

INTRODUCTION

- Deep burn injuries of the dorsal hand can result in substantial loss of mobility and functionality. Therapists fabricate thermoplastic intrinsic plus hand orthoses to protect structures, preserve soft tissue elongation and function, prevent contractures and deformity.
- Splinting goals change with stages of healing. As the patient is progressing with hand ROM and increasing functional use, orthosis design should be progressed as well.
- In these times of limited resources and supply chain restrictions, consideration for materials and supplies is a fiscal responsibility. The idea of upcycling the original orthosis for the next splinting goal provides cost and resource savings.



APPLICATION TO PRACTICE

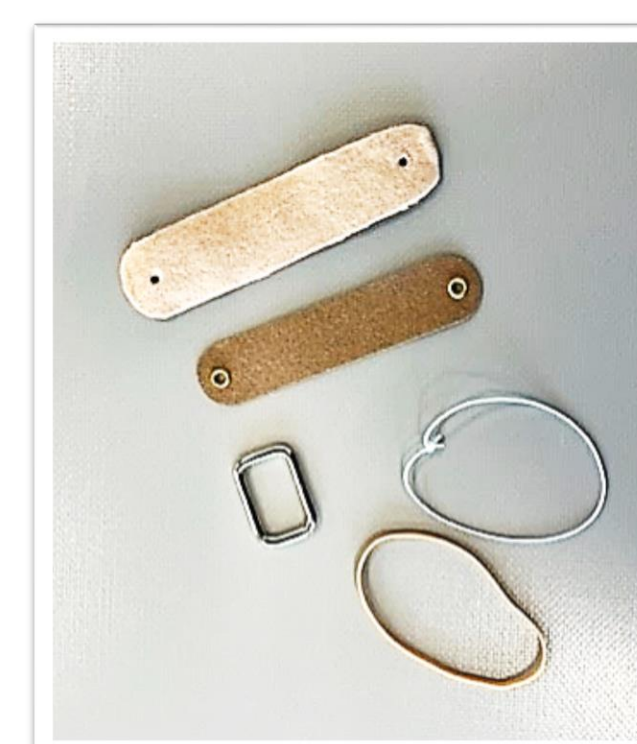
- Patients with limited resources will benefit from minor modification of previously used orthosis instead of fabrication of entirely new orthosis (with added cost and use of thermoplastic materials).
- This orthosis design uses conveniently available splinting/office supplies without the need for specialized, costly materials.

METHODS

- Creativity and innovation come into play for upcycling the patient's initial intrinsic plus hand orthosis and transforming it into a wrist extension orthosis with static progressive components to further facilitate soft tissue elongation and joint movement.
- The intrinsic plus orthosis is transformed into a wrist extension orthosis by the following process:
 - ✓ Trim the hand piece and roll back the trimmed edge to better conform to the distal palmar crease and preserve the arch
 - ✓ Create a thumb hole

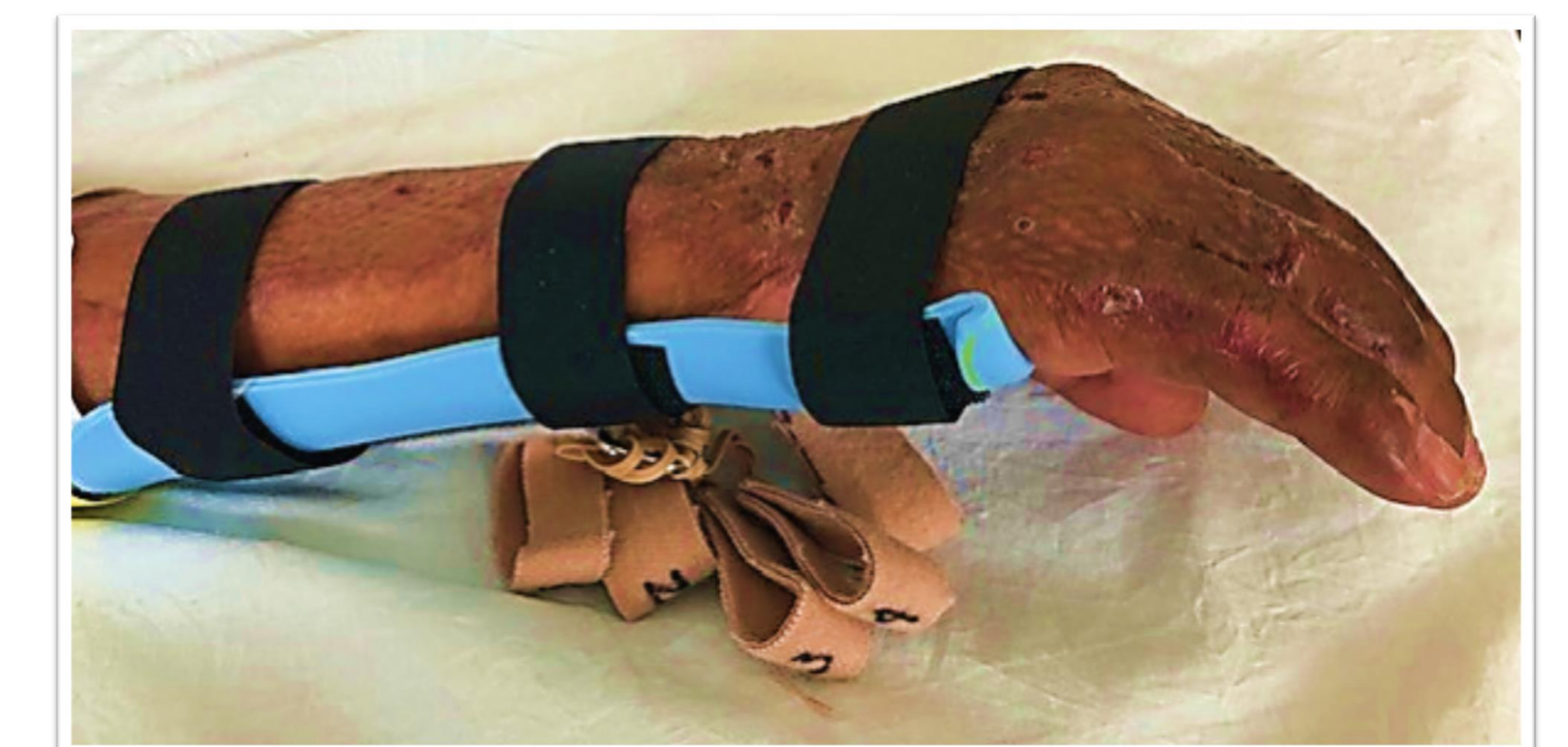


- Static progressive component:
 - ✓ Finger loops fabricated from folded moleskin or use of pre-made suede loops
 - ✓ Elastic thread or rubber bands used for resistive component
 - ✓ Loops are suspended via the elastic component to a D-ring with loop Velcro
 - ✓ D-ring attached to hook Velcro on orthosis and lengths of elastic bands adjusted for gentle, low load pull
 - ✓ Thermoplastic "blockers" added to achieve desired angle of pull



RESULTS

- The upcycled orthosis can be used to promote digit flexion at **both** MCP (metacarpal phalangeal) or IP (interphalangeal) joints with strategic placement of the finger loops on the digits.
- The orthosis is easily adjustable and can be used with or without the finger loops, to provide wrist extension for functional use of digits, or for soft tissue elongation and strengthening with resistance provided by elastic component.



CONCLUSION

The upcycled orthosis offers progressive soft tissue elongation, gentle resistive digit strengthening, flexibility of use and cost as well as resource savings for sustainability.