

From inquisitive toddlers to adventurous teenagers: how to navigate paediatric minor injuries

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Abstract

Paediatric minor injuries are a frequent presentation to the Emergency Department (ED) and acute care settings. As children develop from curious pre-schoolers to teenagers who are learning to take risks, the pattern of injury changes from lower impact injuries and foreign body insertion or ingestions, to injuries sustained at higher impact. Paediatricians typically receive little training in minor injuries. However, some injuries are seen more commonly in children, therefore knowledge or experience in managing them may also be lacking for clinicians who are primarily trained in adult emergency care. Effective management not only requires a comprehensive understanding of paediatric anatomy and physiology, but a nuanced approach to management, tailored to the developmental needs of the child. This can often be a challenge and techniques used in an older child or adult may not be appropriate. This article provides a practical guide to the assessment, diagnosis, and treatment of common minor injuries in Paediatrics. Including some helpful tips and tricks on how to manage those tricky customers.

Keywords Foreign body; minor injury; paediatric emergency

Introduction

Young children are inquisitive and are learning by exploring their environment. This process of trial and error sometimes results in injury or objects becoming lodged in places they shouldn't be. Although most injuries are minor, and can be managed with simple first aid, some may require further attention.

Despite being common, the management of minor injuries is not well covered in paediatric training. However, paediatricians and general practitioners are often best suited to do so, particularly in younger children, where the biggest challenge is often being able to assess a distressed child or knowing how to win over a non-compliant toddler. These are skills that are generally gained by experience.

With increasing demand on adult emergency services more children with injuries may be seen in primary care and other paediatric settings. Therefore, a basic knowledge is useful, as

many only need minor treatment or reassurance. In this article we will discuss some common injuries that are predominantly seen in children. We consider the general approach to diagnosis and management, including some helpful tips and tricks on how to approach young, and often uncooperative, children. Whilst most injuries are minor, we will also highlight those which can carry risk of significant harm, and which require extra vigilance.

Prevention is always better than cure. Primary prevention strategies and public health campaigns are effective but the presentation of a child with a minor injury can provide a vital opportunity to reinforce these messages. As health professionals, we have a duty of care to ensure that any concerns over lack of supervision are discussed with care givers, and we utilize opportunities to discuss home safety.

General approach

The management of minor injuries requires a detailed history of the mechanism of injury and the nature of any subsequent symptoms. When injuries have been unwitnessed the exact mechanism may be unknown. The location of the pain, particularly in younger children or if there is no external sign of injury. However, it is usually possible to use clinical judgement to formulate an appropriate management plan based on the information available and a clinical assessment.

It is important to maintain professional curiosity as to how the injury occurred, particularly if the mechanism does not fit. Unfortunately, some injuries are not accidental.

Wounds

A common reason for children to be brought to the ED is because of a wound that requires closure. This can be done with a variety of methods, depending on location and depth of the wound, and compliance of the child ([Box 1](#)).

Paediatric limb injuries

Pulled elbow

This is a common injury which typically occurs in children under 5 and is due to the head of the radius slipping out of the annular ligament. As the name suggests, the classic history is of a child being pulled up by their arm, however, such a clear history is only obtained in around half of children.

The child will be holding their arm in extension and pronation and will be unable to use it. This is often noticed because they

Wound closure in children

- Tissue adhesive glue: used commonly for minor head lacerations. Easy to apply. Forms a barrier over the wound. Need to keep clean and dry for 5 days.
- Steri-strips: good for wound closure when glue is not suitable, such as near the eyes.
- Suturing: LAT (lidocaine, adrenaline, tetracaine) gel applied directly to the wound is very effective as a local anaesthetic and helps to stop any bleeding.
- If a wound is deep, contaminated or over a joint it may require washout in theatre under general anaesthesia.

Box 1

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will prefer to use the other arm to reach for toys. They usually do not appear to be in pain unless parents try to move the arm.

Treatment is manipulation of which there are two methods (Box 2). If successful, this can satisfyingly lead to complete resolution within minutes. The procedure itself is easy to do, although some helpful tips to make your life easier are listed below (Box 3).

Toddler fracture

This is a non-displaced spiral or oblique fracture of the distal tibia caused by twisting whilst falling. It typically occurs in toddlers and is usually sustained following a seemingly innocuous injury. Presentation will generally be of a limp or refusal to weight bear on the affected side.

The fracture may not be visible on initial X-rays, but a clinical diagnosis can be made if the history is consistent.

There is no evidence to suggest that immobilization is either beneficial or detrimental, therefore a decision should be made in conjunction with parents after explaining the pros and cons and considering the child's level of discomfort. Parents should be reassured that the fracture will heal within 4 weeks regardless of this and that any immobilization is for comfort.

Buckle fractures

These are compression injuries, which do not cause a breach of the cortex (Figure 1).

Buckle fractures heal well with resolution of symptoms within 2–3 weeks. The recent FORCE trial¹ demonstrated that treatment

with a bandage was equally as comfortable as applying a cast or splint, therefore, children can be offered a bandage or may choose not to wear any support. They should be encouraged to use their arm as normal during this time can return to sport and rough play as soon as the pain settles.

Supracondylar fractures

These occur following a fall onto an outstretched hand with hyperextended elbow. Common mechanisms include falling from monkey bars or off a trampoline.

They can be displaced by varying degrees (Figure 2). A thorough neurovascular examination of the limb should be performed (Figure 3) due to the high risk of neurovascular compromise, especially with fractures that are significantly displaced. These should be urgently referred to orthopaedics.

For less significant injuries, the presence of a posterior fat pad may be the only finding on X-ray, indicating an effusion and occult fracture. These can be managed with immobilization and follow up in fracture clinic.

Burns and scalds

Toddlers like to grab things, therefore pulling hot drinks over themselves is unfortunately a common scenario. Luckily, this usually only results in a small, superficial burn, which only requires first aid, dressing and follow up.

Cooling the burn is important to prevent further tissue damage and is beneficial any time within the first 3 hours of the injury. This should ideally be done by running it under cold water for 20 minutes. However, children often become very distressed when doing so, therefore it can be challenging for parents to do adequately at home and should be repeated on presentation if required. The burn should then be covered in clingfilm, and analgesia given as required.

The size and depth of the burn should be assessed to guide further management. A burns classification tool can be used for assessing the total burn surface area with simple erythema not included (Figures 4 and 5). If the burn is large (>5%), full thickness, or in a sensitive area (face, neck, hands, feet, genitalia, perineum or flexural surface) a referral should be made to the burns team. Small blisters should be de-roofed, and excess tissue removed to avoid infection and allow accurate assessment of depth.

De-roofing can be done by using a small (25 g) needle to burst the blister with excess tissue wiped away with moist gauze. If blisters are larger, a scalpel may be needed followed by sterile scissors to excise the skin. This may look unpleasant to parents, therefore explaining the process and reassuring them that this part is not painful for the child can help get them on board. Some further tips are given in Box 4.

After cleaning and deroofting, the burn should be covered with a suitable dressing. The child should be reviewed in 24–48 hours and clear advice given to parents about looking out for signs of infection.

Foreign body emergencies

Foreign bodies in the ears, nose, and throat of children are a frequent occurrence, amounting to a financial burden on NHS England for children who present with nasal or aural foreign bodies of approximately £2,880,148 annually.³

Two common methods to manipulate 'pulled elbow'

For both, sit child on parent's lap and support the elbow with thumb over the radial head (may palpate a 'click' if successful).

- 1) Hyper-pronation
 - Fully pronate forearm
- Or
- 2) Supination/flexion
 - Supinate the forearm
 - Flex the elbow

Box 2

Top tips for manipulation of a pulled elbow

- Tell parents what you think the problem is and warn them what you are going to do before attempting manipulation as it is likely to cause distress
- If it looks like a pulled elbow, try manipulating as early as possible into your examination to maximize your window of opportunity
- You may not necessarily hear a 'click'.

If you have attempted the manoeuvre, leave the child to play and ask parents to encourage them to use the affected arm. Go back in 10 minutes to see if they are using it.

Box 3

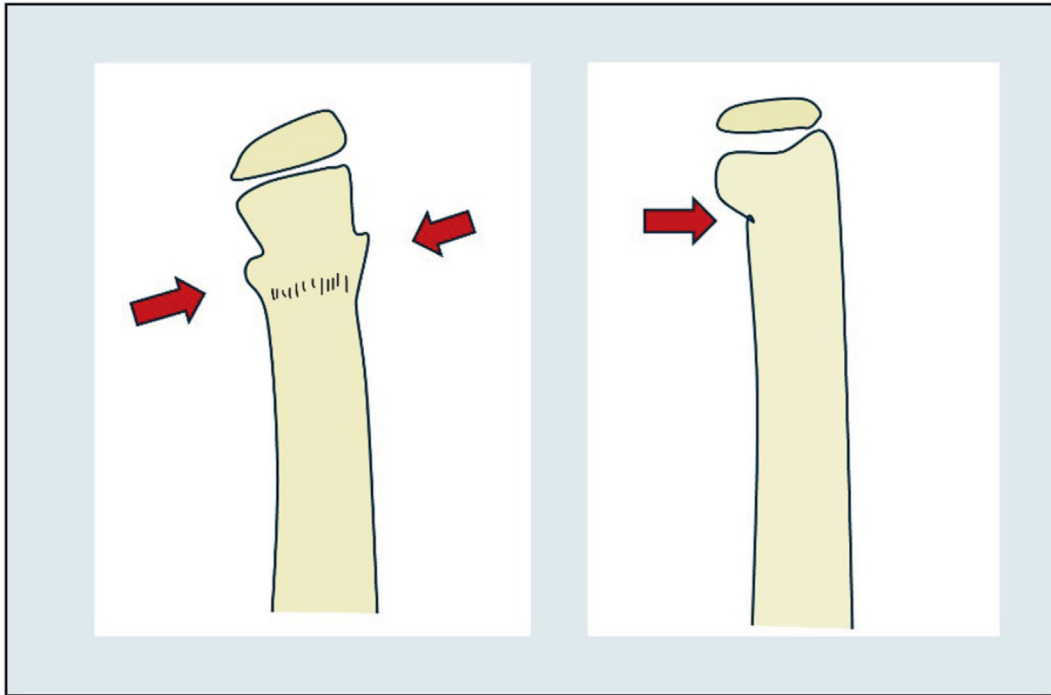


Figure 1 Buckle fracture AP and lateral views.

It is most common amongst pre-school-aged children, when they are curious and love to explore, making them prone to inserting objects into orifices, particularly if they are sparkly and shiny. Commonly encountered foreign bodies include beads, small toys, paper, and food particles.

Effective removal requires a range of techniques depending on the type, location, and degree of patient co-operation. A combination of methods may need to be attempted if the child allows, starting with the least invasive, reserving more

complex interventions for deeper or more challenging foreign bodies.

See [Box 5](#) for some helpful tips and tricks on how you might attempt this in more challenging patients.

Aural foreign bodies

Initial symptoms may include pain, bleeding and distress. Although removal is generally necessary there is no immediate risk. However, if left untreated there can be further complications

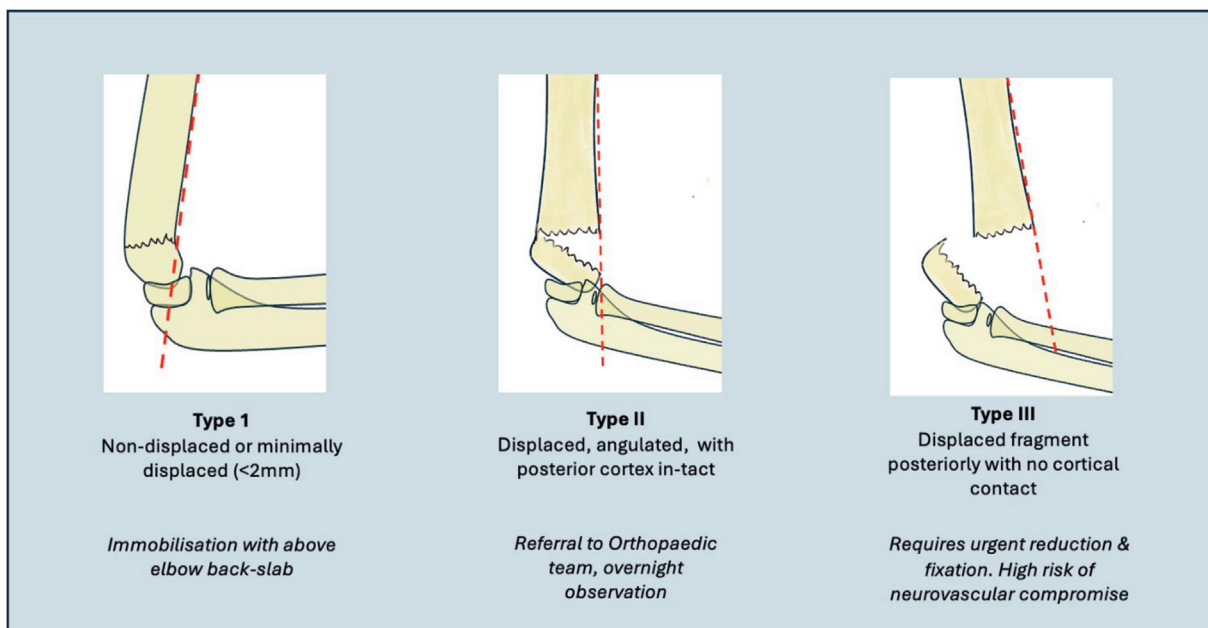


Figure 2 Gartland classification for supracondylar fractures.

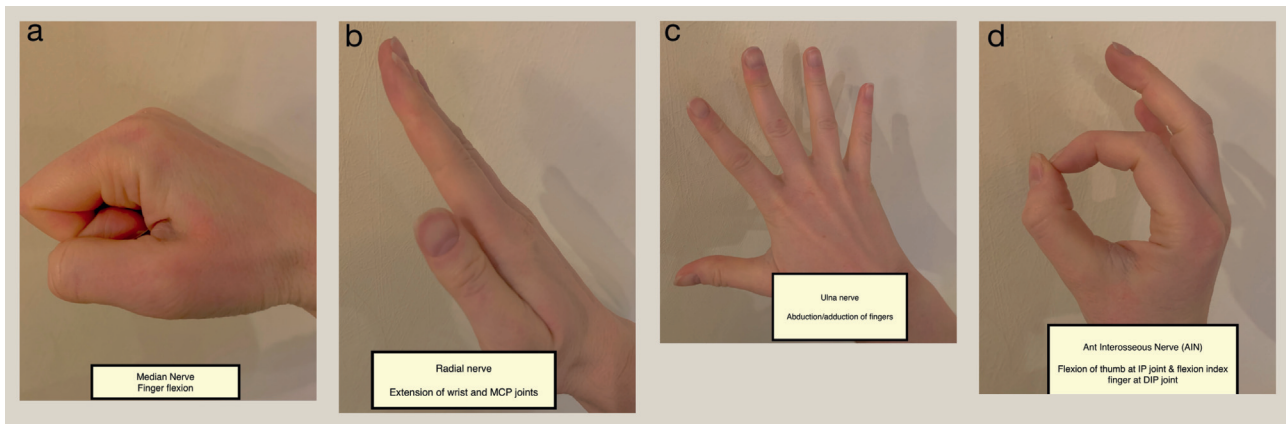


Figure 3 Neurological examination of the upper limb.

later on, such as middle ear damage, hearing loss, vertigo, facial nerve palsy, and meningitis.

Useful equipment for removal of a foreign body in the ear include the following:

- Jobson Horne probe: Gently lift foreign bodies if there is a gap between the object and the ear canal wall.
- Wax hook: Best for softer objects such as tissue or peas. Be careful not to leave any debris behind with this method.

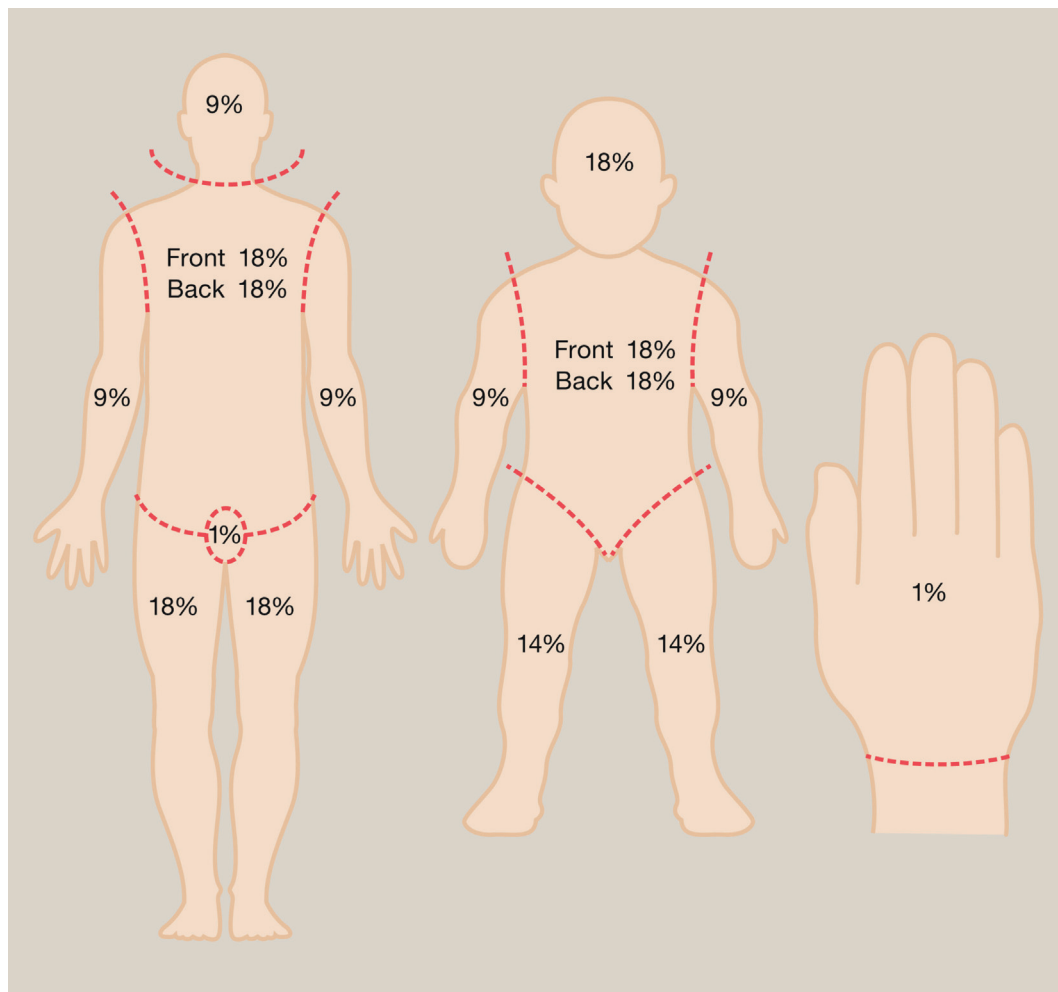


Figure 4 'Rule of nines'. Reproduced from reference 2 with permission from Elsevier.

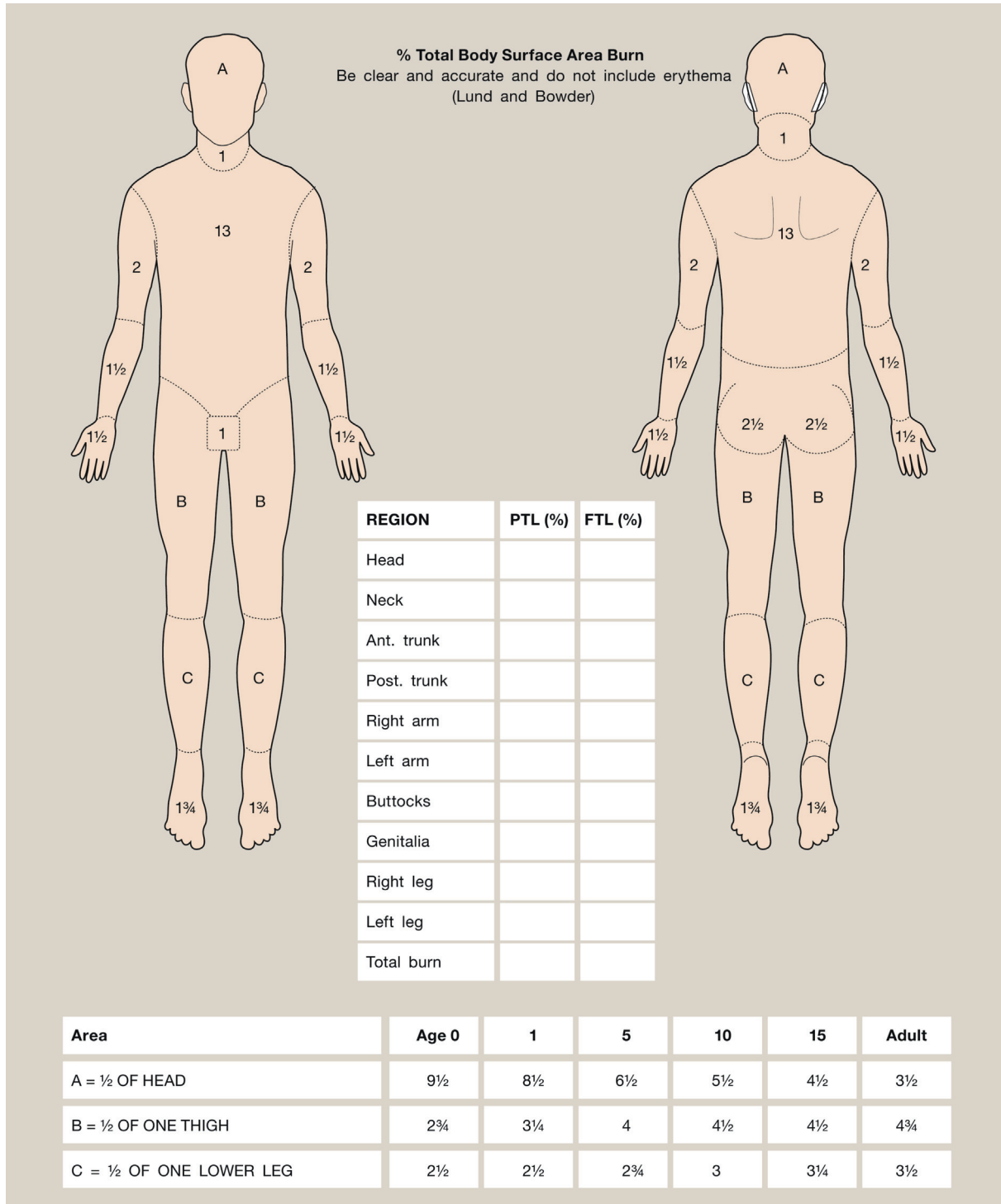


Figure 5 Lund and Bowder chart. Reproduced from reference 2 with permission from Elsevier.

- Crocodile forceps: Ideal for smaller or uneven objects, where a secure grip is needed

Nasal foreign bodies

Early removal is necessary to prevent migration into the upper airways, which could lead to obstruction. Presentation may be delayed, with the first signs typically being nasal obstruction or a foul-smelling discharge. Epistaxis may occasionally occur.

Additional complications include infection and perforation of the nasal septum.

Simple methods for removal of nasal foreign bodies should be tried first:

Nasal blowing: encourage the child to blow their nose while occluding the unaffected nostril. This can be effective if the foreign body is not deeply lodged.

Top tips for the management of minor burns

- Ask for specific details about the liquid (e.g. Was it recently boiled? Was milk or sugar added?) as this gives an indication the likely depth/severity of the burn.
- Prior to cleaning, ensure analgesia is adequate and use distraction where possible.
- Always consider safeguarding: concerning features include delayed presentation, inconsistent history, absence of splash marks in scalds, cigarette or iron shaped burns, burns in glove or stocking distribution

Box 4

Tips and tricks for removal of foreign bodies in children

1. Get the basics right-explain what's going to happen, how it might sound and feel
2. Preparation is key: you may only get one attempt!
3. Distraction: involve a play therapist if possible
4. If in doubt or retrieval is proving difficult due to position, lack of equipment or the child being very distressed don't keep trying: refer to ENT

Box 5

Kissing technique: "parent's kiss": a positive pressure method, effective for solid objects such as beads.

Position the child sideways on the parent's lap, with one arm secured. Instruct the parent to seal the child's mouth with their own while you occlude the unaffected nostril. The parent delivers a sharp breath, generating positive pressure to expel the foreign body.

Other methods that can be used for foreign body removal include:

- Suction via Yankauer suction tip: Effective for smooth-surfaced objects such as beads or polystyrene balls. Inform the child about the noise to reduce anxiety during the procedure.
- Syringe and water: Suitable for objects like tissue or play-dough. A cut-down nasogastric tube is attached to a syringe containing warm water, and the foreign body is flushed out.

Foreign body ingestion

Foreign body ingestion is most common in children aged between 6 months and 3 years, where children tend to put things in their mouths. Common items include coins, small toys, jewellery, batteries, and food. Ingestion of small, smooth, and non-toxic objects typically do not require intervention, as approximately 80% foreign bodies can pass through the gastrointestinal tract without complication.

If they become lodged, the majority are found in the stomach or oesophagus. Occasionally they may be found in the small intestine or oropharynx.

The time duration for the object to pass through the body is variable, often taking 3–5 days. It's not recommended that parents look for the object in the stool as half of objects are never seen again.

Button battery ingestion: this represents a serious and time-critical paediatric emergency with the potential for devastating consequences.

Prompt recognition and intervention are essential to minimize the risk of significant complications, including oesophageal and gastric burns, perforation, and systemic toxicity. Morbidity can occur rapidly, often within 2 h of ingestion, highlighting the urgency of early intervention.

Symptoms may be subtle or intermittent but could include drooling, coughing, choking, abdominal pain, vomiting, and unexplained gastrointestinal bleeding in an otherwise previously well child.

Due to increased awareness of the dangers, parents often present because they are unsure whether a battery has been ingested. Due to the severity of the potential consequences, clinicians should have a high level of suspicion and X-rays performed if there is any doubt, even if the child is asymptomatic. It is important to remember that button batteries can also be inserted into the ears or nose and can be equally damaging.

Button batteries can be distinguished from coins on X-ray by the presence of a circular opacity creating a double ring or 'Halo' sign. If identified, it is imperative to consult surgical or ENT specialities as soon as possible, so that endoscopic removal can be undertaken.

Hair tourniquet syndrome

A hair tourniquet should be considered as a differential diagnosis for an infant with unexplained crying in the absence of any other symptoms.

It most commonly occurs in infants aged around 3 months, due to maternal post-partum hair shedding. Typically, the hair becomes tightly wrapped around digits or genitalia, but can be difficult to detect, as the strand of hair may become buried by oedematous tissue or covered by new skin growth. Once identified, the hair must be removed promptly, as if left untreated, the tourniquet can lead to ischaemia, tissue necrosis, and autoamputation of the affected digit.

Hair can sometimes be unwound gently; however, a scalpel may be necessary to cut the strand of hair. Toothed forceps may also be used to lift the hair and break the strand prior to removal.

An alternative method is to apply a small amount of depilatory cream to the affected area for approximately 10 minutes. This works by breaking down the keratin structure of the hair, making removal easier. However, it is important to note that this method will not work for man-made fibres.

In cases where there has been circumferential skin breakdown, it may be difficult to determine whether the hair has been fully removed. If in doubt, it is crucial to seek specialist assistance from plastics or general surgical colleagues.

Ocular injuries

Corneal abrasions are one of the most frequent types of ocular injuries in children, often due to blunt trauma or foreign bodies. This results in a red, painful eye that is watering. Assessment should include staining with Fluorescein to detect the presence of an abrasion (Box 6). If found Chloramphenicol ointment is usually given. Generally, abrasions heal without any complications, however if large, follow up with ophthalmology may be necessary.

Another common scenario is the inquisitive toddler who has managed to get hold of a household chemical and sprayed them

How to stain an eye to look for corneal abrasion

- Children often find this distressing which can make it challenging
- Anaesthetic eye drops (e.g. proxymetacaine hydrochloride) can help significantly with pain relief, and may improve compliance
- Preparation is key. Try and get the room as dark as possible to allow best chance of success first time round.
- Fluoresceine drops should be inserted to the eye and an ophthalmoscope with a cobalt blue filtered light used to look for an abrasion.

Box 6

in their eyes. Depending on the chemical, this can lead to significant damage and can be sight threatening. Eyes should be irrigated with at least 1 litre of saline and litmus paper used to check for a normal pH (7.4) that is equal on both sides.

Conclusion

As young children become curious and their activity levels increase, inevitably there is a higher frequency of injuries. These are mostly minor and often managed at home. However, clinicians must maintain a high index of suspicion for potentially serious hazards, which can result in catastrophic outcomes if not promptly addressed. As children get older and engage in more physically demanding activities, the nature of their injuries evolves, with a greater incidence of fractures which may be a result of higher impact, with more potential complications. Recognizing these and ensuring timely intervention is important to mitigate long-term consequences.

This article provides a concise overview of some of these injuries, their management, and some helpful tips and tricks that we have gathered through experience, especially when co-operation with the child is challenging.

Although not covered in depth in this article, the importance of preventative measures, parental education and public health

strategies should not be underestimated for injury prevention. It is important that these are addressed with parents during each interaction and communicated with relevant agencies such as health visitors to ensure ongoing education and support. ♦

REFERENCES

- 1 Perry D, Achten J, Knight R, et al. Immobilisation of torus fractures of the wrist in children (FORCE): a randomised controlled equivalence trial in the UK. *Lancet* 2022; **400**: 39–47.
- 2 Gill P, Falder S. Early management of paediatric burn injuries. *Paediatrics Child Health* 2017; **27**: 406–14.
- 3 Dance D, Riley M, Ludemann JP. Removal of ear canal foreign bodies in children: What can go wrong and when to refer. *B C Med J* 2009; **51**: 20–4.

FURTHER READING

Tagg A. Ingested foreign bodies. Don't Forget the Bubbles. Available at: <https://doi.org/10.31440/DFTB.15835>; (accessed 1 February 2025).

Practice points

- Minor injuries account for a significant number of children presenting to emergency care settings, but their management may be less familiar to clinicians who are predominantly adult trained
- Management can be challenging, particularly in younger children, however with adequate preparation and distraction success is much more achievable
- The insertion or ingestion of button batteries and magnets are associated with significant morbidity and mortality and should be managed as a medical emergency
- Prevention is always better than cure