

Ponseti Cast Removal: Video Technique

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Learning Point of the Article:

Cast soakage with lukewarm water followed by unwrapping is a simple and cost-effective method of Ponseti cast removal which can be done by parents at home and eliminates all the complications and fears associated with an oscillating saw and avoids the requirement of any motorized equipment for cast removal and thereby improving the family satisfaction toward the treatment.

Abstract

Introduction: Ponseti casting method is the gold standard for the management of congenital talipes equinovarus in neonates, which consists of weekly manipulation and serial casting. Using oscillatory saw for cast removal is user-dependant and has been fraught with complications consisting of saw burns, thermal abrasions, anxiety, and fear of the saw (especially in children). The aim of this article is to describe our technique of cast removal using visual media format.

Technique: This video describes an easy method of cast soakage with lukewarm water. Once the cast is soaked in water, the knob is identified, and the loosened outer layer of the cast is unwrapped in layers. Complete procedure can be done at home by parents. Since no equipment is utilized, the technique eliminates all complications associated with an oscillating saw.

Conclusion: Cast soakage with lukewarm water followed by unwrapping is a simple and cost-effective method of Ponseti cast removal which can be done by parents at home improving the overall satisfaction of the family.

Keywords: Cast removal, clubfoot, congenital talipes equinovarus, saw burns, thermal abrasions.

Introduction

The Ponseti technique describes a method of treating congenital clubfoot in children below the age of 1 with serial plaster cast application with weekly cast changes until the deformities are gradually corrected [1]. The technique has stood the test of time due to its cost-effectiveness, the relative ease, and dependable results in properly selected patients [2]. Since the cast application is done every week, cast removal is an integral part of the process. The cast is usually removed in the hospital before reapplication; a procedure performed by untrained or minimally trained personnel. Improper cast removal can lead to complications, ranging from fear among the child to even severe saw burns or abrasions [3]. This method of soaking the castoff has been described previously by some authors, but the description was inadequate to a great extent

[4]. Hence, a video elucidating this novel and safe technique to do the same was deemed necessary. We use this video at our center to instruct parents on how to remove the cast a night before when the next cast is due.

The Technique (Video 1)

Cast application

After manipulation of the foot, the Ponseti cast is applied using the plaster of Paris (POP). Initially, below knee cast is applied with foot in 45° abduction and 15° ankle dorsiflexion which is converted to above knee cast in 90° of knee flexion. While applying the final layer of the cast, we leave a knob at the end of the cast around the ankle. This knob helps the parents for easy identification during cast removal (Fig. 1).

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Author's Photo Gallery



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Cast removal

The child is placed on a flatbed. A basin filled with lukewarm water of temperature approximately 42°C is placed at the foot end of the child. The cast is soaked in the basin and water is applied on the outer layer of the cast which results in loosening of the wet portion. The knob is identified and the loosened portion of the cast is unwrapped. The leading end is cut using scissors. The process is repeated until the entire cast is completely removed and takes approximately 15–20 min.



Figure 1: The knob (marked by arrow) of plaster of Paris cast intentionally made for easy identification as the starting point during cast removal.

The lower limb is then cleaned using lukewarm water and the next cast is applied.

Discussion

Congenital talipes equinovarus, with an estimated incidence as high as 1/1000 live births [5], forms the major caseload in any pediatric orthopedic department and the Ponseti serial casting method is the simple, cost-effective, and reliable method of treatment and established excellent results [2]. POP casts have been most commonly used for the treatment. The most common complications of improper cast removal using an oscillatory saw include abrasive injuries and thermal burns [6, 7, 8]. Studies have shown that the incidence of such complications may be as high as 0.72% [9]. The use of an oscillating saw, due to the loud nature and unpleasant vibratory sensation, is a traumatizing experience for the children causing anxiety and negative emotional manifestations, thereby reducing the family satisfaction toward the treatment [10, 11]. Moreover, since the procedure is generally performed by either an untrained ward worker or the junior most doctor on the team, they also carry a significant risk of litigation, costing the hospital as much as

£8000 per person [6]. Wong et al. recommended the use of therapeutic play of children undergoing cast removal procedures. Induction of play in children during cast removal effectively reduces the anxiety levels and negative emotional thoughts among children and improves the satisfaction of the family [12].

The method of soaking the cast off has previously been described by Sadruddin et al [4]. However, the description was found to be brief and leaves much to the imagination. Our method, as elucidated in the video, is a simple and cost-effective solution to the current problems surrounding conventional cast removal methods. Another significant advantage is the lack of need for any specialized equipment for cast removal, thereby enabling parents to remove the cast themselves and ensure proper hygiene of the limb before reapplication of the cast. Furthermore, involvement of family in care of the clubfoot improves compliance toward serial casts application and removal and a trained family can also help sensitize parents of other children with clubfoot toward the treatment. No complications have been reported with this technique.

Conclusion

Cast soakage with lukewarm water followed by unwrapping is a simple and cost-effective method of Ponseti cast removal which can be done by parents at home. This method eliminates all the complications associated with an oscillating saw by reducing the anxiety levels and avoids the requirement of any motorized equipment for cast removal and also improves the overall family satisfaction.

Clinical Message

Cast soakage with lukewarm water followed by unwrapping is a simple and cost-effective method of Ponseti cast removal which can be done by parents at home. This method eliminates all the complications associated with an oscillating saw by reducing the anxiety levels and avoids the requirement of any motorized equipment for cast removal and also improves the family satisfaction.

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