Case Report

Laparoscopic Management of an Ovarian Dermoid Cyst Containing a Mandibular Structure with Teeth: A Novel Surgical Approach

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A B S T R A C T

Background: The presence of ectodermal-derived tissue, including teeth, in an ovarian dermoid cyst is a common occurrence. The presence of a fully formed mandibular structure with teeth, however, is rare, and there are few case reports in the literature that discuss its surgical management.
Case: We report a case of an adolescent girl found to have a mandibular structure with teeth in her dermoid cyst at the time of her laparoscopic ovarian cystectomy and a novel surgical approach in the extraction of the cyst contents from the abdominal cavity.
Summary and Conclusion: The use of an arthroscopic surgical blade to morcellate the mandibular-like bone allowed for completion of the procedure laparoscopically, without laparotomy for specimen extraction, allowing the patient to benefit from the advantages of minimally invasive surgery.
Key Words: Laparoscopy, Teratoma, Dermoid, Ovarian pathology, Surgical technique, Pediatric gynecology, Adolescent gynecology, Mandible, Teeth, Bone

Introduction

The presence of ectodermal-derived tissue, including teeth, in an ovarian dermoid cyst is a common occurrence. The presence of a fully formed mandibular structure with teeth, however, is rare, and there are few case reports in the literature that discuss its surgical management. We report a case of an adolescent girl found to have a mandibular structure with teeth in her dermoid cyst at the time of her laparoscopic ovarian cystectomy and a novel surgical approach in the extraction of the cyst contents from the abdominal cavity.

Case

A 15-year-old girl presented to the office for consultation of a large, asymptomatic, right ovarian dermoid cyst. This had been incidentally detected on sonography 1 month prior to her consultation when the patient was seen in the emergency room for evaluation of viral gastroenteritis. Ultrasound revealed the presence of a right ovarian dermoid cyst measuring 10 × 8 cm in diameter, with multiple echogenic areas possibly consistent with bone or teeth. In the office, the patient denied nausea, vomiting, and any history of abdominal pain. She had no prior gynecologic or surgical history. Physical examination findings were unremarkable. A plan was made to perform a laparoscopic ovarian cystectomy.

At the time of surgery, three 5-mm laparoscopic port incisions were made. Upon entry into the abdomen with the laparoscope, a 10-cm right ovarian dermoid cyst was visualized. Healthy ovarian tissue was present, and there were no signs of torsion. The rest of the abdomen and pelvis was surveyed, revealing a 3-cm left ovarian corpus luteal cyst. All other abdominal and pelvic organs were normal appearing.

A monopolar hook was used to incise the right ovarian cortex, and the cyst wall was identified. Using a combination of sharp dissection and traction and counter-traction maneuvering, the cyst was removed and placed into a laparoscopic specimen retrieval bag. The retrieval bag was advanced to the left lower quadrant port incision site, and this skin and fascial incision was extended with a scalpel to measure 1.5 cm. Extracorporeal morcellation was then performed to extract the ovarian cyst contents from the abdomen.

Upon morcellation, a mandibular structure containing teeth measuring approximately 5 × 3 cm was noted. This mandibular structure could not be extracted using traditional gynecologic morcellation techniques with Mayo scissors and a scalpel. An intraoperative orthopedic surgery consult was obtained, and the recommendation was made to use an arthroscopic surgical blade to morcellate the bone.

An arthroscopic surgical blade with a 4-mm stone cutter bur was used to perform extracorporeal morcellation of the bone contained within the retrieval bag, which allowed for its removal from the abdominal cavity through the 1.5-cm port incision (Fig. 1). Once the mandibular structure and

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Fig. 1. Morcellation of the mandibular structure within the specimen retrieval bag using an arthroscopic surgical blade with a 4-mm stone cutter bur.

cystic contents were removed from the abdomen, the fascial incision was closed, along with the 3 skin incisions. The patient tolerated the procedure well and was discharged home once she met all postoperative milestones on postoperative day 0.

Pathologic evaluation of the cyst revealed a mature cystic teratoma with predominantly ectodermal and mesodermal components including hair, fat, cartilage, and teeth (Fig. 2). The histological appearance of the mandibular structure was that of mature bone.

Discussion

Although the presence of teeth within ovarian dermoid cysts is common, only 5 previous case reports have described the presence of a dermoid cyst containing teeth within a mandibular structure.[1–5] To our knowledge, this is the first such case reported in the pediatric population, and only the second case describing the laparoscopic management of such a structure.[5]

Removal of the mandibular structure without the need for laparotomy for specimen extraction was achieved by using an arthroscopic surgical blade with a 4-mm stone cutter bur, an orthopedic surgical device, to morcellate enough of the bone to allow for its removal through a 15-mm port site incision. Continued morcellation using traditional gynecologic techniques using Mayo scissors and a scalpel posed the risk of instrument damage and failed to produce the desired result of specimen extraction. To our knowledge, the use of an arthroscopic surgical blade during laparoscopy has never been reported in the literature for the debulking of bony structures during a laparoscopic ovarian cystectomy.

Arthroscopic shaver systems are used in orthopedic surgery to assist in arthroscopic debridement. They are used to cut tissue such as cartilage, joints, and bone. They consist of a hand piece, a core powered instrument driver, foots switches, and an arthroscopic shaver.[6] A connecting suction device is used to absorb the bone chips during the surgery.[6] The arthroscopic surgical blade that we used had a 4-mm stone cutter bur at the tip. Burs have several spiral curve cutting edges, and in orthopedic surgery they are useful for aggressive bony site preparation and resection of small bony prominences.[6]

This novel technique requires continuous laparoscopic surveillance to ensure that the specimen collection bag remains intact and that bone fragments stay inside the bag to prevent spillage of dermoid contents. Special care must also be taken to ensure that the bowel is retracted away from the arthroscopic shaver to prevent any potential bowel injury. If an arthroscopic surgical blade is unavailable, preventing mini-laparotomy can be achieved by increasing port sizes to 12 and 20 mm and orienting the mandibular structure to pass through the port.[5]

Extracorporeal morcellation of bony structures within an ovarian teratoma using an arthroscopic surgical blade is technically feasible, and led to successful completion of our patient's laparoscopic ovarian cystectomy without conversion to laparotomy for specimen extraction. This technique allowed our patient to benefit from the advantages of

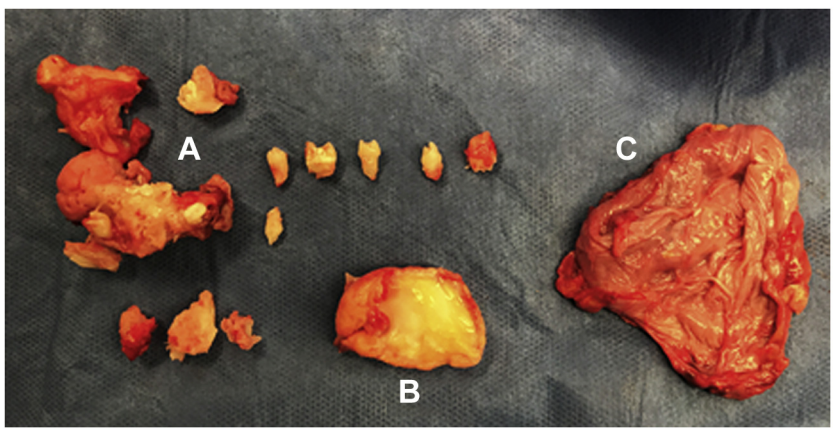

Fig. 2. Mandibular structure with teeth found within the right ovarian dermoid cyst. (A) Mandibular structure with 8 teeth; (B) cartilaginous structure; (C) dermoid cyst capsule.

minimally invasive surgery including improved cosmesis and diminished blood loss, postoperative pain, and length of hospital stay. It also prevented the damage of surgical instruments traditionally used in gynecologic morcellation.

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