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TABLE OF CONTENT

Journal of Surgery [Jurnalul de Chirurgie]

LAPAROSCOPIC DRAINAGE OF PANCREATIC PSEUDOCYSTS.

Filip Eugen Târcoveanu, Alin Vasilescu, Costel Bradea and Cristian Lupaşcu

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Review Article
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Minimally Invasive Surgery: A New Approach for Uterine Cervical Cancer

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Abstract

Initially used for diagnostic, laparoscopy has become a method of treatment in the field of gynecological surgery, but also in many other fields. The results of laparoscopic surgery are now comparable with those obtained by laparotomy in benign and malignant pathologies. Laparoscopy provides improved results in the short term and at least equivalent results in terms of long-term recurrence when compared with open surgery. Robotic-assisted laparoscopy was performed to prevent the disadvantages of conventional laparoscopy. It emerged as a revolutionary technology and has spread in less than a decade in many surgical fields, including urology, cardiothoracic surgery, pediatric surgery and general surgery. Minimally invasive techniques provide a lower rate of complications during surgery as compared to open surgery, which is appropriate tissue due to handling and better anatomical views. Laparoscopic treatment of cervical cancer provides benefits on increasing comfort with decreased convalescence time, but these cases should be reserved for surgeons with extensive experience in laparoscopic procedures. One of the most important advantages of minimally invasive surgical techniques is the short duration of hospitalization.

Keywords: Cervical cancer; Laparoscopic radical hysterectomy; Robotic surgery hysterectomy

Introduction

In the early 1990s, the laparoscopic approach in uterine cervical cancer has started to become quite popular among oncologist surgeons in order to minimize postoperative morbidity. When a new surgical technique is taken into consideration or suggested, it is compared with the standard therapy hitherto. Important issues to be taken into account include the feasibility and applicability of the new technique, intraoperative and postoperative complications and in oncological cases, survival and risk of recurrence.

Gold standard for uterine cervical cancer in the early stages was abdominal radical hysterectomy with pelvic lymphadenectomy for more than 100 years. This technique, described for the first time Wertheim, Meigs subsequently underwent some changes. The first laparoscopic hysterectomy was performed and published in 1989 [1], but the first laparoscopic radical hysterectomy with pelvic and para-aortic lymphadenectomy in a patient with cervical cancer stage IA2 was performed by Nezha et al. in June 1989 and reported in 1992 [2]. Since then, it has been reported in the literature over 1000 cases [3].

Laparoscopic Surgery versus Open Surgery in Uterine Cervical Cancer

Initially used for diagnostic, laparoscopy has become a method of treatment in the field of gynecological surgery, but also in many other field. The results of laparoscopic surgery are now comparable with those obtained by laparotomy in benign and malignant pathologies. The most important advantages of the laparoscopic technique include more pleasing cosmetic appearance, or minimum parietal infectious complications, low incidence of adhesion formation, low cost associated with hospitalization and recovery period smaller resumption of daily activities in a shorter period [4]. In a study comparing the two surgical techniques, the results show an average of operating time with significant differences statistically 231.7 minutes for cases treated laparoscopically and 207 minutes to classical surgery, which can be explained by the fact that laparoscopic hysterectomies implemented quite recently requires a learning curve. The surgeons will become more familiar with laparoscopic procedure; the operative time is expected to become shorter. Intraoperative blood loss was lower in the laparoscopy (161.1 ml) compared with the traditional method (394.4 ml), with blood transfusions in 3 patients. Postoperative complications, represented mostly wound infections were recorded only in the group that received radical abdominal hysterectomy. The hospital stay was less in laparoscopic interventions (mean=2.9 days) compared with the second procedure (mean=5.5 days) [5].

Perino et al. reported similar results for the same parameters for laparoscopic hysterectomies: less hospitalization period (mean=2.4 days versus 6.2 days), minimal intraoperative bleeding (140.0 ml vs 406.0 ml) [6].

A randomized, multicenter study including 116 patients demonstrated that laparoscopic assisted vaginal hysterectomy can be performed in a similar operating time classic surgery with intraoperative blood loss less and a relatively shorter period of hospitalization ($p<0.01$). Postoperative pain, another important parameter discussed, is lower for the first 3 days of laparoscopy versus open surgery ($p<0.5$) [7].

In 2010, Naik et al. published a randomized trial comparing laparoscopic-assisted vaginal radical hysterectomy with abdominal radical hysterectomy in a group of 13 patients (7 patients receiving laparoscopic technique, 6 patients classical intervention) diagnosed with cervical cancer in stage IB1 with a follow-up period of 20 months. The results from minimally invasive and traditional method are statistically significant for the following parameters: catheter maintenance, 4 days versus 21 days, intraoperative blood loss of 400 ml versus 1000 ml, length of stay, less need for analgesics lower. Vaginal

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resection and the resection of utero-sacral ligaments is in each case less (1.26 cm, respectively 1.47 cm) than as compared to the classic approach (2.16 cm, respectively 4.68 cm), which suggests that the laparoscopic hysterectomy is less radical, noting that patients should be carefully selected [8].

Studies show that obesity is associated with a higher incidence of comorbidities and an increased risk of perioperative complications. The main cause of conversion of laparoscopy to laparotomy represents obesity. Many surgeons believe that obesity surgery prevents radical resection limiting parameters of the vagina and the number of lymph-nodes, which influence survival. In this regard, Park et al. conducted a study including 166 patients diagnosed with cervical cancer stages IA2-IIA2 and body mass index (BMI) of at least 30 receiving laparoscopic hysterectomy with pelvic lymphadenectomy (n=54) and classic method surgery (n=112). The authors suggest that the minimal invasive technique is preferred in the case of obese patients due to superior results in the resumption of bowel habits, length of hospitalization, post-operative complications and intra-operative blood loss [9].

Radicality of laparoscopic surgery in patients with cervical cancer can be compared with the classical method. Therefore, surgical excision parts were analyzed in a study by Ghezii et al. Results reported parameters resection was the same in class II radical hysterectomies performed laparoscopically or classic (2.4 cm vs. 2.3 cm), and in the case of class III hysterectomy no statistically significant differences (resection parameters 3.8 cm vs. 3.4 cm) [10]. For cases of cervical cancer in the early stages, IA2-IB1, Malzoni et al. published the results of a study conducted on a group of patients who received laparoscopic radical hysterectomy class II or III with lymphadenectomy. The results were similar to those in the literature, and namely, short hospitalization, no need for blood transfusion, negative resection margins [11].

Laparoscopic approach for cervical cancer has better results compared to open surgery. Laparoscopy provides improved results in the short term and at least equivalent results in terms of long-term recurrence when compared with open surgery. Spirtos et al. reported in a study conducted on a group of 78 patients with cervical cancer in stages IA2 and IB who received laparoscopic radical hysterectomy class III with pelvic and para-aortic lymphadenectomy mean operative time of 205 minutes, with the presence of 3 intraoperative cistotomies and one ureteral injury that required stenting. The average number of lymph nodes removed was 34. Recurrence rate at 3 years was 5.1% [12].

A study comparing the same parameters between the two methods reports that there were no differences in the histologic examination of the tissue resection of parameters, the vaginal resection and negative margins achieved. Postoperative morbidity was present in a larger number of patients for radical abdominal hysterectomy (53% vs 18%) [13].

One topic discussed in laparoscopic surgery for gynecological malignancies remains recurrence rate. Besides learning curve, laparoscopic radical intervention, pelvic and para-aortic lymphadenectomy are particularly important in oncological surgery. Yan et al. performed a study including 240 patients with cervical cancer stages IA2-IIB receiving laparoscopic radical hysterectomy and lymphadenectomy, with a conversion rate of 1.25%. The survival rate at 5 years was for IA2, IB1, IB2, IIA 100%, 82%, 66% and 60% respectively. The author suggests that in IA2-IB1 stages, laparoscopic intervention can be performed without compromising long-term survival. For locally advanced stages, laparoscopic technique requires more investigation [14].

Laparoscopic and Robotic Learning Curve Technique in Gynecologic Pathology

Regarding the learning curve of the technique, Siren et al. describes the first 100 laparoscopic hysterectomies performed for both benign and malignant pathology with an operating time from 45 minutes to 245 minutes with an average of 109 minutes. For the first 10 interventions, the average operative time was 180 minutes, for the last 20 hysterectomies it reach to 75 minutes, which emphasizes the importance of the learning curve [15]. Reade et al. concluded in a study that after a laparoscopy training in gynecological oncology, the learning curve is improving after only 23 cases, with reduced operative time, intraoperative blood loss decreases and the number of resected lymph nodes higher [16].

Another study compares the evolution of the parameters that help technique being feasible and safe for cancer cases (operating time, intra-and postoperative complications, length of hospital stay, number of lymph nodes removed, the rate of transfusion). In this regard were grouped top 50 and next 50 hysterectomies. Authors concluded that all of the aforementioned parameters were improved in group 2 [17]. Similar results were published by Hwang et al. for uterine cervical cancer in the early stages who received laparoscopic radical hysterectomy with lymphadenectomy. 35 patients were compared with the following 35 intervention. Operating time, the number of complications (9 vs 1) was significantly higher in the first group, no significant difference statistically in terms of the number of nodes excised, resection, parametrectomy, lymphovascular space invasion. The authors suggest that the learning curve reaching time from 40 cases [18].

The same reports are available in literature about robotic assisted laparoscopic hysterectomies, with decreased operative time after 20-30 intervention of this type [19]. Yim et al. performed a study of 65 cases of cervical cancer in the early stages that radical hysterectomy with pelvic lymphadenectomy was assisted robotic. Operative time was lower after the first 28 interventions with improved track parameters authors: reduce the bleeding, low rate of postoperative complications [20]. However, Schreuder et al. suggest that the 14 cases is sufficient to reduce the operating time with 48% [21].

The Risk of Metastasis at Incision Trocars / Port-site Metastases

Another concern that arises when laparoscopic techniques are performed for the treatment of gynecologic malignancies is the incidence of metastases at incision trocars. Although this complication is recognized in ovarian cancer, it is very rare in cervical and endometrial cancer. To clarify the rarity of these metastases, Zivanovic et al. identify two cases of 1694 patients operated for gynecologic malignancies compared with 15 cases of ovarian cancer in the same batch. Specifically, in patients in whom recurrence of the incisions for trocars within less than 7 months after the original surgery, the overall survival rate is lower when compared with patients whose recurrence occurs more than 7 months [22]. Moreover, Chen et al. presents a prospective study that included 295 patients with cervical cancer, one patient with metastasis at the trocar incision [23]. As reported by Imachi et al. the incidence of port site metastases from squamous cell carcinoma of the cervix is 0.9% and 5.8% in cases of adenocarcinomas. Moreover, the risk of port-site metastasis in laparoscopic hysterectomy is 6-fold increase for the cases of advanced uterine cervical cancer [24].

Regarding laparoscopic radical hysterectomy for cervical neoplasia, the theory that is mentioned in the literature on the occurrence of metastases at incision trocars is based on the leak, remove carbon dioxide along trocars, phenomen called "chimney effect" [25].

A systematic evaluation of the literature on this topic was conducted, and the results were presented in an article that included 1216 laparoscopic procedures performed for cervical cancer and endometrial cancer (921, 295 procedures, respectively). The incidence

of metastases to the incision site of the trocars was 0.43%, 0.33%, respectively [26].

One case of port-site metastasis following a robotic-assisted laparoscopic radical hysterectomy with bilateral pelvic lymph node dissection for a cervical adenocarcinoma has been described [27].

Types of Laparoscopic Hysterectomies

Single Incision Laparoscopic Surgery (SILS), Natural orifice transluminal endoscopic surgery (NOTES) and is Robotic-assisted laparoscopic surgery (RALS) are the latest technique used in minimally invasive surgery.

Nomenclature LESS (Laparoendoscopic single-site surgery) was controversial and varied. It has been called single access/port/site/incision/trocar surgery, OPUS (one port umbilical surgery), and embryonic natural orifice transluminal endoscopic surgery (eNOTES).

The fundamental idea is to have all of the laparoscopic working ports entering the abdominal wall through the same incision. Single-incision laparoscopic surgery is an alternative to conventional multiport laparoscopy. The advantages of single-access laparoscopic surgery may include less bleeding, infection, and hernia formation and better cosmetic outcome and less pain. The disadvantages and limitations include longer surgery time, difficulty in learning the technique, and the need for specialized instrument [28].

Hysterectomy is one of the most common surgical procedures performed in women. In the United States it is estimated that one third of women undergoing hysterectomy by age 60 years [29]. Use of a single incision for laparoscopic hysterectomy was described in the early 1992. Reducing the number of punctures might potentially reduce morbidity from bleeding, port-site hernias, and internal organ damage and have cosmetic benefits [30].

In surgery field, there has been a continued push toward decreasing the complications associated with large surgical incision sites and its other associated disadvantages. With the advent of laparoscopic surgery, it can now minimize the size of the incision. The Laparoscopic Robot has accorded the benefit of mobility with each of the Robot arms having seven degrees of mobility and great visualization with the high definition 3D (dimensional) laparoscopic camera. The single port laparoscopic system allows several ports to be introduced into the abdomen via one central incision. The size of the port is about 4 cm and fits through a 2 cm incision. Once healed, the scar is virtually unnoticeable [31].

A study by Fader et al. included 13 patients with various gynecological malignancies that surgery (laparoscopic or robotic) was performed through a single incision, LESS. Median operating time was 65 min. All procedures were successfully performed via a single incision and no post-operative complications occurred. The majority of patients required no narcotics post-operatively [32].

Tergas et al. reported the case of a patient diagnosed with stage IB1 cervical cancer who received radical hysterectomy type LESS, bilateral ovariectomy and lymphadenectomy through an umbilical incision 2 cm. Operative time was 251 minutes without intra-or postoperative complications. Tissue parameters and the 16 lymph nodes resected showed no tumor aspects [33].

In a multicenter retrospective study conducted on a group of 46 patients with uterine cervical cancer stages IA2-IB1/IIA1, of which 19 patients received radical hysterectomy through a single incision, and 27 laparoscopic technique (in addition to umbilical trocar were placed 3 other trocars), the results were significant in terms of operating time (270 minutes versus 180 minutes). There were no differences between the two groups in relation to the type of radical hysterectomy, number of lymph nodes resected or perioperative complications. The percentage of patients in first group who were discharged on day 2 postoperative was 57.9% versus 25.0% (p=0.030) [34].

Robotic Surgery for Uterine Cervical Cancer

Robotic-assisted laparoscopy was performed to prevent the disadvantages of conventional laparoscopy. It emerged as a revolutionary technology and has spread in less than a decade in many surgical fields, including urology, cardiothoracic surgery, pediatric surgery and general surgery. The first robotic procedure in gynecologic surgery was performed in 1998 [35]. The da Vinci System has been approved by the Food and Drug Administration for gynecologic surgery in 2005 [36].

This technology has advantages such as a relatively short learning curve, eliminating tremor, increased surgical dexterity and handling of the wrists, 3D visualization, digital zoom, camera stability, motion scaling, 7 degrees of freedom, ergonomic advantages for the surgeon, fulcrum effect, telesurgery and remote surgical education. However, robotic surgery has some disadvantages: loss of feeling of the surgeon, the high cost of equipment for increased assembly and disassembly of the robot.

Using robotic surgery is considered to be associated with low operative time, increased accuracy, improved dexterity, faster suture, fewer errors compared to open surgery or laparosopic method. However, there is debate on two issues: oncological outcomes and safety intervention. A systematic evaluation of the literature regarding surgical treatment of cervical cancer in the early stages has been completed and the results were presented in an article that included 1339 patients who received laparoscopic radical hysterectomy, 1552 patients with abdominal radical hysterectomy and 327 patients who underwent robotic-assisted radical hysterectomy. Data were collected from international databases (MEDLINE, EMBASE, BioMed Central, Cochrane Database of Systematic Reviews (CDSR) and were finally selected 320 articles relevant to the topic proposed. Average loss was significantly greater in abdominal radical hysterectomies compared with laparoscopic and robotic techniques ($p<0001$). As is the oncologic outcomes, the average number of nodes removed in the three types of procedures was similar. A single resection margin was positive in a study that belonged robotic surgery. Postoperative morbidity was significantly higher in open surgery compared to the other two techniques regarding wound infection. The number of cystotomies and vessel damage is slightly higher than the laparoscopic method for the two techniques [37].

Minimally invasive surgery is used in locally advanced cervical cancer without notable adverse effects reported prognosis and overall survival. A study by Vizza et al. on this topic, including patients with neoadjuvant chemotherapy for locally advanced cervical cancer (IB2-IIb) and robotic radical hysterectomy is practiced. It was reported one intraoperative and 19 postoperative complications. At a follow-up of 28 months, 83% of patients had no recurrence [38].

Minimally invasive techniques provide a lower rate of complications during surgery as compared to open surgery, which is appropriate tissue due to handling and better anatomical views. Sert and Eraker reported for robotic radical hysterectomies to 25 patients, 3 cases of bladder injury, which was repaired everything about robotics [39].

A review comparing hysterectomy vs. radical robotic laparoscopic radical hysterectomy for cervical cancer in the early stages identifies a 6% rate of intraoperative complications, with low urinary vascular lesions where robotic surgery [40]. Estap et al. report a single cystotomy in a patient who has had three previous cesarean section and two cystotomies in the laparoscopic group [41]. Ko et al. compare with conventional radical hysterectomy hysterectomy 32 cases with 16

robotic radical hysterectomy: there was no complication in the robotic group, while in open surgery group was reported section of the ureter, requiring surgical repair [42]. Magrini et al. report the results of a study conducted on a group of 27 patients with robotic radical hysterectomy compared with laparoscopic and open techniques, results showing a similar operative time for robotic surgery and classical method. Blood loss, length of hospital stay was the same for laparoscopy and robotics, and significantly lower compared with conventional surgery [43].

With the new classification of radical hysterectomy proposed by Querleu in 2008, the literature shows the results of nerve-sparing technique in robotic surgery in cervical cancer. Gil-Ibanez et al. reported three robotic radical hysterectomies interventions types B1 and C1. The average operating time was 260 minutes. During postoperative follow (mean=13.7 months), 3 patients reported ano-rectal dysfunction. No patient had recurrence. The authors suggest that nerve-sparing technique is attractive in robotics because it allows a good quality visualization of blood vessels and autonomic (sympathetic and parasympathetic branches) of the bladder and rectum, allowing the procedure to be feasible and safe in view of oncology [44].

Parametrectomy, another important element for the assessment of surgical radicality in cervical cancer, was studied by Ramirez et al. who reported 5 cases of robotic parametrectomy and pelvic lymphadenectomy, with one intraoperative complication and two postoperative complications in the same patient (vesico-vaginal fistula and lymphocele). Surgical excision specimen was not infiltrated the tumor [45].

Discussion

Minimally Invasive Gynecologic Oncology Surgery lasted many years to practice acceptance, largely because of the lack of results in terms of distance recurrence in cancer, but also because of the need to conduct training for advanced laparoscopic techniques.

Laparoscopic treatment of cervical cancer provides benefits on increasing comfort with decreased convalescence time, but these cases should be reserved for oncologic surgical oncologist with extensive experience in laparoscopic procedures.

One of the most important advantages of minimally invasive surgical techniques is the short duration of hospitalization. According to the literature, robotic surgery offers other advantages, such as intra-and postoperative complications with a low rate of occurrence, minimal postoperative pain. All of this positively affects quality of life, with rapid reintegration daily activities, which provides medical benefit, socially and economically. However, the cost of the machine DaVinci is a limiting factor for the development of robotic surgery, however, indirect costs related to the reduction in the duration of hospitalization, and complications must be taken into account.

Conflict of interests

The authors have no conflicts of interest to declare.

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Review Article Open Access

Intraductal Papillary Mucinous Neoplasm of the Pancreas; Up-to-Date

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Abstract

The intraductal papillary mucinous neoplasm (IPMN) is a proven precursory lesion of pancreatic cancer, maybe the most important. The pancreatic cancer is a pathology associated with high rates of mortality. The IPMN develops from the epithelial ductal pancreatic cells and it expresses as cystic dilation of the main pancreatic duct and/or its branches, being part of the differential diagnosis of the cystic pancreatic masses. The identification of "invasive" and high-grade dysplasia IPMN lesions is imperiously necessary for a correct therapeutic approach; the pancreatic complementary resection being indicated in all cases with high-grade dysplasia upon the surgical margins of frozen section examinations.

Keywords: Pancreatic cancer; Early detection; intraductal papillary mucinous neoplasm; IPMN

Introduction

Pancreatic cancer is the fourth cause of death by cancer in the developed countries, being one of the few cancers for which survival has not improved significantly during the last decades [1]. Even if pancreatic cancer is associated with high rates of mortality, a population-based screening approach is not suitable taking into account the low rates of occurrence of the pancreatic cancer in general population [2].

The occurrence of pancreatic cysts in the general population seems to be as high as 20% [3]. Together with the mucinous cystic neoplasia, invasive pancreatic neoplasia, and pancreatic intraepithelial neoplasia, the intraductal papillary mucinous neoplasia (IPMN) is one of the proved precursor lesions of the pancreatic cancer [4].

We intend to review in this paper the main aspects related to the IPMN occurrence, management and follow-up.

Definition

Described more than 30 years ago as a distinct tumor entity of mucinous cystic neoplasia or ductal adenocarcinoma [5], the IPMN is a cystic pancreatic neoplasia [6]. Its recognition increased significantly in the late years due to the advances in abdominal imaging [7,8]. Therefore, nowadays it seems that the IPMN lesions might represent up to 9.8% of the exocrine pancreatic neoplasia [9].

IPMNs develop from the epithelial ductal pancreatic cells and appear like cystic dilation of the main pancreatic duct and/or its branches [10]. Together with the mucinous cystic neoplasia, the IPMN is one of the two mucin-producing pancreatic neoplasms [11]. The IPMN lesions appear to be neoplastic precursors since, without treatment, aggressive clinical behavior of the tumor might develop following malignant transformation [12].

General Data

The IPMN is more frequently diagnosed in male than in female patients, especially in the seventh and eighth life decades [13]. The survival in patients diagnosed with IPMN is related to the form of neoplastic lesion, being substantially higher in patients with "non-invasive" than in those with "invasive" IPMNs; cases in which a 5-year disease specific survival of 46% was reported [14]. The occurrence of IPMN seem to be associated with some clinical conditions such as antecedents of diabetes (especially when insulin dependent), chronic pancreatitis or pancreatic ductal adenocarcinoma [15].

Morphology

The IPMN are classified into three types: main duct IPMN, branch type IPMN, and mixed type IPMN, according to criteria stated upon imaging studies and/or histology [16]. The main duct IPMN represents segmental or focal dilatation of the main pancreatic duct with more than 5 mm diameter. The cystic pancreatic lesions with diameters between 5 and 9 mm are considered "worrisome features" while those having more than 9 mm are taken into account as "high risk stigmata" [17]. Brach duct IPMN represents pancreatic cyst with more than 5 mm diameter that communicate with the main pancreatic duct. Mixed types associate both main and branch duct IPMN criteria [17]. For the presence of two or more cystic lesions in the pancreatic parenchyma that have communication with the main pancreatic duct, the term multifocal branch duct IPMN was proposed [18].

According to the degree of differentiation, the IPMN lesions are classified as low-grade dysplasia in the case of adenoma, intermediate-grade of dysplasia in borderline lesions, respectively high-grade dysplasia [14].

In the case of IPMN, the benign lesions are those with low grade of dysplasia, the intraductal papillary mucinous adenoma. The intraductal mucinous tumors with moderate dysplasia are considered borderline tumors and the ones with associated carcinoma, regardless the invasive or non-invasive characters, are invasive malignant pancreatic tumors [9].

The duct cells proliferation as well as the mucin secretion leads to the pancreatic duct dilation, the specific imagistic characteristic

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of the IPMN [2]. One of the main IPMN's features is the production of mucin, IPMN being therefore classified as one of the mucinous pancreatic neoplasia. The mucins, either transmembranary or secreted, are contributors to the epithelial mucous barriers and are also involved in inflammation and cancer development, and are playing a role in cell growth and cell survival [20].

Tumoral Markers

Mucin type 1 (MUC1), a transmembranary mucin, is considered a marker of an "aggressive" pathway of tumor development; MUC 1 inhibits the cell-cell as well as the cell-stroma interactions, therefore facilitating the tumor invasiveness. Also, MUC1 interferes with the immune resistance of the neoplastic cells. On the contrary, the mucin type 2 (MUC2), one of the secreted mucins, interferes the gel formation and seem to characterize the "indolent", benign pathway of the pancreatic carcinogenesis [21].

There have been characterized four different histopathological varieties of the IPMN: gastric, intestinal, pancreaticobiliary, and oncocytic type [22,23]. Their classification is made by immunohistochemical examination taking also into consideration the mucin expression. The gastric IPMN has in general a uniform structure and is responsible for low-grade dysplasia, expressing mainly mucin type 5 (MUC5). The intestinal IPMN generally presents MUC2 expression. The pancreaticobiliary IPMN is the most aggressive; it expresses MUC1 and is accountable with a high-degree dysplasia. The up-regulation of MUC1 is otherwise a late pathogenic event in the pancreatic cancers [17].

Besides mucins, there are also other biological markers, like IL1β, PGE2, KRAS, GNAS), and the 9 miRNA, that were included into an extended panel which might lead to determining the biological signature of the tumor mass [24].

The fluid contained in the pancreatic cyst was analyzed for tumor markers such as the carcinoembryonic antigen (CEA), CA 19-9, CA 72-4, CA 125, and CA 15-3. Among all these markers, the CEA concentration in the cyst fluid seems to be the most accurate diagnosis test for differentiating the neoplastic mucinous lesions from the non-mucinous pancreatic cystic lesions [25].

Imaging Diagnosis

The main imaging features of the cystic pancreatic tumors are: serous cystadenoma and mucinous cystadenoma. The serous cystadenoma are generally less than 2 cm diameter, lobulated, with no communications with the main duct, but with central calcifications. The mucinous cystadenoma have frequently more than 2 cm and are smooth, well encapsulated, without lobulated contours. The communications with the main duct are absent in mucinous cystadenoma and mural nodules might be seen. When present, the calcifications have peripheral distribution, not central. The IPMN might have either a lobulated or a smooth aspect, mural nodules might be present, but the calcifications are atypical [26]. The pancreatic cysts with more than 3 cm in diameter have to be explored by EUS after the usual CT/ MRI approach [17].

The endoscopic ultrasonography (EUS) might play an important role in IPMN evaluation because it also allows the sampling of the cystic fluid. The EUS provides useful information on the cystic wall aspects, presence of mural nodules or septa [27].

Management

There aren't any "evidence based" guidelines, but consensus on the IPMN management at the level of current published evidence is weak, generally based on retrospective and uncontrolled studies [17]. In the 2012 consensus, the indications for resection are more conservative, the branch duct IPMN more than 3 cm without presence of "high risk stigmata" could benefit from follow-up, without immediate surgical intervention. Limited resection without lymphadenectomy or splenectomy was proposed when there was no suspicion of malignancy, whereas pancreatectomy with standard lymph nodes dissection was recommended for invasive or non-invasive IPMN or MCN [17].

In the case of the main duct IPMN and mixed type IPMN, pancreatic resection is indicated taking into consideration the high risk of malignancy. Based on the preoperative imaging exams results, the type of the pancreatic resection should be established. If the CT/ MRI examination does not reveal malignancy in the tail region, the pancreaticoduodenectomy is the recommended intervention. During the surgical intervention, the frozen section examination of the pancreatic margins is necessary to decide the follow-up. In the case of high-grade dysplasia, the extension of the pancreatic resection is indicated. The low grade dysplasia does not impose extending resection while in the case of intermediate grade of dysplasia the decision is more difficult, other patients' characteristics should be considered as well [17].

The risk of diabetes mellitus (neither incidence nor prevalence) seems not to differ between patients resected for IPMN when there is no high grade dysplasia and those being assigned to follow-up [28].

In selected cases, observation only, without pancreatic resection could be taken in consideration. By having newer and more accurate diagnostic tools, the indication and timing of surgical intervention became more selective nowadays [29].

Prognosis

Yogi T et al found among 153 patients diagnosed with IPMN, low/ intermediate grade dysplasia in 54.9%, high grade dysplasia in 22.2%, stromal invasion <5 mm (T1a) in 4.6%, and invasive intraductal papillary mucinous carcinoma in 18.3%. The median follow-up of this cohort was 46,4 months and the recurrence rates observed were 6.0%, 5.9%, 42.9%, respectively as high as 57.1% [30].

The small IPMN associated invasive carcinoma represents approximately 25% of the all resected IPMN – associated invasive carcinoma. Among these, 57% are tubular adenocarcinoma and 29% colloid adenocarcinoma. The overall recurrence rate observed is 24% with a median time of recurrence of 16 months [31].

Kwon JH et al described in 337 patients with branch type IPMN: 37 patients with multifocal branch duct type IPMN, 22 patients with remnant multifocal branch IPMN (1 central pancreatectomy, 14 distal pancreatectomy, 7 standard pylorus-preserving pancreaticoduodenectomy). The malignancy was suspected based upon the following criteria: diffuse dilation of the main pancreatic duct with a diameter larger than 10 mm, tumor diameter more than 3 cm, significant pain or abdominal discomfort. Within a period of 40 months of follow-up, only one patient with associated invasive carcinoma died [18].

Recurrence and Follow-up

Tumor location, mural nodule size, presence of invasive cancer, lymph node metastasis, IPMN persistence in the pancreas remnant, and main duct dilation after surgery were identified as risk factors for tumor recurrence after surgery [30,31]. Moreover, Nara S et al, on multivariate analysis models, identified the presence of lymph node metastasis, serosa invasion, and a high level of serum carbohydrate antigen 19-9 as predictive factors of recurrence after intraductal papillary mucinous carcinoma resection [32].

The recurrence after the noninvasive IPMN could be due to the residual dysplastic cells in the surgical margins, presence of multicentric

tumors with asynchronous lesions overlooked in the pancreas remnant or metachronous lesions in the pancreas remnant [33].

Because the IPMN is a lesion that usually is accompanied by a slow-growing pattern, the follow-up should be probably maintained on long-term. Some authors reported no mortality on a period of 4-years follow-up after resection [34] and others a 94% survival-rate after a 5-years follow-up period [35].

Conclusion

The IPMN is an increasingly documented entity in the last decades, a cystic pancreatic mass characterized by mucin production. The type of the produced mucin could be a marker of the tumor mass development pathway, "aggressive" when associated with MUC1 production and "indolent" in the case of MUC2 production. The surgical management is decided by the expressed tumor type, the pancreatic resection being the only solution in high-grade dysplasia. The global survival in patients with low-grade dysplasia IPMN is optimistic, but long-term follow-up should be indicated in these patients if considering the slow-growing pattern of the IPMN.

Conflict of interests

The authors have no conflicts of interest to declare.

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The Influence of Training Levels and Surgical Experience on Outcomes after Single-Incision Laparoscopic Appendectomy

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Abstract

Background: Single-incision laparoscopic appendectomy (SILA) has become an accepted alternative to conventional multiport laparoscopic appendectomy. Yet, little is known about the impact of operations performed by residents on the outcome of SILA. The aim of the present study was to evaluate the safety and efficacy of SILA performed by younger surgeons.

Methods: All SILA's at a single institution were reviewed and grouped according to the educational level of the operating surgeon: group 1 included residents with no experience in single-incision laparoscopic surgery (SILS) and little experience in multiport laparoscopy, group 2 comprised fellows with experience in multiport laparoscopy but with no experience in SILS, and group 3 consisted of senior surgeons, all of whom were experienced in performing SILS.

Results: A total of 176 patients were included. The patients had been operated on by residents (n=62), fellows (n=21), or senior surgeons (n=93). Senior surgeons performed the operation in less time than fellows or residents (48.7 vs. 55.4 vs. 53.6 minutes, respectively; p=0.108). Six patients required conversion to multiport laparoscopy while no patient required conversion to the open procedure. The overall postoperative morbidity was 9.1%, with no significant difference between the three groups (p=0.536). The surgeon's level of surgical education was no statistical risk factor for developing postoperative complications after SILA.

Conclusion: Although operating times were longer for residents and fellows compared to senior surgeons, less surgical experience did not correlate with a greater need for conversion to multiport laparoscopy and was not associated with a higher rate of postoperative complications.

Keywords: Single-incision laparoscopic surgery; Single-port; Appendectomy; SILS; SILA; Resident; Surgical training

Introduction

Over the last thirty years, laparoscopic appendectomy has gained wide acceptance as the surgical procedure of choice for patients with acute or chronic appendicitis. A shorter hospital stay, earlier return to work and activity, better wound healing, and less postoperative pain are now well known reasons for the transition from laparotomy to laparoscopy. These benefits raise the question as to whether more minimalized surgery would offer patients even greater benefits. Therefore, single-incision laparoscopic surgery (SILS) has raised tremendous interest among surgeons in the last few years, and has emerged as a serious alternative to conventional multiport laparoscopy. Although larger series and extended follow-up analyses are still missing and may well provide valuable additional information regarding postoperative outcomes, several studies have demonstrated the technical feasibility and safety of single-incision laparoscopic appendectomy (SILA) [1-6].

Experienced laparoscopic surgeons were reported to have a short learning curve for SILS. As senior surgeons are becoming increasingly familiar with the technique, it is being incorporated in surgical training as well. Appendectomy is one of the most common surgical procedures performed worldwide [7]. Being one of the most basic laparoscopic procedures in general surgery, it is mainly performed by residents. The influence of resident involvement in surgery and postoperative care is controversially discussed. It is reported to be associated with longer operating times, higher costs, and higher complications rates [8-10]. However, it has also been reported to exert a protective effect on the patients' outcome [11]. Little is known about the effect of resident-performed SILA on intraoperative and postoperative outcomes. The purpose of the present study was to determine resident performance and postoperative outcomes in patients undergoing SILA performed by a resident versus SILA performed by an experienced laparoscopic surgeon.

Material and Methods

We performed a review of all patients who underwent single-incision laparoscopic appendectomy between July 2009 and January 2014 at Vivantes Klinikum Am Urban in Berlin, Germany. Patients who underwent appendectomy as part of another single-incision laparoscopic procedure were excluded from the study. Patients with primary multiport laparoscopic or open appendectomy were also excluded. Demographic data included age, gender, weight, height, body mass index (BMI), the American Society of Anesthesiologists score (ASA score), preoperative comorbidities, previous abdominal surgery, and laboratory data concerning leukocytes and C-reactive protein (CRP) on admission. Details of surgery included operating time, the need for conversion to multiport laparoscopy or the open procedure and the reasons for conversion, intraoperative findings such

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as peritonitis, peritoneal adhesions or other pathological findings (e.g. gynecological reports). Data concerning short-term outcomes included postoperative complications, the need for reintervention, leukocyte count, CRP values on discharge, and the length of hospital stay. All specimens were sent for histological investigation, which included determination of the grade of inflammation.

Patients were divided into three groups, based on the educational level of the surgeon performing the operation. Group 1 included all residents from postgraduate year 1 to 6 with no experience in single-incision laparoscopic surgery and little experience in multiport laparoscopy. Fellows (postgraduate year >6) were pooled in group 2; these surgeons had experience in multiport laparoscopy but no experience in SILS. Group 3 included three senior surgeons and the head of the department, all of whom were highly experienced laparoscopic surgeons. We started performing SILA in July 2009, at the beginning of the study period, but all surgeons in group 3 had previous experience in the procedure. Taken together, they had performed more than 100 single-incision cholecystectomies until July 2009. All surgeons were grouped according to their level of education at the time of the procedure. At the start of the study in July 2009 Group 1 included 6 residents (n=2 in postgraduate year 1, n=2 in postgraduate year 3, n=1 in postgraduate year 4, n=1 in postgraduate year 5), Group 2 included 4 fellows and Group 3 included 3 attendings and the head of the department.

The surgical procedure has been described earlier [5,12]. A 15 to 20mm incision was performed in the umbilical folds and extended downward to the fascia. A commercial port system (TriPort™ or Triport+™; Olympus, Germany) was inserted with the provided insertion device. After diagnostic laparoscopy the appendix was identified and detached. Dissection of the mesoappendix was performed using stepwise electrocauterization and scissors. The appendiceal base was both ligated with two Endoloops (Serag Binder; Serag Wiessner, Germany) and cut in-between, or dissected using a stapler system (Endo Gia™; Covidien, USA). The specimen was removed directly through the port system. The fascia was closed using non-absorbable 0 suture and absorbable 4-0 monofilament sutures for skin closure. Only standard straight 5 to 10mm instruments and laparoscopes were used.

The patients' data were entered prospectively into a Microsoft Access (Office 2003, Microsoft, USA) database and reviewed retrospectively. Statistical analysis was performed using SPSS Version 22 (IBM, USA). To compare the three groups, the Chi-square test ($\chi 2$) was used for analysis of categorical variables, and Student´s t-test or a single factor variance analysis for continuous data, with the level of significance set to a p value lower than 0.05. A logistic regression analysis was performed to assess the educational level of the surgeon as a potential risk factor for postoperative complications after SILA.

Results

During the study period, 176 patients were identified as having undergone single-incision laparoscopic appendectomy. Patients were divided into three groups: those operated on by residents (n=62), by fellows (n=21) and those operated on by senior surgeons (n=93). The patients' demographic data are shown in Table I. Their mean age was 26.8 ± 9.2 years (range, 13-64 years) and 29.5% were male. The patients' mean BMI was 22.6 ± 3.3 kg/m^2 (range, 14.1-32.0 kg/m^2), demographic data did not differ significantly between the three groups.

The overall mean operating time was 51.2 ± 17.2 minutes (range, 22-140 minutes). The mean operating time required by senior surgeons was 48.7 ± 17.2 minutes, followed by residents (53.6 ± 15.7 minutes) and fellows (55.4 ± 20.5 minutes), but the difference did not achieve statistical significance (p=0.108). Neither the direct comparison between residents and senior surgeons (p=0.075), nor between residents and fellows (p=0.663) or between fellows and senior surgeons (p=0.119) revealed a significant difference in mean operating times (Table II).

Six patients (3.4%) required conversion to the multiport laparoscopic procedure with insertion of one or two additional trocars. Four conversions (66.7%) were performed by residents, one by fellows, and one by senior surgeons (p=0.068). The reasons for conversion were extensive peritoneal adhesions, appendix perforation with intra-abdominal abscess, or retraction difficulties because of abnormal location of the appendix. No conversion to the open procedure was required.

Complication rates were similar in the three groups (6.5%, 14.3% and 9.7%, respectively; p=0.536). The overall postoperative morbidity was 9.1%. No wound infection occurred in patients operated on by residents, two infections among those operated on by fellows, and three in the senior surgeon group. Gastrointestinal complaints included postoperative diarrhoea, bowel obstruction, and intestinal atony or paralysis. Other complications were prolonged postoperative pain, urinary tract infection, and urinary retention. A logistic regression analysis to assess predictors of complications after SILA revealed no significance in respect of the surgeon's educational level on postoperative morbidity (Table III).

Table I: Demographic Data of Patients who underwent SILA (n=176).

	Resident n=62	Fellow n=21	Senior Surgeon n=93	*p* value
Gender		0.145		
Male	24 (28.7%)	3 (14.3%)	25 (26.9%)	
Female	38 (61.3%)	18 (85.7%)	68 (73.1%)	
ASA-score		0.427		
I	51 (82.3%)	19 (90.5%)	81 (87.1%)	
II	11 (17.7%)	2 (9.5%)	12 (12.9%)	
Age (years)	26.6 ± 10.4	27.1 ± 8.2	26.9 ± 8.6	0.964
BMI (kg/m^2)	22.8 ± 3.3	22.4 ± 2.1	22.6 ± 3.3	0.902
Comorbidities	13 (21.0%)	3 (14.3%)	12 (13.3%)	0.217
Previous abdominal surgery	2 (3.2%)	1 (4.8%)	7 (7.9%)	0.228
Leukocytes on admission (nl)	11.2 ± 4.2	12.0 ± 4.7	12.5 ± 4.3	0.187
Leukocytes on discharge (nl)	7.3 ± 2.0	7.1 ± 1.3	6.8 ± 1.9	0.354
CRP on admission (mg/l)	30.7 ± 44.9	28.7 ± 38.4	25.9 ± 43.5	0.797
CRP on discharge (mg/l)	43.9 ± 46.7	47.9 ± 45.4	44.1 ± 36.8	0.925
Length of hospital stay (days)	3.6 ± 1.2	3.8 ± 1.8	3.8 ± 2.9	0.766

ASA (American Society of Anesthesiologists); BMI (body mass index); CRP (C-reactive protein)
Values are given as numbers and percentages, or means ± standard deviation

Table II: Details of Surgery and Histology of Patients who underwent SILA (n=176).

	Resident n=62	Fellow n=21	Senior Surgeon n=93	*p* value
Operating time (minutes)	53.6 ± 15.7	55.4 ± 20.5	48.7 ± 17.2	0.108
Peritonitis	2 (3.2%)	0	4 (4.3%)	0.672
Peritoneal adhesions	5 (8.1%)	2 (9.5%)	11 (11.8%)	0.446
Additional intraoperative findings	2 (3.2%)	2 (9.5%)	9 (9.7%)	0.14
Conversion to multiport	4 (6.5%)	1 (4.8%)	1 (1.1%)	0.068
Postoperative complications	4 (6.5%)	3 (14.3%)	9 (9.7%)	0.536
Wound infection	0	2 (9.5%)	3 (3.2%)	
Intraabdominal abscess/ hematoma	0	0	3 (3.2%)	
Gastrointestinal complaints	2 (3.2%)	0	1 (1.1%)	
Other	2 (3.2%)	1 (4.8%)	2 (2.2%)	
Reoperation	0	1 (4.8%)	3 (3.2%)	0.209
Pathology				0.23
Normal appendix	4 (6.5%)	1 (4.8%)	5 (5.4%)	
Acute appendicitis	47 (75.8%)	20 (95.2%)	80 (86.0%)	
Chronic appendicitis	11 (17.7%)	0	8 (8.6%)	
Perforation	4 (6.5%)	3 (14.3%)	5 (5.4%)	0.719

Values given as numbers and percentages, or means ± standard deviation

Table III: Predictor of postoperativ complications after SILA (n=16; 9.1%).

	OR	95% CI	p value
Surgeon level	0.472		
Resident	Referent		
Fellow	1.55	0.46-5.29	
Attending	2.42	0.49-11.82	

OR (odds-ratio); CI (confidence interval)

The median duration of hospital stay for all patients who underwent SILA was 3 days (range, 2-27 days). The mean length of the hospital stay for patients operated on by residents, fellows and senior surgeons was 3.6 ± 1.2, 3.8 ± 1.8 and 3.8 ± 2.9 days, respectively (p=0.766).

Figure 1 shows the increasing percentage of operations performed by residents over the last few years. In 2009 and 2010, the first cases of SILA at our institution were mainly operated on by senior surgeons, but in the following years the procedure was performed by younger surgeons.

Discussion

The aim of the present study was to evaluate the influence of surgical training levels on surgical and postoperative outcomes after single-incision laparoscopic appendectomy, and to ascertain the safety of resident involvement. Reviewing the results of 176 single-incision cases, we found that the surgeon's training level had little impact on outcomes after SILA. Although operating times were longer for residents and fellows compared to senior surgeons, the difference did not achieve statistical significance. A lower surgical training level did not correlate with a greater need for conversion to multiport laparoscopy, and was not associated with a higher rate of postoperative complications, including wound infection, intra-abdominal abscess, hematoma and gastrointestinal complaints.

In previous studies, the involvement of residents in surgery was found to be associated with longer operating times and higher postoperative morbidity for multiport laparoscopic surgery or open surgical procedures in general surgery [8-10,13]. We have a limited body of data concerning the presence and impact of surgical trainees on single-incision laparoscopic procedures. In a retrospective analysis of 220 consecutive patients undergoing single-incision laparoscopic cholecystectomy, Sato et al. found residents to be an independent risk factor for prolonged operating times [14]. In a single-port simulator model of Conway et al., experienced single-port surgeons performed surgery faster and with no loss of accuracy compared to experienced conventional laparoscopic and novice laparoscopic surgeons [15].

These reports concur with our data. In the present study, the mean operating time required by senior surgeons with previous experience in single-incision surgery was shorter than that required by fellows or residents, although the difference did not achieve significance. The fellows involved in the study did have prior experience in advanced multiport laparoscopic procedures, but their median operating time was similar to the time required by residents. These difficulties of conventional laparoscopic proficient surgeons to translate these skills to SILS have also been reported by three laboratory-based studies comparing laparoscopic- and SILS-trained candidates [16-18]. Pucher et al. concluded that the skills required for SILS are not automatically acquired through multiport laparoscopic experience [19].

Previous studies showed a steep learning curve for SILS: 10 to 40 attempts were needed to learn single-incision cholecystectomy [19], and about 10 cases to learn single-incision appendectomy [2]. These data were confirmed in our review of the surgeons involved in the present study, but we were unable to determine the exact number of operations needed to achieve a learning curve plateau for single-incision appendectomies. Since previous simulation and training in the skills laboratory were found to enhance a surgeon's skills in multiport laparoscopic surgery, the same could be true for SILS. Simulator training and specific training in SILS might even shorten the learning curve while the patient's comfort could be improved by using a new surgical procedure [20-22]. Therefore, some authors advocate specific SILS training and simulation models [19,23]. However, it should be noted that certain surgical skills and procedures can only be learned in the operating room [8].

We do not provide a special SILS simulator model at our institution and do not yet have a SILS-specific training curriculum for residents. All SILS novices in the present study were trained on the job. Using a logistic regression model, we were unable to demonstrate resident or fellow involvement in single-incision appendectomy as a potential risk factor for developing a postoperative complication. The present study confirms that, with appropriate supervision, single-incision surgery performed by surgeons with various levels of education is safe for patients.

The present study is one of the largest single-institution series of SILA, but the number of cases is still small and the study is therefore most likely underpowered. The consequence of the small sample size is a fairly high chance for a Type II error especially regarding our results of the postoperative outcome. The study should therefore only be seen as a pilot study and larger multicentre series and randomization will be

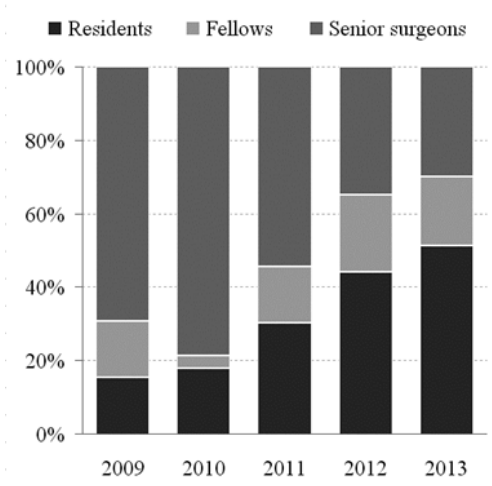

Figure 1: Operations Performed by Residents over the Last Few Years.

needed to validate the findings. Another limitation of the present study is that data concerning the extent of intraoperative resident involvement were not available and were not standardized. In open appendectomy, an experienced surgeon supervising an assistant may significantly influence the speed of the surgical procedure and its outcome. When teaching the laparoscopic procedure, the assisting senior surgeon's role is mainly limited to giving instructions and directing the camera. Thus, the surgical flow and the outcome of surgery is largely dependent on the less experienced operating surgeon. On the other hand, when a resident experiences intraoperative difficulties in performing a laparoscopy, the more experienced fellow or senior surgeon may completely take over and perform the major steps of the operation. As this aspect is rarely documented after an operation, some single-incision appendectomies may have been categorized incorrectly in the present study. This, obviously, is more likely to occur when a resident is involved.

Conclusion

Patients may rest assured that younger surgeons can perform single-incision laparoscopic appendectomies safely and effectively, although the operating time may be longer and larger case series will be needed to validate the findings. This fact is valuable in view of the paucity of surgeons in Western countries and the fact that education in surgery takes a considerable amount of time.

Conflict of interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and publication of this article.

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Journal of Surgery
[Jurnalul de Chirurgie]
Case Report Open Access

Minimally Invasive Surgery for Small Bowel Obstruction: The Experience of a Tertiary Hospital in the Anglo-Caribbean

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Abstract

Objectives: The aim of this study was to access the feasibility and benefit of minimally invasive surgery for Small Bowel Obstruction in a tertiary hospital in Trinidad and Tobago.

Design and Methods: All patients with clinical and radiologically diagnosed small bowel obstruction, who had nil resolution with conservative management at 48 hours, or who had nil passage of oral contrast into the colon at 12 hours, were included in this case series. Exclusion criteria included: anesthesiological contraindication for laparoscopy. The primary endpoints were resolution of obstruction (time to first bowel movement, time to commencement of oral feeds) and length of hospital stay. Secondary endpoints included overall morbidity and operative complications (bleeding, subphrenic or pelvic intraabdominal abscesses, wound infections, respiratory complications), during and after hospitalisation.

Results: There were five (5) patients who meet the inclusion criteria for this case series from January 2014 to March 2015. 40% (2/5) of the patients were female. The mean age was 38.4 yrs. Conversion rate was 0%. The enterotomy rate was 20% (1/5). The median duration of postoperative ileus was 5 days. . The median duration of postoperative hospital stay was 5.6 days, mean time to enteral feeds was 1.8 days. Rate of post-operative complications was 20% (1/5).

Conclusion: With appropriate patient selection, minimally invasive surgery is a safe alternative to open surgery for SBO, with acceptable morbidity and mortality.

Keywords: Laparoscopy; Small bowel obstruction

Introduction

Small bowel obstruction (SBO) is a common surgical emergency [1]. Open adhesiolysis has been established as the standard of care for those patients who do not resolve with conservative management. However, it has been associated with further formation of intra-abdominal adhesions with approximately 10% to 30% of patients requiring another laparotomy for recurrent bowel obstruction [2].

As laparoscopic emergency surgery continues to gain acceptance with the surgical fraternity, we continue to see new pathologies utilizing this form of surgical management [3]. Laparoscopic adhesiolysis has proven to have a series of benefits: decrease post-operative pain, faster return of intestinal function, shorter hospital stay, decreased wound complications, and decreased postoperative adhesion formation [4,5].

Laparoscopic adhesiolysis is still a very new option for the management of SBO. There are numerous studies demonstrating the feasibility of laparoscopy in the management of acute adhesive small-bowel obstruction. However, there are minimal randomized control trials on Laparoscopic versus open adhesiolysis. The aim of this study was to access the feasibility and benefit of laparoscopic adhesiolysis in our setting.

Patients and Methods

From January 2014 through March 2015, 5 consecutive patients with clinical and radiological signs of acute SBO were admitted to one of the surgical units at The Eric Williams Medical Science Complex, Trinidad and Tobago. The diagnosis was confirmed on review of plain supine and erect abdominal x-rays; illustrating dilated small bowel loops with greater than three (3) air fluid levels. Baseline blood investigations included serum electrolytes and a complete blood count.

Once there were no signs of peritonitis, all patients had commencement of conservative management with placement of a nasogastric tube (NGT) on free drainage, appropriate intravenous fluids and nil by mouth status [6-8]. All patients were given water soluble contrast (Ultravist) via the NGT, followed by serial abdominal radiographs at 4, 6 and 8 hours [6,7]. Failure of conservative management was defined as nil advancement of contrast into the colon at 8 hours with no clinical signs of resolution of obstruction (Figure 1) [9,10]. Surgical intervention was then deemed necessary for these patients, who then went on to have laparoscopic adhesiolysis after appropriate consent was obtained. All data was collected prospectively.

Laparoscopic technique

The first port was inserted at an alternate site, away from the previous incisions, for all 4 of the patients with previous laparotomies. Palmer's point was the main site used and entry into the peritoneal cavity was obtained using an optical trocar. Subsequent ports were inserted under direct vision. The locations and number of ports were determined at the time of surgery after inspection of the abdominal cavity. The collapsed distal bowel was identified from the ileocecal region and followed until the transition point was identified (Figure 2). Obstructing adhesions were divided with laparoscopic scissors, and the

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Figure 1: Supine abdominal X-ray with oral contrast. This X-ray illustrates, failure of progression of water-soluble contrast into the colon.

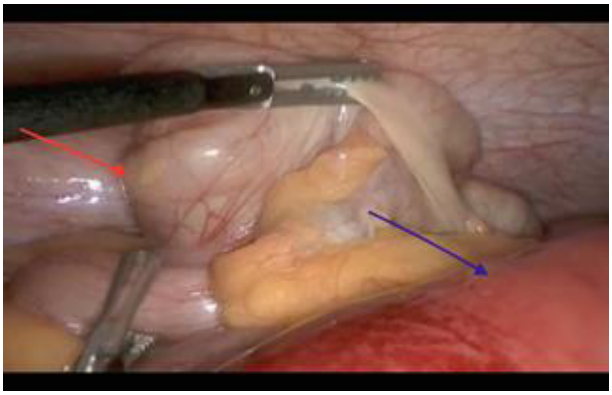

Figure 2: Intra-operative photograph. Photograph showing collapsed ileocecal region (red arrow) from where the bowel will be followed towards the proximal site of obstruction (the transition zone). The purple arrow shows the dilated proximal intestine.

bowel was inspected for viability. All adhesiolysis was done by sharp dissection. Ports were removed under direct vision the fascial defects of port sites greater than 5 mm were closed with 0 vicryl.

Results

Five patients who presented with acute small bowel obstruction and failed conservative management underwent laparoscopic adhesiolysis. There were 3 males and 2 females of a mean age of 38.4 years (Range 17-71 yrs.). All of these patients completed laparoscopic treatment. Thus the conversion rate was 0%.

Table 1 summarizes the patient's characteristics and intra operative findings. Four (80%) of these patients had previous abdominal surgery. There was one (20%) patient with a virgin abdomen.

The aetiology of small bowel obstruction in this series included single bands and multiple adhesions. Two (40%) of the patients had a single obstructing band, whereas the others had multiple adhesions.

There was a single case of bowel injury. This occurred with the patient who had two previous surgeries. The patient originally had an operation for a perforated appendix, and was taken back to the theatre for development of a pelvic abscess, which was not amenable to radiological aspiration. Thus the patient had extensive dense adhesions. During sharp dissection of a thick adhesive band between the small bowel and anterior abdominal wall, an enterotomy occurred with minimal spillage, and it was repaired laparoscopically with 2-0 mersilk. The above patient tolerated oral feeds by day two (2) post operatively and was discharged on day three (3) post operatively.

The mean operative time was 90 minutes (Range 64-120). The eldest patient from this case series developed pneumonia seven days after being discharged from hospital. There were no mortalities and no other morbidity. Complications are summarized in Table 2.

Discussion

There have been a number of guidelines established to assist in evidence-based management of acute SBO. The Bologna Guidelines which was updated in 2013 by the world society of emergency surgery working group on adhesive SBO; sought to give indications for laparoscopy in the management of acute SBO. The Bologna guidelines concluded that laparoscopic adhesiolysis is a safe and feasible alternative to the open approach in experienced hands and selected patients [10]. This conclusion has been echoed by similar guidelines such as Vettoretto et al. consensus conference guidelines [9] and Eastern Association for the Surgery of Trauma practice management guideline for small bowel obstruction [11]. These guidelines are based on a preponderance of Class III evidence. Therefore, to definitively access the benefits and complications of laparoscopic adhesiolysis, prospective randomized studies are required.

As the indications for laparoscopic surgery in the emergency setting continues to expand, it is expected to encompass the surgical management of acute SBO also.

There are several retrospective studies and meta-analysis comparing open and laparoscopic approaches, which have revealed less complications and shorter hospital-stay with the laparoscopic

Table I: Patient characteristics and operative information.

Sex: Age (yr)	Laparoscopic Findings	Procedure
Previous laparotomy [4]		
M: 26	Post appendectomy adhesions: Multiple adhesions to anterior abdominal wall, two restricting bands at distal ileum	Laparoscopic adhesiolysis
F: 17	Post appendectomy + Cecectomy adhesiolysis: Extensive adhesions, single adhesive band	Laparoscopic adhesiolysis Suture closure of enterotomy
F: 48	Post myomectomy adhesions: Adhesions between uterus and SB at sites of myomectomy	Laparoscopic adhesiolysis
M: 30	Post laparotomy adhesions: Multiple adhesions at proximal small bowel	Laparoscopic adhesiolysis
Virgin abdomen [1]		
M: 71	Omental band obstructing jejunum	Laparoscopic adhesiolysis

Table II: Perioperative complications.

	Total
Duration of ileus	
Median (days)	5
Range	2-4
Length of Hospital stay	
Median (days)	5.6
Range	2-7
Access Injury	0
Enterotomy	1
Bleeding	0
Wound Complications	0
Pulmonary Complications	1
Death (30 day mortality)	0

approach [12-15]. It is on this background that we sought to define our experience and outcomes with laparoscopic adhesiolysis in our patient population.

The issue of safety in the laparoscopic management of acute SBO must always be considered. Peritoneal access by using the 'alternative site technique' has been suggested by many authors [2]. In our setting, the use of an optic scope has been proven to be a safe method to gain entry into the peritoneal cavity. Finding the site of obstruction can be difficult if the bowel is severely dilated, or if there are extensive dense adhesions.

Suter et al. defined distended loops of bowel (4 cm) as an absolute contraindication to laparoscopic adhesiolysis [16]. However, we have noted from our experience, that minimal, careful manipulation of the distended bowel while directing our attention to the collapsed bowel, which is much easier to manipulate, and careful sharp dissection of adhesions; allows for safe and efficient adhesiolysis.

Earlier series had a very low threshold for conversion to laparotomy in patients with distended bowel loops and extensive adhesions [13]. This would explain the longer operative time experienced in our series, as these patients had complete definitive treatment laparoscopically.

The surgeon's expertise allowed the conversion rate to be 0%, as the only case of an enterotomy was closed by suturing laparoscopically. Enterotomy is one of the common reasons for conversion in earlier series.

There is presently a prospective, randomized control trial enrolling patients to compare open surgery to laparoscopic adhesiolysis in patients with computed tomography diagnosed adhesive SBO [17]. This trial will provide level 1b evidence for the use of laparoscopy in the management of adhesive SBO, and we look forward to its conclusion.

Conclusion

This series shows that minimally invasive surgery is feasible in patients with acute SBO. Definitive laparoscopic management was possible in all patients with minimal peri-operative morbidity. These findings support laparoscopic surgery as the primary surgical intervention in SBO, once performed by an experienced surgeon.

Conflict of interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and publication of this article.

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Journal of Surgery
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Case Report Open Access

Giant Seminoma in an Undescended Testis Presenting as a Mass in the Right Iliac Fossa

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Abstract

Seminoma in undescended testes may present as right iliac fossa mass. A seminoma in a 49 year old man with ipsilateral undescended testis is presented and relevant literature is reviewed. A 49 year old male presenting with a right iliac fossa mass was admitted to our hospital and initial diagnostic tests followed by abdominal computerized tomography (CT) were performed. Abdominal CT clearly demonstrated the tumor location. He underwent surgery and the tumor was not operable and biopsy was taken. Pathological diagnosis was consistent with classical seminoma. He was referred to oncology clinic after discharge. Tumors of undescended testis can present as a right iliac fossa mass and clinicians must be aware of their existence.

Keywords: Seminoma; Undescended testes; Right iliac fossa mass

Introduction

Germ cell tumors (GCT) of testes can be benign (teratomas) or malignant (seminoma and non-seminoma). GCT most frequently occurs in the gonads, only 2-5% of them arise in extra-gonadal regions such as the mediastinum, retroperitoneum, pineal gland and sacral area [1].

Cryptorchidism carries a higher potential for malignant transformation than normally descended testis. The position of the undescended testis is related to the likelihood of carcinogenesis with intra-abdominal testis having the highest malignant potential. The majorities of undescended testes locates distal to the external inguinal ring and are palpable.

Seminoma is the most frequent carcinoma of the testicle in the fourth decade of life and constitutes 60% to 65% of germ cell neoplasia [2]. Several histopathological characteristics of the tumor have been evaluated and three types of pure seminoma have been described: classic, anaplastic and spermatocytic [3]. We report a patient with seminoma arising in an undescended testis which presented as a palpable mass of right iliac fossa.

Case Presentation

A 29 year old man married with five children, with no known previous complaint presented to the surgical unit, University Charity Teaching Hospital with complaints of abdominal swelling for 4 months. He had been suffering from anorexia, weight loss during last two months. The patient experienced dragging pain in the hypogastrium during the last two months.

On general examination the patient was found to be ill looking and mildly anemic. On local examination an intra-abdominal mass was palpable. The abdominal mass was elongated occupying the whole right iliac fossa and extending into the hypogastrium (12 cm × 8 cm approximately). The margins were ill defined, surface was irregular and consistency was hard. The lump was fixed with underlying structures and not tender. On digital rectal examination rectal mucosa was found to be free without any bulge. On examination of the inguinoscrotal region the left testis was found to be in place but the right testis was absent from the left scrotal sac.

Our provisional diagnosis was malignant tumor of the right intra-abdominal testis.

Investigations showed elevated alkaline phosphatase (5 times the normal) and B-HCG (6 times the normal. Sperm analysis and alpha feto protein were within normal ranges. The CT scan showed a huge solid mass arising from the pelvis with calcification, no liver lesions or para-aortic lymph node enlargement (Figure 1).

On ultrasonographic scanning of whole abdomen the right iliac fossa mass was demonstrated as large complex soft tissue mass (14.7 cm × 10.9 cm) with a hypoechoic oval area at the centre (suggestive of testicular growth). All other investigation reports were insignificant.

Figure 1: Showed huge solid mass arising from the pelvis.

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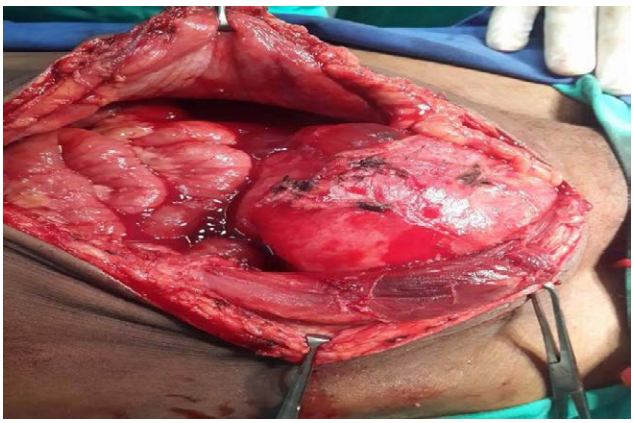

Figure 2: Abdominal mass during exploration.

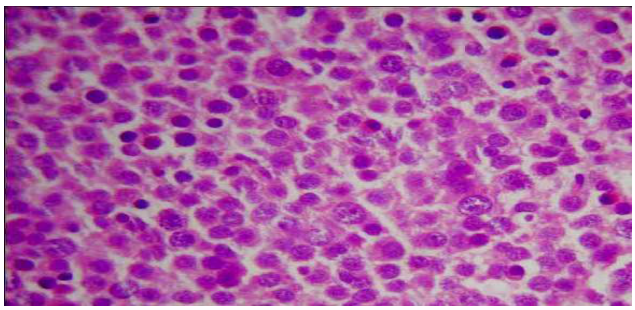

Figure 3: Photomicrograph of intra-abdominal left testicular tumor-seminoma.

We went for laparotomy with lower midline incision and found a huge growth occupying the hypogastrium and the right iliac fossa (Figure 2). The mass was adherent to the greater omentum, the sigmoid colon and the posterior abdominal wall. The mass was inoperable (Figure 2). The postoperative period was uneventful. The histopathological examination of the mass revealed Seminoma of testis (Figure 3). After two weeks the patient was subjected to combination chemotherapy under supervision of oncologist.

Discussion

Cryptorchidism is a common problem in Sudan [4]. It is a known cause of testicular tumor. The position of the undescended testis is related to the likelihood of carcinogenesis with the intra-abdominal location having the highest risk for malignancy. The incidence of testicular tumor is 10 times more in inguinal testes and 50 times more in intra-abdominal testes [5]. The cause of carcinogenesis is still debatable. A high intra-abdominal temperature has been incriminated as the cause of carcinogenesis in the testis [6]. There may be a decrease in the spermatogenesis, Leidig cell abnormality, and delay in the development of the Sertoli cells in the testes leading to infertility. In our case, there was no evidence of sterility due to the testicular malfunction and the patient has four children.

Painless enlargement of the testis is the common mode of presentation in an undescended testis. Rarely, an abdominal testicular tumor can cause acute abdomen, massive abdominal mass, pain, and haematuria because of adjacent visceral infiltration [7-10]. Our patient had no such complication. Dramatic improvements in survival have resulted from the combination of effective diagnostic techniques, improvement in serum tumor markers, effective multi-drug chemotherapeutic regimens and modifications of surgical techniques during last twenty years.

In this particular case, the tumor was classified as Stage I classical seminoma with positive lymphovascular invasion (tunica vasculosa nested tumor cells). Unilateral rapidly enlarging abdominal mass with undescended testis should alert clinicians towards consideration of the possibility of seminoma and initiation of prompt intervention.

Seminomas tumors are very sensitive to chemotherapy and radiotherapy. Nichols recommends primary abdominal radiotherapy for patients with small volume retroperitoneal seminoma (abdominal mass <5 cm) and chemotherapy for patients with larger volume disease [11]. The prognosis is excellent in cases of seminomatous histology with 5-years survival rates >90% achieved with platinum-based chemotherapy. Furthermore, cisplatin-based chemotherapy reduces the risk of metachronous contralateral testicular germ cell tumor (TGCT), which cumulative incidence for patients with unilateral TGCT is 1-5% [12].

In conclusion, the abdominal variant of undescended testis is rare and carries a high risk of malignant transformation to seminoma. Primarily the parents, then the school medical officers and finally the patients himself must be aware of undescended testes and address the problem seriously. An undescended testis, whenever possible, must be brought down into its normal scrotal position within school going age. We think that our patient was presented to us late because he has no problems related to infertility and impotence, and for other social reasons.

Conflict of interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and publication of this article.

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Case Report Open Access

Non Peptic Ulcer Upper Gastrointestinal Bleeding in Patients Treated with Non-Steroidal Anti-inflammatory Drugs for Musculo-Articular Disorders

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Abstract

Introduction: Complications in the evolution of digestive tract benign pathology leads to symptoms: hemorrhagic, occlusive or perforative syndrome.

Method: We present three cases of gastrointestinal (GI) hemorrhage with a different pathology and rarely seen in clinical practice in patients treated with non-steroidal anti-inflammatory drugs for muscular-articular pathology. Cases' presentation: (1) A 47 years old man known with recurrent episodes of upper GI bleeding was admitted for a new massive hemorrhage; the emergency laparotomy revealed a splenic arteriovenous fistula penetrating the Wirsung duct. A splenopancreatectomy was performed with uneventful recovery. (2) A 57 years old woman with chronic anemia, nausea, weight loss and vomiting was admitted for intermittent recurrent episodes of melena. The exploratory laparotomy revealed several jejunal diverticulum with active bleeding; a segmental enterectomy was performed with uneventful recovery. (3) A 24 year old patient was admitted for massive inaugural melena. The upper GI tract endoscopy was negative; due to hemorrhagic shock an emergency exploratory laparotomy was performed and revealed a jejunal GIST. The resection was performed with uneventful recovery. The histo-pathologic exam confirmed a benign GIST.

Conclusions: During Non-Steroidal Anti-inflammatory Drugs (NSAID) therapy, anemia and upper GI bleeding are usually considered as common disorders related with peptic ulcer. However NSAID therapy can hide another more complex causes of bleeding. In majority of cases the bleeding is brutal and surgical approach remains the only alternative to perform the diagnosis and to cure the patient.

Keywords: Gastrointestinal bleeding; Non peptic ulcer gastrointestinal bleeding; Splenic arterio-venous fistula; Small bowel diverticulosis; Gastrointestinal stromal tumor; GIST; Splenopancreatectomy; Enterectomy

Introducere

Evoluția patologiei benigne a sistemului digestiv este în cele mai multe cazuri, fie asimptomatică, fie oligosimptomatică. Apariția complicațiilor însă generează simptome hemoragice , ocluzive sau perforative. Prezentăm trei cazuri de hemoragie digestivă având o patologie diferită și rar întâlnită în practica medicală: fistula splenică arteriovenoasă, diverticulită jejunală și tumoră stromală jejunală hemoragică. Fistula splenică arteriovenoasă trebuie suspicionată în prezența hipertensiunii portale fără asociere de boală cronică hepatică [1]. Complicația cea mai frecventă este hemoragia variceală, însă în cazul nostru cauza hemoragiei a fost erodarea porțiunii proximale a canalului Wirsung de la nivelul cozii pancreasului. Apariția hemoragiilor digestive inferioare în cadrul evoluțiilor tumorilor stromale gastrointestinale și a diverticulitei jejunoileale nu este un fapt neobișnuit, însă raritatea acestei patologii în practica medicală fac ca aceste sângerări să fie greu de diagnosticat preoperator, existând doar o suspiciune prin excluderea altor cauze.

Prezentarea Cazurilor

Primul caz este reprezentat de către un pacient în vârstă de 47 de ani, cunoscut cu internări repetate în servicii chirurgicale și gastroenterologie, pentru episoade hemoragice exteriorizate prin scaune melenice, cu un răsunet mai mult sau mai puțin accentuat asupra stării generale. De asemenea, pacientul este cunoscut cu tratament cronic cu anti-inflamatorii non-steroidiene (AINS) pentru o leziune la nivelul ligamentului încrucișat anterior al genunchiului stâng. Examinările gastroscopice au evidențiat prezența unor varice esofagiene de grad I, fără stigmate de sângerare și prezența de sânge digerat mai ales la nivelul duodenului. Examenele ecografice pun în evidență o splenomegalie moderată, în rest fără modificări la nivelul parenchimului hepatic. Datele de laborator indică o anemie feriprivă. După fiecare episod bolnavul a fost externat cu indicație de tratament anti-secretor și marțial pentru corectarea anemiei, cu evoluții temporar favorabile. În cadrul ultimei internări bolnavul prezintă brusc un episod hemoragic sever cu scaune melenice care evoluează spre șoc hemoragic și impune intervenția chirurgicală de urgență. Intraoperator se decelează un stomac aparent indemn și prezența abundentă de sânge în primele anse jejunale. Se practică o antroduodenotomie longitudinală și se constată exteriorizarea de sânge proaspăt prin ampula duodenală mare. Se explorează manual ficatul, căile biliare extrahepatice și pancreasul și se depistează o formațiune tumorală la nivelul cozii pancreasului. După eliminarea aderențelor perilezionale se constată semne de hipertensiune portală sectorială și o dilatare anormală a venei splenice cu caracter pulsatil datorită unei fistule arterio-venoase splenice care înglobează și coada pancreasului având comunicare cu canalul Wirsung; „testul" terapeutic per-operator, întreruperea fluxului sangvin care alimentează fistula, determină dispariția exteriorizării de sânge transpapilar. S-a practicat deci splenopancreatectomia caudală

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şi, bineînţeles, sutura antroduodenotomiei. Evoluţia postoperatoire a fost favorabilă pacientul fiind externat în ziua a 6-a postoperator; examenul histopatologic a confirmat fistula splenică arterio-venoasă, cu erodarea canalului Wirsung.

Al doilea caz este reprezentat de o pacientă cu epicondilită dreaptă, în vârstă de 57 de ani, aflată la prima internare în Clinica Chirurgie II, prezentând dureri abdominale difuze, scădere ponderală, episoade intermitente de scaune melenice. La examenul clinic se constată o paloare mucotegumentară. Gastroscopia şi colonoscopia exclud o eventuala patologie cu potenţial hemoragic la acest nivel, însă cu evidenţierea de sânge digerat exteriorizat prin ileonul terminal, ceea ce ridică suspiciunea unei tumori la nivelul intestinului subţire. Datele de laborator indică semnele unei anemii post-hemoragice. Cu diagnosticul de excludere, tumoră jejunală sau ileală, se intervine chirurgical şi se constată mai mulţi diverticuli pe prima porţiune a jejunului dintre care unul chiar la nivelul unghiului duodeno-jejunal, de dimensiuni care variază între 5 şi 35 mm localizaţi, în vecinătatea inserţiei mezenterului sau dezvoltaţi chiar între foiţele peritoneale ale mezenterului (Figura 1). S-a practicat rezectie segmentară de jejun cu anastomoză duodeno-jejunală termino-terminală. Evoluţia a fost favorabilă cu externare în a 7-a zi post-operator. Examenul histopatologic a confirmat diverticulii jejunali complicaţi cu diverticulită.

Al treilea caz este reprezentat de un pacient 24 de ani, cu leziune de menisc la nivelul genunchiului drept, cu un prim episod de scaune melenice. Examenul gastroscopic, este negativ, cu excepţia unor eroziuni antrale. La două ore după efectuarea gastroscopiei şi la 5 ore de la internare bolnavul prezintă brusc semnele şocului hemoragic cu emisie de melenă masivă. Tabloul clinic sever, nu permite continuarea altor investigaţii şi se intervine chirugical prin laparotomie mediană, constatându-se prezenţa sângelui în interiorul anselor intestinale şi absenţa lui în stomac. Explorarea minuţioasă a intestinului subţire evidenţiază o formaţiune tumorală rotund-ovalară cu diametru de 15 mm la aproximativ 5 cm de unghiul Treitz (Figura 2). Se practică enterotomie cu excizia formaţiunii tumorale, urmată de sutură. Macroscopic apare ca o formaţiune dezvoltată submucos dar cu erodarea mucoasei şi cu hemoragie activă pulsatilă în centrul tumorii. Se trimite piesa excizată la examenul histopatologic extemporaneu care confirmă caracterul benign al tumorii. Examenul histopatologic evidenţiază o tumoră stromală gastrointestinală (Gastrointestinal Stromal Tumor, GIST) fără grad de malignitate. Bolnavul a fost externat în ziua 7 postoperator.

Discuţii

Sângerările de la nivelul intestinului subţire reprezintă 3-5% din totalul sângerărilor gastrointestinale. Cele mai frecvente cauze de hemoragie de la acest nivel sunt angiodisplaziile, tumorile benigne şi maligne, boala Crohn şi diverticulul Meckel [1,2].

Figura 1: Diverticuloza jejunală - aspect intraoperator.

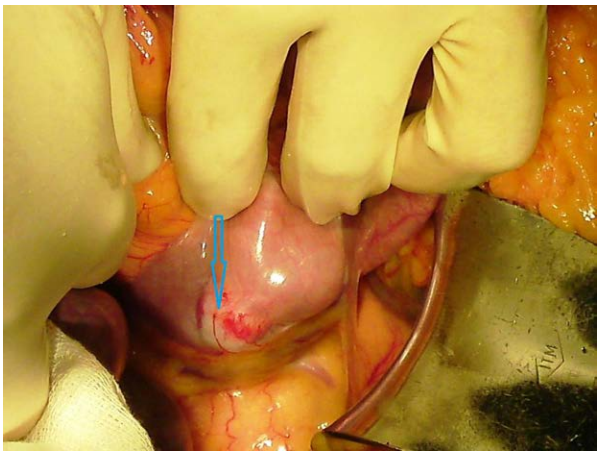

Figura 2: Localizarea tumorii jejunale în apropierea unghiului Treitz.

Artera splenică reprezintă a treia localizare anevrismală abdominală, după aorta infra-renală şi artera iliacă [1]. Formarea anevrismului de arteră splenică se bazează pe incompetenţa structurală a ţesutului conjunctiv arterial care asigură integritatea lumenului. Ca factori de risc includ asocierea hipertensiunii portale, tulburări ale ţesutului conjunctiv, anomalii congenitale, traume şi infecţii. Spre deosebire de alte anevrisme viscerale ateroscleroza nu joacă un rol important în dilatarea anevrismală a arterei splenice [2,3]. În cazul nostru pacientul prezintă un istoric cert de traumatism abdominal pentru care a fost spitalizat dar fără intervenţie chirurgicală. Principala complicaţie a fistulei splenice arteriovenoase (FSAV) este ruptura şi revărsarea sangvină în cavitatea peritoneală, tractul digestiv prin penetrarea intestinului subţire sau gros sau în canalul Wirsung cu fenomene de hemoragie digestivă superioară cum a fost şi în cazul nostru. Rupturile pot apărea şi spontan, dar de cel mai multe ori sunt traumatice [iatrogenă sau accidental], sau chiar infecţioase [1,3]. Pentru o lunga perioada FSAV rămâne asimptomatică, timp în care se produc modificări hemodinamice din cauza şuntului arterio-venos care conduce la o creştere bruscă a presiunii in vena portă. Procesul de apariţie a hipertensiunii portale se desfăşoară mult mai rapid decât în boala hepatică cronică [2]. Profilul clinic al FSAV constă, în principal în dureri abdominale, sângerare gastrointestinală şi diaree. Simptomatologia se datorează creşterii bruşte a fluxului venos mezenteric [2,3]. Ecografie abdominală Doppler color este de prima intenţie în cazul suspicionării unei FSAV care poate pune în evidenţă splenomegalie, excluderea modificărilor de tip cirotic la nivel hepatic şi prezenta fluxului aberant la nivelul venei splenice. Investigaţia de elecţie este însă arteriografia selectivă celiacă sau splenică. Metoda localizează cu precizie aria de vascularizaţie anormală şi rasunetul presiunii arteriale în sistemul portal. Este recomandată în cazurile de apariţie bruscă a hipertensiunii portale şi absenţa unei boli hepatice cronice [1,4]. Odată ce diagnosticul este bine stabilit intervenţia chirurgicală este obligatorie pentru a evita o eventuala evoluţie nefavorabilă cu complicaţii hemoragice care vor afecta negativ prognosticul. În mod tradiţional rezecţia chirurgicală clasică sau laparoscopică de obicei cu splenectomie este tratamentul cel mai des utilizat [4]. Metodele endovasculare minim invazive câştigă teren fiind asociate cu un risc mai scăzut, dar sunt greu de realizat tehnic datorita tortuozităţii arterei splenice [5].

Diverticuloza dobândită jejunoileală se caracterizează prin hernierea mucoasei şi submucoasei prin stratul muscular al peretelui intestinului (diverticuli falşi), de obicei la nivelul inserţiei mezenterului

pe intestin. Diverticulii dobândiţi sunt de obicei multiplii, în contrast cu diverticulului Meckel congenital-diverticul adevărat(prezenţa tuturor straturilor intestinale) şi tind să fie mai mari şi în mai mare număr la nivelul jejunului proximal , mai mici şi mai puţini la nivelul ileonului [6]. Coexistenţa altor diverticuli se întâlneşte la nivelul colonului în 20-70%, duodenului în 10-40%, esofagului şi stomacului în 2% din cazuri şi poate indica etiologia comună asociată [7]. În ceea ce priveşte etiologia diverticulilor jejunoileali,ipotezele actuale se concentrează pe anomalii în musculatura netedă sau în plexul mienteric. Evaluarea probelor jejunale în microscopia electronică a demonstrat că aceste anomalii sunt de trei tipuri: fibroză şi număr scăzut de celule musculare normale, care se asociază cu boli de sistem, fibroză şi degenerescenţa celulele musculare netede, care sugerează o miopatie viscerală şi degenerescenţa neuronală şi axonală care indică o neuropatie. Aceste anomalii conduc la denaturarea contracţiilor musculare netede şi creşterea presiunii intraluminale. Rezultatul este hernierea mucoasei si submucoasei prin zonele de slabă rezistenţă aflate la nivelul inserţiei mezenterului pe peretele intestinului [6-10]. De obicei, boala este asimptomatică până când apar complicaţii. Uneori bolnavul poate prezenta chiar în absenţa complicaţiilor dureri abdominale difuze, cronice, meteorism postprandial. Complicaţiile includ diverticulita, perforaţia şi hemoragia. Diverticulita, cu sau fără perforaţie sau abces apare la aproximativ 2-6% din cazuri [7,9]. Dintre explorările imagistice tomografia computerizată (CT) poate vizualiza localizarea leziunilor inflamatorii, cum ar fi un abces. Endoscopia (capsula endoscopică şi enteroscopia cu dublu-balon) este extrem de utilă în diagnosticul bolii diverticulare, însă utilizarea ei în cazurile acute este contraindicată [8]. Hemoragia apare pe fondul diverticulitei cronice şi de obicei nu este gravă, dar prezintă un caracter cronic, anemiind bolnavul, cum a fost şi în cazul bolnavei prezentate. Endoscopia superioară şi inferioară sunt utile în diagnosticul patologiei asociate sau coexistenţa altor diverticuli. Diagnosticul este deci, de obicei unul de excludere şi rareori preoperator. Odată luată decizia de explorare chirurgicală a cavităţii peritoneale, laparoscopia este foarte utilă în evaluarea pacientilor fără complicaţii şi se evită o eventuală laparotomie dacă nu este indicată. În prezenţa complicaţiilor constatate laparoscopic intraoperator, cum ar fi perforaţia, abcesul şi obstrucţia mecanică este necesară laparotomia cu rezecţia intestinului afectat [10,11].

Tumorile stromale gastrointestinale (GIST) sunt rare, constituind 1-3% din totalul neoplasmelor gastrointestinale [12]. Examinările electronomicroscopice şi imunohistochimice au clasificat tumorile mezenchimale gastrointestinale în: tumori stromale, leiomioame, schwannoame [13]. GIST apar la bolnavii de vârstă medie şi la persoane între 50 - 70 ani şi foarte rar se întâlnesc la copii. Repartiţia pe sexe este aproape egală [12,14]. Vârsta pacientului prezentat a fost de 24 de ani în momentul diagnosticării tumorii. Tumorile stromale sunt bine delimitate, fără capsulă, pe secţiune aspectul fiind cărnos, adeseori cu degenerescenţă chistică sau cu necroză [13]. Exulceraţia mucoasei este frecventă, ca şi în cazul prezentat, manifestată prin hemoragie digestivă. Invazia seroasei organului sau a epiplonului de către tumoră pledează pentru malignitate. Diagnosticul preoperator se poate stabili prin endoscopie, ultrasonografie endoscopică şi puncţie ghidată prin ultrasonografie endoscopică [14,15]. În majoritatea cazurilor însă, diagnosticul de certitudine este elucidat postoperator. În multe studii este demonstrat faptul că localizarea tumorii este determinantă pentru evoluţia ulterioară: tumorile localizate pe intestinul subţire au caracter mai agresiv decât cele cu localizare la nivelul stomacului. Clasificarea tumorilor stromale după agresivitate în grupe cu risc foarte scăzut, scăzut, intermediar şi crescut, folosită de Fletcher, este acceptată de majoritatea autorilor ca fiind mai elocventă faţă de clasificarea în malign şi benign [14,16]. În privinţa tratamentului chirurgical nu există un consens, unii autori recomandă extirparea tumorii cu margini libere de 2 cm, iar alţii recomandă exereza largă cu limfadenectomie şi omentectomie [15]. Necesitatea limfadenectomiei este pusă sub semnul întrebării, datorită incidenţei scăzute a diseminării ganglionare a tumorilor stromale gastrointestinale [14]. În tratamentul recidivelor şi metastazelor, un rol important îl ocupă inhibitorul de tiroxikinază-imatinib mesylate (Glivec®) [15].

Patologia musculoarticulara dispune de diagnostice din ce in ce mai precise odata cu utilizarea sondelor ecografice dedicate, care, în mâna unui ecografist experimentat, pot egala fiabilitatea examenului RMN [17]. Odată diagnosticul precizat, terapia antinflamatorie este de prima linie alături de proceduri fizioterapeutice şi de gimnastică medicală. Tratamentul cu AINS poate fi elementul fie declanşator, fie de „ascundere" al unei hemoragii digestive. În cazurile prezentate, tratamentul cu AINS a determinat focalizarea examenelor şi a managementului spre o afecţiune de tip ulcer peptic / gastrită, iar cauza reală a hemoragiei a fost o „surpriză" intra-operatorie. Tratamentul cu AINS a fost întrerupt în post-operator, afecţiunile musculo-articulare fiind tratate in secţia de specialitate

Concluzii

In majoritatea cazurilor, patologia benignă a intestinului subţire rămâne silenţioasă până la apariţia complicaţiilor. Hemoragia prezintă un caracter acut, cu semnele şocului hemoragic, sau cronic. Indiferent de natura patologiei, tratamentul chirurgical este singurul care asigură hemostaza şi vindecarea pacientului.

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Conflict de interese

Autorii nu declară nici un conflict de interese.

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Journal of Surgery
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Case Report Open Access

Peptic Perforation of the 4th Duodenal Segment: Case Report

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Abstract

Introduction: Even if the prevalence of peptic ulcer disease has decreased in the last years, duodenal perforation remains a life threatening complication. The duodenum is the second most common site of gastrointestinal perforations after the colon and perforation of the 4th portion is very rare.

Case presentation: A 67-yers-old man was admitted to the emergency department of the Annecy Hospital with intense abdominal pain, vomiting and no transit for the last 24 hours. The laboratory count showed an inflammatory syndrome. A CT scan revealed free air and fluid near the Treitz's angle. An exploratory laparotomy was performed that revealed a perforation of the forth portion of the duodenum. A duodenal resection with duodeno-jejunal anastomosis was performed.

Discussions: Peptic ulcer disease is a common disease and the perforation is one of its most life threatening complications. The localization of the DP on the forth segment of the duodenum is very unusual. The most frequent localization of DP is the first duodenal segment. Abdominal CT scan is the most sensitive radiological exam if there is suspicion of a DP. A Zollinger-Ellison syndrome must be taken into count. Peritonitis is an indication for immediate laparoscopy or laparotomy, taking into account the patient's condition. Despite the successful medication therapy and the progress in treatment of duodenal ulcer, perforation remains a serious complication, requiring an emergency surgical treatment.

Conclusion: Duodenal perforation of the fourth portion is an extremely rare complication of the peptic ulcer disease and the surgery is the primary modality of treatment.

Keywords: Peptic ulcer; Perforation; Duodenum; Duodenal resection

Introduction

The incidence and prevalence of uncomplicated peptic ulcer disease (PUD) have decreased in the last years, especially because of the efficacy of treatment to eradicate Helicobacter pylori (HP) resulting a decreasing number of duodenal perforations (DP).

If an imbalance between the aggressive and protective factors occurs of the gastric mucosa, then the PUD may occur and eventually its complications**.** Most ulcers are associated with an infection by Helicobacter pylori (HP), AINS or stress [1]. Normally mucosal erosions should be equal to or exceed 0.5 cm deep and 3 mm wide to produce a duodenal perforation**.**

The duodenum is the second most common site for a digestive tract perforation after the colon. Duodenal ulcer perforations are 2 to 3 times more common than gastric ulcer perforations. Four million people worldwide are affected annually by PUD. About 10 to 20% of these patients will encounter complications, and 2% of the ulcers will perforate**.** The annual incidence of perforated ulcers ranges from 3.77 to 14 cases per 100,000 individuals. The peak of age is between 40 to 60 years [1-3].

The perforation is often the first clinical sign of PUD. The perforation site usually involves the anterior wall of the duodenal bulb (60%), although it might occur in the gastric antrum (20%) or in the gastric lesser curvature (20%) [2,4].

The geographic variations of the risk factors of PUD contributed to a decreased prevalence of the disease in West. The highest mortality of the disease occurs in Japan and Portugal, the lowest one in Canada and United States. Mortality for duodenal ulcer complications is high in Scotland, England, Italy and low in Belgium and France and also in the Third World countries [1].

Case Presentation

A 67-year-old male was admitted to the emergency department of the Annecy Hospital, France, with intense abdominal pain, vomiting and no transit for the last 24 hours. His past medical history was no significant.

On arrival his vital signs showed auricular temperature of 36.5°C, heart rate of 108 bpm and blood pressure of 106/66 mmHg. The physical exam revealed generalized abdominal voluntary guarding and rebound tenderness. Rectal examination did not reveal the presence of blood or melena, but the patient referred episodes of diarrhea with blood during the last 48 hours.

Laboratory data showed leukocytosis (12,200/mm^3) with neutrophils at 9,750/mm^3.

The CT-scan showed free air localized in front of the fourth duodenal segment, near the Treitz angle suggesting a duodenal perforation. A small quantity of liquid was found between the left colon and the abdominal wall (Figure 1).

An emergency laparotomy was performed and revealed a

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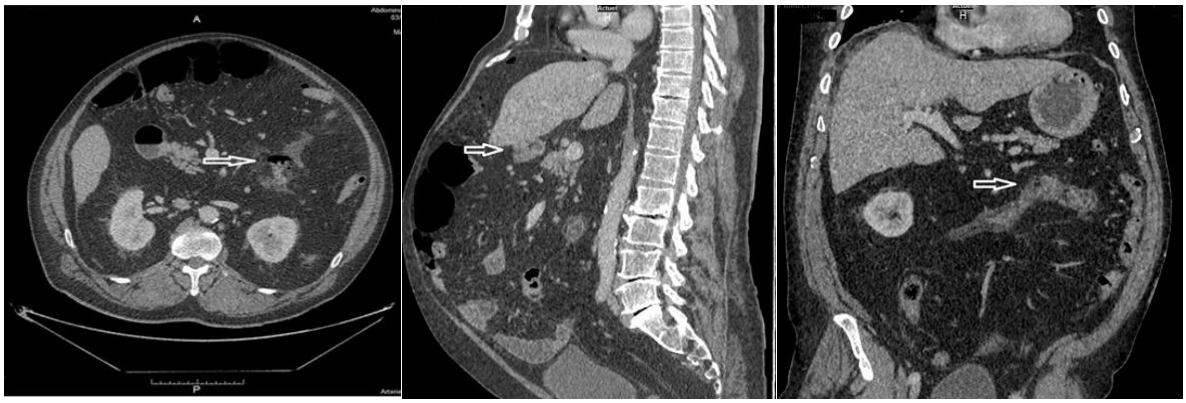

Figure 1: CT scan - free air localized in front of the fourth duodenal segment, near the Treitz angle suggestive for a duodenal perforation.

perforation of the fourth segment of the duodenum, 2 cm proximal to the Treitz angle associated to a localized peritonitis and multiple inflammatory false membranes. The Treitz angle was mobilized and a segmental resection of about 5 cm of duodenum with end to end duodeno-jejunal anastomosis was performed. An extensive peritoneal lavage was also completed. No drain was left in place. A broad-spectrum antibiotic therapy was initiated.

The patient's postoperative course was uneventful. The patient resumed oral intake on the 4-th postoperative day and was slowly progressed to soft diet. He was discharged from the hospital on the 13th post-operative day. The pathological exam confirmed the peptic duodenal perforation.

Discussion

The physical examination may find the patient in intense pain. The abdominal exam may found board-like rigidity of the abdominal wall if patient arrives in the phase of chemical peritonitis (0-6 hours). Hypotension, tachycardia or high fever are signs of gravity.

In the natural evolution if the patient awaits, the pain may improve because of the dilution of the duodenal contents by the peritoneal exudate but later the signs and symptoms of bacterial peritonitis re-occurs [12,13].

The localization of the DP on the forth segment of the duodenum is very unusual. The most frequent localization of DP is the first duodenal segment. Perforation of the second duodenal portion is very unusual too [14].

CT scan was useful to evoke the diagnosis and precise the site of the perforation in our case.

Abdominal CT scan is the most sensitive radiological exam if there is suspicion of a DP. Usually the findings consist of a thickened bowel wall, mesenteric fat stranding, and an extra luminal collection of air or fluid, retroperitoneal or in the peritoneal cavity [15].

Peritonitis is an indication for immediate laparoscopy or laparotomy, taking into account the patient's condition. An operation should be not be delayed by additional imaging if the patient's in poor clinical condition [16].

We took into count the possibility of Zollinger-Ellison syndrome (ZES). ZES or gastrinoma is a neuroendocrine tumor of the pancreas or duodenum characterized by the triad comprising usually striking gastric acid hyper-secretion, severe ulcer disease and non-beta islet cell tumors of the pancreas [23,24]. The increased secretion on the gastrin can result in a more severe or complicated peptic ulcer disease than for the patients with idiopathic ulceration. The annual incidence is estimated at 0.5 per million [21,22] and the majority of patients are diagnosed between 20 and 50 years of age [25-27]. In our case the levels of gastrin and chromogranin A were normal. No Octreoscan was made.

Laparoscopic repair of DP is the golden-standard treatment. There is still meta-analysis who not support favorable outcomes for minimally invasive treatment of PPU and sustain the open surgery [17].

In this case laparotomy allowed the resection with anastomosis and peritoneal lavage and provided good short-term results, but for a "standard" perforation a laparoscopic approach is recommended.

Our therapeutic strategy for a DP of the fourth portion was the mobilization of the Treitz's angle, segmental duodenal resection with a primary duodenum-jejunum anastomosis. No drain was left in place, but this attitude may vary depending on the severity of the peritonitis. A simple suture is recommended with very good results and a low morbidity in perforations of the duodenal bulb, but in this case the surgeon preferred a segmental resection because of the unusual localization of the perforation and the personal preference of the surgeon for the open approach [1].

If the patient's condition doesn't allow a surgical operation or the perforation is delimited by the surrounding organs with mild abdominal symptoms and no evidence of impending sepsis, A non-operative, conservative approach may be considered if the patient condition allows that or he have anesthetic contraindication for the operation. This includes PPI and antibiotic treatment, resuscitation [1] with i.v. fluids, a nasogastric tube and percutaneous drainage of the collections if are present and symptomatic treatment. Also the HP eradication after surgery is required and HAS demonstrated to reduce the ulcer recurrence rate and the risk of hemorrhage [16].

Despite the successful medication therapy and the progress in treatment of duodenal ulcer, perforation remains a serious complication, requiring an emergency surgical treatment [18-20].

Conclusion

Perforation of the 4th duodenal segment is a rare complication of the peptic ulcer disease. The diagnosis is challenging because there are no patognomonical clinical signs the correct pre-operative diagnosis is based on a contrast-enhanced CT scan.

Emergency surgical intervention is recommended. Non-operative management should be reserved for selected patients.

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Conflict of interests

Authors have no conflict of interest to disclose.

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Case Report Open Access

Laparoscopic Drainage of Pancreatic Pseudocysts

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Abstract

Pancreatic pseudocyst is a complication of acute or chronic pancreatitis. The invasive treatment (surgical or endoscopic) is recommended if the pseudocyst persisted for more than 6 weeks after the diagnosis and if the size is larger than 6 cm and is symptomatic. The laparoscopic techniques have been developed to provide the patient with the benefits of a minimal access alternative. The aim of this article is to analyze the postoperative results of the pancreatic pseudocyst laparoscopic surgery. We have accomplished a restrospective study using clinical and para-clinical test results and postoperative results from the patients who have been treated with laparoscopic drainage. We reported a case of a large symptomatic pseudocyst after an attack of gallstone pancreatitis. Laparoscopic cholecystectomy and extern drainage have been performed at the same time with good postoperative results. Starting with year 2000 until year 2015, 85 patients, diagnosed with pancreatic pseudocyst, have been treated in the First Surgical Clinic, University Hospital Saint Spiridon Iasi. From which only 8 have been treated with laparoscopic drainage, encountering no mortality and morbidity. Postoperative hospital stay was 9,41 days. The postoperative drainage duration was between 5 and 21 days with a mean of 7 days. Late postoperative results were good in 6 patients and mediocre in the 2 patients. Conclusion: The laparoscopic technique has all the benefits of the minimal invasive approach. Better postoperative results were seen in cysto-digestive anastomosis using a Endo GIA stapler.

Keywords: Pancreatic Pseudocyst; Laparoscopy; Laparoscopic Drainage;

Introducere

Pseudochistul pancreatic este cea mai importantă complicaţie tardivă a pancreatitei acute care poate să apară şi în cursul evoluţiei pancreatitelor cronice şi a traumatismelor pancreatice accidentale sau operator.

Pseudochistul pancreatic (PP) reprezintă o colecţie lichidiană, delimitată de un perete fibros fără ţesut epitelial, dar care comunica direct sau indirect cu canalele pancreatice [1]. Capsula PP este rezultatul reacţiei inflamatorii a ţesuturilor vecine faţă de acţiunea sucului pancreatic extravazat. Formarea PP are nevoie de cel puţin de 6 săptămâni sau mai mult de la episodul de pancreatita pentru că peretele să se matureze şi să fie posibil o derivaţie internă chisto-digestivă. Conţinutul lichidian al pseudochistului, format din suc pancreatic extravazat, sânge transformat şi chiar sfaceluri, este bogat în enzime pancreatice. PP trebuie diferenţiate de colecţiile lichidiene acute postnecrotice pancreatice şi peripancreatice care apar în primele 3 săptămâni în evoluţia pancreatitelor acute şi care în jumătate din cazuri se resorb şi care nu au un pseudoperete şi de "Walled-off necrosis", termen nou introdus în terminologia colecţiilor acute pancreatice, cunoscut anterior drept sechestru pancreatic, necroza pancreatică delimitată sau necroza infectată [2].

Diagnosticul de certitudine al PP este imagistic. Multe tehnici sunt utile pentru diagnostic, monitorizare şi strategie terapeutică: ecografia transabdominală, ecografie endoscopică, CT şi IRM cu substanţa de contrast, pancreatografia retrogradă endoscopică; tomodensitometria, este indispensabilă.

Netratat, PP care nu s-a remis sub tratament conservator după 6 săptămâni şi este mai mare de 6 cm. conduce spre complicaţii: tulburările de compresiune, ruptura pseudochistului, abcesul şi cea mai gravă, hemoragia prin ruptura unui pseudoanevrism. Aceste complicaţii grăbesc intervenţia chirurgicală, pun probleme de tactică şi cresc morbiditatea şi mortalitatea.

Tratamentul PP se face în echipa multidisciplinară, beneficiind de progresele din radiologia intervenţională, endoscopia intervenţională şi chirurgia minim invazivă.

Tratamentul PP beneficiază de două opţiuni terapeutice distincte: terapia conservatoare medicală însoţită de monitorizarea până la resorbţia completă a pseudochistului şi tratamentul invaziv care constă în drenaj percutan, eco- sau CT-ghidat, drenaj endoscopic, drenaj chirurgical extern sau intern, clasic, laparoscopic sau rezecţie pancreatică, fiecare cu indicaţii bine codificate.

Laparoscopia şi-a făcut loc în arsenalul terapeutic datorită avantajelor abordului minim invaziv [3]. Prin această metodă se poate realiza drenajul extern sau drenajul intern prin efectuare unei anastomoze chistogastrice transgastric [4] sau exogastric sau unei anastomoze chistojejunale în "Y" tip Roux cu ajutorul staplerului [5,6].

Material şi metodă

Au fost studiate retrospectiv foile de observaţie, protocoalele operatorii ale pacienţilor diagnosticaţi cu pseudochist postnecrotic de pancreas din Clinica I Chirurgie "Tănpsescu-Butureanu" din cadrul Spitalului Clinic de Urgenţă "Sf. Spiridon" Iaşi, în perioada 01.01.2000 – 30.06.2015, completând o fisă tip . Am identificat cazurile operate prin abord laparoscopic şi am analizat rezultatele imediate şi la distanţă.

Rezultate

În perioada de studiu în Clinica I Chirurgie "Tănăsescu-Buţureanu" Iaşi au fost internaţi şi trataţi invaziv 85 de bolnavi cu PK pancreatic: drenaj extern chirurgical (40%), drenaj extern laparoscopic (9.4%),

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drenaj extern percutan (7.1%), chisto-jejuno-anastomoză (31.8%), chisto-gastro-anastomoză (8.2%), splenopancreatectomie caudală (2.4%), duodeno pancreatectomie cefalică (1.2%).

Drenajul extern laparoscopic a fost realizat la 8 bolnavi din lotul studiat, în condiţii elective (7 cazuri). Etiologia pseudochistului a fost colecisto-pancreatită acută în 4 cazuri, situaţie în care colecistectomia laparoscopică s-a efectuat concomitent cu abordul pseudochistului, de obicei nematurat.

Intervalul mediu de timp dintre episodul pancreatic acut şi diagnosticul pseudochistului a fost de 5 luni. Jumătate din pseudochisturile drenate laparoscopic au fost complicate cu stare generală mediocră la internare: astenie (n=4, 50%), durere (n=8, 100%), dispepsie (n=8, 100%), sindrom enzimatic (n=5, 62.5%), sindrom inflamator (n=5, 62.5%).

Topografia chisturilor drenate laparoscopic, toate unice, a fost jumate pe capul pancreasului, jumătate pe corp-coadă. Abordul pseudochisturilor pancreatice s-a făcut submezocolic, chistul fiind exteriorizat prin mezocolonul transvers.

Dimensiunile chistului au fost între 6 şi 10 în 7 cazuri şi peste 15 cm într-un singur caz, conţinutul fiind tulbure în 5 cazuri, cu detritusuri în 4 cazuri; Peretele chistului a fost subţire sau imatur în 7 cazuri (Figura 1).

În câte 3 cazuri am întâlnit pleurezie enzimatică pe partea stângă şi ascită. Într-un caz s-a identificat o comunicare cu canalul Wirsung, fapt ce a prelungit drenajul până la 14 zile.

Într-un caz bolnavul era obez, abordul laparoscopic având avantaje certe faţă de abordul clasic. Abordul laparoscopic nu a înregistrat decese şi s-a însoţit de rezultate bune în 6 cazuri şi mediocre în 2 cazuri, ultimele determinate de persistenţa sindromul dispeptic (3 cazuri) şi a diabetului zaharat (1 caz).

Durata menţinerii tubului de dren a fost între 15 şi 21 de zile cu o medie de 7 zile, iar cantitatea medie de lichid exteririzat zilnic a fost de 40 ml, diminuând progresiv.

Tehnica are toate avantajele abordului minim invaziv, în acelaşi timp permite efectuarea şi altor tipuri de intervenţii de tipul anastomozelor chisto-gastrice sau chisto jejunale cu staplerul şi abordul concomitent asupra cailor biliare în caz de litiază veziculară coexistentă (Figura 2).

Prezentăm în continuare cazul pacientei L.M. în vârstă de 22 ani care se internează în Clinica I Chirurgie Iaşi cu astenie, vărsături, dureri epigastrice şi în hipocondru drept cu iradiere posterioară. Pacientă, cunoscută cu microlitiază biliară, a fost diagnosticată cu colecisto-pancreatită acută, în urmă cu 2 luni, apărută postpartum şi tratată în alt serviciu conservator.

Bolnavă, cu stare generală influenţată, are o înălţime de 156 cm şi 53 kg. Examenul local evidenţiază un abdomen mărit de volum, mobil cu mişcările respiratorii, dureros spontan şi la palpare în epigastru şi hipocondru drept cu o formaţiune de consistenţă chistică în mezogastru de de 15 cm în diametru, fixă.. Manevra Murphy este pozitivă. Clinic se descoperă şi o artrită la genunchiul stâng.

Probele biologice evidenţiază hemoglobina de 10 g/dL, hematocrit 30,9%, rezerva alcalină 30 mmoli/L, proteinemie 62 g/L, bilirubinemie direct 0.39 mg/dL, fosfataza alcalină 111 UI/L, lipaza 91 UI/L.

Ecografia abdominală arată o colecţie lichidiană peripancreatică de 145 x 122 x 112 mm, neomogenă cu detritusuri în interior. Colecistul este voluminos cu perete edematos şi conţine 6 calculi de 3-5 mm; coledocul este nedilatat.

După o pregătire preoperatorie de 7 zile ce conduce la ameliorarea stării generale şi a datelor biologice, se intervine chirurgical prin abord laparoscopic. Se găseşte un pseudochist gigant, corporeal, care împinge anterior stomacul şi în jos colonul transvers, care se exteriorizează în rădăcina mezocolonului transvers, între unghiul duodeno-jejunal şi vasele colice mijlocii; peretele este subţire, peritoneul prezintă infiltrat edematos (Figura 3).

Colecistul este mărit de volum cu aderente periveziculare cu edem important în pediculul biliar. Se aspira conţinutul ciocolatiu al pseudochistului pancreatic, evacuându-se cc 1 L de lichid, se drenează cu tub şi se practică colicistectomie retrogradă laparoscopică şi drenajul cavităţii peritoneale.

Evoluţia postoperatorie este favorabilă. Monitorizarea ecografică a cavităţii PP arată micşorarea cavităţii cu menţinerea unei colecţii lichidiene de 3 cm corporeo-caudală şi cu absenţa revărsatului lichidian în spaţiul Douglas şi Morrison.

Bolnava se externează a 19-a zi cu tubul de dren plasat în cavitatea pseudochistului, tub care este suprimat la o lună postoperator. Pacienta este controlată după 10 luni clinic, biologic şi ecografic, înregistrându-se un rezultat bun.

Discuţii

Terapia conservatoare se adresează PP necomplicate, asimptomatice cu vechime sub 6 săptămâni şi dimensiuni sub 6 cm. Resorbţia spontană a pseudochistului este posibilă până în 85% din cazuri. Ea este . depedentă de dimensiuni, vârsta pseudochistului, grosimea peretelui, etiologie, modificările canalelor pancreatice şi severitatea pancreatitei acute [2].

Cea mai frecventă metoda utilizată în tratamentul PP este drenajul chistului, realizat prin metode de radiologie intervenţională, endoscopic sau chirurgical. Alegerea tipului de intervenţie depinde de dimensiunile pseudochistului,, localizare, prezenţa complicaţiilor şi caracteristicile morfologice ale peretelui. Chirurgia, altă dată metodă de elecţie, şi-a restrâns indicaţiile la pseudochisturile mari, simptomatice, complicate şi în cazul eşecului celorlalte terapii mai puţin invazive. Intervenţia chirurgicală se impune atunci când există cel mai mic dubiu de malignitate. Opţiunile chirurgicale variază între drenajul extern, drenajul intern şi rezecţia chirurgicală.

Drenajul percutan ghidat ecografic sau CT are indicaţii limitate în pseudochisturile imature sau infectate situate caudal la bolnavii taraţi. Înregistrează un număr mare de eşecuri şi recidive şi se poate însoţi de complicaţii: leziuni ale viscerelor vecine chistului, hemoragii (2%), suprainfecţii (9%) şi fistula pancreatică (2%).

Metoda, care a luat avânt în ultima perioadă şi de care noi nu am beneficiat, este drenajul endoscopic care combină avantajele intervenţiilor clasice cu abordul minim invaziv. Aceasta se realizează pe două căi: drenajul transpapilar-transductal în timpul pancreatografiei retrograde endoscopice şi drenajul transmural mai frecvent transgastric sub control eco-endoscopic [7]. Drenajul endoscopic are rezultate imediate şi la distanţă mai bune în comparaţie cu drenajul percutan [8]. Acesta foloseşte stenturi de metal sau plastic trecute transmural pentru drenajul colecţii fluide intrapancreatice [9,10]. Unii autori arată aceeaşi valoare în privinţa rezultatelor a acestei metode cu chistogastrostomia efectuată pe cale chirurgicală [11].

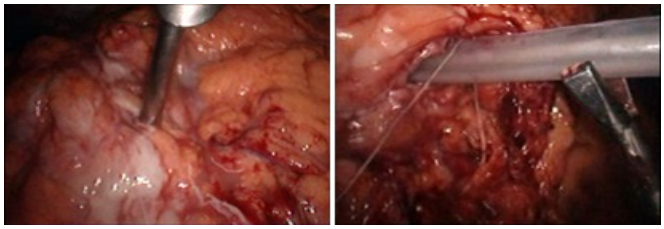

Figura 1: Drenaj extern laparoscopic într-un PP "imatur" fără perete consistent.

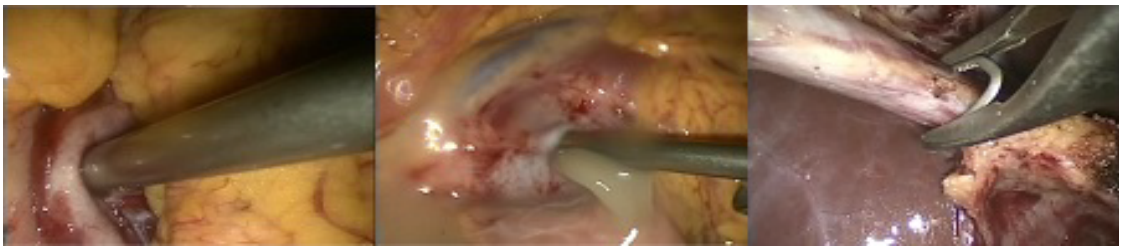

Figura 2: Drenaj extern laparoscopic într-un chist imatur asociat cu colecistectomie laparoscopică.

Figura 3: PP corporeal imatur care bombează în rădăcina mezocolonului transvers.

Drenajul transpapilar este recomandat în pseudochisturile care comunică cu sistemul ductal şi presupune efectuarea unei sfincterotomii endoscopice cu riscurile ei şi instalarea unui cateter de drenaj [12]. Drenajul direct transmural prin peretele gastric constă în crearea unei derivaţii interne între pseudochist şi stomac realizat pe cale endoscopică [13]. Realizarea metodei se face în centre endoscopice avansate care beneficiază de ecografie endoscopică şi de instrumentar pentru endoscopie intervenţională [14]. Metodă este însoţită şi de riscuri, în primul rând hemoragia la secţiunea peretelui gastric şi al pseudochistului [15]. Utilizarea ecoendoscopiei cu sistem Doppler permite vizualizarea vaselor parietale şi efectuarea secţiunii într-o zonă avasculară [16]. Dacă pseudochistul este necomplicat şi conţinutul său este fluid, eficienţa drenajului este foarte bună [17]. Rata de recidivă a pseudochistului după 2 ani este de 16%.

Drenajul laparoscopic are o rată de succes 98,3% mai mare decât a drenajului endoscopic [18]. Complicaţiile sunt mai rare după drenajul intern laparoscopic (4.2%) faţă de 12% în drenajul endoscopic [19]. Rezultatele tardive (la 2 ani după procedură) sunt superioare în privinţa recidivei după drenajul laparoscopic (2.5%) faţă de cel endoscopic (14.4%) [20]. Cea mai frecvent folosită metodă este chistogastro anastomoza [21]. În abordul laparoscopic se poate folosi şi abordul prin orificii naturale (NOTES) printr-un singur trocar [22]. Drenajul laparoscopic poate fi însoţit de colecistectomie laparoscopica în caz de litiază biliară asociată. Drenajul intern laparoscopic are rezultate similare sau superioare cu drenajul intern efectuat pe cale deschisă.

Chirurgia deschisă nu va fi exclusă din arsenalul terapeutic deoarece ea rămâne metodă de referinţă în multe cazuri demonstrându-şi superioritatea prin rezultatele imediate şi tardive [4]. Pe cale deschisă se pot realiza: drenajul extern, drenajul intern chisto-gastric sau chisto-jejunal şi mai ales rezecţia pancreatică de necesitate sau când există cea mai mică suspiciune de malignitate. Chirurgia deschisă este şi ultima metodă la care apelăm în caz de eşec al metodelor minim invazive întâlnit într-un număr important de cazuri. Aşa cum a demonstrat Ito, practicarea chirurgiei deschise după insuccesul metodelor non-operative se însoţeşte de o rată mai mare de incidenţe intraoperatorii de complicaţii postoperatorii şi chiar de mortalitate [4].

Echipa multidisciplinară care analizează cazul şi chiar bolnavul preferă iniţial o metodă nechirurgicală de tipul drenajului extern percutan sau drenajului intern endoscopic. Bolnavul trebuie monitorizat periodic aproape lunar pentru a urmări evoluţia, deoarece în jumătate din cazuri ei vor dezvolta complicaţii sau recidive ale pseudochisturilor, caz în care se apelează tot la o metodă invazivă, dar mai puţin agresivă, cum ar fi abordul laparoscopic. După această metodă urmează o lungă perioadă de monitorizare, pentru că şi acum pot apărea alte complicaţii sau recidive. În ultimă instanţă se apelează la intervenţia clasică de drenaj intern sau rezecţie care rezolvă definitiv cazul cu preţul unor spitalizări repetate şi implicit costuri mai mari şi a unei morbidităţi ridicate.

Concluzii

Drenajul laparoscopic al pseudochistului pancreatic este sigur, se însoţeşte de morbiditate minima şi are aceleaşi rezultate cu drenajul realizat prin chirurgie clasică. Abordul laparoscopic permite tratamentul concomitant al litiazei veziculare, car a generat pancreatita acută. Durata intervenţiei este mai mică, spitalizarea mai scurtă şi avantajul estetic este evident. Drenajul extern are inconvenientul unei fistule pancreatice, care se inchide spontan, motiv pentru care se indică drenajul intern, când peretele pseudochistului permite o anastomoză chisto-digestivă cu endostapler.

Conflict de interese

Autorii nu declară niciun conflict de interese.

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