



Is Single Incision Laparoscopy A Feasible Alternative for Advanced Ovarian Cancer Approach? A Case Report and Literature Review

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Abstract

Single incision laparoscopy (SIL) is a promising technique in the context of minimally invasive surgery, since it might improve cosmesis and cause less tissue trauma, if compared to multiple incision laparoscopies. Recent studies have shown its feasibility and safety for the approach of benign diseases. In this article, we report four cases of advanced ovarian cancer, addressed through SIL, with the purpose of fast diagnosis and recovery, allowing prompt onset of chemotherapy. In this series, there were no per-operative complications and no necessity of conversion to multiple incision laparoscopy or laparotomy. The maximum hospital stay was 48 hours. All patients were discharged in good conditions and referred to chemotherapy.

Keywords

Minimally invasive surgery, single incision laparoscopy, ovarian cancer

Introduction

The standard staging and treatment of ovarian cancer traditionally includes laparotomy, peritoneal washings, hysterectomy, bilateral salpingo-oophorectomy, omentectomy, peritoneal biopsies, pelvic and para-aortic lymphadenectomy. Since the 90's, with the advances in minimally invasive surgery, pioneers in these techniques have been proposing laparoscopy for the management of ovarian cancer [1]. Laparoscopic surgery can be incorporated in different ways to the management of this disease, depending on its stage and purpose of the procedure [2].

Further advances in laparoscopic surgery instruments made it possible to perform a pelvic or intra-abdominal surgery through a single incision, which scar will be hidden in the umbilicus. Such approach targets to mitigate patient post operative pain, reduce hospital stay, promote earlier recovery from surgery and better cosmetic results, and emerges as an alternative for staging and treatment of selected cases of ovarian cancer [3,4].

In this text we report the management of advanced ovarian cancer performed with single incision laparoscopy (SIL). A comprehensive search of the PubMed database was performed in June of 2014 using medical subject heading “minimally invasive surgery”; “single incision laparoscopy”; “ovarian cancer”.

Case Reports

Case 1

A 46 year old woman complained of pelvic pain. Transvaginal echography showed a right adnexal mass, predominantly cystic, with solid internal projections, limited by thin, irregular walls. Doppler assessment showed sparse blood supply. The mass measured 65 x 40 x 31mm (volume 42cc). A small amount of free fluid in the pelvis and prominent lymph nodes (measuring up to 9 x 7mm) were also described. The only increased tumor marker was CA 125 (426,8U/ml).

Computed tomography of the pelvis displayed ascites, mesenteric densification plans, enlarged mesenteric lymph nodes and peritoneal lesions due to probable carcinomatosis. The patient had no other diseases.

A SIL was performed, using SITRACC (for “single trocar access”; Edlo, Porto Alegre, Brazil) port (Figure 1), through a 3cm incision in the umbilicus. Approximately 6liters of ascitic fluid were drained, and albumin was replaced throughout the procedure. The inspection of abdominal cavity showed multiple nodules implanted in the peritoneum, liver, diaphragm and stomach serosa, defining this tumor as a FIGO stage IIIB (Figure 2). Directed biopsy of tumor implants was carried out. Due to intense adhesions, it was impossible to achieve optimal individualization of pelvic organs.

The postoperative course was uneventful and the patient was discharged 24 hours after surgery and referred to chemotherapy. Histology results revealed papillary carcinoma of the ovary, with affected margins.

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Figure 1: SITRACC Device.

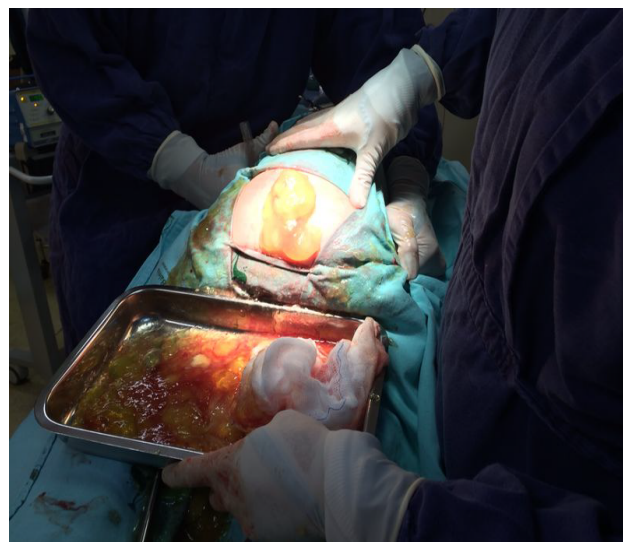


Figure 3: Large amount of mucoid secretion drained through the single incision.

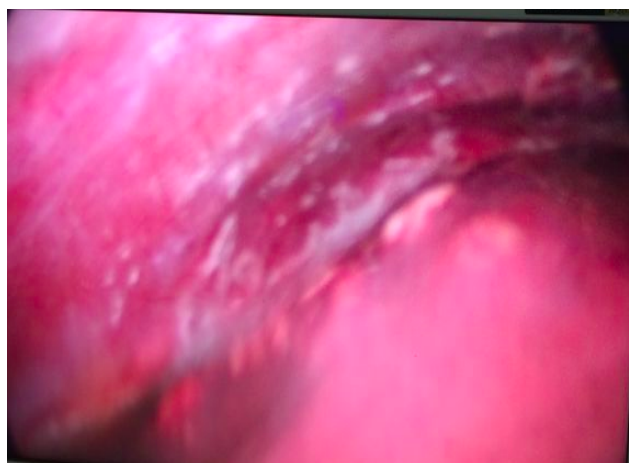


Figure 2: Tumor implants on the liver surface.



Figure 4: Large pelvic mass.

Case 2

A 61 year old woman complained of pelvic pain and abdominal swelling. Transvaginal echography showed a complex pelvic mass, with coarse septa, measuring 9,2 x 4,7cm. Doppler assessment showed sparse blood supply. The mass measured 65 x 40 x 31mm (volume 42cc). CA 125 levels were increased (176mU/ml), as well as carcino-embryonary antigen (79mU/ml).

Computed tomography of the pelvis displayed ascites, amorphous images in the pelvis, septa and peritoneal nodules. The patient suffered from hypertension, and no other diseases.

A SIL was performed, using SITRACC (for “single trocar access”; Edlo, Porto Alegre, Brazil) port, through a 3cm incision in the umbilicus. An enormous amount of mucoid secretion was drained from the abdominal cavity (Figure 3). An irregular mass occupied the pelvis, preventing the reach to the pelvic organs. The inspection of abdominal cavity presented multiple nodules implanted in the peritoneum and hepatic surface. Directed biopsy of tumor implants was carried out. This tumor was staged as a FIGO IIIB tumor.

The postoperative course was uneventful and the patient was discharged 48hours after surgery. Histology results revealed chronic inflammation, mucoid substance accumulation, and atipic epithelial cells.

Case 3

A 38 year old woman complained of rapid abdominal swelling and weight loss. Transvaginal echography showed a heterogeneous pelvic

mass, with irregular walls, measuring 13,8 x 11,3cm (volume 468cc), and free fluid in the pelvis. CA 125 levels were increased (530,2mU/ml). Computed tomography of the pelvis displayed significant ascites, and bilateral adnexal masses.

A SIL was performed, using SITRACC (for “single trocar access”; Edlo, Porto Alegre, Brazil) port, through a 3cm incision in the umbilicus. Five liters of fluid were drained from the cavity. The inspection of abdominal cavity presented nodules implanted in the peritoneum, omentum and hepatic surface. A large pelvic mass prevented optimal visualization of pelvic organs (Figure 4). Directed biopsy of tumor implants was performed.

The postoperative course was uneventful and the patient was discharged 48 hours after surgery and referred to chemotherapy. Histology results revealed papillary/serous adenocarcinoma of the ovary. This was a FIGO stage IIIB tumor.

Case 4

A 46 year old woman complained of abdominal pain and weight loss. Abdominal echography showed bilateral heterogeneous adnexal masses, with irregular shapes, volume 56,7cc on the right, 108cc on the left, and free fluid in the pelvis. CA 125 levels were increased (172,1mU/ml). Computed tomography showed several hepatic nodules, small ascites, peritoneal lesions possibly representing carcinomatosis, increased para-aortic lymphnodes, and bilateral adnexal masses, measuring 5,5 x 5,4cm and 8,2 x 7,1cm.

A SIL was performed, using SITRACC (for “single trocar access”; Edlo, Porto Alegre, Brazil) port, through a 3cm incision in

the umbilicus. Ascites was drained from the cavity. The inspection of abdominal cavity presented peritoneal lesions, nodules implanted in the peritoneum, omentum, diaphragm and large hepatic nodules. Directed biopsy of tumor implants was performed.

The postoperative course was uneventful and the patient was discharged 48 hours after surgery and referred to chemotherapy. Histology results revealed serous adenocarcinoma of the ovary. This was a FIGO stage IIIC tumor.

Discussion

Ovarian cancer is the fifth most common cancer in women in the United States. Because of the lack of specific symptoms and absence of screening tests, the detection of ovarian cancer in early stages is extremely difficult. Most of the patient's present stages III or IV at diagnosis and their survival rates are 46% or less in five years [1].

The standard treatment of ovarian cancer includes peritoneal washings, hysterectomy, bilateral salpingo-oophorectomy, omentectomy, peritoneal biopsies, pelvic and para-aortic lymphadenectomy, in order to perform maximal cytoreduction. Since the 90's, these procedures were accomplished through laparoscopic surgery, as an attempt to reduce surgical morbidity [1].

There are several potential roles of SIL for ovarian cancer evaluation and treatment. In early stage disease, it allows staging and complete treatment [1,2]. The advantages of conventional laparoscopy are applicable to SIL surgery in cases of ovarian cancer: better visualization of small lesions in difficult areas, reduced blood loss, faster return of the bowel function, decreased hospital stay [1]. There is evidence that laparoscopic surgery doesn't affect the outcomes when compared to open surgery [1].

In advanced disease, it can be used for assessment of the feasibility of cytoreduction or even for debulking. After treatment, SIL may be a suitable option for reassessment [1]. There is paucity of data regarding laparoscopy for advanced ovarian cancer, but series of cases have shown small post operative morbidity and acceptable survival [1].

The potential advantages of SIL over conventional laparoscopy include cosmetic, less blood loss, less post operative pain and faster recovery [5]. Since the incision is larger when laparoscopy is made through one port, it allows excision of larger tumor, without rupture, and with less tissue trauma associated with extraction [4]. The limitations of the SIL technique are the sharp angle of operation and movement difficulty, extending the learning curve [5].

The patients cited in this report had short hospital stay (24 to 48 hours), fast post operative recovery and early referral to the chemotherapy service. They were all affected by advanced disease, so they wouldn't obtain benefit from initial laparotomy and cytoreduction. In this situation, SIL is a safe tool for staging and diagnosing ovarian cancer.

Available data regarding single incision laparoscopy indicate that any operation performed with conventional laparoscopy can be reproduced with SIL, not only in gynecology. In oncologic nephrology, for instance, some published series demonstrated the feasibility of SIL for radical nephrectomy. Park et al. compared 19 cases of SIL nephrectomy with 38 cases of conventional laparoscopic nephrectomy, and found no differences in operative time, blood

loss and complications between the two techniques. The same study showed significant reduction in post operative pain and length of hospital stay [5].

However, due to the recent introduction of this technique, long term oncological outcomes are not currently available [5].

Some authors state that developments in technology and instrumentation will facilitate the implementation of SIL. The association between SIL and robotic surgery may overcome the current instrumentation difficulties [5].

SIL has been recently evaluated for the approach of many gynecologic malignancies, not only for surgical treatment, but also for staging. Gouy et al. submitted 50 patients with locally advanced cervical cancer to SIL and para-aortic lymphadenectomy, with positive results. The median number of obtained lymph nodes was 18; median operative time was 185 minutes; median hospital stay was two days; and median time to chemoradiation therapy was 16,5 days [6].

Most of the current knowledge about SIL comes from studies that include benign diseases. A meta-analysis concluded by Murji et al. in 2013 compared the use of SIL with conventional laparoscopy in gynecologic procedures. No significant differences were found between the two groups. The strength of evidence was low because of the low quality of the available studies. The evidence was not strong enough to recommend the use of SIL over conventional laparoscopy, but not even to discourage it, since the risk of complication was also similar [7].

Conclusion

Single incision laparoscopy has been used for staging and treatment of several malignancies, including gynecological cancers, but has barely been described for the approach of ovarian cancer. Recent studies show similar safety and feasibility between conventional laparoscopy and SIL, although the long term results are unproven. This small series highlights the employment of this new technique in the management of ovarian cancer, and its potential to be a cost-effective alternative.

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