HỘI NGHỊ KHOA HỌC CHẨN ĐOÁN HÌNH ẢNH TP.HCM MỞ RỘNG LẦN THỨ XII–2025

Chiến lược 2 bước chẩn đoán khối u buồng trứng trước phẫu thuật theo IOTA

RSHCM 2025

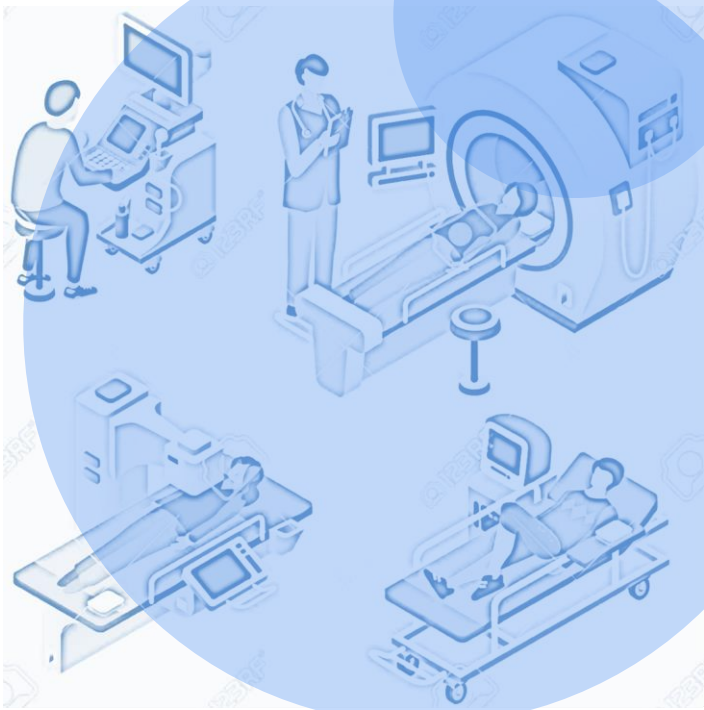
Giới thiệu

- Ung thư buồng trứng là nguyên nhân hàng đầu thứ năm gây tử vong do ung thư ở phụ nữ ở các nước phát triển
- Bệnh nhân ung thư buồng trứng được điều trị tại các trung tâm chuyên về ung thư có tiên lượng tốt hơn so với những bệnh nhân được điều trị tại khoa phụ khoa tổng quát.
- Chẩn đoán trước phẫu thuật chính xác là rất quan trọng để tạo điều kiện điều trị tối ưu

Giới thiệu

- Những mô hình toán học được tạo ra để tiên lượng khả năng ác tính của u buồng trứng
  - RMI
  - Các mô hình của IOTA: LR1, LR2, SRRisks,ADNEX
- Các mô hình của IOTA phân biệt tốt hơn, ADNEX có thể tính nguy cơ của 4 loại ác tính
- Một số tổn thương của buồng trứng có thể dễ dàng nhận ra → không cần mất thời gian nhập vào mô hình tính toán → Mô tả đơn giản

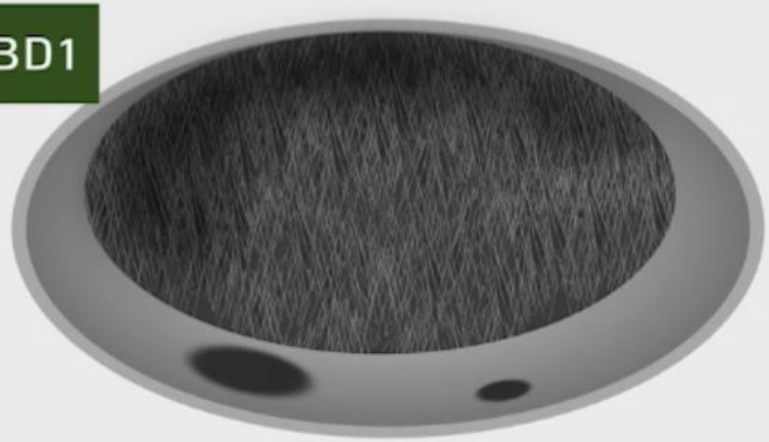
Mô tả đơn giản



40-50% khối u

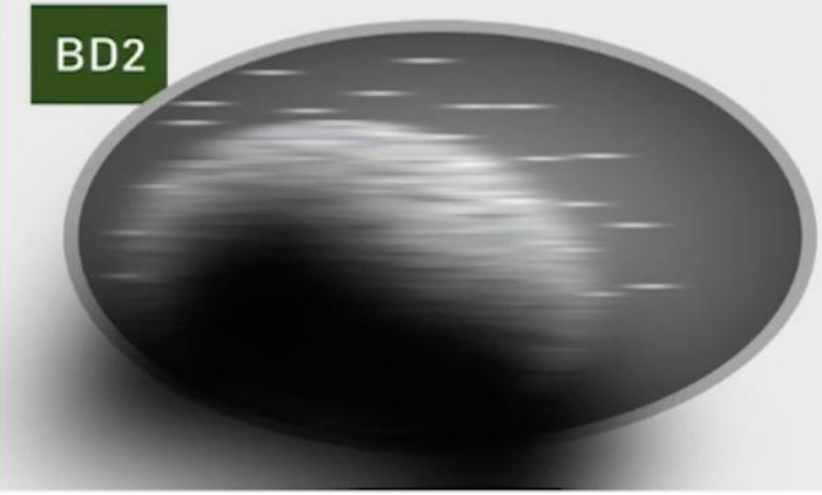
Mô tả đơn giản

BD1



Khối u nang đơn thuỳ, phản âm kém dạng kính mờ, ở phụ nữ trước mãn kinh, kích thước <10 cm

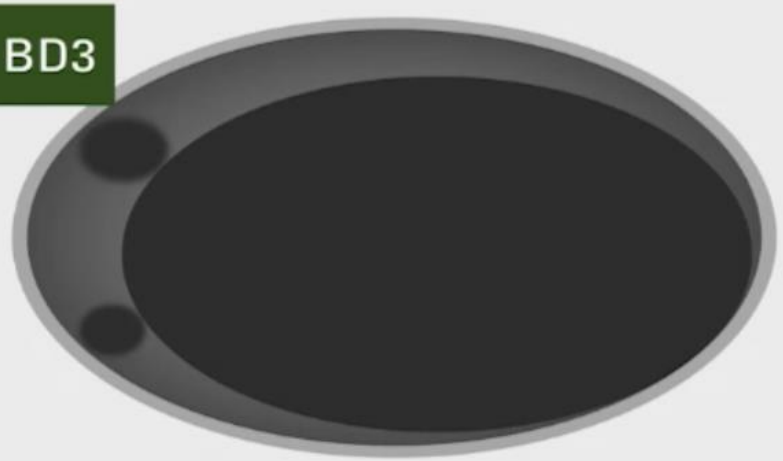
BD2



Khối u nang đơn thuỳ, phản âm hỗn hợp dạng bì và có bóng lưng, ở phụ nữ trước mãn kinh, kích thước <10 cm

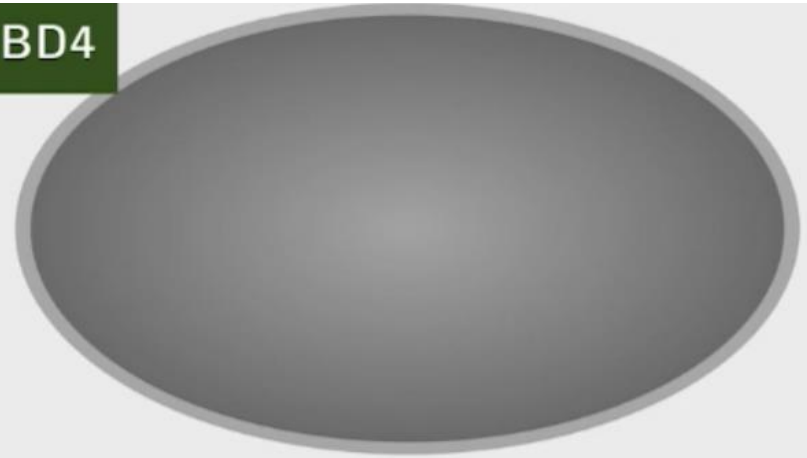
Khối u nang đơn thuỳ, phản âm trống, bờ đều, kích thước <10 cm

BD3

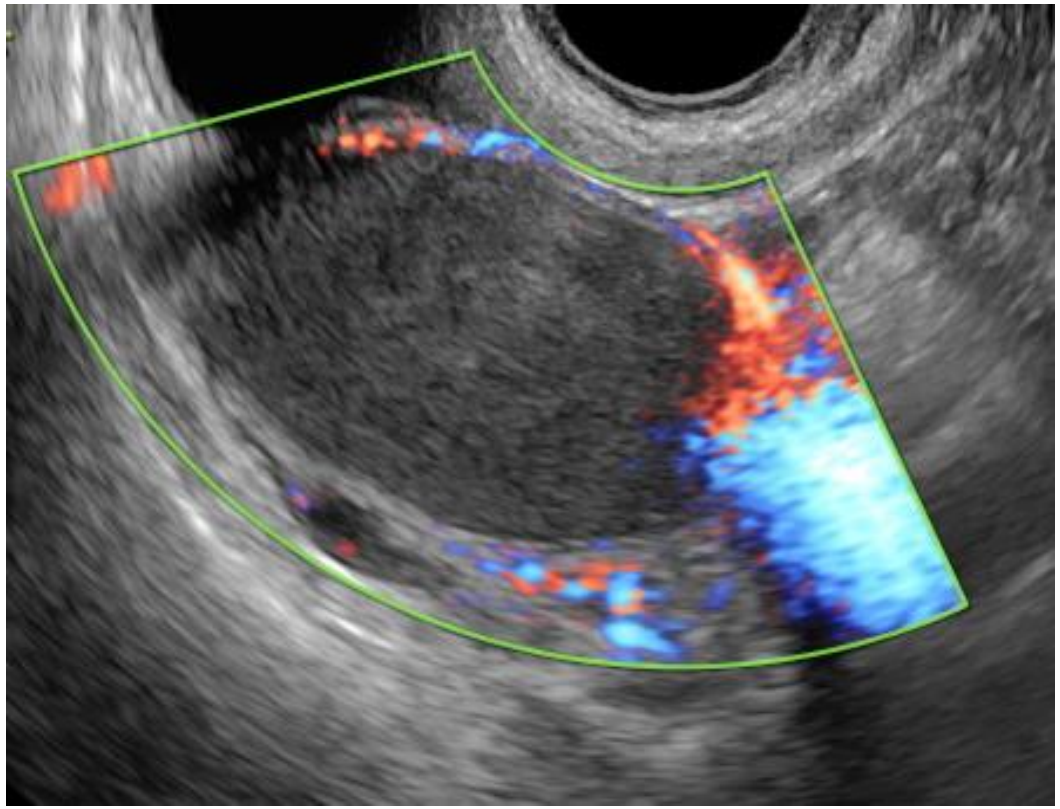


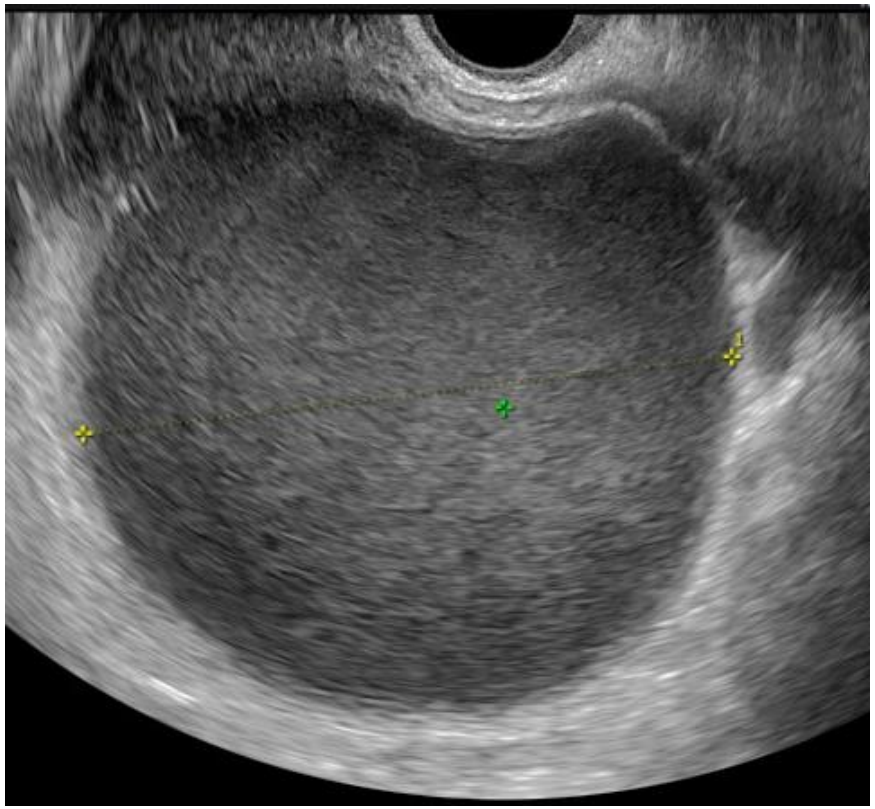
Khối u nang đơn thuỳ, bờ đều, kích thước <10 cm

BD4



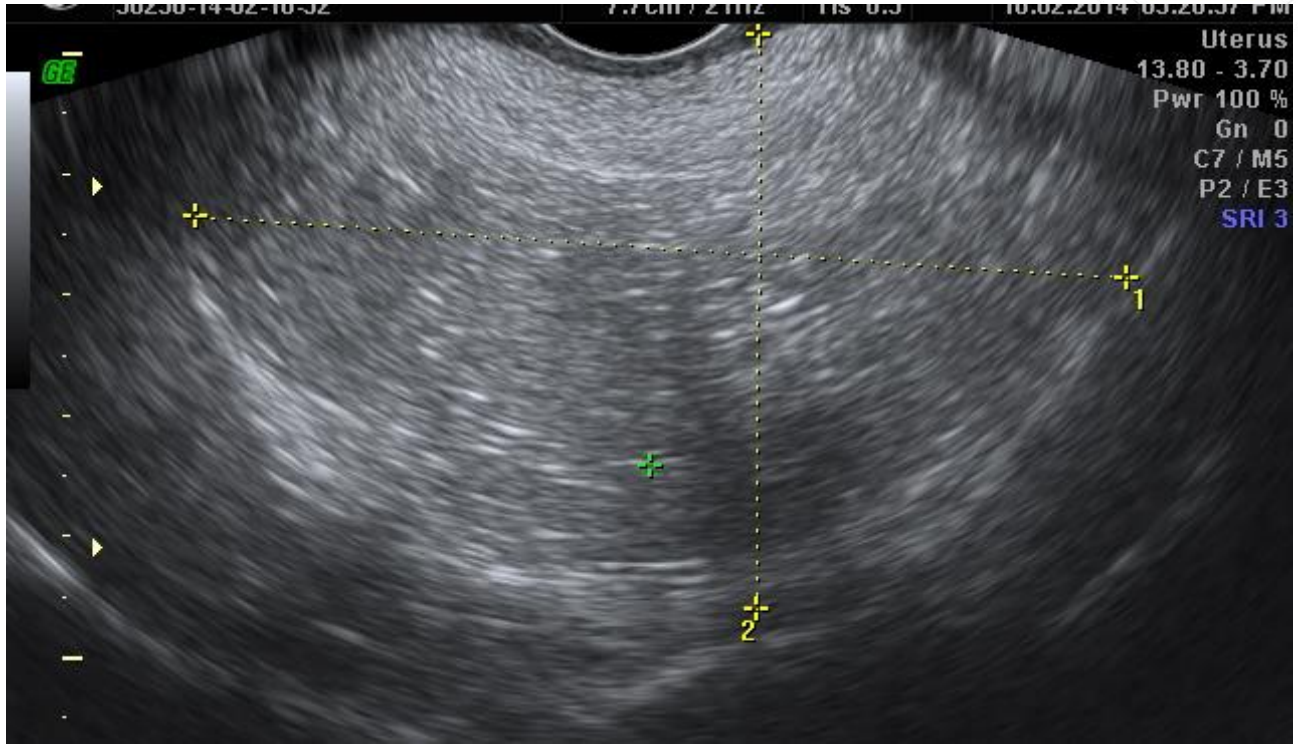
Mô tả đơn giản 1 - Nang lạc nội mạc





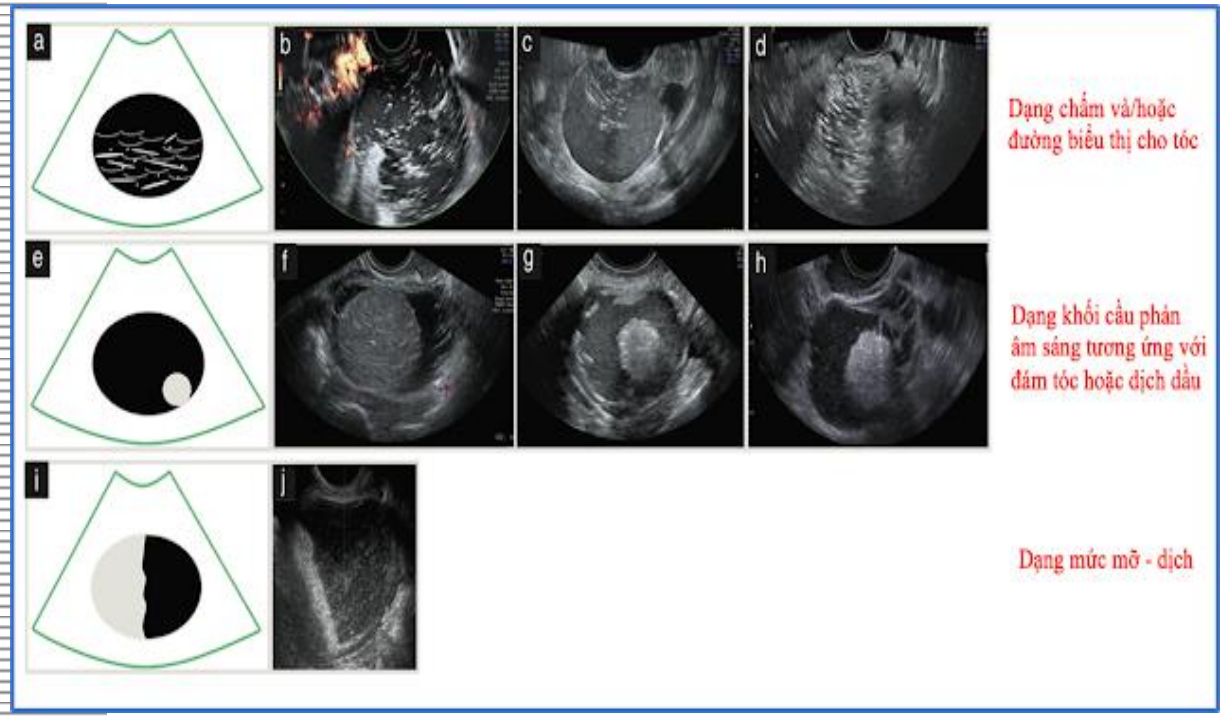
- Nang đơn thùy
- Nang phản kém đồng nhất – dạng kính mờ
- Gặp trên phụ nữ trước mãn kinh
- Kích thước <10cm

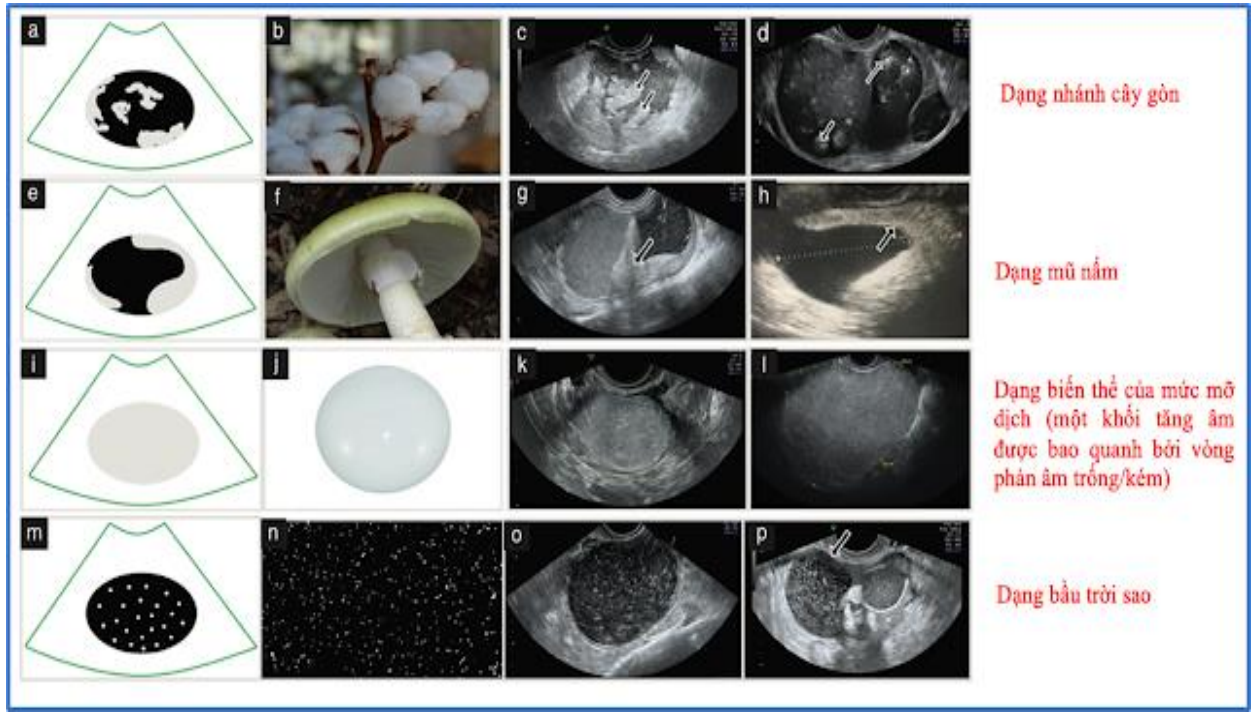
Mô tả đơn giản 2 - U bì



- Nang đơn thuỳ
- Phản âm hỗn hợp – dạng bì có bóng lưng
- Gặp trên phụ nữ trước mãn kinh
- Kích thước <10cm

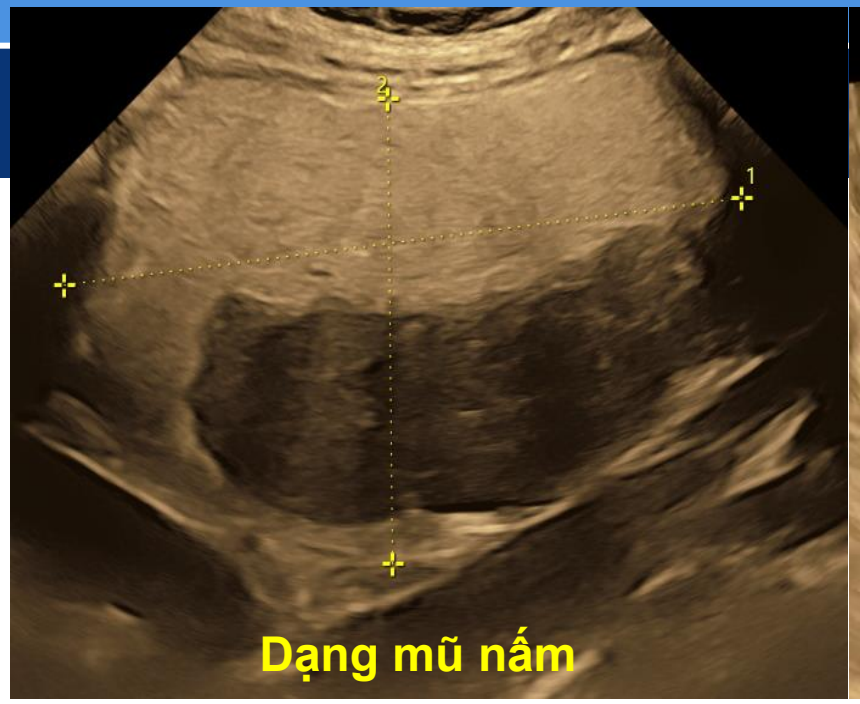
Sự đa dạng của u bì



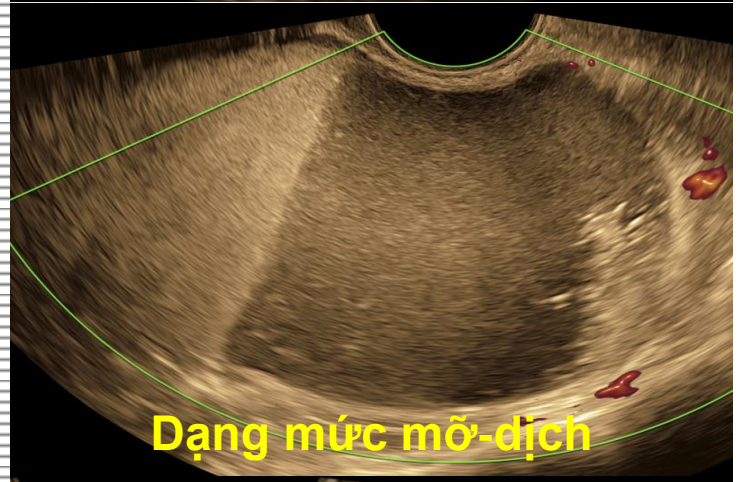


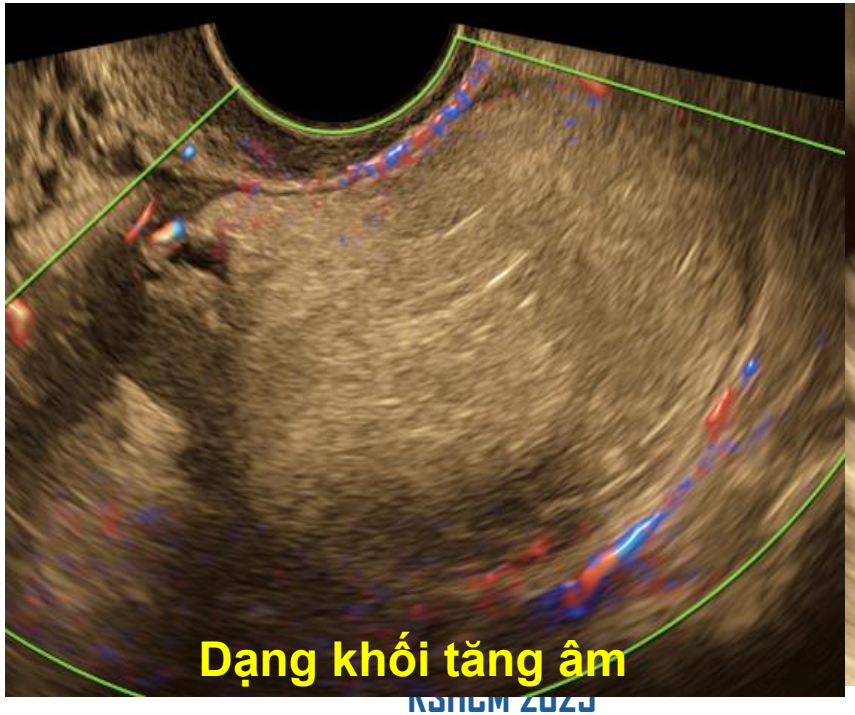
Heremans, R., Valentin, L., Sladkevicius, P., Timmerman, S., Moro, F., Van Holsbeke, C., Epstein, E., Testa, A.C., Timmerman, D. and Froyman, W. (2022), Imaging in gynecological disease (24): clinical and ultrasound characteristics of ovarian mature cystic teratomas. Ultrasound Obstet Gynecol, 60: 549-558. https://doi.org/10.1002/uog.24904


Dạng khối cầu phản âm sáng


Dạng mũ nấm


Dạng nhánh gòn


Dạng mức mỡ-dịch

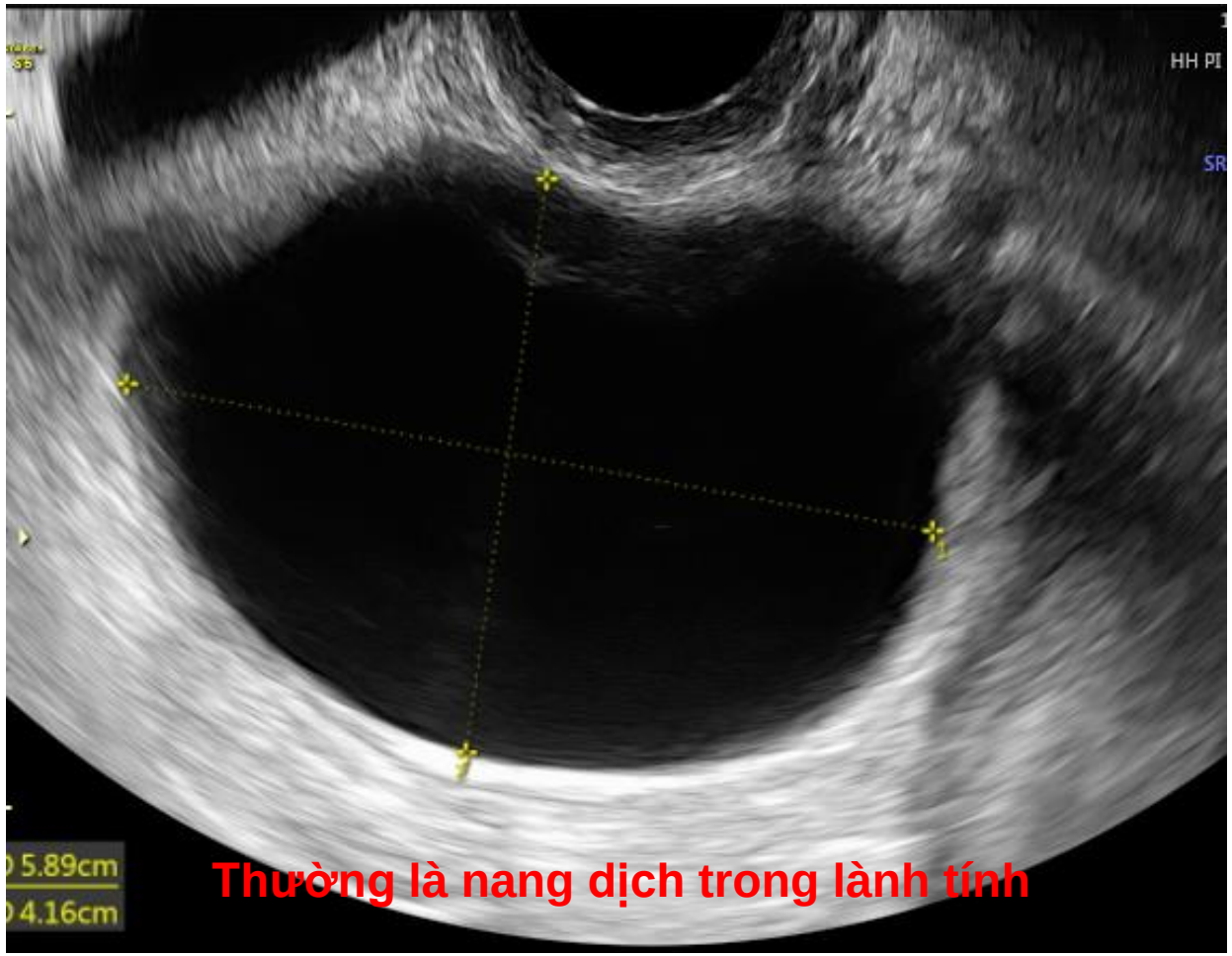

Dạng khối tăng âm


Dạng bầu trời sao

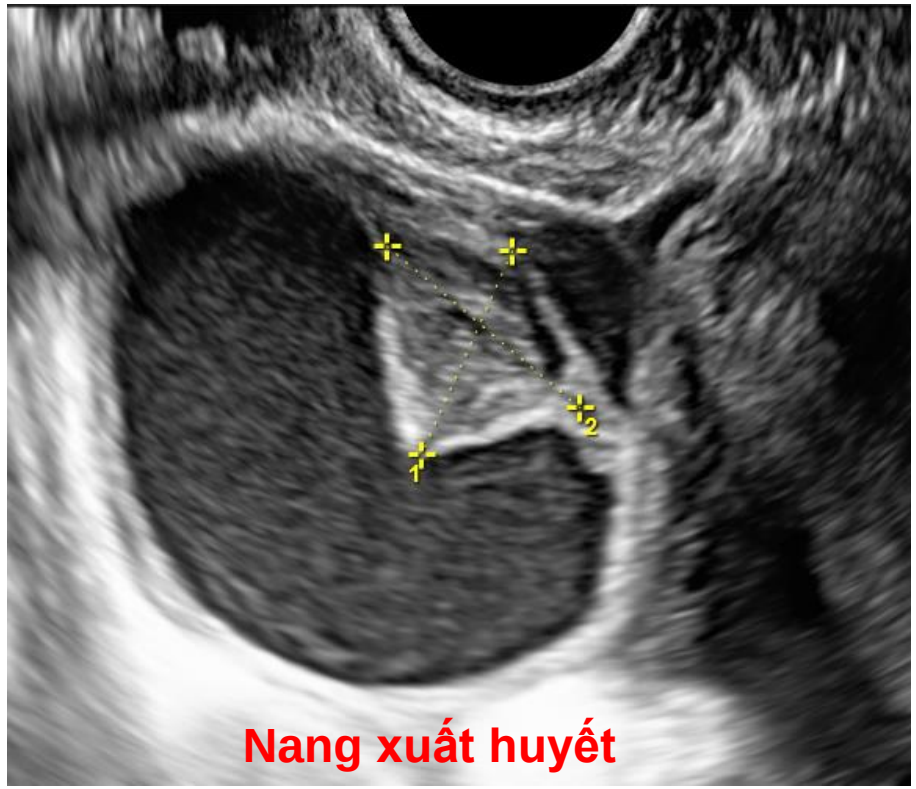

Dạng đường phản âm sáng

Mô tả đơn giản 3 – Nang đơn giản

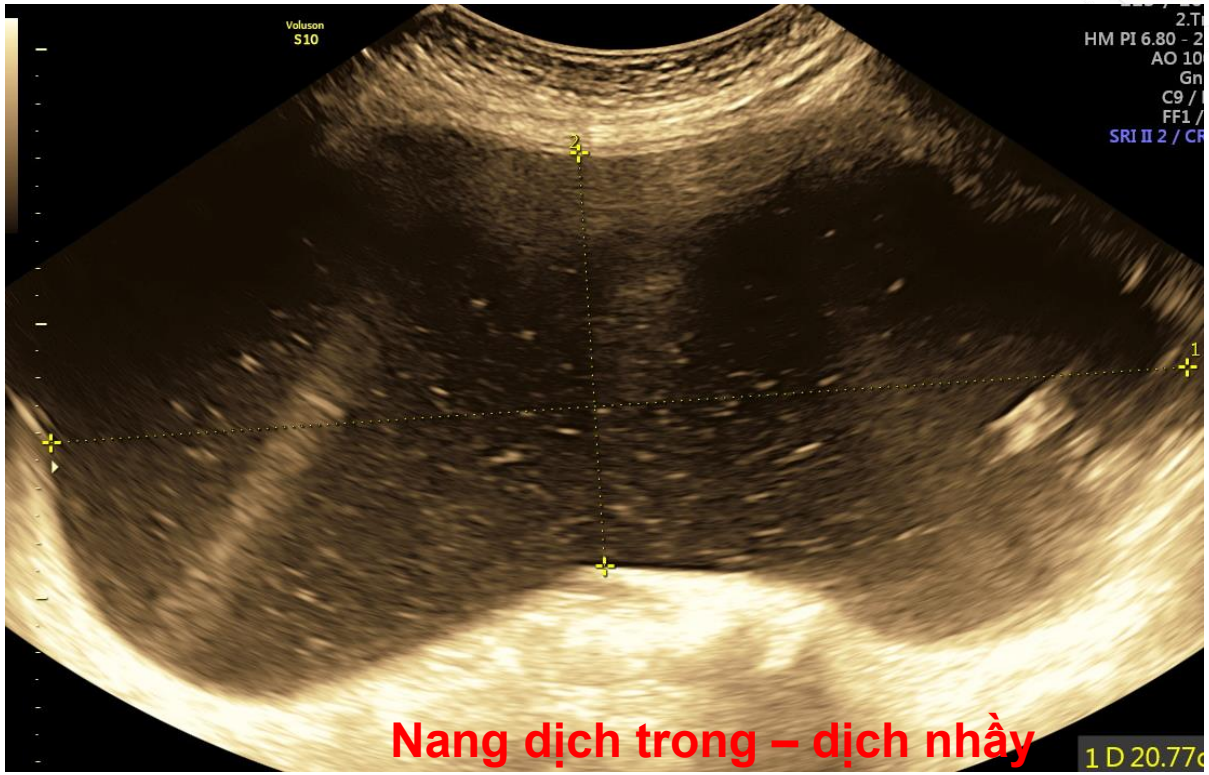
- Nang đơn thuỳ
- Phản âm trống
- Bờ đều
- Kích thước không quá 10cm



Mô tả đơn giản 4 – nang đơn thuỳ



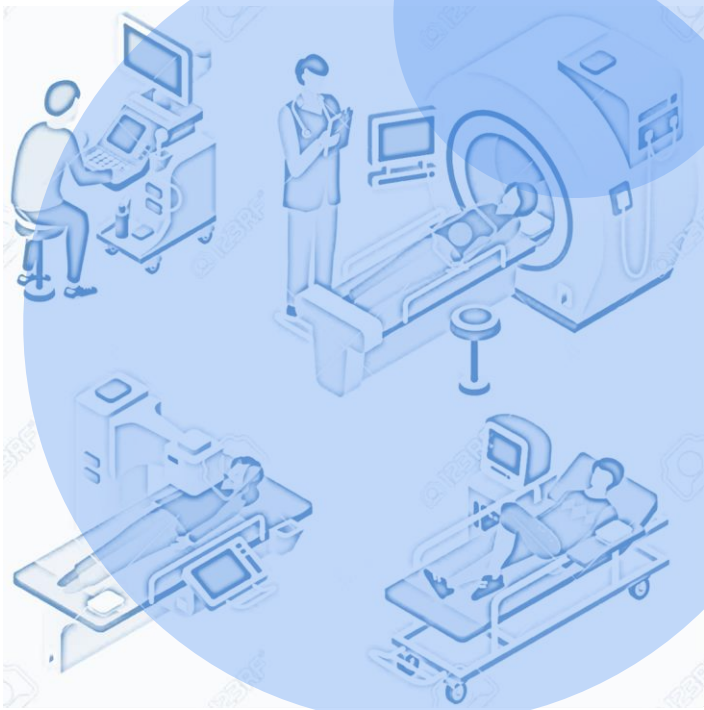
Nang xuất huyết



Nang dịch trong – dịch nhầy lành tính

- Nang đơn thuỳ
- Phản âm bất kì
- Bờ đều
- Kích thước không quá 10cm

Mô hình hồi quy



Mô hình hồi quy

❖ **LR2: (6 thông số)**

1. Tuổi
2. Có báng bụng
3. Có mạch máu trong nhú
4. Đường kính lớn nhất của phần đặc
5. Bờ trong u đều/không đều
6. Có bóng lưng

❖ **ADNEX: (9 thông số)**

1. Tuổi
2. Trung tâm ung thư
3. Đường kính lớn nhất của u
4. Đường kính lớn nhất phần dặc
5. Nhiều 10 thùy
6. Số nhú
7. Bóng lưng
8. Dịch ổ bụng
9. CA 125

Mô hình hồi qu

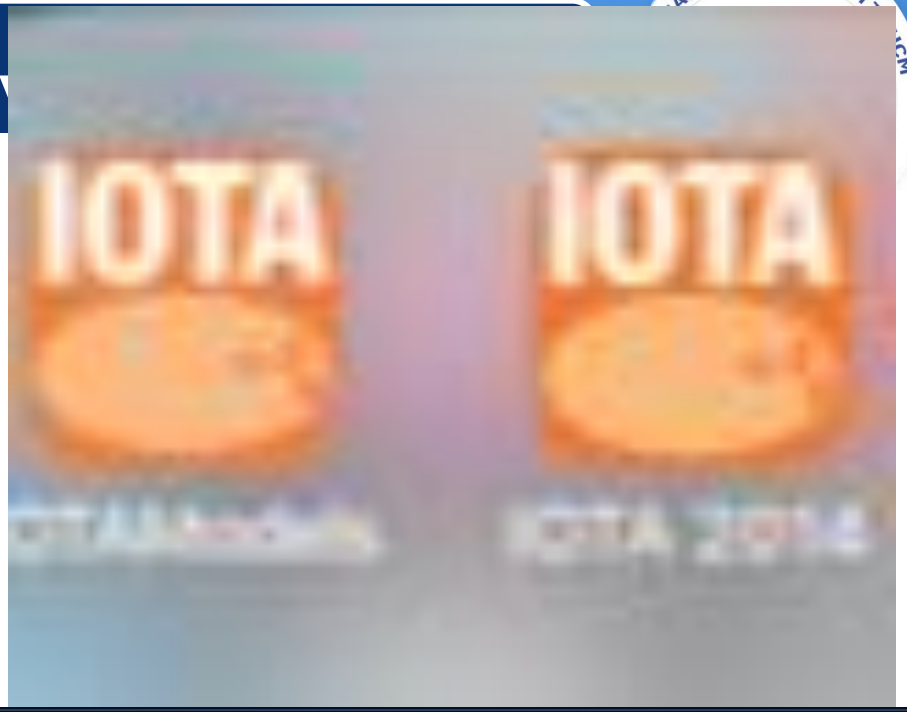
Trên điện thoại/ máy tính bảng

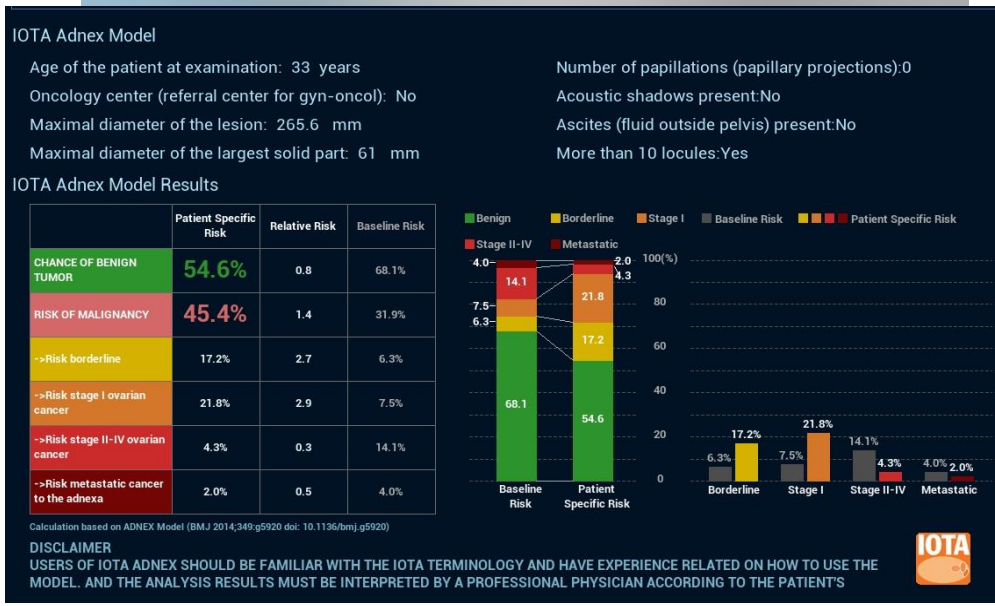
- iOS (iphone)
- Android

Trên máy tính: excel

Trên các máy siêu âm

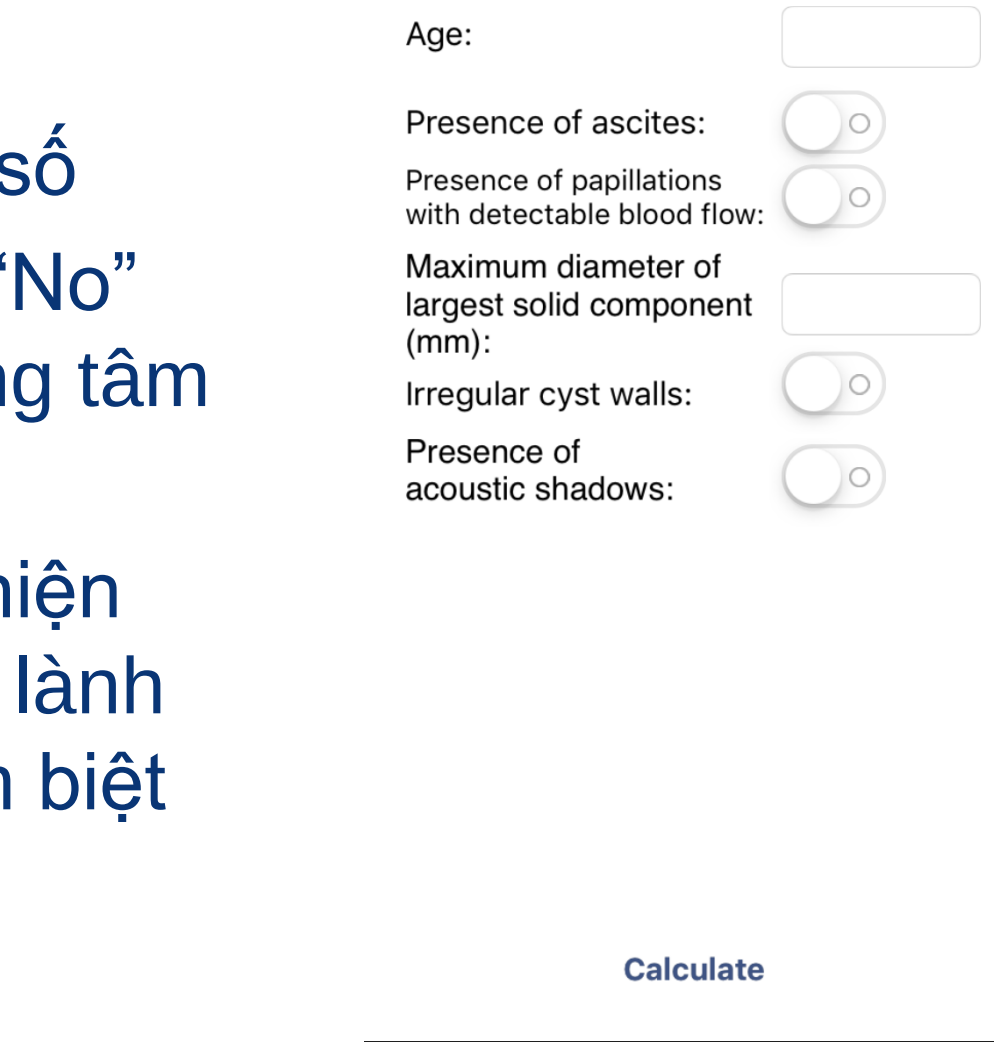
➔ NGUY CƠ ÁC TÍNH KHI ≥ 10%

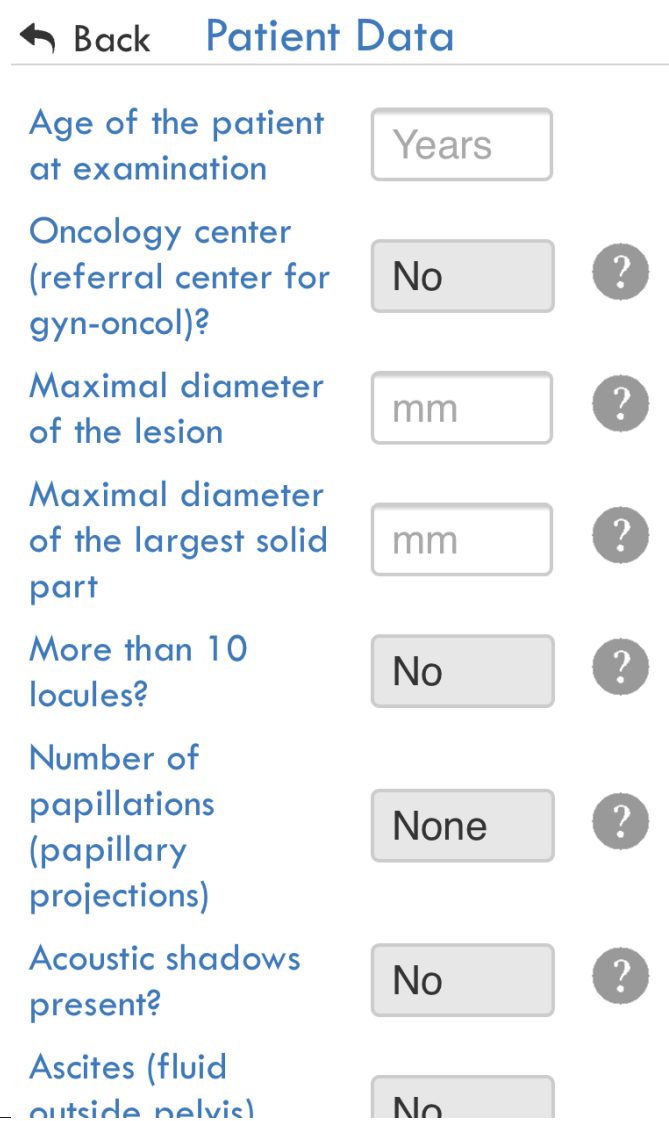




Mô hình hồi quy

- Ghi nhận các thông số
- Oncology center → "No" (nếu không phải trung tâm ung thư)
- CA 125: không cải thiện khả năng tiên lượng lành ác (nhưng giúp phân biệt các loại ung thư)





Mô hình hồi quy

Nguy cơ ác tính

Thay đổi nguy cơ

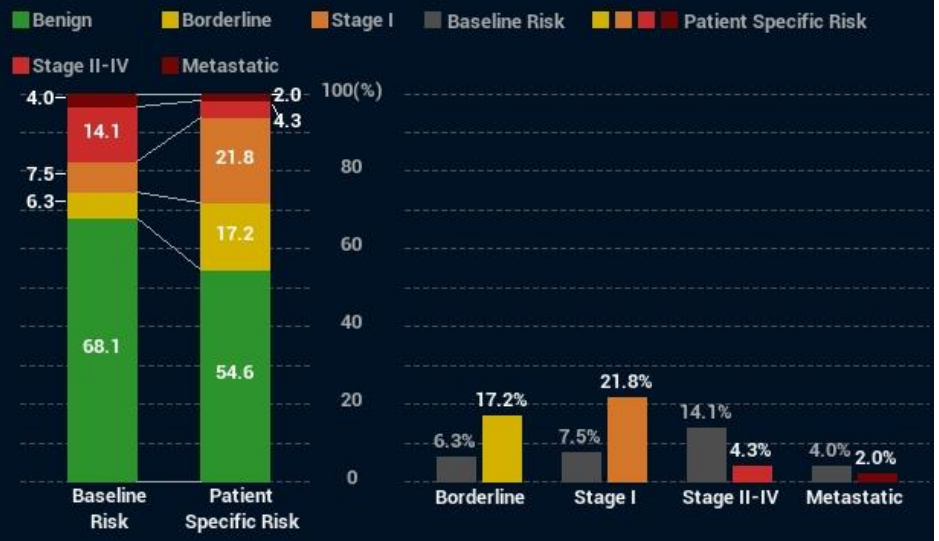
IOTA Adnex Model

Age of the patient at examination: 33 years
Oncology center (referral center for gyn-oncol): No
Maximal diameter of the lesion: 265.6 mm
Maximal diameter of the largest solid part: 61 mm

Number of papillations (papillary projections):0
Acoustic shadows present:No
Ascites (fluid outside pelvis) present:No
More than 10 locules:Yes

IOTA Adnex Model Results

	Patient Specific Risk	Relative Risk	Baseline Risk
CHANCE OF BENIGN TUMOR	54.6%	0.8	68.1%
[illegible]	45.4%	1.4	31.9%
->Risk borderline	17.2%	2.7	6.3%
->Risk stage I ovarian [illegible]	21.8%	2.9	7.5%
->Risk stage II-IV ovarian cancer	4.3%	0.3	14.1%
->Risk metastatic cancer to the adnexa	2.0%	0.5	4.0%



Calculation based on ADNEX Model (BMJ 2014;349:g5920 doi: 10.1136/bmj.g5920)

DISCLAIMER
USERS OF IOTA ADNEX SHOULD BE FAMILIAR WITH THE IOTA TERMINOLOGY AND HAVE EXPERIENCE RELATED ON HOW TO USE THE MODEL. AND THE ANALYSIS RESULTS MUST BE INTERPRETED BY A PROFESSIONAL PHYSICIAN ACCORDING TO THE PATIENT'S

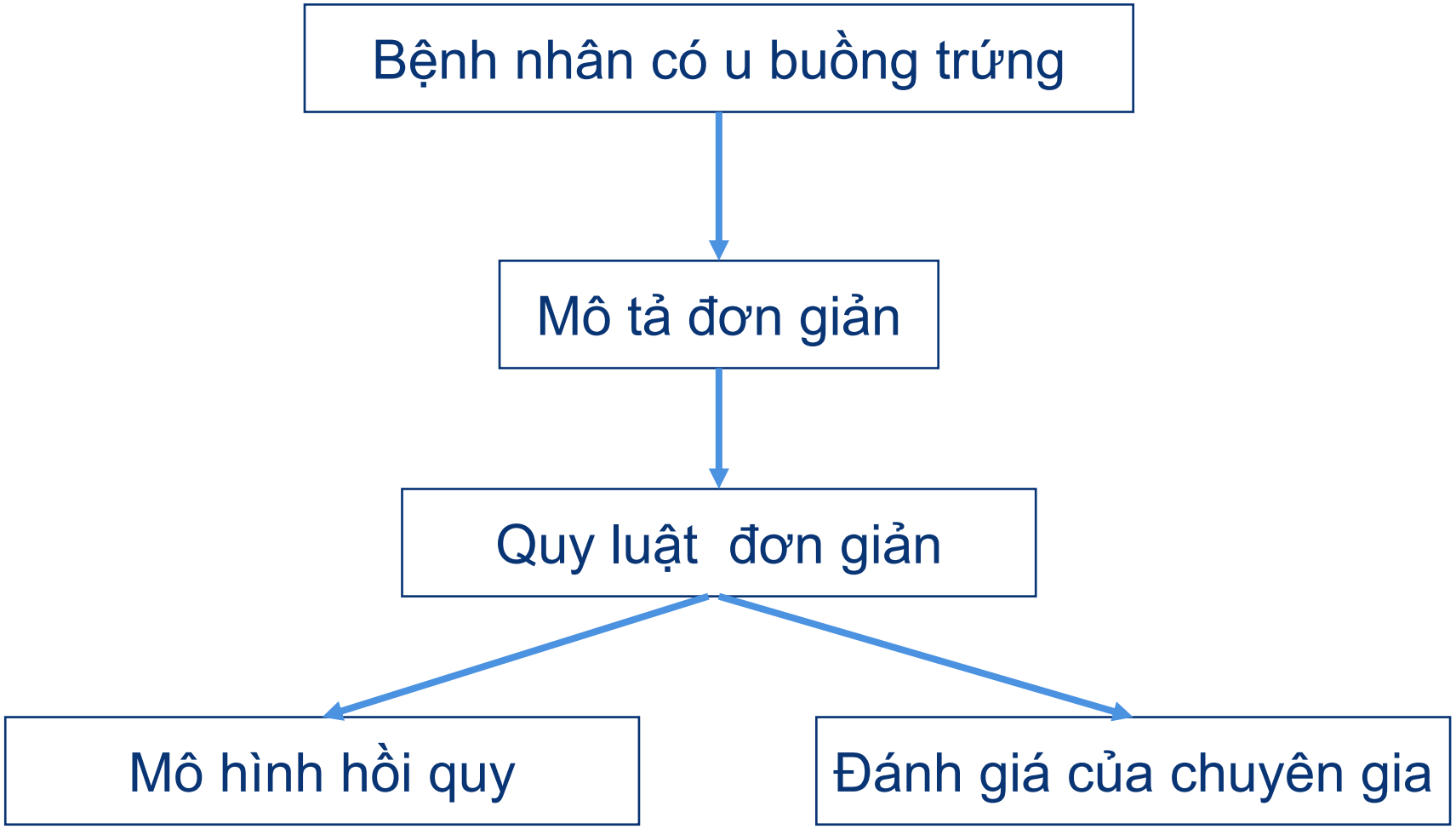
Original Paper | Free Access

Clinically oriented three-step strategy for assessment of adnexal pathology

L. Ameye ✉, D. Timmerman, L. Valentin, D. Paladini, J. Zhang, C. Van Holsbeke, A. A. Lissoni, L. Savelli, J. Veldman, A. C. Testa, F. Amant, S. Van Huffel, T. Bourne

First published: 18 April 2012 | https://doi.org/10.1002/uog.11177 | Citations: 62

Mô hình ba bước



Abstract | Free Access

OC04.01: External validation of IOTA three-step strategy for assessment of adnexal masses

J. Hidalgo, M. Aubá, B. Olartecoechea, T. Errasti, A. Ruiz-Zambrana, F. Ros, J. Alcazar

First published: 15 October 2018 | https://doi.org/10.1002/uog.19225

Objectives

To perform the external validation of IOTA's three-step strategy for classifying adnexal masses as benign or malignant, when ultrasound is performed by non-expert sonographers.

Methods

Prospective observational study conducted at two university hospitals in Spain. We included patients with an adnexal mass that was assessed by ultrasound through the three-step strategy: non-expert sonographers applied the first step (simple descriptors) and the second step (simple rules; if the mass could not be classified with the first step) and an expert sonographer made the subjective assessment of the mass if it could not be classified with the first two steps. None of the patients included in this study had been included in previous IOTA studies. Patients had to undergo surgery or at least twelve months of follow-up. Definitive histology after tumour removal or data from 12 months follow-up were used as reference standard.

Results

Two hundred and eighty-three patients were included (median age 48). One hundred and sixty-five patients (58.3%) were premenopausal and 118 (41.7%) postmenopausal. Two hundred and sixteen women (76.3%) underwent surgical treatment (154 benign and 62 malignant) and 67 (23.7%) performed expectant monitoring for at least 12 months (all these masses were considered benign because no sonographic characteristic changes of malignancy were observed). Simple descriptors could be applied in 126 (44.5%) masses. Of the remaining 157 lesions, 112 (71.3%) could be characterised using simple rules. Of the remaining 45 (16.0%) masses, all could be classified by an expert sonographer. Therefore, 238 (84%) masses could be classified using the first two steps by non-expert sonographers. The diagnostic performance of the three-step strategy was: sensitivity 95.1%; specificity 97.7%; positive likelihood ratio 42.1 and negative likelihood ratio 0.05. The diagnostic accuracy was 97.1%.

Conclusions

The IOTA three-step strategy shows good accuracy in the classification of adnexal lesions when used by non-expert sonographers.

Abstract | Free Access

VP61.10: Diagnostic performance of IOTA three-step strategy for classifying adnexal masses in a tertiary centre in Vietnam

V. Nguyen Dinh, N. Nguyen, L. Nguyen, V.H. Giang, H. Ngo

First published: 15 October 2020 | https://doi.org/10.1002/uog.23351

Objectives

To assess the diagnostic performance of the International Ovarian Tumor Analysis (IOTA) three-step strategy for preoperative characterisation of ovarian masses in a tertiary obstetrics and gynecology centre in the South of Vietnam.

Methods

This was a retrospective study conducted in Hung Vuong Obstetrics and Gynecology Hospital from 2016 to 2018. Patients who suspected ovarian pathology were evaluated by transvaginal sonography using IOTA three-step strategy. Non-expert examiners performed the first step (simple descriptors), the second step (simple rule if the mass could not be classified in the first step) and the third step (IOTA regression model 2 if masses could not be categorised in the first two steps). The outcome was findings at surgery and the histological diagnosis of surgically removed masses. The diagnostic performance of this strategy was estimated by calculating its sensitivity, specificity, positive predictive value (PPV) and negative predictive value (NPV).

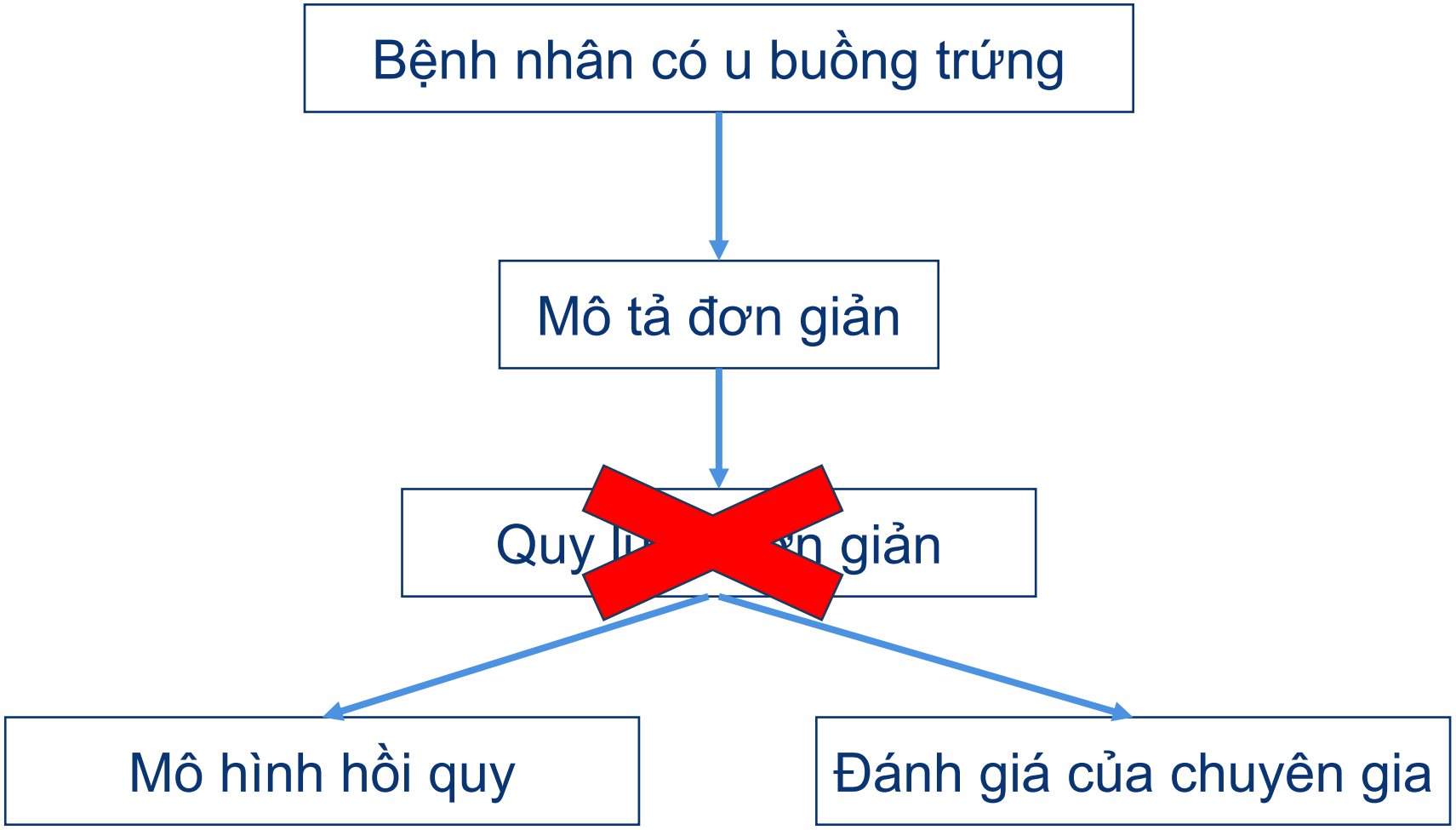
Results

There were 597 adnexal masses investigated in this study. The surgical resulted in 501 (84%) histologically benign and 96 (16%) malignant masses. The diagnostic performance for three steps was sensitivity: 84.5% (95%CI, 75.8–91.1) and specificity: 82.6% (95%CI, 79.0–85.8). The PPV and NPV were 48.5% (95%CI, 43.3–53.7) and 96.5% (95%CI, 94.5–97.8), respectively. There were 15 false-negative cases in which 4/15 (26%) were rare tumours (Brenner, granulosa cell tumour, immature teratoma, dysgerminoma) and 6/15 (40%) were borderline tumours. There was a trend in increasing sensitivity over three years (81.8% in 2016 and 92.3% in 2018).

Conclusions

Implementation of IOTA three-step strategy resulted in a good performance on validating adnexal masses when used by non-expert sonographers in our centre.

Mô hình hai bước



EP23.15: Diagnostic performance of the IOTA two-step strategy in an oncological referral centre

G.C. Albertini, G. Ortelli, G. Bogani, S. Palladino, U. Leone Roberti Maggiore, F. Raspagliesi, V. Chiappa

First published: 09 September 2024 | https://doi.org/10.1002/uog.28951

Objectives

To provide an external validation of “IOTA two-step strategy” in women with at least an adnexal mass referred to our centre.

Methods

This is a retrospective analysis of data of patients with at least an adnexal mass, referred at Fondazione IRCCS Istituto Nazionale dei Tumori. All ultrasound (US) examinations were performed by an EFSUMB Level III examiner. Consecutive patients were recruited irrespective of subsequent management (conservative or surgery). The main outcome was classification of tumours as benign or malignant, based on histology or on clinical and US information during at least 1 year of conservative follow-up. The management of the patients was defined according to the subjective impression of the US examiner. The “IOTA two-step strategy” was applied to all adnexal masses.

Results

Overall, 1,200 patients were recruited. We excluded patients who were already in follow-up at recruitment (592 patients) and all patients that did not fulfil our criteria for good-quality follow-up data (108 patients). A total of 500 patients were considered for the analysis. Overall, 272 (54.4%) tumours were benign (at final histology or unmodified after at least 12 months follow up), 193 (38.6%) invasive malignant and 35 (7%) borderline (considered as malignant in our analysis). Serum CA125 was positive in 199 patients (39.8%), with median value 357 U/mL. Modified benign descriptors were not applicable in 430 (86%) tumours, 203 (47.2%) benign and 227 (52.8%) malignant. ADNEX was then applied to stratify the malignancy risk (threshold 10% to suspect malignancy) and correctly categorised 222/228 histologically confirmed malignancies (97.3%).

Conclusions

Women with adnexal masses referred to an oncological centre due to high risk of malignancy usually show heterogeneous/complex masses. The modified benign descriptors are not very useful as first diagnostic step in this selected high-risk population. ADNEX confirms its very good diagnostic performance to predict malignancy.

Prospective external validation of IOTA methods for classifying adnexal masses and retrospective assessment of two-step strategy using benign descriptors and ADNEX model: Portuguese multicenter study

A. L. Borges, M. Brito, P. Ambrósio, R. Condeço, P. Pinto, B. Ambrósio, F. Mahomed, J. M. R. Gama, M. J. Bernardo, A. I. Gouveia, D. Djokovic

First published: 13 March 2024 | https://doi.org/10.1002/uog.27641

Objectives

The primary aim was to validate the International Ovarian Tumor Analysis (IOTA) benign simple descriptors (BDs) followed by the Assessment of Different NEoplasias in the adneXa (ADNEX) model, if BDs cannot be applied, in a two-step strategy to classify adnexal masses identified during pregnancy. The secondary aim was to describe the natural history of adnexal masses during pregnancy.

Methods

This was a retrospective analysis of prospectively collected data from women with an adnexal mass identified on ultrasonography during pregnancy between 2017 and 2022 at Queen Charlotte's and Chelsea Hospital, London, UK. Clinical and ultrasound data were extracted from medical records and ultrasound software. Adnexal masses were classified and managed according to expert subjective assessment (SA). Borderline ovarian tumors (BOTs) were classified as malignant. BDs were applied retrospectively to classify adnexal masses, and if BDs were not applicable, the ADNEX model (using a risk- of-malignancy threshold ≥ 10%) was used, in a two-step strategy. The reference standard was histology (where available) or expert SA at the postnatal ultrasound scan.

Results

A total of 291 women with a median age of 33 (interquartile range (IQR), 29–36) years presented with an adnexal mass during pregnancy, at a median gestational age of 12 (IQR, 8–17) weeks. Of those, 267 (91.8%) were followed up to the postnatal period. Based on the reference standard, 4.1% (11/267) of adnexal masses were classified as malignant (all BOTs) and 95.9% (256/267) as benign. BDs were applicable in 68.9% (184/267) of adnexal masses; of these, only one (0.5%) BOT was misclassified as benign. The ADNEX model was used to classify the 83 residual masses and misclassified 3/10 (30.0%) BOTs as benign and 25/73 (34.2%) benign masses as malignant, of which 13/25 (52.0%) were classified as decidualized endometrioma on expert SA. The two-step strategy had a specificity of 90.2%, sensitivity of 63.6%, negative predictive value of 98.3% and positive predictive value of 21.9%. A total of 56 (21.0%) women underwent surgical intervention: four (1.5%) as an emergency during pregnancy, four (1.5%) electively during Cesarean section and 48 (18.0%) postnatally. During follow-up, 64 (24.0%) adnexal masses resolved spontaneously. Cyst-related complications occurred in four (1.5%) women during pregnancy (ovarian torsion, $n = 2$; cyst rupture, $n = 2$) and six (2.2%) women in the postnatal period (all ovarian torsion). Overall, 196/267 (73.4%) women had a persistent adnexal mass at postnatal ultrasound. Presumed decidualization occurred in 31.1% (19/61) of endometriomas and had resolved in 89.5% (17/19) by the first postnatal ultrasound scan.

Conclusions

BDs apply to most adnexal masses during pregnancy. However, the small number of malignant tumors in this cohort (4.1%) restricted the evaluation of the ADNEX model, so expert SA should be used to classify adnexal masses during pregnancy when BDs do not apply. A larger multicenter prospective study is required to evaluate the use of the ADNEX model to classify adnexal masses during pregnancy. Our data suggest that most adnexal masses can be managed expectantly during pregnancy, given the high rate of spontaneous resolution and low risk of complications.

Abstracts | Free Access

OP14.02: Two-step strategy in the classification of ovarian tumours: modified benign descriptors and IOTA ADNEX

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Objectives

External validation of the diagnostic performance of the two-step modified International Ovarian Tumour Analysis (IOTA) benign simple descriptors and IOTA ADNEX.

Methods

Ambispective diagnostic accuracy study based on ultrasound data collected at a University Hospital with a gynecologic oncology unit between 2012 and 2022. Two IOTA-certified level III sonographers classified adnexal masses using modified benign simple descriptors (MBD) (first step). Unclassifiable masses in the first step were evaluated using the IOTA ADNEX model (second step). The main outcome was the classification of tumours as benign or malignant. Histopathology was used as the diagnostic reference standard. For analysis, the diagnostic performance of the two-step strategy was estimated.

Results

871 patients with 880 adnexal masses were included in the study, of which 547 (62%) met the classification criteria for their evaluation based on MBD (first step) and 333 (38%) were assessed using IOTA ADNEX. 98% (535/547) of the masses classified according to the MBD, were benign by histopathology. The diagnostic performance of IOTA ADNEX (second step) had a sensibility of 92%, specificity of 67%, positive predictive value of 49%, negative predictive value of 96% and area under the curve of 0.88 (CI 95%, 0.83–0.92).

Conclusions

MBD had the ability to correctly classify most of the evaluated masses. Regarding the two-step strategy, it had an appropriate diagnostic performance, which is why it is recommended for clinical use.

Kết luận

- Chiến lược hai bước của IOTA là một cách hữu ích trong tiếp cận khối u phần phụ trước phẫu thuật vì
  - Mô tả đơn giản (BD) đã giúp nhận diện nhanh và phân loại các khối u lành tính thường gặp
  - Mô hình ADNEX là mô hình có giá trị cao
- Việc sử dụng cũng đơn giản hơn do mô hình được tích hợp vào các máy siêu âm
- Các nghiên cứu gần đây chứng minh được hiệu quả của việc sử dụng

Cám ơn sự chú ý theo dõi của quý thầy cô và các bạn