Queensland Paediatric Guideline

Emergency

# 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 irreducible inguinal hernia which require time-critical diagnosis to avoid permanent harm.

| Emergent | Urgent | Other |
|---|---|---|
| • spermatic cord torsion ('testicular torsion')<br>• irreducible inguinal hernia | • scrotal trauma<br>• testicular tumours<br>• vasculitis | • appendix testis torsion<br>• hydrocele<br>• epididymo-orchitis (EDO)<br>• varicocele<br>• idiopathic scrotal oedema<br>• referred pain from renal colic or appendicitis |

# Assessment

The primary aim of the assessment is to identify testicular torsion to enable emergent 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, referred pain
- systemic symptoms including nausea, vomiting, dizziness
- trauma
- urinary symptoms (sexual history in older males)

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** | |
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| **History** | **Examination** |
| • sudden onset of unilateral scrotal pain with systemic symptoms e.g. nausea, vomiting, (typical, 70% cases)<br>• **onset of pain predominantly in the iliac fossa, may have history of minor trauma**<br>• **associated ipsilateral iliac fossa pain**<br>• intermittent testicular pain (can result from intermittent torsion/spontaneous detorsion)<br>• acute abdominal or inguinal pain (can be due to torsion of undescended testes)<br>• **pain at rest** | • tachycardia<br>• absent cremasteric reflex<br>• abnormal testis position (horizontal lie on standing and high riding)<br>• thickened spermatic cord<br>• scrotal skin: erythema, discolouration, swelling, thickening<br>• 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)<br>• global testicular tenderness<br>**The presence or absence of a single sign cannot exclude testicular torsion.** |

| Emergent causes of testicular pain - irreducible inguinal hernia | |
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| **History** | **Examination** |
| • **typically, unilateral pain in scrotum or inguinal area, often associated with systemic symptoms including vomiting**<br>• **often the lump is noticed on nappy change in younger children** | • tender inguinal scrotal swelling<br>• strangulated bowel within the scrotum may transilluminate<br>• inability to palpate above the lump with the testes inferior (in males)<br>• tender, erythematous, thickened / woody / swollen lump |

| Urgent causes of testicular pain | |
|---|---|
| **Condition** | **Clinical features** |
| **Scrotal trauma** | • local bruising and/or oedema and/or formation of haematoma<br>• may present with testicular rupture and haematocele |
| **Epididymo-orchitis (EDO)** | • mostly in the < 1yo or sexually active > 15 yo<br>• inflammation of the epididymis and/or testis due to:<br>  ○ infection (commonly viral including mumps, adenovirus, enterovirus or influenza, rarely bacterial)<br>  ○ chemical irritation caused by the reflux of urine into the ejaculatory ducts due to voiding dysfunction/constipation)<br>• typically present with dysuria, urinary frequency, malodourous urine<br>• bacterial infection more likely in child with structural urinary tract abnormalities, instrumented urinary tract or sexually transmitted infection (e.g. chlamydia or gonorrhoea) |
| **Testicular tumours** | • typically, painless subacute swelling<br>• approximately 20% of cases present with testicular pain and swelling resulting from haemorrhage into the tumour<br>• check for history of leukaemia |
| **Vasculitis** | • may present with scrotal symptoms<br>• Henoch Schonlein Purpura can cause orchitis |

| Other causes of testicular pain | | |
|---|---|---|
| **Condition** | **Description and epidemiology** | **Clinical features** |
| **Appendix testis torsion** | • occurs when the appendix testis (an embryological remnant on the upper pole of the testis) torts<br>• most common in pre-pubertal boys 7-13 years old | • pain that 'just won't go away'.<br>• they usually present after 1-2 days of pain.<br>• usually minimal pain at rest |

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| | | • inflammation can develop with time, making it hard to distinguish from spermatic cord torsion – If inflamed, the cremasteric reflex will not activate.<br>• occasionally focal tenderness or see a 'blue dot' on the upper pole of the testis. This is more easily visible by stretching the scrotal skin overlying the testis |
| **Hydrocele** | • result of a patent processus vaginalis | • typically, painless fluctuant swelling<br>• often increases during times of being unwell with viral illness.<br>• transillumination can help, although if symptomatic please consider irreducible inguinal hernia (bowel filled with fluid can also transilluminate |
| **Varicocele** | • abnormal enlargement of the spermatic cord venous plexus.<br>• usually seen in peri-pubertal males | • dull / dragging pain and swelling mostly on left side towards the end of the day or with activity<br>• varicocele may reduce with lying and increase with standing, and increased pressure such as Valsalva / coughing. |
| **Idiopathic scrotal oedema** | • benign, self-limiting condition | • painful swelling and oedema that extends beyond the scrotal boundaries usually into the perineum, across to the other side of the scrotum, up into the groin, and occasionally to the shaft of the penis.<br>• It is usually red and shiny.<br>• this tends to last a few days.<br>• exclude testicular pain by gently pushing on the scrotum, to mobilise the testis into the groin, where testicular tenderness can be excluded. |
| **Referred pain** | • testicular pain can occur as a result of renal colic or rarely appendicitis | • testicular pain from renal colic or appendicitis |

## 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

If after clinical exam testicular torsion in deemed unlikely, other non-emergent diagnosis of acute scrotal pain may be considered.

| Investigations for diagnosis of non-emergent conditions | |
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| **EDO** | • urinalysis is recommended (note a normal urine does not exclude EDO)<br>• urine PCR* for chlamydia and gonorrhoea recommended if clinically suspected |
| **Scrotal trauma** | • consider ultrasound to look for testicular rupture (breach of the tunica albuginea) and haematocele. |
| **Varicocele** | • consider ultrasound - request visualisation of the kidneys and renal vessels to exclude evidence of renal vein compression and mass – this is usually done as an outpatient |

*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 of 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. The first point of call should be Paediatric surgical, General Surgical or Urological services. If no onsite Surgical services, contact RSQ to arrange urgent transfer to the nearest suitable facility. Patients >12 years old do not need a paediatric surgeon. (See position statement from the Royal Australasian College of Surgeons)

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.

## Irreducible inguinal hernia

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

Immediate referral to Paediatric Surgical service is required for irreducible 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 or inflammation may require 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 |
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| • confirmed or suspected testicular torsion<br>• irreducible inguinal hernia<br>**Resolution of testicular torsion is usually required within SIX hours to avoid permanent harm.** |

| Diagnosis | Contact |
|---|---|
| Possible testicular torsion | Onsite Paediatric Surgical/ General Surgical / Urology service as per local practice.<br>If no onsite service, contact **Retrieval Services Queensland (RSQ) on 1300 799 127** to coordinate urgent transfer for definitive care.<br>RSQ (access via QH intranet) |
| Irreducible inguinal hernia | Paediatric Surgical Service onsite or via Retrieval Services Queensland (RSQ).<br>If no onsite service, contact **Retrieval Services Queensland (RSQ) on 1300 799 127** to coordinate urgent transfer for definitive care. |

### Child requiring non-time-critical care

| Reason for contact | Who to contact |
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| **Advice** (including management, disposition or follow-up) | Follow local practice. Options:<br>• onsite/local paediatric surgical/general surgical/urological service<br>• Queensland Children's Hospital experts via Children's Advice and Transport Coordination Hub (CATCH) on 13 CATCH (13 22 82) (24-hour service)<br>• local and regional paediatric videoconference support via Telehealth Emergency Management Support Unit TEMSU (access via QH intranet) on 1800 11 44 14 (24-hour service) |
| **Referral** | First point of call is onsite/local paediatric surgical service |

### Inter-hospital transfers

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|---|---|
| **Do I need a critical transfer?** | • discuss with onsite/local paediatric surgical/general surgical/urological service |
| **Request a non-critical inter-hospital transfer** | • contact onsite/local paediatric surgical service<br>• contact RSQ on 1300 799 127 for aeromedical transfers<br>• contact Children's Advice and Transport Coordination Hub (CATCH) on 13 CATCH (13 22 82) for transfers to Queensland Children's Hospital |
| **Non-critical transfer forms** | • QH Inter-hospital transfer request form (access via QH intranet)<br>• aeromedical stepdown (access via QH intranet)<br>• commercial aeromedical transfers:<br>  ○ Qantas<br>  ○ Virgin<br>  ○ Jetstar |

## 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, supportive underwear 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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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


# Guideline approval

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## Disclaimer

This guideline is intended as a guide and provided for information purposes only. The information has been prepared using a multidisciplinary approach with reference to the best information and evidence available at the time of preparation. No assurance is given that the information is entirely complete, current, or accurate in every respect. We recommend hospitals follow their usual practice for endorsement locally including presenting it to their local Medicines Advisory Committee (or equivalent) prior to use.

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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