CLINICAL GUIDELINE: GIRFT TESTICULAR TORSION PATHWAY: EOE SUPPLIMENTARY INFORMATION

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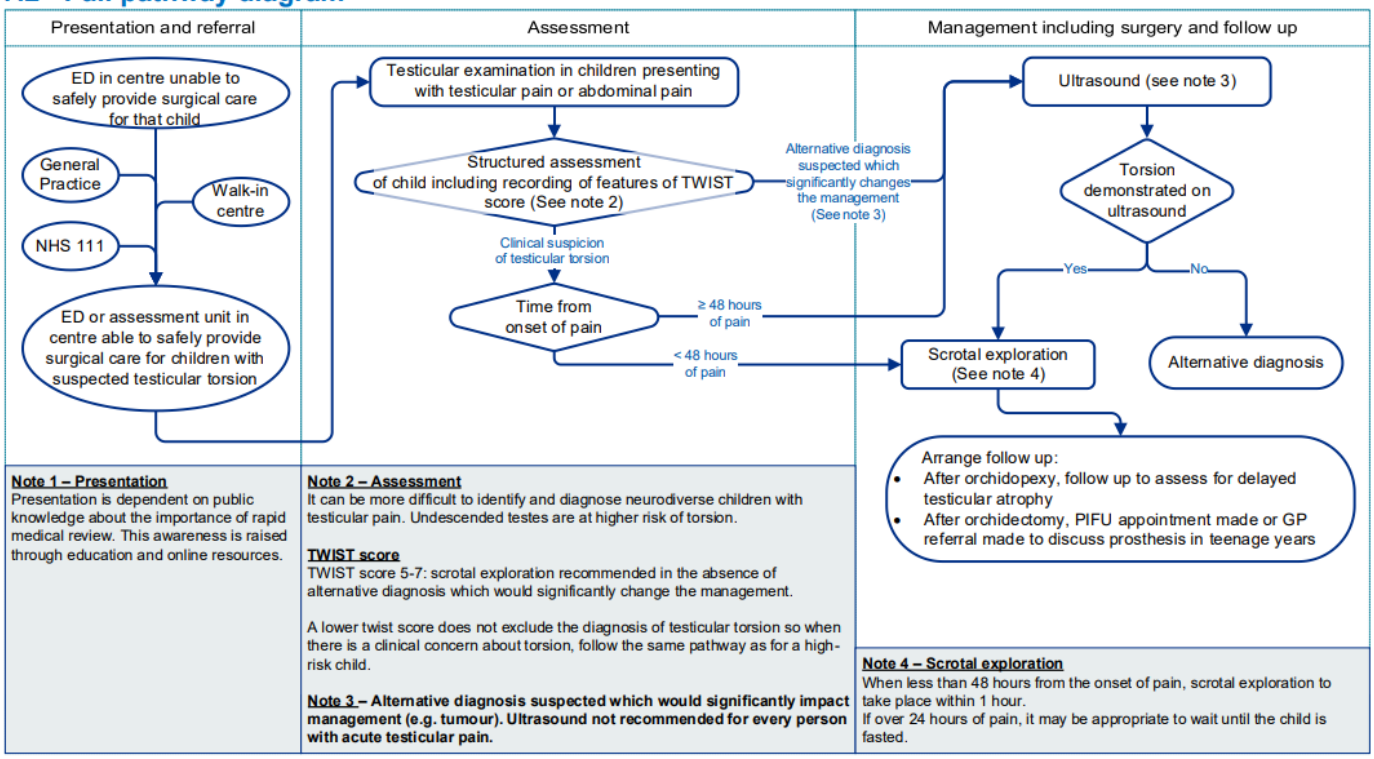
Date of meeting	

7.2 Full pathway diagram



SUGGESTED EOE ADVICE/ REFERRAL PATHWAY IN EXCEPTIONAL CASESs

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SCROTAL PAIN IN CHILDREN

1. Overview:

- Acute scrotal pain in children may arise from many differential diagnoses (table 2). 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 (2).
- Testicular torsion is relatively uncommon with an incidence of between 3.5-4.5/100,000 (3-5) however a high index of suspicion for testicular torsion is essential (2), as delays to its recognition and management results in significant morbidity in the form of testicular loss (2,5).
- 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, of which 2501 were in children.

2. Assessment

The priority of the assessment of the presenting child is to determine whether a time critical condition, testicular torsion is present.

- **Timely evaluation by a surgical decision maker means review within 60 minutes of arriving at the emergency department.**
- **Children with abdominal pain should always have a testicular examination.**
- **There should be an awareness that children with undescended testes have an increased risk of testicular torsion.**
- **Neurodiverse CYP (e.g. with learning difficulties, autistic spectrum disorder, neurodisability) pose difficulty around the identification and diagnosis of the cause of testicular pain and a higher index of suspicion is required.**
- **A TWIST score should be used to support a structured assessment of a child or young person with testicular pain.**
- **A child with a painful undescended testis can be managed in their local centre if the urologist/general surgeon feels confident to do this.**

Table 1 : TWIST SCORE

Symptoms	TWIST Points	Likely Risk of Torsion
Swelling	2	**TWIST SCORE of 5 or more with symptoms less than 48 hours mandates scrotal exploration.**
Hard Testicle	2	
Absent Cremasteric Reflux	1	
Nausea and Vomiting	1	
High Riding Testis	1	**Twist score of 0-4 does not completely exclude torsion**

History taking may be more challenging as adolescents may be more reluctant to disclose symptoms due to embarrassment and consideration of a careful examination in this age group is necessary. Ensure a chaperone is present.

Table 2: Signs and symptoms

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

3. Differential Diagnoses

Table 3: Differential diagnosis

Condition	Clinical Features
Torsion of appendix testis/epididymis • Blue dot on upper pole of testis	• Most common in pre-pubertal boys • Usually minimal pain at rest • Inflammation can develop with time • Nausea and vomiting uncommon
Idiopathic Scrotal Edema • Common in younger children • Benign, self-limiting e.g. insect bite	• Low grade discomfort, swelling and edema beyond the scrotum usually into the perineum.
Hydrocele • Normally resolves by 2 years of age	• Painless fluctuant swelling • Trans illuminates
Scrotal Trauma • History of significant trauma	• Local bruising and/or edema and/or hematoma
Epididymitis/orchitis • 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).	• Dysuria, increased frequency, malodourous urine. • Fever common • Gradual onset • Nausea and/or vomiting uncommon
Testicular Tumors	• Painless swelling, gradual onset
Vasculitis (Henoch-Schonlein Purpura)	Associated rash, abdominal pain,

4. Initial Management

The fundamental principle of management in scrotal pain is that if torsion cannot be ruled out clinically then exploration is mandatory.

- ✓ Urine dipstick- if positive further MC&S should be performed to evaluate for presence of infection.
- ✓ NBM- for emergency surgery
- ✓ Analgesia- as per local protocols for age/weight
- ✓ Local anesthetic cream application
- ✓ Urgent referral to Surgical team- general surgery or urology.

☒ Blood tests - not required for testicular torsion-but maybe useful if sepsis is an alternative diagnosis

5. ULTRASOUND

- **Newborns with a suspected antenatal torsion should undergo an ultrasound to exclude alternative diagnoses.**
- **An ultrasound is indicated if there is a strong suspicion of an alternative diagnosis which significantly changes the management.**
- **When there is a suspected testicular torsion a child should not be transferred for an ultrasound to be undertaken.**
- **When there is a suspected testicular torsion a child's surgical treatment should not be significantly delayed for an ultrasound to be undertaken.**
- **Ultrasound can be used as an adjunct to diagnosis of torsion for CYP with < 48 hours of pain if it does not result in a significant delay to treatment.**
- **An ultrasound is indicated if the pain has been present for ≥ 48 hours.**

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 boy 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 (6) as 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 (7-9). Any transfer of care will necessarily increase time to intervention and therefore the risk of testicular loss. The GIRFT report highlights transfer of patients as a particular area of concern - in some specialist trusts 25% of scrotal explorations have been transferred in (10).

At all hospitals that provide an emergency theatre service, there should exist 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)

(11,12). Furthermore, the curriculum for anaesthetists includes the CCT requirement that a 'general' anaesthetist "Provides safe anaesthetic care for common non-complex elective and emergency surgical procedures in children aged one year and over" (13)

• ICBs and ODNs should develop local referral pathways to result in referral from primary care to an appropriate secondary care centre. The development of these referral pathways should include emergency departments, anaesthetists, urologists, general surgeons, paediatric surgeons/urologists, paediatricians, ambulance trusts, commissioners, NHS 111 and primary care providers.

• Referral pathways should minimise the number of transfers a patient undergoes, aiming for a maximum of 1 transfer between healthcare providers (including transfer from primary to secondary care).

• NHS111 algorithms and primary care should have a low threshold for immediate referral for children with acute testicular pain to a hospital where scrotal exploration can be performed on site for that child.

Guidance for Receiving Paediatric Surgical Team

- When receiving referral for suspected testicular torsion: request patient is made NBM, and they are transferred as URGENT BLUE LIGHT transfer.
- If there are no Paediatric beds available, then 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, arrangements to be made to transfer the child from Paediatric recovery back to the referring hospital.
- Referring hospital – 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.

7. Surgical Procedure Tool:

Children with suspected testicular torsion should be operated on within 1 hour of decision for surgery if they have had pain for less than 48 hours. In some situations it may be appropriate to wait until they are fasted if they have had >24 hours of pain.

CONSENSUS DOCUMENT REGARDING PROCEDURE:

https://bjui-journals.onlinelibrary.wiley.com/doi/epdf/10.1111/bju.15818

- Depending upon starvation status, rapid sequence anesthesia may be required. Surgery should not be delayed for the need for completion of starvation.
- 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.
    - If the testes looks normal and tunica vaginalis fluid is clear/ minimal other pathology should be looked for.
    - In case of testicular torsion, testes 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.
- 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.

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.
- 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.

8. Follow up

- **After orchidopexy for torsion a boy should have follow-up to assess for delayed testicular atrophy.**
- **Boys undergoing orchidectomy should have a PIFU appointment made (or a GP re-referral made) to discuss a prosthesis in their later teenage years.**

9. Responsibilities/ Guidance/ recommendations:

Responsibility of NHS trusts:

Surgeons working in departments responsible for undertaking Paediatric scrotal explorations should demonstrate evidence of annual CPD activity.

Each acute trust with theatre services and general surgery/ urology provision should have established local management pathways to undertake local exploration of the children with suspected torsion. 24 hour provision of access to acute paediatric surgical services to manage acute scrotum patients as well as follow up e.g. 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 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 boys presenting to their trust aged 3 or over with an acute scrotum requiring surgical exploration.

Commissioners should include measure in quality schedule as mentioned below with 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. Audit measures:

Annual audit of quality of care will be undertaken by each trust providing data to ICS and to SIC ODN in April.

Data will be collated and presented in June COG meeting of ODN.

BESIDES THE AUDIT POINTS MENTIONED IN NATIONAL DOCUMENT FOLLOWING ADDITIONAL DATA SHOULD BE REVIEWED.

1. Readmission rates : 7-30 day readmission
2. Activity data and testicular loss rate
3. Number of patients inappropriately transferred including time between initial assessment at first unit and surgery post transfer (0% expected).
4. Number of transfers in children with age above 3
5. Patient experience
6. Compliance regarding competence of all on call surgeons/ urologists to undertake torsion; Anesthetic compliance to manage younger children

11. References

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12. Contributors

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13. Exceptional Circumstances Form

Form to be completed in the **exceptional** circumstances that the Trust is not able to follow ODN approved guidelines.

Details of person completing the form:	
Title:	Organisation:
First name:	Email contact address:
Surname:	Telephone contact number:
Title of document to be excepted from:	
Rationale why Trust is unable to adhere to the document:	
Signature of speciality Clinical Lead: Date:	Signature of Trust Nursing / Medical Director: Date:
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