

Short Paper

A universal operating hand splint

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DESIGN OF THE EQUIPMENT

The device (Figures 1 & 2) is made from any autoclavable metal or material. It consists of four metal plates, one each to support the forearm, palm and fingers, and one basal plate to support the above three. They are connected by joints which can be locked at a given vertical angle. A supporting rod gives extra support to the splint. There are multiple holes in the plates for passing fasteners to fix the forearm palm and fingers.

METHOD OF USE

The splint is placed on the hand table. The vertical angles of the joints of the splints are decided according to the need for the surgery and then the joints are locked. The arm of the patient rests on the hand table.

The forearm, hand and fingers are placed on the respective plates of the splints and fastened in place (Figure 3). The horizontal angle of the wrist and

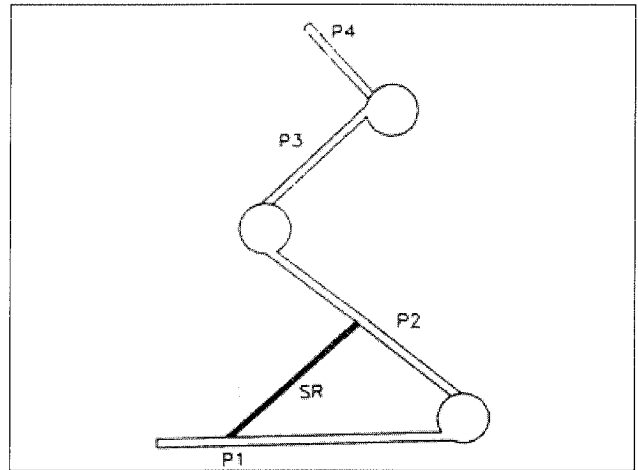


Figure 2: The assembled splint (Drawing of the side view. P1 - 4 are the plates and SR is the side rod)

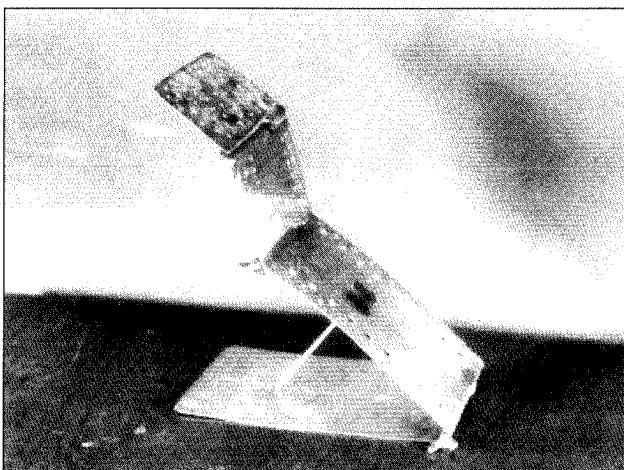


Figure 1: The assembled splint (tangential view)

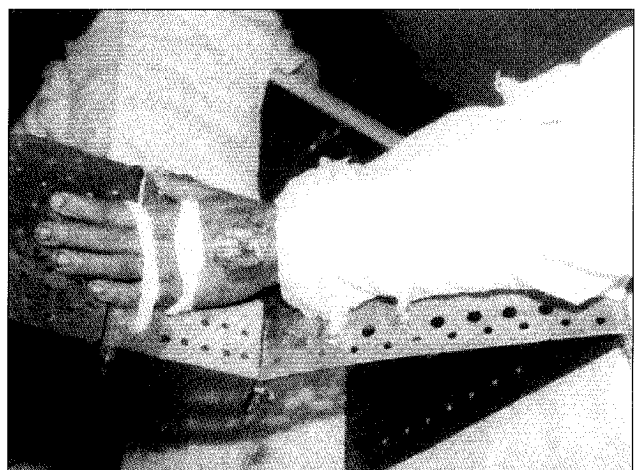


Figure 3: Splint being used in a case of extensor tendon injury

metacarpophalangeal joints can be varied by pulling the fasteners in different directions. Retraction of the wound margins can be done by sutures, which are then passed through the holes in the plates and fixed underneath them by artery forceps.

The splint has been used in twenty two patients which includes burns contractures, congenital syndactyly, volkman's ischaemic contracture, extensor tendon injury, flexion tendon injury and claw hand.

DISCUSSION

At present, most of the operating hand splints available are rigid ones, on which the angles of the joints of the hand can be varied only horizontally. The lead hand splint holds the finger joints in different vertical angles, but, being malleable, it cannot offer rigid and firm fixation. Retraction of wound is possible in Tupper's universal hand holder and retractor, but vertical angles of joints of hand cannot be varied on it.

A rigid splint with fixed angles' has been used for correction of claw hand, but it's use is limited to that condition only.

The present splint has facilities for variation of both horizontal and vertical angles of the wrist and metacarpophalangeal joints and vertical angle of elbow joint.

It provides a combination of advantages

1. A single splint can be used for variety of hand operations by just varying the angles of the joints between the plates.
2. This device eliminates / minimizes the use of an assistant to support the joints of the forearm and hand in different vertical angles during surgery. This eliminates the effects of shaking of and crowding of the operation field by the assistant's hands and accidental injury to them.
3. Elevation by this device, of forearm and hand during surgery and also after the release of tourniquet, will minimize bleeding which offers double benefit of saving the patient's blood and offering a clear view of the operating field to the surgeon.
4. Hands with stiff joints can be easily fixed on this splint by varying it's angles.

CONCLUSION

The present splint provides a combination of elevation, vertical and horizontal variation of joints of hand and facilities for self retraction. This is suitable for all cases of hand surgery.

REFERENCES

1. Fritschi EP. Surgical reconstruction and rehabilitation in leprosy, 2nd edn. New Delhi: Director for Southern Asia, The leprosy mission. 1984. pp. 49-75