

# Guideline

## Common umbilical disorders - Emergency management in infants

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<b>Applicable to</b>	All CHQ staff involved in the care of infants with umbilical disorders				
<b>Authorisation</b>	Executive Director Clinical Services				

### Purpose

This document provides clinical guidance for all staff involved in the care and management of an infant presenting to an Emergency Department (ED) with symptoms of common umbilical disorders.

### Scope

This guideline applies all Emergency Staff who re managing infants with concerns of umbilical disorders.

### Related documents

#### Policy and standard(s)

- Umbilical Disorders Parent Fact Sheet (in development)
- [CHQ-GDL-01202 Children's Health Queensland Paediatric Antibiocard: Empirical Antibiotic Guidelines](#)

## Common umbilical disorders

### Delayed umbilical cord separation

Umbilical cord separation should occur in the first week of life although there can be delay of up to 3-4 weeks of age. Delayed umbilical cord may suggest leukocyte adhesion defects. In most cases even if the cord does not separate by 3-4 weeks it will spontaneously detach later.

Umbilical dry cord care (see [below](#)) is recommended over using chlorhexidine which was proven to delay cord separation and increase complication rate.

### Investigation

In cases when the umbilical cord does not separate by 3 weeks a Full Blood Count (FBC) is indicated in order to investigate for leukocyte adhesion defects. If neutrophilia/neutropenia is noted or there are any other clinical suspicions or concerns, discuss with immunology.

### Treatment

If the umbilical cord does not detach by 4 weeks, repeat FBC and discuss with immunology/paediatric consultant.

### Umbilical cord care

- Dry cord care includes keeping the cord clean and leaving it exposed to air or loosely covered by a clean cloth (including folding the front part of the nappy). When it becomes soiled, the cord remnant is to be cleaned with soap and water.
- In situations in which hygienic conditions are poor and/or infection rates are high, the WHO recommends using chlorhexidine for cord care.

## Umbilical granuloma

An umbilical granuloma is a small nodule of tissue measuring 3-10 mm, it is a soft, moist, pink, usually pedunculated. Umbilical granulomas are the most common umbilical mass and may become apparent following the separation of the umbilical cord.

### Treatment

The initial treatment should be simple table salt treatment with studies showing 91-100% success rate with no significant complications.

#### *Salt treatment*

Is most easily done when the infant is asleep, using the following steps:

- Clean the umbilical area with a cotton ball soaked in warm water
- Apply a small pinch of table/cooking salt over the umbilical granuloma
- Cover the area with adhesive tapes to keep the salt in place for 30 min

- Clean the area using a cotton ball soaked in warm water
- Repeat this procedure twice a day for 5 consecutive days

If salt treatment fails, and no improvement in size is seen at 5 days, then alternative diagnosis should be considered.

An alternative but not as benign treatment is topical silver nitrate stick (silver nitrate 75%). Usually only a few applications are need. Caution should be exercised in applying silver nitrate and the surrounding skin should be protected with paraffin, because it can cause chemical burns or staining of the surrounding skin.

If the treatment fails to treat the granuloma, surgical resection may be needed

#### **ALERT**



**If salt treatment fails alternative diagnosis and surgical review should be considered before further treatment is commenced**

## Umbilical polyp

Umbilical polyps are firm masses comprised of intestinal/urachal mucosa remnants. As in the case of umbilical granulomas, an umbilical polyp becomes apparent after the umbilical cord is detached.

Umbilical granulomas and polyps may be impossible to differentiate clinically. Umbilical polyps are much less common, and typically are larger, seldom bleed/are exudative and do not respond to salt/silver nitrate therapy as in the case of granulomas.

### Treatment

Surgical consultation recommended. May need ultrasound evaluation.

## Umbilical hernia

Umbilical hernia is defined as persistent opening or weakness of the umbilical ring. It is caused by failure of the umbilical ring to close after birth. The umbilical hernia appears as a soft swelling, varying in size, of the umbilical area – usually easily reduced. It is more prominent during coughing, crying or straining and could become larger in the first 6 months of life.

Risk factors are prematurity, low birth weight, African descent and certain syndromes.

Most cases are asymptomatic. Incarcerated or strangulated umbilical hernias are extremely rare.

### Treatment

In symptomatic (e.g. incarceration) or very large/persistently growing hernias surgical closure is the treatment of choice.

In asymptomatic cases observation until 4-5 years of age is preferred since closure of the umbilical ring is complete in most children by the age of 5-6 years of age. In addition, surgical correction in children < 4 years old has a higher complication rate.

Spontaneous closure is less likely in cases of a hernia >1.5 cm, older age, underlying predisposing condition (e.g. Ehlers Danlos syndrome).

Advice given to families should include advice of when to present to ED (if there are any signs of incarceration: it is firm/irreducible/tender/red/associated with vomiting).

#### ALERT



**Contact paediatric critical care specialist (onsite or via RSQ) for a child with life-threatening incarcerated umbilical hernia**

## Omphalitis

Omphalitis is an infection of the umbilicus and/or surrounding tissues. It is characterized by purulent (±bloody) discharge from the umbilical cord stump with surrounding induration, erythema, and tenderness. Systemic signs such as fever, lethargy or poor feeding are suggestive of a more severe infection.

This condition is very rarely seen post the neonatal period. Common risk factors for the development of neonatal omphalitis include unplanned home birth or septic delivery, low birth weight, prolonged rupture of membranes, umbilical catheterization, and chorioamnionitis. Neonatal omphalitis is rare in high-resource countries.

It is usually a polymicrobial infection, but *Staphylococcus aureus* remains the most frequently reported organism. Other common pathogens include group A and group B *Streptococci* and Gram-negative bacilli, rarely, anaerobic infections also may occur.

Depending on how omphalitis is defined, case-fatality rates as high as 15% have been reported.

#### Treatment:

- Septic workup
- Cultures (including dry swab of the discharge)
- IV antibiotics

#### IV antibiotics dosing for the treatment of omphalitis

<b>Flucloxacillin IV</b>	<b>Less than 1 month old:</b> Refer to <a href="#">neonatal dosing</a> . <b>1 month or older:</b> 50 mg/kg/dose IV every 6 hours (maximum 2 g/dose).
<b>Gentamicin IV</b>	<b>If less than 1 month old:</b> Age dependent - Refer to <a href="#">neonatal dosing</a> . <b>If 1 month or older:</b> 7.5 mg/kg IV once daily (maximum 320 mg/day).

#### ALERT



**Contact paediatric critical care specialist (onsite or via RSQ) for a child with life-threatening omphalitis**

## Omphalomesenteric duct anomalies

Partial or complete failure of involution of the embryonic omphalomesenteric duct can leave an abnormal connection between the umbilical cord and the gastrointestinal tract. This can lead to different anomalies in varying degrees of severity - ranging from complete patency resulting in drainage from the umbilicus, Meckel diverticulum, omphalomesenteric remnant or an umbilical polyp.

### Treatment

Management of all types of omphalomesenteric duct anomalies is surgical.

## Urachal anomalies

Disruption in the urachal involution can lead to different anomalies, varying in severity. Complete patency will present with drainage of urine of the umbilicus however when there is no connection between the umbilicus to the bladder an umbilical polyp/bladder diverticulum/urachal cyst can be found.

Complications include Urinary Tract Infection (UTI) (especially in the case of full patency and bladder diverticulum), cyst infection, abdominal pain or haematuria.

### Treatment

Surgical excision is the treatment of choice in most cases.

Often a urachal remnant is identified on ultrasound scan. These are usually the fibrous remnant at the dome of the bladder, about 1cm in size, and are of no consequence.

#### ALERT



**Consider seeking senior emergency/surgical advice as per local protocols for child with suspected umbilical polyp or omphalomesenteric/ urachal anomalies**

### Umbilical discharge

- Mild discharge from the umbilical stump, even when accompanied by some odour, in the absence of inflammatory signs may be a normal occurrence
- Granulomas often ooze small amounts of clear or yellow fluid. Umbilical mucosal polyps may discharge mucous.
- Omphalitis is characterized by purulent discharge
- Any urine or bowel content discharge from the umbilicus implies a urachal or Omphalomesenteric duct anomalies respectively

### Considerations

- Most of the umbilical disorders are benign and should not necessitate admission
- In cases of suspected omphalitis – septic workup and admission for IVABs is indicated

## When to escalate care

Follow your local facility escalation protocols for children of concern. Transfer is recommended if the child requires care beyond the level of comfort of the treating hospital. Clinicians can contact the services outlined below to escalate the care of a paediatric patient.

Service	Reason for contact by clinician	Contact
<b>Local Paediatric service</b>	For specialist paediatric advice and assistance with local transfers as per local arrangements.	As per local arrangements
<b>Children's Advice and Transport Coordination Hub (CATCH)</b>	For access to specialist paediatric advice and assistance with inter-hospital transfer of non-critical patients into and out of Queensland Children's Hospital. For assistance with decision making regarding safe and appropriate inter-hospital transfer of children in Queensland. For QH staff, <a href="#">click here</a> for the QH Inter-hospital transfer request form (access via intranet).	(07) 13 CATCH 24 hours <a href="#">CATCH website</a>
<b>Telehealth Emergency Management Support Unit (TEMSU)</b>	For access to generalist and specialist acute support and advice via videoconferencing, as per locally agreed pathways, in regional, rural and remote areas in Queensland.	<a href="#">TEMSU QHEPS website</a> 24 hours
<b>Retrieval Services Queensland (RSQ)</b>	For access to telehealth support for, and to notify of, critically unwell patients requiring retrieval in Queensland. For any patients potentially requiring aeromedical retrieval or transfer in Queensland.	<a href="#">RSQ QHEPS website</a> 24 hours

## When to consider discharge

### Follow-up

- After initiating salt treatment for umbilical granuloma, a GP review is recommended after 5 days of treatment
- Surgical follow up is recommended for children with large umbilical hernia

## When to consider admission

- Admission is indicated in any case of omphalitis

## Consultation

Key stakeholders who reviewed this version:

- General Surgery Senior Medical Officer QCH
- AMS pharmacist QCH
- Emergency Senior Medical Officers QCH

## Definition of terms

Term	Definition
ED	Emergency Department
WHO	World Health Organisation
UTI	Urinary tract Infection
GP	General Practitioner

## References and suggested reading

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## Guideline revision and approval history

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1.0 25/06/2021	Senior Medical Officer Emergency Department	Director Paediatric Emergency Medicine QCH	Divisional Director, Critical Care

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