

Contribution of laparoscopy in young women with abdominal pain

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Summary

This study retrospectively evaluates the laparoscopic treatment of acute abdominal pain in 120 young girls aged 13 to 25 years from 1990 to 1995. Seventy-two (60%) of all operations were emergency procedures. Of these, 55 had functional ovarian cysts, eight patients were operated on for adnexal torsion and nine patients had other adnexal conditions. Ovarian cyst resection was performed in 46 patients and ovarian cyst coagulation in 17 patients. In the rest of the 48 patients (40%), 31 (26.67%) cases had pelvic inflammatory disease, three (2.5%) benign ovarian tumors, two (1.6%) ectopic pregnancies, one (0.8%) a paraovarian cyst and 11 (5%) endometriosis. Laparoscopy appeared to be a safe and effective surgical procedure.

Key words: Laparoscopy; Acute abdominal pain; Adolescent girls.

Introduction

Pain among adolescents has been identified as an important public health problem [1, 2]. Abdominal pain (AP) is a common symptom in female adolescents that may be caused by gastrointestinal or urological conditions, or gynecological problems. Abdominal pain mostly occurs in the child-bearing age group, but is not uncommon in premenarchal girls or women in reproductive age. Recurrent AP represents one of the most frequent syndromes in pediatric pathology of all ages, sometimes raising difficulties in establishing the diagnosis. It is estimated that 15% to 25% of all adolescents suffer from recurrent or chronic pain conditions [3, 4]. One of the most frequent causes of recurrent abdominal pain in young girls is genital disease. Pain that occurs during menstruation may be due to dysmenorrhea or endometriosis. Sometimes it is very difficult to differentiate between the organic and psychological aspects of the pain. Acute pelvic pain often requires prompt diagnosis and treatment. In a patient presenting with acute pelvic pain, it is important to determine the need for immediate supportive measures, the presence of pregnancy or other conditions.

If the patient is pregnant, it is obligatory to determine whether the pregnancy is extrauterine or intrauterine. When abdominal pain is suspect, urgent surgical intervention is indicated, and is usually performed by laparoscopy. This study evaluates retrospectively the pre-operative work-up and the operative treatment of abdominal pain in young girls treated in our institution.

Methods

We report retrospectively the records of 120 adolescent girls who were hospitalized in our institution for acute lower abdominal pain from 1/1/1990-31/12/1995. All patients were submitted to laparoscopy (either diagnostic or operative). The mean age of the patients was 19 (range 13-25) years. Extrauterine pregnancy was diagnosed only in two of the patients with five weeks of amenorrhea and positive pregnancy tests (early pregnancy continuous abdominal pain is unusual). The extrauterine pregnancy was diagnosed by use of serum β -HCG and transvaginal ultrasound (US). All patients were examined at either the surgeon's office or the emergency gynecological room at Aschaffenburg Hospital. Most of the women in this study experienced changes in their bodies - bloating, weight gain around the middle, indigestion, bowel changes, and abdominal pain.

The diagnostic approach of our patients included a detailed gynecologic and obstetric history, and complete physical and gynecologic examination. The next step was to give attention to the characteristics of the pain and presence of any associated symptoms. The presence of associated symptoms, such as nausea, vomiting, diarrhea, dysuria, or abnormal bleeding contributed to the diagnosis. None of the study women were menstruating or in the mid-cycle phase so the pain would not be attributed to ovulation and none had high fever. An important diagnostic sign was pain induced by cervical movement during pelvic examination allowing for mobilization of the uterus to determine whether this induced pain. Vaginal US was performed for the differential diagnosis of certain conditions, such as adnexal masses, uterine myomas, ovary-cyst rupture or bleeding of the corpus luteum. We also used laboratory tests, such as the erythrocyte sedimentation rate, full blood count and urine or cervical mucus culture.

Results

A number the study participants (66.6%) complained of abdominal pain as the most bothersome symptom, (in 10.4% the pain was located in the extremities and in 23% in the back). Of the study patients 86.6% stated that the pain started a few hours before their visit to the hospital

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Table 1. — *Laparoscopic findings.*

Laparoscopy= 120	Patients = 120	
Functional ovarian cyst	55	45.84%
Adnexal torsion	8	6.66%
Other adnexal conditions	9	7.5%
PID	31	25.84%
Benign ovarian tumors	3	2.5%
Ectopic pregnancy	2	1.67%
Paraovarian cyst	1	0.83%
Endometriosis	11	9.16%

emergency room. We performed 28 diagnostic laparoscopies and 92 operative ones. Twenty-nine of the women (24.1%) had undergone at least one prior pelvic or abdominal operation, and ten (8.1%) had undergone more than one. No malignancy was detected in any of the study patients during laparoscopy. In the majority of cases the preoperative diagnosis was confirmed by the laparoscopic findings (Table 1). In 85% of the cases (108 of 120) the preoperative diagnosis was confirmed by diagnostic laparoscopy. Operative laparoscopy provided a definitive diagnosis in 115 of the 120 cases (96%). In 4% (5 of 120) of the cases the final diagnosis was confirmed by histopathological examination and all findings were benign. In 6% (7 of 120) of the remaining cases diagnostic laparoscopy ruled out chronic etiology of the pain instead of acute. In this group the pain had started about three months before and they needed medication. The intraoperative diagnosis was ovarian vessel syndrome. In three patients (2%) of this group a further laparotomy was needed due to bowel-uterine adhesions. Seventy-two (60%) laparoscopies were performed as emergency cases; we found that 55 had functional ovarian cysts, eight adnexal torsion, two hydrosalpinx and seven adnexitis. Unilateral salpingo-oophorectomy was performed in four patients with tuboovarian abscesses and unilateral oophorectomy in two patients with adnexal torsion. Ovarian cyst resection was performed in 46 patients with serous functional cysts of the ovary and ablation of the ovarian cysts in 17 patients with a ruptured bleeding cyst of the ovary. Pelvic inflammatory disease was detected in 31 (26.67%) patients (usually due to chlamydial infection), benign ovarian tumors in three (2.5%) patients, ectopic pregnancy in two (1.6%) patients, endometriosis in 11 (5%) patients and a paraovarian cyst in one (0.8%) patient. The histological diagnosis of benign ovarian tumors and paraovarian cysts was serous ovarian cysts. The ectopic pregnancies were both located in the ampulla. In one of these cases excision of the salpinx was necessary because of tubal rupture. The second case was treated conservatively by salpingotomy because the salpinx was unruptured. Endometriosis (all stages) was established in 11 patients. The distribution of the patients according to the stage of endometriosis was the following: Stage I (6 cases), Stage II (3 cases), Stage III (1 case). In only one case was the disease unilateral (on the left), with an endometrioma 3 x 5 in dimension. Patients in the endometriosis subgroup complained of dysmenorrhea (66.6%), pelvic pain not related to the

menstrual cycle (28.4%) and dyspareunia (5%). The most common location of acute pain was the lower abdomen. In our patients with endometriosis we did not find significant differences in the frequency of dysmenorrhea, pelvic pain or dyspareunia at different stages of the disease. There were no major complications intra- or postoperatively. The average hospitalization time was two days (range 1-4 days), and average blood loss was minimal.

Discussion

Laparoscopy has an important place in the management of several conditions that cause acute pelvic pain in women of reproductive age. In gynecological emergency disorders in young women CT scanning is rarely helpful, and usually a combination of pregnancy testing, clinical examination, transvaginal (TV) and transabdominal (TA) US scanning are utilized to formulate the differential diagnosis. Following these conventional investigations, diagnostic laparoscopy is highly effective and recommended [5-7]. Emergency laparoscopic surgery allows for both the evaluation of acute abdominal pain and the treatment of many common acute abdominal disorders. Laparoscopic surgery has been firmly established as the best intervention in most gynecological emergencies but requires further randomized controlled trials to definitively establish its role in other conditions. In patients with acute pelvic pain laparoscopy should be performed when a tentative clinical diagnosis has been reached on the basis of the history, clinical examination and laboratory findings [8].

Laparoscopic access usually permits conservative and radical treatment of ectopic pregnancy. There is a significant amount of high quality evidence regarding the role of laparoscopic surgery in ectopic pregnancy (EP). Reports from many centers indicate that laparoscopic salpingotomy is successful in > 90% of patients [9-13]. Laparoscopy represents the standard for a prompt and accurate diagnosis of pelvic inflammatory disease. The value of laparoscopy is evident in view of the relative inaccuracy of the clinical diagnosis [14-16]. Laparoscopy with adequate medical therapy has proven successful in the treatment of more than 95% of patients with tuboovarian abscesses [17]. Ovarian cyst torsion is an organ threatening condition that causes patients to present with acute lower abdominal pain. Initially pregnancy must be excluded and a TV US scan should be performed to exclude ovarian cyst formation. If pain fails to subside, laparoscopy should be performed to exclude adnexal torsion. Conservative management by laparoscopy is the best approach when adnexal torsion needs to be carried out promptly to preserve the adnexa [18]. High awareness and timely laparoscopy contributed to the conservation of the adnexa in our young patients. The majority of benign ovarian cysts found during laparoscopy can be treated laparoscopically [19, 20]. In cases of endometriosis the objective of the laparoscopic surgery is to remove as much endometriotic tissue as pos-

sible and to restore the pelvic anatomy to normal conditions. There is no correlation between the severity of symptoms and the stage of disease. Laparoscopy offers the possibility of diagnosis and treatment of the disease at the same time [21, 22]. The laparoscopic management of acute abdominal pain in young women seems to be accurate, safe and effective either for the diagnosis or the treatment [23, 24]. In cases of acute abdominal pain because of gynecological conditions diagnostic laparoscopy usually offers the possibility of treatment.

References

- [1] A. Roth-Isigkeit, U. Thyen, H. Stöven, J. Schwarzenberger, P. Schmucker: "Pain among children and adolescents: restrictions in daily living and triggering factors". *Pediatrics*, 2005, 115, 152.
- [2] Perquin C.W., Hazebroek-Kampschreur A.A., Hunfeld J.A. *et al.*: "Pain in children and adolescents: a common experience". *Pain.*, 2000, 87, 51.
- [3] Roth-Isigkeit A., Raspe H.H., Stöven H., Thyen U., Schmucker P.: "Pain in children and adolescents: results of an exploratory epidemiological study [in German]". *Schmerz.*, 2003, 17, 171.
- [4] Goodman J.E., McGrath P.J.: "The epidemiology of pain in children and adolescents: a review". *Pain.*, 1991, 46, 247.
- [5] Magos A.L., Baumann R., Turnbull A.C.: "Managing gynaecological emergencies with laparoscopy". *Br. Med. J.*, 1989, 299, 371.
- [6] Mikkelsen A.L., Felding C.: "Laparoscopy and ultrasound examination in women with acute pelvic pain". *Gynecol. Obstet. Invest.*, 1990, 30, 162.
- [7] Taylor E.W., Kennedy C.A., Dunham R.H., Bloch J.H.: "Diagnostic laparoscopy in women with acute abdominal pain". *Surg. Laparosc. Endosc.*, 1995, 5, 125.
- [8] Neugebauer E.A., Sauerland S.: "Guidelines for emergency laparoscopy". *World. J. Emerg. Surg.*, 2006, 1, 31.
- [9] H. Fernandez, S. Pauthier, S. Doumère, C. Lelaidier, F. Olivennes, Y. Ville *et al.*: "Ultrasound- guided injection of methotrexate versus laparoscopic salpingotomy in ectopic pregnancy". *Fertil. Steril.*, 1995, 163, 25.
- [10] H. Reich, D.A. Johns, J. De Caprio, F. McGlynn, E. Reich: "Laparoscopic treatment of 109 consecutive ectopic pregnancies". *J. Reprod. Med.*, 1988, 33, 885.
- [11] M. Vermesh, P.D. Silva, G.F. Rosen, A.L. Stein, G.T. Fossum, M.V. Sauer: "Management of unruptured ectopic gestation by linear salpingostomy: a prospective, randomized clinical trial of laparoscopy versus laparotomy". *Obstet. Gynecol.*, 1989, 73, 400.
- [12] A. Zouves, B. Urman, V. Gomel: "Laparoscopic surgical treatment of tubal pregnancy. A safe, effective alternative to laparotomy". *J. Reprod. Med.*, 1992, 37, 205.
- [13] V. Gomel: "For tubal pregnancy, surgical treatment is usually best". *Clin. Obstet. Gynecol.*, 1995, 38, 353.
- [14] H. Buchan, M. Vessey, M. Goldacre, J. Fairweather: "Morbidity following pelvic inflammatory disease". *Br. J. Obstet. Gynaecol.*, 1993, 100, 558.
- [15] S.D. Hillis, R. Joesoef, P.A. Marchbanks, J.N. Wasserheit, W. Cates, L. Werstrom: "Delayed care of pelvic inflammatory disease as a risk factor for impaired fertility". *Am. J. Obstet. Gynecol.*, 1993, 168, 1503.
- [16] J. Sellors, J. Mahony, C. Goldsmith, D. Rath, R. Mander, B. Hunter: "The accuracy of clinical findings and laparoscopy in pelvic inflammatory disease". *Am. J. Obstet. Gynecol.*, 1991, 164, 113.
- [17] R. DeWilde, M. Hesseling: "Tube-preserving diagnostic operative laparoscopy in pyosalpinx". *Gynaecol. Endosc.*, 1995, 4, 105.
- [18] Breech L.L., Hillard P.J.: "Adnexal torsion in pediatric and adolescent girls". *Curr. Opin. Obstet. Gynecol.*, 2005, 17, 483.
- [19] Mais V., Ajossa S., Piras B., Marongiu D., Guerriero S., Melis G.B.: "Treatment of nonendometriotic benign adnexal cysts: a randomized comparison of laparoscopy and laparotomy". *Obstet. Gynecol.*, 1995, 86, 770.
- [20] Yuen P.M., Yu K.M., Yip S.K., Lau W.C., Rogers M.S., Chang A.: "A randomized prospective study of laparoscopy and laparotomy in the management of benign ovarian masses". *Am. J. Obstet. Gynecol.*, 1997, 177, 109.
- [21] T.A. Mahmood, A.A. Templeton, L. Thompson, C. Fraser: "Menstrual symptoms in women with pelvic endometriosis". *Br. J. Obstet. Gynaecol.*, 1991, 98, 558.
- [22] A.A.W. Peters, E. Van Dorst, B. Jellis, B. Van Zuuren, J. Hermans, J.B. Trimpos *et al.*: "A randomized clinical trial to compare two different approaches in women with chronic pelvic pain". *Obstet. Gynecol.*, 1991, 77, 740.
- [23] Warren O., Kinross J., Paraskeva P., Darzi A.: "Emergency laparoscopy - current best practice". *World J. Emerg. Surg.*, 2006, 31, 1, 24.
- [24] Porpora M.G., Gomel V.: "The role of laparoscopy in the management of pelvic pain in women of reproductive age (Review)". *Fertil. Steril.*, 1997, 68, 765.

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