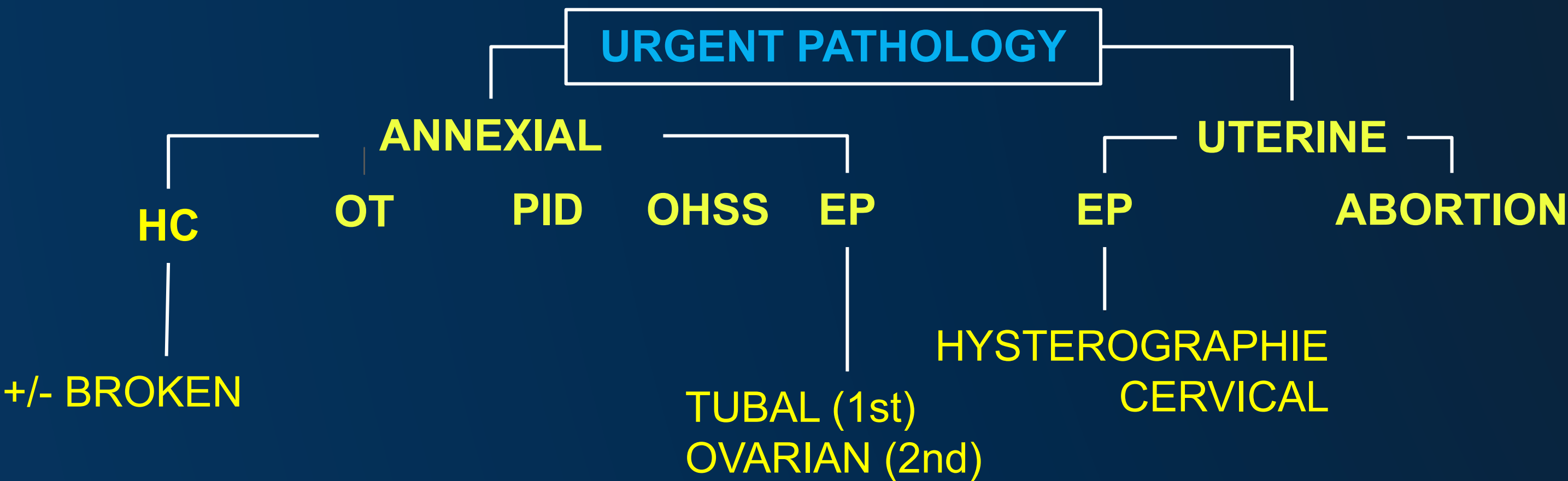


The audience is renewed: How to resolve a gynecological ultrasound request in the emergency department if I am not an expert?

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Introduction

With the aim of optimizing diagnostic times and differentiating medically managed gynecological pathologies from surgical emergencies, a practical tool for the ultrasound characterization of acute pelvic pain is presented. Through a case series evaluated in the emergency department using transvaginal ultrasound, following literature, multimodal (CT, MRI, and PET/CT), and anatomopathological correlation, key imaging patterns of critical entities are identified, encompassing: complicated hemorrhagic cysts progressing to acute abdomen, adnexal torsion, infectious processes, ovarian hyperstimulation syndrome, and first-trimester emergencies including ongoing abortion and ectopic pregnancies (tubal and cesarean scar).



Conclusion

Ultrasound is the primary tool in emergency department visits for pelvic pain in women. Achieving an accurate differential diagnosis from other pathologies requires strict clinical-imaging integration to guarantee timely and accurate therapeutic management. In this scenario, the support of brief, standardized guidelines for the on-call physician is fundamental to optimize decision-making.

HEMORRHAGIC CYST (HC)

- **Clinical:** Acute pain (post-coital / exercise / trauma).
- **US:** Cystic image with a reticular pattern or clot (echogenic, avascular, and mobile).

Free fluid: "dirty" with echoes (hemoperitoneum).

OVARIAN TORSION (OT)

- **Clinical:** Acute, sharp, sudden/intermittent pain + nausea/vomiting. *Suspect in:* Perimenarche or pregnancy (due to laxity).
- **US:** Asymmetric enlargement with edema. *Signs:* "String of pearls" (peripheral follicles), "follicular ring", and "whirlpool" sign (twisted pedicle). Foci of stromal hemorrhage. Inconclusive Doppler. Free fluid.

PELVIC INFLAMMATORY DISEASE (PID)

- **Clinical:** Pelvic pain, abnormal vaginal discharge, and abnormal bleeding.
- **US:** *Endometritis:* Thickened/heterogeneous endometrium / *Fallopian Tubes:* Thick wall (>5mm), "cogwheel" sign (coronal view), incomplete septa. Variable content (hydro/pyo/hematosalpinx) / *Tubo-ovarian abscess:* Multilocular cystic mass, thick wall, peripheral Doppler flow.

OVARIAN HYPERSTIMULATION SYNDROME (OHSS)

- **Clinical:** Pain, abdominal distension, nausea/vomiting.
- **US:** Bilateral symmetric enlargement. Multiple cysts ("spoke wheel" appearance). +/- Ascites and effusions (pleural/pericardial).

ECTOPIC PREGNANCY (EP)

- **General US:** Empty uterine/cervical cavity + thickened endometrium. Hemoperitoneum. Extrauterine gestational sac with FHR (Fetal Heart Rate).
- **Tubal/Ovarian:** Complex extra-adnexal mass ("Blob sign"). Thick ring with an anechoic center ("Bagel sign"). Doppler: "Ring of fire" sign.
- **Cervical:** "Figure-of-8" uterus + normal fundal endometrium.
- **Cesarean Scar:** Thin anterior myometrium, gestational sac with echogenic borders and intense peripheral vascular flow, closed cervical canal.

MISCARRIAGE IN PROGRESS (MP) / ABORTION

- **Clinical:** Heavy bleeding, severe hypogastric pain, open cervix.
- **US:** Heterogeneous endometrium + descending/low-lying gestational sac.

