



Original article

Prospective, Randomized Comparative Study Between Single-port Laparoscopic Appendectomy and Conventional Laparoscopic Appendectomy^{☆,☆☆}



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A B S T R A C T

Introduction: Laparoscopic appendectomy is probably the technique of choice in acute appendicitis. Single port laparoscopic surgery (SILS) has been proposed as an alternative technique. The objective of this study is to compare the safety and efficacy of SILS against conventional laparoscopic appendectomy (LA).

Material and methods: From January 2011 to September 2012, 120 patients with acute appendicitis were prospectively randomized; 60 for SILS and 60 for LA. Patients between 15 and 65 years were selected, with onset of symptoms less than 48 h. We compared BMI, surgery time, start of oral intake, hospital stay, postoperative pain, pathology, and costs.

Results: The median age, BMI, sex, and time of onset of symptoms to diagnosis were similar. There were no statistically significant differences in the operative time, start of oral intake, or hospital stay. There was a significant difference in postoperative pain being higher in SILS (4 ± 1.3) than in LA (3.3 ± 0.5) with a $P=.004$. Flemonous appendicitis predominated in both groups in a similar percentage. A total of 3 cases with intra-abdominal abscess (SILS 2, LA 1) required readmission and resolved spontaneously with intravenous antibiotic treatment. One case of SILS required assistance by a 5 mm trocar in the RLC for drainage placement. The cost was higher in SILS due the single port device.

Conclusion: SILS appendectomy is safe, effective, and has similar results to LA in selected patients, and although the cost is greater, the long term results will determine the future of this technique.

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Estudio comparativo prospectivo aleatorizado entre apendicectomía laparoscópica por puerto único y apendicectomía laparoscópica convencional

RESUMEN

Palabras clave:

Apendicectomía laparoscópica
Cirugía por puerto único
Apendicitis aguda
Laparoscopia
Cirugía mínimamente invasiva

Introducción: La apendicectomía laparoscópica es probablemente en la actualidad la técnica de elección en las apendicitis agudas. La cirugía laparoscópica por puerto único (PU) ha intentado instalarse como técnica alternativa. El objetivo de este estudio es comparar la seguridad y eficacia del PU frente a la apendicectomía laparoscópica convencional (LC). **Material y métodos:** De enero del 2011 a septiembre del 2012 se aleatorizó prospectivamente a 120 pacientes con apendicitis aguda (PU 60, LC 60). Se seleccionó a pacientes entre 15 y 65 años con inicio de síntomas < 48 h comparándose el IMC, tiempo operatorio, inicio de ingesta, estancia hospitalaria, dolor postoperatorio, anatomía patológica y costes.

Resultados: La edad media, IMC, sexo y tiempo de inicio de síntomas hasta el diagnóstico fueron similares. No se encontraron diferencias del tiempo operatorio, inicio de ingesta ni estancia hospitalaria. Se evidenciaron diferencias en el dolor postoperatorio siendo mayor en el PU ($4 \pm 1,3$) que en la LC ($3,3 \pm 0,5$) con una $p = 0,004$. La apendicitis flemonosa predominó para ambos grupos. Hubo 3 reingresos por absceso intraabdominal (PU 2, LC 1) que requirieron tratamiento antibiótico intravenoso. Un caso del PU requirió asistencia intraoperatoria de un trocar de 5 mm en FID por necesidad de drenaje. El coste fue mayor en el PU debido al dispositivo empleado.

Conclusión: La apendicectomía por PU es segura, eficaz con resultados similares a la LC en pacientes seleccionados y, aunque el coste es mayor, serán los resultados obtenidos a largo plazo los que determinen el futuro de esta técnica.

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Introduction

Laparoscopic appendectomy is probably the current technique of choice for acute complicated or uncomplicated appendicitis. Since Semm performed the first laparoscopic appendectomy in 1983, a large variety of papers have been published, noting the advantages of this technique compared to open appendectomy.¹⁻³ However, in an effort to “minimize” the incision in the abdominal wall, laparoscopic surgery through a single port is now being used, commonly known as SILS (*Single-Incision Laparoscopic Surgery*). This relatively new concept started over 15 years ago in pediatric surgery,⁴⁻⁸ evolving to the present day with the development of devices and medical graspers that have helped the surgeon to extend its application to other diseases.⁹ SILS-based appendectomy tries to position itself as an alternative technique compared to conventional laparoscopy (CL), with emphasis on the publication of studies with better cosmetic results,^{10,11} considering that it is usually performed through the umbilicus and the scar is almost invisible.

This is a prospective randomized study comparing CL-based appendectomies to SILS-based appendectomies. Parameters are analyzed such as surgery time, start of oral intake, hospital stay, post-surgery pain, post-surgery complications, pathology, and costs.

Materials and methods

In January 2011, a prospective randomized study was initiated, aiming to compare SILS to CL. The study included 60 patients

for each technique, with the following inclusion criteria: patients aged between 15 and 65 years, with BMI < 30, onset of symptoms less than 48 h, absence of previous abdominal surgery, ASA anesthesia risk I, presence of a surgeon trained in both techniques and signed informed consent (Table 1). The age range of patients was based on that of the economically active population, given that it is a well-defined population sector and relevant to the statistical study. Another factor for inclusion was non-obese patients, i.e. with a BMI < 30, because a higher value would increase the possibility of complications.^{12,13} Appendicitis cases with a time of onset of symptoms of less than 48 h were selected, predictably uncomplicated (no perforation, no diffuse or localized peritonitis). Pain was assessed with a visual analog scale (VAS) on discharge. Another important factor to note was the motivation of the surgeon to perform this type of technique; therefore, 3 surgeons were considered who were interested in learning and developing it. These surgeons had no previous experience with SILS-based appendectomies, but did with CL, which made it easier on their learning curve.¹⁴ All the patients included were informed and accepted the randomized study;

Table 1 – Inclusion Criteria.

Age between 15–65 years
BMI < 30
Onset of symptoms < 48 h
ASA I
Surgeons trained in SILS
No previous abdominal surgery
Signed informed consent

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