

Comparative Study of Different Entry Sites in Laparoscopic Surgery: which is Safest??

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Abstract:

Introduction: Laparoscopic gynecological surgeries have gained popularity due to wide range of benefits. However the complications related to abdominal entry site persists. Major complications are large blood vessel and gastrointestinal tract injury accounting for 50% prior to the commencement of surgery.(1 and 2) The access locations usually are 1.Umbilical point 2.Left upper quadrant or Palmer's point and Jain point . The present study was performed to assess the safety profile of different laparoscopic entry sites in gynaecological surgeries.

Design and methodology: Retrospective review, undertaken at a tertiary care referral center from January 2013 to December 2016.

Results: In 1324 patients who underwent laparoscopic surgery, the laparoscopic entry site was ¹. umbilical point (433 patients) ². Palmer's point (807 patients) and Jain point (84 patients).

Conclusion: The left upper quadrant site (Palmer's point) proved to be one of the safest modes of entry for operative laparoscopy with no significant entry related, intra-operative or postoperative complications. This technique is extremely beneficial in cases of previous surgeries, obese patients and in very thin patients.

Keywords: port entry, palmer's point, jain point

I. Introduction

With advanced skills and ultramodern technology and instrumentation, more number of complex surgeries are being performed laparoscopically. But the trend of most complications being associated with primary access remains same. So there have been studies on primary access sites. An important risk group is patients with previous laparotomy . Post surgical adhesion incidence is 70 – 95% in patients undergoing major gynecological surgery.(^{3, 4}) The overall incidence of major injuries at the time of entry is 1.1/1000.(⁵) Bowel injuries have occurred in 0.7/1000 laparoscopies (⁶). Despite considerable advances in endoscopic techniques and instrumentation, inadvertent and potentially avoidable entry injuries continue to occur.

In common practice, umbilical point is usually preferred for primary trocar placement, the alternate sites being palmer's and jain point. Palmer's point is universally accepted point of entry in cases of patients with previous surgeries. Palmer's point lies 3cm below the left subcostal margin in midclavicular line. After giving a stab incision the skin is lifted and a veress needle is inserted into the abdomen and pneumoperitoneum is created. It is considered as arguably the safest alternative site for peritoneal access in women having undergone earlier abdominal surgeries(^{7,8,9}).

Another alternate site is Jain point. The jain point is located in the left paraumbilical region at the level of umbilicus, in a straight line drawn vertically upward from a point 2.5 cm medial to anterior superior iliac spine(ASIS). The advantage it has over palmer's point is it can be used later in surgeries as an operative trocar due to its lower position. It is usually found to be free of adhesions. The skin is not lifted in this technique. After making a stab incision the veress needle is directly introduced perpendicular o the abdomen.

II. Methodology

Data of patients who underwent laparoscopic pelvic surgeries at our center from January 2013 to December 2016 were collected. The number of previous surgical history was recorded. Patient's age , BMI ,indication of previous surgery, mode of previous surgery and incision of previous surgery were tabulated. Cases with multiple surgeries were counted when tabulating data for indication of surgery and type of incision. Complications are defined as events that significantly prolonged or altered the planned procedure delayed discharge or lead to a prolonged convalescence. Complications directly related to the entry technique that occurred intraoperatively and discovered immediately or up to 2 weeks postoperatively were recorded.

III. Results

Of the total 1324 laparoscopic pelvic cases done between January 2013 and December 2016 at AMRI hospital, Bhubaneswar, in 433 patients the primary entry site was umbilical point , in 807 patients the primary entry site was palmers' point and 84 patients had Jain point approach.

No significant entry related complications were reported in the present study with the use of palmer as primary port. There were no injuries to superficial or deep vessels of anterior abdominal wall. There was no haematoma formation at port site. No vascular or intestinal injury was encountered intraoperatively. All patients were discharged within 24-48 hr of surgery as per the hospital protocol. No patient needed any extra hospital stay due to any entry related issues.

While with umbilical point main difficulty was in patients with previous surgeries who had adhesions. Two cases of omental vessel injury was documented in cases of umbilical site entry in post surgical cases. There was no injury reported in the palmer's entry technique. In cases of jain point entry too there was no entry related complication except that we found it a little inconvenient to be sure whether the vessel was intrabdominal or not because the skin was not being lifted in this technique unlike the palmer's entry technique.

IV. Discussion

As the most important and dangerous step in laparoscopy is primary port site entry, it should always be safe. Injuries occur if instrument is advanced toward the posterior abdominal wall or if there is anatomically normal distended bowel (type 1 injury) or due to visceral adhesion to anterior abdominal wall (type 2 injury). RCOG guideline on preventing entry related gynecological laparoscopic injuries states "the umbilicus may not therefore be the most appropriate site for primary trocar insertion following previous abdominal surgeries".¹⁰ For this reason alternative primary approaches to laparoscopic surgeries have been introduced in patients with a history of laparotomy. Probably the safest initial entry site is the left upper quadrant known as Palmer's point first describe in 1931 by Palmer.

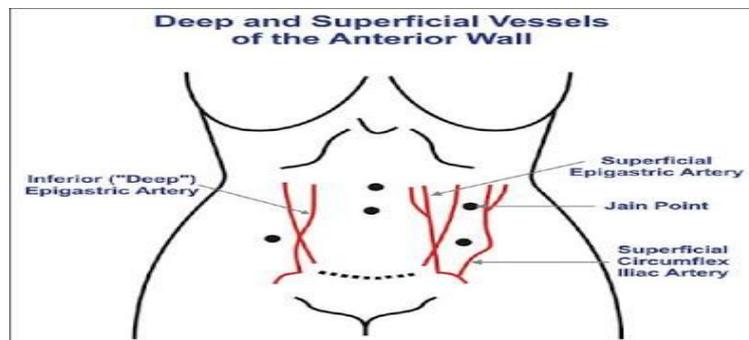


Fig-1 showing deep and superficial vessels of anterior abdominal wall.



Fig2 showing palmer's point entry site

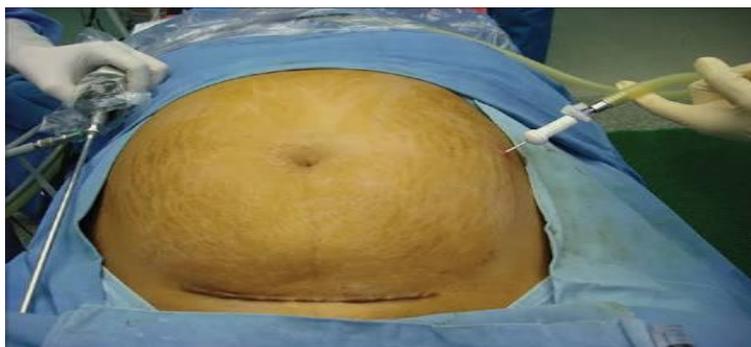


Fig3 showing Jain point entry site

V. Conclusion

The left upper quadrant site (Palmer's point) has a lot of advantage for operative laparoscopy with no significant entry related, intra-operative or postoperative complications. It is easy to replicate even by beginners. This technique has also advantage in cases of previous laparotomy or obesity and in exceptionally thin patients.

References

- [1]. J. Magrina complications of laparoscopic surgery *clin obstet Gynecol*, volume 45, 2002, pp. 469-480
- [2]. F.W. Jansen, w. Kolkman, E.A Bakkum, C.D. De Kroon, T.C.M. Trimbos Kemper, J.B. trimbos Complications of laparoscopic: an inquiry about closed versus open entry technique *Am J Obstet Gynecol* vol 190, 2004, pp 634-638.
- [3]. Liakakos T, Thomakos N, Fine PM, Drevenis C, Young RL. Peritoneal adhesions Etiology, Pathophysiology, Clinical significance. Recent advances in prevention and management. *Dig surge* 2001, 18:260-273.
- [4]. Ellis H, The magnitude of adhesions related problems. *Ann Chir Gynaecol*, 1998;87:9-11.
- [5]. Krishnakumar S, Tambe P. Entry complications in laparoscopic surgery. *J Gynecol Endosc Surg*.2009;1:4-11.
- [6]. Palmer R. Safety in laparoscopy. *J Reprod Med*. 1974;13:1-5.
- [7]. Childers JM, Brzechffa PR, Surwit EA. Laparoscopy using the left upper quadrant as the primary trocar site. *Gynecol Oncol*. 1993;50:221-5.
- [8]. Roy GM, Bazzurini L, Solima E, Luciano AA. Safe technique for laparoscopic entry into the abdominal cavity. *J Am Assoc Gynecol Laparosc*. 2001;8:519-28.
- [9]. Corson SL, Brooks PG, Soderstrom RM. Safe technique for laparoscopic entry into the abdominal cavity. *J Am Assoc Gynecol Laparosc*. 2002;9:399.
- [10]. Preventing entry-related gynaecological laparoscopic injuries. London: RCOG; 2008. Royal College of Obstetricians and Gynaecologists. Green-top guideline no. 49.

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