

Intraoperative ultrasound for benign cystic teratoma. Report of two cases

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Abstract

Purpose Teratoma is one of the most common ovarian neoplasms and frequently leads to laparoscopic surgical procedure. When this tumor is small and the ovarian surface seems regular during the surgery, it is difficult to localize the tumor.

Methods We used a standard transvaginal ultrasound probe during the procedure and filled the pelvic cavity with saline solution of 0.9% in order to create an interface between the saline solution and the surgical instruments.

Results We could localize the teratoma with confidence and precision, allowing to perform a sparing surgery.

Conclusion This is a simple, secure and efficient technique that can be performed in most of the institutions.

Keywords Intraoperative · Ultrasound · Teratoma · Sparing · Laparoscopy

Introduction

Teratoma is one of the most common ovarian neoplasms and account for 15% of all ovarian tumors [1]. The benign cystic teratoma can be complicated by torsion, rupture and uncommonly malignant degeneration [2]. Frequently diagnosed by transvaginal ultrasound, it leads to a surgical treatment. When this tumors is occupying all the ovarian

parenchyma, it is usually performed a complete oophorectomy (with ipsilateral salpingectomy in most of the cases); however, when the teratoma occupies part of the ovary, the surgeon must excise only the tumor, preserving the normal ovarian tissue, the so-called oophoroplasty.

Though it is not difficult to see the teratoma image at an ultrasound scan, it is difficult to determine which portion of the ovary is committed when teratoma reaches a small size, since the ovarian surface seems normal at laparotomy or laparoscopy. At laparotomy, palpatory evaluation may be sufficient to define the location of the lesion, which does not occur at laparoscopy. We show a technique that allows to identify a small size teratoma inside the ovarian parenchyma during laparoscopic surgery.

Methods

The technique was applied for two patients who underwent for laparoscopic surgery after a diagnostic of suspected teratoma by transvaginal ultrasound scan. They were treated by the Department of Gynecology team from AC Camargo Hospital.

The first patient was AAAM, 37-year old, multiparous (one vaginal delivery and two cesarean-sections), smoker, no other morbidities. An ultrasound scan showed an echogenic nodule in her right ovary measuring 1.3×1.1 cm and she was submitted to surgery at 30 October 2009.

The second patient was MP, 27-year old, nulliparous, no morbidities. An ultrasound scan found a hyperechogenic nodule in her right ovary measuring 1.8×1.7 cm and she was submitted to surgery at 20 August 2010.

A transvaginal standard probe was inserted during the two intraoperative situations in order to define the side of

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the ovary which contained the suspected teratomas, since it seemed normal by outside view (Fig. 1).

Once the ultrasound scan found the diseased ovary, the pelvic cavity was filled with saline solution of 0.9% in order to create an interface between the saline solution and the surgical instruments (Fig. 2), allowing visibility of these instruments by the ultrasound. Then, the surgeon chooses one of the sides of the ovary (proper ligament of ovary or tubal side) and the ultrasound examiner could identify if the surgeon was holding the side with tumor or the normal parenchyma (Figs. 3; 4). From there, the surgeon could excise the teratoma with confidence (Fig. 5).

After the oophoroplasty, a new ultrasound scan with a 7.5 MHz linear transducer was performed on the excised piece and confirmed the image previously observed (Fig. 6). Then, the piece was sent to frozen biopsy in order to confirm a mature teratoma (Fig. 7). Hemostasis was done for the remaining ovarian parenchyma and no suture was necessary.

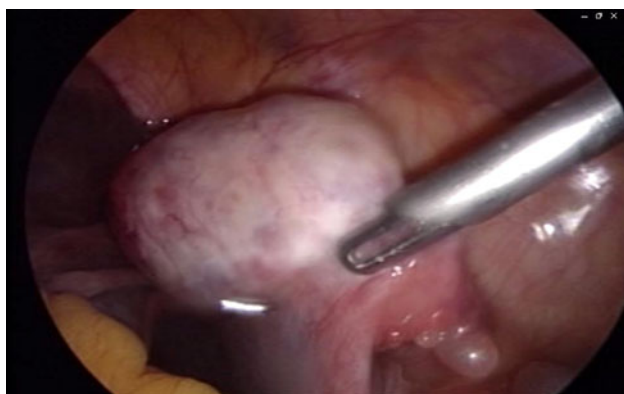


Fig. 1 The ovary seems normal by outside view

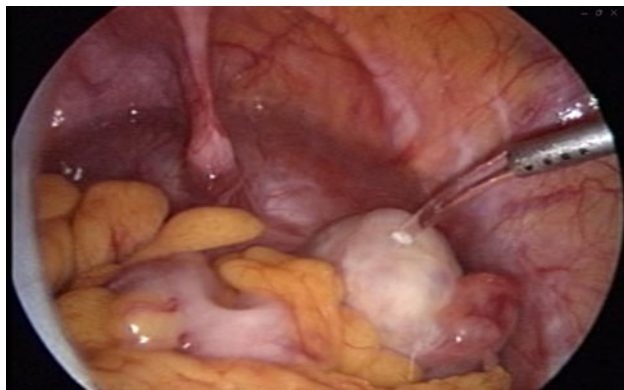


Fig. 2 The pelvic cavity was filled with saline solution allowing visibility of surgical instruments by the ultrasound scan



Fig. 3 The echogenic nodule (Rokitansky sign) guides the surgeon. An arrow indicates the instrument



Fig. 4 Grasping the side to be excised



Fig. 5 Excising the teratoma

Results

Both patients had no post-operative complication and they were sent home on the first post-operative day. The patients

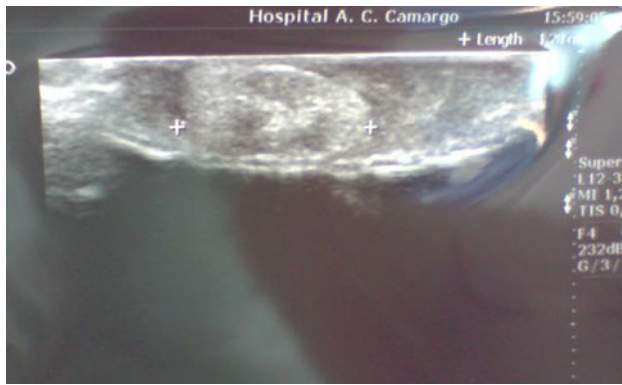


Fig. 6 The echogenic nodule is seen in the excised piece

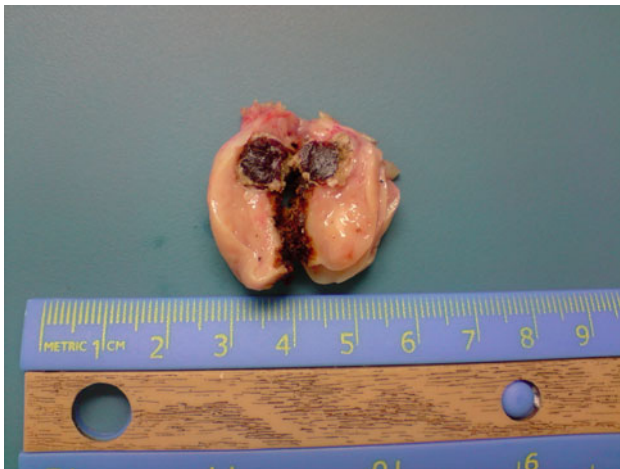


Fig. 7 A mature teratoma is confirmed by the pathologist

did not have any menstrual irregularity before and after the surgery.

Discussion

It is known that most of the mature cystic teratomas are asymptomatic and grow slowly at a rate of 1.8 mm each year [3]. Most of these asymptomatic teratomas are managed expectantly, since associated complications such as torsion, rupture and infection are rare. Expectant management with transvaginal ultrasound is proper for the most cases. However, there are patients that request surgery for several reasons. Hoo et al. [4] related that 50% of indications for surgical intervention for ovarian dermoid cysts were by patient request. In our practice, only two patients described here requested surgery because of cancerphobia.

The reason for surgical conservative treatment in a early phase of the disease is that these benign tumors can keep

growing until there is no normal ovarian parenchyma left. Furthermore, these tumors are bilateral in ~10% of the cases [5].

In many cases, it is difficult for the surgeon to define which side of the ovary is compromised by a small cystic benign teratoma, since the ovary seems normal by outside view. Besides, when the surgery is performed by laparoscopy, the tactile evaluation of the ovary is limited.

There are ultrasound probes specific for laparoscopy, but it is not available in every institution. The technique we described is performed using a standard vaginal probe that is available in many hospitals.

One of the most frequent ultrasound findings for benign cystic teratoma is the Rokitansky nodule which consist of a densely echogenic tubercle projecting into the cyst lumen. It contains hair, teeth and fat and may cause acoustic shadowing [2]. This sign drives the surgeon, through intraoperative ultrasound, to excise only the teratoma or the portion that contains the teratoma, leaving the normal ovarian parenchyma intact.

Conclusion

The technique we described is indicated for small teratomas when a sparing surgery is preferable. It is easy to perform, simple, safe, non-toxic, fast and cheap.

Conflict of interest The authors declare that they have no conflict of interest.

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