

Clinical Guideline:**Authors:** EoE Acute Scrotum working group**For use in:** EoE Paediatric Units, EoE Emergency Departments

Guidance specific to the care of children 0-16 years

Used by: paediatricians, general surgeons, anaesthetists, paediatric emergency medicine physicians, nurses.**Key Words:** acute scrotum, testicular torsion, time critical**Date of Ratification:** 09/05/2023**Review due:** 09/05/2026**Registration No:** SiC-ODN-2023-2**Approved by:**

Surgery in Children Clinical Oversight Group	
Clinical Lead Milind Kulkarni	Milind Kulkarni

Ratified by ODN Board:

Date of meeting	09/05/2023
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Audit Standards:

Providers should participate in audits of the Children Presenting with Acute Scrotum Guideline against these recommendations to identify opportunities to improve safety, quality and performance.

Audit points

- Review local implementation of the Children Presenting with Acute Scrotum Guideline with providers through the Clinical Oversight Group quarterly meetings.

Introduction

This Guideline has been commissioned by the East of England Surgery in Children Operational Delivery Network (ODN) and developed by a working group of key stake holders from hospitals/Trust networks (please see the back page of this guideline bundle for full list of participants). The guideline is intended to reduce variations in practice identified by GIRFT and prevent discrepancies by promoting a standardised best evidence based practice approach for delivering care for children with testicular pain (0-16 years). It is meant to inform the standards of clinical management and referral pathways for the care of children in East of England. The guideline development process involved review of current guidelines, NICE advice, NCEPOD recommendations, commissioning guidance, specialist society advice, policies related to surgery in children from across the regions and current best practice evidence and research.

Scope

This guide is only intended for the 0- 16 years old age range of patients and is only recommended by this group for the patients/ conditions with acute testicular pain. This guideline should be used alongside of the local policies. The advice provided should be used as a guide; best practices for individualised care should be followed in all cases.

Quality Standards

Primary care:

- All children seen in primary care with suspected testicular torsion are referred to secondary care immediately.

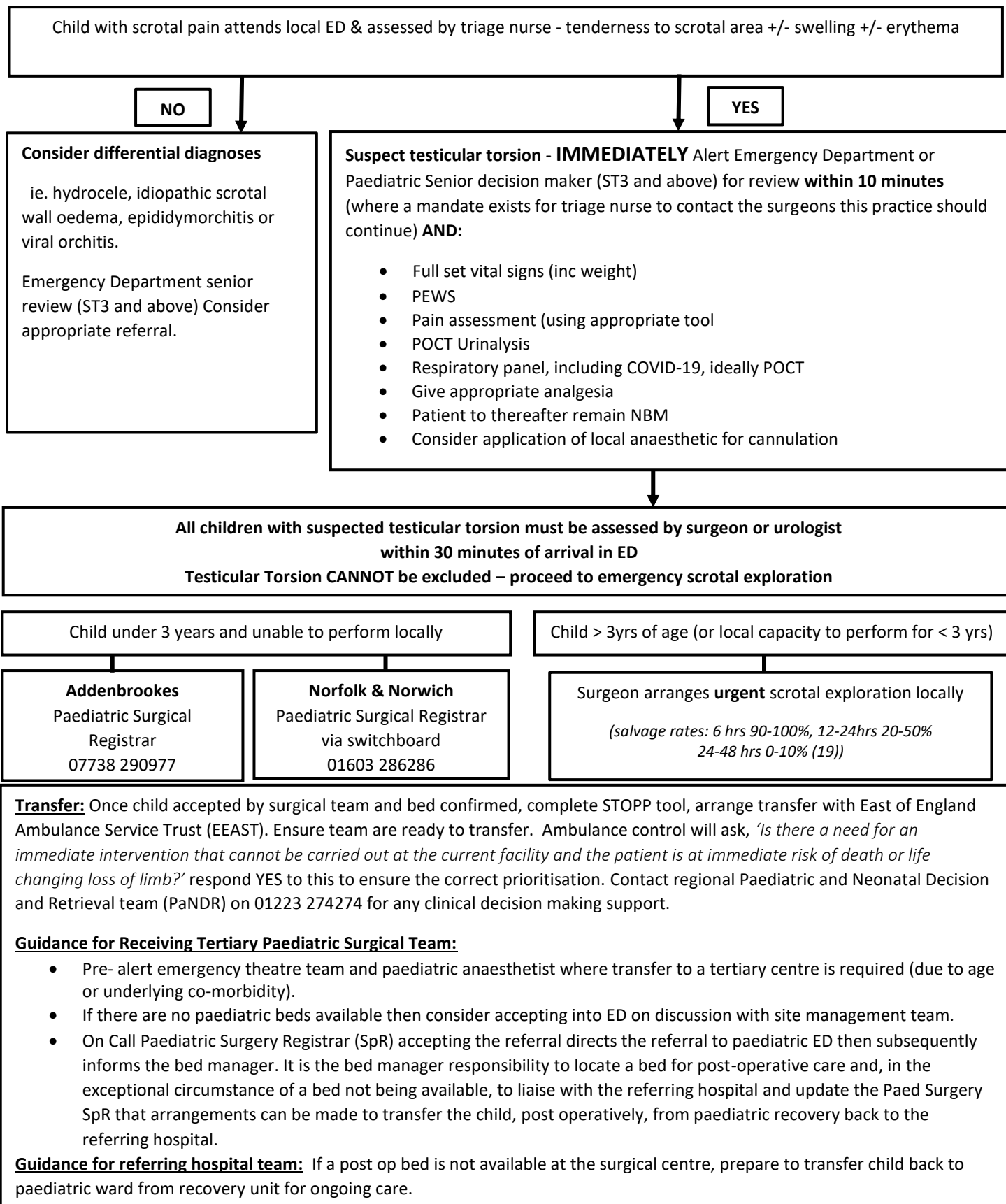
Secondary Care:

- Any child with acute scrotum should be assessed within 10 minutes of arrival by ED/ Paediatric Decision maker (ST3 and above).
- Fasting instructions are initiated.
- Pain relief is offered immediately.
- Any child with suspected torsion should be assessed within 30 minutes of presentation by Surgical/Urology registrar
- A child >3 years Child with suspected torsion should be taken to theatre within 3 hours of decision to operate at local hospital.
- A child < 3 years Child with suspected torsion should be referred to paediatric surgery centre within 1 hour, and transport arranged as a 'Time Critical' transfer (18) .
- A decision not to operate on a child with suspected torsion of appendix of testis should be made by senior surgical decision maker.
- At surgery, torsed testis should be fixed by 3 point fixation with non-absorbable suture. In cases of torsion the contralateral testis should also be fixed in the same manner.
- In a suspected nonviable testis, tunica incision should be taken to assess the blood supply after de torsion. Only completely black testes with no blood supply are removed. Testes with doubtful viability should be fixed and retained.
- All children should have a follow up appointment in 6 months locally for assessment of testes for position and size. Information regarding fertility, prosthesis insertion and development should be provided

Primary Care

Any child with suspected testicular torsion should be referred immediately for definitive care at the nearest hospital ED

Secondary Care



PURPOSE OF THIS DOCUMENT

This guideline is designed to standardise the assessment and management of paediatric presentations with an acute scrotum within the East of England ODN; thereby

- Minimising unnecessary morbidity associated with a delay in management by providing local care
- Reducing the incidence of ‘missed’ testicular torsion and
- Reducing costly litigation (16)

This document also seeks to clarify the patient pathway for children with suspected testicular torsion.

SCROTAL PAIN IN CHILDREN

1. Overview

Acute scrotal pain in children may arise from many differential diagnoses. However, the most critical of these in the acute setting is testicular torsion, caused by the twisting of the testicle on its axis, impairing venous, and subsequently arterial blood supply via the spermatic cord (1).

- Acute scrotal pain in children may arise from many differential diagnoses (table 1). However the most critical of these in the acute setting is testicular torsion, caused by the twisting of the testicle on its axis, impairing venous, and subsequently arterial blood supply via the spermatic cord (1).
- Testicular torsion is relatively uncommon with an incidence of between 3.5-4.5/100,000 (2,4) however a high index of suspicion for testicular torsion is essential (1), as delays to its recognition and management results in significant morbidity in the form of testicular loss (1,4).
- Incidence peaks in the 1st year of life and again at puberty.
- In 2013-14 there were 3304 finished consultant episodes with torsion of testes 2501 of which were in Children (5).

2. Assessment

Symptoms	Signs
Sudden pain is the most common presenting symptom - may be more gradual in some cases. A history of previous transient scrotal pain is significant (1)	Tender Testis. Obvious discomfort, an unusual gait or reluctance to move
Difficulty passing urine, dysuria	Oedema, swelling and redness to the scrotal area, progressively diffuse hemiscrotal involvement
Lower abdominal pain	High riding and transverse lie of affected testicle
Nausea and/or vomiting	Absent cremasteric reflex

3. Differential Diagnoses

Condition	Clinical Features
Torsion of appendix testis/epididymis <ul style="list-style-type: none"> Blue dot on upper pole of testis 	Most common in pre-pubertal boys <ul style="list-style-type: none"> Usually minimal pain at rest Inflammation can develop with time Nausea and vomiting uncommon
Idiopathic Scrotal Oedema <ul style="list-style-type: none"> Common in younger children Benign, self-limiting e.g. insect bite 	<ul style="list-style-type: none"> Mild discomfort, swelling and oedema beyond the scrotum usually into the perineum
Hydrocele <ul style="list-style-type: none"> Normally resolves by 2 years of age 	<ul style="list-style-type: none"> Painless fluctuant swelling Trans illuminates
Scrotal Trauma <ul style="list-style-type: none"> History of significant trauma 	<ul style="list-style-type: none"> Local bruising and / or oedema and/or haematoma
Epididymitis/orchitis <ul style="list-style-type: none"> Older teen /adult with STI Inflammation of the epididymis and/or testis due to viral infection (mumps, adenovirus) or chemical irritation caused by reflux (constipation). 	<ul style="list-style-type: none"> Dysuria, increased frequency, malodourous urine. Fever common Gradual onset Nausea and/or vomiting uncommon
Testicular Tumours	<ul style="list-style-type: none"> Painless swelling Gradual onset
Vasculitis (Henoch-Schonlein Purpura)	<ul style="list-style-type: none"> Associated rash Abdominal pain

4. Initial Management

If testicular torsion cannot be ruled out in presentations of scrotal pain, exploration is mandatory, this is a fundamental management principle

- POCT urinalysis- if positive, further MC&S should be performed to evaluate for presence of infection.
- Blood tests- not required for testicular torsion-but maybe useful if sepsis is an alternative diagnosis – if sepsis is considered, activate sepsis six
- Nil By Mouth- for emergency surgery (following administration of analgesia)
- Analgesia- as per local protocols for age/weight
- Local anaesthetic cream application – IV access
- Urgent referral to surgical team- general surgery or urology.

5. Imaging

Imaging in the form of ultrasound/doppler is not recommended

This may result in unacceptable delay to time critical management in testicular torsion (13). In (international) centres that do perform USS in acute scrotums, they utilise radiologists with specific experience in this modality with the need to evaluate for other signs such as twisted spermatic cord (14). Indeed, there may be preserved testicular blood flow on Doppler in up to 25% of testicular torsions (15).

6. Transfer

Considering the time- critical nature (NCEPOD Code 2- Urgent) of the condition, patients and their families benefit from assessment and surgery performed locally. The transfer of a child with a suspicion of torsion from a secondary care Institution to a tertiary centre should therefore be an exceptional occurrence (e.g. medical comorbidities) (5)

Suspicion of acute testicular torsion mandates urgent surgical exploration (5). Testicular loss can occur 4 hours after onset of symptoms with best outcomes seen in the management of testicular torsion within 1 hour of presentation (6,8). Transfer of care will increase the time to intervention and therefore the risk of testicular loss. GIRFT (year) highlights the transfer of patients as a particular area of concern. Nationally the guidance is clear and NHS England states that **“The transfer of a boy with a suspicion of torsion from a secondary care Institution to a tertiary centre should therefore be an exceptional occurrence” (5).**

All hospitals that provide an emergency theatre service, should provide the surgical expertise to perform scrotal exploration in children. Specialist training in paediatric surgery is not required to perform paediatric scrotal exploration, and it remains in the curriculum for both general surgeons and urologists to achieve a Certificate of Completion of Training (CCT) (10, 11). In support of this, the curriculum for anaesthetists includes the CCT requirement that a ‘general’ anaesthetist “provides safe anaesthetic care for common noncomplex elective and emergency surgical procedures in children aged one year and over” (12). It is acknowledged that however, in immediate future anaesthetist completing the CCT may not have this competency, with current training standards children over the age of three years should be able to be safely anaesthetised at DGH (depending on local expertise available during emergency).

Guidance for Receiving Paediatric Surgical Team

- On receiving referral for suspected testicular torsion: request patient is made NBM and they are transferred as TIME CRITICAL transfer.
- If no paediatric beds available consider accepting into ED on discussion with site management team.
- Pre- alert emergency theatre team and paediatric anaesthetist. Where transfer to a tertiary Centre is required (due to age of boy or underlying co-morbidity); responsibilities in relation to bed management are as follows:
- Tertiary Centre – On the Call Paediatric Surgery Registrar (SpR) accepting the referral, directs the referral to paediatric ED then subsequently informs the bed manager. It is the bed manager’s responsibility to locate a bed for post-operative care and in the exceptional circumstance of a bed not being available, to liaise with the referring hospital and post operatively, making arrangements to transfer the child from paediatric recovery back to the referring hospital.

Guidance for Referring team

- Direct paramedic crew transferring the child to the paediatric ED at the tertiary centre.
- Should information be received that the tertiary centre has no bed to provide post-operative care; make necessary arrangements to accept the child back post-surgery.

Surgical Procedure Tool

- According to starvation status, rapid sequence anaesthesia may be required. Surgery should not be delayed for the need for completion of fasting.
- In supine position, scrotum is explored through midline, paramedian or transverse scrotal incision as per surgeon's choice.
- Affected testis is delivered after opening tunica vaginalis. o If the testes looks normal and tunica vaginalis fluid is clear/ minimal other pathology should be looked for.
- In case of testicular torsion, testis should be untwisted and kept in warm gauze. Exploration should be undertaken on opposite side and other testes is fixed with 3-0 non-absorbable suture by three point fixation
- If the testes on affected side is viable or doubtfully viable (change of colour, incision of tunica albuginea showing fresh blood) then it is fixed with 3 point fixation with 3-0 non-absorbable suture.
- In case of non-viable testis, testis should be removed.
- If torted appendix of testes is found, it should be excised
- If epididymo-orchitis is suspected a microbiological swab is taken before closure.
- Closure is undertaken with absorbable sutures without closing tunica vaginalis.
- Skin is closed with absorbable suture. • Scrotal Support dressing is given to those who have reached puberty and should be worn for 5 days.
- Well patients can be discharged after adequate pain control.
- All children should have a follow up appointment in 6 months locally for assessment of testes for position and size. Information regarding fertility, prosthesis insertion and development should be provided. (18,19,20,21)

8. Nursing Care

This is generally a simple procedure and an uncomplicated recovery should be expected.

- Heart rate, respiratory rate and blood pressure should be recorded every 30 minutes for 2 hours on return to the ward and then hourly until the child is fully awake, eating and drinking (17).
- It can be good practice to include pulse oximetry and capillary refill assessment with these observations.
- Temperature should be taken initially and then every hour until fully awake, eating and drinking, unless there is any variation from the norm.
- An age/developmentally appropriate pain assessment tool should be used on all children post operatively and age and weight appropriate oral analgesia prescribed.
- Anti-emetics prescribed as required to encourage oral intake.
- The child can be encouraged to mobilise when ready.
- If a dressing is applied, instructions to carer to soak off after day 5 if not already displaced should be given.
- Sutures can take 2-3 weeks to fully resolve but dressing will gradually fall off within the first 5 days.
- Discharge when able to mobilise, has passed urine and any pain well managed. Ensure family and child aware of time of last analgesia and when further doses can be given.
- Ensure discharge letter given to family with patient information signposting and follow up recorded

9. Responsibilities/Guidance/Recommendations

Responsibility of NHS trusts:

Each acute trust with theatre services and general surgery/ urology provision should have established local management pathways to undertake local exploration of the children over age of 3 years with suspected torsion. 24 hour provision of access to acute paediatric surgical services to manage acute scrotum patients as well as follow up eg infection pathway, counselling, prosthetics. General paediatric surgery training should be included in annual appraisal and revalidation for all anaesthetists and surgeons as appropriate. Trusts should follow the regional referral pathway and quality guidelines and participate in annual quality measure exercise. Undertake local annual audit of patients presenting with acute scrotum for submission to ICS and SiC ODN.

Responsibility of ICS/ commissioners:

Commissioners should make sure appropriate public awareness campaigns are undertaken including in schools and with health professionals. All secondary care acute paediatric inpatient units with an emergency department and with a co- located acute adult or paediatric general surgery/urological service on site should be commissioned and recognised for providing an acute service for all children/young people presenting to their trust aged 3 years or over with an acute scrotum requiring surgical exploration. Commissioners should include measure in quality schedule as mentioned below with each provider.

Responsibility of ODN/ Tertiary centres:

- Annual audit of patient presenting with acute scrotum with prospective data collection
- Annual presentation of regional audit data
- Organise educational and governance session with specific session for acute scrotum.
 - Network facilitated training courses

10. Pathways

Suggested North East EoE pathway

- NORFOLK AND NORWICH UNIVERSITY HOSPITAL TRUST (ALL AGES)
- JAMES PAGET HOSPITAL (3 years and above)
- QUEEN ELIZABETH HOSPITAL (3 years and above)
- IPSWICH HOSPITAL (3 years and above/cases under the age of 3 could also be carried out if local skills allow)
- COLCHESTER HOSPITAL (3 years and above/cases under the age of 3 could also be carried out if local skills allow)
- WEST SUFFOLK HOSPITAL (3 years and above)

Suggested South & West EoE pathway

- CAMBRIDGE UNIVERSITY HOSPITAL (all ages)
- HINCHINGBROOKE HOSPITAL (3 years and above)
- PETERBOROUGH HOSPITAL (3 years and above/cases under the age of 3 years could also be carried out if local skills allow)
- LUTON & DUNSTABLE HOSPITAL (3 years and above/cases under the age of 3years could also be carried out if local skills allow)
- BEDFORD HOSPITAL (3 years and above)
- LISTER HOSPITAL (3 years and above/cases under the age of 3years could also be carried out if local skills allow)
- PRINCESS ALEXANDRA HOSPITAL (3 years and above)

- BROOMFIELD HOSPITAL (3 years and above/cases under the age of 3 years could also be carried out if local skills allow)

Suggested London Pathway (as per NTPN Guidelines(see appendix 3)

- WATFORD HOSPITAL (3 years and above/cases under the age of 3years could also be carried out if local skills allow)
- SOUTHEND HOSPITAL (3 years and above/cases under the age of 3years could also be carried out if local skills allow)
- BASILDON HOSPITAL (3 years and above/cases under the age of 3 years could also be carried out if local skills allow)

11. Audit Measures

Annual audit of quality of care will be undertaken by each trust providing data to ISC and to SIC ODN in April. Data will be collated and presented in June COG meeting of ODN.

1. Timely assessment by senior decision maker (within 1 hours) (100% compliance expected)
2. Timely intervention : % of explorations within 3 hours of decision to operate (100% compliance expected)
3. Readmission rates : 7-30 day readmission (According to GIRFT)
4. Activity data and testicular loss rate
5. Number of patients inappropriately transferred including time between initial assessment at first unit and surgery post transfer (0% expected).
6. Patient experience

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14. Appendices

STOPP tool

Audit tool

NT Acute scrotum pathway

BJUI consensus document

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