Single-Incision Laparoscopic Appendectomy and Dermoid Cyst Enucleation

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ABSTRACT

We present a case report describing the outcome of an appendectomy and subsequent ovarian cyst enucleation using a single-incision laparoscopic approach in a 19-year-old patient. In an acute care setting, computed tomography of the abdomen demonstrated findings consistent with early acute appendicitis as well as a complex cystic mass on the right ovary. Pelvic ultrasonography revealed a right ovarian cystic lesion measuring 2.9 cm. There were no intraoperative complications. This case report demonstrates the feasibility of single-incision laparoscopy even when separate pathologic results are encountered and is, to our knowledge, the first report of the use of this technique for simultaneous appendectomy and dermoid cyst enucleation.

Key Words: Laparoscopic surgery, Appendectomy, Dermoid cyst.

Citation Champney M, Malloy T, Chudusama B, Chung A. Single-incision laparoscopic appendectomy and dermoid cyst enucleation. CRSLS eCRSLS.2014.0014913. DOI: 10.4293/CRSLS.2014.0014913.

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INTRODUCTION

Appendicitis results from inflammation of the vermiform appendix. Its cause is multivariable. Peak incidence of appendicitis occurs in the late second decade of life and it is more prevalent in males than in females, with a ratio of 3:2. It is one of the most common causes of acute abdominal pain in young adults.

Dermoid cysts are benign cystic teratomas of the ovary that consist of all 3 elements of embryologic tissue. They are the most common germ cell neoplasms and are most commonly found in women of reproductive age.[1]

In our case, an appendectomy and subsequent dermoid cyst enucleation was successfully performed using a single-incision laparoscopic approach. To our knowledge, no such case has been reported to date.

CASE REPORT

A 19-year-old young woman presented to the emergency department complaining of acute right lower quadrant abdominal pain of 24 hours' duration. She described her abdominal pain as sharp and constant and denied any history of associated nausea, vomiting, or dysuria. She did, however, report a significantly diminished appetite and occasional chills. Her last menstrual period had taken place approximately 2 weeks prior and she denied any recent sexual activity. The patient stated that she was otherwise in good health, with no previous surgical history.

On physical examination, the patient had a temperature of 100°F. Her blood pressure was 92/68 and her pulse was 97 beats/min. She appeared pale and to be in mild distress. Examination of the abdomen revealed no evidence of trauma. Tenderness to palpation was noted mainly in the right lower quadrant. There was no guarding or rebound tenderness. Bowel sounds were normal. The remainder of the physical examination was not significant.

Laboratory analysis revealed an elevated white blood cell count of 21,000/μL and her urinalysis was positive for leukocytes. β-Human chorionic gonadotropin levels were negative. Computed tomography of the abdomen and pelvis demonstrated a fluid-filled appendix and mild periappendiceal inflammation consistent with early acute appendicitis. No evidence of rupture or abscess was

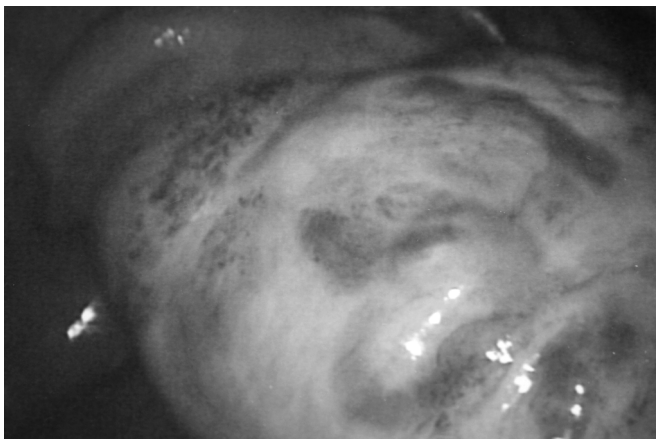

Figure 1. Right adnexal mass.

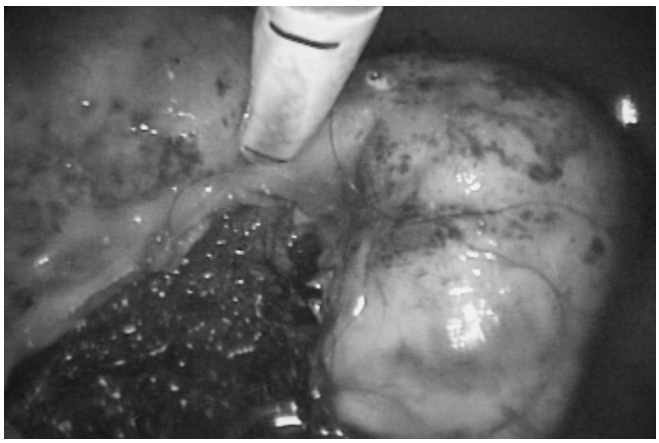

Figure 2. Extrusion of hair and sebaceous material from right adnexal mass.

noted. A fat-containing right adnexal mass measuring 6 cm with dense calcification, suggestive of an ovarian teratoma, was seen in the pelvis. Pelvic ultrasonography revealed a right ovarian cystic lesion measuring 2.9 cm. The right ovary was measured at 4.7 × 3 × 3 cm.

The patient was taken to the operating room for a single-incision laparoscopic appendectomy and for evaluation of the right adnexal mass by the patient's gynecologist. After the appendectomy, a single incision was made in the enlarged right ovary (**Figure 1**). The extruded sebaceous material and hair were evacuated, taking care to preserve the remainder of the right ovary (**Figure 2**). Both the appendix and excised right ovarian tissue were sent to pathology for evaluation.

On the basis of the pathologic report, the final diagnoses of acute appendicitis and a benign cystic teratoma were made.

DISCUSSION

Our patient had an asymptomatic benign cystic teratoma that was discovered incidentally with computed tomography after an emergency department admission for acute appendicitis. A single-incision laparoscopic approach was done for both the appendectomy and removal of the cyst to achieve a good aesthetic outcome in this thin young woman.

Benign cystic teratomas, or dermoid cysts, if used in reference to the ovarian variant, are the most common germ cell neoplasm and account for as much as 20% to 25% of all ovarian neoplasms.[2] Most commonly, dermoid cysts tend to occur in women of reproductive age.[1] Ultrasonography has become the gold standard for early diagnosis of dermoid cysts[3] and, when found, surgical excision of these tumors is recommended because of the possibility of complications including torsion of the ovary, rupture, infection, and malignant degeneration.[2] Although rare, malignant degeneration has been reported in as many as 2% of cases.[1,4]

Traditionally, the surgical approach to cyst enucleation was via laparotomy. However, in the past 2 decades, laparoscopic removal of dermoid cysts has increasingly become the standard of care. Of note, laparoscopy has been cited to be especially advantageous versus the standard open approach because of its inherent advantage of allowing complete visualization of the pelvic region of the abdomen and thus a more accurate diagnosis of various adnexal pathologies. This approach minimizes the need for the extension or creation of another incision should unexpected findings arise.[5]

It is possible that the main area of concern associated with the laparoscopic approach has been the spillage of cyst contents during its removal, resulting in chemical peritonitis, chronic granulomas, or malignancies of the peritoneum because of seeding of the peritoneum with potentially malignant tissue. However, with use of an endo-bag and with prompt irrigation of the peritoneal cavity in the event of a spillage, the incidence of complication has been reported to be <1%.[2,4,6] In addition, because malignant teratomas are an entity found most often in the elderly,[1] it is less of a concern in young women of reproductive age. Finally, a conservative approach to tumor removal is recommended to minimize adhesions and preserve fertility as much as possible because most patients with benign cystic teratomas are of reproductive age.[2]

Acute appendicitis is thought to occur as a result of luminal obstruction with consequent edema of the distal organ. Dietary and familial factors have also been implicated in its pathogenesis. Appendicitis is one of the most common causes of acute abdominal pain, with a peak incidence in young adults. Clinically, acute appendicitis may have a variable presentation, and although various hematologic and radiologic tests have been developed to aid in its diagnosis, currently, computed tomography with contrast remains the gold standard. The mainstay of treatment of acute appendicitis is appendectomy, with either an open or a laparoscopic approach. Over the past decade, the laparoscopic approach to appendectomy has become more popular. Multiple studies have shown that this technique has resulted in shorter length of stays and better cosmesis, with similar rates of postoperative morbidity when compared with the open approach.[7,8]

In more recent years, advancements toward more minimally invasive surgical techniques have led to the advent of the single-incision laparoscopic surgery (SILS). SILS uses a single multiport access point through the umbilicus.[9] Numerous retrospective studies have been published on the benefits of SILS, and SILS has been used successfully in the surgical removal of a wide variety of abdominal pathologic conditions.[10,11] The use of SILS has been reported in some cases to result in an overall decrease in the postoperative length of stay,[12] a decrease in the maximum pain score immediately after surgery, and better resultant cosmesis versus the standard multiport laparoscopic technique (LAP).[12] However, as some experts have pointed out, many of the published studies to date are anecdotal[10] or retrospective[13] and may be subject to selection bias. As such, the accuracy of the reported data should be questioned. In addition, published data from randomized, controlled trials are still scarce.[13] Thus, much debate still exists over the concrete benefits of SILS versus the standard multiport laparoscopic technique.

In our patient, SILS was successfully used for both an appendectomy and for subsequent enucleation of an ovarian dermoid cyst. The patient tolerated the procedure well without any complications, and the resultant cosmesis in our thin, 19-year-old female patient was perhaps more favorable than what might have resulted with the use of the standard multiport laparoscopic technique.

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