

### Original Questions:

Our Hospital PT program is interested in learning if other hospitals are providing any posting to the heel of their LE serial casts when there are significant PF contractures.

1. For settings that provide serial casting, do you utilize any sort of wedge or posting?
  - a. If so, what products do you use?
2. Do you have criteria for when you utilize a wedge?
  - a. Is there a certain degree of contracture?
  - b. Is pain ever a consideration?
3. Are there any negative impacts of using a wedge with casting?

### ORG A (Outpatient Clinic):

1. Wedging or posting? Materials used: I use wedges to accommodate for tightness. I use various thicknesses of dense foam to customize a wedge. I will use a combination of plaster and wedges as well. I take care of tightness first in the transverse and frontal planes before addressing tightness in the sagittal planes. If the wedge needed is 3" or greater, I don't wedge.
2. If the contracture is around 30-35 plus degrees, I don't wedge. I take care of tightness in the frontal and transverse planes first before addressing sagittal plane tightness. If I attempt to complete all three at one, sores/pressure areas are going to crop up in relative sites of flexibility. Casting should be pain free because tightness is being accommodated. If pain is present, it will cause an uptick in spasticity. I have the parent remove the cast as soon as possible. I make sure to educate the parent and pt on the difference between discomfort and pain. Having the casts on will be uncomfortable due to bulkiness, heaviness, and pressure/confinement.
3. You want to accommodate the tightness of the calf muscle groups. You want to bring the floor up to meet the heel. You want the child to bear weight through the heel for good sensory feedback. Hopefully, this will cause a change in COG position. There is nothing negative about a wedge. Wedges are our friend.

### ORG B:

1. **For settings that provide serial casting, do you utilize any sort of wedge or posting?** Yes we use the casting material to make ribbons and make a heel. We use this regardless to reinforce the cast at that weak point. We also can use a wedge out of Styrofoam surrounded by casting ribbons for reinforcement for when the contracture is like 30-40 deg. You also have to extend the foot plate when making a heel wedge due to physics. If they are weight bearing they need some sort of wedge to get their weight shift forward and get some degrees of inclination or better tibial translation within the cast. You shouldn't cast for a straight knee but cast to get some knee flexion when in standing.
  - a. If so, what products do you use?
2. **Do you have criteria for when you utilize a wedge?** We try to bring them to neutral and bring them closer to a typical gait pattern. If non ambulatory you are making the wedge for positioning with w/c footplates or in their stander.
  - a. **Is there a certain degree of contracture?**
  - b. **Is pain ever a consideration?** Yes, you might have to go either way with the wedge Depending on what the pain is from.
3. **Are there any negative impacts of using a wedge with casting?** Could make the cast too heavy for the child. Or if they are made incorrectly they can cause the kid to pronate or supinate when the foot strikes the ground.

**ORG C:**

1. **For settings that provide serial casting, do you utilize any sort of wedge or posting?** yes, but not attached to the cast
  1. **If so, what products do you use?** we use dense foam, cut to size, and provided by an orthotist partner. Foam wedges vary in size from 1/4" to 1.5". We "stack" wedges if we need something taller than 1.5". The wedges are placed in cast boots and held in place with Velcro.
  2. **Do you have criteria for when you utilize a wedge?** we base the wedge size on plantar flexion angle and ability of the pt to control their knee. The majority of the kids can stop using wedges when they reach neutral, however, some kids still need wedging into dorsiflexion range because of knee control.
    1. **Is there a certain degree of contracture?** We wedge all kids who will bear weight while in casting and can't control their knee
    2. **Is pain ever a consideration?** yes but this is rarely to case
3. **Are there any negative impacts of using a wedge with casting?** we moved to placing wedges in the cast boot and not adhering to or wrapping in the cast material due to fabrication challenges and too many remakes.

**ORG D:**

Background on our serial casting approach: We currently use semi rigid casts that are reinforced with fiberglass stays to increase rigidity. We use Delta Cast Soft as the semi rigid casting tape. We started using this method in December 2023. Prior to Dec 2023, we had been using hard fiberglass as our primary cast application. We no longer use the fiberglass only approach.

1. **For settings that provide serial casting, do you utilize any sort of wedge or posting?** Yes, we consistently wedge/post our casts. We have done this for both fiberglass and soft cast approach. We have posted for many, many years (10-15 years would be my estimate).
  - a. **If so, what products do you use?** We use Foam from AliMed-the Firm option. This foam is dense enough for weightbearing. We used to use a less dense foam, but it tends to be more compressive.

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- b. 2970001778
2. Do you have criteria for when you utilize a wedge?
  - a. **Is there a certain degree of contracture?** We use wedges depending on what angle the cast is able to be placed at. We cast wedges into the cast if a patient has less than 0 degrees ankle dorsiflexion angle when casted. We also consider the shank to vertical angle in our decision for how many degrees to post, and may add heel lifts in cast boots to get the desired shank angle if needed. We post 100% of our patients.
  - b. **Is pain ever a consideration?** I am not completely clear on this question. Our patients do not tend to complain of pain in their casts at all.

3. **Are there any negative impacts of using a wedge with casting?** Not in our experience. Using a wedge with casting is best practice at ORG D. We find that using a wedge protects the midfoot joint (prevents midfoot break), allows patients to get heel contact and eccentrically lengthen their gastroc, and prevents knee joint hyperextension (and maintains a level of stretch on the gastroc vs. avoiding the stretch with knee hyperextension). We gain ankle ROM each week even though we are casting in plantarflexion and posting using wedges. Each week, we see a reduction in the amount of wedging we have to use as the patient gains ankle DF ROM.

## **ORG E:**

### **Clarifying Language:**

When we "post" we're referring to adding material at the plantar aspect of the heel of the cast after a few layers of cast tape have been applied and before the final layer of cast tape has been applied (sagittal plane intervention). I did not ask my colleagues about any medial or lateral posting to correct frontal plane issues since I'm pretty sure most of us don't do that for our casting patients. We typically refer to a "wedge" as something that we're adding after the casting process is complete, and often after we've assessed gait.

1. **For settings that provide serial casting, do you utilize any sort of wedge or posting? - yes, roughly 80% of the time**
  - a. **If so, what products do you use?**
    - i. Posting materials in order of frequency:
      1. **most often 1/8" aquaplast laid in layers**
      2. empty cast roll (the plastic left over from a roll of cast tape)
      3. extra layers of casting fiberglass
      4. webril
    - ii. Wedge material outside the cast in order of frequency (marginally different):
      1. Cloud Crepe
      2. Compressed roll of webril (most often with tape wrapped around)
      3. Aquaplast
      4. Cardboard
    - iii. \* The wedge is frequently secured via velcro or tape
2. **Do you have criteria for when you utilize a wedge?**
  - a. **Is there a certain degree of contracture?** - Yes (no one reported that it's "never" a consideration)
    - i. 50% of respondents are primarily focused on ROM (they will utilize wedge/posting if the dorsiflexion PROM with knee flexed is <0 degrees)
    - ii. the other half are more focused on function and posture (heel contact with the ground, preventing genu recurvatum, etc).
  - b. **Is pain ever a consideration?** - resounding yes (no one reported that it's "never" a consideration)

- c. I would also say that we're generally not posting/wedging patients who are non-ambulatory, assuming that if a patient is currently, or working towards, using a stander, the stander would be able to accommodate a plantarflexed position within reason.
3. Are there any negative impacts of using a wedge with casting? - rarely

**ORG F:**

1. For settings that provide serial casting, do you utilize any sort of wedge or posting?
  1. If so, what products do you use? Yes we use pink foam board insulation (Like the kind you put in bathroom walls) we cut and wedge it with an electric knife
2. Do you have criteria for when you utilize a wedge? We always wedge to bring the floor up to the heel to allow the child to have heel contact in standing and walking. To do this we have the child in prone with a piece of plexiglass on their foot and then use an angle finder to see how much of a wedge is needed to obtain a neutral or 2-3 degree dorsiflexion position. We then cut wedge material to fill the gap to make the foot in neutral.
  1. Is there a certain degree of contracture? Anything less than neutral
  2. Is pain ever a consideration? We cast in sub maximal, so the cast should not be causing pain.
3. Are there any negative impacts of using a wedge with casting? No this helps with obtaining heel contact

**ORG G:**

- 1) For settings that provide serial casting, do you utilize any sort of wedge or posting? yes
  - a. If so, what products do you use? We do our serial casts using gypsona plaster with soft cast over the top, so often our wedges are just created from the gypsona before the soft cast is applied, but we will occasionally use an adjustalift instead
- 2) Do you have criteria for when you utilize a wedge? If the patient is unable to be casted in at least neutral we always wedge to bring the ground to the heel
  - a. Is there a certain degree of contracture? Casted in less than 0 degrees of dorsiflexion, so R2 dorsiflexion with knee extended of <+2 to +3 degrees
  - b. Is pain ever a consideration? yes
- 3) Are there any negative impacts of using a wedge with casting? Not of the wedging directly, but if you are using the wedging to try to accommodate too great of an ankle contracture there are negative impacts including increased risk of slipping inside the cast.

**ORG H:**

1. For settings that provide serial casting, do you utilize any sort of wedge or posting? Yes, we do both.
  - a. If so, what products do you use? We use styrofoam for the wedges and cellona for posts
2. Do you have criteria for when you utilize a wedge?
  - a. Is there a certain degree of contracture? Basically anything below ~5 deg of passive dorsiflexion and we will wedge.
  - b. Is pain ever a consideration? Pain is always a consideration, though we've found the wedge and posts generally decrease pain.

3. **Are there any negative impacts of using a wedge with casting?** Initially there is a risk for increased falls as kids learn TKE. Some of the kids may try to hyperext their knees as well.