

Single Trocar Access Appendectomy - Initial Experience

Apendectomia por Acesso Trocar Simples – Experiência Inicial

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ABSTRACT

Objective: To present the initial experience in the Videolaparoscopic Appendectomy by the transumbilical path, using a single port system, named Single Trocar Access - SITRACC®. **Patients and Methods:** From November 2009 to July 2010 eight SITRACC appendectomies were performed. The operation consisted of the classic laparoscopic appendectomy, using special flexible and articulated instruments. **Preliminary Results:** The average operative time was 38 minutes. No extra trocar was necessary. All patients were discharged from the hospital within 24 hours of their surgery. There were no major post-operative complications. **Discussion:** Appendectomy by the Single Trocar Access method is feasible and safe. With the improvement of the instruments and the multichannel trocar, new surgeries could be performed by this method, adding a new weapon in a continuous fight to benefit our patients.

Key words: Minimally Invasive Surgery, Appendectomy, Single Trocar Access.

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INTRODUCTION

The development of endoscopic surgery, which was started in 1987 by the French surgeons Mouret and Perissat, represented the beginning of a new concept in the surgical field. It made possible surgical procedures with minimum pathophysiologic trauma, resulting in less pain and faster recovery, as well as adding more satisfactory cosmetic results.

Rapid and continuous improvement in optical technology, as well as in the instruments used in endoscopic surgery, have allowed increasingly complex operations to be accomplished with the minimally invasive methods, spreading this approach to surgical suites around the planet.

Several brand new technologies and approaches have appeared and have been evolving in parallel; these surgical revolutions include telesurgery, robotics in surgery, the use of the virtual reality in the surgical training, natural orifice transluminal endoscopic surgery (NOTES), and single port surgery.

Since Kaloo¹ reported his first experience with NOTES, using transgastric access in porcine models,

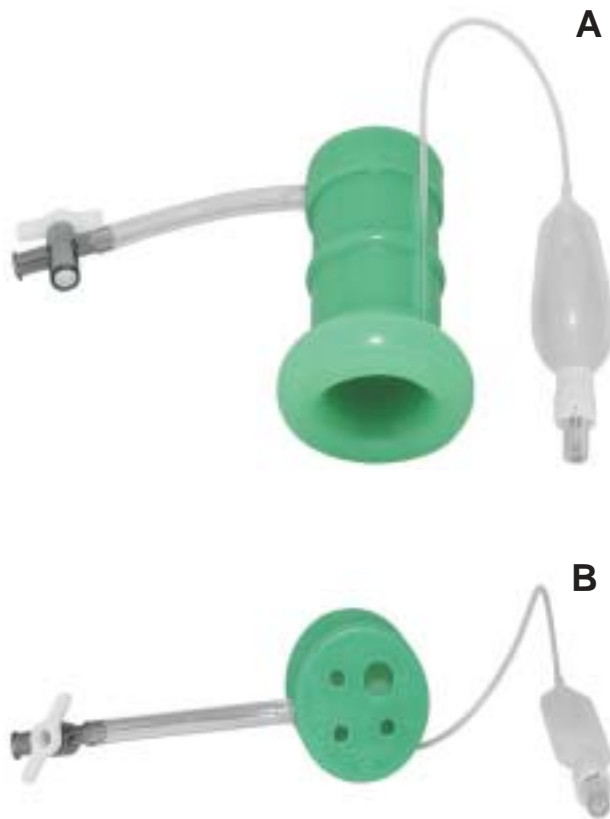
many scientists around the planet have been looking for new technologies and new surgical approaches and have been trying to determine the feasibility of these tantalizing possibilities.

Because of the current limitations of NOTES procedures (troubled access, orientation, infection, organ closure, etc.), single port surgery may be an excellent option to achieve scarless abdominal surgery, while enjoying all the advantages of a minimally invasive procedure. The Single Trocar Access - SITRACC® was created to achieve this goal.

This paper reports the first experience with SITRACC appendectomy.

PATIENT AND METHODS

In the beginning of the research process, a single trocar access system was developed, named SITRACC®² (Edlo Company, Brazil) – (Figures 1A and 1B). This new device consists of a trocar with four channels (one 10mm and three 5mm), through which special distal articulated or flexible instruments



Figures 1A and 1B - SITRACC® Platform.

are introduced. Articulated graspers, scissors, hook and clip applicators were developed specially for this approach.

After the approval of the protocol by the Ethics Committee of the Red Cross Hospital in Curitiba, Paraná, eight Single Trocar Appendectomies were performed using the SITRACC system between November 2009 and July 2010. Five patients were male and three female; age ranged from 18 to 35.

Under general anesthesia, the patients were placed in Trendelenburg and left lateral position. The single port was introduced through the umbilicus, after the dissection of the abdominal wall, by direct visualization.

All patients had first stage appendicitis. The operation consisted of the classical steps for an appendectomy. Two clips were applied at the base of the appendix and at the proximal segment of the appendicular artery. No cases required the introduction of a second trocar.

The average operative time was 38 minutes. There were no significant post-

operative complications. All patients were discharged within 24 hours of the procedure, using a single analgesic (acetaminophen) and a single antibiotic (cephalosporin). There was no infection or major complication through 30 days of follow-up.

DISCUSSION

Appendectomy is the most common indication for emergency surgery in general surgery.

The advantages of the videolaparoscopic appendectomy have been widely reported during the last decade.

The so-called one trocar appendectomy, where the dissection of the appendix is performed inside the abdomen and, after that, it is exteriorized and extracted outside the abdominal cavity has been used especially in pediatric patients,³ but also in adults.^{4,5}

In 2007, Zhu⁶ from China, reported his first experience using the umbilicus to access the peritoneal cavity, naming the procedure Transumbilical Endoscopic Surgery (TUES). He performed a liver cyst fenestration, abdominal exploration, and appendectomy. A standard flexible endoscope was introduced into a 12mm trocar and the operation was performed with the instruments through the working channels by the endoscope.

In 2008, Zhu⁷ et al published another paper describing new TUES operations: two cases of liver cyst fenestrations, six cholecystectomies, and nine appendectomies, using a trichannel trocar. The appendix was extracted through the umbilicus and resected extracorporeally.

Also during 2008, Palanivelu et al⁸ from India, described eight successful transumbilical endoscopic appendectomies, using a standard flexible endoscope. The authors considered this technique a precursor of NOTES.

In the past few years interest in new minimally invasive approaches has expanding rapidly in the scientific field globally. The SITRACC is one new option among devices in this area. The advantages of the single port surgery path are similar to NOTES, such as fast recovery and better cosmetics results (Figure 2), without the problems that the pure transluminal surgery brings, such as the difficulty in closing organs, intracavitary orientation, infections, and others.



Figure 2 - Cosmetic result 7 days after the surgery.

CONCLUSION

In face of a new technology and/or a new approach we need to ask ourselves three questions:

Is it feasible?

Is it safe?

Is it worthwhile?

We can conclude that Appendectomy by Single Trocar Access is feasible and safe, representing an important option in the surgical arsenal. The third question can only be answered after new prospective comparative studies compare the new approach and the conventional laparoscopic procedures. This is a new technique and it needs to be further studied.

RESUMO

Objetivo: Apresentar a experiência inicial de apendicectomia por videolaparoscopia pela via transumbilical, usando um sistema de portal único, chamado Single Trocar Access - SITRACC®. **Pacientes e Métodos:** De novembro de 2009 a julho de 2010 oito apendicectomias usando o SITRACC foram realizadas. A cirurgia consistiu na apendicectomia laparoscópica clássica, utilizando instrumentos especiais flexíveis e articulados. **Resultados:** O tempo cirúrgico médio foi de 38 minutos. Em nenhum dos casos foi necessário adicionar outro portal. Todos os pacientes tiveram alta até 24 horas após a cirurgia. Não houve complicações maiores durante a fase pós-operatória. **Discussão:** A apendicectomia pelo método de Acesso Trocarte Único é viável e segura. Com o aperfeiçoamento dos instrumentos e do trocarte multicanal, novas cirurgias poderão ser realizadas por esse método, acrescentando uma nova arma na luta contínua para beneficiar nossos pacientes.

Palavras-chave: Cirurgia Minimamente Invasiva, apendicectomia, Single Trocar Access.

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