

## Laparoscopic Reversal of Hartmann's Procedure: Where are We?

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### ABSTRACT

The laparoscopic reversal Hartmann's procedure is a challenging technique showing promising results in comparison to the open method. The laparoscopic procedure seems to be safer and achieves faster positive results in contrast to the open reverse Hartmann's procedure in the hand of Good and trained laparoscopic surgeon and carefully selected patients. However, before considering it as a gold standard randomized prospective studies are needed.

### INTRODUCTION

The Hartmann's procedure is a surgical technique first described in 1921 to treat rectal cancer [1]. Through time the method has seen some changes. The first technique never considered the restoration of the intestinal tract continuity. Some surgeons added colostomy closure and others started using laparoscopy [2]. The Reversal of Hartmann's Procedure (RHP) using laparotomy is well established and preferred to laparoscopy by many surgeons; the high rate of adhesions can explain this after Hartmann's procedure.

However, since Anderson et al. [3] reported the first case of laparoscopically assisted colostomy closure, many surgeons have started doing the Laparoscopic Reversal of Hartmann's Procedure with somewhat similar outcomes [4].

Through this review, we are going to discuss the existing data in the literature; seeking the feasibility of laparoscopic reverse Hartmann's procedure.

### REVIEW

The Hartmann's procedure is nowadays less and less used [5]. However, it is still the preferred technique in emergency settings because of its relative safeness in patients at high risk of colorectal anastomosis [5]. It is considered, as a gold standard, in the stercoral peritonitis due to a left colon/rectal perforation.

Around 44% of patients will undergo bowel continuity restoration after Hartmann's procedure [6]. As shown by Van de Wall et al. [7] review of the literature Reversal of HP is accompanied by an essential risk of complications (mean 16.3%, range 3%-50%) and has an overall mortality rate of 1%. Overall complication rates reported in a series of open Hartmann's reversal range from 4%-43%, with Anastomotic Leakage happening in up to 12% of patients.

There is no consensus around the time to stoma closure, and the surgeons will decide case by case. Generally, a 2-3 months period between stoma formation and closure is required [7].

Two main concerns have to be assessed before stoma closure the patient's general status, the etiology of rectal resection.

With the development of laparoscopic surgery in the last decade, restoration became a part of the procedures performed laparoscopically. Surgeons were mainly looking to benefit from this less invasive method and reduce the overall morbidity [8].

However, two main hurdles faced the laparoscopic pic approach:

1. A safe way of entry in a previously operated abdomen
2. The severe intraabdominal Adhesions [9].

Regarding the way of entry; the most used technique reported in the literature was umbilical Hasson technique [10,11]. This method allows a full exploration of the abdominal cavity, assessment of the feasibility of the procedure; and also allows dissection of the colostomy under direct vision [4,9]. Other authors started with the dissection of the colostomy and used the incision as a way of entry

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reducing the gas leakage with a purse-string suture on the Apo neurotic wall [12]. Some other authors reported the use of the palmer point in left hypochondrium [13] and others used an open approach in the right lower quadrant of the abdomen [8]. However, no consensus or enough scientific proof is favoring a way to access the abdominal cavity to another. To the best of our knowledge, most authors agree on the extreme caution while entering the abdomen and using a technique the surgeon is proficient in doing.

Regarding the anastomoses, there are also several possibilities (Hand-sewn suture or by instrument endo-GIA, or circular stapler). The Cochrane systematic review, the evidence was insufficient to show a superiority of either of the techniques [14]. We will recommend; leaving the choice to the surgeon. Surgeons are invited to use the method they are most used to.

Most of the studies made in the topic report less intraoperative bleeding, shorter hospital stays, less postoperative morbidity especially wound infection [15,16]. The time to first flatus, the early ambulation and oral feeding were all achieved faster [17].

In Toro et al. [4] review, the length of hospital stay was 6.2 days. In Melkonian et al. [8] comparative study, including 74 patients, the hospital stay was significantly shorter for laparoscopy (5 vs. 7 days).

The laparoscopic reversal has shown less Morbi/mortality compared to open Hartmann's reversal procedure. The morbidity reported with open Hartmann's reversal is 4%-43% [8,15] and approximately 15% in the laparoscopic ones [4,8,15].

The most frequent early complication was colostomy wound infection. Haughn et al. [18] found that the 6 months morbidity was also higher in the open surgery arm and this was explained by a higher rate of an incisional hernia in the open arm. Melkonian et al. [8] reported a case of evisceration in the open arm which could have been avoided by laparoscopy.

Another main criticism addressed to the laparoscopic reverse Hartmann's procedure a longer operative time when compared to the open approach.

In open Hartmann's procedure, the mean operative time reported in the literature was 167 min [19]. In laparoscopic Hartmann's method, the mean operative time was 171.1 min [4]. In other reports, it was even lower than 150 min [8,9]. The difference of expertise between surgeons can easily explain this difference in operative time.

The data found in the literature is promising; however, we have to take it cautiously. Most of the data come from retrospective series. Most of the study, reports bias in patient's selection.

Some studies avoided the inclusion of cancer patients in the laparoscopy arm [8] and others showed a tendency to choose more fitted patients for laparoscopy [9].

The expertise of surgeons performing those procedures is rarely reported and is a source of bias knowing the importance of having a good learning curve in surgery. The absence of technique standardization makes it hard to compare the results from the different data available in the literature.

Thus, the need for randomized prospective studies before considering the laparoscopic reverse Hartmann's procedure as a gold standard.

## CONCLUSION

The laparoscopic reverse Hartmann's procedure seems to be safer and achieves faster positive results in comparison to the open reverse Hartmann's procedure in the hand of Good and trained laparoscopic surgeon and carefully selected patients. However, before considering it as a gold standard randomized prospective studies are needed.

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