Feasibility and Safety assessment of a novel minilaparoscopic Appendicectomy technique using percutaneous handles during the different degrees of Acute Appendicitis

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Introduction: Various laparoscopic techniques have been developed to reduce incisions' number and invasiveness, leading to shorter recovery times, hospital stay, decreased analgesic use, and fewer complications. Needlescopic/minilaparoscopic surgery employs instruments with a diameter of 3 mm or less. The MiniLap System utilizes a 2.4 mm percutaneous shaft with an integrated tip, eliminating the need for a trocar, reducing tissue trauma and a defect 12 times smaller than the 5 mm trocar. Several studies have demonstrated the safety and feasibility of minilaparoscopic appendectomy (MLA) for the treatment of acute appendicitis(AA) across various age groups and severities. This study aimed to report the outcomes and feasibility of a novel technique using minilaparoscopic/percutaneous instruments during MLA.

Methods: A prospective study evaluated the demographic, surgical variables and 30-day morbidity associated with MLA performed by a surgical team between June 2023 and August 2024. The procedure was performed using a 10mm trocar for the camera, either a 5mm trocar for minilaparoscopic-assisted cases or a 3mm trocar for totally MLA, placed suprapubically. A percutaneous handle (Teleflex Incorporated, Morrisville, NC, USA) was introduced through the right flank for appendix traction. Patients were discharged within 24 hours with mild analgesics and antibiotics.

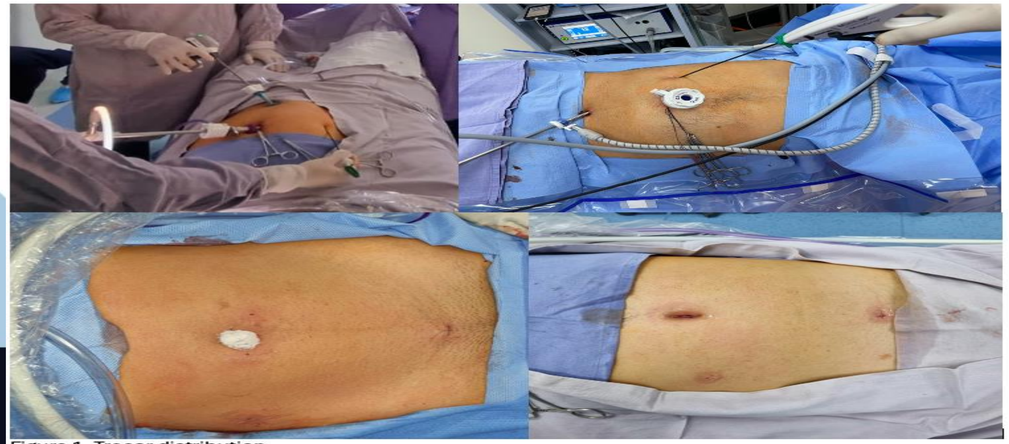


Figure 1. Trocar distribution

Results: A total of 32 patients were included, 22 (68.75%) were male. The mean patient age was 32.1 years, with a mean BMI of 29.5 kg/m². The mean operative time was 38.5 minutes(21-115min). Drainage was required in only 3 patients (1 with 4C-degree AA and 2 with 5-degree AA; exteriorizing it through the suprapubic trocar. Lavage was performed when necessary. Conversion of the suprapubic trocar was required in 10 patients, and 2 patients required conversion of the percutaneous instrument to a conventional trocar (both cases involved grade 5 appendicitis). During follow-up, 28 patients reported mild or no pain, with only 4 patients requiring additional analgesics and antibiotics due to intraoperative findings. No complications were reported during the follow-up period, and 93.75% of patients expressed high aesthetic satisfaction.

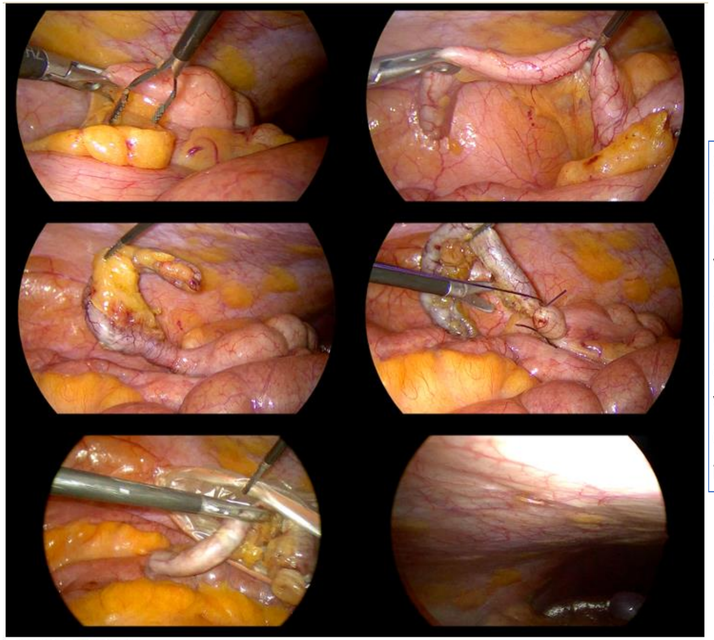


Figure 2. Technique

Conclusions: This novel approach utilizing a combination of minilaparoscopic and minilaparoscopic-assisted appendectomy with the percutaneous MiniLap system appears to be both feasible and safe, with low morbidity, minimal postoperative pain and high aesthetic satisfaction; .outcomes were highly satisfactory, and the technique offers a promising alternative for the treatment of acute appendicitis.

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