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Open Versus Veress Needle Access in Laparoscopic Surgery

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Abstract

Introduction: Establishing pneumoperitoneum is a crucial step in laparoscopic surgery. This case series compares the open (Hasson) and Veress needle (closed) techniques with respect to access time, safety, and postoperative outcomes.

Presentation of Cases: Thirty patients undergoing elective laparoscopic procedures were included, 15 in each group (Veress and Open). Parameters assessed included access time, pneumoperitoneum success rate, complications, postoperative pain, analgesic use, hospital stay, and follow-up duration. The Veress technique provided a significantly shorter access time (mean 3.8 min vs. 5.3 min, $p < 0.001$), with similar rates of complications and postoperative recovery.

Discussion: The Veress needle method is faster but may pose higher risk in patients with prior surgery, while the open technique remains safer in complex cases. Both approaches are effective when performed by experienced surgeons.

Conclusion: Both Veress and open methods are safe and effective for laparoscopic access. Technique selection should depend on patient factors and surgeon expertise.

Keywords: Laparoscopy; Veress needle; Open access; Pneumoperitoneum; Case series; Surgical safety

Introduction

Laparoscopic surgery has transformed modern surgical practice by reducing postoperative morbidity and enhancing recovery compared to traditional open surgery. The creation of pneumoperitoneum, which provides adequate visualization and working space, is a vital initial step. Two main approaches are employed: the closed (Veress needle) and the open (Hasson) techniques. Despite being widely practiced, the debate persists regarding which method ensures greater safety and efficiency [1,2]. This study compares the two techniques in a tertiary-care setting to evaluate their clinical outcomes and safety profiles.

Presentation of Cases

Thirty patients undergoing elective laparoscopic surgeries were divided equally into two groups: Group A (Veress needle) and Group B (Open Hasson). Standard four-port laparoscopic cholecystectomy, appendectomy, and diagnostic procedures were performed. Parameters such as access time, intraoperative complications, pneumoperitoneum success, postoperative pain, and hospital stay were recorded. Both groups tolerated the procedure well, with no mortality. The open method proved advantageous in patients with prior abdominal surgery, while Veress offered faster access in straightforward cases.

Observation and Results

A total of 30 patients were evaluated—15 in each group. The mean access time was 3.8 minutes for the Veress group and 5.3 minutes for the open group ($p < 0.001$), indicating a statistically significant difference favoring the Veress method. The Veress group achieved a 93% success rate in creating pneumoperitoneum, while the open group achieved 100%.

Complications were comparable between groups (Veress: 5 cases, Open: 6 cases; $p = 0.75$). Minor issues included pre-peritoneal insufflation, vascular injury, and omental injury. No bowel or major vascular injury was reported. Postoperative pain scores at 6 and 24 hours and at discharge showed no significant differences between the groups ($p > 0.05$). Analgesic use averaged 7.1 days for Veress and 7.3 days for Open ($p > 0.05$). The mean hospital stay was 4.7 days for Veress and 4.9 days for Open ($p > 0.05$). The mean follow-up period was approximately 20 days for Veress and 21 days for Open ($p > 0.05$).

Discussion

The results of this quasi-experimental study demonstrate that both the Veress and open (Hasson) techniques are safe and effective for laparoscopic access. The Veress technique allows faster entry, consistent with findings by Neudecker et al. (2002) and Bonjer et al. (1997), who reported shorter access times using the Veress method[3,4]. However, open access provides direct visualization, reducing the risk of major vascular or visceral injury, particularly in patients with prior abdominal surgeries [5].

In this study, one vascular injury occurred in the Veress group, and none in the open group. These observations align with literature emphasizing that closed techniques contribute to most vascular complications during laparoscopy[6]. No bowel injuries occurred in either group. Minor omental injuries and port-site infections were observed but not statistically significant. Similar trends were reported by Molloy et al. (2002) and Krishnakumar et al. (2009)[7,8].

Postoperative pain and analgesic requirements were similar in both groups, as supported by Yilmaz et al. (2013), who found no difference in pain outcomes based on entry method [9]. The duration of hospital stay was also comparable, supporting findings from Agresta et al. (2002) that both methods permit early recovery when complications are minimized[10].

Although the Veress method demonstrated faster access, the open technique remains safer in patients with surgical scars, obesity, or adhesions. The study's limitations include small sample size, single-center design, and lack of long-term follow-up. Larger multicenter trials are recommended to validate these results and refine patient selection criteria.

Conclusion

Both the Veress needle and open (Hasson) techniques are effective and safe for establishing pneumoperitoneum in laparoscopic surgery. The Veress method offers shorter access times, whereas the open approach ensures better safety in complex cases. Optimal outcomes depend on surgeon expertise, careful case selection, and adherence to safety protocols.

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