

# Specimen removal after laparoscopic appendectomy: a cheap trick

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**Abstract.** – Laparoscopic appendectomy (LA) has gained worldwide acceptance as an effective surgical treatment of acute appendicitis. One of its main advantages is the almost total absence of cosmetic sequelae. Obviously, this relates with the use of little sized trocars. Whereas the whole dissection can be performed by means of two 5-mm operative ports, other than the 10-mm laparoscope one, usually the dissected appendix cannot be removed through a 5-mm trocar. As in most cases a 5-mm camera is not available, the surgeon must use a second 10-mm trocar, thus losing the cosmetic advantages. In this technical note a cheap trick to retrieve the specimen after LA is described.

*Key Words:*

Laparoscopic appendectomy, Specimen removal, Emergency laparoscopy.

## Introduction

Laparoscopic appendectomy (LA) is a well established laparoscopic operation. Although it is commonly performed worldwide, some areas of refinement still exist. LA is usually performed by means of two 5-mm ports and one 10-mm port. The two 5-mm trocars are used for the dissection, but in most cases it is impossible to retrieve the specimen through one of these little ports. Moreover, the extraction of the infected appendix directly through the skin incision after having removed the cannula increases the risk of abdominal wall abscess. So, the surgeon can, alternatively, change the camera to a 5-mm telescope or substitute a 5-mm trocar with a 10-mm one, thus enlarging one skin incision. In this last case, one of the main advantages of laparoscopy, that is a better esthetical result, is lost. Moreover, in most settings a 5-mm laparoscope is not available. In order to solve this dilemma, we propose a cheap

way to remove the appendix through the laparoscope cannula without the need for a 5-mm laparoscope or a large skin incision.

## Materials and Methods

After general anaesthesia, the patient is placed in the Trendelenburg position. The first step is the access into the abdomen through the umbilicus with a 10-mm trocar by the Hasson technique. After obtaining the pneumoperitoneum, a 30° viewing 10-mm laparoscope is inserted for the exploration of the cavity. In almost all cases we use two other 5-mm cannulas both inserted, for cosmetic reasons, in the right and left iliac fossae. The appendix is then dissected free and the mesoappendix is exposed. The appendicular vessels within the mesoappendix are isolated and ligated or clipped depending on the immediate availability of a 5-mm clip applier. After the appendix has been completely dissected free, we place three endo-loops at its base and cut it, leaving two ligatures on the appendicular stump. For a better safety, we accurately coagulate the redundant mucosa at the appendicular stump. At this point the specimen is suspended into the abdomen with a grasper, paying attention to not touch anything with the free stump. To remove the appendix we use a glove finger as a retrieval bag. The surgeon cuts the glove middle finger at its base in an oblique direction and pass a double 1/0 silk stitch near the opening of the new “bag”, leaving a long free segment. The laparoscope is then removed and the bag is inserted in the 10-mm cannula leaving the tail of the suture outside the trocar. With the camera reinserted, the appendix is placed into the “bag” (Figure 1). The laparoscope is extracted again and the specimen is withdrawn through the 10-mm umbilical port simply by pulling the tail of the previously



**Figure 1.** Appendix being inserted into the bag.

placed suture on the glove finger, minding to open the valve of the cannula as the bag is coming out. The abdomen is washed out in the usual way and a drain may be left depending upon the intra-abdominal conditions.

In a four years period (February 2003-February 2007), 156 patients have been submitted to LA. They were 30 males and 126 females, aged  $35 \pm 12$  (mean  $\pm$  standard deviation). In 142 patients (91.0%) LA was performed for acute appendicitis. In 14 patients (9.0%) the appendectomy was performed for prophylactic reasons during another laparoscopic pelvic operation with the same trocar configuration.

## Results

Six patients needed laparotomic conversion (6/156, 3.8%). Two patients, included in the total number of 156, experienced a backward laparotomy-to-laparoscopy conversion. LA was completed with the classical trocar configuration (one 10-mm, two 5-mm) in 124 cases (124/150, 82.7%). In the other patients (26/150, 17.3%) it was necessary to resect a particularly inflamed appendix or a Meckel diverticulum by endoscopic stapler, so the surgeon needed to substitute a 5-mm trocar with a 10-mm one. In 8 out of these 26 cases practical considerations during the operation led the surgeon to use a 10-mm commercial endoscopic bag.

So, the specimen was extracted by the “glove finger” technique in 142 patients. Actually, in the 18 cases in which a secondary 10-mm port was available, the technique was slightly easier, due to the fact that the surgeon was able to extract the specimen inside the glove finger through the operative port with the laparoscope inside the abdomen.

The mean operating time was  $57 \pm 23$  min in the whole series and was  $54 \pm 18$  min in the patients in which the “hand-made bag” was used.

No patient experienced technique related complications.

## Discussion

The advantages of laparoscopic exploration and operation in acute pelvic and low-abdominal pain are well known. In particular, LA may be regarded as the gold standard in the treatment of acute appendicitis<sup>1</sup>. Its advantages are mainly related to cosmetic reasons and to the significantly reduced risk of wound infection. This correlates with the need to use small cannulas. The classical trocar disposition (one 10-mm port and two 5-mm ports) is commonly used. We modified the usual position of the cannulas by moving the 5-mm ones in the right and left iliac fossae, for cosmetic reason. In this way the surgeon often operates almost towards the camera. We are well aware that this technique might be theoretically criticized due to the lack of triangulation between the cannulas, but, as LA is anyway an easy-to-perform procedure, we prefer to obtain good cosmetic results than to operate in an ergonomic way.

Unluckily, often it is impossible to retrieve the appendix through a 5-mm trocar. For the usual cosmetic reasons we feel highly frustrating to enlarge a skin incision to insert a 10-mm cannula just to extract the specimen. Unluckily, we haven't got a 5-mm camera to set free the umbilical cannula to retrieve the specimen with a common specimen-bag.

The reported technique may be an easy and cheap trick to extract the resected appendix through the umbilical port. It may be regarded as a refinement of the technique already described by Moore<sup>2</sup>, by allowing the easy recover of the bag by means of a suture passed on the glove finger and left running outside the 10-mm cannula when the laparoscope is inserted.

The use of a glove finger instead of a specifically purposed retrieval bag<sup>3</sup> is a cheap option also if we consider that the main argument against LA is just the higher cost. Contrary to Gett and Johnston<sup>4</sup>, we don't turn the glove finger inside out unless a powderless glove is available.

This technique is easy to perform and feasible in almost every patient. The only limit may be represented by the size of the specimen, but we never had an appendix so huge to not fit in a glove middle finger sized 9 (the largest glove size available in our operating room). The use of the commercial endoscopic bag in few cases was suggested by practical reasons during the operation. The cases in which the surgeon preferred to use a commercial 10-mm bag were those with a deeper flogosis of the appendix and the ileocecal region and a 10-mm port other than the laparoscope port was available, as it was used to help the endoscopic stapler in. The mean operation time wasn't affected by the use of this new technique.

In conclusion, removing the appendix in a bag is an effective mean to reduce the risk of wound infection. The use of a slightly modified glove finger as a retrieval bag inserted and removed through the 10-mm cannula is a cheap and easy

way to obtain good cosmetic results avoiding the need to enlarge a skin wound.

Moreover, this technique may be used to retrieve other little surgical specimens, such as nodes or tissue from biopsy.

### References

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