

A New Plastic/A New Technique

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INTRODUCTION

Since the advent of high temperature plastics such as polypropylene, we have been able to supply patients with light, cosmetic, form fitting plastic jackets. Our problem has always been the time consuming steps of fabrication. Postoperative jackets usually are not measured until the patient is able to tolerate the process of casting; then we are rushed by everyone concerned to apply the orthosis as soon as possible. Many times the physician will merely apply a postoperative body cast to avoid a weekend layover in the hospital.

The fitting process is sometimes quite difficult due to the guesswork involved in cast modification. Many times several adjustments are needed to obtain the proper fit.

Over a five year period, we have developed a new plastic[†] and a new technique of fabricating plastic jackets as well as other commonly used orthoses. Now the patient can be measured, fitted, and dismissed from the hospital in one day.

The plastic has many of the characteristics of polyethylene. It is strong, durable, yet somewhat flexible. One can rivet, stitch, or glue attachment straps to the material. Spot adjustments can be made with a heat gun. Trim lines are cut with scissors or a jig saw.

[†]Mold-A-Brace, C.H. Martin Co., 329-331 Marietta Street, N.W., Atlanta, GA 30313.

^{††}Available in Adult (S, M, L), Children (Infant-Adolescent).

MATERIALS

The plastic comes in metal cans in pint and quart quantities. Each orthosis is made from a cotton pattern which comes in various sizes.^{††} A toaster oven or inexpensive convection oven is used to heat the plastic to 190°-200°F, causing it to melt. A heavy roller is used to spread the plastic throughout the pattern.

METHOD

We will illustrate only the fabrication of a postoperative body jacket, other orthoses vary slightly according to pattern construction.[†] If the jacket is to be fabricated at a location other than our office, we heat the plastic to 250° and wrap each can in several layers of paper for insulation, which keeps the plastic liquid for over three hours.

- Select proper size by applying the pattern on the patient (Figure 1). Each jacket has an anterior and posterior section.
- Unzip and remove the anterior section with the patient in the supine position.
- Open the can of plastic and pour into the anterior section (Figure 2).
- Smooth the plastic throughout the pattern with the roller (Figure 3), making sure an even coat is obtained by gently running your hand over the entire section (Figure 4). Adhesive tape can be used to close the top of the pattern, preventing leakage.

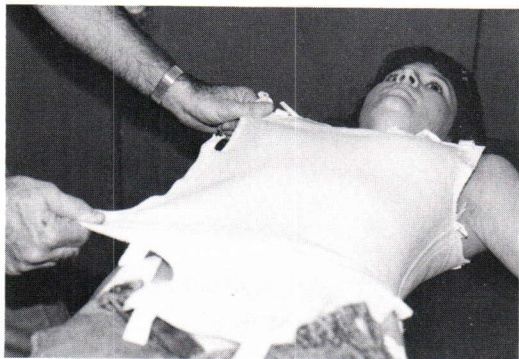


Figure 1. Select proper size by fitting pattern to the patient.

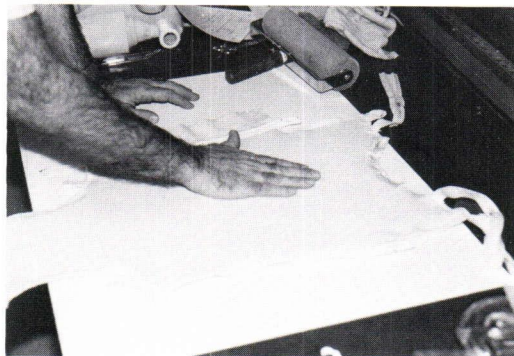


Figure 4. Feel with the hands to check the consistency.



Figure 2. Pour the plastic into the anterior section of the jacket.



Figure 5. Reapply the anterior section.



Figure 3. Roll the plastic throughout the anterior section.



Figure 6. Tie the shoulder straps, pull bottom to stretch out wrinkles, and smooth with hands.

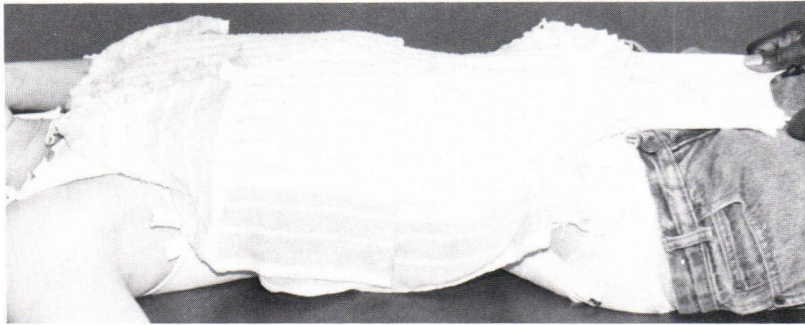


Figure 7. Cool with cold wet towels.



Figure 8. Cut trim lines with bandage scissors.

- Remove the posterior section and repeat the steps of pouring, smoothing, reapplying, stretching, cooling, and trimming.
 - Transport the jacket to your lab for completion. It is as simple to finish as a univalve or bivalved jacket. Zippers are removed as we feel they limit the patient to one tightness; Velcro® straps are substituted.
 - Return the jacket to the patient. The only tool needed may be scissors to further trim the jacket if the patient is allowed to sit.
- Reapply the anterior section to the patient (Figure 5), tie shoulder straps, and pull the bottom to stretch out all wrinkles. Use your hands to help smooth and mold the fabric as you would if applying a plaster negative (Figure 6). Always be sure the proximal end is free of wrinkles, even if you must hold it taut.
 - Apply cold wet towels to the garment to hasten the hardening of the plastic (Figure 7). This requires five to eight minutes.
 - When hardened, simply cut trim lines with bandage scissors (Figure 8) and remove the anterior section. If any wrinkles appear, use an ordinary heat gun to smooth them out.
 - Apply another anterior section to the patient and log roll to the prone position.

DISCUSSION

By molding the jacket directly on the patient, a perfect fit is virtually assured. Patients who have previous experience wearing other types of jackets or casts report 100 percent preference for this method. They enjoy the soft feeling of the plastic and the fact that there is no proximal slippage when changing positions.

Patients and physicians appreciate the advantages of additional days of postoperative healing before measurement and same day fabrication.

This is a technique that is not easy to perfect. Practitioners electing to incorporate it into their practice should be prepared to practice many times before becoming proficient in the method.

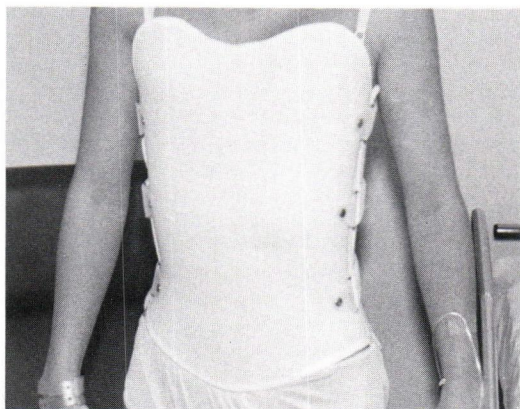


Figure 9. Patient in the standing position wearing the finished jacket.



Figure 10. Patient in the sitting position wearing the finished jacket.

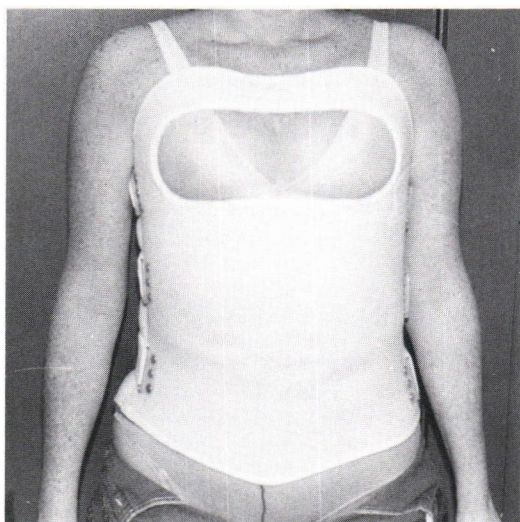


Figure 11. The patient wearing the finished jacket with a cut out for the breasts.

CONCLUSION

Physicians in our area now use the custom formed jackets described in this article instead of casts when time is of the essence.

Plaster modifications, vacuum forming, and the use of central fabrication labs have been eliminated by this method.

We have found better satisfaction with the products fabricated by this method from nurses, therapists, physicians, and patients than from any other device we have ever produced.

AUTHOR

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