

Port Site Metastasis Following Laparoscopic Resection of Jejunum Adenocarcinoma

Jejunum Adenokarsinomunun Laparoskopik Rezeksiyonunu Takiben Gelişen Port Yeri Metastazı

EROL AKSOY, MURAT ULAŞ, MUSTAFA TANER BOSTANCI, YILMAZ ÖZDEMİR, TAHSİN DALGIÇ, ERDAL BİROL BOSTANCI

Türkiye Yüksek İhtisas Hastanesi, Gastroenterolojik Cerrahi Kliniği, Ankara - Türkiye

ÖZET

İnce barsak adenokarsinomu nadir olmakla beraber ince barsak adenokarsinomunun laparoskopik rezeksiyonu sonrası port yeri metastazı son derece nadir bir klinik durumdur.

Sunduğumuz hasta ince barsağında kitle tespit edilmiş 49 yaşında bir bayan hastadır. Hastaya tanı sonrası laparoskopik rezeksiyon yapılmış ve ardından adjuvan tedavi verilmiştir. Tanı konulmasından bir yıl sonra hastanın karın duvarında subumbilikal port yerinde rekürrens gelişmiştir.

Daha önce yayınlanmış ince barsak neoplazmının laparoskopik rezeksiyonu sonrası port yeri metastazı olgusu olmayıp biz bu bildiri ile onkolojik cerrahi sonrası

ABSTRACT

Small intestine adenocarcinoma is rare and port site metastasis after laparoscopy for a small intestine adenocarcinoma is an extremely rare phenomenon. We present a case of 49 year-old-female diagnosed with a small intestine mass. She subsequently underwent a laparoscopic resection. After operation, adjuvant chemotherapy was applied to her. One year following diagnosis, she developed a recurrence on her abdominal wall at the subumbilical port site.

We remark possible modes of metastasis and present any published data to date on port site metastasis following laparoscopic resection of small intestine adenocarcinoma.

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Dr. Mustafa Taner Bostancı
Türkiye Yüksek İhtisas Hastanesi,
Gastroenterolojik Cerrahi Kliniği, Ankara - Türkiye
Tel: 0533.3175888
e-mail: mtanerbostanci@gmail.com

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muhtemel bir metastaz yerini belirterek bu konuya dikkat çekmek istedik.

Anahtar Kelimeler: Laparoskopik cerrahi, Port yeri metastazı

Introduction

In recent years, after laparoscopic oncological procedures, several reports of trocar site recurrence have been published.¹⁻³ The exact mechanism of development of metastasis of the abdominal wall is unknown. However, various explanations are given in the literature. In this case, we report an extremely rare localisation of metastasis of the following surgery of small intestine malignancy.

Case

In February 2013, a 49 year-old woman was referred to our hospital because of the abdominal mass. After clinical and imaging evaluation we detected a mass originated from small intestine (Figure 1-CT). Any distant metastases were detected and all tumor markers were in normal ranges. Patient underwent laparoscopic assisted segmental small intestine resection and anastomosis. Pneumoperitoneum was created using a Veress needle placed at subumbilical level with a maximum intra-abdominal pressure of 12 mm Hg. Three laparoscopic ports were created: two 10 mm ports (one midline subumbilical for the optical and one ancillary lateral left), and one ancillary 5 mm ports (one lateral right). In operation, we detected a mass on jejunum 30cm far away from Treitz ligament. First of all, we enlarged the subumbilical port site and the specimen was pull through the incision. Extracorporeal resection and anastomosis was done. The ports were all closed with skin stitches, only for 10 mm ports the fascia was also sutured; 5% polyvidone iodine was instilled before closing all ports. The histological examination confirmed two small intestine adenocarcinomas whose sizes were 5x1.5 cm and 6x4cm. and the distance between these tumours was 0.6 cm. Both of the tumours infiltrated the intestine serosa but perineural, nodal and lenfovasculer space involvement were not detected (T3N0). Postoperative period adjuvant chemotherapy was applied. Patient's follow-up was performed according to internal multidisciplinary guidelines.

Key words: Laparoscopic surgery, Port site metastasis

In December 2013, the patient showed a symptomatic and palpable abdominal wall mass of about 6 cm diameters under the subumbilical port site. CT imaging confirmed the presence of a parietal recurrence in the subcutaneous tissue with involvement of the underlying fascia and any other neoplastic localisation (Figure 2-CT). İncisional biopsy was done and the histological examination confirmed adenocarcinoma.

In January 2014, wide surgical excision of the lesion, including skin and subcutaneous tissue reaching the muscular fascia and peritoneum was performed. At the same time, the patient underwent a diagnostic laparotomy. During procedure, careful intra-abdominal inspection, was performed. No macroscopic evidence of tumour recurrence or ascites was detected (Figure 3- view of the area after excision). After the resection fascial defect was repaired by lateral fascial relaxation and onlay prolen mesh fixation.

Macroscopically removed mass measured 4x4x2 cm; pathologic examination revealed a metastasis of well differenced adenocarcinoma.



Figure 1. A mass originated from small intestine.



Figure 2. CT view of the lesion.



Figure 3. View of the area after excision.

After surgery the patient was referred to the medical oncology department.

Discussion

In the 1990s, laparoscopic surgery became accepted as a standard approach for general surgical operations including cholecystectomy⁴ and appendectomy.⁵ In the randomized studies, the laparoscopic compared to the open approach resulted in decreased length of hospital stay, fewer postoperative complications, more rapid return to normal activities with reduced analgesic requirements. This was associated with decreased cost of care and also achieved superior cosmetic results leading to increased patient satisfaction. Following this, the frontier of laparoscopic surgery was pushed further forward through experimentation of other complex intraabdominal surgery including colorectal surgery,⁶ bariatric surgery⁷ and more recently hepatopancreaticobiliary surgery.⁸

The first known report of a port-site metastasis was by Dobronte and associates⁹ in 1978. The authors reported implantation of malignant ovarian cystic adenoma in penetration sites of the pneumo-needle and trocar. Since this report, there has been extensive publication of case reports in the literature, describing this phenomenon in gastrointestinal,¹⁰ urological¹¹ and gynaecological malignancies.¹²

The incidence of tumour seeding in general laparoscopic surgery ranges from 0.8% to 21%.^{13,14} However, most authors report an incidence of 0.5%, comparable to the rate for surgical wound metastases (0.8%-1.6%) in

conventional open methods.¹⁴⁻¹⁸

There are several mechanisms that have been proposed and studied in an experimental setting to investigate the development of port-site metastasis in animal models. The most commonly discussed hypotheses include hematogenous dissemination, wound contamination, effects of pneumoperitoneum that including the type of insufflating gas, chimney effect, aerosolization, surgical technique and the local immune response. Experiments investigating these hypotheses have yielded both positive and negative results and it is likely the occurrence of port-site metastasis is multifactorial stemming from a combination of these various hypotheses.^{19,20}

However, there is a subgroup of patients who may profit greatly from diagnostic laparoscopy but who are at increased risk for cancer implantation at the trocar site. These are patients with ascites in whom there is a high index of suspicion for peritoneal carcinomatosis or peritoneal mesothelioma. In these high risk patients a modification of the diagnostic laparoscopic technique should be considered. The port-sites should be limited to the midline or limited to sites that can be included as part of the abdominal incision. Lateral ports should be avoided except under unusual circumstances and are rarely mandatory in this clinical setting - diagnostic laparoscopy in patients with suspect carcinomatosis.²⁵ Port-site metastasis is a strong risk factor for peritoneal dissemination. An accurate diagnostic work-up should include imaging and exploration of the peritoneal cavity to identify peritoneal metastases.²⁰ A simple subcutaneous wide excision of port-site metastasis would constitute

a failure of the understanding of the mechanism that underlies its occurrence. Owing to the high risk for peritoneal carcinomatosis, an extensive clinical work-up comprising of positron emission tomography scans and contrast enhanced computed tomography scan should be performed to identify for other sites of metastasis. In the absence of distant metastasis, a wide excision of the port site together with a laparotomy to survey the peritoneal cavity should be performed. If there are evidence of peritoneal seeding, a cytoreductive surgery combined with perioperative intraperitoneal chemotherapy should be performed in patients whose demographic and disease factors fulfil the selection criteria for treatment. In our case, peritoneal dissemination wasn't detected and only wide surgical excision was done. Studies show that recurrence of tumour at the port site probably can be avoided by the use of plastic bags or wound protectors to avoid direct contact between the tumour and the wound. It is also essential that extraction of the specimen is done through an abdominal incision wide enough to allow easy passage of the specimen.^{21,22} In view of the current literature, the best approach is to limit the development of port site metastasis following

laparoscopic procedures would be to avoid direct tumour handling and strictly adhering to the principles of laparoscopic oncological surgery.²⁰

Povidone iodine when injected intraperitoneally has been shown to have tumoricidal activity.²³ The use of topical intraperitoneal cytotoxic drugs has also been recommended.²³ However, a study done by Tai *et al* that used topical oxaliplatin application in a rat injected with viable rat colon carcinoma cells, found no statistically significant differences port site metastasis rates of the treated and untreated layers of the abdominal wall.²⁴

Conclusions

Surgeons opting for laparoscopic procedures should remain aware of the possibility of port site metastasis presenting after a latency period ranging from a few months to 3-4 years. While many factors may be responsible for this event following laparoscopic surgeries, the most common is intraoperative spillage. The best treatment option for these patients is different from patient to patient. Ultimately, prevention is better than cure.

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