



ORIGINAL RESEARCH PAPER

Medical Science

MODIFIED PVC FOOT DROP STOP SPLINT

KEY WORDS: PVC (Polyvinyl chloride), Ankle Joint, Splint, Foot Drop, Function.

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ABSTRACT

INTRODUCTION

The foot has two function of great significance. Firstly it supports and then propulsion. The role of ankle joints like that of other real joints in bringing down limit is to take an interest in kinematic function and load bearing. Every lower leg joint backs roughly one portion of the body weight. These functions of the foot are disturbed due to various causes. Most common cause of foot drop are :- Lateral popliteal nerve palsy, sciatic nerve palsy, spondylolisthesis, facet arthropathy or tumours, compression in vertebral canal by disc, tumour, tuberculosis, paraplegia, hemiplegia and pathological ankle joint may give rise to foot drop.

Wooden foot drop stop splint is utilized in Medical colleges, predominantly because of its low cost. Aluminium foot drop stop splint and plastic moulded ankle foot orthosis is utilized once in a while because of its high cost, inaccessibility of moulding facilities and heavy moulding procedure. However one can simply work and enhance the splint design. Such an endeavour was made by us by designing modified P.V.C foot drop stop splint.

MATERIAL AND METHODS

Recently designed and developed constructed foot drop stop splint was utilized to keep up the foot in typical anatomical arrangement, safeguard the function and encourage ambulation for the patient having foot drop because of different above said conditions.

A) DEVELOPMENT OF THE SPLINT MATERIAL REQUIRED

- 1) PVC 2mm in thickness (Plastic utilized for neckline).
 - 2) 2.5 inch wide Nawar tape.
 - 3) 2.5 inch wide versatile.
 - 4) Velcro.
 - 5) A bit of Dunlop elastic.
 - 6) 2 ½ inch thick wooden piece (roughly 12 inch length).
 - 7) Bolts and nails.
- B) ESTIMATIONS

To make the paper design

- 1) Foot piece length from great toe to heel.
- 2) Inhale correct expansiveness at the toe level and heel level.
- 3) Calf piece length from the heel to 3/4th of the calf.
- 4) Inhale heel level same as foot pieces.
- 5) Calf level correct broadness at calf.

C) ESTIMATION AND MATERIAL USE FOR THE STRAPS

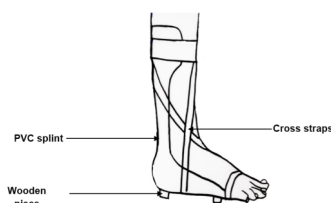
STRAPS

- Made from versatile, holds the foot in the proximal bit of the curve, genuine circumference +2inch
- Straps to hold the calf set up real size +3 1/2 inch
- Cross strap-strap – bolted to the foot piece at the toe level, measured from calf around the toes and to the calf once more.

Velcro is stitched to the strap in normal conduct

Cross strap: both closures have male part to fasten of cross strap, female bit of Velcro is stitched over the width of the calf piece at upper end, on rear of the plastic. Cut the support according to the paper design. Document the edges and pass the straps in particular openings. Fix the wood pieces with the nails. The support is prepared for the utilization.

More extreme time required to set up the splint ideal from taking the estimation is 2 ½ hour. The cost of splint is Rs 70 - 80 relying available estimation of the material.



MODIFIED PVC FOOT DROP STOP SPLINT

OBSERVATIONS

The modified foot drop splint support has enhanced restorative appearance when contrasted with wooden foot drop stop splint. The straightforwardness in donning was experienced and detailed by relatives and in addition patients. The shape of the foot piece and the flexible strap made it helpful for either sides saving patients cash and Specialist's endeavors.

As said before the splint was effective used to keep up the foot in ordinary arrangement and in this way safeguarding its capacity while understanding was bound to bed.

It was seen by us and experienced by patients that because of smoothness of material and fitting arrangement of the straps the calf and the foot are held in position extremely well.

The cross strap is situated such that it turns into the resultant force of the two powers (gravitational force on the foot and the over activity of plantar flexors) subsequently, ends up plainly successful in controlling the foot drop. The wooden piece keep the foot of the bed avoiding heel sore and counteracts turn at the hip.

The splint was utilized as a part of the mobile stage for a some of the foot drop patients. The fundamental PVC material and the cross strap are the two critical variables which includes mobile stage. The splinting material has a level of adaptability; in this way splint does not break even after weight-bearing. Cross strap and adaptability of the PVC material encourage normal component of gait. Presently let us break down how our splint helps in encouraging normal gait components.

DISCUSSION

At 0% of gait cycle ordinary heel strikes the ground yet in the event that there is foot drop heel stay off the ground because of plantar flexions. This trouble is overwhelmed by the cross strap. At 15 %, regularly there is a foot flat, patients with foot drop bear weight just on forefoot or are not ready to appropriate weight, but rather with the assistance of our splint the ankle stays stable and at 90 degree so that foot flat occasion is conceivable. At 30%, heel off is the ordinary occasion which is effortlessly proficient because of adaptable material. Ordinarily at 60%, toes off and start of swing stage begins. Hemiplegic patients encounter twisting of toes and injury to the toes amid this occasion. Adaptability and support of the toes keeps this twisting and injuries.

At mid swing foot dorsiflexion is kept up with the assistance of cross strap in this way maintaining a strategic distance from high stepage gait. We have still not worn out this splint on the extremely spastic foot; however we feel that with minor changes this will be helpful even to such patients.

Development of the splint is not extremely strenuous. So also it doesn't require any instruments. The straightforwardness in manufacture makes it worthwhile for small clinic and nursing homes where there are just a single or two specialists and orthotics for the general treatment strategies.

CONCLUSION

We can gladly say that our modified PVC foot drop stop splint is more adequate, advantageous, and minimal effort. It has enhanced restorative appearance and great development to keep up the typical anatomical alignment, safeguard the capacity and help in ambulation. It is exceptionally helpful for Medical Colleges, general hospital and primary health centers.

REFERENCES

- 1) Braces and Splints for musculoskeletal conditions American Family Physician. 2010-02-09
- 2) Kolata, Gina (17 January 2011). "Close Look at Orthotics Raises a Welter of Doubts". New York Times. Retrieved 2011-01-18. "Foot Orthotics"
- 3) . Www.thefootandlegclinic.co.uk. Retrieved 24 March 2016.
- 4) Whiteside, S., et al. Practice analysis of certified practitioners in the disciplines of orthotics and prosthetics. 2007, American Board for Certification in Orthotics and Prosthetics, Inc., Alexandria, Virginia.
- 5) Biomechanics of human motion Marian Willians- Herbert Lissner-W.B.Sounder.Co.
- 6) Randell L.Braddom of Physical Medicine & Rehabilitation. —www.abcop.org Certification Orthotist & Prosthetist
- 7) www.abcop.org – Certification – Orthotist & Prosthetist.