

Prevalence of Infraumbilical Adhesions in Women With Previous Laparoscopy

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ABSTRACT

Background and Objective: The aim of this study is to evaluate the prevalence of intraabdominal adhesions to the umbilicus following gynecologic laparoscopy through an umbilical incision.

Methods: A retrospective review was performed of all gynecologic laparoscopic procedures in a private practice setting to identify patients with a repeat laparoscopy who had a history of a previous laparoscopy through an umbilical incision. Patients with a history of other surgeries were excluded. All repeat laparoscopies used a left upper quadrant entry technique where the abdominal cavity was surveyed for adhesions. We also reviewed adverse events attributable to the left upper quadrant entry approach.

Results: We identified 151 patients who underwent a second laparoscopy and had a previous umbilical scar. Thirty-two of the 151 (21.2%) patients with a history of a laparoscopy had evidence of adhesions to the umbilical undersurface. No adverse events or injuries were attributed to the left upper quadrant entry technique.

Conclusions: Adhesions to the umbilical undersurface occur in 21.2% of patients who have undergone a prior laparoscopy through an umbilical incision. For this reason, we recommend an alternate location for entry in patients with an umbilical scar from a previous laparoscopy.

Key Words: Laparoscopy, Adhesions, Umbilical incision.

INTRODUCTION

Injuries to intraabdominal structures by the Veress needle or a trocar, while rare, are one of the most common types of complications during laparoscopy. In fact, a quarter of all complications from laparoscopy occur during the initial attempt at peritoneal access with the Veress needle or the primary trocar.^{1,2} They are reported in 0.1% and 0.5% of laparoscopic procedures.^{1,2}

Intraabdominal adhesions increase the risk of injury during laparoscopy, because the normal anatomy may be distorted. Furthermore, hospital admissions attributed to adhesions following gynecologic laparoscopy have been demonstrated to be comparable to that of open gynecologic procedures.³ Previous studies indicate that the prevalence of intraabdominal adhesions following abdominal and pelvic surgery are as high as 70%; however, the prevalence of anterior abdominal adhesions following laparoscopy alone has not been well documented.^{4,5} The aim of our study was to determine the prevalence of infraumbilical adhesions to the umbilical undersurface in patients with a prior laparoscopic procedure through an umbilical incision.

METHODS

A retrospective review was conducted of charts of patients who underwent a laparoscopy for gynecologic indications, from April 2000 to September 2003. All laparoscopic procedures were reviewed, and all cases where a laparoscopy was performed through an umbilical incision were included for review. All the laparoscopic surgeries were performed for gynecologic indications, and a 10-mm umbilical trocar was used in all cases. Patients with a previous laparotomy were excluded. The study included 151 patients who had a laparoscopy and a surgical history of a gynecologic laparoscopic procedure through an umbilical incision. All operative reports were reviewed and the findings of intraabdominal adhesions were noted. All the initial gynecologic procedures were performed through an umbilical incision after achieving pneumoperitoneum after insufflation with CO₂ gas through a Veress needle. Continuous CO₂ insufflation was maintained throughout the procedures. The indications for the second procedures are listed in **Table 1**.

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Table 1.
Indications for Repeat Laparoscopy

Indications	Adhesions Present (n = 32)	No Adhesions Present (n = 119)	Total (n = 151)
Pelvic Pain	9	24	33
Myoma	3	9	12
Pelvic Mass	2	27	29
Pelvic Relaxation	12	35	47
Endometriosis	5	9	14
Other	1	15	16

All repeat procedures were performed following a uniform approach. After general anesthesia was achieved, patients were placed in the lithotomy position and prepped and draped in the usual sterile fashion. A left upper quadrant entry technique was used in all patients who had a history of a prior laparoscopy, as this is our standard practice. The gastric contents were removed by nasogastric suctioning, and the Veress needle was inserted at the left subcostal margin at a point in between the midclavicular and anterior axillary lines (**Figure 1**). Following confirmation of proper placement, pneumoperitoneum was achieved by using continuous CO₂ gas. The primary trocar was inserted at a site lateral to the rectus abdominus muscles, slightly inferior to the umbilicus on the left side of the abdomen (**Figure 1**). A 5-mm laparoscope was inserted through this port to inspect the umbilical undersurface. If intraabdominal adhesions were present in the umbilical area, sites free of adhesions were selected for insertion of accessory trocars. The adhesions were lysed as appropriate, the umbilical trocar was then placed under direct visualization, and the diagnostic or therapeutic procedure was continued as planned.

RESULTS

The study included 151 subjects. The average age of the subjects was 42 years (range, 17 to 72), and the average weight was 81 kg (range, 56 to 131). The indications for the laparoscopic procedures are listed in **Table 1**. Laparoscopic examination revealed 32 of 151 (21.2%) subjects with a prior laparoscopy with an umbilical scar had intraabdominal adhesions to the umbilical undersurface. Of the 151 patients, 24 had undergone more than one previous laparoscopy. In this subgroup of subjects, 8 of 24 (33%) had intraabdominal adhesions to the umbilical undersurface. Of the 32 patients with adhesions to the umbilical undersurface, 4 (9.4%) had adhesions involving the

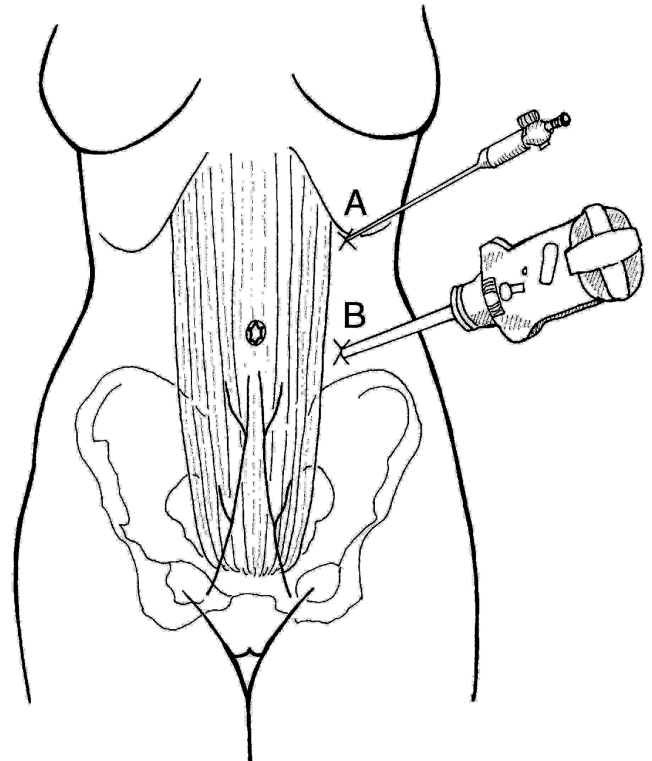


Figure 1. (A) Location of Veress needle insertion. (B) Location of primary trocar insertion.

bowel, 2 (6.3%) had dense adhesions involving the omentum, and 25 (84.3%) had thin adhesions involving the omentum.

Peritoneal access and visualization of the umbilical undersurface was successful in all 151 cases of left upper quadrant entry. No injuries, adverse events, or conversions to laparotomy attributed to the method of peritoneal access were reported. In addition, no incidences occurred of preperitoneal insufflation sustained by placing the Veress needle at the left costal margin.

DISCUSSION

Adhesion formation between bowel and the anterior abdominal wall may result from any surgical disruption of the peritoneum. Even the smallest of incisions, such as ones made during laparoscopy, could result in significant adhesion formation and should alert the laparoscopic surgeon to take the necessary steps to avoid subsequent injury. While injury to the bowel is rare during laparoscopy, up to 25% are caused by the Veress needle or the primary trocar.^{1,2} Vascular injuries account for 30% to 50% of surgical complications of laparoscopy.^{1,2} Approxi-

mately 75% of vascular injuries during laparoscopy occur during the insertion of the Veress needle or the primary trocar.⁴ The occurrence of such trauma is likely to be more frequent in the face of previous abdominal or pelvic surgery that may result in fixation of the bowel or other structures in closer proximity to the anterior abdominal wall. Extensive knowledge of the surgical history, the relevant anatomy, and controlled proper technique are essential to avoid such injuries.

The goal of this study was to examine the prevalence of intraabdominal adhesions to the infraumbilical area in patients with a prior laparoscopic surgery. Intraabdominal adhesions following gynecologic surgery have been examined in a number of previous studies with varying results. Brill et al⁵ studied the presence of adhesions at the time of laparoscopy in 360 patients who had previously undergone laparotomies. They found 27% of patients with prior Pfannenstiel incisions, 55% with a prior midline incision below the umbilicus, and 67% with prior vertical incisions extending above the umbilicus had adhesions from either bowel or omentum to the anterior abdominal wall. Weibel and Majno⁶ examined 752 subjects at post-mortem autopsy and discovered intraabdominal adhesions in 69% of patients who had previously undergone gynecologic surgery. Levrant et al⁷ studied 215 patients who underwent a laparoscopic procedure for gynecologic indications. They reported no anterior abdominal adhesions in patients with a previous laparoscopy. Fifty-nine percent of patients with a midline vertical incision and 28% of patients with a suprapubic transverse incision had adhesions to the anterior abdominal wall.

While the prevalence of intraabdominal adhesions following laparotomy has been reported in numerous studies, the specific presence of umbilical adhesions following a gynecologic laparoscopy through an umbilical incision is not well documented. Kaali and Barad⁸ in a retrospective review reported on 4,532 laparoscopies for various indications. Although 25% of the patients reviewed in their study had intraabdominal adhesions, only one had adhesions to the umbilicus. Audebert and Gomel⁹ in a prospective study evaluated the presence of umbilical adhesions in patients with previous surgery. They found 1.6% of patients with a prior laparoscopy, 19.8% with a prior Pfannenstiel incision, and 51.7% with a prior vertical skin incision had umbilical adhesions.

The present study demonstrates that the prevalence of umbilical adhesions following laparoscopy is higher than previously reported. No injuries occurred to the bowel,

bladder, or major vessels during any of the cases because adhesions to the umbilical undersurface were identified and excised before entry through the umbilicus. However, it should be kept in mind that this is a retrospective study addressing the prevalence of intraabdominal adhesions and not injuries. A much larger randomized prospective study comparing a traditional umbilical entry with an alternate entry point would be required to address intra-abdominal injuries because these complications are rare in nature. It is also difficult to explain the reason for the higher prevalence of umbilical adhesions reported in this study compared with those reported in previous reports. We should, however, point out that our patient population represented a cohort of women with a wide range of pathologies. Furthermore, Lower et al,³ in a large epidemiologic study, reported the hospital readmission rate attributed to adhesions from gynecologic laparoscopy was comparable to the readmission rate attributed to adhesions from gynecologic laparotomy. These findings suggest that complications due to adhesions from gynecologic laparoscopy may be more significant and may have a greater relevance than previously believed. This should be kept in mind if a subsequent laparoscopy is required.

An alternative method of peritoneal access may be considered in patients with a history of a prior laparoscopy through an umbilical incision. We prefer the left upper quadrant entry method because it has been shown to be safe and effective, and we have gained experience with its use.^{9,10} In the present study, no adverse effects or injuries due to the left upper quadrant entry method occurred and peritoneal access and insufflation were achieved without difficulties in all 151 cases reported. Laparoscopic surgeons should be familiar with alternate methods of peritoneal access in the event that such a method may be necessary.

CONCLUSION

Adhesions to the umbilical undersurface occur in 21.2% of patients who have undergone a prior laparoscopy through an umbilical incision. For this reason, consideration should be given to an alternate location for entry in patients with an umbilical scar from previous laparoscopy. Entry through the left upper quadrant appears to be a safe, effective method to gain peritoneal access during laparoscopy in patients with a history of laparoscopy.

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