

## Commissioner's Guide to the NCEPOD Report 'Twist and Shout'

### A review of the complete pathway and quality of care provided to children and young people who presented to hospital with testicular torsion

#### INTRODUCTION

Testicular torsion occurs when the spermatic cord twists and cuts off the blood supply to the testicle. Testicular torsion is a surgical emergency requiring prompt diagnosis and surgical intervention to preserve the testicle. Delay in presenting to hospital has been consistently shown to lead to poor outcomes.

After admission to hospital for suspected testicular torsion, operative delay also adversely affects the chance of salvaging the testicle. In a systematic review of 1,283 patients, when surgical intervention occurred within a six-hour window from the onset of testicular pain, there was a 97% chance of the patient's testicle being saved. While the study concluded that survival percentages are significant, beyond the widely accepted time-period of six-eight hours, the salvage rates decreased, the longer that surgical intervention was delayed.

The operation involves two possible procedures: either testicular fixation, when the testicle can be saved and fixed to prevent recurrent torsion (this is called orchidopexy), or removal of the testicle (orchidectomy), where it is not salvageable. In either case it is also standard practice to fix the other testicle at the same time.

A range of specialties and health services are involved in the care of patients with testicular torsion, including NHS 111, ambulance, primary care, and secondary care, and with the potential for delay in diagnosis and treatment to occur at any point of the pathway, these are the main factors that lead to poorer outcomes.

Initial delays on the part of adolescent males to seek medical assistance may be due to: a 'watch and wait' approach by them and their parents/carers; a lack of public awareness about the pathology of testicular torsion; and unwillingness to trouble healthcare services for fear of embarrassment or raising a false alarm.

In 2019 the Healthcare Safety Investigation Branch (HSIB) report reviewed the diagnostic and treatment pathway and identified 'system-wide' delays. The report found that the accuracy, accessibility, and variability of national guidance on the diagnosis and treatment of testicular torsion was leading to delays in treatment.

When patients with suspected testicular torsion present to hospital there are many factors that can contribute to delay in diagnosis and treatment. Commissioning guidelines state that assessment and surgical intervention should be performed locally, and that the transfer of a patient with suspected testicular torsion to a tertiary centre should only occur in exceptional circumstances. Despite this, the Getting It Right First Time (GIRFT) paediatric surgery and urology report found that in some specialist trusts one in four patients had been transferred from another organisation.

This NCEPOD study was developed with wide multidisciplinary input to review the care of patients with testicular torsion. It identifies several areas of care that require improvement.

## PATIENT POPULATION

### Inclusion criteria

Patients aged 2 to 24 years, inclusive, admitted to hospital who had a diagnosis of testicular torsion (ICD10 code N44), and who underwent a non-elective operation for testicular torsion (OPCS codes N03.4; N05; N06; N08; N09; N13.2; N13.3 and N13.5) between 1st April 2021 and 31st March 2022, were identified for study inclusion. Patients admitted with scrotal pain (ICD10 codes N45 and N508) were also identified for context but were not sampled for inclusion in the clinical peer review process.

### Exclusion criteria

Patients who did not undergo a procedure for testicular torsion, and patients who were subsequently identified as being admitted on an elective basis.

## KEY FINDINGS FROM THE STUDY

### Pre-hospital delays

- 27/209 (12.9%) patients took over six hours to notify anyone of their symptoms.
- The majority of patients (305/414; 73.7%) first described their pain or discomfort to a family member.
- Most pre-hospital delays were due to patients (157/239; 65.7%) and parents/carers (83/239; 34.7%) not recognising the symptoms of testicular torsion. The person responsible for this lack of recognition varied depending on the age of the patient. For those under 12 years it was mostly the parent/carer, between 12-16 years it was split between the patient and the parent/carer, and over 17 years it was largely the patient.

### In-hospital assessment and investigations

- Only 36/66 (56%) patients who did not inform a healthcare professional or service arrived at hospital within six-hours.
- When in-hospital 491/514 (95.5%) patients were reviewed with two hours of arrival.
- 179/456 (39.3%) patients were not reviewed within six hours of onset of symptoms.
- 88/574 (15.3%) of the sample had presented to healthcare services with symptoms which could indicate testicular torsion in the previous week.
- Reviewers believed there were missed opportunities for early diagnosis by healthcare services for 239/589 (40.6%) patients.
- 38/435 (8.7%) patients were seen by a consultant and only 98/549 (17.9%) patients were seen by a urology specialist.
- 73/402 (18.2%) patients underwent Doppler ultrasound of the testicles.
- The reviewers were of the opinion that Doppler ultrasound was performed unnecessarily in 56/580 (9.7%) patients.
- The Clinician Survey indicated that 6/352 (1.7%) clinicians would always perform Doppler ultrasound and 167/352 (47.4%) would never perform Doppler ultrasound in patients with suspected testicular torsion.

### **Surgical intervention**

- The decision to operate was made within six hours of symptoms starting for 215/424 (50.7%) patients.
- The reviewers reported that there was a delay in decision-making in 82/635 (12.9%) patients.
- 288/569 (50.6%) of operations were performed by a senior specialist trainee.
- 445/570 (78.1%) operations were undertaken by urologists, with 61/570 (10.7%) done by general surgeons.
- 156/340 (45.9%) patients who underwent an orchidopexy had surgery within six hours of symptom onset compared with 10/116 (8.6%) of those who underwent orchidectomy.
- Reviewers believed that there were avoidable delays in treatment in 232/635 (36.5%) patients and in 114/232 (49.1%) these delays impacted on the care of the patient.

### **Pathway of care in-hospital and transfers**

- 91/143 (63%) of hospitals reported that patients were transferred for treatment on occasion.
- Organisational questionnaire data indicated that younger children ( $\leq 5$  years-old) were more readily transferred.
- Aligning with the GIRFT data, reviewers found that 44/628 (7.0%) (GIRFT data were 10%) patients in this report were transferred to another hospital for surgery.
- In the clinician's questionnaire the figure was 27/526 (5.1%)

### **Follow-up arrangements**

- Where a follow-up appointment was not offered (313/581; 53.9%), 157/313 (50.2%) reviewers thought there should have been one.
- Reviewers reported that discharge summaries were adequate for 490/568 (86.3%) patients.
- The reviewers found the option of prosthetic replacement could only be found in the notes of 139/534 (26.0%) patients who had an orchidectomy.
- The reviewers were of the opinion that 62/174 (35.6%) of patients received appropriate postoperative psychological support.

### **Pathway protocols**

- In 72/143 (50.3%) hospitals there was a specific protocol for the management of testicular pain in children/adolescents.
- The reviewers reported that only 67/457 (14.7%) patients were commenced on a dedicated pathway for testicular torsion.
- Patients who were not on a pathway were more likely to undergo an orchidectomy (154/389; 39.6%) compared with those who were on a pathway (16/67).
- TWIST (Testicular Workup for Ischaemia and Suspected Torsion) score was used for both children and adults in only three hospitals

## **KEY FEATURES OF A SERVICE**

### **1. Raise public awareness about testicular torsion**

Steps in maternity/antenatal care (e.g. advice for care of a new baby in the red book) and post-natal care should be taken to educate parents/carers about the pathology and early warning signs of testicular torsion. The need to urgently attend an emergency department, and not 'wait and watch', to achieve surgical intervention (if necessary) within six hours when testicular pain is

experienced is a critical component of this education. The health curriculum from nursery through to higher education needs to involve advice about testicular torsion.

## **2. Training to recognise testicular torsion in primary and emergency care**

Training modules require updating to enable primary care and emergency staff to recognise atypical signs of testicular torsion and the need to enact urgent referral pathways for timely surgical intervention.

## **3. Reduce in-hospital delays through clear, documented pathways of care and transfer**

Transfers should be minimised where intervention can be performed on-site. Where transfers are unavoidable, patients must be transferred to a centre where scrotal explorations can be performed safely on-site with a pre-alert system in place to inform the receiving hospital of an incoming transfer. Transfers must also be classed as urgent with the aid of clear and documented protocols and pathways. Auditing of the testicular torsion pathway, at least annually, is essential to identify areas for improvement.

## **4. Senior assessment and investigations**

Patients with suspected testicular torsion should have an urgent referral and clinical review by a senior surgical decision-maker (minimum ST3 or equivalent) specialising in urology, paediatric surgery, or general surgery. A consensus must also be made on the use of Doppler ultrasound on patients with suspected testicular torsion.

## **5. Thorough postoperative follow-up and discharge planning must occur for all patients**

All risks associated with the procedure, particularly an orchidectomy, must be discussed with the patient and parents/carers. Patients must be informed that they can make a patient-initiated follow-up (PIFU) follow-up e.g. to discuss prosthetic implants for patients who underwent an orchidectomy, following their procedure and that psychological support is available if needed.

## **SUPPORTING NATIONAL GUIDANCE AND REPORTS**

**Healthcare Safety Investigation Branch: Management of Acute Onset Testicular Pain.**

**NHS East Midlands Clinical Networks: Commissioning guide: Management of Paediatric Torsion.**

**Getting It Right First Time: Paediatric General Surgery and Urology. GIRFT Programme National Specialty report.**

**Testicular Health Education Resources: Approved by the PSHE Association.**

**HeadSmart: Know the signs and symptoms.**

**NHS England: Seven day services clinical standards.**

**European Society for Paediatric Urology: Guidelines on Paediatric Urology.**

**The Royal College of Radiologists: Clinical Radiology Specialty Training Curriculum.**

**Children's Hospital of Philadelphia: Emergency Department Clinical Pathway for Children with Acute Non-traumatic Scrotal/Testicular Pain.**

**NICE: Clinical Knowledge Summary. How should I assess a person with a scrotal swelling and/or pain?**

**NICE: Clinical Knowledge Summary: Testicular torsion**