Laparoscopic treatment of ovarian dermoid cysts is a safe procedure

Zulfo Godinjak[1*], Nurija Bilalović[2], Edin Idrizbegović[1]

[1] Obstetrics and Gynaecology Hospital, University Clinical Centre of Sarajevo, Patriotske lige 81, 71000 Sarajevo, Bosnia and Herzegovina.
[2] Department for Clinical Patology and Citology, University Clinical Centre of Sarajevo, Bolnička 25, 71000 Sarajevo, Bosnia and Herzegovina.

Abstract

Experienced laparoscopic surgeons should consider laparoscopy as an alternative to laparotomy in management of ovarian dermoid cysts in selected cases. The aim of this study was to analyze the safety of laparoscopy in ovarian dermoid cysts treatment and risk of chemical peritonitis. We report 63 cases of patients (mean age of 37) with ovarian dermoid cysts originating from the ovary, treated from 2002 to 2010. Most of the patients underwent cysts removal. In 7 patients salpingo-oophorectomy was performed. We used 15 mm trocars for removing specimens. In patients with dermoid cyst rupture peritoneal cavity was washed out thoroughly with Ringer lactate and drained for 24-48 hours. All the material extracted was sent for a histopathology examination. The diagnosis of mature ovarian dermoid cysts was confirmed in 58 (92.63%) of cases and immature ovarian dermoid cysts in 5 (7.37%) cases. Dermoid cysts were composed of tissue developed from three germinative layers in 31 (49%) patients, from two germinative layers in 25 (40%), and in 7 (11%) patients from one germinative layer. No intra or postoperative complications occurred. No signs or symptoms of chemical peritonitis were observed regardless of cystic spillage or not. We conclude that the risk of chemical peritonitis can be minimized when undertaking laparoscopic removal of ovarian dermoid cysts if the peritoneal cavity is washed out thoroughly from spillage of cyst contents. Drainage of peritoneal cavity should be performed in the patients with the ruptured dermoid cysts.

KEY WORDS: laparoscopy, ovarian dermoid cysts, chemical peritonitis

INTRODUCTION

Dermoid cysts present the most common germinative ovarian tumor in women of reproductive age. Transvaginal ultrasound and diagnostic laparoscopy have improved management of ovarian dermoid cysts. Laparoscopy is the standard treatment of ovarian dermoid cysts and provides many advantages over laparotomy. However, laparoscopic approach could result in chemical peritonitis caused by the spilled contents of a ruptured dermoid cyst [1]. In addition to chemical peritonitis, the procedure can be complicated by intraperitoneal dissemination of tumor if the dermoid cyst underwent malignant transformation. Intra-peritoneal spillage of contents from an ovarian dermoid cyst may occur after spontaneous rupture of the cyst; therefore it is very important to act promptly. Histologically, dermoid cysts contain different tissues developed from one or all three germinative layers. The most commonly observed are tumors of ectodermic tissue.

MATERIALS AND METHODS

In this study we present 63 patients in whom we diagnosed ovarian dermoid cysts and treated with laparoscopy in the period from 2002 to 2010. The age of patients was from 20 to 54 years (mean age 37). Preoperatively, tumor marker CA 125 was determined for each patient. All patients underwent transvaginal ultrasonography with Doppler for assessment of ovarian pathology. Cysts measurement ranged from 42 to 96 mm in diameter. Three patients had dermoid cysts on both ovaries. In 56 (88.89%) patients we performed laparoscopic cystectomy, in 7 (11.11%) adnexectomy (salpingo-oophorectomy). Firstly, we evacuated the contents of the cyst to reduce the size of cyst, then we evacuated cyst. We used a trocar of 15 mm diameter for the evacuation of cysts. No endobags were used to remove the cysts from the abdomen. In cases of inadvertent rupture of the dermoid cysts, peritoneal lavage with lactated Ringer's solution was undertaken. A pelvic drain was then placed and left in place for 24-48 hours. Specimens were sent for histopathology analysis and in all patients diagnosis of ovarian dermoid cysts was confirmed. We analyzed

* Corresponding author: Zulfo Godinjak, Obstetrics and Gynaecology Hospital, University Clinical Centre of Sarajevo, Patriotske lige 81, 71000 Sarajevo, Bosnia and Herzegovina
Tel: +38733297000; Fax: +38733441815
E-mail: zulfikar_g@yahoo.com

Submitted: 15 April 2011/ Accepted: 12. October 2011

the operative outcome, complications and possible factors that could lead to the development of chemical peritonitis.

RESULTS

The obtained values of tumor marker CA 125 were within the normal range in all patients. During the laparoscopic surgical procedure the rupture of dermoid cysts occurred in 38 (60.32%) of 56 patients with cystectomy, and in 3 (42.9%) of 7 in whom we performed adnexectomy. There was no statistically significant difference in the incidence of dermoid cysts rupture in relation to the type of laparoscopy surgery. (X^2 = 1003, p=0.421). Out of 63 there were 20 patients (31.75%) with dermoid cyst diameter larger than 60 mm, and in 43 (69.25%) cyst diameter was less than 60 mm. Rupture occurred in 16 (80%) of 20 cysts of where the diameter was greater than 60 mm and in 22 (51.17%) of 43 whose diameter was less than 60 mm. Intraoperative rupture of the cyst was significantly correlated with the size of ovarian dermoid cysts (cyst diameter greater than 6 cm) (X^2 = 8.39, p = 0.004). For all cysts we performed histopathology tests which confirmed that the dermoid cysts were derived from the different germ cell layers, as shown in the Table 1. Dermoid cysts were composed of the tissue that developed from the three germinative layers in 31 (49%) patients, in 25 (40%) from two layers, and in 7(11%) patients from one germinative layer (Figure 1). As it can be seen, the largest number of ovarian dermoid cysts developed from all three types of germinative layers. Mature dermoid cysts were confirmed patho-histologically in 58 patients, and immature dermoid cysts in 5 patients. In our study, no intra or postoperative complications occurred, none case of chemical peritonitis was noted, and there were no malignant transformation of ovarian dermoid cysts. All patients were followed up one year by vaginal ultrasound and there were no cases of cyst recurrence.

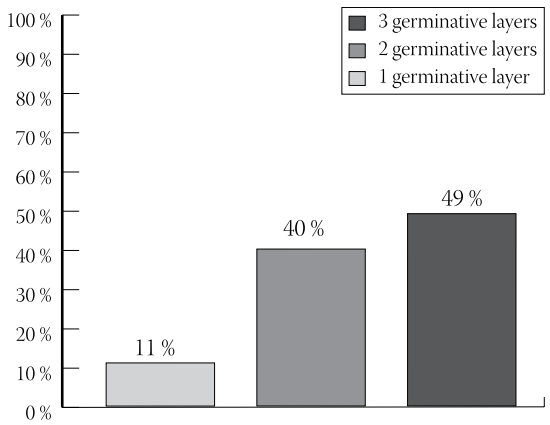

FIGURE 1. Representation of dermoid cysts in relation to the number of germinative layers from which they developed

TABLE 1. Tissue type in ovarian dermoid cysts

Tissue type in dermoid cysts	Number of patients
Formations of flatly layered epithelium with signs of keratosis	62
Sebaceous glands	60
Sweat glands	43
Smooth muscle tissue	44
Cartilage	26
Adipose tissue	44
Hair and hair follicles	50
Cellular connective tissue	57
Glands with cylindrical epithelium	28
Brain tissue	23
Bone tissue	9
Parts of plexus chorioideus	6
Salivary glands	5
Skin	5
Nerves and mature neural tissue	4
Glands of the respiratory type	3
The mucosa of the colon	3
Columnar epithelium of gastric type	2
Ganglion and ganglion cells	2
Gastric mucosa	2
Seromycinosa glands	1
Hyaline connective tissue	1
Parts of a thyroid gland	1
Immature cartilage	5
Immature neural tissue	4
Blood vessels	3

DISCUSSION

One of the theoretical pitfalls of laparoscopy is the assumed high risk for intraoperative cyst rupture during laparoscopy. In order to reduce intraoperative spillage of cystic we performed removal of the specimen through an endoscopic retrieval bag. Removing cysts in an endobag significantly reduced both operating time and spillage [2]. However, controlled intraperitoneal spillage of contents does not increase postoperative morbidity as long as the peritoneal cavity is thoroughly washed [2]. The risk of granulomatous peritonitis can be minimized by undertaking laparoscopic removal of dermoid cysts with the routine intraoperative use of an endoscopic retrieval bag to prevent intraperitoneal spillage of cysts contents [3]. In this study, the endobag was not used. Instead, the contents of the cysts were aspirated following removal of the cyst content via a 15 mm trocar. Spillage of cyst contents occurred in 38 (60.3%) of 56 patients in whom we performed cystectomy and in 3 (42.9%) of 7 in whom we performed salpingo-oophorectomy. None of the patients had intraoperative complications, nor developed chemical peritonitis following the surgery, as reported by certain authors in their studies. During the cysts extraction, minimal spillage occurred in 42,5% of cases and none developed chemical peritonitis [4].

Spillage of cyst content occurred in 66% of cases, no intra or postoperative complications occurred, and none case of chemical peritonitis was noted [5]. Rupture of ovarian dermoid cyst resulting in chemical peritonitis is very rare and may be associated with malignant transformation [6]. There are studies which report on the chemical peritonitis developing after scattering the contents of the cyst. Chemical peritonitis developed after removal of the ovarian dermoid cyst due to scattering of its content despite the use of endobag and thorough irrigation with physiologic fluids [7]. Chemical peritonitis develops also in case of spontaneous rupture of the dermoid cyst. When an ovarian cyst ruptures spontaneously an emergency operation is usually performed and the chemical peritonitis is alleviated by irrigating the abdominal cavity [8]. Some other studies suggest that the spilled contents should be aspirated from the peritoneal cavity as soon as possible since it can cause development of chemical peritonitis. Spilled fluid from ovarian dermoid cysts should be removed as soon as possible from the peritoneal cavity in order to prevent prolonged chemical peritonitis [8]. Is the length of contact between the content of the dermoid cyst and peritoneal cavity a decisive factor leading to the development of chemical peritonitis, or is there another factor? Laparotomy should be considered in case where laparoscopy is not feasible due to the size of the cyst or in case of suspected malignancy. Our study criteria for laparotomy were a high suspicion of malignancy and a cyst larger than 10 cm [9]. It is very important to do a complete preoperative diagnosis and then decide which operative method is to be used- laparoscopy or laparotomy. With careful preoperative screening the rate of laparoscopies for treatment of benign ovarian cysts can be increased [9]. However, careful approach is required due to the possibility of unexpected, very rarely, malignancy in ovarian dermoid cysts. We had no cases with malignant degeneratiaon of ovarian dermoid cyst. One should be aware of the possibility of unexpected malignancy when the decision to manage an ovarian mass laparoscopically is made [10]. Bilateral localization is observed in some 10-15% of cases and the estimated incidence of malignant degeneration is 0.5-1.8% [11]. Cystectomy of ovarian dermoid cysts performed by laparoscopy is associated with higher incidence of intra-abdominal spillage than laparotomy, but this is not associated with increase in morbidity [12].

CONCLUSION

Laparoscopy should be considered as a method of choice for the removal of ovarian dermoid cysts. It should be performed by surgeons with considerable experience in advanced laparoscopic surgery. Experienced laparoscopic surgeons should consider laparoscopy as an alternative to laparotomy in management of ovarian dermoid cysts in selected cases. We concluded that the risk of chemical peritonitis can be minimized when undertaking the laparoscopic removal of ovarian dermoid cysts and if the peritoneal cavity is washed out thoroughly from spillage of cysts contents. In patients whom ovarian dermoid cysts ruptured, the peritoneal cavity should be drained.

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