

Ultrasound, macroscopic and histological features of borderline ovarian tumors

Valeria Verdecchia, Paola Romeo, Damiano Arciuolo, Francesca Moro 



Francesca Moro

¹Dipartimento Scienze della Salute della Donna, del Bambino e di Sanità Pubblica, Fondazione Policlinico Universitario Agostino Gemelli, IRCCS, Rome, Italy

Biography: Dott.ssa Francesca Moro is a gynecologist of Fondazione Policlinico Universitario Agostino Gemelli, IRCCS, in Rome. She is particularly involved in clinical research in ultrasound and gynecologic oncology.

Dipartimento Scienze della Salute della Donna, del Bambino e di Sanità Pubblica, Fondazione Policlinico Universitario Agostino Gemelli, IRCCS, Rome, Italy

Correspondence to

Dr Francesca Moro,
Dipartimento Scienze della Salute della Donna, del Bambino e di Sanità Pubblica, Fondazione Policlinico Universitario Agostino Gemelli, IRCCS, Rome 00168, Italy; morofrancy@gmail.com

Accepted 20 April 2020

Published Online First

18 September 2020

SUMMARY

The objective of this video ([Video 1](#)) is to present two cases of borderline ovarian tumors, examined at the Gynecologic Oncology Unit of the Fondazione Policlinico Universitario Agostino Gemelli, IRCCS, in Rome, Italy. The first part of the video shows clinical, ultrasound, macroscopic, and histological features of a patient with serous borderline ovarian tumors. The second part of the video presents clinical, ultrasound, macroscopic, and histological features of a patient with mucinous borderline ovarian tumor.

The first case is a 39-year-old patient with no family history of cancer, referred to our center for an adnexal mass incidentally detected during a routine ultrasound examination performed at another hospital. Serum levels

of oncological markers were: CA125 22U/mL (reference range: 0–35 U/mL), CA 19.9 <0.3U/mL (reference range: 0–37 U/mL), human epididymis protein 4 (HE4) 66 pmol/L (reference range: 0–150 pmol/L), carcinoembryonic antigen (CEA) 0.42 ng/mL (reference range: 0–5 ng/mL). Transvaginal ultrasound examination showed a right unilocular solid tumor 68×39×53 mm, with anechoic content and multiple papillary projections. The largest papillary projection was 17×46 mm and it showed moderate vascularization. At ultrasound examination of the left ovary, an unilocular solid tumor 19×18×16 mm, with anechoic content and a papillary projection with moderate vascularization, was present. IOTA ADNEX model¹ showed an increased risk of malignancy, and the relative risk was highest for borderline



Video 1 Video representing clinical, ultrasound, macroscopic and histological features of a 39-year-old patient with serous borderline ovarian tumor and a 57-year-old patient with mucinous borderline ovarian tumor.



© IGCS and ESGO 2021. No commercial re-use. See rights and permissions. Published by BMJ.

To cite: Verdecchia V, Romeo P, Arciuolo D, et al. *Int J Gynecol Cancer* 2021;31:302–303.

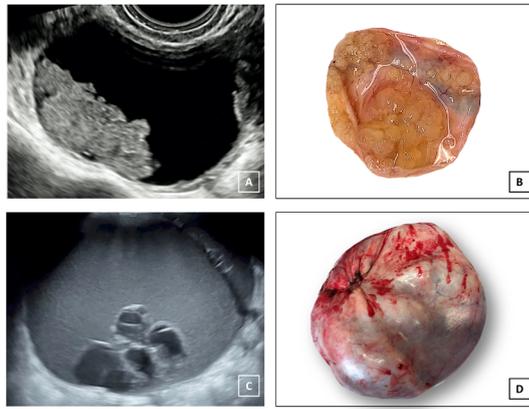


Figure 1 Ultrasound and macroscopic images of a serous borderline ovarian tumor (A, B) and of a mucinous borderline ovarian tumor (C, D).

tumor (link to the IOTA ADNEX model calculator: <https://www.iota-group.org/sites/default/files/adnexmodel/IOTA-ADNEXmodel.html>). Moreover, the tumor was classified as O-RADS 5.² At laparoscopy, bilateral ovarian masses were confirmed, and a right salpingo-oophorectomy and left cystectomy were performed. The macroscopic assessment of the right mass confirmed the presence of a solid cystic tumor with multiple papillary projections. Final histology report was positive for bilateral serous borderline ovarian tumor (Figure 1).³

The second case was a 57-year-old patient with no family history of cancer. During a transabdominal ultrasound examination performed for abdominal and pelvic swelling, a complex adnexal mass was detected. Serum levels of oncological markers were: CA125 22U/mL (reference range: 0–35U/mL), CA 19.9 <0.3U/mL (reference range: 0–37U/mL), CEA 0.32ng/mL (reference range: 0–5ng/mL). Transvaginal ultrasound examination showed a left multilocular cyst 180×110×205mm, with more than 10 locules and low-level content. In the cyst it was possible to observe a multilocular nodule termed a 'honeycomb nodule'.^{4,5} The cyst showed minimal vascularization on color Doppler examination. IOTA ADNEX model¹ showed an increased risk of malignancy, and the relative risk was highest for borderline.

Moreover, the tumor was classified as O-RADS 4.² At laparoscopy, a voluminous left adnexal mass reaching the transverse umbilical plane was seen. Intra-operative frozen section of the left ovarian mass was positive for mucinous cystadenoma. Hysterectomy, bilateral salpingo-oophorectomy, and appendectomy were performed. At macroscopy, a left multilocular cystic mass with mucinous content was described.⁶ Final histology report was positive for mucinous borderline ovarian tumor (Figure 1) with focal intraepithelial carcinoma.⁷

Contributors All the authors contributed to the collection of clinical, ultrasound, macroscopic, and histological materials and in the realization of the video.

Funding The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

Competing interests None declared.

Patient consent for publication Not required.

Provenance and peer review Commissioned; internally peer reviewed.

ORCID iD

Francesca Moro <http://orcid.org/0000-0002-5070-7245>

REFERENCES

- 1 Van Calster B, Van Hoorde K, Valentin L, *et al*. Evaluating the risk of ovarian cancer before surgery using the ADNEX model to differentiate between benign, borderline, early and advanced stage invasive, and secondary metastatic tumours: prospective multicentre diagnostic study. *BMJ* 2014;349:g5920.
- 2 Andreotti RF, Timmerman D, Strachowski LM, *et al*. O-RADS US risk stratification and management system: a consensus guideline from the ACR Ovarian-Adnexal Reporting and Data System Committee. *Radiology* 2020;294:168–85.
- 3 Longacre TA, Wells M. Serous tumors. In: Kurman RJ, Carcangiu ML, Herrington CS, *et al*, eds. *WHO classification of tumours of female reproductive organs*. Lyon, France: IARC Press, 2014: 15–24.
- 4 Yazbek J, Raju KS, Ben-Nagi J, *et al*. Accuracy of ultrasound subjective 'pattern recognition' for the diagnosis of borderline ovarian tumors. *Ultrasound Obstet Gynecol* 2007;29:489–95.
- 5 Moro F, Zannoni GF, Arciuolo D, *et al*. Imaging in gynecological disease (11): clinical and ultrasound features of mucinous ovarian tumors. *Ultrasound Obstet Gynecol* 2017;50:261–70.
- 6 Longacre TA, Bell DA. Mucinous tumors. In: Kurman RJ, Carcangiu ML, Herrington CS, *et al*, eds. *WHO classification of tumours of female reproductive organs*. Lyon, France: IARC, 2014: 25–8.
- 7 Seidman JD, Soslow RA, Vang R, *et al*. Borderline ovarian tumors: diverse contemporary viewpoints on terminology and diagnostic criteria with illustrative images. *Hum Pathol* 2004;35:918–33.