

CASTING

Casting is the procedure whereby a broken bone is immobilized and supported by a cast.

A cast is usually available in two types:

1. Plaster of paris (anhydrous calcium sulphate) which is heavy and takes long time to dry (24-48 hours).
2. synthetic plaster (made of resin) which is lighter and gets easily dried (30 minutes to 1 hour).

Cast should be preferably stored in a dry place at a temperature of 23-25⁰C. It should never be left opened and exposed to the air. It hardens easily when soaked and left dried.

Some common types of plasters applied

1. Short-arm cast e.g, # distal end of radius and ulna and metacarpals.
2. Long-arm cast e.g, # lower third or mid shaft of radius and ulna.
3. Short-leg cast e.g., # malleolous or metatarsal bone.
4. Boot-leg cast e.g, # sprain ankle.
5. Long-leg cast e.g, # lower third or mid-shaft of tibia and fibula
6. Cylinder cast e.g, # patella or trauma to knee joint.
7. Hip spica e.g, # femur in children or dislocation of the hip.
8. Minerva jacket cast e.g, # cervical spine
9. Lumbar jacket cast e.g, # lumbar-sacral spine.

INDICATIONS

1. It is mainly used for the immobilization of fractures.
2. after surgery (e.g.) repair of contractures in plastic surgery.
3. To correct deformities (e.g.) congenital deformities among new borns (club foot or CTEV).
4. For support (e.g.) soft tissue injuries, sprain, nerves and tendon repairs or palsy.
5. To provide pain relief (e.g.) chronic rheumatic arthritis.
6. To aid in the healing of pressure sores (e.g.) dorsum of foot.

Requisites for application of cast

1. Stockinett
2. Orthoban or synthetic padding
3. Plaster or pairs bandages
4. Elbow or knee rest
5. Plastic apron
6. Bowl of warm water
7. Disposable gloves
8. Rubbish bag
9. Plastic covered pillow

Preparation of the patient

1. Read the prescription and check the patient's details.
2. Explain the procedure to the patient and gain consent to proceed.

Patient's assessment

1. What type of injury?
2. Is there any underlying condition which may affect the way the cast is applied? For e.g., Diabetes Mellitus, Rheumatoid arthritis.
3. Skin condition – any wound or dermatological problem?
4. Any bony prominence that needs extra padding.

PROCEDURE

1. Positioning of the patient
2. Padding of prominent areas smoothly and evenly without tension
3. Soak plaster in lukewarm water (20-25⁰C).
4. Leave for 3 – 5 seconds and squeeze gently to remove excess of water.
5. Roll bandage away from the applicator.
6. Roll evenly without tension, covering about one-third of the previous turn.
7. Constant smoothing and moulding is necessary to make the cast one whole and not a succession of layers (use palms).
8. The plaster must be observe regularly for cracking, softening or breakdown.

Advices and care of the plastered limb

Do's and Don't

1. Do exercise of fingers and toes
2. Do elevate limb as much as possible
3. Do not touch or write on the cast until dry
4. Do not get the cast wet
5. Do not poke anything under the cast
6. Do not cut or interfere with the cast

Things to look out for are:

1. Developing severe pain that does not get better when limb is elevated.
2. Swelling of fingers and toes.
3. fingers/toes go blue or white.
4. unable to move fingers/toes.
5. developing numbness or pins and needles in plastered limb.
6. a foreign body becomes stuck under the cast.

Although not a complication, sweating and itching under the cast is common.

OBSERVATION

1. Pallor – change in skin colour of the lower extremity due to compression of blood vessels, swelling and tenseness of limb.
2. Paraesthesia – change in sensation in the lower limb or its extremities. This can be pins and needles or numbness.
3. Paralysis – muscles wasting and weakness or drop wrist or foot, indicating nerve involvement.
4. Pain – persistent and increasing pain even during passive movement may indicate compartment syndrome.
5. Pulse – a weakening or absence of pulse is indicative of a problem in the limb within the cast.

In addition to these, patients may develop pressure sores which is characterized by a burning sensation, local heat, odour, staining through cast and pyrexia.

COMPLICATIONS

Improper and unskillful application of cast may lead to complications. It may cause:

1. Obstruction of blood circulation causing ischaemic changes.
2. Nerve impairment causing palsy, drop wrist or foot and numbness.
3. Compartment syndrome – pain on passive movement, tenseness of skin, change in sensation, swelling of the limb.
4. pressure sores due to uneven padding or tight plaster
5. Stiffness of joints
6. Rarely allergic reaction with plasters.

OUTCOME 4

CAST ADAPTATION

Cast adaptation refers to an alteration that is made on an applied plaster for different reasons. It may be done the following ways:

1. Splitting – to reduce tightness and swelling
2. Fenestration – an opening is made in the plaster for wound inspection or an area where the patient is complaining of increased pain.
3. Wedging – to change the limb position in the cast. Elliptical incision is made either anteriorly or posteriorly on the cast. A wedge is then inserted and plastered in position.
4. Trimming – the edges of the cast is usually trimmed to stop it rubbing against the skin or causing any pressure.

Reference

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