

Scrotal swelling as the presenting feature of antenatal intestinal perforation with meconium pseudocyst: a case report

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ABSTRACT

Background: Scrotal swelling in the neonatal period is a common finding with a range of underlying causative processes, ranging from the benign to surgical emergencies. This case highlights some of the diagnostic difficulties in an unusual clinical presentation.

Case Presentation: We describe a case of antenatal intestinal perforation presenting as scrotal swelling in a newborn of 35 weeks gestation. Antenatal ultrasound scans had not raised suspicion and there was no abdominal distension apparent in the immediate neonatal period. Clinical impression was initially of testicular torsion prior to radiological assessment, which demonstrated pneumoscrotum and free peritoneal gas requiring urgent surgery.

Conclusion: It is important to consider intra-abdominal pathology in association with a patent processus vaginalis as a cause for scrotal swelling in the newborn, in addition to urological causes. Following surgical management, it is important to exclude cystic fibrosis as an underlying cause for meconium ileus.

Keywords: Intestinal perforation, scrotal swelling, neonate, case report.

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Background

Scrotal swelling is a common examination finding during the neonatal period, with a number of potential underlying pathologies. Causes range from relatively benign conditions such as hydrocele, which require only parental reassurance and monitoring of the infant, to those that require urgent surgical intervention, including incarcerated inguinal hernia and testicular torsion. Differentiation between these is based on careful examination and radiological assessment.

Although intestinal perforation is known to be a cause of pneumoscrotum [1], it is rare for scrotal swelling to be the only presenting feature without associated abdominal findings. Here, we describe the case of a neonate with scrotal swelling where the initial clinical suspicion was of testicular torsion, but the infant was subsequently found to have ileal perforation.

Case Presentation

We present the case of a baby boy born by emergency caesarean section for fetal distress at 35 weeks gestation, who presented with bilateral scrotal swelling and discoloration shortly after birth. Antenatal scans had been normal and the pregnancy otherwise unremarkable. On examination, the scrotal swelling appeared erythematous, tender to palpation and only partially transilluminated. Abdominal examination was otherwise normal and there was no respiratory or cardiovascular compromise. Perinatal testicu-

lar torsion was strongly suspected, and urgent urological opinion and radiological assessment were sought.

Ultrasound scanning demonstrated fluid and free gas in the scrotum and both inguinal canals with tracking into the abdomen. Abdominal X-ray confirmed free peritoneal gas consistent with intestinal perforation.

The infant was commenced on intravenous antibiotics to treat intra-abdominal sepsis and a nasogastric tube was placed on free drainage. Over the first day of life, the clinical signs progressed with the development of abdominal distension and nasogastric aspirates became bilious. Urgent transfer to a paediatric surgical center was arranged.

At laparotomy, he was found to have an antenatal perforation at the terminal ileum with meconium pseudocyst and bowel obstruction, associated with bilateral hydroceles. Resection of the perforated ileum was performed with ileostomy and mucous fistula formation. The infant made good clinical progress post-operatively and established enteral feeding with no further complications. The stoma was subsequently reversed, and normal growth and development have been seen at follow-up.

Results of the newborn bloodspot screening were normal. Extended genetic testing for cystic fibrosis was performed as part of investigation into a potential underlying cause. No pathogenic mutations of the Cystic Fibrosis Transmembrane Conductance Regulator gene were detected by DNA sequencing.



Figure 1. Photograph of infant on first day of life with scrotal swelling and discoloration.

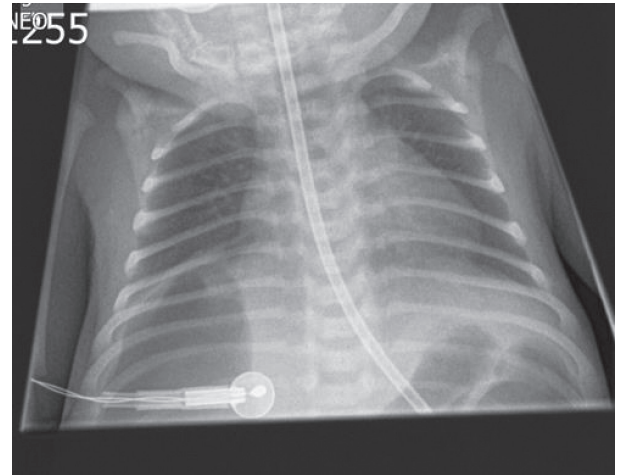


Figure 2. X-ray of chest and upper abdomen showing intestinal perforation with free peritoneal gas visible in right upper quadrant of the abdomen.

Table 1. Differential diagnosis of neonatal scrotal swelling and the distinguishing features [7].

DIAGNOSIS	EXAMINATION FEATURES	MANAGEMENT	ADDITIONAL NOTES
Intra-testicular Causes			
Torsion	Firm swelling. Discoloration. Can be tender or nontender in neonatal period	Urgent surgical review. Ultrasound can be helpful but in acute torsion do not delay surgery	Normally unilateral (bilateral 10%). Frequently antenatal occurrence (70% of cases).
Neoplasm	Nontender testis enlargement. Does not transilluminate	Radiological & biochemical assessment. Surgical management with oncology.	Rare in neonates
Supernumerary testis	Nontender. Palpable distinct masses in scrotum	Ultrasound appearance shows normal testicular tissue	Rare. Most often left sided. Torsion and malignancy more likely.
Adrenal rest	Nontender firm mass	Ultrasound assessment. Typically benign	Adrenal tissue deposits in testes. Association with Congenital Adrenal Hyperplasia recognized.
Extra-testicular Causes			
Hydrocele	Nontender soft swelling. Transilluminates. Unilateral or bilateral. Can change in size and have bluish hue	Reassurance. Surgical repair if persists past 18 months.	More common in premature infants.
Hematoma	Soft swelling of scrotum that does not transilluminate. Discoloration.	Clinical assessment, Observation if otherwise well.	Can occur spontaneously, following traumatic delivery or in association with systemic illness
Inguinal-scrotal hernia	Nontender swelling in scrotum (unless incarcerated). Unable to palpate upper margin. Reducible	Urgent surgical opinion if unable to reduce or painful. Otherwise nonurgent surgical repair	Risk of incarceration.
Pneumoperitoneum	Scrotal swelling, normally in association with abdominal distension	Surgical management	Patent processus vaginalis allows extension of generalized intra-abdominal process.
Meconium periorchitis	Soft swelling at birth that hardens over weeks as meconium calcifies	Ultrasound assessment. Benign mass that does not require intervention	Associated with healed meconium peritonitis

Discussion

In-utero bowel perforation results in peritoneal leakage of sterile meconium, leading to meconium peritonitis. The incidence is estimated to be 1 in 35,000 live births [2]. This may be apparent at antenatal ultrasound

as intra-abdominal calcification. Meconium pseudocysts are formed *in-utero* when meconium extruded from a bowel perforation becomes enclosed by adhesions caused by the associated inflammation, and forms a collection between bowel, peritoneum, and omentum.

Antenatally, this may present at ultrasound as a well-defined hyperechogenic heterogeneous mass surrounded by a calcified wall [3]. Associated findings can include ascites, polyhydramnios, and bowel dilatation [4]. Abdominal distension and bilious vomiting are typical presenting features in the neonatal period.

Causes of bowel obstruction leading to perforation include meconium ileus, bowel atresia, and volvulus [5], with rarer causes including infection with cytomegalovirus and parvovirus reported. Overall mortality has been reported as 55% [6].

This case is an unusual presentation of antenatal perforation as suspicions had not been raised by the antenatal ultrasound findings and there was no abdominal distension in the initial neonatal period.

It is important to consider intra-abdominal pathology associated with a patent processus vaginalis as a cause for scrotal swelling, in addition to urological causes. Following surgical management, cystic fibrosis should be excluded as a potential underlying cause for meconium ileus that can lead to antenatal intestinal perforation.

Acknowledgement

None

List of Abbreviations

None

Consent for publication

Informed consent has been obtained from parents to publish this case report in a medical journal.

Ethical approval

Ethical approval is not required at our institution for publication of a case report in a medical journal.

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Summary of the case

Patient (gender, age)	1	Male neonate of 35 weeks gestation
Final Diagnosis	2	Antenatal intestinal perforation with meconium pseudocyst
Symptoms	3	Scrotal swelling and discoloration
Medications	4	Antibiotics for intra-abdominal sepsis
Clinical Procedure	5	Laparotomy, resection of perforated ileum, ileostomy, and mucous fistula formation
Specialty	6	Neonates