

Letter to Editor

Modifications of traditional pressure gloves for improved performance in scar flexion contracture prevention and fingertip circulation inspection

Dear editor,

Scar hyperplasia and contracture may occur both during the spontaneous healing process of burn injuries and after surgical correction of burn-injury-related hand dysfunction or deformity such as ulnar claw.^[1] Pressure gloves, capable of suppressing local scar hypertrophy and preventing scar contracture formation through scar tissue stretching, are commonly used during the rehabilitation phase in burn patients.^[2] Nevertheless, traditional or conventional pressure gloves have significant drawbacks.

First, traditional gloves are finger closed that cannot adequately keep fingers straight when patients are sleeping or lying in bed. They are also associated with low patient compliance and difficulties being applied to the areas of anatomical flexures because of high-frequency movement. Splints that are designed to stretch tissue scars, prevent scar contractures, and correct the underlying problems may compensate for the inability of traditional pressure gloves to hold fingers in straight positions.^[3] However, it is difficult and complicated to fix splints on gloves. To overcome this technical challenge, we attempted to perform a customised modification of the traditional pressure gloves. More specifically, a pocket is generated by sewing a piece of cloth outside the injured finger, allowing for one piece of thermoplastic splints to be inserted in a sandwich manner or two pieces of thermoplastic, one on the top and the other at the bottom of the finger [Figure 1]. This modification enables the use of pressure gloves and splints in combination, which not only has better patient compliance but also allows for adjustments at will to meet the need of movements of the finger with scars.

Another drawback of the conventional finger-closed gloves is the inconvenience in checking up and evaluating the circulation in the distal end of the finger (i.e., the fingertip).^[4]

To overcome this inconvenience, we made another modification of the traditional pressure gloves by cutting the distal end of each finger open, thereby allowing for easier inspection of the circulation in the fingertip by doctors [Figure 2].



Figure 1: Materials used for an improved pressure glove.



Figure 2: The pressure glove with an additional pocket inserted by a shaped thermoplastic splint and an open window at the distal end of each finger.

Access this article online

Quick Response Code:



Website: www.burnstrauma.com

DOI:
10.4103/2321-3868.134083

References

1. Kaplan FT. The stiff finger. *Hand Clin* 2010;26:191-204.
2. Bloemen MC, van der Veer WM, Ulrich MM, van Zuijlen PP, Niessen FB, Middelkoop E. Prevention and curative management of hypertrophic scar formation. *Burns* 2009;35:463-75.
3. Schouten HJ, Nieuwenhuis MK, van Zuijlen PP. A review on static splinting therapy to prevent burn scar contracture: Do clinical and experimental data warrant its clinical application? *Burns* 2012;38:19-25.
4. O'Brien KA, Weinstock-Zlotnick G, Hunter H, Yurt RW. Comparison of positive pressure gloves on hand function in adults with burns. *J Burn Care Res* 2006;27:339-44.

**Hongliang Zhao^{1,2}, Yan Chen³,
Cuiping Zhang⁴, Xiaobing Fu⁴**

¹General Hospital of People's Liberation Army, Beijing,
²The First Hospital of Shijiazhuang, Shijiazhuang, Hebei,

³Department of Pharmacy, General Hospital of Beijing Military Region, Dongcheng, Beijing, ⁴Wound Repair and Tissue Regeneration Laboratory, The First Affiliated Hospital, General Hospital of PLA, Beijing, China

Corresponding author: Cuiping Zhang,
Wound Repair and Tissue Regeneration Laboratory,
The First Affiliated Hospital, General Hospital of PLA,
51 Fu Cheng Road, Beijing 100048, China.
E-mail: zcp66666@sina.cn

Received: 23-12-13, **Revised:** 18-02-14, **Accepted:** 27-04-14

How to cite this article: Zhao H, Chen Y, Zhang C, Fu X. Modifications of traditional pressure gloves for improved performance in scar flexion contracture prevention and fingertip circulation inspection. *Burn Trauma* 2014;2:146-7.

Source of Support: Supported in part by the National Nature Science Foundation of China (81121004, 81230041, 81171798) and the National Basic Science and Development Programme (973 Programme, 2012CB518105). **Conflict of Interest:** None declared.

