial being compounded by an additional feature, obesity. Our results indicate that Jain point is a viable option in obese patients with or without previous surgery, as our major complication rate was 0.01%.[24] Vilos et al.[25] published a recent guideline on laparoscopic entry for gynecological surgery and have recommended alternative non umbilical insertion sites for Veress needle. We are already advocating a non–umbilical approach, Jain Point, as published in July 2021.[26] Now assessing its possible role in obese patients. Rationale of using Jain point is that the viscera on left side, including stomach, kidney and spleen reach maximum up to T10–L1 level, whereas Jain point is at L4 level. Lower down the sigmoid colon adheres to the pelvic brim, leaving a large nascent area free of scars and adhesions on left side which is used to make Jain Point entry at para-umbilical position. The area is with least chances of surgical scars hence least chances of abdominal wall adhesions. Jain Point mimics the position of a referee on a tennis court, sitting just outside the court, monitoring the position of ball with equal agility on either side of court. In the context of previous surgeries, it means that it can be used in upper, mid and lower abdominal scars safely; avoiding the midline and paramedian adhesions. Previously the study has been conducted in thin patients,[27] patients with multiple previous surgeries,[28] large masses, general surgery cases[29] and upper abdomen scars with good surgical outcomes.[30]

Existing alternate entry port, Hassan's open technique has limitation in obese patients in making the port which is about 2 cm in length and deep till rectus sheath, which is difficult to reach due to excess abdominal fat, leading to higher incidence of port site hernia;

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and has difficulty in maintaining pneumoperitoneum during the entire length of surgery. Hasson presented his review of 5,284 women who had open laparoscopies out of which 21 had minor wound infections, four minor hematomas, one developed umbilical hernia that required surgery and one small bowel injury[31]. In our study, over a long follow-up, we did not come across any case of port site hernia or infection at Jain Point port as it is 5mm compared to 2cm incision required in Hasson technique. As quoted by Magos et al.,[32] it is equally unwise to use Hasson's open entry technique, as it is no safer than blind entry when there are type 2 bowel adhesions making bowel adherent, right under the umbilicus.

Another popularly used entry point is the Palmers point,[33] which has certain limitations as mentioned in literature with occasional liver laceration due to peri-visceral fat disposition with distorted anatomy in obese patients.[34,35] Jain point can be used in all contra indications of Palmer's point, notably bloated stomach, hepatosplenomegaly, upper quadrant scars, large upper abdominal masses, and suspected post inflammatory adhesions.[36] Whenever left side Jain Point is found to be challenging due to previous laparotomy for septicemia, infectious pathologies with multiple drain sites, splenic rupture and splenic enlargement, a mirror image of Jain point on right side can be considered without risk of injury to liver, whereas Palmer's point cannot be used from the right side due to risk of liver injury. Jain point has a fixed, prominent bony landmark, the ASIS, which can be still easily palpated in obese patients.

Another entry point described is 9th intercostal space[37] which is less used, rendering its learning and usage scarcely documented and practiced. Furthermore, using it in obese patients where surface marking for ribs could be more difficult and associated difficulties and complications related to entry could be further compounded.

Technically when making entry in obese patients, an important component is assessment of patient's weight distribution and mobility of panniculus. A high waist circumference, central obesity, can impose more technical challenges compared with patients whose weight is more concentrated along hips, truncal obesity. Jain Point can be useful in central obesity, as there is less adipose tissue in the region 10 to 13 cm lateral, compared to umbilicus. Our study points that Jain point entry is easy to learn with 8-10 initial cases under the supervision of senior consultants, and the remaining completely independently, demonstrating the short learning curve and reproducibility of the procedure by trainees and fellows in gynae endoscopy who made one third of entries, of all cases in the study group. It also alleviates the fear of first blind entry and MRV injury.

Entry at Jain point can safely be made by Veress first or visual/optical trocar entry,[38] threaded (ternamian) trocar,[39] disposable shielded trocar,[40] or even direct trocar entry.[41] How one makes initial entry is according to surgeon or institutional preference. We have devised, introduced and established the safety of Jain point entry port through our large series of patients over an observation span of 11 years. Other researchers have also reported the use of Jain Point in situations to avoid previous surgical scars in gynecology, general surgery and oncology.[42–51] The rate of conversion to laparotomy in laparoscopic surgery as reported by Walker et al.[52] and Scribner et al.[53] was 25.8% and 36.4%, respectively. In our study there was no conversion to laparotomy; along with forty years of surgical unit and expertise, rigorous pre op and intra op work up. A safe and smooth laparoscopic entry at Jain point is also a contributing factor.

The study does not intend to champion over any conventional techniques, rather, it provides a non-umbilical viable entry port in obese patients with added advantage in cases with previous surgeries and contraindications of Palmer's point. However there is a limitation of our study that it is retrospective in nature.

Conclusion

Keeping in view the recent recommendations of non -umbilical entry, it is very essential to find a safe, non-umbilical, primary entry port in obesity to reduce complications, for which we propose Jain Point, left lateral port, as a viable option. Jain Point is located by a single very prominent bony landmark, the ASIS, which is not obscured even in morbid obesity. Moreover, it continues as main ergonomic working port throughout the surgery. Due to its left paraumbilical position, 10 to 13 cm from midline, at a nascent area, it is free of risk of injury to vessel, viscera, adhesion and bowel, and is equally safe for previous surgery cases for scars in upper, mid or lower abdomen. In obese patients, Jain point entry has been found to be safe and reproducible by novice and advanced endoscopic surgeons alike.

Acknowledgments

All authors were involved in carrying out the study. Dr. Nutan Jain, Dr. Sakshi Srivastava and Dr. Priyanka Sureddi drafted the manuscript; and Dr. Vandana Jain contributed in editing and reviewing the manuscript. All statistical analysis was carried out by Miss. Aarti Jain. A very special thanks to Amol Kothari and Mansi Jain Kothari for helping with the editing. The authors would like to pay their gratitude to Mr. Bhopal Singh, Mr. Vishram Singh, Miss. Asha Rathi and our other OR staff for their dedicated support and help during the compilation of this study.

Ethics approval and consent to participate: This paper is the description of a technique that uses a different anatomical approach for an established procedure of first blind port insertion in laparoscopic surgeries and does not come under World Medical Association Declaration of Helsinki definition of human experimentation. Still, the procedure and relevant risk involved was presented and discussed in our institution's review and audit board meeting. The board agreed upon the safety aspect of the technique and concluded that since it is a retrospective study and does not disclose the identity of the patient, it does not require ethical committee approval. It was believed that this technique is undertaken in the best interest of the patients and does not violate Indian Council of Medical Research ethical guidelines (2017).

Consent for publication: All the authors consent for publication of this manuscript. We have been taking the consent of patients routinely along with consent for surgery regarding publications as this is a teaching institute as well. Patients were assured that their identity will not be disclosed. The consent has been taken regarding availability of details and photos on the internet but the personal identity will not be disclosed and will be treated confidentially. The images used in this paper do not disclose details of patients.

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Since it is only a retrospective analysis of the cases already operated, no funding was needed.

Conflicts of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships.

References

1. Obesity: preventing and managing the global epidemic. Report of a WHO consultation. *World Health Organ Tech Rep Ser*. 2000;894:i–xii,1–253.

2. Chan JK, Gardner AB, Taylor K, et al. Robotic versus laparoscopic versus open surgery in morbidly obese endometrial cancer patients – a comparative analysis of total charges and complication rates. *Gynecol Oncol*. 2015;139(2):300–305.

3. Shabanzadeh DM, Sørensen LT. Laparoscopic surgery compared with open surgery decreases surgical site infection in obese patients: a systematic review and meta–analysis. *Ann Surg*. 2012;256(6):934–945.

4. Barber TM, Hanson P, Weickert MO, et al. Obesity and polycystic ovary syndrome: implications for pathogenesis and novel management strategies. *Clin Med Insights Reprod Health*. 2019;13.

5. Barber TM, McCarthy MI, Wass JA, et al. Obesity and polycystic ovary syndrome. *Clin Endocrinol (Oxf)*. 2006;65:137–145.

6. Onstad MA, Schmandt RE, Lu KH. Addressing the role of obesity in endometrial cancer risk, prevention, and treatment. *J Clin Oncol*. 2016;34(35):4225–4230.

7. Schmandt RE, Iglesias DA, Co NN, et al. Understanding obesity and endometrial cancer risk: opportunities for prevention. *Am J Obstet Gynecol*. 2011;205(6):518–25.

8. Park CY, Kim JC, Kim DY, et al. Inguinal hernia repair in overweight and obese patients. *J Korean Surg Soc*. 2011;81(3):205–210.

9. Novitsky YW, Cobb WS, Kercher KW, et al. Laparoscopic ventral hernia repair in obese patients: a new standard of care. *Arch Surg*. 2006;141(1):57–61.

10. Liu T, Wang W, Ji Y, et al. Association between different combination of measures for obesity and new–onset gallstone disease. *PLoS One*. 2018;13(5):e0196457.

11. Giannios NM, Gulani V, Rohlck K, et al. Left upper quadrant laparoscopic placement: effects of insertion angle and body mass index on distance to posterior peritoneum by magnetic resonance imaging. *Am J Obstet Gynecol*. 2009;201(5):522.e1–5.

12. Ahmad G, Baker J, Finnerty J, et al. Laparoscopic entry techniques. *Cochrane Database Syst Rev*. 2019;1(1):CD006583.

13. Audebert AJ, Gomel V. Role of microlaparoscopy in the diagnosis of peritoneal and visceral adhesions and in the prevention of bowel injury associated with blind trocar insertion. *Fertil Steril*. 2000;73(3):631–635.

14. Royal college of Obstetricsians and Gynaecologists. Green–top guideline No. 49. Preventing entry–related gynaecological laparoscopic injuries. London: RCOG; 2008.

15. Sharp HT. Overview of gynecologic laparoscopic surgery and non–umbilical entry sites. In: Falcone T, editor. UpToDate. 2019. 10 p.

16. Jain N, Sareen S, Kanawa S, et al. Jain point: A new safe portal for laparoscopic entry in previous surgery cases. *J Hum Reprod Sci*. 2016;9(1):9–17.

17. Tadesse TA, Kedir HM, Fentie AM, et al. Venous thromboembolism risk and thromboprophylaxis assessment in surgical patients based on caprini risk assessment model. *Risk Manag Healthc Policy*. 2020;13:2545–2552.

18. Laryea J, Champagne B. Venous thromboembolism prophylaxis. *Clin Colon Rectal Surg*. 2013;26(3):153–159.

19. Melnyk M, Casey RG, Black P, et al. Enhanced recovery after surgery (ERAS) protocols: Time to change practice? *Can Urol Assoc J*. 2011;5(5):342–348.

20. Tuttlies F, Keckstein J, Ulrich U, et al. ENZIAN–score, a classification of deep infiltrating endometriosis. *Zentralbl Gynakol*. 2005;127:275–281.

21. Abrao MS, Andres MP, Miller CE, et al. AAGL 2021 endometriosis classification: an anatomy–based surgical complexity score. *J Minim Invasive Gynecol*. 2021;28(11):1941–1950.e1.

22. Chapron CM, Pierre F, Lacroix S, et al. Major vascular injuries during gynecologic laparoscopy. *J Am Coll Surg*. 1997 Nov;185(5):461–465.

23. Ahmad G, O'Flynn H, Duffy JM, et al. Laparoscopic entry techniques. *Cochrane Database Syst Rev*. 2012;(2):CD006583.

24. Jain N, Srivastava S, Bayya SLP et al. Jain point laparoscopic entry in contraindications of Palmers point. *Front Surg*. 2022;9:928081.

25. Vilos GA, Ternamian A, Laberge PY, et al. Guideline No. 412: Laparoscopic Entry for Gynaecological Surgery. *J Obstet Gynaecol Can*. 2021;43(3):376–389.e1.

26. Jain N, Jain V, Chandi A, et al. Jain point: an alternate laparoscopic non–umbilical first blind entry port to avoid vessel, viscera, adhesions and bowel (VVAB). *Updates Surg*. 2021;73(6):2321–2329.

27. Jain N, Singh S, Mandal KK, et al. A retrospective study of a novel non–umbilical laparoscopic entry port in thin patients—Jain point. *Gynecol Surg*. 2020;17:13.

28. Jain N, Srivastava S, Sharma S, et al. Jain Point : To avoid trocar injuries in multiple previous surgeries. *Medical Research Archives.* 2023;11(11).

29. Gupta S, Gupta P, Jain N. Jain point in the practice of general surgery. In: Nutan Jain, editor. Non–umbilical laparoscopic entry ports, 1st ed., Jaypee brothers medical publishers, New Delhi. 2020.

30. Jain N, Jain V, Agarwal C, et al. Left lateral port: safe laparoscopic port entry in previous large upper abdomen laparotomy scar. *J Minim Invasive Gynecol*. 2019;26(5):973–976.

31. Hasson HM. Open laparoscopy as a method of access in laparoscopic surgery. *Gynaecol Endosc*. 1999;8:353–362.

32. Magos, A. Frappell J. Laparoscopic entry after previous surgery. *Obstet Gynecol*. 2013;15:68–69.

33. Palmer R. Safety in laparoscopy. *J Reprod Med*. 1974;13(1):1–5.

34. Womack AS, Mourad J. Liver laceration with palmer's point entry in the super obese patient. *J Minim Invasive Gynecol*. 2020;27(7, Supplement):S58.

35. Pamela G McIntosh, Chris G Andrew. Needle insufflation into the liver as a cause of massive gas embolus and CVA. *J Surg Case Rep*. 2021;10.

36. Gupta N, Sharma JB, Mittal S, et al. Genital tuberculosis in Indian infertility patients. *Int J Gynaecol Obstet*. 2007;97(2):135–138.

37. Agarwala N, Liu CY. Safe entry techniques during laparoscopy: left upper quadrant entry using the ninth intercostal space—a review of 918 procedures. *J Minim Invasive Gynecol*. 2005;12(1):55–61.

38. Bucheeri MM, Menon S, Mhatre A, et al. The use of optical trocars in abdominal entry among patients with obesity – A case series. *Ann Med Surg (Lond)*. 2021;69:102698.

39. Ternamian AM. A trocarless, reusable, visual–access cannula for safer laparoscopy; an update. *J Am Assoc Gynecol Laparosc*. 1998;5(2):197–201.

40. Trocars: safety and selection. Emergency Care Research Institute. *Health Devices*. 1998;27(11):376–399.

41. Mulayim B, Aksoy O. Direct trocar entry from left lateral port (Jain point) in a case with previous surgeries. *J Gynecol Surg*. 2020;36(1).

42. Nowacki M, Alyami M, Villeneuve L, et al. Multicenter comprehensive methodological and technical analysis of 832 pressurized intraperitoneal aerosol chemotherapy (PIPAC) interventions performed in 349 patients for peritoneal carcinomatosis treatment: An international survey study. *Eur J Surg Oncol*. 2018;44(7):991–996.

43. Gupta S. Jain point: first blind entry port for laparoscopic cholecystectomy. Newsletter of Association of Surgeons of India – Asiindia.org. SCALPEL–2022.

Citation: Jain N, Srivastava S, Jain V, et al. Laparoscopic entry in obese patients: Jain point. *Obstet Gynecol Int J.* 2024;15(2):43–49.
DOI: 10.15406/ogij.2024.15.00733

44. Carrubba AR, McKee DC, Wasson MN. Route of hysterectomy: straight stick laparoscopy. *J Gynecol Surg*. 2021;37(2):107–111.

45. Bedaiwy MA, Yong PJ, Farghaly TA, et al. The effect of age and body mass index on the surgical anatomy of supraumbilical port insertion: implications for laparoscopic and robotic surgery. *Gynecol Obstet Invest*. 2018;83(6):546–551.

46. Clark NV, Einarsson JI. 5. Laparoscopic entry techniques. In: E Saridoğan, GS Kilic, K Ertan, editors. Minimally invasive surgery in gynecological practice: Practical examples in gynecology. Berlin, Boston: De Gruyter; 2020:50–60.

47. Reynolds R. Development of an intraperitoneal catheter placement device for use on the battlefield. MS. Thesis. University of Nebraska–Lincoln; 2021.

48. Eamudomkarn N, Luanratanakorn S, Seejorn K. Alternative access sites for abdominal entry in gynecologic laparoscopy: a literature review and narrative summary of findings. *Srinagarind Med J*. 2021;36(2):240–245.

49. Salcedo AMC, Guarin CB, Jaramillo JDL, et al. Pregnancy complaints and complications: clinical presentations. *Glob Libr. Women's Med*. 2021.

50. Recknagel JD, Goodman LR. Clinical perspective concerning abdominal entry techniques. *J Minim Invasive Gynecol*. 2021;28(3):467–474.

51. Pepin K. Abdominal entry in laparoscopic surgery. *Contemp OB/GYN J*. 2020;65(11):20–23.

52. Walker JL, Piedmonte MR, Spirtos NM, et al. Laparoscopy compared with laparotomy for comprehensive surgical staging of uterine cancer: Gynecologic Oncology Group Study LAP2. *J Clin Oncol*. 2009;27(32):5331–5336.

53. Scribner DR Jr, Walker JL, Johnson GA, et al. Laparoscopic pelvic and paraaortic lymph node dissection: analysis of the first 100 cases. *Gynecol Oncol*. 2001;82(3):498–503.

Citation: Jain N, Srivastava S, Jain V, et al. Laparoscopic entry in obese patients: Jain point. *Obstet Gynecol Int J*. 2024;15(2):43–49.
DOI: 10.15406/ogij.2024.15.00733