Frequency and Laparoscopic Management of Ovarian Remnant Syndrome

Basim Abu-Rafeh, M.D., George A. Vilos, M.D., and Millie Misra, M.D.

Abstract

Study Objective. To report the frequency and outcome of laparoscopy in women with chronic pelvic pain and/or pelvic mass who were found to have ovarian remnants.

Design. Cohort study. (Canadian Task Force classification II-2).

Setting. University-affiliated hospital.

Patients. One hundred nineteen women who had had hysterectomy and oophorectomy.

Intervention. Laparoscopic surgery.

Measurements and Main Results. Ovarian remnants were known in 5 and were found intraoperatively in 21 patients (18%). These 26 women had undergone at least one laparoscopy in an attempt to remove the remnants. After the ureter was identified, ovarian remnants were dissected and removed from the retroperitoneum laparoscopically with minimal risk of vessel or visceral injury. There were no intraoperative or postoperative complications and no conversions to laparotomy. In addition to ovarian remnants, adhesions were found in 19 women, endometriosis in 4, and no other pathology in 3. Twenty women had complete relief of symptoms. At follow-up of 1 to 8 years (mean 5 yrs), six underwent repeat laparoscopy for persistent pain; one had recurrent ovarian remnant.

Conclusion. Ovarian remnant syndrome is not an infrequent complication after hysterectomy and oophorectomy in women with endometriosis.

operative laparoscopy. Five of these women had been diagnosed with ovarian remnants and had had at least one earlier laparoscopy in an attempt to remove them. In the remaining 114 patients ovarian remnant was confirmed in 21, fulfilling inclusion criteria of documented previous oophorectomy, persistent pelvic pain and/or mass, and histologic findings with routine hematoxylin and eosin stain of ovarian cortical tissue.

Indications for hysterectomy and BSO were endometriosis (24 women), pelvic inflammatory disease (1), and menorrhagia (1). These 26 women had undergone 43 previous laparotomies and 21 laparoscopies (median 2 surgical procedures). Twenty-one had had bilateral oophorectomy by laparotomy and five by laparoscopy. Four had had unilateral oophorectomy at different times. The most common symptom was CPP with a pelvic mass detected at pelvic examination (2), and documented by ultrasound (10) or CT scan (3). No other preoperative investigation or ovulation stimulation was performed in any patient. Twelve women (46%) had CPP alone; one (4%) had a pelvic mass and no pain.

Operative Technique

Laparoscopic access was achieved using the classic closed technique, establishing pneumoperitoneum with a Veress needle to a preset pressure of 20 to 25 mm Hg. A 10-mm nondisposable cannula was placed at the umbilicus or left upper quadrant. After abdominal entry, two or occasionally three more 5- to 10-mm ports were established suprapubically and lateral to the midline to facilitate surgery. Intraabdominal omental and bowel adhesions were divided and endometriosis implants were excised. The ureter on the side of suspected ovarian remnants was identified in the retroperitoneal space by incising peritoneum at the pelvic brim and tracing its course into the bladder. For left-sided remnants the sigmoid was usually mobilized medially from the pelvic brim to the cul-de-sac. The ovarian remnant was dissected, mobilized, and removed using a combination of a Coherent 5000 L CO2 laser (Lumenis, Norwood, MA), hydrodissection, and electrosurgery. The location of remnants was not constant and they were encountered anywhere along the entire pelvic sidewall, including sacral promontory in one case. As a result, usually there was no identifiable or predictable blood supply, and bleeders were identified, isolated, and electrocoagulated as they were encountered. Remnants were extracted in an endobag through a 10-mm port.

Results

No significant intraoperative or immediate postoperative complications occurred, and all procedures were completed laparoscopically. Operating time ranged from 33 to 172 minutes (mean 85 min). Estimated blood loss was less than 150 ml, and no patient developed anemia or required transfusion. Ovarian remnants were present on the left side in 14 women, right side in 10, bilaterally in 1, and implanted on the sacral promontory in 1. Pelvic adhesions were found in 19 patients and endometriosis in 4; in 3 women the ovarian remnant was the sole lesion. All patients were discharged within 24 hours.

During follow-up of 1 to 8 years (mean 5 yrs) six women (23%) had repeat laparoscopy for persistent pain attributed to recurrent pelvic adhesions. In one of these patients persistent ovarian tissue was found and removed. The pain persisted, and laparotomy performed elsewhere confirmed ovarian tissue again. The remaining 20 women (77%) remained free of symptoms.

Discussion

It is important to distinguish ovarian remnant syndrome from residual ovary syndrome and supernumerary and accessory ovaries. Persistent or recurrent pelvic symptomatology may originate from one or both residual ovaries preserved at the time of hysterectomy. This occurs in 1% to 3% of hysterectomies when the ovaries are maintained and is referred as residual ovary syndrome.15 Supernumerary and accessory ovaries also may cause persistent pelvic symptoms after hysterectomy.16,17 Supernumerary ovary is a third ovary with no anatomic connection to normally located ovaries; it is thought to develop during embryogenesis through the arrest of migrating gonocytes that contain ovarian follicle tissue.18 The term accessory ovary is used when excess ovarian tissue is noted near a normally placed ovary and it is connected to it.18

Ovarian remnant syndrome usually results from unintentional incomplete removal of ovaries for a variety of indications. Predisposing risk factors include extensive adhesive disease from endometriosis, pelvic inflammatory disease, inflammatory bowel disease, appendicitis or appendectomy, history of several pelvic surgeries, and neoplastic lesions. All these conditions may result in an unusually difficult hysterectomy and
oophorectomy due to distorted anatomy, extensive fibrosis, and increased or anomalous vascularity leading to inadequate removal of ovarian tissue adherent to pelvic peritoneum, vessel wall, or viscera such as bowel, ureters, or bladder.\textsuperscript{2-3,7-10}

An additional mechanism for development of this syndrome is autotransplantation of ovarian tissue. In ovarietomized cats\textsuperscript{1} and rats\textsuperscript{19} devascularized ovarian tissue can reimplant and become functional on intact and denuded peritoneal surfaces. Indeed a case of accidental ovarian autograft after laparoscopic surgery was reported.\textsuperscript{20} During the last decade we also experienced such accidental ovarian autotransplantation in 1 patient during 601 laparoscopic salpingo-oophorectomies performed in 489 women. This case was a relatively easy and uneventful right salpingo-oophorectomy for the sole residual ovary extracted by morcellation without the use of a bag. Six months later the patient complained of persistent pelvic pain and a 4-cm complex mass. At laparoscopy an ovarian remnant with a corpus luteum was removed from the right side of the sacral promontory. This mass was not present at the first laparoscopy and was thought to have developed from a misplaced and autografted piece of ovary.

The adequacy of laparoscopic oophorectomy and tissue extraction were questioned as possible contributing factors to ovarian remnant syndrome.\textsuperscript{14,21,22} Thus with growing popularity of laparoscopic surgery and with increased complexity of these procedures, some believe the frequency of this syndrome will undoubtedly increase.\textsuperscript{23} However, limited published evidence\textsuperscript{21} and our own experience with laparoscopic oophorectomy do not support this notion.

The profile for developing ovarian remnant syndrome includes a history of several pelvic surgeries for CPP due to outlined risk factors. Most of our patients had a history of endometriosis as an underlying factor for hysterectomy and oophorectomy. The main feature is persistent pelvic pain described as cyclic, constant, dull, diffuse, nonradiating, or well localized in the presence of a pelvic mass. The cause of pain is poorly understood. Several reports describe unilateral ureteral obstruction, and large and small bowel obstruction associated with ovarian remnants.\textsuperscript{2}

The clinical diagnosis of ovarian remnant may be difficult and requires an element of suspicion in women with the stated profile and risk factors. Suspicion may be enhanced by findings of premenopausal serum levels of gonadotropins and estradiol in the absence of exogenous hormone replacement therapy (HRT) or after stimulation with clomiphene citrate\textsuperscript{5,6} or gonadotropin-releasing hormone (GnRH) agonists.\textsuperscript{23} Ultrasound may be helpful in determining the presence, location, size, and shape of a pelvic mass.\textsuperscript{2,4,8} Although sonographic characteristics of ovarian remnants have been described,\textsuperscript{4} CT scans and MRI are also advocated, although their diagnostic usefulness is unproved.\textsuperscript{3}

Medical treatment without tissue diagnosis was advocated in patients at high risk for surgery or who have had numerous unsuccessful surgeries. Therapy with oral contraceptives, medroxyprogesterone, and danazol has minimal and mixed results.\textsuperscript{1,24-26} Although GnRH agonists were effective in one woman with recurrent syndrome,\textsuperscript{24} its prolonged administration may be limited by the requirement for add-back HRT.

Pelvic radiation therapy to obliterate residual ovarian tissue was effective in a small number of patients\textsuperscript{13,9} but carries a significant risk of bowel injury due to immobilization by postoperative adhesions.\textsuperscript{7} In addition, treatment of a pelvic mass medically or by irradiation without a tissue diagnosis may be a violation of medical practice since several malignancies may be associated with ovarian remnants.\textsuperscript{9,27-29}

The most widely accepted treatment is surgical excision by laparotomy or laparoscopy. In a recent review the authors concluded that complete excision of ovarian remnants at exploratory laparotomy affords patients the best option for avoiding future corrective surgery for pelvic pain from persistent ovarian remnants.\textsuperscript{3}

In reviewing exploratory laparotomy in the management of the syndrome, injury to the ureter and bladder appears to be the most frequent complication.\textsuperscript{2,3,7-10,30} Preoperative intravenous pyelogram and ureteral stents were advocated, although their routine use poses certain risks.\textsuperscript{24}

Operative laparoscopy became popular in the 1980s, offering better visualization, magnification, and microdissection of anatomic planes and structures through videotechnology. However, access may be limited at times, and videolaparoscopy denies the surgeon depth perception and tactile response. It was thought that laparoscopic dissection of densely adherent structures was more difficult than laparotomy, and the preferred route for management of ovarian remnants should be exploratory laparotomy. During the last decade, however, several reports described effective laparoscopic surgery for the syndrome.\textsuperscript{10-11,13}
From this small series of 26 patients and the three published series,\textsuperscript{10–13} it appears that laparoscopic surgery for excision of ovarian remnants is feasible and may be a reasonable alternative to laparotomy, provided that surgical expertise and proper instrumentation are available.

References
