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Treatment of ovarian dermoid cysts

Place and modalities of operative laparoscopy

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Abstract. The purpose of this study was to discuss the place and the specific modalities of laparoscopic surgery in the management of ovarian dermoid cysts. This retrospective and noncomparative study was carried out in 65 patients who presented dermoid ovarian cyst between January 1986 and December 1990 in our institution. The surgical treatment was performed purely by laparoscopy in 86.2% of the cases (56 patients). The modalities of laparoscopic surgery were as follows: ovariectomy (8 cases; 14.3%), transparietal cystectomy (4 cases; 7.1%) and intraperitoneal cystectomy (44 cases; 78.6%). In 15 cases (15/44 = 34%) the intraperitoneal cystectomy was carried out without opening the cyst and the intact cyst was extracted using an endoscopic impermeable sack. We observed no cases of chemical peritonitis. The risk of recurrence after conservative treatment is 4% (two patients) and out of the ten patients for whom a second-look laparoscopy was performed only two (20%) presented adhesions. Laparoscopic treatment of dermoid ovarian cysts is feasible, safe, and effective. The treatment can be conservative in over 80% of the cases. The specific risk of chemical peritonitis can be countered by a change in the cystectomy technique. The use of an impermeable laparoscopic sack permits extraction of the cyst without any peritoneal contamination.

Key words: Dermoid ovarian cyst — Laparoscopic surgery — Impermeable endoscopic sack

Ovarian dermoid cysts make up 30% of benign ovarian tumors [22], and are bilateral in 10–15% of cases [3, 22]. The most important complications for dermoid cysts are torsion [3, 8, 20], spontaneous rupture and risk of peritonitis [8, 23, 31], and the existence of a neoplasic element, whose frequency is evaluated at 1–3% [1, 4, 11, 13, 24].

Treatment of benign dermoid cysts, whether conservative or radical, has until now generally been carried out via laparotomy. The advantages of laparoscopy as compared to laparotomy have been clearly established [5, 16]. Initial results show that laparoscopic surgical treatment of benign dermoid cysts is efficient, reliable and gives rise to no complications [15, 17, 28].

The purpose of this study was to present our work on the laparoscopic surgical treatment of dermoid cysts, paying particular attention to the specific problems involved by these cysts.

Materials and methods

We operated on 65 patients presenting with dermoid cysts between January 1986 and December 1990. During this same period we operated on a total of 295 patients for ovarian cysts, meaning the percentage of dermoid cysts was 22.03% (65/295).

Patients

Patients' mean age was 31.11 years ± 0.98 (range 19–58). Thirty-eight patients (58.4%) were nulliparous, 11 (17%) were primaparous, and 16 (24.6%) were multiparous. Three patients (4.6%) had already undergone laparotomy for treatment of a dermoid cyst. In one case there was a past history of a homolateral dermoid cyst operated on 10 years previously, and in two cases a contralateral dermoid cyst had been initially operated on 5 and 18 years, previously.

The dermoid cysts were discovered as follows: during systematic examination (20 patients, 30.8%), due to chronic pelvic pain (25 cases, 38.5%), as a result of investigation of a pelvic mass (16 cases, 24.6%), and because of acute abdominal pain syndrome (4 cases, 6.1%). The mean size of the dermoid cysts as assessed by endovaginal ultrasonography was 5.6 ± 0.32 cm (range 3–13 cm). Six patients (9.23%) presented with bilateral dermoid cysts.

Operative technique

In every case, an initial preoperative assessment [15, 21] was made in order to look for any signs of malignancy—in which case lapa-

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rotomy is required. In seven cases, treatment was performed via laparotomy either because the surgeon was not very experienced in laparoscopic surgery (six patients) or because neoplasic pathology was suspected (one patient). When the treatment was laparoscopic, general anesthesia and intubation were carried out according to the usual technique [5]. Whatever technique is used, the first phase of laparoscopy is exclusively diagnostic, comprising sampling of peritoneal liquid for cytology, careful inspection of the complete abdominopelvic cavity, and examination of the cystic ovary, not forgetting the contralateral ovary, to look for any growth. Once and only once this initial endoscopic assessment has revealed no signs of malignancy can the laparoscopic treatment begin. Otherwise laparotomy must be performed. In two cases at the beginning of our series we reverted to laparotomy for a cystectomy commenced via laparoscopy, due to the considerable size of the cysts (12 and 13 cm).

In every other case, treatment was purely performed by laparoscopy. Several laparoscopic techniques were used: (1) Transparietal cystectomy [5, 10]: This consists in first aspirating the cyst contents and then bringing the ovary out of the abdomen via a mini–suprapubic incision in order to remove the cyst pouch. The ovary is then sutured and replaced in the abdominal cavity. (2) Intraperitoneal cystectomy, which can be carried out in two different ways: With the first method, the cyst is subjected to puncture without spillage using a 5-mm trocar. Once the cyst has been emptied of its contents, it is incised along the antimesial border. Then cystoscopy is carried out to check that there are no intracystic vegetations. Finally, the cyst pouch is separated from the ovarian cortex by pulling in opposite directions with two or three grasping forceps. The cyst is then extracted via one of the suprapubic trocars and sent for pathological examination [5, 12, 15, 21]. In the second technique [10], the cyst is not punctured but dissected without opening it in order to avoid any peritoneal spillage. The ovarian cortex is incised using laparoscopic scissors or the monopolar hook. Once the cleavage plane has been identified, the dermoid cyst is progressively dissected using either the laparoscopic scissors or aquadissection with the help of one or two grasping forceps for correct positioning. Bipolar coagulation is used for hemostasis during the dissection process. The now-completely-dissected-but-intact cyst is placed in an impermeable laparoscopic sack (Endobag Oval 13.5 × 17 cm; Laboratoires Peters, Bobigny, France) introduced via one of the trocars. The sack is then brought up to the abdominal wall under one of the suprapubic openings, which enables one to puncture the cyst without any spillage and extract it without any contact between the cyst and the abdominal wall [10]. In the great majority of the cases, the ovary is not sutured. The final phase in the operation is the same, however, for all cases, with a very thorough cleansing of the peritoneum using warm normal saline solution. This procedure is systematic after laparoscopic surgical treatment of ovarian cysts and is especially important in this case to avoid secondary chemical peritonitis. (3) Ovariectomy, which is carried out as usual using the bipolar forceps for coagulation and laparoscopic scissors [5, 10, 26]: The ovary is then extracted, with or without a sack, via one of the suprapubic incisions or by posterior colpotomy.

Results

Laparotomy was performed without any attempt to use laparoscopy in seven cases (10.8%). In six of these, four of which presented with acute torsion, the choice of laparotomy was motivated by the surgeon's lack of experience in laparoscopic surgery. The other case required laparotomy because neoplasic pathology was suspected after the preoperative assessment [15, 21] carried out systematically for all the patients in this series. The patient was 58 years old and presented a postmenopausal ovarian cyst which appeared very heterogenous under endovaginal ultrasonography, and this led us to indicate hysterectomy with bilateral adnexectomy via laparotomy. The histology examination revealed a benign dermoid cyst. In two cases (3%), at the beginning of our series, we had to terminate a procedure started via laparoscopy by laparotomy because the cysts were very large (12 and 13 cm).

In all the other cases (56 patients; 86.2%), treatment was purely laparoscopic. The modalities were as follows: laparoscopic ovariectomy (8 cases; 14.3%) in patients over 40; transparietal cystectomy (4 cases; 7.1%) all carried out at the beginning of the series; intraperitoneal cystectomy (44 cases; 78.6%) for most cases. When we attempted a conservative laparoscopic treatment, we observed no failure, and no cases were converted to oophorectomy or laparotomy. In 30 cases, we attempted to perform the intraperitoneal cystectomy without spillage. We finally succeded in using this technique in only 15 cases. For these cases, an impermeable laparoscopic sack was used to extract the cyst without opening it. The average duration of the laparoscopic surgical operation did not differ significantly from that found with laparotomy treatment (103 ± 2 min vs 90 ± 7 min). There were no significant differences in operative time when the cyst was initially aspirated prior to cystectomy vs when the cystectomy was performed without spillage (102 ± 2 min vs 105 ± 7 min). There were no complications per- or postoperatively. We observed no cases of chemical peritonitis.

The long-term results for these patients show that the risk of recurrence is 4%. Out of the 48 patients who benefited from conservative endoscopic treatment and whose treatment now dates back more than 12 months, two (4%) suffered a recurrence 9 months after their operation. This was homolateral in one case and contralateral in the other. There is little risk of postoperative adhesions. For the first ten patients that presented with a dermoid ovarian cyst more than 6 cm and that were treated by laparoscopic intraperitoneal cystectomy, we performed a second-look laparoscopy. The intraperitoneal cystectomy was accomplished without spillage in only 20% of these ten cases. Two patients (20%) presented adhesions. In one case these were minimal (class A) and in the other moderate (class B) according to the American Fertility Society Classification (AFS) [2]. The patients' fertility is maintained after conservative laparoscopic treatment of dermoid ovarian cyst. Sixteen patients desired pregnancy and 11 of these presented no other factors for infertility. For one patient we performed a transparietal cystectomy and in the ten other cases we performed an intraperitoneal cystectomy. In six of these cases the intraperitoneal cystectomy was done without spillage. The rate of intrauterine pregnancy for these 11 patients is 91% (ten cases). The cumulative intrauterine pregnancy rates are, respectively, 27.3%, 63.6%, 81.8%, and 91% at 6, 12, 20, and 27 months.

Comment

These results demonstrate that, provided there is a careful assessment and that the surgeon is specifically trained for laparoscopic surgery, ovarian dermoid cysts can be treated via laparoscopy. As for any ovarian cysts, treatment must be preceded by a preopera-

tive assessment combining thorough clinical examination, tumoral markers assays (Ca 125), and endovaginal ultrasonography [15, 19, 21]. The particular point about dermoid cysts is their composition, which is often a mix of solid–cystic components, making it difficult to establish if they are benign or not by diagnostic ultrasonography [29]. Laparoscopy can only take place once this initial assessment has proved satisfactory. The first phase of laparoscopic surgery itself is always diagnostic. It consists of peritoneal liquid sampling together with complete exploration of the abdominopelvic cavity to look for any signs of possible malignancy, which would require laparotomy.

Very few teams have reported their experience in laparoscopic surgical treatment of dermoid cysts [15, 17, 28]. A certain degree of expertise in laparoscopic surgery is required. It is often difficult to obtain cleavage because the cyst frequently adheres very strongly to the ovarian cortex. The rate of exclusively laparoscopic conservative treatment is directly correlated with the experience of the surgeon. As was the case for Reich et al. [28], the laparotomies we were led to carry out due to technical difficulties came at the beginning of our series, with surgeons lacking experience in operative laparoscopy. Taken as a whole, our series includes complete treatment via laparoscopy for 86.2% of cases (56/65) with no laparotomy required for the last 45 cases. These results are comparable to those obtained by Canis et al. [7], who were able to treat 80.5% of 113 dermoid cysts (91 patients) via laparoscopy.

The laparoscopic management of dermoid ovarian cyst is safe and does not involve any undue risk of peroperative complications [17, 28]. Reich et al. [28] is the only author to report a complication occurring during laparoscopic treatment of a dermoid cyst: This was in fact an accident secondary to the introduction of a trocar. Whereas this may indeed be a complication of laparoscopic surgery, it is quite definitely not specific to treatment of dermoid cysts.

The long-term results of laparoscopic surgery for dermoid cysts are satisfactory. Similarly to Reich et al. [28] and Nehzat et al. [17], we have never witnessed any postoperative chemical peritonitis after laparoscopic treatment of dermoid cysts. This risk of acute peritonitis after rupture, whether spontaneous or accidental during exeresis, is a rare complication of dermoid cysts [20, 25]. It is secondary to the chronic irritation of the peritoneal cavity by the cyst contents when not evacuated immediately [14]. This serves to stress that cleansing of the peritoneum at the end of the operation is of prime importance and must be carried out systematically. The technique used for peritoneal cleansing must be very strictly applied. It needs to be very generous (3–4 L of normal saline solution) and concerns the whole abdominopelvic cavity. The rate of adhesion formation after laparoscopic surgical treatment for dermoid cysts is low [17]. Eighty percent of the patients in our series presented no adhesions at the follow-up laparoscopy. And last but not least, those patients desiring pregnancy remain fertile after laparoscopic treatment of dermoid cysts. Among these patients in our series who had no other factors for infertility, 91% obtained pregnancy. These fertility results are the same as those reported by Canis et al. [6], for whom the intrauterine pregnancy rate after laparoscopic surgery for dermoid cysts is 91.7%.

Three laparoscopic surgery techniques can be used when treating dermoid cysts: intraperitoneal cystectomy, transparietal cystectomy, and ovariectomy. Radical treatment is indicated under two circumstances: difficulty or impossibility of conservative treatment and in patients over 40. The procedure must always be preceded by identification of the ureter and adhesiolysis if necessary so that the ovary is completely mobile. Various techniques can be used for ovariectomy: using the endo-loop [30], bipolar coagulation [5, 10, 26], automatic stapler [9], or the laser [18]. The results obtained show that these techniques are broadly equivalent [9], apart from the cost. Transparietal cystectomy [5, 10], the frequency of which is inversely proportional to the surgeon's experience in laparoscopic surgery, is best reserved for certain voluminous dermoid cysts. The optimum treatment is intraperitoneal cystectomy, and we used this for 78.6% of our cases dealt with by laparoscopic surgery. As the specific problem posed by dermoid cysts is the potential risk of postoperative chemical peritonitis, certain modifications to the technique can be suggested. Whereas the standard procedure is to puncture the cyst without spillage prior to aspiration, incision, and cystoscopy, there is a distinct advantage to accomplishing the cystectomy without opening the cyst [10, 17, 28]. This is difficult, involving cautious incision of the ovarian cortex along the antimesial border of the ovary by means of laparoscopic scissors or monopolar hook. This incision should concern the ovarian cortex alone and enables the cleavage plane between the dermoid cyst and the ovary to be reached with the cyst itself remaining intact. Then two or three grasping forceps are used to initiate intraperitoneal cystectomy, which must be carried out with extreme care to avoid rupturing the cyst. Whereas the thick walls often found with dermoid cysts are helpful in this respect, they also frequently present very tight adhesions to the ovarian cortex, especially in the hilum area, rendering dissection more difficult. The advantage is that none of the dermoid cyst contents are disseminated in the peritoneum. Once completely dissected the dermoid cyst must now be removed without any peritoneal spillage. This can be accomplished in two ways—the first being extraction of the intact cyst via the suprapubic site in an impermeable laparoscopic sack [10, 28]. The dissected cyst is placed in the sack previously introduced via a trocar, after which the bag is closed and brought up to the abdominal wall. If the cyst is small enough it is removed in one piece through the suprapubic site; if not, it is punctured in the sack before extraction. The second method involves posterior colpotomy and then extraction of the dermoid cyst via the vagina [27]. If the cyst is too large, it is punctured and drained via the vagina prior to extraction. A more elegant solution is to use an impermeable sack as in the previous technique; the unopened cyst is placed

in the sack introduced via the vagina and extraction then proceeds without any peritoneal spillage [27]. Intraperitoneal cystectomy without spillage is a difficult procedure. We succeeded in using this technique in 34% (15/44) of the intraperitoneal cystectomies. But we attempted this surgical treatment in only 30 cases. So in our experience it was possible to accomplish intraperitoneal cystectomy without spillage in only one-half of the cases (15/30).

These results confirm that, provided the preoperative assessment is very thorough, laparoscopic surgical treatment of dermoid cysts is perfectly feasible. Surgeons skilled in operative laparoscopy can use exclusively endoscopic and conservative techniques in over 80% of cases. The particular problem raised by the risk of chemical peritonitis can be countered by a change in the cystectomy technique, with the proposed use of impermeable laparoscopic sack permitting ovarian dermoid cysts to be extracted without any risk of peritoneal contamination.

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