

Wooden board technique for Hip Spica application in children.

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Introduction

Hip spica is a plaster covering the torso and continuing down to the ankle on the affected side and to the knee on the unaffected side or covering bilateral legs to the ankle. It has an opening around the perineal area for toileting. The objective of the hip spica is to immobilise the hip, pelvis and/or femur to correct and maintain hip deformities. Hip spicas can generally be used in children up to 6 years of age. The duration of the cast varies from 3 weeks to 12 weeks depending on the etiology/pathology.

Indications

A spica cast can be used for stabilisation of pelvic or femur fractures, or post reduction/reconstruction for developmental dysplasia of the hip (DDH), to stabilise post operative septic hips.

Technique

The Wooden Board technique utilises a wooden board configuration for hip spica cast application. The wooden board is a rectangular plank of 100x15x2 cm in dimension (Fig. 1) which can be placed on any ordinary operating/consultation table.

The wooden board is placed perpendicular over the operative table

after anaesthesia, the child is placed off table over the edge of the board with the help of the anaesthetist (Fig. 2). The position of Boyle's machine is at the head end of the operating table and is placed diagonal to the position of the anaesthetist which helps them to monitor the patient. The assistant holds the legs with hips in 30° flexion, 30° abduction and 30° external rotation (Fig. 2). The surgeon stands between both the legs of the patient while applying the Spica and one assistant stabilises the wooden board at the head end of the patient. Fig. 3 illustrates the intra-operative positioning of the patient, surgeon and the anaesthetist using the wooden board technique. Stockinet is first placed over the torso and over both the legs. Soft padding is then applied from the rib cage to the ankle just above the medial malleolus of the affected limb. Padding is applied proximal to the unaffected knee to allow free movement at the knee joint. The plaster of Paris (POP) cast is rolled over the torso and then taken across to the affected leg To maintain the position of hips in abduction PVC sticks are kept obliquely (sticks that are available after the utilisation of the POP roll) around the hip joint as reinforcers (Fig. 4). Cast is then applied proximal to the unaffected

knee and is reinforced with the PVC sticks. Additional layer of fiberglass cast is applied over the Spica cast which reinforces the plaster quality and helps to keep the cast light weight. At this point the alignment of the fracture or hip dislocation is confirmed under image intensifier and appropriate moulding of the cast is performed. While removing the wooden board the anaesthetist stabilises the head and neck and one assistant removes the wooden board with gentle side to side movements from the head end of the patient. Adhesive sticking is applied around the plaster edges to prevent cast irritation around the skin. Demonstration video link given at the end.

Plaster care

It is important to educate, counsel and demonstrate the parents about proper plaster care which can help keep the child comfortable and avoid plaster related complications.

The child should be repositioned between supine and prone position 2-4 hourly, during the day and night to avoid pressure sores. Nappies need to be checked every 2 hours during the day and 3-4 hourly overnight. They must be changed as soon as they are soiled or wet to prevent soiling/ wetting the plaster, and to avoid skin breakdown and irritation. Adhesive tape "petaling" around opening of spica cast helps protect the skin from the plaster edges (Fig. 5). Avoid using foreign objects when it itches, one can use a blow dryer. A

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Submitted Date: 24 Jul 2022, Review Date: 03 Aug 2022, Accepted Date: 17 Sep 2022 & Published Date: 10 Dec 2022

© Authors | Journal of Clinical Orthopaedics | Available on www.jcorth.com | DOI:10.13107/jcorth.2022.v07i02.S23

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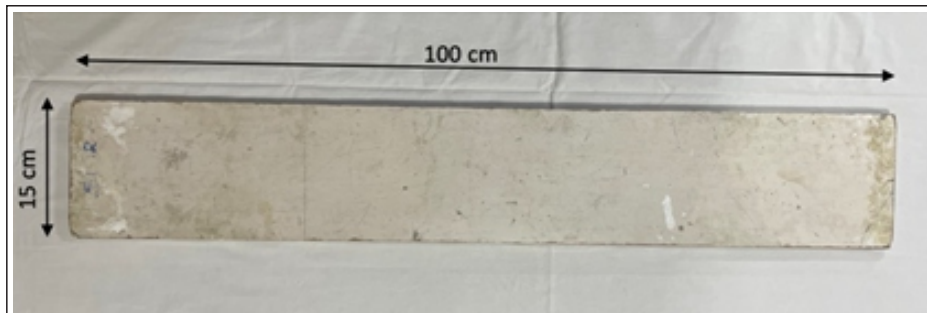


Figure 1: Wooden Board

daily sponge bath of exposed areas with a mild soap is required avoiding any contact with cast or lining. Regular skin assessment for breakdown or pressure areas should be done. The use of lotions and powders under and near the cast and perineal area should be avoided as these can soften and irritate the skin and lead to breakdown.

Complications

Pressure sore can develop on parts of the body where the blood flow is reduced because of prolonged cast pressure. Skin infections, pruritis, compartment syndrome.

Mesenteric artery syndrome/cast syndrome can occur. Though a rare complication secondary to pressure of the cast around the abdomen. It is associated with proximal duodenal obstruction resulting in the external compression of the third portion of the duodenum by the superior mesenteric artery. Signs and symptoms are general

and unpredictable in nature and can include emesis which is frequently bilious, and may contain partially digested food, nausea, early satiety, and abdominal pain.

Conclusion

Wooden board technique is simple, innovative, cost effective and easy reproducible at any centre. This hybrid technique helps to avoid the cast becoming tight after removing the wooden board. There is better moulding ability with the initial POP cast. This technique is cost effective. Utilizing the POP plastic sticks reinforces the cast, makes it easier to carry the patient and maintain good perianal hygiene as there is no need to apply the horizontal plaster bar. This technique has been used successfully at our institution for several hip Spica applications for the past 15 years.



Figure 2: Childs position of the child over the wooden board with the hips in 30/30/30 degree position.



Figure 3: Intra-operative positioning of the patient, surgeon and the anaesthetist using the wooden board technique.



Figure 4: POP sticks used to reinforce the cast.



Figure 5: Tape "petaling" around opening of spica cast

Declaration of patient consent: The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given his consent for his images and other clinical information to be reported in the Journal. The patient understands that his name and initials will not be published, and due efforts will be made to conceal his identity, but anonymity cannot be guaranteed.

Conflict of Interest: NIL; **Source of Support:** NIL

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Conflict of Interest: NIL
Source of Support: NIL

How to Cite this Article

Patwardhan S, Sodhai V, Gundawar C, Patil V. Wooden board technique for Hip Spica application in children. Journal of Clinical Orthopaedics Jul-Dec 2022;7(2):30-32.