
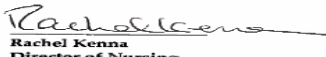


**PLASTER OF PARIS 'BACKSLAB' CASTS APPLICATION
IN THE EMERGENCY DEPARTMENT GUIDELINE**


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Approved By Name: Fionnuala O'Neill Title: Nurse Practice Coordinator	Signature:  Date: December 2016
Authorised By Name: Rachel Kenna Title: Director of Nursing	Signature:  Rachel Kenna Director of Nursing
Author/s	Name: Ruth Howard Title: Advanced Nurse Practitioner (ANP)
Location of Copies	On Hospital Intranet and locally in department

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1.0 Introduction

These guidelines aim to promote the safe and effective application of plaster of Paris 'backslab' casts to children attending the Emergency Department. Backslab POP's may only be applied by nursing staff in the Emergency Department who have undertaken appropriate training and are deemed competent to carry out the procedure.

2.0 Indications for the application of a Plaster of Paris (POP) backslab

- To immobilise, splint and support an injured limb.
- As part of therapeutic management of specific fractures / injuries.
- As a pain relieving intervention.
- To prevent further injury


3.0 Definition

Plaster of Paris is hemihydrated calcium sulphate. On adding water it solidifies by an exothermic reaction into hydrated calcium sulphate. Backslab plaster of Paris casts are used as a treatment of fractures to immobilise the limb. Applying a back slab, as opposed to a full cast should allow for swelling of the limb. A good cast fits well, does not cause constriction, is smooth on the inside and is lightweight (Members of the Royal College of Nursing Society of Orthopaedic Nursing, 2000).

4.0 Types of backslab

The common types of plaster of Paris slabs used on the limbs are the following:
Below Elbow Plaster slab
Above Elbow plaster slab
Ulnar Gutter Slabs
Volar Slabs
Scaphoid Slab
Below Knee Plaster slab
Above Knee Plaster slab
Plaster of Paris is the materials of choice in treating fresh fractures
Please consider if Plaster of Paris is the best option. Dynacast/futura splinting may also be considered in some cases

5.0 Complications associated with the application POP backslabs


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Backslab application is not without risks and complications (e.g. stiffness, pressure sores, compartment syndrome, muscle atrophy) and the risk of morbidity is higher when casts are applied by less experienced practitioners. Certain materials and methods of ideal backslab application are recommended to prevent morbidity in the patient who is at high risk for complications with casting. Those at high risk include the unconscious patient (including the patient under anaesthesia), those presenting with multiple trauma, the very young patient, the developmentally delayed patient and the patient with spasticity (Halanski and Noonan 2008, Drozd *et al* 2009).

6.0 Equipment Required


Prepare Environment
Lukewarm water (25-30°C) required for soaking plaster of Paris
Standard ward trolley if plaster trolley not available
Stockinette – various sizes.(3M 3” upper limb, 3M 4” lower limb)
Softban synthetic orthopaedic padding – various sizes.
Mollelast bandages – various sizes.
Appropriate width of plaster of Paris as per child’s individual clinical need ensuring that the slab covers two thirds of the limb circumference.
Tape / triangular slings / crutches / gloves / aprons / advice sheets regarding cast care instructions.
Elastoplast ® Elastic Adhesive Bandage
Triangular bandage or crutches as required
Towel
Gloves
Written advice, e.g. cast care instructions, crutches information

7.0 Guidelines for application of a POP backslab

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Remove any rings or jewellery and nail varnish as soon as the child presents for triage and support the injured limb in a sling or on a pillow. The circulatory state and the nerve supply of the limb (neurovascular observations) should be checked before and after the application of a backslab.

ACTION	RATIONALE & REFERENCE
<p>NOTE: Prior to preparing equipment etc. the child must be assessed and appropriate analgesia given.</p>	<p>Administration of adequate pain relief helps to facilitate in the application of the plaster without causing unnecessary discomfort. Assessment of the child using a suitable pain scale prior to and post administration of analgesia may assist in determining the type of, and the effect of analgesia given. (Drendel <i>et al</i> 2006, Bethel 2008, Walker 2008, Chow <i>et al</i> 2013)</p>
<p>Prepare environment & equipment.</p> <p>Explain procedure to child / parent(s) / guardian & gain consent to proceed.</p> <p>Liaise with the medical staff following child's x-ray for clinical findings & proposed treatment.</p> <p>Perform an assessment of the child giving consideration to the following:</p> <ul style="list-style-type: none"> ▪ The pathology or injury. ▪ Why the cast is being applied. ▪ Any underlying condition that may affect the way the cast is applied i.e. diabetes or rheumatoid disease. <p>The skin: is there a wound or redness anywhere? bony areas that will need extra padding, blood vessels or nerves that may be compromised, Any expected swelling.</p> <p>Perform a neuro-vascular assessment of the affected limb, prior to application of any plastering material. This includes assessing the colour, movement, sensation, limb temperature, capillary refill & distal pulses. Always compare and contrast the affected limb with the unaffected limb.</p> <p>The neuro-vascular assessment needs to be documented in the child's notes and any</p>	<p>To inform child / parents. To gain co-operation. To ensure consent for procedure. Promotes child's trust & understanding (Miles 2004, Lucas and Davis 2005).</p> <p>To confirm the need for the backslab. Consider other types of limb immobilization</p> <p>For prevention and early detection of any complications (Miles 2004, Drozd <i>et al</i> 2009, Chow <i>et al</i> 2013).</p> <p>To out rule deficits & identify irregularities. (McRae & Esser 2006)</p>

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abnormalities reported to medical staff.

Reassess the child's pain using appropriate pain assessment tools and document in the child's notes.

Administer analgesia as required prior to application of backslab cast, & administer as per medication policy. Observe its effect, potential side effects and document in records.

Provide multi modal methods of pain relief, including play and distraction, as required and as age appropriate.

Remove the clothes from the affected limb, while maintaining the child's privacy.

The size of the stockinette will vary according to the limb involved. When measuring the length of the stockinette allow extra length.

Apply stockinette to affected limb ensuring it is free from wrinkles and creases. Allow a small amount of extra material to turn back over the edges of the slab. Stockinette should not be used routinely if the limb is very swollen and painful

As the correct position is determined by the nature of the injury, limitations of movement due to pain, swelling & the risk of neurovascular compromise must be considered.

Ensure sufficient staff are available to help hold & apply the backslab.

The limb is then positioned and maintained in appropriate alignment and maintained and padding applied as for a full cast. This undercast padding should be applied firmly, smoothly and evenly. Too much padding can make the backslab loose & allow movement of the injured limb + / - skin excoriation.

Measure the length of plaster required depending on the size of the limb, then cut the required

To ensure accurate documentation is recorded. (An Bord Altranais 2002, Miles 2004))

To assess and treat the child's pain and to ensure that the appropriate analgesia is prescribed (Lucas 2005, Manwarron 2007).

To ensure that the child is comfortable. If a painful limb is to be positioned successfully the child must be as relaxed as possible (Lucas and Davis 2005, Foster 2007)

To assist the child's pain relief (Lucas 2005, Walker 2008)

To maintain child's privacy & dignity (Miles 2004b)

Stockinette tends to appear shorter once cut as some of the length is used when placed around the circumference of the limb (Miles 2005a).


As it can cause constriction and when cut through, may crease thereby causing pressure (Miles 2004b, Drozd *et al* 2009).

To allow easy accessibility to the limb & to ensure that the limb is maintained in the correct position (Beaty & Kasser 2005, Drozd *et al* 2009).

To maintain correct limb position and provide comfort for the child.

To protect bony prominences such as the ulnar and radial styloids, the malleoli or the head of fibula, these areas must have extra padding (McRae & Esser 2002). As the plaster cast dries out it becomes looser and any movement over the bony prominences may cause some friction and sores if the padding is inadequate (Crawford Adams & Hamblen 2006)

To reduce the risk of pressure & to prevent possible cast indentation (Miles 2005))

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length, using a minimum of 6 layers and leave ready. Additional layers can be used as per clinical need.

The plaster slabs are then shaped, trimming top and lower ends as required.

The POP back slab is folded concertina fashion and dipped into the luke warm (25-30°C) water holding the ends and maintaining the concertina folds. The slab should be immersed for about 2 - 5 seconds (if the slab is held in water for too long it will lose most of the plaster resin to the water), ensuring the plaster is thoroughly soaked, before withdrawing from the water. The layers should be gently compressed together.

The backslab is removed from the water, squeezed very gently to remove excess water and straightened out. It is important not to squeeze too much water from the plaster, as it needs to remain wet throughout.

The slab is then carefully positioned on the limb and smoothed to fit the contours. The correct position of the limb, determined by the injury must be maintained throughout the application and until the plaster is set as movement could result ridges in the cast.

Constant smoothing and moulding is necessary. This must be undertaken using the palms of the hands rather than the fingers, to avoid dents in the cast.

Applying a back slab, as opposed to a full cast should allow room for swelling of the limb.

The backslab is held in place with a wet bandage, which must be pre-soaked to avoid further shrinkage, and to enable it to adhere better. The end of the bandage is fixed with a plaster of Paris or an elastoplast strip.

The stockinette is turned back over the ends of the slab.

Mollelast is applied around the limb, evenly and

Cold water slows, and hot water quickens, the setting process, and it is important to remember that both extremes of temperature can be uncomfortable for the child (Miles, 2004a).

If too much water is squeezed out, the plaster may become dry and unmanageable. Squeezing also accelerates the setting time (Miles 2004a, Drozd *et al* 2009).


The surface should be smooth both inside and out, and equal thickness throughout the length of the cast in order to prevent breakdown of the cast. (Kozin 2006)

In order to bond the layers together. The strength and comfort of the finished backslab depends on union of the layers, therefore speed of application and smoothing are very important (Miles 2005a).

In order to make the cast whole and not a succession of layers (Crawford Adams & Hamblen 2006). A loosely applied backslab will not provide adequate splintage and can cause pain by rubbing the skin (Miles 2004))

A back slab applied too tightly will restrict blood supply and possibly nerve supply to the limb (Miles 2004, Royal College of Nursing 2000).

Any neuro vascular deficits identified need to be corrected prior to completion of the cast (Miles 2004)

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without tension.

The limb position should be maintained until the cast is completely set.

Colour, movement sensation & pulses of the distal part of the limb should be checked on completion to ensure no possible impairment of the circulation or nerve supply

Upper Limb Fractures

Once the cast is set, place the upper limb in a sling and give the child / parents instructions (verbal and written) (*instructions include cast care, circulation care, and observation of the extremities of the limb*) on how long the sling is to remain in place, when it may be removed and how it should be re-applied.

Lower Limb Fractures

Crutches are supplied as necessary for the child; instruction regarding their safe use should be given to both the child & parent(s). The child must be given time to practice using crutches before discharge. Written advice is given also regarding the use of crutches (see physiotherapy advice sheet). Instruct parents / child to elevate lower limb injuries until review in the Fracture Clinic.

The limb is taken through a full range of movements to check that the plaster does not impede movement and exercise. If this occurs, the cast should be trimmed to allow the relevant movement.

The extremities are checked for good circulation, sensation and movement before the child leaves the department, (*instructions include cast care, circulation care, and observation of the extremities of the limb*).

The child must be instructed to exercise the fingers and elbow, shoulder or toes and knee as appropriate on a daily basis.

- 1) Giving cast care instruction is an essential part of the management of the child with a plaster cast.

To ensure that the child is proficient in the use of crutches and avoid further injury (Miles 2005).


To ensure that any swelling resolves (McRae & Esser 2006), and in order to detect possible impairment of the circulation (Crawford Adams & Hamblen 2006)

To monitor range of limb full movements (Miles 2004a, 2004b, 2005)

To identify any neuro-vascular deficits (Miles2004). Any neuro-vascular deficits that are identified pre or post cast application need to be documented.

To prevent joints becoming stiff (Miles 2005a, Judge 2007).

Advice and instructions given to the child and carers can contribute to a reduction of the incidence of complications (RCN 2000, Miles 2004). It is good practice to ensure that the child has written information to reinforce the advice given (Miles 2004).

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<p>2) Full instructions must be given to the child's and parent (s) on the care of their limb, the cast, and the prevention of complications. These must be given verbally, by demonstration and reinforced by written documentation. The same must be documented in the child's notes.</p> <p>3) The child / parent needs to be informed of the possible complications that can arise.</p> <p>Parents are advised to return to the Emergency Department if any concerns arise regarding their child's affected limb / cast.</p> <p>Follow-up care in the Fracture Clinic must also be arranged (the next available appointment).</p> <p>Information regarding the care given must be recorded in the child's documents which must be clear and accurate.</p>	<p>Record keeping ensuring contemporaneous documentation of actions is essential to provide clear evidence of the care planned, the decisions made, the care delivered and the information shared (NMBI 2015a, Miles 2004). To ensure accurate recording of procedure & advice given.</p>
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