Casting Guide: Neutral Position Suspension Casting Technique for Plaster-of-Paris

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Casting preparation: Patient position

1. Position the patient supine on the examination table or chair with the lower leg parallel to the floor or in a slightly declined position. This makes it easier to create a forefoot dorsiflexion force to assist in pronating the MTJ during casting.

2. Position long axis of foot parallel to patient’s sagittal plane (i.e. vertical). Position leg so that the foot can be held vertical when the STJ is in the neutral position. If the leg is externally rotated, this has a tendency to induce supination of the STJ and MTJ during casting. Have the patient shift their hips and internally rotate the patient’s leg to reduce the abducted position of the leg and foot. Adjust leg position until the foot can be easily held in the neutral position while the foot is held vertically. Be sure to reposition the patient when casting the opposite foot.

Casting Process: Plaster Splint Application and Foot Positioning

Recommended material: Two 5X30 (folded to 5X15) extra fast set plaster splints.

1. Saturate first splint and ring out excess water. Place a ½ inch fold along the superior edge of splint. The fold makes for a sturdier cast.

2. Place splint over posterior heel and bring anteriorly just below the medial and lateral malleolus. Tack splint to dorsomedial and dorsolateral aspect of foot.

3. Tack the medial and lateral portions of the loose splint to the plantar surface of the foot.

4. Work the remaining plaster splint towards the posterior surface of the heel and gently rub the plaster into the cloth mesh.
5. Saturate second splint and ring out excess water. Tack splint to medial side of foot, drape loosely over toes and tack other end to lateral side of foot.

6. Tack medial and lateral aspects of splint to plantar surface of foot as shown and gently smooth the entire cast making sure to remove any trapped air.

7. Fold splints along superior edge of cast where forefoot and rearfoot splints overlap to lock splints together.

8. Grasp foot in sulcus sub 4th and 5th. Lift foot vertically to elongate foot but do not lift distal aspect of leg off leg rest. Slightly supinate and pronate the foot and locate the STJ neutral position.

9. With the STJ in neutral, abduct, dorsiflex and evert the forefoot to pronate the MTJ making sure not to pronate the STJ in the process. Use a salute like grip. Smooth cast with opposite hand. Hold for several minutes until cast is firm then release foot and allow cast to set for a few more minutes.

Casting Process: Cast Removal and Quality Control

1. Squeeze tissue on dorsum of foot to break surface tension.

2. Pull cast off of heel, then lift and slide off of toes.

3. Compare cast to foot. Check forefoot to rearfoot relationship and overall quality of cast.

Tips:
1. Proper patient positioning helps facilitate proper STJ and MTJ positioning.
2. Insufficient forefoot abduction, dorsiflexion and eversion force can result in MTJ supination while excessive force can result in STJ pronation. Use ounces, not pounds of force to pronate the MTJ.