Laparoscopic resection of ovarian benign cystic teratomas: experience with 84 cases

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Laparoscopic treatment of benign cystic teratoma of the ovary has been recommended following the study of relatively small numbers of patients. We reviewed our experience with a prospective ongoing protocol for the treatment of benign ovarian teratomas, between January 1990 and December 1996. Sonography established the diagnosis, and biochemical markers were used to screen for possible malignancy. Surgery consisted of resecting the cyst and conserving the ovary if appropriate. The resected cyst was aspirated of its contents following insertion into an EndoCatch bag. Removal was accomplished via the narrowest incision possible by pulling the bag's margins through the incision and grasping the solid parts with conventional surgical instruments. The diameter of the cysts ranged from 2 to 15 cm. Cystectomy was performed in 47, and oophorectomy in 37, patients. Spillage occurred in 11 cases, but none developed peritonitis or fever. The mean duration of post-operative stay was 0.9 days (range 0.5–2). We conclude that laparoscopic resection of benign teratomas of the ovary is safe, well tolerated, and shortens hospital stay. Key words: laparoscopic surgery/ovarian benign cystic teratoma

Introduction

Benign cystic teratomas (‘dermoid cysts’) of the ovary constitute some 10–13% of all ovarian tumours and represent the most common benign ovarian germ cell tumours (Peterson et al., 1955; Peterson, 1956; Woodruff et al., 1968; Caruso et al., 1971). Typically these tumours are discovered during child-bearing age. The spectrum of clinical presentation of these tumours ranges from incidental finding in some cases to chemical peritonitis and fever. The mean duration of post-operative stay was 0.9 days (range 0.5–2). We conclude that laparoscopic resection of benign teratomas of the ovary is safe, well tolerated, and shortens hospital stay. Key words: laparoscopic surgery/ovarian benign cystic teratoma

Materials and methods

Between January 1, 1990 and December 31, 1996, all women evaluated in our department for either abdominal pain or suspicious adnexal finding underwent transvaginal ultrasonographic examination (Elscint 2000, 6.5 MHz probe; Elscint, Haifa, Israel). The diagnosis of dermoid cyst was suggested by several sonographic findings including: cystic ovarian mass with densely echogenic mural tubercles; cystic ovarian mass with thin, echogenic band-like echoes; dense ovarian mass without a cystic component (Laing et al., 1981; Herrman et al., 1987; Mais et al., 1995). When a tentative diagnosis had been reached, serum concentrations of specific ovarian tumour markers were obtained, in order to rule out possible malignancy (O’Connell et al., 1987; Chen et al., 1988).

If there was no suspicion of malignancy, and all other criteria suggested a dermoid cyst, the women were advised to undergo laparoscopic confirmation and subsequent removal of the tumour. Patients with an apparent ovarian torsion received no work-up for possible malignancy and were considered as a separate subset. The decision as to whether the whole ovary or only the cyst was to be removed was made according to the desire to retain fertility. The appropriate informed consent was then signed by all patients.

Laparoscopy was performed using a 10–12 mm subumbilical trocar and two accessory suprapubic trocars, one of which was of 10 mm diameter for the use with an EndoCatch (AutoSuture; ASSC, Norwalk, CT, USA). The diagnostic part of the procedure consisted primarily of a close inspection of pelvic and abdominal organs with cytological sampling, aimed at ruling out possible malignancy. Following this step the definitive therapeutic procedure was undertaken, in accordance with the patient’s consent. Our recommendation took into account the patient’s parity and the size of the tumour. Thus, for a patient who viewed her family size as final we recommended oophorectomy if a cystectomy appeared to be technically difficult. The surgical technique has been described previously (Shalev et al., 1994). Specifically, regardless of whether cystectomy or oophorectomy was performed, the resected tissue was inserted into the EndoCatch and within it the cyst was fenestrated by monopolar diathermy, to allow insertion of the tip of the suction device. Monopolar diathermy was not used.
Patients underwent cystectomy and four oophorectomy; none was made regarding the preferred procedure. Hence, seven detorsion was always the first step. Subsequently, a decision or abdominal pain indicative of peritonitis.

Five peri-menopausal women elected to undergo bilateral oophorectomy. In 11 cases, this was associated with malignancy, in six cases, it was extended to allow smooth passage of the specimen. In three women, in the early stages of the protocol, the whole specimen was removed through a colpotomy incision. If unintended spillage occurred, a copious amount of physiological saline solution (2–3 l, as appropriate) was used for lavage, and any particulate material was carefully grasped and removed.

Data on the duration of hospital stay were obtained from the hospital registry. This specific database counted any fraction of a day as a full day’s stay. Moreover, administrative enforcements dictated that all elective patients had to be hospitalized a day earlier. Therefore, we performed a specific calculation of post-surgery stay, which allowed the data to be compared with that of other reports.

Results

A total of 93 women were suspected of having a benign cystic teratoma. In 11 cases, the CA125 concentration was elevated; in two cases, this was associated with malignancy, in six cases, endometriosis and in two cases with benign cystic teratoma. Eventually, 84 women underwent laparoscopic surgery for cystic teratoma of the ovary. Their mean age was 32 (range 12–64) years, and the mean parity 2.6 ± 1.7. Ovarian torsion was present in 11 cases (13%), abdominal pain in 54 cases (64%), and incidental findings in 20 cases (36%). A bilateral tumour was found in eight cases (9.5%). Three patients were pregnant at the time of operation. The size of the cysts ranged from 2 to 15 cm (median 7 cm). In all, 47 patients (56%) underwent cystectomy only and 37 patients underwent oophorectomy. Five peri-menopausal women elected to undergo bilateral oophorectomy. Spillage occurred in 11 women (13%), but none developed either post-operative fever or abdominal pain indicative of peritonitis.

In the 11 patients who presented with ovarian torsion, detorsion was always the first step. Subsequently, a decision was made regarding the preferred procedure. Hence, seven patients underwent cystectomy and four oophorectomy; none of the latter being due to the presence of a fully necrotic ovary. Histological examination did not reveal any case of malignancy. Mean duration of hospital stay was 2.9 (range 1–5) days, of which only 0.9 days (range, 0.5–2) were post-operative. No complications such as pain, and no recurrences were reported during the follow-up period which lasted up to 84 months. None of the patients who wished to retain fertility and who had had no previous fertility problems reported any subsequent difficulty in conceiving. No systematic evaluation of adhesion formation was attempted, since we did not believe that this would justify the performance of an additional laparoscopy.

Discussion

As far as we are aware, this series is the largest so far reported from a single centre (Table I). Our results confirm earlier reports using smaller patient numbers (Nezhat et al., 1989), which suggested that this approach is feasible and almost free of complications. Furthermore, we found practically no case in which the use of the laparoscopic technique failed to cope with a cystic teratoma of the ovary. Cystic teratomas may be extremely large, making the possibility of performing laparoscopy questionable on morphological grounds. A detailed review of previous reports has suggested that laparoscopy has rarely been performed on cysts >8–10 cm in size. Howard (1995) suggested that it should not be performed on cysts with a diameter of >15 cm, while Teng et al. (1996) suggested a combined laparoscopic–colpotomy approach for larger cysts. We were able to carefully evacuate the contents of appreciably larger cysts, while minimizing spillage, using a large EndoCatch bag. Not infrequently, cysts >10 cm diameter were shrunken to dimensions that allowed their extraction through the original trocar incisions. The obvious cosmetic advantage of this technique for young women can be appreciated.

Accidental spillage of the cysts’ contents appears to be adequately treated by washing with copious amounts of liquid and careful inspection of the pelvic cavity for particulate remnants. Whereas in humans an untreated spillage may be catastrophic (Coccia et al., 1996), animal models have suggested that adequate washing is able to prevent peritonitis even after the most extreme exposure to spilled cystic teratoma contents (Fiedler et al., 1996). Laparoscopy allows meticulous inspection of the pelvic and abdominal cavity, which is not possible in laparotomy. We did not perform a second-look laparoscopy to verify adhesion formation rates and so cannot

Table I. Summary of reports on laparoscopic resection of benign cystic teratomas of the ovary

<table>
<thead>
<tr>
<th>Patients (n)</th>
<th>Diameter of cyst (cm)</th>
<th>Spillage (%)</th>
<th>Hospitalization (days)</th>
<th>Major complications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nezhat et al. (1989)</td>
<td>9</td>
<td>5–8</td>
<td>33</td>
<td>Not specified</td>
</tr>
<tr>
<td>Reich et al. (1992)</td>
<td>25</td>
<td>1–10</td>
<td>56</td>
<td>1–2</td>
</tr>
<tr>
<td>Bollen et al. (1992)</td>
<td>14</td>
<td>1–8</td>
<td>100*</td>
<td>2</td>
</tr>
<tr>
<td>Chapron et al. (1994)</td>
<td>56</td>
<td>3–11</td>
<td>66</td>
<td>Not specified</td>
</tr>
<tr>
<td>Howard (1995)</td>
<td>8</td>
<td>3–12</td>
<td>Not specified</td>
<td>0.7 ± 0.5</td>
</tr>
<tr>
<td>Lin et al. (1995)</td>
<td>29</td>
<td>4.4 ± 0.3</td>
<td>100</td>
<td>0.7 ± 0.2</td>
</tr>
<tr>
<td>Teng et al. (1996)</td>
<td>30</td>
<td>7 ± 3</td>
<td>77</td>
<td>Not specified</td>
</tr>
<tr>
<td>Present study</td>
<td>84</td>
<td>2–15</td>
<td>13</td>
<td>2.9b</td>
</tr>
</tbody>
</table>

*Puncture, aspiration and lavage were part of the technique.

b See text for details.
compare our results directly with those of Keckstein et al. (1996). However, no clinically significant instances were recorded during the follow-up period.

Concern about possible malignancy should not be overemphasized; when malignancy is disseminated, it would be diagnosed immediately. However, usually such patients will have been excluded on the basis of sonography and biomarkers (Chen et al., 1988). In the rare cases of an ovary which harbours an area of unspread malignant transformation, our technique offers good protection against spillage, with the likelihood that the size of the mass will necessitate extension of the original incision in order to permit its removal. In the even rarer situation, spillage occurring from a malignant tumour, it is likely that the role of spillage in the prognosis of malignancy is probably insignificant (Dembo et al., 1990; Sjoval et al., 1994).

The duration of hospitalization in our series was longer in comparison with that reported elsewhere. This results from both registration technicalities and the specific characteristics of our population, which make registered hospitalizations longer in general. However, further analysis of the postoperative stay reveals that the recovery stage is as short as can be expected after any laparoscopic procedure. Nevertheless, this method of treatment for cystic teratoma of the ovary involves a short hospitalization period, which is a major concern for both insurance agencies and patients. The virtual elimination of early complications, including peritonitis and wound infections, further serves to shorten hospitalization.

In conclusion, the combined experience of all centres attempting resection of cystic teratomas by the laparoscopic approach suggests that in suitable cases with skilled operators this could be considered a safe alternative to laparotomy. Our results emphasize that this is also the case for cysts as large as 15 cm in diameter.

References