

# Pediatric Scrotal Pain Clinical Pathway

January 2022

<b>Inclusion criteria</b>	Patients aged 3 months-19 years who present with scrotal pain and/or redness/swelling
<b>Exclusion criteria</b>	Patients with history of scrotal trauma
<b>Outcomes/Goals</b>	<ol style="list-style-type: none"> <li>1. Consistent, evidence-based management of pediatric scrotal pain</li> <li>2. Rapid Urology referrals when appropriate</li> <li>3. Improved patient care after discharge for non-torsion scrotal pain</li> </ol>
<b>NURSE documentation</b>	Chief complaint. Onset of pain. Presence of temperature. Associated trauma. Birth and medical history, medications, allergies, vital signs.
<b>INTERVENTIONS</b>	ESI Triage level II Full set of vitals Ondansetron ODT 0.1-0.2mg (maximum dose 8mg/dose) for nausea Prepare discharge instruction packet including testicular pain education materials when appropriate
<b>DIAGNOSTICS</b>	Urinalysis with microscopy and reflex culture Urine PCR – GC/Chlamydia if sexually transmitted infection suspected or patient is sexually active
<b>PHYSICIAN (LIP)</b>	
Scoring Criteria	Score patient using TWIST Score (0-7). If score $\geq$ 5, testicular torsion likely. Consult urology immediately, make patient NPO, and prepare for transfer. If $<$ 5, order US with Doppler scrotum and contents.
Medication	
NSAIDS	Ibuprofen – 3-5 days 10 mg/kg q6h
Antipyretics	Acetaminophen 10-15 mg/kg q6h
Antibiotics (If Bacterial Epididymo-Orchitis)	<u>Non-STI:</u> Ofloxacin (300 mg PO twice a day for 10 days) OR Levofloxacin (500 mg PO once daily for 10 days)  <u>STI:</u> Ceftriaxone (250 mg IM in one dose) PLUS Doxycycline (100 mg orally twice a day for 10 days) or, for men who practice insertive anal sex, levofloxacin (500mg once daily for 10 days)

# Clinical Pathway Decision Making Process

## Pediatric Acute Scrotal Pain Evaluation

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Obtain vitals  
Collect UA with micro (GC/CT as appropriate)  
Apply clinical scoring system

TWIST Score	
	Points
Testicular swelling	2
Hard testicle	2
Absent cremasteric reflex	1
Nausea/Vomiting	1
High riding testis	1
<b>Total Points</b>	

### Score $\geq$ 5: Testicular Torsion Likely

1. Immediate Urology Consult
2. NPO
3. Arrange Emergent Transfer

YES

### Score < 5: Indeterminate

Ultrasound Scrotum and Contents with Doppler

Absent or decreased testicular flow?

NO

Increased flow on US and scrotal swelling on exam?

Sonographic e/o appendix testicle/epididymis torsion and superior-lateral tenderness of testis OR blue-dot sign?

Normal Scrotal Ultrasound?

Urinalysis positive OR patient febrile?

NO

YES

### Suspected Bacterial Epididymo-Orchitis

- Urine Culture
- Urology Consult/Referral
- Antibiotics, NSAIDS
- Scrotal Pain education
- Urine PCR if suspect STI

### Non- Bacterial Epididymo-Orchitis

- Administer Scrotal Pain education materials

### Suspect Appendicular Torsion

- Administer scrotal pain education materials
- NSAIDS PRN
- Scrotal support
- Ice

### Likely Normal

- Administer Scrotal Pain education materials
- NSAIDS PRN

## Pediatric Scrotal Pain Rationale and Data

### Goals of Clinical Pathway

1. Consistent, evidence-based management of pediatric scrotal pain
2. Rapid Urology referrals when appropriate
3. Improved patient care after discharge for non-torsion scrotal pain

Data Considerations	Interventions	Rationale
<p>TWIST Score</p>	<p>Calculate for all pediatric patients presenting with acute onset scrotal pain.</p>	<p>Barbosa et al. conducted a prospective study of the TWIST score for 338 patients presenting with acute scrotal pain between the ages of 3 months and 18 years. A score of 2 or less corresponded to low risk of testicular torsion with no recommendation for US. A score of 3 or 4 points determined intermediate risk, for which US would be indicated. A score of 5 or more indicated high risk with recommendation of surgical exploration.</p> <p>A TWIST score of 2 or less had a NPV of 100% (range 98% to 100%), PPV 49% (39% to 59%), sensitivity 100% (91% to 100%) and specificity 82% (76% to 86%). For a score of 5 or more NPV was 96% (range 93% to 98%), PPV 100% (89% to 100%), sensitivity 76% (62% to 87%) and specificity 100% (98% to 100%).</p>
<p>Urine Analysis</p>	<p>UA for every patient</p> <p>Urine Culture for Epididymo-Orchitis</p> <p>Urine PCR for Chlamydia-Gonorrhea if Sexual History Suggestive</p>	<p>The cause of acute epididymitis in pediatric patients can be viral, post-infectious, reactive etiology, or bacterial in nature.</p> <p>A retrospective study of patients diagnosed with epididymitis or epididymo-orchitis found that of the 38 urine cultures available, 7 were positive (18.4%). Isolates included Escherichia coli (3 patients), enterococcus (2), Staphylococcus aureus (1) and coagulase negative Staphylococcus (1). Cristophoro (2017) on review of 27 articles concerning pediatric epididymo-orchitis found that 22 reported data on urine cultures. Of the 670 patients who supplied a urine culture, 100 (14.9%) were found to be positive, with a mean across the studies of 19.0% (95% CI, 17.66%–20.43%).</p> <p>In contrast, in a study by Pilatz et al of 273 patients &lt; 18 years with acute epididymitis underwent comprehensive investigation comprising microbiologic cultures, polymerase chain reaction (PCR) for sexually transmitted infections (STIs), 16S ribosomal DNA (rDNA) analysis, and PCR detection of 23 viruses. Escherichia coli, as a causative agent, was identified in 132 antibiotic-naive patients (88%) and 44 pretreated patients (51%); 16S rDNA analysis increased the detection rate by 10%. STIs were present in 34 cases (14%) (25 patients with Chlamydia trachomatis) and were not restricted to a specific age group.</p> <p>Patients should only be tested if sexual history significant. In a study by Santillanes et al. of 54 adolescent boys aged 12 years or older, 12 (37%) were tested for gonorrhea and chlamydia. One (5%) was found to be positive for both gonorrhea and chlamydia.</p>
<p>Scrotal Ultrasound</p>	<p>For TWIST Score &lt; 5</p>	<p>Doppler US can increase the predictively of testicular torsion. In Karmazyn et al. the ultrasound finding of decreased or absent testicular flow had a sensitivity of 63% and a specificity of 99%</p>
<p>Testicular appendix swelling on Doppler US</p>	<p>Suspect Appendicular torsion</p>	<p>Torsion of the testicular appendix has a typical appearance on color Doppler US, which can be used to safely rule out other disorders and avoid unwarranted surgery or antibiotic treatment.</p>
<p>Increased Blood flow and scrotal edema without signs of appendicular torsion and with +UA and fever</p>	<p>Suspect Epididymo-Orchitis</p>	<p>In the retrospective study by Redshaw et al., urinalysis data was available for 79 patients (31.3%) and was positive in 25 (31.6%). In a study by Boettcher et al. the best predictors of epididymo-orchitis were dysuria, a painful epididymis on palpation, and altered epididymal echogenicity and increased peritesticular perfusion found on ultrasound studies. Trojan et al. discuss these typical findings and treatment for men with Epididymo-orchitis in a review published in <i>American Family Physician</i>.</p>

## Antibiotic Considerations

Considerations for antibiotic selection include tissue specific penetration and culpable organisms.

Seppänen (1980) found that trimethoprim (TMP, 160 mg) given twice daily was found in concentrations two to four times higher in the testis and epididymis as compared to sulfadiazine (SD, 250 mg) or sulfamethoxazole (SM, 800 mg). The drug concentrations and the concentration ratios of SD/TMP and SM/TMP obtained suggest that combination antibiotics are adequate for synergistic antibacterial action at the serum, urine and tissue levels.

### 2010 CDC Recommendations:

#### Non-STI Epididymo-orchitis:

For acute epididymitis most likely caused by enteric organisms or with negative gonococcal culture or nucleic acid amplification test, ofloxacin (300 mg PO twice a day for 10 days) or levofloxacin (500 mg PO once daily for 10 days) may be used

*In the study by Pilatz et al. (2015) for naive patients, cultured bacteria were susceptible to fluoroquinolones and group 3 cephalosporins in >85% of cases (pretreated patients: 42% and 67%, respectively).*

#### STI Epididymo-orchitis:

Ceftriaxone (500 mg IM in one dose) plus doxycycline (100 mg orally twice a day for 10 days) or, for men who practice insertive anal sex, levofloxacin (500mg once daily for 10 days)

### References:

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