SOP

PLASTER OF PARIS CAST

Department of Surgery
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Standard Operating Procedure (SOP) on Plaster of Paris (POP) cast

Title
Plaster of Paris (POP) cast

Issued By
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(1) Purpose
To ensure safe, effective, and standardized application and removal of Plaster of Paris (POP) casts for immobilization of fractures and soft tissue injuries, while minimizing complications.

(2) Scope
To ensure safe, effective, and standardized application and removal of Plaster of Paris (POP) casts for immobilization of fractures and soft tissue injuries, while minimizing complications.

(3) Responsibilities
(3.1) Consultant / Medical Officers
- Supervise procedure and manage complications.
- Obtain informed consent.

(3.2) Circulating Nurse / Assistant
- Prepare materials and assist with patient positioning
- Communicate with patient & alleviate anxiety

(3.3) Medical Students and Health Care Staff
- Perform the procedure according to this SOP.
- Be vigilant about impending complication, detect early & take necessary precautions

(4) Indications
- Fracture immobilization
- Post-reduction stabilization
- Soft tissue injuries – for comfort
- Post-operative immobilization

(5) Contraindications

- Open fractures with contamination
- Severe limb swelling (relative)
- Compromised circulation
- Impending compartment syndrome
- Known allergy to POP materials

(6) Materials Required

Ensure the following are available before commencing the procedure:

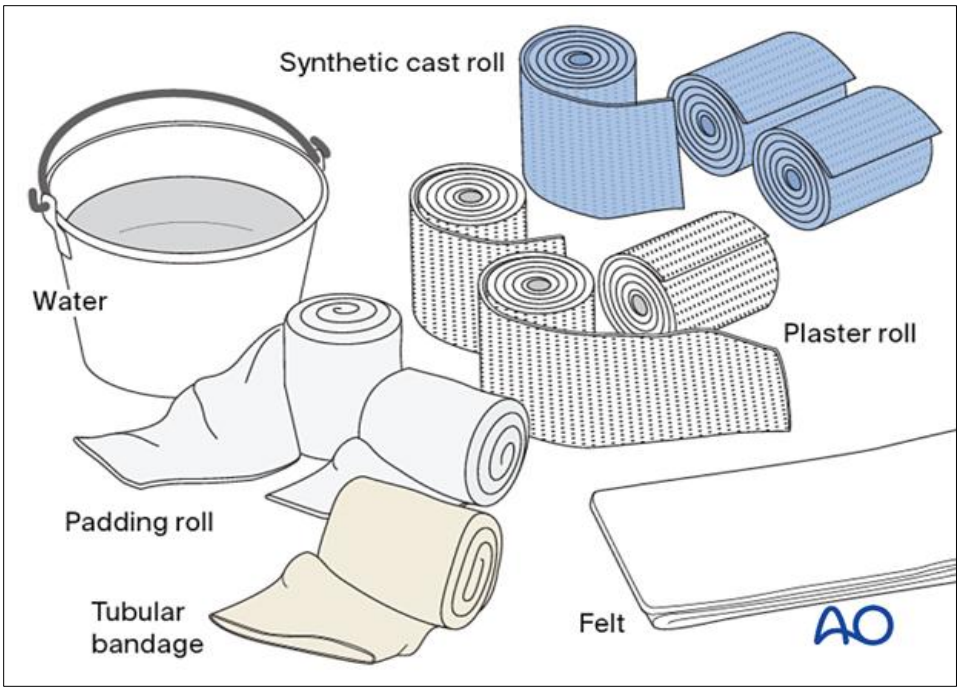
Item	Specification
POP bandages	Various widths: 4, 6, 8 inches
Bowl of clean water	Room temperature
Padding (cotton/soft roll)	Orthopedic cotton wool or soft roll
Gloves and apron	Personal protective equipment
Bandage scissors	For trimming and removal
Plaster saw and spreader	Oscillating plaster saw for removal

(7) Procedure

(7.1) Assemble Equipment

Before starting the procedure, gather all necessary equipment and place it on a tray or trolley:

- Arrange items so they are within easy reach
- Ensure everything is clearly visible
- Keep the workspace clean and organized

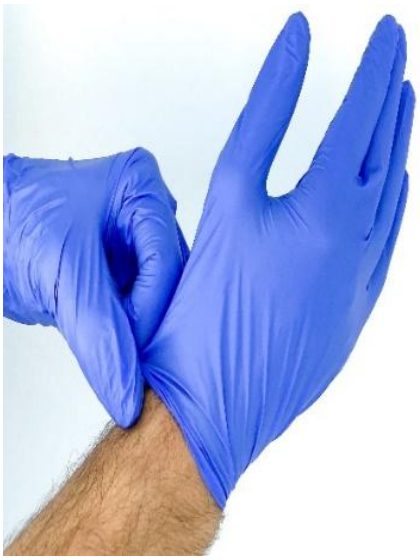


(7.2) Preparation

- Explain the procedure and obtain informed consent from patient or guardian.
- Perform pre-procedure neurovascular assessment: pulse, capillary refill, sensation, and movement.
- Position patient comfortably; ensure assistant support if needed.
- Expose the limb fully and remove all jewellery distal to the site

(7.3) Steps (Application of POP Cast)

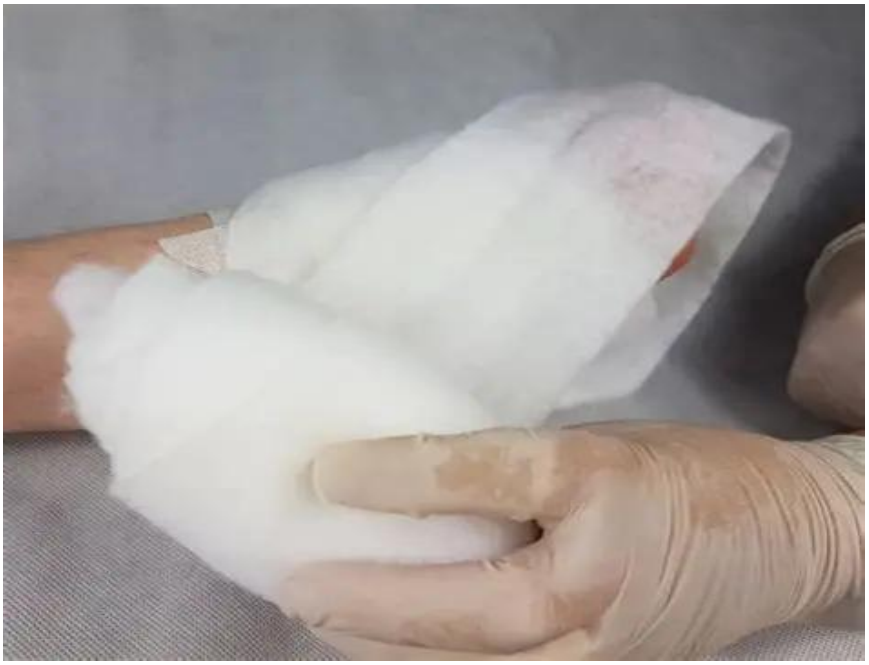
- **Choose the Apron and proper glove size for you.**



- **Apply Padding**

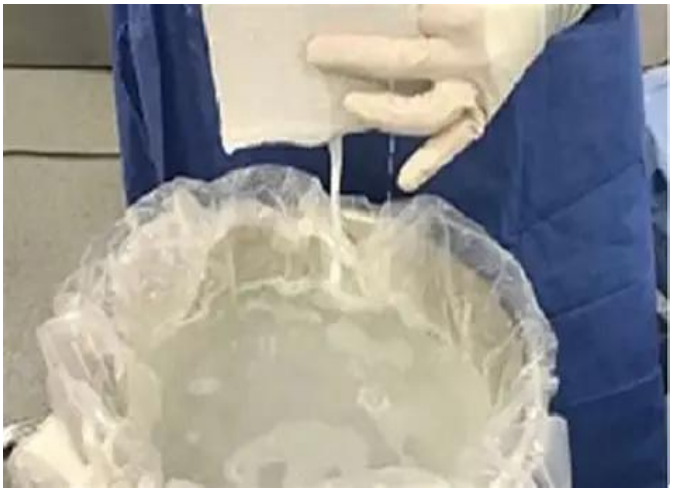
Apply orthopedic cotton padding in overlapping spiral turns (50% overlap).
Apply 2–3 extra layers over bony prominences (malleoli, heel, radial styloid).
Keep padding smooth and even — avoid ridges or folds.
Padding serves to

- Prevent sores
- Increase comfort
- Act as spacer to aid removal



- **Soak POP Bandage**

Fill bowl with clean water at room temperature only (hot water increases exothermic reaction risk).
Submerge POP bandage completely; hold until bubbling ceases (approximately 3–5 seconds).
Remove and gently squeeze — do not wring.

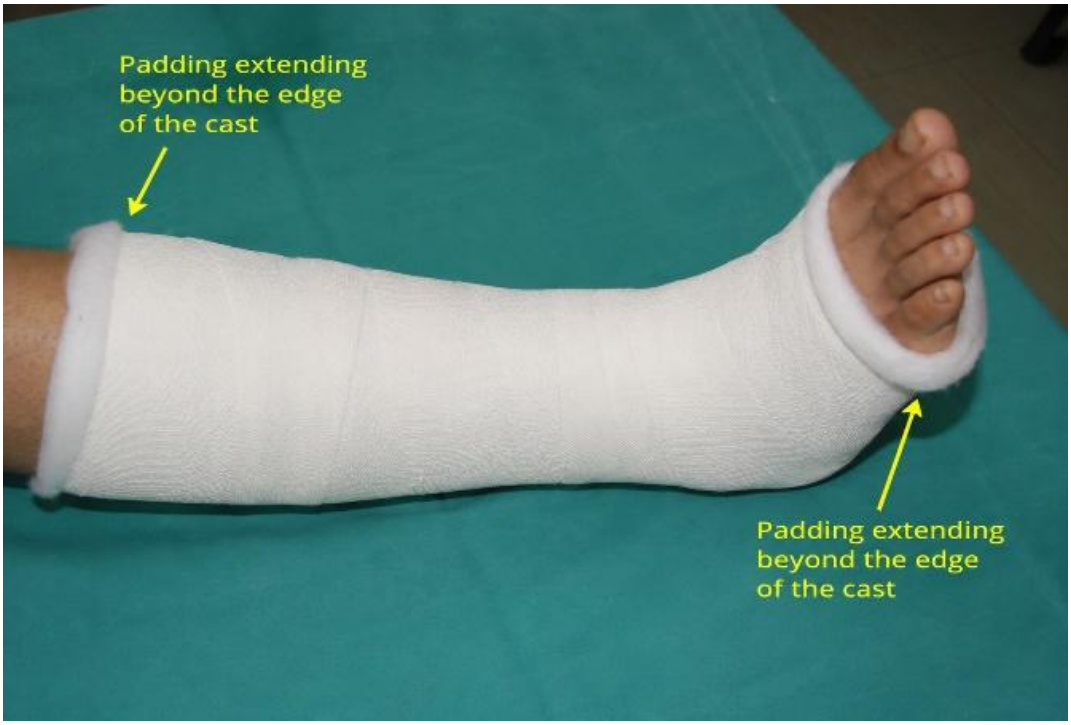


- **Apply the Cast**

Maintain limb in correct anatomical / functional position throughout.
Apply bandage in smooth, overlapping turns (50%) from distal to proximal.
Apply without tension; smooth each layer with the palm of the hand immediately after application.
Apply 4–6 layers for standard strength.

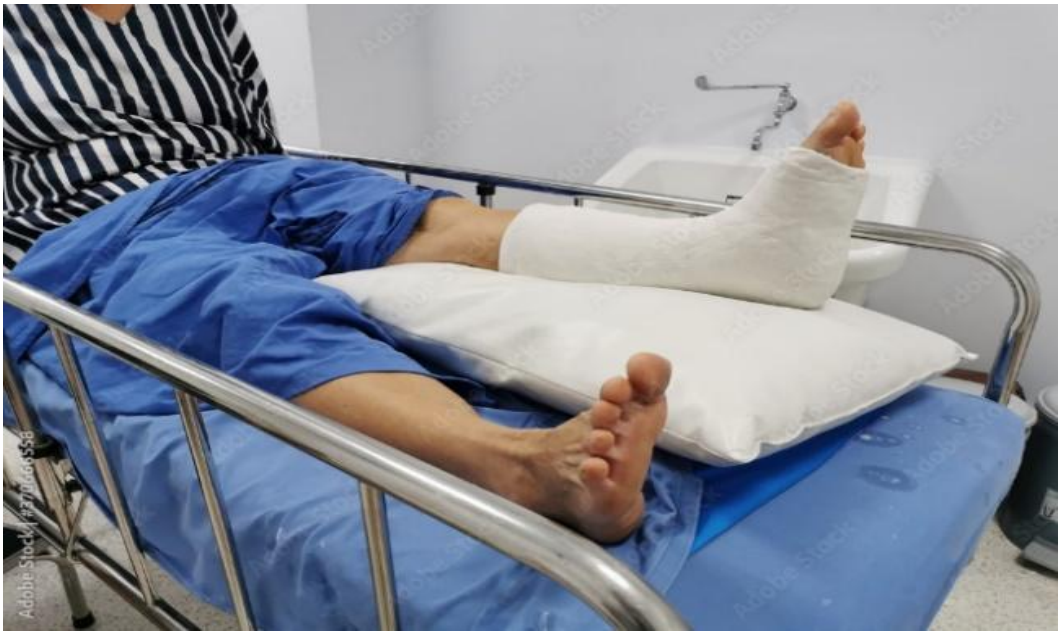
- **Mold the Cast**

While still malleable, mold cast using palms and thenar eminences only -NOT fingertips.
Maintain anatomical position (e.g., 90° ankle, wrist in slight extension).
Ensure that small amount of padding extend beyond the margins of the cast to avoid the skin injury.



- **Allow the Cast to set**

Support cast on a pillow in elevated position until fully set (approximately 15–20 minutes).
Warn patient: cast will feel warm — this is a normal exothermic reaction.
Do NOT cover with blanket or apply weight until fully hardened.
Perform neurovascular check immediately after application and at 30 minutes.



(8) Post-procedure Care

- Elevate limb on a pillow for 24–48 hours post-application.
- Perform and document neurovascular checks: circulation, sensation, and movement.
- Educate patient on cast care: keep dry, do not insert objects, report numbness or severe pain immediately.
- Arrange follow-up imaging and outpatient review as clinically indicated.

Document all findings, procedure details, and patient education provided

(9) Complications

- Compartment syndrome(6Ps) — EMERGENCY: Pain, Pallor, Paresthesia, Paralysis, Pulselessness, Poikilthermia (cold to touch)
- Pressure sores and skin ulceration at bony prominences
- Cast loosening or tightness due to swelling
- Skin maceration, dermatitis, or infection beneath cast
- Thermal injury from exothermic reaction
- Joint stiffness post-immobilization

(10) Documentation

- Type and size of cast applied and limb involved
- Date, time, and name of practitioner
- Pre- and post-procedure neurovascular status
- Any complications encountered and actions taken

- Patient education provided and follow-up instructions given

(11) Steps (Removal of POP Cast)

- **Cutting the cast**

Explain the procedure to patient; reassure regarding noise and vibration of the saw.
Use an oscillating (not rotating) plaster saw. Apply firm downward pressure; move in short up-down strokes — do NOT drag along the cast.
Make two longitudinal cuts: one medial, one lateral (bivalving technique).
Keep fingers clear of blade; have assistant support limb at all times.

- **Remove the Cast and inspect the skin**

Insert cast spreader into cut line and gently open the cast.
Use bandage scissors to cut through padding and stockinette layer.
Carefully remove both halves; support limb at all times.
Inspect skin thoroughly: look for pressure sores, skin breaks, redness, maceration, or infection.
Document all findings; perform neurovascular and joint assessment post-removal.

(11) References

1. Bailey & Love's Short Practice of Surgery. 28th ed. CRC Press; London.
2. World Health Organization (WHO). Patient Safety Guidelines: Safe Surgery Saves Lives. WHO Press; Geneva.
3. American College of Surgeons Committee on Trauma. Advanced Trauma Life Support (ATLS®) Student Course Manual. Latest ed. American College of Surgeons; Chicago.

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