Statewide 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 surgical staff, Lady Cilento Children's Hospital, Brisbane. It has been endorsed for use across Queensland by the Statewide Emergency Care of Children Working Group in partnership with the Queensland Emergency Department Strategic Advisory Panel and the Healthcare Improvement Unit, Clinical Excellence Division.

Key points

- Testicular torsion is a surgical emergency - testis viability can diminish considerably 6 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 a false negative).
- All boys with acute scrotal pain, or unexplained abdominal pain, require a scrotal exam.
- Urgent surgical review is required to expedite definitive management for boys if testicular torsion cannot be excluded or an alternate explanation for symptoms cannot be made.
- Urgently contact onsite general surgical or urological services for all presumptive testicular torsion cases. Where that is not possible, contact the nearest paediatric surgical department and/or RSQ for escalation of treatment.

Introduction

Acute scrotal pain is a common surgical emergency in boys, and represents 0.3% of all paediatric emergency presentations. It is most common in post-pubertal boys, although it can be seen in a range of ages, from neonates to young men.

Acute scrotal pain has a range of differential diagnoses, including testicular torsion. A standardised, rapid clinical evaluation is required, with careful attention to the features on history and clinical examination that can help differentiate between the potential causes for such pain. It is important that time-critical diagnoses, especially testicular torsion and incarcerated inguinal hernia, are made rapidly to optimise clinical outcomes.

Possible causes of testicular pain in children

Emergent causes of testicular pain in children	
Spermatic cord torsion ('testicular torsion')	Typical presentation (70% cases) - sudden onset unilateral scrotal pain with systemic symptoms (nausea, vomiting, tachycardia). Atypical presentation (30%) – gradual onset of pain predominantly in the iliac fossa, or pain following a history of minor trauma. Fever may be present. Intermittent pain may reflect intermittent torsion/spontaneous detorsion. Torsion of the undescended testis can manifest as acute abdominal or inguinal pain with a lump in the groin.
Incarcerated inguinal hernia	Characterised by tender inguinal scrotal swelling. May be complicated by bowel obstruction or necrosis.

Urgent causes of testicular pain	
Scrotal trauma	Commonly causes local bruising/oedema/haematoma formation. May result in testicular rupture and haematocele.
Epididymo-orchitis (EDO)	Inflammation of the epididymis and/or testis. History may include dysuria, frequency, malodourous urine and fever. Commonly caused by infection or chemical irritation (caused by the reflux of urine into the ejaculatory ducts due to voiding dysfunction/constipation). Bacterial EDO – rare in boys, except if structural urinary tract abnormalities or instrumented urinary tract. Can be a complication of sexually transmitted infections (e.g. chlamydia and gonorrhoea). Viral EDO – due to mumps, adenovirus, enterovirus or influenza.
Testicular tumours	Usually present with painless subacute swelling. 20% of cases present with testicular pain and swelling due to haemorrhage into the tumour.
Vasculitis	May present with scrotal symptoms. Henoch Schonlein Purpura can cause orchitis.

Other causes of testicular pain	
Appendix testis torsion	Most common in pre-pubertal boys. Occurs when the appendix testis (an embryological remnant on the upper pole of the testis) torts. Presents later than spermatic cord torsion, with pain that 'just won't go away'. Usually minimal pain at rest. Inflammation can develop with time, making it hard to clinically distinguish from spermatic cord torsion. Occasionally can find focal tenderness or see a 'blue dot' on the upper pole of the testis.
Hydrocele	Result of a patent processus vaginalis. Typically causes painless fluctuant swelling. Transillumination can help confirm the diagnosis.
Varicocele	Abnormal enlargement of the spermatic cord venous plexus. Usually seen in peri-pubertal males, usually on the left side and presents with dull pain and swelling.
Idiopathic scrotal oedema	Benign, self-limiting condition. Usually low-grade discomfort, swelling and oedema that extend beyond the scrotal boundaries, typically into the perineum.
Referred pain	May be from renal colic or appendicitis

Assessment

The primary aim of the assessment is to identify testicular torsion which is a surgical emergency. The viability of the testis is directly related to time from onset of torsion, and to the number of twists in the spermatic cord. For this reason, every effort must be made to minimise the delay to detorsion for these patients. Delays to diagnosis of testicular torsion (QH staff only) have resulted in permanent harm. A standardised, rapid clinical evaluation allows timely decision making which is required to maximise the odds of testicular salvage. Most (90-95%) testes are salvaged if the torsion is resolved within 6 hours.

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 have the resulting examination.

Examination

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

Clinical signs to suggest testicular torsion

- absent cremasteric reflex
- abnormal testis position (horizontal lie on standing and high riding)
- thickened spermatic cord
- scrotal skin changes.

The presence or absence of any single sign cannot rule out testicular torsion.

Keep in mind that undescended testes can also tort – these present with a painful groin lump which can be mistaken for lymphadenopathy, or abscess. As always, examining the scrotum (and not finding both testes descended) is the key.

Urgent surgical referral is required on clinical suspicion of testicular torsion.

The first point of contact should always be local onsite general surgical or urology services to ensure the fastest possible clinical treatment. Where that is not possible, contact the nearest paediatric surgical department and/or RSQ for escalation of treatment.

Investigations

ALERT – Investigations (including scrotal USS) are NOT routinely required for presumptive testicular torsion. Delays to detorsion increase the risk of testicular infarction.

Investigations for other conditions causing acute scrotal pain	
Testicular torsion	Clinical diagnosis with usually no investigations required Pyuria on urinalysis does not rule out torsion. Delays to detorsion increase the risk of testicular infarction. Ultrasound (USS) may delay definitive management, and a false negative (only 80-85% sensitive) result may be inappropriately reassuring. Scrotal USS should only be done at the request of the surgical consultant. A normal USS in boys does not exclude torsion.
EDO	Urinalysis will usually show evidence of infection but normal urine does not exclude EDO. If clinically suspected, request urine PCR* for chlamydia and gonorrhoea
Scrotal trauma	Ultrasound may be useful to look for testicular rupture.
Hydrocele	Transillumination can help confirm the diagnosis
Varicocele	Ultrasound may be useful - request visualisation of the kidneys and renal vessels to exclude evidence of renal vein compression and mass.

*Polymerase chain reaction

Management

Testicular torsion

ALERT – Testicular torsion is best managed within 6 hours, but the testis may still be salvageable for up to 24 hours

The management of patients with suspected testicular torsion is surgical exploration and, if necessary, orchidopexy.

Urgent referral to surgical team is required on clinical suspicion of testicular torsion. The fastest treatment will always be onsite, and onsite general surgical or urological services should be contacted first. Where that is not possible, contact nearest paediatric surgical department and/or RSQ for escalation of treatment.

Urgent referral to surgical team is mandatory in all boys for whom testicular torsion cannot be excluded.

Incarcerated inguinal hernia

The management of incarcerated inguinal hernia is urgent surgical review and reduction in theatre.

Immediate referral to surgical team is required for incarcerated inguinal hernia

Other diagnoses

The management for non-urgent 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 team for drainage.
- **Varicocele** – consider referral to surgical team as may need surgical intervention, especially if causing pain, or impairing testicular growth.
- **Hydrocele** – most (90%) resolve by 2 years of age. Consider referral to surgical team if not resolved in children ≥ 2 years.
- **Scrotal trauma** - Surgical review is required unless the testis examines normally 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 be managed with excision of the appendix testis.

When to escalate care

Pre-pubertal boys (8-12 years) and post-pubertal boys (>12 years) presenting with presumptive testicular torsion do not routinely require treatment at a paediatric facility unless there are paediatric specific concerns. The local general surgical or urology team should be the first point of contact, as transfer may result in time-critical delays in 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.

Clinicians can contact the services outlined below to escalate the care of a paediatric patient.

Service	Reason for contact by clinician	Contact
Local Surgical/Urology service	First point of contact for urgent management of presumptive testicular torsion if no onsite paediatric surgical service. Escalate to closest paediatric surgical service if treatment cannot take place locally.	As per local arrangements
Paediatric Surgical service	For urgent management of presumptive testicular torsion.	As per local referral arrangements
Local Paediatric service	For non-surgical paediatric advice and assistance with local transfers as per local arrangements.	As per local arrangements
Children's Advice and Transport Coordination Hub (CATCH)	For access to specialist paediatric advice and assistance with inter-hospital transfer of non-critical patients into and out of Lady Cilento Children's Hospital. For assistance with decision making regarding safe and appropriate inter-hospital transfer of children in Queensland. For QH staff, click here for the QH Inter-hospital transfer request form (access via intranet).	(07) 3068 4510 24 hours CATCH website
Telehealth Emergency Management Support Unit (TEMSU)	For access to generalist and specialist acute support and advice via videoconferencing, as per locally agreed pathways, in regional, rural and remote areas in Queensland.	TEMSU QHEPS website 24 hours
Retrieval Services Queensland (RSQ)	For assistance with time-critical transfer of presumptive testicular torsion cases where treatment by local surgical services not possible. For access to telehealth support for, and to notify of, critically unwell patients requiring retrieval in Queensland. For any patients potentially requiring aeromedical retrieval or transfer in Queensland.	RSQ QHEPS website 24 hours

When to consider discharge

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.

Follow-up

Assuming the correct diagnosis has been made, symptoms should settle and there should be no need for routine GP follow up. If pain is persisting or increasing, reassessment is indicated – either at the GP or the Emergency Department, and it is important to convey this to parents prior to discharge.

When to consider admission

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

Related documents

For QH staff, CHQ-GDL-00704 Abdominal Pain: Emergency Management in Children (access via intranet).

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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.
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- 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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