



Single incision laparoscopic anterior resection for cancer using a "QuadiPort Access System[®]"

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rezime **BACKGROUND:** Single incision laparoscopic surgery (SILS) is developing rapidly and different devices are already available. However there is limited data in the literature about single port laparoscopic colorectal surgery. **AIMS:** We report the first case of a single incision laparoscopic anterior resection for cancer using the device "QuadiPort Access System[®]". **METHODS:** A 66 year old female affected by adenocarcinoma of the rectosigmoid junction underwent a radical single incision laparoscopic anterior resection performed by an experienced laparoscopic team. **RESULTS:** The preoperative staging was T2N0M0. The total operative time was 135 min. Length of hospital stay was 6 days. The length of the specimen was 27 cm and 21 nodes were isolated. The pathological examination showed adenocarcinoma staged T3N2MX; G2. There was no postoperative morbidity and at the 6 month follow-up, the patient presented in well condition with no complications and free from cancer. **CONCLUSION:** Single incision laparoscopic anterior resection for locally advanced high rectal cancer seems to be feasible and the "QuadiPort Access System[®]" seems to be a valid device. To evaluate outcomes and costeffectiveness of SILS versus the standard laparoscopic colorectal surgery multicenter prospective randomised trials are necessary and the "QuadiPort Access System[®]" could prove to be the device of choice.

Key words: Single Incision Laparoscopic Surgery, Malignancy, Laparoscopic Colorectal Surgery.

INTRODUCTION

Several studies have showed that laparoscopic colorectal surgery is associated with less postoperative complications, shorter length of hospital stay and quicker return of gut function¹⁻⁵. In totally laparoscopic colorec-

tal surgery, 3 to 5 trocars are required and a minilaparotomy is necessary to remove the specimen.

Single Incision Laparoscopic Surgery (SILS) is already been used in many centres for basic laparoscopic procedure like cholecystectomy, urologic procedure and appendectomy⁴⁻⁵, however in colorectal surgery the experience is still very limited.

SILS has the advantage of a lower complexity than Natural Orifice Transluminal Endoscopic Surgery (NOTES) for clinical application⁶⁻⁹. Low instruments triangulation and off-axis vision represent an important limit of SILS and NOTES¹⁰⁻¹³.

In the literature there are few case reports and case series and only one review about single port laparoscopic colorectal surgery.

We report the first case in Italy of Single Incision Laparoscopic anterior resection using the new device "QuadiPort Access System[®]".

MATERIAL AND METHODS

A 66 years old female with 2 months history of fresh rectal bleeding and no relevant past medical/surgical history underwent a colonoscopy. A 3 cm polypoid lesion was found at the level of the recto-sigmoid junction, biopsies were taken and the lesion was tattooed. Histology showed adenocarcinoma moderately differentiated, patient was staged by pelvic MRI and CT chest, abdomen and pelvis. The case was discussed at the multidisciplinary meeting. The patient underwent a single incision laparoscopic anterior resection using the device "QuadiPort Access System[®]" (Olympus Medical System Corp, Tokyo, Japan; Figure 1). No bowel preparations or diet restriction were used.

A 4-cm vertical umbilical incision was made. Anterior rectus fascia and peritoneum were incised and the umbilicus was suspended with two sutures of Prolene 2/0 stitch. "QuadiPort Access System[®]" (Olympus Medical System Corp, Tokyo, Japan; Figures 1-2) was inserted and the

pneumoperitoneum was created. A new deflectable laparoscopic optic (Olympus) and straight laparoscopic instruments were used.

The procedure was performed with patient in supine position, legs parted, and the left arm abducted with the intravenous line. With patient in anti-Trendelenburg position, the mobilization of the splenic flexure, descending and sigmoid colon was performed and the Gerota's fascia was detached from the Toldt's fascia both using the harmonic scalpel (Ultracision - Ethicon Endo-Surgery Inc, Cincinnati, OH), (Figure 3). The gonadal vessels and the left ureter were identified. The inferior mesenteric vessels were identified, clipped and divided (Figure 4). The artery was sectioned 1–2 cm anterior to the aorta and the vein close to the inferior border of the pancreas after the incision of the Treitz muscle.

The upper rectum was dissected following the same principle of the TME and divided intracorporeally with an endo-GIA stapler 5 cm below the tattooed area. The left colon was divided extracorporeally (Figure 5) and the head of the 33mm circular stapler was inserted to the proximal colonic segment using a purse string of Prolene 2/0 stitch. A terminal-terminal stapled anastomosis was performed intracorporeally according to the Knight-Griffen technique and checked by hydropneumatic test (Figure 6).

The fascia was closed with interrupted stitches of PDS 1 and the skin with Dermabond glue (Ethicon Inc, Cincinnati, OH).

A defunctioning stoma was not necessary. The nasogastric tube was removed immediately after surgery whilst the urinary catheter was left in situ to monitor the urine output and removed the following day.

RESULTS

Patient's BMI was 25. The preoperative staging was T2N0M0. The total operative time was 135 min with 150 ml blood loss. Transabdominal sutures for retraction were not used. The length of the incision was 4 cm and was not necessary to prolong it to remove the the specimen (Figure 7).

There were no intraoperative and postoperative complications and the hospital stay was 6 days.

Histopathology examination of the specimen confirmed the 3 cm polypoid lesion to be a locally advanced adenocarcinoma moderately differentiated, with adequate non invaded surgical margins (20 cm proximally and 4 cm distally) (T3; G2). 21 lymph nodes were isolated from the specimen and six of them were found positive (N2). The length of bowel removed was 27cm.

At 3 and 6 months follow-up the CEA level was within normal range and at 6 month follow-up a CT scan of chest, abdomen and pelvis showed no evidence of incisional hernia or metastasis. Patient's satisfaction about cosmesis was excellent.

DISCUSSION

This is the first case of single incision laparoscopic high anterior resection using the device "QuadiPort[®]" performed in Italy.



FIGURE 1.
QUADIPOINT SYSTEM

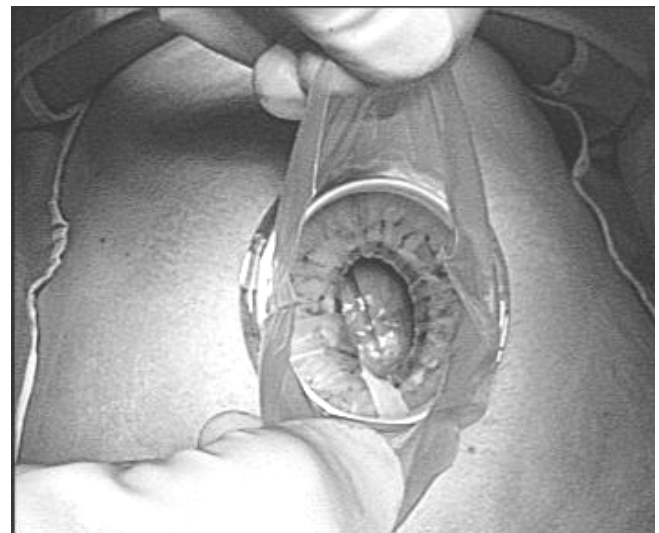


FIGURE 2.
QUADIPOINT SYSTEM

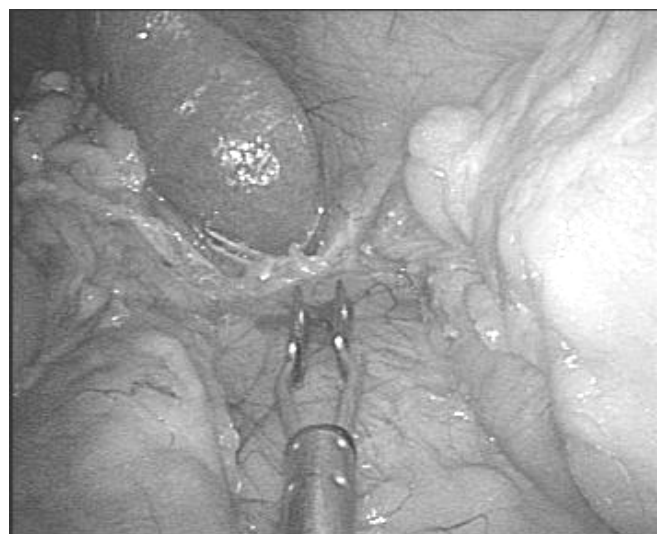


FIGURE 3.
SPLENIC FLESSURE MOBILIZATION

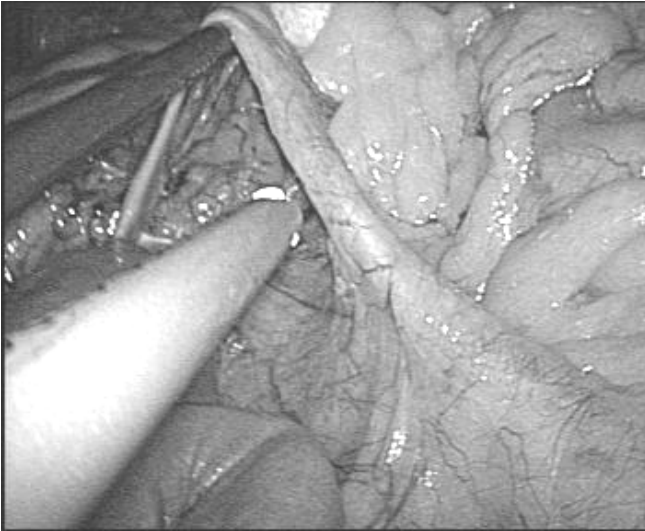


FIGURE 4.
INFERIOR MESENTERIC VEIN



FIGURE 7.
SKIN INCISION



FIGURE 5.
LEFT COLON EXTRACTION



FIGURE 6.
KNIGHT-GRIFFENANASTOMOSIS

SILS has been used so far in several surgical procedures as nephrectomy, cholecystectomy, hysterectomy, adnexal mass resection, appendectomy and sacrocolpopexy^{6,11,14,15,16}. To date, few single case reports⁴ and a review¹⁷ are present in the literature to evaluate SILS in colorectal surgery.

Conventional laparoscopic colorectal surgery requires several ports of 5 or 12 mm plus a 5 cm incision to remove the specimen. In colorectal surgery SILS compare to standard laparoscopy can achieve better cosmetic result^{18,19}. The device "Quadiport[®]" requires a 4 cm incision, compare to the 3 cm incision of the device "Triport System[®]".

SILS in colorectal surgery achieve better cosmetic result but could probably also reduce the intra/postoperative bleeding and the port site complications; in fact during lateral port insertion in laparoscopic colorectal surgery, epigastric vessels injury is not uncommon and some authors also reported localised metastasis, wound infection and incisional hernia of the port site^{20,21}. However SILS could be associated with a higher incisional hernia rate, in fact a prospective study on laparoscopic colectomy found a higher incisional hernia rate through the midline than other extraction sites²².

In our experience, SILS high anterior resection seems to be feasible and the surgical principles could be followed as in open or conventional laparoscopic surgery. Some surgeons to achieve triangulation use some transperitoneal suspension stitches²³. In our practice these are not used for the risk of tissue damage.

The use of new articulated instruments and laparoscopic optics could be useful during dissection decreasing clashing and improving triangulation. One study showed the use of three ports through a gel-port to increase the freedom of motion²⁴. In our case we used straight instruments and a dedicated laparoscopic optic.

We believe that the device "Quadiport[®]" allow to have much more freedom of movement than the device "Triport system[®]", that we have previously used to perform cholecystectomy and colonic resection. This is for two

reasons: the midline incision for the "Quadiport[®]" device is 1 cm longer than the "Triport[®]" device and the instrument fulcrum is more distal.

We believe that SILS in colorectal surgery can be performed only by high laparoscopic skills surgeon and is unlikely at the moment that can become a standard practice; however to evaluate outcomes and cost-effectiveness of SILS versus to conventional laparoscopic colorectal surgery, multicenter prospective randomised trials are necessary.

SUMMARY

LAPAROSKOPSKA PREDNJA RESEKCIJA REKTUMA SA JEDNOM INCIZIJOM ZA KARCINOM REKTUMA, KORIŠĆENJEM "QUADI PORT ACCESS SYSTEM[®]"

Uvod: Single incision laparoscopic surgery (SILS) - laparoskopiska hirurgija sa jednom incizijom se brzo razvija i različiti aparati su u upotrebi. Međutim, ograničeni su podaci u literaturi o laparoskopskoj hirurgiji sa jednom incizijom.

Ciljevi: Prikazan je slučaj laparoskopске prednje resekcije rektuma sa jednom incizijom zbog karcinoma rektuma, uz upotrebu "QuadiPort Access System[®]".

Metode: Kod 66 godina stare pacijentkinje koja je imala adenokarcinom rektosigmoidalnog prelaza kolona uradjena je radikalna laparoskopiska prednja resekcija rektuma sa jednom incizijom od strane iskusnog laparoskopskog tima.

Rezultati: Preoperativni stadijum je bio T2N0M0. Ukupno vreme operacije iznosilo je 135 min. Dužina bolničkog lečenja je bila 6 dana. Dužina otklonjenog preparata iznosila je 27 cm i 21 limfni nodus je izolovan. Patološki pregled pokazao je adenokarcinom stadijuma T3N2MX, G2. Nije bilo postoperativnog morbiditeta i nakon 6 meseci postoperativnog praćenja, pacijentkinja je u dobrom stanju, bez komplikacija i bez znakova postojanja karcinoma.

Zaključak: Laparoskopiska prednja resekcija rektuma sa jednom incizijom za lokalno uznapredovali karcinom rektuma je izvodljiva i "QuadiPort Access System[®]" se pokazao kao validan aparat. Da bi se evaluirali rezultati isplativosti SILS naspram standardne laparoskopске kolorektalne operacije multicentrične prospektivne randomizirane studije su neophodne i "QuadiPort Access System[®]" bi mogao postati aparat izbora.

Ključne reči: incizija, laparoskopiska hirurgija, malignitet, kolorektalna laparoskopiska hirurgija

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