Volume: 1 (February, 2019)

Indian Fertility Society

SONO-NAVIGATOR SERIES

ROLE OF ULTRASOUND IN DIAGNOSING ENDOMETRIOMA

Endometriosis, a common and clinically important cause of infertility, is classically defined as the presence of functional endometrial glands and stroma outside the uterine cavity. This may present microscopic implants to large cysts called as endometriotic cysts / endometriomas or chocolate cysts.

Endometriomas are most common in ovaries and are the result of repeated cyclic hemorrhage within a deep implant. Cyst walls may become thick and fibrotic with dense adhesions.

Diagnosis

The **gold standard** diagnostic technique is laparoscopy. Although ultrasound is poor at detecting peritoneal implants (~11%), it is better at detecting endometriomas. [1] Ultrasound examination is an easy and noninvasive method in the differential diagnosis, planning surgical intervention as well as preoperative and postoperative medical therapy. This includes morphologic assessment with two-dimensional ultrasound and other various ultrasound modalities such as three-dimensional sonography, color Doppler, and power ultrasound imaging.[2]

Typical Ultrasound Features

1. **Classical appearance is of a unilocular cyst with diffuse homogeneous ground-glass echoes** and acoustic enhancement, as a result of the hemorrhagic debris. This appearance occurs in **50%** of cases.[3] **(Fig. 1)**
2. **Small echogenic foci** adhering to the wall in about **1/3rd** of cases.These have been postulated to be cholesterol deposits, small blood clots or debris. It's important to differentiate these foci from true wall nodules as they make the diagnosis of endometrioma very likely. **(Fig. 2)**
3. On doppler ultrasound, **color score between 1 and 3** (i.e. no vascularization to moderate vascularization) with no flow inside the papillary projection. **(Fig. 3)**
4. **Bilateral endometriomas in 28% cases.**[4] Large ones may appear as kissing ovaries. **(Fig. 4)**
5. Findings of **acute haemorrhage such a layering blood products or retractile thrombus are uncommon(<10%)**, despite repeated haemorrhage.

Atypical Ultrasound Appearances (Fig. 5, 6)

1. Absence of ground glass appearance
2. Bi- or multi-locular (~85% will have <5 locules)
3. Retracted blood clots
4. Papillary projections, vascularized – Calcified lesions
5. Cystic-solid lesion (~15%) or purely solid lesion (1%)
6. Anechoic cysts (rare; 2%)

Typical Ultrasound Appearances of common ovarian cysts (common differential diagnosis, Fig. 7-10)

Type of cyst	Typical USG appearance
Follicular cyst	Simple, anechoic, smooth walled
Corpus Luteal cyst	Ring of fire **(Fig. 7)**
Hemorrhagic cyst	fibrin strands **(fishnet/reticular)** or low level echoes, good through transmission, variable wall thickness, some circumferential vascularity. Retracting clot, fluid level debris may also be seen. **(Fig. 8)**
Mature cystic teratoma	Hyperechoic **rokitansky nodule**, fat fluid level **(supernatant layer is hyperechoic, representing fat)***, focal calcifications.** **(Fig. 9)**
Mucinous cytadenoma	A cystic mass with multiple, smooth, thin septa and no nodularity. Contains different echogenic materials, ranging from anechoic to diffuse low echogenic with **floating echogenic foci** that suggest a variety of mucin components. **(Fig. 10)**

* In an endometrioma with fat - fluid levels, **the supernatant fluid layer should be hypoechoic**, with a hyperechoic dependent layer representing blood.

**Endometriomas also may have central calcification although punctuate calcifications in the walls of endometriomas are more common. So, presence of focal calcification does not exclude endometrioma.

Most common misdiagnoses of endometriomas by sonography -hemorrhagic cysts and dermoids.

The Society of Radiologists in Ultrasound 2010 Consensus Conference Statement recommended **Short-interval follow-up (6 to 12 weeks)** in reproductive-aged women to ensure that acute hemorrhagic cysts are not mistaken for endometriomas.[5]

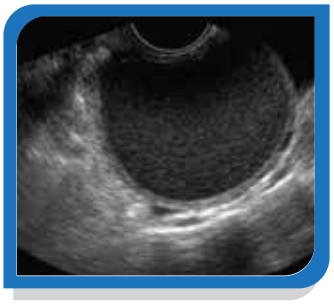

Fig. 1: Typical endometrioma showing ground glass appearance

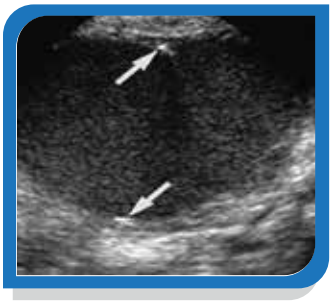

Fig. 2: Typical endometrioma showing wall nodularity

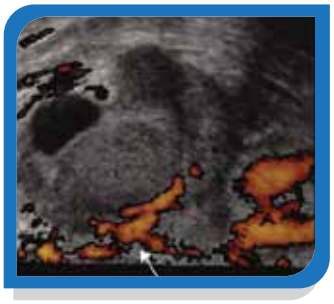

Fig. 3: Vascularity pattern of an endometrioma. Pericystic flow at the level of the ovarian hilus (arrowhead).

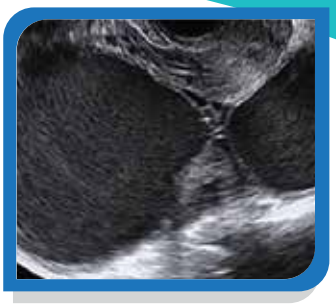

Fig. 4: Bilateral endometriomas with Kissing Ovaries.

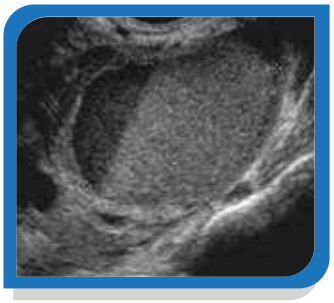

Fig. 5: Atypical endometrioma with fluid level and variable echogenicity.

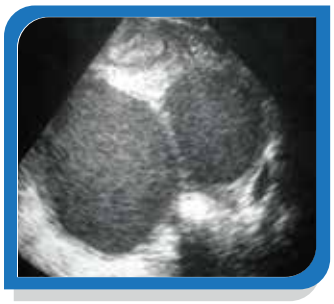

Fig. 6: Multiloculated endometrioma

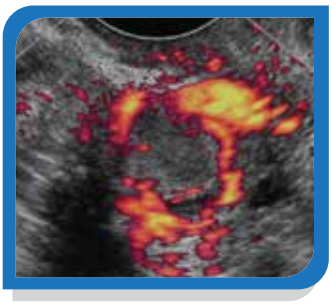

Fig. 7: Corpus luteal cyst showing ring of fire pattern.

Fig. 8: Haemorrhagic Ovarian cyst

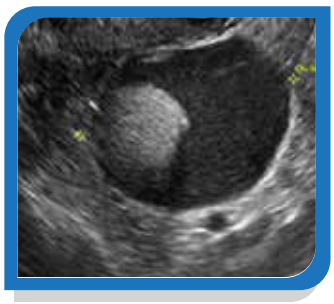

Fig. 9: Mature cystic teratoma

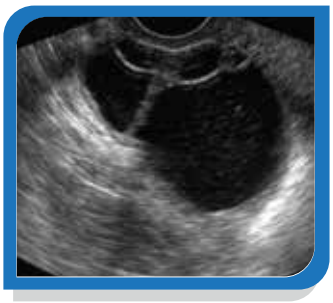

Fig. 10: Mucinous cystadenoma showing a thin walled multilocular cystic mass with a regular septum.

References

1. S. Reid, G. Condous. Transvaginal sonographic sliding sign: accurate pre-diction of pouch of Douglas obliteration. (2013) Ultrasound in Obstetrics & Gynecology. 41 (6): 605.
2. Van Holsbeke C, Van Calster B, Guerriero S et-al. Endometriomas: their ul-trasound characteristics. Ultrasound Obstet Gynecol. 2010;35 (6): 730-40.
3. Patel MD, Feldstein VA, Chen DC et-al. Endometriomas: diagnostic perfor-mance of US. Radiology. 1999;210 (3): 739-45.
4. Vercellini P, Aimi G, De Giorgi O, Maddalena S, Carinelli S, Crosignani PG. Is cystic ovarian endometriosis an asymmetric disease? Br. J. Obstet. Gynaecol.105(9),1018–1021 (1998).
5. Levine D, Brown DL, Andreotti RF, et al. Management of asymptomatic ovarian and other adnexal cysts imaged at US: Society of Radiologists in Ultrasound Consensus Conference Statement. Radiology. 2010;256(3):943–954.

Book References

1. Callen, P.W. (2008).Ultrasound in obstetrics and gynecology.Philadelphia:Saunders, Elsevier.
2. Abuhamad A. (2014). Ultrasound in obstetrics abd gynecology:A practical approach.

Dr M Gouri Devi
President

Dr Pankaj Talwar
Secretary General

Contributor
Dr Gunjan Bhatnagar
Fellow IFS

Dr Ashok Khurana
SIG Convenor
Reproductive Ultrasound

Dr Ritu Khanna
SIG Co-convenor
Reproductive Ultrasound

+91 9667742015
+91 9899308083
+91 11 40018184
indianfertilitysocietydelhi@gmail.com
www.indianfertilitysociety.org
IFS SECRETARIAT - 302, 3rd Floor, Kailash Building,
26 Kasturba Gandhi Marg, CP, New Delhi-110001

WHY TO JOIN IFS

IFS is a Multi-disciplinary Society that values the input and participation of professionals in the scope of Reproductive Medicine.

INDIAN FERTILITY SOCIETY

IFS MEMBERSHIP
Benefits At A Glance

Dr. M Gouri Devi
President

Dr. Pankaj Talwar
Secretary General

- Pan India Society
- Collaboration with ESHRE & IFFS
- 2350 Members & 25 Chapters
- National Conference Fertivision every year with reduced registration fees
- Special Interest Group (13) for IFS Members to show cast their talent
- Research Wing of IFS has its own ethical committee for Research Project approval
- Publication Wing - Fertility Science & Research Journal
- IFS Fellowship Program in Clinical ART & Embryology in collaboration with Amity University
- ESHRE Certified Embryologist Examination in India, conducted by IFS every year
- IFS Outreach activities all over India
- IFS Master Courses
- Free access to IFS E-Pathshala contents and Official Journal
- IFS E-Pathshala - IFS Conversation, Nexus, ARText, Fertility News, CATALYST

indianfertilitysocietyifs ifsdelhi indianfertilitysociety/

IFS SECRETARIAT
302, 3rd Floor, Kailash Building,
26, Kasturba Gandhi Marg, CP,
New Delhi-110001

+91 9667742015
+91 9899308083
+91 11 40018184

indianfertilitysocietydelhi@gmail.com
www.indianfertilitysociety.org

INDIAN FERTILITY SOCIETY

IFS is a Multi-Disciplinary Society that values the input and participation of professionals in the scope of Reproductive Medicine.

2350+ Members

25 State Chapters

How To Join IFS

IFS Life Membership Fees

Clinicians:-
Rs. 5932/- + (18% GST -1068) = Rs.7000/-

Non Clinicians:-
Rs. 4237/- + (18% GST -763) = Rs. 5000/-

Online Procedure

It is the easiest way to Register yourself as the lifetime member of our family. while following the procedure, fill the online membership form and pay the membership fee.

Your registration number would be generated and you will get your membership certificate and also access to member portal on our website where you can manage your profile and get all important notification.

Offline Procedure

You can pay by cash or card at the registration counter provided.

or

you can easily download our offline membership form or use the offline form attached with this document, fill all required information attach the membership fee DD or Cheque and send on our secretariat address.

Account Details:
Account No: 50562010067180 | IFSC Code: ORBC0100179
Bank Name: Oriental Bank of Commerce
Branch: Connaught Place, New Delhi-110001

Dr. M. Gouri Devi
President

Dr. Pankaj Talwar
Secretary General

IFS Secretariat
Flat No. 302, 3rd Floor,
Kailash Building,
26, Kasturba Gandhi Marg,
C.P. New Delhi – 110001

+91 9667742015
+91-9899308083
91-1140018184

indianfertilitysocietydelhi@gmail.com
info@indianfertilitysociety.org
indianfertilitysocietyifs
ifsdelhi
indianfertilitysociety

INDIAN FERTILITY SOCIETY

Offline Registration Form

Download the form and send to the secretariat with recent pic and cheque/draft

Name		Qualification	
Date of Birth		Designation	
Workplace Phone No		Residence Phone No	
Mobile		E-mail	

Workplace Address

Residence Address

State		IFS Chapter	

Address to be used for correspondence

Workplace ○ **Residence** ○

Account Details:
Account No: 50562010067180 | IFSC Code: ORBC0100179
Bank Name: Oriental Bank of Commerce
Branch: Connaught Place, New Delhi-110001

Payment Details :
Amount : .....
Cash / Cheque / Demand Draft No. : ..... Dated : .....
Bank : : .....
Signature : : .....Name : ..... Date : .....

IFS Life Membership Fees

Clinicians:-
Rs. 5932/- + (18% GST -1068) = Rs.7000/-

Non Clinicians:-
Rs. 4237/- + (18% GST -763) = Rs. 5000/-

* Please make Cheque / Draft in favour of "INDIAN FERTILITY SOCIETY" payable at New Delhi.
*Please attaché two recent passport size photographs.

Who can apply for IFS Membership : All Professionals with postgraduate qualification such as Obstetricians & Gynaecologists, Clinical embryologists, andrologists, ultrasonologists, counsellors, geneticists and other involved in the care of infertility patients.

IFS Secretariat
Flat No. 302, 3rd Floor,
Kailash Building,
26, Kasturba Gandhi Marg,

+91 9667742015
+91-9899308083
91-1140018184

indianfertilitysocietydelhi@gmail.com
info@indianfertilitysociety.org
indianfertilitysocietyifs
ifsdelhi