

# Acute scrotal pain - Emergency management in children

## Purpose

This document provides clinical guidance for all staff involved in the care and management of a child presenting to an Emergency Department (ED) with acute scrotal pain in Queensland.

This guideline has been developed by senior ED clinicians and Paediatricians across Queensland, with input from Paediatric Surgery, Queensland Children's Hospital, Brisbane. It has been endorsed for use across Queensland by the Queensland Emergency Care of Children Working Group in partnership with the Queensland Emergency Department Strategic Advisory Panel and the Healthcare Improvement Unit, Clinical Excellence Queensland.

## Key points

- Testicular torsion is a surgical emergency - testis viability can diminish considerably **six** hours after symptom onset.
- A presumptive diagnosis of testicular torsion should be made promptly on history and examination alone.
- USS and bloods are not routinely required (may delay diagnosis and be falsely negative).
- All boys with acute scrotal pain, or unexplained abdominal pain, require a scrotal examination.
- Urgent surgical review is required if testicular torsion cannot be excluded or an alternate explanation for symptoms cannot be made.
- If no paediatric surgical service onsite, the first point of call for suspected testicular torsion cases should be the General Surgical or Urological services. If no onsite Surgical services, contact Retrieval Services Queensland (RSQ) to arrange urgent transfer.

## Introduction

Acute scrotal pain is a common surgical emergency in boys. While it usually occurs in post-pubertal boys, it can be seen in a range of ages from neonates to young men. A number of diagnoses can present with acute scrotal pain including testicular torsion and incarcerated inguinal hernia which require time-critical diagnosis to avoid permanent harm.

Emergent	Urgent	Other
<ul style="list-style-type: none"> <li>• spermatic cord torsion ('testicular torsion')</li> <li>• incarcerated inguinal hernia</li> </ul>	<ul style="list-style-type: none"> <li>• scrotal trauma</li> <li>• epididymo-orchitis (EDO)</li> <li>• testicular tumours</li> <li>• vasculitis</li> </ul>	<ul style="list-style-type: none"> <li>• appendix testis torsion</li> <li>• hydrocele</li> <li>• varicocele</li> <li>• idiopathic scrotal oedema</li> <li>• referred pain from renal colic or appendicitis</li> </ul>



## Assessment

The primary aim of the assessment is to identify testicular torsion to enable urgent management. A standardised, rapid clinical evaluation with careful attention to the features on history and clinical examination can differentiate between the potential causes for acute scrotal pain.

### History

History taking should include specific questioning on:

- pain including onset and location
- systemic symptoms including nausea, vomiting, tachycardia
- trauma
- urinary symptoms

Keep in mind boys may be reluctant to volunteer scrotal symptoms because of embarrassment and reluctance to be examined.

### Examination

Careful physical examination of the scrotum (with a chaperone) should focus on signs of testicular torsion.

### Diagnosis

Emergent causes of testicular pain - testicular torsion	
History	Examination
<ul style="list-style-type: none"> <li>• sudden onset of unilateral scrotal pain with systemic symptoms e.g. nausea, vomiting, tachycardia (typical, 70% cases)</li> <li>• gradual onset of pain predominantly in the iliac fossa, may have history of minor trauma and/or a fever (atypical)</li> <li>• intermittent testicular pain (can result from intermittent torsion/spontaneous detorsion)</li> <li>• acute abdominal or inguinal pain (can be due to torsion of undescended testes)</li> </ul>	<ul style="list-style-type: none"> <li>• absent cremasteric reflex</li> <li>• abnormal testis position (horizontal lie on standing and high riding)</li> <li>• thickened spermatic cord</li> <li>• scrotal skin changes</li> <li>• lump in the groin in child with acute abdominal or inguinal pain (can reflect torsion of undescended testis but may be mistaken for lymphadenopathy or abscess)</li> </ul> <p><b>The presence or absence of a single sign cannot exclude testicular torsion.</b></p>

Emergent causes of testicular pain - incarcerated inguinal hernia	
History	Examination
<ul style="list-style-type: none"> <li>• typically, sudden onset of unilateral pain in scrotum or inguinal area, often associated with systemic symptoms</li> </ul>	<ul style="list-style-type: none"> <li>• tender inguinal scrotal swelling</li> <li>• may be complicated by bowel obstruction or necrosis</li> </ul>



Urgent causes of testicular pain	
Condition	Clinical features
<b>Scrotal trauma</b>	<ul style="list-style-type: none"> <li>local bruising and/or oedema and/or formation of haematoma</li> <li>may present with testicular rupture and haematocele</li> </ul>
<b>Epididymo-orchitis (EDO)</b>	<ul style="list-style-type: none"> <li>inflammation of the epididymis and/or testis due to: <ul style="list-style-type: none"> <li>infection (commonly viral including mumps, adenovirus, enterovirus or influenza, rarely bacterial)</li> <li>chemical irritation caused by the reflux of urine into the ejaculatory ducts due to voiding dysfunction/constipation)</li> </ul> </li> <li>typically present with dysuria, urinary frequency, malodorous urine</li> <li>bacterial infection more likely in child with structural urinary tract abnormalities, instrumented urinary tract or sexually transmitted infection (e.g. chlamydia or gonorrhoea)</li> </ul>
<b>Testicular tumours</b>	<ul style="list-style-type: none"> <li>typically, painless subacute swelling</li> <li>approximately 20% of cases present with testicular pain and swelling resulting from haemorrhage into the tumour</li> </ul>
<b>Vasculitis</b>	<ul style="list-style-type: none"> <li>may present with scrotal symptoms</li> <li>Henoch Schonlein Purpura can cause orchitis</li> </ul>

Other causes of testicular pain		
Condition	Description and epidemiology	Clinical features
<b>Appendix testis torsion</b>	<ul style="list-style-type: none"> <li>occurs when the appendix testis (an embryological remnant on the upper pole of the testis) torts</li> <li>most common in pre-pubertal boys</li> </ul>	<ul style="list-style-type: none"> <li>pain that 'just won't go away'.</li> <li>usually minimal pain at rest</li> <li>inflammation can develop with time, making it hard to distinguish from spermatic cord torsion</li> <li>occasionally focal tenderness or see a 'blue dot' on the upper pole of the testis</li> </ul>
<b>Hydrocele</b>	<ul style="list-style-type: none"> <li>result of a patent processus vaginalis</li> </ul>	<ul style="list-style-type: none"> <li>typically, painless fluctuant swelling</li> </ul>
<b>Varicocele</b>	<ul style="list-style-type: none"> <li>abnormal enlargement of the spermatic cord venous plexus.</li> <li>usually seen in peri-pubertal males</li> </ul>	<ul style="list-style-type: none"> <li>dull pain and swelling on left side</li> <li>transillumination can help confirm diagnosis</li> </ul>
<b>Idiopathic scrotal oedema</b>	<ul style="list-style-type: none"> <li>benign, self-limiting condition</li> </ul>	<ul style="list-style-type: none"> <li>low-grade discomfort, swelling and oedema that extends beyond the scrotal boundaries usually into the perineum</li> </ul>
<b>Referred pain</b>	<ul style="list-style-type: none"> <li>testicular pain can occur as a result of renal colic or appendicitis</li> </ul>	<ul style="list-style-type: none"> <li>testicular pain from renal colic or appendicitis</li> </ul>



## Investigations



**ALERT** – Delays to detorsion increase the risk of testicular infarction.

Investigations are **NOT** routinely required for presumptive testicular torsion.

- pyuria on urinalysis does **not** exclude testicular torsion
- normal scrotal USS in boys does **not** exclude testicular torsion (80-85% sensitive)
- scrotal USS recommended **only** on specialist advice

Following the exclusion of testicular torsion, other non-emergent diagnosis of acute scrotal pain may be considered.

### Investigations for diagnosis of non-emergent conditions

<b>EDO</b>	<ul style="list-style-type: none"> <li>• urinalysis is recommended (note a normal urine does not exclude EDO)</li> <li>• urine PCR* for chlamydia and gonorrhoea recommended if clinically suspected</li> </ul>
<b>Scrotal trauma</b>	<ul style="list-style-type: none"> <li>• consider ultrasound to look for testicular rupture</li> </ul>
<b>Varicocele</b>	<ul style="list-style-type: none"> <li>• consider ultrasound - request visualisation of the kidneys and renal vessels to exclude evidence of renal vein compression and mass</li> </ul>

\*Polymerase chain reaction

## Management

### Testicular torsion



**ALERT** – Resolution of torsion is usually required within **six** hours to avoid permanent harm.

Testis viability is directly related to the time to detorsion and the number of twists in the spermatic cord. [Delays to diagnosis of testicular torsion](#) (access via QH intranet) have resulted in permanent harm.

Boys with presumptive testicular torsion require surgical exploration and, if necessary, orchidopexy. Testes may still be salvageable for up to 24 hours. The fastest treatment will always be onsite. If no Paediatric Surgical service onsite, first point of call should be General Surgical or Urological services. If no onsite Surgical services, contact RSQ to arrange urgent transfer.



Urgent referral to the Surgical or Urological service (onsite or via RSQ) is required for the boys with presumptive testicular torsion or acute scrotal pain where testicular torsion is unable to be excluded

### Incarcerated inguinal hernia

Boys with incarcerated inguinal hernia require urgent surgical review and reduction in theatre.



Immediate referral to Paediatric Surgical service is required for incarcerated inguinal hernia



## Other diagnoses

The management for differential diagnoses is as follows:

- **EDO** - antibiotics as per local guidelines. May be IV or oral depending on the patient's age, comorbidities and severity of illness. If complicated by abscess formation, consider referral to Surgical service for drainage.
- **Varicocele** – consider referral to Surgical service as may need surgical intervention, especially if causing pain, or impairing testicular growth.
- **Hydrocele** – most (90%) resolve by two years of age. Consider referral to Surgical service if persists past two years of age.
- **Scrotal trauma** – refer to Surgical service unless examination of the testis is normal and there is no evidence of significant scrotal swelling.
- **Appendix testis torsion** - if confirmed, can usually be managed with analgesia as an outpatient, although some boys with persisting pain may undergo excision of the appendix testis.

## Escalation and advice outside of ED

Clinicians can contact the services below to escalate the care of a paediatric patient as per local practices. Transfer is recommended if the child requires a higher level of care.

Pre-pubertal boys (8-12 years) and post-pubertal boys (greater than 12 years) presenting with presumptive testicular torsion do not routinely require treatment at a paediatric facility unless there are paediatric-specific concerns. Transfer may result in time-critical delays to surgery and a detrimental outcome for the patient. This is reinforced in the Position Paper "Surgery in Children" published by the Royal Australasian College of Surgeons.



### Child requiring time-critical care

#### Diagnoses requiring time-critical care

- confirmed or suspected testicular torsion
- incarcerated inguinal hernia

**Resolution of testicular torsion is usually required within SIX hours to avoid permanent harm.**

Diagnosis	Contact
Possible testicular torsion	Onsite Paediatric Surgical service else onsite Surgical / Urology service as per local practice. If no onsite service, contact <b>Retrieval Services Queensland (RSQ) on 1300 799 127</b> to coordinate urgent transfer for definitive care. <a href="#">RSQ</a> (access via QH intranet)
Incarcerated inguinal hernia	Paediatric Surgical Service onsite or via Retrieval Services Queensland (RSQ). If no onsite service, contact <b>Retrieval Services Queensland (RSQ) on 1300 799 127</b> to coordinate urgent transfer for definitive care.





## Child requiring non-time-critical care

Reason for contact	Who to contact
<b>Advice</b> (including management, disposition or follow-up)	Follow local practice. Options: <ul style="list-style-type: none"> <li>onsite/local paediatric surgical service</li> <li>Queensland Children's Hospital experts via <a href="#">Children's Advice and Transport Coordination Hub (CATCH)</a> on 13 CATCH (13 22 82) (24-hour service)</li> <li>local and regional paediatric videoconference support via Telehealth Emergency Management Support Unit <a href="#">TEMSU</a> (access via QH intranet) on 1800 11 44 14 (24-hour service)</li> </ul>
<b>Referral</b>	First point of call is onsite/local paediatric surgical service

## Inter-hospital transfers

<b>Do I need a critical transfer?</b>	<ul style="list-style-type: none"> <li>discuss with onsite/local paediatric surgical service</li> </ul>
<b>Request a non-critical inter-hospital transfer</b>	<ul style="list-style-type: none"> <li>contact onsite/local paediatric surgical service</li> <li>contact RSQ on 1300 799 127 for aeromedical transfers</li> <li>contact <a href="#">Children's Advice and Transport Coordination Hub (CATCH)</a> on 13 CATCH (13 22 82) for transfers to Queensland Children's Hospital</li> </ul>
<b>Non-critical transfer forms</b>	<ul style="list-style-type: none"> <li><a href="#">QH Inter-hospital transfer request form</a> (access via QH intranet)</li> <li><a href="#">aeromedical stepdown</a> (access via QH intranet)</li> <li>commercial aeromedical transfers: <ul style="list-style-type: none"> <li><a href="#">Qantas</a></li> <li><a href="#">Virgin</a></li> <li><a href="#">Jetstar</a></li> </ul> </li> </ul>

## When to consider discharge from ED

Boys who have been assessed and have no evidence of serious surgical or infectious pathology can be safely discharged home. In these boys, 48-72 hours of rest and NSAIDs will help decrease inflammation and pain. Oral hydration and the management of constipation (if present) are worthwhile to address the underlying cause.

On discharge, advise parents to seek medical attention (GP or ED) if pain is persisting or increasing.

### Follow-up

- Not routinely required.

## When to consider admission

Requirement for admission will be determined by the relevant specialist service.



## Related documents

- [Patient Safety Communique No.6/2017. Testicular Torsion](#) (access via QH intranet)
- [Position Paper "Surgery in Children" published by the Royal Australasian College of Surgeons](#)

## References

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11. Patient Safety Communique No.6/2017. Testicular Torsion [https://qheps.health.qld.gov.au/\\_data/assets/pdf\\_file/0022/1400278/psc-ttorsion.pdf](https://qheps.health.qld.gov.au/_data/assets/pdf_file/0022/1400278/psc-ttorsion.pdf) (access via QH intranet)
12. Position Paper, "Surgery in Children" published by the Royal Australasian College of Surgeons [https://umbraco.surgeons.org/media/1666/2017-05-04\\_pos\\_fes-pst-055\\_surgery\\_in\\_children.pdf](https://umbraco.surgeons.org/media/1666/2017-05-04_pos_fes-pst-055_surgery_in_children.pdf)

## Guideline approval

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The guideline is not a substitute for clinical judgement, knowledge and expertise, or medical advice. Variation from the guideline, taking into account individual circumstances may be appropriate.

This guideline does not address all elements of standard practice and accepts that individual clinicians are responsible for:

- Providing care within the context of locally available resources, expertise, and scope of practice
- Supporting consumer rights and informed decision making in partnership with healthcare practitioners including the right to decline intervention or ongoing management
- Advising consumers of their choices in an environment that is culturally appropriate and which enables comfortable and confidential discussion. This includes the use of interpreter services where necessary
- Ensuring informed consent is obtained prior to delivering care
- Meeting all legislative requirements and professional standards
- Applying standard precautions, and additional precautions as necessary, when delivering care
- Documenting all care in accordance with mandatory and local requirements

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