



Evidence-Based Resource

Natural History Ovarian Cysts?

Evidence Level IV

Ovarian cysts are the most commonly diagnosed abdominal abnormality in prenatal females. Despite its frequent presentation, there remains a paucity of knowledge surrounding the natural history of these cysts. Controversy remains for optimal management and indications for surgical management and drainage are poorly understood. Bascietto and colleagues performed a systematic review and meta-analysis to investigate the outcomes of ovarian cysts prenatally diagnosed by ultrasound. A total of 34 studies published from 2000 to 2016 were identified, with a total of 954 fetuses included in the analysis. 33 of the studies were retrospective reviews, and 1 was a prospective cohort analysis. Results for the overall population and several subgroups were pooled and analyzed:

Resolution of the cyst:

- Overall: PP 53.8% (95% CI: 46.0-61.5%) of prenatally diagnosed cysts in fetuses were resolved during pregnancy or after birth;
- PP 69.4% (95% CI: 59.0-79.0%) of simple cysts were resolved;
- Complex cysts were less likely to resolve than simple cysts: OR 0.15 (95% CI: 0.10-0.23); and
- Cysts \geq 40 mm were less likely to resolve than cysts $<$ 40 mm: OR 0.03 (95% CI: 0.01-0.06)

Change of ultrasound pattern

- PP 23.6% (95% CI: 14.4-34.4%) of simple cysts changed to complex cysts during pregnancy or at birth;
- Cysts measuring \geq 40 mm were more likely to change ultrasound pattern during pregnancy than cysts measuring $<$ 40 mm: OR 3.16 (95% CI: 1.02-9.7); and
- o Of these, PP 57.7% (95% CI: 42.9-71.8%) resulted in ovarian loss due to surgical removal or ovarian amputation

Ovarian torsion:

- Incidence: 21.8% (95% CI: 15.2-29.2%) for cysts overall, 6.0% (95% CI: 3.6-8.9%) for simple cysts, and 44.9% (96% CI: 31.7-58.54%) for complex cysts;
- Ovarian torsion for cysts \geq 40 mm was more likely than cysts $<$ 40 mm: OR 30.8 (95% CI: 8.6-110.0); and
- More likely for complex cysts than simple cysts: OR 59.1 (95% CI: 24.7-141.0)

Intracystic hemorrhage:

- Incidence: 6.8% (95% CI: 3.7-10.8%) of cyst cases;
- More likely for complex cysts than simple cysts: OR 28.6 (95% CI: 4.9- ∞);
- More likely for cysts \geq 40 mm than cysts $<$ 40 mm: OR 31.7 (95% CI: 3.7-270.0); and
- Greater likelihood for simple cysts \geq 40 mm than simple cysts $<$ 40 mm: OR 63.4 (95% CI: 10.7- ∞)

Surgery

- Surgical intervention: Overall 39.5% (95% CI: 30.1-49.3%) of fetuses with a prenatal diagnosis of ovarian cysts had surgery, 24.6% (95% CI: 14.2-36.9%) for simple cysts, and 64.8% (95% CI: 52.2-76.3%) for complex cysts;
- Patients with cysts \geq 40 mm were more likely to have surgery than patients with cysts $<$ 40 mm: OR 64.4 (95% CI: 23.6-175.0);
- Patients with complex cysts were more likely to have surgery than patients with simple cysts: OR 14.6 (95% CI: 8.5-24.8); and
- Ovarian loss due to oophorectomy or salpingo-oophorectomy occurred in 25.1% (95% CI: 17.2-34.0%) of surgical cases

Complex cysts and cysts \geq 40 mm were associated with an increased odds of ovarian loss: 35.1 (95% CI: 17.0-72.7) and 58.9 (95% CI: 19.2-181.0), respectively.

Following intrauterine aspiration:

- No reoccurrence either during pregnancy or after birth PP 48.9% (95% CI: 25.0-74.0%);
- Reoccurrence occurred in 37.9% (95% CI: 14.8-64.3%) of cases;
- Increase in cyst size occurred in 6.9% (95% CI: 2.0-14.5%);
- Change of ultrasound pattern from simple to complex cyst: 7.9% (95% CI: 2.6-15.8%);
- Ovarian torsion: 10.8% (95% CI: 4.4-19.7%);
- Intracystic hemorrhage: 12.8% (95% CI: 3.8-26.0%);
- Rate of preterm delivery: 5.1% (95% CI: 0.7-13.0%); and
- Rate of miscarriage: 21.8% (95% CI: 0.9-40.0%)

Misdiagnosis:

- Rate: 7.5% (95% CI: 4.4-11.4%)
- o Misdiagnosis occurred for gastrointestinal anomalies: 54.1% (95% CI: 28.1-78.9%);
- o Urogenital anomalies: 14.9% (95% CI: 6.6-25.6%); and
- o Renal anomalies: 10.3% (95% CI: 4.0-19.1%)

Histopathological assessment:

- Available for 385 cases
- o Cysts were either follicular or theca lutein: 93.0% (95% CI, 87.7-96.8%);
- o Cystadenoma: 2.1% (95% CI, 0.9-3.7%); and
- o Teratoma: 1.5% (95% CI, 0.5-2.9%)

PP = Pooled Proportion; OR = Odds Ratio; CI = Confidence Interval

Conclusions: Over half of all prenatally diagnosed ovarian cysts regress without intervention. Size and complexity of cysts are determinants of outcomes. Larger cysts and complex cysts are associated with a higher risk of ovarian torsion, intracystic hemorrhage, and may lead to oophorectomy.

Systematic Reviews

Bascietto F, Liberati M, Marrone L, Khalil A, Pagani G, Gustapane S, et al. Outcome of fetal ovarian cysts diagnosed on prenatal ultrasound examination: systematic review and meta-analysis. *Ultrasound Obstet Gynecol.* 2017;50(1):20-31.

