

# Is ICG imaging safe and accurate to predict testicular torsion?

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		<input type="checkbox"/> Protocol
<b>Registration date</b> 04/12/2023	<b>Overall study status</b> Ongoing	<input type="checkbox"/> Statistical analysis plan
		<input type="checkbox"/> Results
<b>Last Edited</b> 13/03/2026	<b>Condition category</b> Urological and Genital Diseases	<input type="checkbox"/> Individual participant data
		<input checked="" type="checkbox"/> Record updated in last year

## Plain English summary of protocol

### Background and study aims

Testicular torsion is a time critical condition for children and young people. It is difficult to diagnose without an operation. Missing it means the child will lose a testicle. There are no good diagnostic tests, only tests that delay the child's journey to theatre, which puts them at further risk of losing the testicle. Most boys with a painful testicle get a surgical exploration to see if it is torsion and to untwist and fix it. Up to 85% of children having surgery will not have torsion. They will have something they didn't need surgery for. We want to see whether a new, low risk, fast investigation could be used to diagnose the problem, meaning no torsions are missed and less children have unnecessary surgery. This study will test ICG which is a fluorescent dye which shows flow or lack of flow in an organ. The researchers hope it will be able to show the testes with absent blood flow to diagnose torsion, so no boys lose a testis in future. They hope it will show when there is a good blood supply preventing many hundreds of young men a year having an unnecessary operation.

### Who can participate?

Children aged 0-19 years presenting with testicular pain being taken to theatre for scrotal exploration at Sheffield Children's NHS Foundation Trust

### What does the study involve?

When it is decided a child needs to go to theatre for a painful scrotum the researchers will take a specialist camera photo after giving the dye (with no radiation exposure) and compare the findings of the photo with the outcome at surgery. This will allow them to test if it is safe and accurate.

### What are the possible benefits and risks of participating?

The possible benefits of the dye and camera system are huge. The study is going to investigate whether ICG dye can safely diagnose torsion in a protocol which affects the child's normal pathway minimally and exposes them to almost no additional risk. The side effects of ICG angiography in children, not under general anaesthetic, include nausea and vomiting (19%), itchy skin (2%), hot flush (2%), bronchial spasm (3%). In a larger meta-analysis no severe adverse reactions were described. The risks are similar to the risks of CT contrast use reported at 1/42000 for an anaphylactic reaction. Use of ICG should be avoided in those with previous

anaphylactic reactions. Similarly, ICG injection contains iodine and should be avoided with those with a iodine allergy. If an adverse reaction rate to ICG injection of over 3 % is noted the study will be abandoned. The anesthetist will be slowly monitoring the child as standard during surgery and rapid intervention will proceed.

Where is the study run from?

Sheffield Children's NHS Foundation Trust (UK)

When is the study starting and how long is it expected to run for?

July 2023 to June 2026

Who is funding the study?

The Children's Hospital Charity (UK)

Who is the main contact?

Dr Caroline MacDonald, carolinemary.macdonald@nhs.net

## Contact information

### Type(s)

Scientific, Principal investigator

### Contact name

Ms Caroline MacDonald

### Contact details

D Floor

Damer Street

Western Bank

Sheffield

United Kingdom

S10 2TH

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carolinemary.macdonald@nhs.net

## Additional identifiers

### Integrated Research Application System (IRAS)

1008108

### Protocol serial number

SCH-2769

## Study information

### Scientific Title

Assessment of diagnostic accuracy of indocyanine green fluorescence imaging in children and young people with testicular pain requiring surgical exploration

### Acronym

## ICG in Paediatric Acute Scrotum

### Study objectives

Primary objective:

To calculate the diagnostic accuracy of torsion versus non-torsion for CYP presenting with acute scrotum who are undergoing scrotal exploration

Secondary objectives:

1. To calculate the diagnostic value of ICG by skin type and tanner stage
2. To calculate the diagnostic value of ICG post detorsion for predicting long-term testicular loss
3. To explore patient and family acceptability of ICG imaging without sedation or GA in the emergency department setting for testicular pain

### Ethics approval required

Old ethics approval format

### Ethics approval(s)

Approved 15/11/2023, West Midlands - Coventry & Warwickshire Research Ethics Committee (2 Redman Place, Stratford, London, E20 1JQ, United Kingdom; 02071048211; coventryandwarwick.rec@hra.nhs.uk), ref: 23/WM/0179

### Study design

Single-centre interventional controlled trial

### Primary study design

Interventional

### Study type(s)

Diagnostic, Safety

### Health condition(s) or problem(s) studied

Acute scrotum

### Interventions

One intervention for this study, an intravenous injection of indocyanine green into the scrotum. Then utilising a specialist near infra-red (NIR) camera, an image of the CYP scrotum will be captured. The participant will then receive their normal routine care. After 1 year, there will be a follow-up visit with the CI.

### Intervention Type

Drug

### Phase

Phase II

### Drug/device/biological/vaccine name(s)

Indocyanine green fluorescent dye

### Primary outcome(s)

Diagnostic accuracy of ICG for testicular torsion as compared to non-torsion diagnosis, will be calculated by findings of fluorescence versus non-fluorescence compared to surgical outcomes of salvage versus non salvage at surgery

### **Key secondary outcome(s)**

1. ICG diagnostic accuracy by tanner stage and skin pigmentation will be calculated by findings of fluorescence versus non-fluorescence compared to surgical outcomes of salvage versus non salvage at surgery
2. ICG to predict late testicular atrophy will be calculated by findings of fluorescence versus non-fluorescence compared to surgical outcomes of salvage versus non salvage at 12 month clinical review
3. Adverse reactions from ICG injection measured using SUSAR reporting for inpatient course
4. Family and CYP acceptance of diagnostic procedure measured using survey and qualitative methodology

### **Completion date**

30/06/2026

## **Eligibility**

### **Key inclusion criteria**

1. Children presenting with testicular pain being taken to theatre for scrotal exploration at Sheffield Children's NHS Foundation Trust
2. Aged 0-19 years

### **Participant type(s)**

Patient

### **Healthy volunteers allowed**

No

### **Age group**

Mixed

### **Lower age limit**

0 years

### **Upper age limit**

19 years

### **Sex**

Male

### **Total final enrolment**

0

### **Key exclusion criteria**

Children with any allergy to contrast medium or iodine

**Date of first enrolment**

30/07/2023

**Date of final enrolment**

30/06/2026

## Locations

**Countries of recruitment**

United Kingdom

**Study participating centre**

Sheffield Children's NHS Foundation Trust

Western Bank

Sheffield

England

S10 2TH

## Sponsor information

**Organisation**

Sheffield Children's NHS Foundation Trust

**ROR**

<https://ror.org/02md8hv62>

## Funder(s)

**Funder type**

Charity

**Funder Name**

The Children's Hospital Charity

## Results and Publications

**Individual participant data (IPD) sharing plan****IPD sharing plan summary**

Data sharing statement to be made available at a later date