Chapter 33

Rehabilitation of the Burn Patient

Gay Lynn McCrady, OTR

Burns occur in devastating numbers here in Nigeria. Many people are left with thick, ugly scars and spend the rest of their lives trying to hide their skin from staring eyes. After working in Nigeria for several years, I realized that the treatment of the burn patient is usually finished as soon as the wound heals. But wound healing is only the first part of the overall healing of the burn patient. Rehabilitation of the patient for the prevention of contractures and scarring is the second half of the healing process.

Walking through the market I would see several people with scars from burns. I would see patients in the hospital and many of them would have thick raised scars from burns they had sustained in the past. I was saddened because I knew these scars could have been prevented with the right treatment. Seeing these patients scarred and disfigured was an inspiration for me to find ways to help patients recover better and prevent the development of thick scars. I opened a pressure garment clinic called “Healing Touch”. This clinic helps burn patients whose skin has just healed with no scar development and patients who are six months to one year post burn with various levels of scarring. It has taken a lot of time and effort to get it started since this is an unknown product that has never been available in Nigeria. I am still doing awareness in hospitals and churches to help people understand what pressure garments are and the benefits they can have for burn patients. (Figures 1, 2)
What are pressure garments?

Pressure garments are tight fitting garments made from elastic type material that are measured, sewn, and fitted for each person after their burn has healed. The pressure garment acts as an outer layer of skin, putting pressure on the healing skin helping it to flatten out and therefore preventing it from developing into thick scars or reducing scars that have already formed. In a burn, the top layer of skin is gone so it is not able to put pressure on the skin below as it would in healthy skin. Without pressure on the skin, very thick and stiff scarring, called hypertrophic scarring, can form. This type of scarring can limit movement and be very unsightly. The pressure garment acts as an outer layer of skin applying pressure on the skin and preventing the thick scarring from developing. If scars have already formed, the pressure garment will apply pressure on the scar and help it to become soft and flatten out.

The garments are to be worn 23 hours a day. They are removed to bathe and apply lotion on the skin. Then the garment is reapplied. The patient will wear the garment up to a year or more until the scar has flattened and is no longer maturing.

Examples of pressure garments

Fig. 3 Foot sock

Fig. 4 chin and neck strap
As I began to set up the clinic, I was able to connect with Cindy Jackson, a woman in the USA who has started an organization called Burn Care International. She has started pressure garment clinics in three countries, so her input was very helpful. At the start, I listed everything needed to make the garments and explored the market to see what items were available here in Nigeria.

**To make the garments, you need the following items:**

- Elastic or spandex type material
- Wooly nylon thread
Zippers
2” and 1” elastic
Foam
Serger—an over locking sewing machine
Sewing machine (one that does various stitches such as zig zag and button holes)

The zippers, elastic, and foam are available in the country, but the fabric and wooly nylon thread are bought in the USA and brought as excess baggage or shipped. I am exploring ways to get the fabric in the country or shipped over by traders that sell material in the country, but that is still in progress. The wooly nylon thread can be found on the internet at [www.threadart.com](http://www.threadart.com). It is sold in 1000 meters (1100 yard) spools for $2.99 each. The material I get through Cindy Jackson. She has made contact with the companies that make pressure garments in the USA and is able to get material through them. The material cost $15 a yard and usually comes in 50 yard rolls. You can learn more about Cindy Jackson and her ministry at burncareinternational.blogspot.com or contact her at envoyseminar@aol.com.

The next step in starting the clinic was finding a good seamstress. I was able to find one who had gone through a training program in sewing, so that was very helpful. I then had to educate her on what pressure garments are and what we were working to achieve for the patient through wearing the pressure garments. (Fig. 8, 9) Pressure garments are more difficult to make than clothing, so we had to do some training classes on measuring the patient, cutting out the garments, using the serger (Fig. 10), and getting the right compression over the affected areas.
A serger is an overlocking sewing machine. A serger trims the seam and encloses the seam allowance or edge of the fabric, inside a thread casing, all in one step. (Available in Nigeria)

We continue to improve with each garment we make. Below are the measurement sheets we use to measure the patients. (Fig. 11, 12, 13)
Fig. 11
Fig. 13
Many patients have been fitted for the pressure garments and we have seen good success in reduction of their scars. We have also had several patients come right after their burn has healed and the pressure garments have prevented scars from forming.

One patient was burned from someone striking a match behind him and accidentally catching his shirt on fire. (Fig. 14) He was burned on the back of his left shoulder all the way down his arm and on the left side of the face. He was fitted with a shirt and face mask as soon as the wounds had healed. He wore the shirt faithfully for up to one year, but he did not like wearing the face mask, so it was not worn regularly. At the end of one year, he had not developed any scars on his arm and shoulder, but had a small scar develop on his left cheek. It was exciting to follow the patient from beginning to end and see how the pressure garments had prevented any scars from forming.

A four year old boy came that had suffered burns from a house fire. He was burned on his right chest and right arm. When he came, he was three months post discharge from the hospital and had already developed scarring and a contracture of the right elbow. (Fig. 15) He was fitted with a shirt with the right arm sleeve extending down to his wrist. (Fig. 16) He has worn the garment faithfully for three months and the scars have softened and started to reduce. (Fig. 17) He will be scheduled for surgery for a contracture release of his right elbow. He will continue to wear the garment up to one year or more depending on when the skin has fully healed. His mother was very happy to see that the scar had reduced. She said she wished she had known sooner that these garments were available.
A twelve year old boy came to the clinic and he had severe scarring on his back and right buttocks. (Fig. 18) He and his friends had been playing outside with matches. The back of his shirt caught on fire and he did not know until one of his friends told him. Instead of dropping and rolling, he ran and that caused the fire to spread down to his trousers before his friends help put it out. When he came to the clinic, he was about four months post healing from the burn. The scars were still soft so the garment would be of benefit to him. He came back for adjustment of his garments at three months and the scars were noticeably reduced, but he still has a long way to go. (Fig. 19, 20) There were some cavities or sunken in places on his back so foam was added to fit into those places to provide the needed compression. He has worn the garments for about six months now and will continue to wear them for as long
as the scars are reducing. He says that the garments help reduce the itching and he is more comfortable when he is wearing the garments.

The garments are also beneficial for patients with varicose veins and lymphedema. With varicose veins the compression garments help to push the blood through the veins, reducing pressure on the veins, therefore reducing the pain in the legs. Patients with lymphedema have chronic swelling in the arms or legs. The garment applies more compression around the end of the extremity and less pressure towards the trunk, to encourage lymph flow out of the extremity and towards the body. The amount of compression in the garments sewn for varicose veins and lymphedema patients is less than the ones for scar prevention/reduction for burn patients. One varicose vein patient came and after wearing the garment for a month, he reported that the garment had helped reduce the pain in his leg. (Fig. 21, 22)

The price of the garments was decided on the basis of cost for sustaining the business while keeping the garments at a reasonable price so the patients are able to afford them. This will vary in every country as to the cost of the supplies and salary for the seamstress. We are now charging the following prices converted from USD prices below:

- Shirt- $13
- Trousers- $13
- Arm sleeve-$6.50
- Shorts- $6.50
- Full glove- $6.50
- Half glove- $3.25
- Foot sock- $6.50
- Face Mask- $8.00
A small fee is charged for repairs on the garments such as holes, zippers breaking or needed reduction as the garment has stretched out.

Here are some challenges I faced while starting Healing Touch Pressure Garment Clinic:

- This is a new product that has never been available in this country, so it has taken a lot of time and effort to go out to hospitals, clinics, and churches doing awareness.
- Many patients are referred late for treatment or come many months after healing and have already developed thick scars. Education of doctors and distribution of brochures and posters in hospitals, clinics and churches has been a big focus.
- Many patients are fitted for the garments and then never come back for check-ups, adjustments or for us to see the progress in healing.
- Many of the supplies can be bought here in the country, but they are not good quality so repairs are needed quite frequently.

Gay Lynn McCrady, OTR
Healing Touch Pressure Garment Clinic
Working with SIM in Jos, Nigeria