

Pediatric Ovarian Torsion

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What is a Clinical Pathway?

- An evidence-based guideline that decreases unnecessary variation and helps promote safe, effective, and consistent patient care.

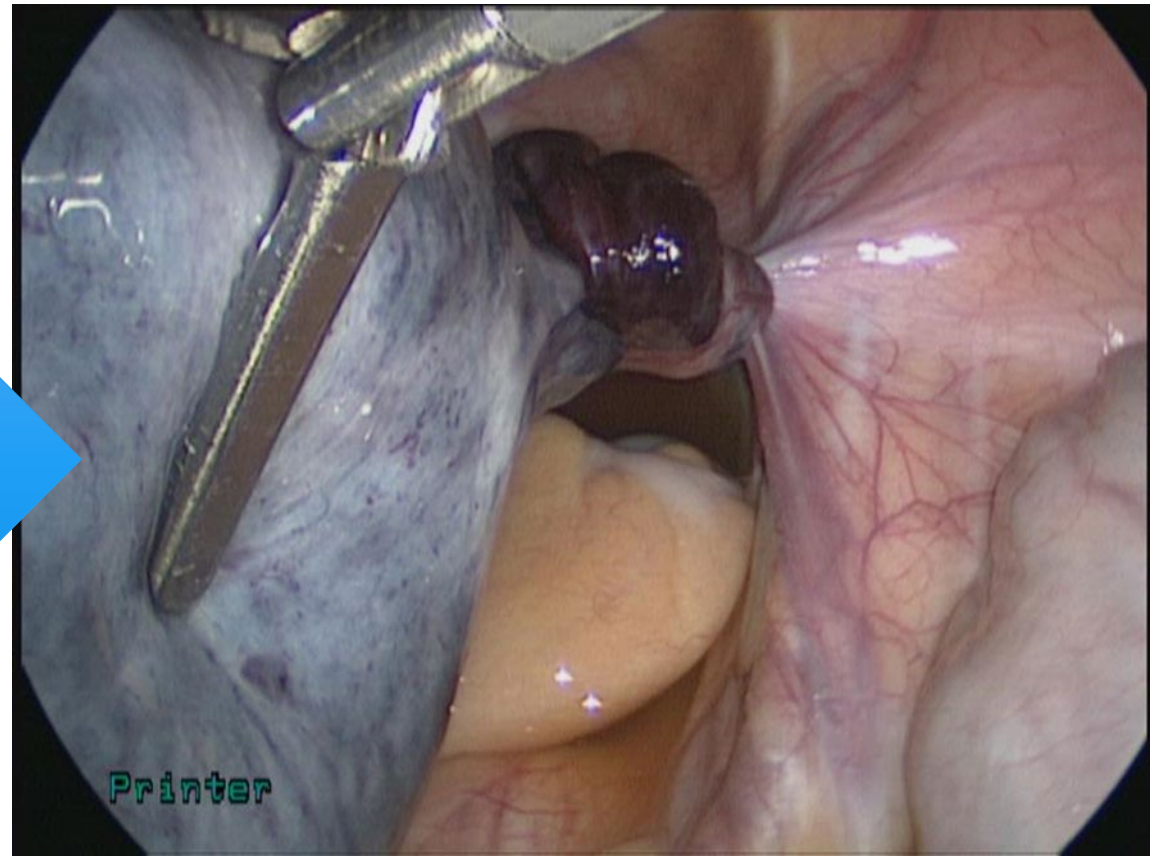
Objectives of the Pathway

- Implement a systematic approach to manage patients presenting with ovarian torsion
- Achieve prompt recognition and rapid definitive surgical treatment for patients with this condition
- Outline consistent discharge criteria and ensure appropriate outpatient follow-up for patients with ovarian torsion

Why is the pathway necessary?

- Ovarian torsion is the complete or partial rotation of the ovary on its pedicle, leading to ischemia and potential loss of the ovary

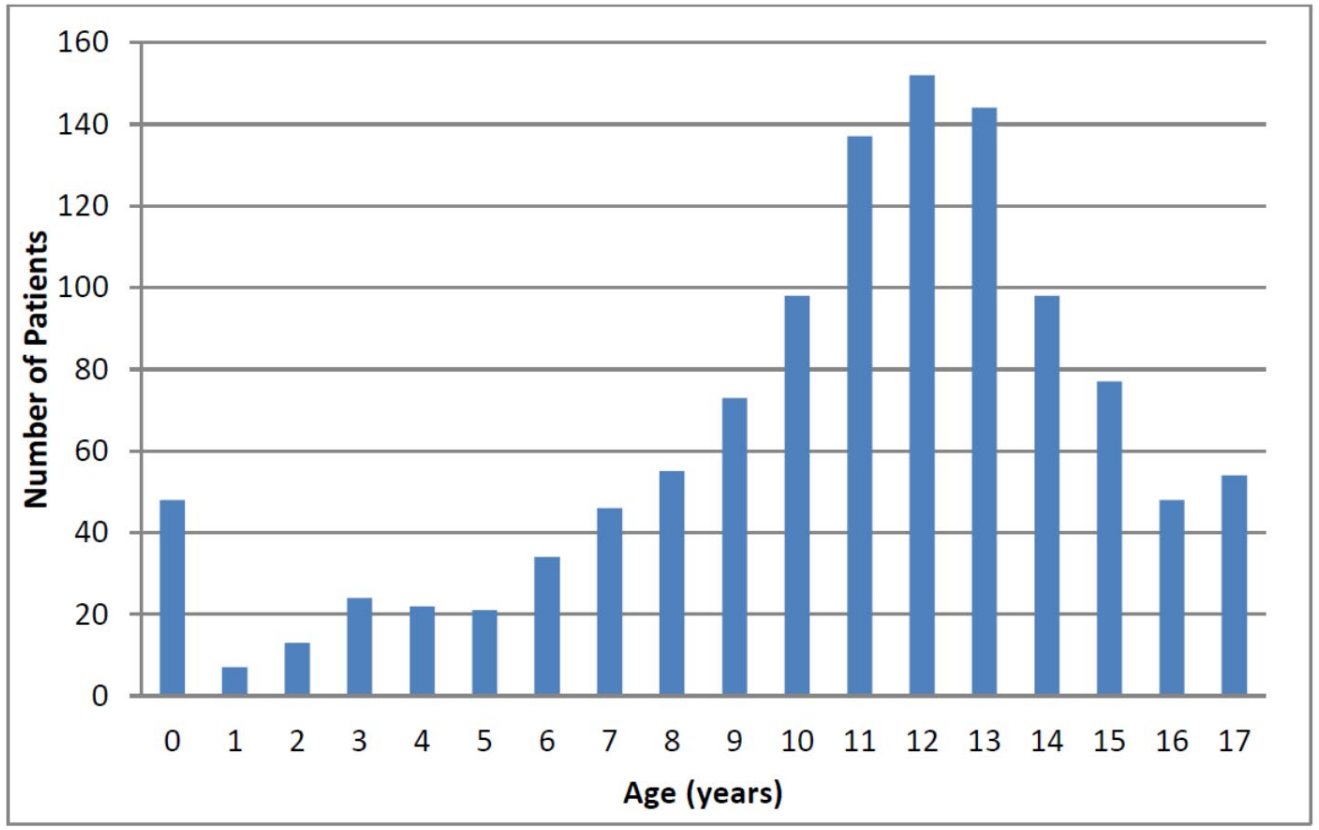
A dusky torsed ovary



Why is the pathway necessary?

- Early diagnosis can be challenging as ovarian torsion accounts for only 3% of acute abdominal pain in females, and can mimic other more common conditions
- While Doppler ultrasound is an important part of the initial workup, normal ovarian appearance and Doppler flow do not exclude the possibility of torsion
- Prompt surgical treatment with operative de-torsion is the key factor leading to ovarian salvage

Age Distribution of Ovarian Torsion



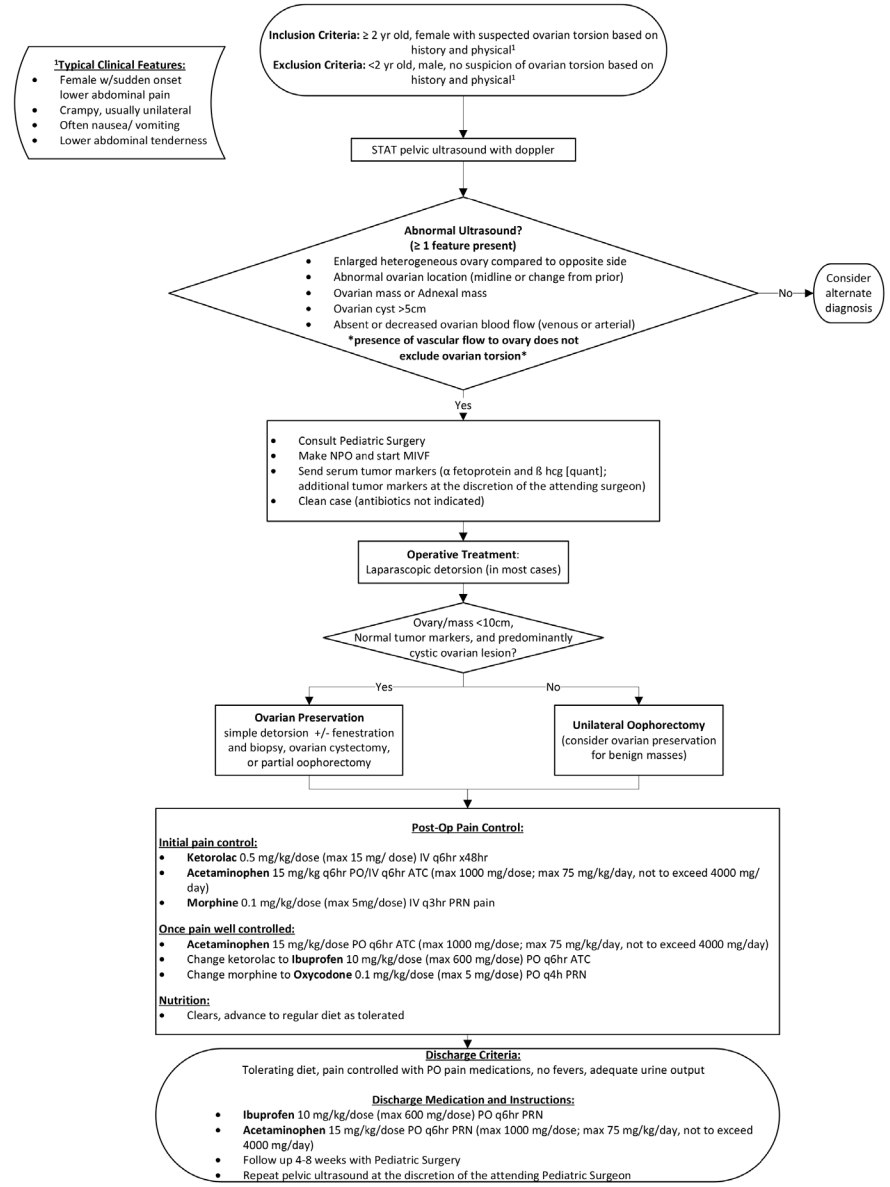
This is the Ovarian Torsion Clinical Pathway.

We will be reviewing each component in the following slides.

CLINICAL PATHWAY:

Ovarian Torsion

THIS PATHWAY SERVES AS A GUIDE AND DOES NOT REPLACE CLINICAL JUDGMENT.



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CLINICAL PATHWAY:

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[1]Typical Clinical Features:

- Female w/sudden onset lower abdominal pain
- Crampy, usually unilateral
- Often nausea/ vomiting
- Lower abdominal tenderness

Any female patient 2 years or older who presents with clinical features concerning for Ovarian Torsion, should have a STAT pelvic ultrasound with Doppler.

Inclusion Criteria: ≥ 2 yr old, female with suspected ovarian torsion based on history and physical[1]

Exclusion Criteria: <2 yr old, male, no suspicion of ovarian torsion based on history and physical[1]

Abnormal Ultrasound?
(≥ 1 feature present)
- Enlarged heterogeneous ovary compared to opposite side
- Abnormal ovarian location (midline or change from prior)
- Ovarian mass or Adnexal mass

No → Consider alternate diagnosis

STAT pelvic ultrasound with doppler

exclude ovarian torsion*

Yes

- Consult Pediatric Surgery
- Make NPO and start MIVF
- Send serum tumor markers (α fetoprotein and ß hcg [quant]; additional tumor markers at the discretion of the attending surgeon)
- Clean case (antibiotics not indicated)

Operative Treatment:
Laparascopic detorsion (in most cases)

Ovary/mass <10cm, Normal tumor markers, and predominantly cystic ovarian lesion?

Yes → **Ovarian Preservation**
simple detorsion +/- fenestration and biopsy, ovarian cystectomy, or partial oophorectomy

No → **Unilateral Oophorectomy**
(consider ovarian preservation for benign masses)

Post-Op Pain Control:

Initial pain control:
- **Ketorolac** 0.5 mg/kg/dose (max 15 mg/ dose) IV q6hr x48hr
- **Acetaminophen** 15 mg/kg q6hr PO/IV q6hr ATC (max 1000 mg/dose; max 75 mg/kg/day, not to exceed 4000 mg/day)
- **Morphine** 0.1 mg/kg/dose (max 5mg/dose) IV q3hr PRN pain

Once pain well controlled:
- **Acetaminophen** 15 mg/kg/dose PO q6hr ATC (max 1000 mg/dose; max 75 mg/kg/day, not to exceed 4000 mg/day)
- Change ketorolac to **Ibuprofen** 10 mg/kg/dose (max 600 mg/dose) PO q6hr ATC
- Change morphine to **Oxycodone** 0.1 mg/kg/dose (max 5 mg/dose) PO q4h PRN

Nutrition:
- Clears, advance to regular diet as tolerated

Discharge Criteria:
Tolerating diet, pain controlled with PO pain medications, no fevers, adequate urine output

Discharge Medication and Instructions:
- **Ibuprofen** 10 mg/kg/dose (max 600 mg/dose) PO q6hr PRN
- **Acetaminophen** 15 mg/kg/dose PO q6hr PRN (max 1000 mg/dose; max 75 mg/kg/day, not to exceed 4000 mg/day)
- Follow up 4-8 weeks with Pediatric Surgery
- Repeat pelvic ultrasound at the discretion of the attending Pediatric Surgeon

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If the Pelvic Ultrasound is positive for one or more radiographic feature, then proceed down the pathway and prepare the patient for surgery.

- Consult Pediatric Surgery
- Make patient NPO
- Send STAT serum tumor markers

➡ Note that no antibiotics are necessary

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[1]**Typical Clinical Features:**
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STAT pelvic ultrasound with doppler

Abnormal Ultrasound?
(≥ 1 feature present)
- Enlarged heterogeneous ovary compared to opposite side
- Abnormal ovarian location (midline or change from prior)
- Ovarian mass or Adnexal mass
- Ovarian cyst >5cm
- Absent or decreased ovarian blood flow (venous or arterial)

presence of vascular flow to ovary does not exclude ovarian torsion

Consider alternate

ending surgeon)

Operative Treatment:
rascopic detorsion (in most cases)

Yes

- Consult Pediatric Surgery
- Make NPO and start MIVF
- Send serum tumor markers (α fetoprotein and ß hcg [quant]; additional tumor markers at the discretion of the attending surgeon
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Post-Op Pain Control:

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The operative goal is ovarian preservation whenever possible.

Certain factors that may lead to unilateral oophorectomy are:

- Large masses (over 10 cm)
- Abnormal tumor markers

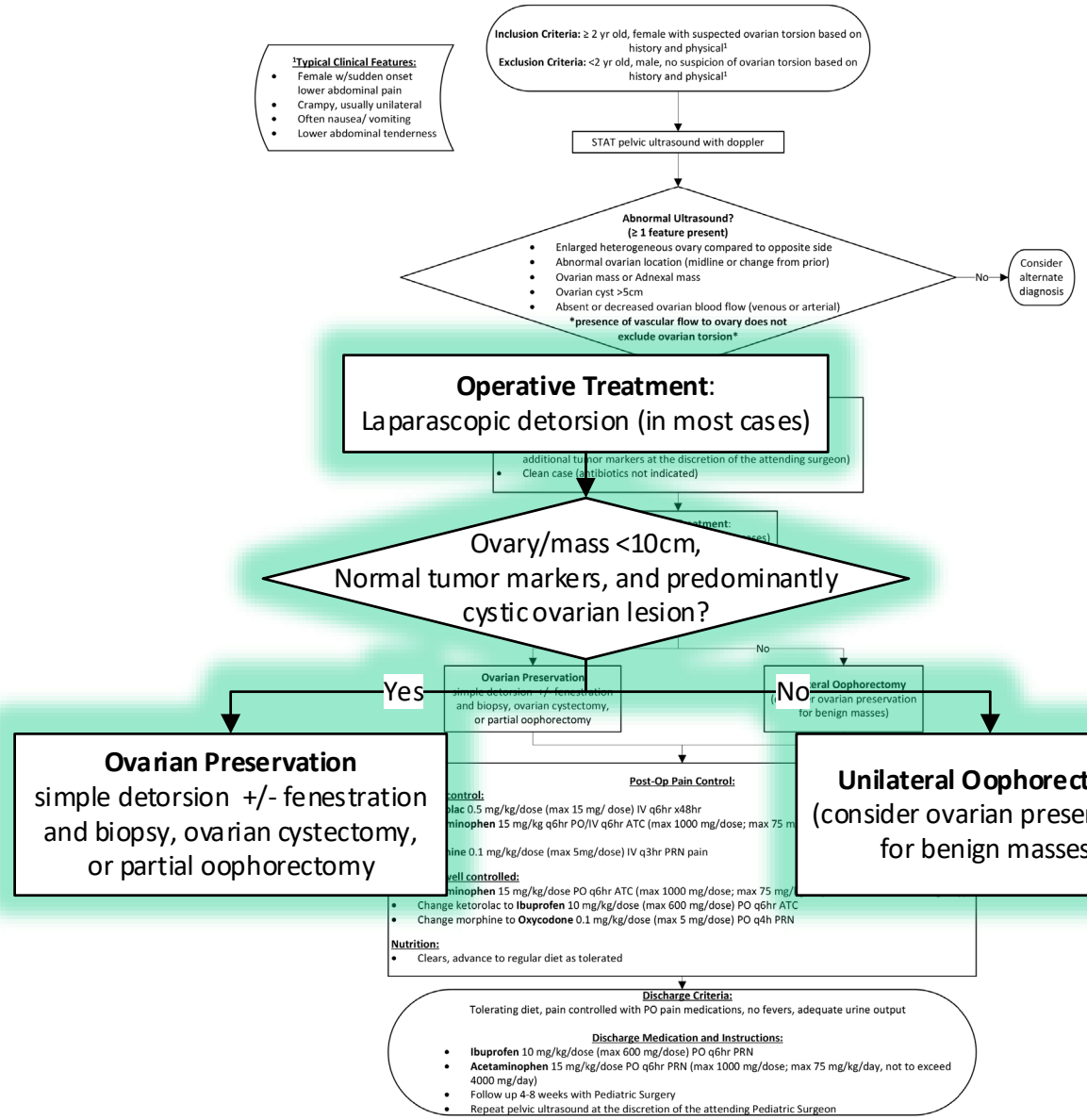
And/or

- Solid or non-cystic masses

See the algorithm for Operative management on the next slide

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Ovarian Torsion

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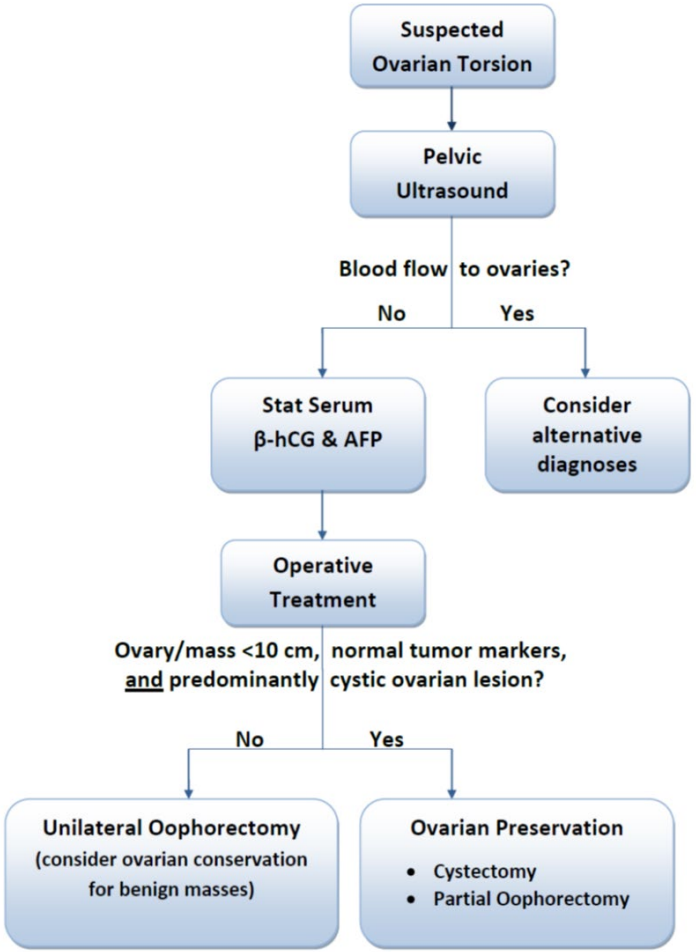
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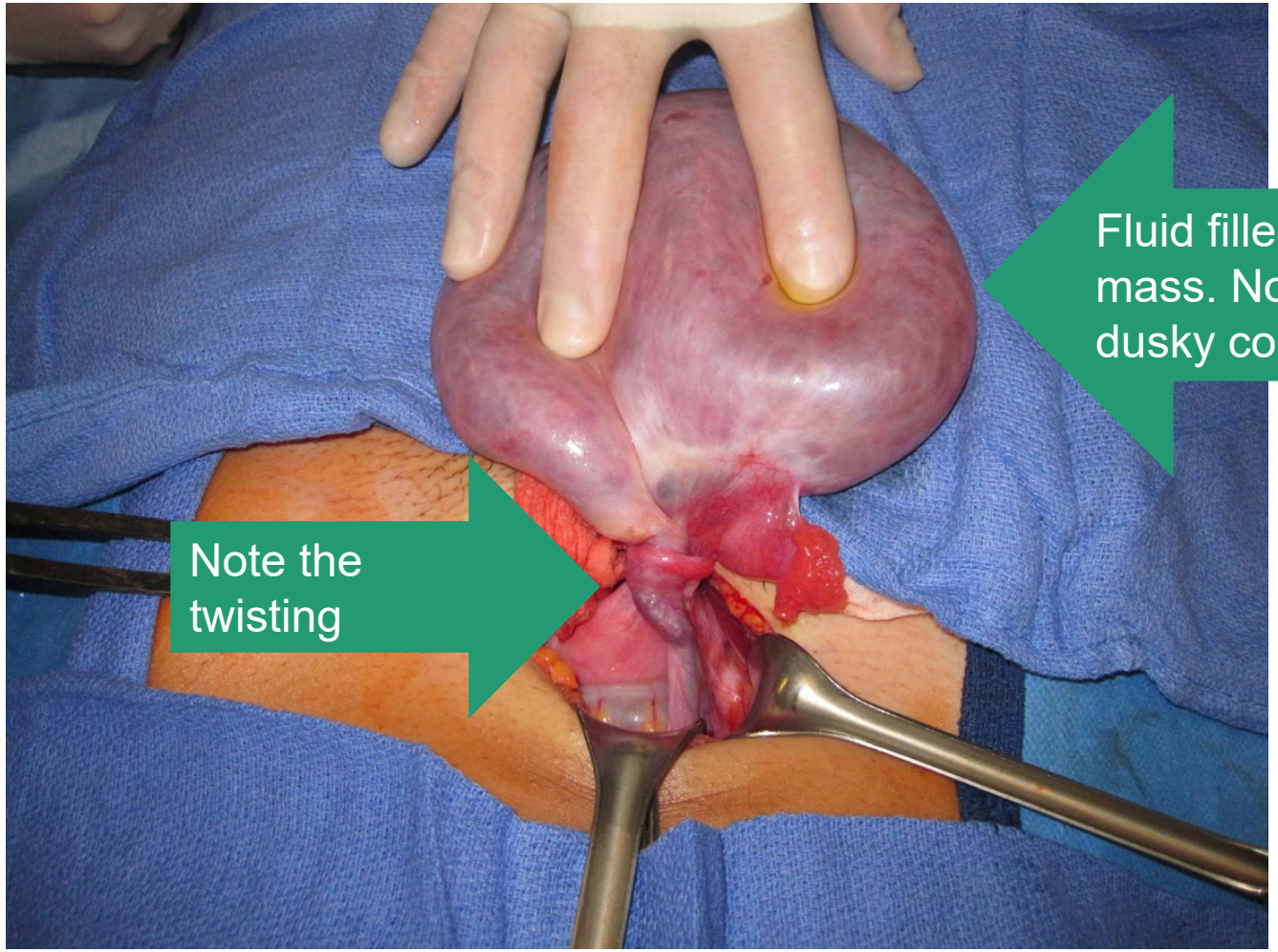
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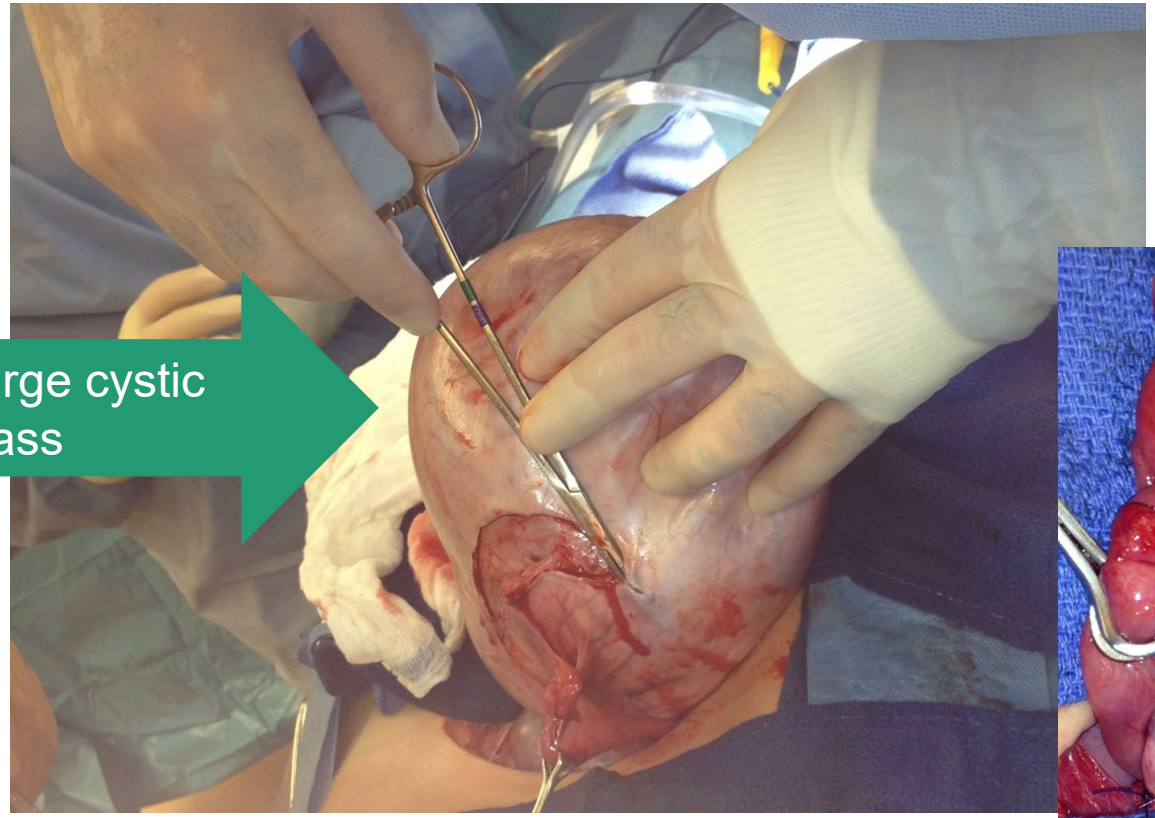
Algorithm for Operative Management



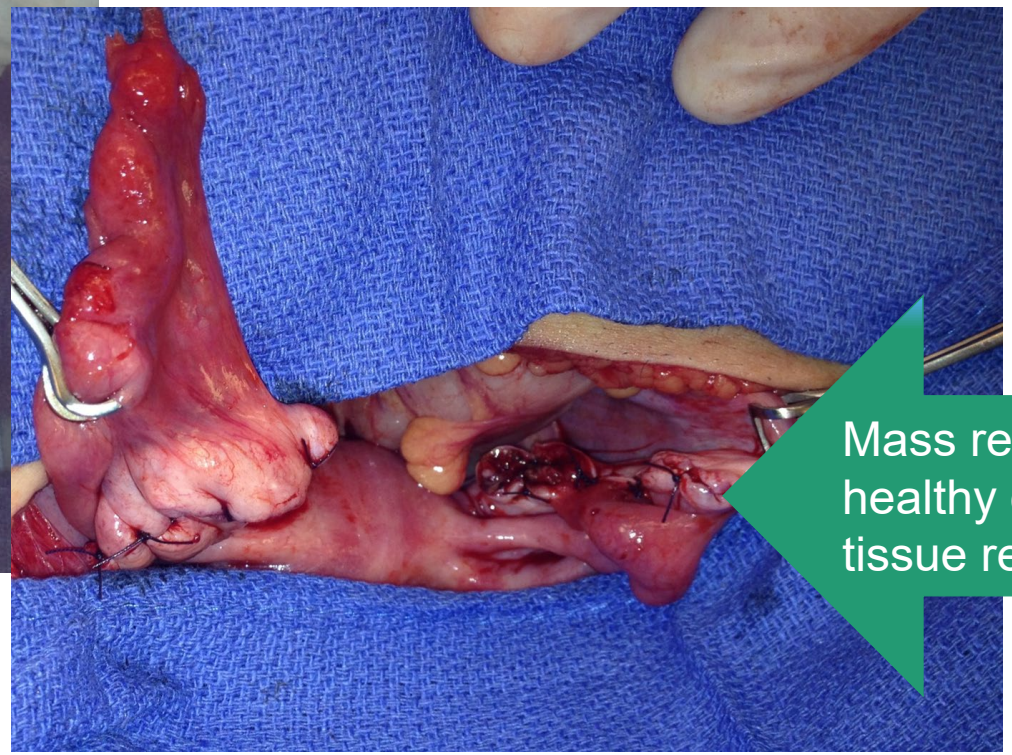
A Torsed Ovary



Ovarian Preservation



Large cystic mass



Mass removed, and healthy ovarian tissue remaining.

Post operative management starts with pain control

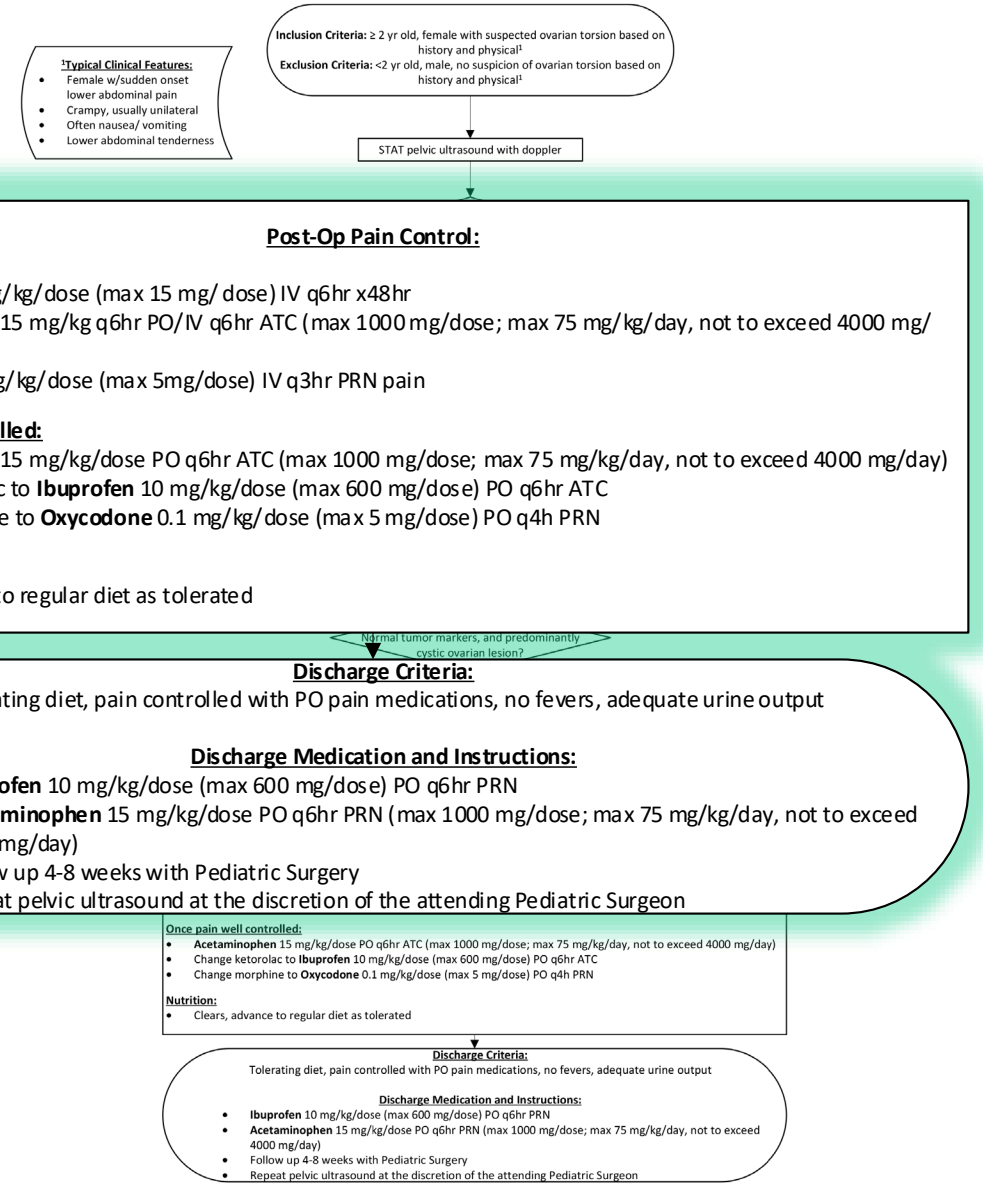
- Once pain is well controlled and patient is tolerating a regular diet, switch over from IV to PO pain medications
- No narcotics required at discharge

Follow up is in 4-8 weeks in the surgery clinic. Need for repeat pelvic ultrasound is determined on a case by case basis.

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Quality Metrics

- Average time from arrival to start of imaging (pelvic ultrasound with Doppler)
- Average time from imaging to start of definitive operative management
- Percentage of patients with ovarian preservation

Pathway Contacts

- Brendan Campbell, MD, MPH
  - Department of Pediatric Surgery and Trauma
- Katerina Dukleska, MD
  - Department of Pediatric Surgery and Trauma

References

- Byrne MM, Wilson NA, Levatino E, Powell DM, Arca MJ. Sustained Positive Practice Change After Targeted Education in the Management of Ovarian Torsion. *J Pediatr Surg*. 2025 Jan;60(1):162062.
- Guthrie BD, Alder MD, Powell EC. Incidence and trends of pediatric ovarian torsion hospitalizations in the United States, 2000-2006. *Pediatrics.* 2010 Mar;125(3):532-8.
- Campbell BT, Austin DM, Kahn O, McCann MC, Lerer TJ, Lee K, Thaker S, Herbst KW, Rader CM. Current trends in the surgical treatment of pediatric ovarian torsion: we can do better. *J Pediatr Surg.* 2015 Aug;50(8):1374-7.
- Dasgupta R, et al. Ovarian torsion in pediatric and adolescent patients: A systematic review. *J Pediatr Surg.* 2018 Jul;53(7):1387-1391.

Thank You!

About Connecticut Children's Clinical Pathways Program

The Clinical Pathways Program at Connecticut Children's aims to improve the quality of care our patients receive, across both ambulatory and acute care settings. We have implemented a standardized process for clinical pathway development and maintenance to ensure meaningful improvements to patient care as well as systematic continual improvement. Development of a clinical pathway includes a multidisciplinary team, which may include doctors, advanced practitioners, nurses, pharmacists, other specialists, and even patients/families. Each clinical pathway has a flow algorithm, an educational module for end-user education, associated order set(s) in the electronic medical record, and quality metrics that are evaluated regularly to measure the pathway's effectiveness. Additionally, clinical pathways are reviewed annually and updated to ensure alignment with the most up to date evidence. These pathways serve as a guide for providers and do not replace clinical judgment.