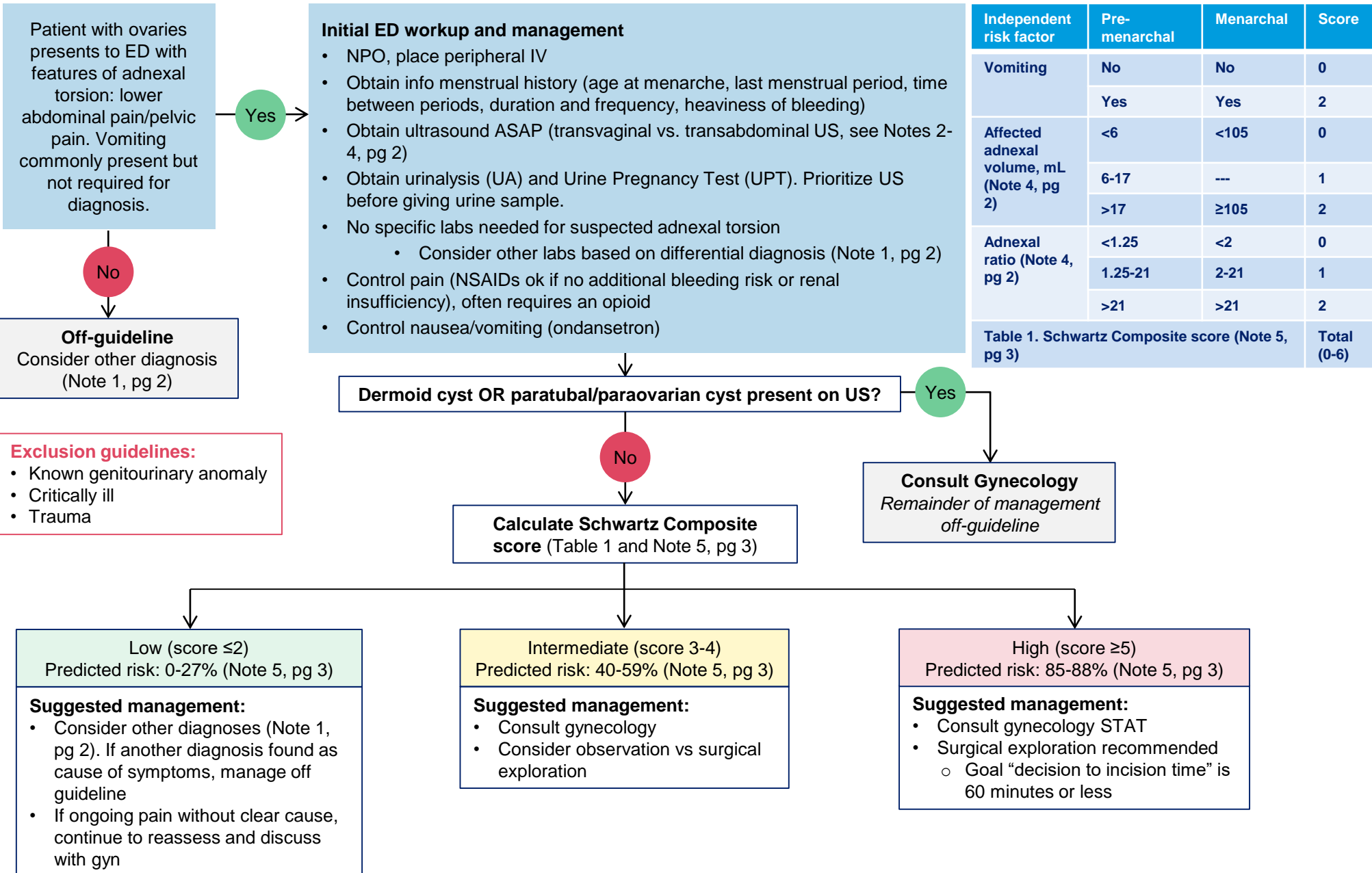


Aim: Utilize a standardized clinical score to guide efficient, effective, and equitable workup of possible adnexal torsion.



Disclaimer: This guideline is designed for general use with most patients; each clinician should use their own independent judgment to meet the needs of each individual patient. This guideline is not a substitute for professional medical advice, diagnosis or treatment.

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Note 1. Differential diagnosis includes (not limited to):

- **Gyn:** simple ovarian cyst, hemorrhagic ovarian cyst, mittelschmerz, ectopic pregnancy, sexually transmitted infection, pelvic inflammatory disease
- **Non-Gyn:** appendicitis, constipation, bowel obstruction, gastroenteritis, urolithiasis, UTI, pancreatitis

Note 2. Ultrasound type

- **Transvaginal ultrasound** (with empty bladder) is gold standard test of choice in all menarchal patients who are either sexually active or use tampons.
 - Benefits= quick, can do with empty bladder, probe is size of a super-tampon
- **Transabdominal ultrasound:** for patients not meeting transvaginal criteria (e.g., have not had menarche yet OR in menarchal patients who are not sexually active or do not use tampons).
 - Downsides: needs a full bladder, takes time to fill bladder (Note 3)

Note 3. For quick bladder filling (if patient needs transabdominal ultrasound and bladder not full enough to obtain adequate imaging): Strongly consider urinary catheter placement to retrofill bladder if clinical suspicion for adnexal torsion is high, as follows:

- Consider patient comfort measures: urojet (topical lidocaine gel) plus fentanyl/morphine, child life if available
- Place urinary catheter (Foley), size per typical Foley sizing. Obtain 60 ml catheter syringe, sterile water, and catheter plug.
- Instill sterile water into catheter. Goal volume = $(\text{Age} + 2) \times 30$ (for a max volume of 500 mL)
- At Children's Minnesota: Ultrasound tech will do portable ultrasound once urinary catheter is placed; bladder can be filled at bedside during ultrasound
- Leave urinary catheter in place until diagnosis known. If positive for torsion, leave urinary catheter in place.

Note 4: Ultrasound interpretation:

- Do not rely on doppler studies; arterial and venous flow is NOT predictive of the presence or absence of adnexal torsion
- To calculate adnexal volume (if not reported), use the following formula: length x width x height x 0.523 (in centimeters)
- To calculate the adnexal ratio: volume of affected side/volume of unaffected side
- Presence of paratubal/paraovarian cyst (next to fallopian tubes or ovary, of any size) or dermoid/teratoma increases risk of torsion and should prompt urgent gynecology consultation regardless of other findings. Small ovarian cysts (follicles of 3 cm or less are considered normal in postmenarchal patients) may have low risk for torsion, however, proceed with Schwartz composite scoring.

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Note 5: Schwartz composite score predicts risk of adnexal torsion in children and adolescents. "The TCS [total composite score] was found to be 92.1% accurate at predicting torsion in premenarchal patients and 81.3% accurate in predicting torsion in menarchal patients. The sensitivity of the TCS in premenarchal patients was 97.1% and the PPV was 94.3%, whereas the sensitivity was only 77.4% in menarchal patients with a PPV of 83.7%, although LR+ was higher for menarchal patients (5.2 vs 1.9)."⁴ Data below combined from reference articles to calculate percentage of patients who had adnexal torsion when taken to the OR based on patient's Schwartz Composite Score^{1,4}

Schwartz Composite Score	0	1	2	3	4	5	6	
Patients (%) With Adnexal Torsion	0 (0%)	10 (19%)	4 (27%)	24 (40%)	22 (59%)	36 (88%)	47 (85%)	143
No Adnexal Torsion	7	44	11	36	15	5	8	126
Total Patients	7	54	15	60	37	41	55	269

Workgroup: Ronning M, Miller R, Halverson J

References:

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2. Koff, SA. Estimating Bladder Capacity in Children. Urology. 1983 Mar;21(3):248
3. Levine D, et.al. Management of asymptomatic ovarian and other adnexal cysts imaged at US: Society of Radiologists in Ultrasound Consensus Conference Statement. Radiology. 2010 Sep;256(3):943-54. doi: 10.1148/radiol.10100213. Epub 2010 May 26. PMID: 20505067
4. Marcinkowski K et al. Application of a Composite Score to Predict Adnexal Torsion in Premenarchal and Menarchal Children and Adolescents. Journal of Pediatric Surgery. 2024 March; 59(3): 509-514. <https://doi.org/10.1016/j.jpedsurg.2023.09.041>.