4-2024

Ovarian Torsion

Children's Mercy Kansas City

Ovarian Torsion
Clinical Pathway Synopsis

Ovarian Torsion Algorithm

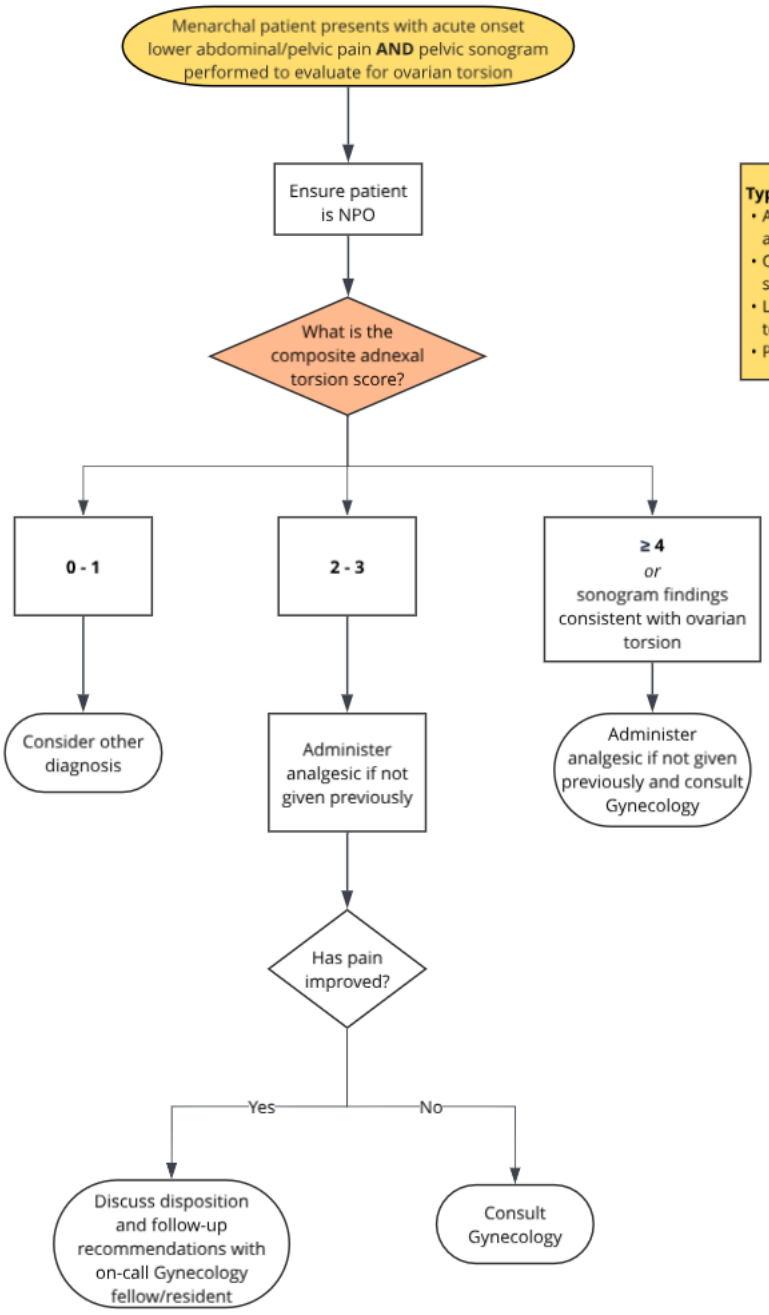
Inclusion criteria:
- Menarchal patient*
- Pelvic sonogram performed

**Patients that have not yet undergone menarch can have torsion, however, it is rarer and less studied so should not follow this algorithm. Call Gynecology if you have a clinical concern.*

Exclusion criteria:
- Positive pregnancy test

Composite Adnexal Torsion Score for Menarchal Patients

Risk factor		Score
Vomiting since symptom onset	No	0
	Yes	2
Adnexal Volume (mL) (larger side)	< 75	0
	75 - 105	1
	> 105	2
Adnexal Ratio (mL or cc) *Volume of the larger ovary/ volume of the smaller ovary*	< 1.25	0
	1.25 - 21	1
	> 21	2



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Typical Clinical Features:
- Acute onset lower abdominal pain
- Often nausea/vomiting since symptom onset
- Lower abdominal tenderness
- Possible fever

** These clinical pathways do not establish a standard of care to be followed in every case. It is recognized that each case is different, and those individuals involved in providing health care are expected to use their judgment in determining what is in the best interests of the patient based on the circumstances existing at the time. It is impossible to anticipate all possible situations that may exist and to prepare a clinical pathway for each. Accordingly, these clinical pathways should guide care with the understanding that departures from them may be required at times.*

Table of Contents

Objective of Clinical Pathway

The objective of the Ovarian Torsion Clinical Pathway is to provide standards of care for patients presenting with signs and symptoms of ovarian torsion. The aim of this pathway is to minimize variation of care through guidance for evaluation and treatment for ovarian torsion.

Background/Epidemiology

Ovarian torsion is a rare event (estimated 5/100,000) in the pediatric and adolescent population (Dasgupta et al., 2018). Ovarian torsion occurs when the ovary twists about the suspensory ligament of the ovary (also called the infundibulopelvic ligament), usually provoked by a mass (Adeyemi-Fowode et al., 2019). The twisting of this pedicle causes disruption in blood flow to the ovary by occluding the ovarian artery and vein. Clinical presentation, as described by Adeyemi-Fowode et al., (2019), is patients typically presenting with acute onset abdominopelvic pain usually associated with vomiting. Patients appear uncomfortable and usually have abdominal tenderness. On imaging, pelvic ultrasound may show an enlarged ovarian size and volume (especially compared to the contralateral ovarian volume), heterogenous echotexture, and peripheralization of follicles of the effected ovary (Tielli et al., 2022). Occasionally a "whirlpool sign" is demonstrated on doppler ultrasound or CT findings consistent with twisted vasculature (Murphy et al., 2022; Tielli et al., 2022). Doppler flow is frequently used to evaluate for ovarian venous outflow. While Doppler flow is useful, it is not sensitive or specific enough to reliably diagnose ovarian torsion (Tielli et al., 2022).

If ovarian torsion is clinically suspected (based on history, exam, and imaging), urgent surgery is warranted. There is no "safe time" for the ovary to be compromised. Children's Mercy standard is for the patient to be in the OR within 2 hours of suspected torsion by the consulting specialists (pediatric & adolescent gynecology). If torsion is found intra-operatively, the default is ovarian-sparing surgery with detorsion (Dasgupta et al., 2018; Adeyemi-Fowode et al., 2019). If a cyst is also found to be the culprit of torsion, a cystectomy (or cyst fenestration/aspiration) should be performed if it is safely possible (Dasgupta et al., 2018). Rarely is oophorectomy indicated. Most torsions are associated with masses such as a hemorrhagic cyst (from a developing physiologic follicle), a paratubal cyst (a congenital cyst on the fallopian tube or in the broad ligament), or a dermoid/mature teratoma (a benign ovarian tumor), where less than 3% of torsions are associated with malignancy (Adeyemi-Fowode et al., 2019).

Most ovaries resume normal function within three months post-detorsion (Walker et al., 2018). Long-term fertility data on those with torsion or oophorectomy is lacking, but overall, reassuring with spontaneous pregnancies and live births in both cohorts.

Although torsion is most common in the reproductive age female due to the dynamic nature of the ovaries, torsion can happen in the premenarchal patient. Premenarchal torsion is outside the scope of this clinical pathway given limited research on algorithms and sonographic cutoffs. Torsion in the premenarchal patient has a wider variety of clinical presentation and on ultrasound is more concerning when the adnexal ratio is > 2.5. Each case should be individualized and consultation with gynecology should take place if there is a clinical concern for premenarchal torsion (Hartman et al., 2021).

Target Users

- Physicians (Emergency Medicine, Hospital Medicine, Ambulatory, Fellows, Residents)
- Nurse Practitioners
- Nurses

Target Population

Inclusion Criteria

- Menarchal patients presenting with acute onset lower abdominal or pelvic pain with pelvic sonogram performed to evaluate for ovarian torsion.

Exclusion Criteria

- Patients with a positive pregnancy test

Practice Recommendations

A clinical practice guideline has not been established for the care process for patients presenting with ovarian torsion. Practice recommendations are based on expert opinion and consensus of the providers involved in the care of menarchal patients presenting with concern for ovarian torsion.

Additional Questions Posed by the Clinical Pathway Committee

No clinical questions were posed for this review.

Recommendation Specific for Children's Mercy

The Composite Adnexal Torsion Score (CATS) for menarchal patients is a tool to predict ovarian torsion based on clinical and radiological findings. CATS has been adapted for use in this clinical pathway (Linam, 2023), with the addition of actions specific to Children's Mercy for each CATS score category as follows:

- 0 – 1: Consider alternate diagnosis
- 2 – 3: Administer analgesics and assess pain to determine the need to consult Gynecology and/or recommend follow-up actions
- ≥ 4 or sonogram findings consistent with ovarian torsion: Administer analgesics and consult Gynecology

Measures

- Utilization of the Ovarian Torsion Clinical Pathway
- Utilization of Composite Adnexal Torsion Score for menarchal patients

Value Implications

The following improvements may increase value by reducing healthcare costs and non-monetary costs (e.g., missed school/work, loss of wages, stress) for patients and families and reducing costs and resource utilization for healthcare facilities.

- Decreased risk of overdiagnosis or underdiagnosis
- Decreased frequency of admission
- Decreased unwarranted variation in care

Organizational Barriers and Facilitators

Potential Barriers

- Variability of acceptable level of risk among providers
- Challenges with follow-up faced by some families

Potential Facilitators

- Collaborative engagement across care continuum settings during clinical pathway development
- High rate of use of the clinical pathway

Diversity/Equity/Inclusion

Our aim is to provide equitable care. These issues were discussed with the Committee, reviewed in the literature, and discussed prior to making any practice recommendations.

Power Plans

- No Power Plans are associated with this clinical pathway.

Associated Policies

- Transvaginal Exam Procedure
- Pelvic ultrasound

Education Materials

- No educational materials are associated with this clinical pathway.

Clinical Pathway Preparation

This pathway was prepared by the Evidence Based Practice (EBP) Department in collaboration with the Ovarian Torsion Clinical Pathway Committee composed of content experts at Children's Mercy Kansas City. If a conflict of interest is identified, the conflict will be disclosed next to the committee member's name.

Ovarian Torsion Clinical Pathway Committee Members and Representation

- Ashli Lawson, MD, MS | Gynecology | Committee Co-Chair
- Kay North, DO | Radiology | Committee Co-Chair
- Erin Scott, DO | Emergency Department | Committee Co-Chair
- Katherine Randolph, DO | Pediatric Fellow | Committee Member

EBP Committee Members

- Todd Glenski, MD, MSHA, FASA | Anesthesiology, Evidence Based Practice
- Megan Gripka, MT (ASCP) SM | Evidence Based Practice

Clinical Pathway Development Funding

The development of this clinical pathway was underwritten by the following departments/divisions: Gynecology, Radiology, Emergency Medicine, and Evidence Based Practice.

Conflict of Interest

The contributors to the Ovarian Torsion Clinical Pathway have no conflicts of interest to disclose related to the subject matter or materials discussed.

Approval Process

- This pathway was reviewed and approved by the Ovarian Torsion Committee, Content Expert Departments/Divisions, and the EBP Department; after which they were approved by the Medical Executive Committee.
- Pathways are reviewed and updated as necessary every 3 years within the EBP Department at CMKC. Content expert teams are involved with every review and update.

Review Requested

Department/Unit	Date Obtained
Gynecology	April 2024
Radiology	April 2024
Emergency Medicine	April 2024
Evidence Based Practice	April 2024

Version History

Date	Comments
April 2024	Version one – development of Ovarian Torsion Clinical Pathway algorithm and synopsis

Date for Next Review

- April 2027

Implementation & Follow-Up

- Once approved, the pathway was presented to appropriate care teams and implemented. Care measurements will be assessed and shared with appropriate care teams to determine if changes need to occur.
- Education was provided to all stakeholders:
  - Nursing units where the Ovarian Torsion Clinical Pathway is used
  - Departments of Gynecology, Radiology, and Emergency Medicine
  - Providers
  - Resident physicians
- Additional institution-wide announcements were made via email, hospital website, and relevant huddles.

Disclaimer

When evidence is lacking or inconclusive, options in care are provided in the supporting documents and the power plan(s) that accompany the clinical pathway.

These clinical pathways do not establish a standard of care to be followed in every case. It is recognized that each case is different, and those individuals involved in providing health care are expected to use their judgment in determining what is in the best interests of the patient based on the circumstances existing at the time.

It is impossible to anticipate all possible situations that may exist and to prepare clinical pathways for each. Accordingly, these clinical pathways should guide care with the understanding that departures from them may be required at times.

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