

Compression Garments 101

Joanne Gladfelter, RN, CPSN

Goal: To review the importance of postoperative compression and compression garments to promote postoperative healing and improved aesthetic results.

Objectives:

- **Understand** the importance of proper postoperative compression and the selection of the correct compression garment.
- **Identify** the important elements to look for in a compression garment.
- **Define** the necessity of educating staff for proper garment selection.
- **Explain** how to correctly measure to determine the proper garment(s) and garment sizing.

An essential requirement following facial aesthetic and reconstructive plastic surgery, lipoplasty, augmentation mammoplasty, and abdominoplasty is proper compression, usually provided by an area-specific compression garment. Surgical results and postoperative recovery are significantly affected by the correct garment selection, proper garment fit, and patient compliance.

This continuing education article will assist in understanding the needs and benefits of postoperative compression, identify the importance of selecting the correct compression garment, demonstrate how to correctly measure to determine proper garment sizing, and define the necessity of educating staff and patients for proper garment selection and patient compliance.

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The author has no conflict of interest.

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A BRIEF HISTORY

Compression as an indicated treatment of human disease can be traced back to Hippocrates 450 BC. At that time, it was mainly used to treat leg ulcers and venous disorders. Progressive forms of body wrapping were later applied for sprains and soft tissue injury to minimize swelling and edema. Body wrapping with compression was also utilized following burns to minimize the formation of scar tissue. However, not until Dr. Gerard Illouz introduced blunt liposuction techniques in France in 1978, did routine external compression become part of the postoperative care regime. In those days, elastic wraps, called French tape, were used to wrap the patient's body. Although elastic wraps functioned, they were difficult to apply uniformly and challenged patient's tolerance. Compliance and consistency became common issues. During this same time frame, synthetic fabrics such as nylon, which had been first introduced in 1938, began to be used in the progressive development of women's undergarments. Surgeons soon took note and began to find undergarment options on the commercial market for applying postoperative compression.

UNDERSTANDING THE NEED FOR POSTOPERATIVE COMPRESSION

The need for tissue compression following surgery relates to the trauma and insult to the underlying body structures involved. Blood vessels, lymphatic channels, and connective fibers attaching skin to deeper structures can all be altered, severed, bruised, or removed during surgery. Bruising, edema, and discomfort are the postoperative results of this

trauma. The art of proper compression can assist in lessening these postoperative conditions and further reducing the risk of possible complications and pain.

Even though the incisions sites may be small following surgical procedures, such as lipoplasty, large areas of tissue may be affected under the skin. The result, though hidden, is a large wound under the skin that the body needs to repair. The body must rebuild new capillaries leading to the skin. It must restore the fine transport network that carries clear nurturing liquids to and from each cell. The body must also reconnect the links that hold the skin tightly but flexibly in place.

During the healing process, while continuing to repair, the damaged structures must also devote considerable efforts to balancing the amount of liquid between cells and blood. Decreased exits and channels for the distribution of excessive fluid can result in edema causing delayed healing and unnecessary discomfort. Gentle external compression distributed evenly on the skin surface can result in adequate pressure to force body fluids to deeper tissues promoting the process of healing, eliminating excessive edema and external skin tension.

BENEFITS OF POSTOPERATIVE COMPRESSION GARMENTS

Throughout medical history, means of compression has been provided in various manners for many reasons and different purposes. For surgical procedures that require external postoperative compression, the ideal solution has become the medical compression garment. Cosmetic surgery, especially lipoplasty, has prompted and promoted the continued evolution of the modern-day compression garment. This evolution has resulted in compression garments that can and do provide the following postoperative benefits:

- Edema is significantly reduced by compressing and flushing potentially harmful body fluids away from the skin.
- Bruising is minimized by compression on small blood vessels and capillaries.
- The possible risk of infection is reduced when potentially harmful fluids are not allowed to accumulate.
- General body contouring and skin retraction are aided by firm compression of the skin during the healing process.
- Comfort is improved by compression provided support.

The following formula can be applied to the use of postoperative compression garments:

$$\text{Edema control} + \text{Tissue support} = \text{Healing} + \text{Patient comfort}$$

WHAT TO LOOK FOR IN A COMPRESSION GARMENT?

There are currently many different body-specific, styles, types, and manufacturers of compression garments available for multiple and varied surgical procedures. With so many choices there is a challenge in knowing exactly what to look for in a compression garment that is necessary to provide the required postoperative benefits and patient comfort to ensure compliance.

Fabric is one of the most important elements to consider when selecting a compression garment. The fabric must provide the proper stretch and pressure to evenly compress the specific body area; actually molding to every curve like a soft, second skin while allowing the patient to move without restriction. Cutting edge textile science and fabric technology have been incorporated to provide desired fabric characteristics such as the following:

- **Power/stretch:** The fabric must be able to stretch both North/South and East/West to provide gentle even compression that does not bind or pull.
- **Softness:** The necessity of fabric softness is not only tactile but for the purpose of avoiding the tendency of stiffer fabrics to crease and ripple, preventing the required smooth and evenly distributed compression and healing.
- **Allergy-free:** It is important that the fabric not contain latex to eliminate the possibility of an allergic reaction or allergic response.
- **Absorption & wicking:** The fabric must possess the ability to absorb body moisture and pull it away from the skin promoting evaporation that will decrease the possibility of skin irritation, rashes, and/or infection.
- **Durability:** Extended wear and washing requires that the fabric be made of interlocking special premium yarns to maintain garment shape and provide size memory.
- **Anti-microbial:** Agents incorporated into the fabric to fight odor, mold, and mildew caused by bacteria are desired for patient comfort and compliance.

Construction of the garment must be provided in such a manner as to

- limit skin contact with any hard or rough surfaces,
- all seams must be on the outside of the garment,
- labels, if not heat sealed, must be on the outside of the garment so as not to come in contact with the skin, and
- zippers and fasteners must be shielded from contact with the skin by a soft-cushioned fabric or padding.

Convenience of design is required to

- accommodate body functions,
- allow garment accessibility for ease in putting on and taking off, and
- provide availability of staged garments for proper compliance throughout the complete healing process.

MEASUREMENTS AND SIZING

Sizing has been one of the most challenging issues for both the patient and the medical staff in measuring and selecting the correct garment. Properly sizing the patient is an important necessity commonly prone to error. One of the most frequent reasons for lack of patient compliance is the complaint of discomfort. This discomfort is commonly caused because the patient is wearing the wrong size, a poorly fitted, or incorrect garment.

Measuring patients for compression garments can be simplified with less margin of error by using a routine and standardized measurement protocol.

- Surgical procedures usually determine and identify the body areas that will be affected and require compression. Identifying these areas or areas should be considered first.
- Compression garments are frequently designed allowing for zone-specific compression. Comparing body areas requiring compression with zone-specific compression garments should be considered next.
- The specific body zones that need to be measured are usually determined by the garment manufacturer and are garment specific.
- Standardized measurements of these properly identified body zones should be taken and noted in the patient's chart.
- Reference to the manufacture sizing chart should then be made to determine the correct garment size.
- Preoperative fitting can assist in ensuring that the correct garments and garment size have been ordered (Figure 1).

Also available is the *Patient Measuring System*, which eliminates any measuring guesswork and can be done eliminating the need for referral to a sizing chart. The *Patient Measuring System* provides a specially designed measuring tape to be used around the proper body zones, indicating on the tape the size of the garment that best matches the patient's measurements (The Marena Group, 2000; Figure 2).

Even though much of the measuring guesswork can be eliminated by using a standardized measuring protocol or the specially designed *Patient Measuring System*, there can still be sizing questions and challenges that can occur. The following recommendations may be helpful.

- For patients who are in between sizes, it is advised to select the larger size, eliminating garment stress and patient discomfort.
- Extremely tall patients (more than 5' 8") requiring a full-body compression garment with a bra may obtain better compression and a more comfortable fit by using separate properly fitting garments rather than one ill-fitting and uncomfortable garment.
- Procedures requiring full-body compression with a bra can be difficult if the body area measurements are different. If there is a difference of one size between body areas, it is recommended that the larger size be selected. This will usually not compromise compression. If there is a difference of more than one size between body areas, separate garments are suggested for adequate compression. If there is a difference of two to three sizes between different body areas, a custom-tailored garment is recommended.

Properly identifying, measuring, and sizing of the postoperative compression garments are extremely important and must be considered to be a part of surgery planning. Although patients will eventually be smaller, immediate postoperative swelling usually causes the patient to be approximately the same size for several weeks following surgery as they were before the surgery. Therefore, preoperative fitting of the first-stage compression garment being considered is encouraged.

Multiple garments are recommended when extended wear is required. Following lipoplasty procedures, multiple garments are necessary to facilitate laundry issues and comfort. Approximately 7–10 days (after surgery drainage, swelling, and discomfort have improved), a nonzippered compression garment is recommended. The change to a nonzippered garment may assist the patient with possible compliance issues and frequently contributes to improved self-esteem. The patient begins to feel as though healing is progressing and recovery is inevitable.

PATIENT COMPLIANCE AND UNDERSTANDING

Before the surgery, the patient must be fully aware of the fact that part of the postoperative protocol for his or her surgical procedure includes the wearing of a specific compression garment.

Compression garments are normally worn 24 hours a day, 7 days a week, for a duration of 3 weeks to 6 months so patient education and understanding are extremely important if compliance is to be expected. A straightforward explanation of the duration and length of time the garment must be worn helps in the patient understanding of the importance of the compression it provides.

Face Mask Sizing



Arm Measurements



Bra Measurements



Hip



Girdle Measurements
Waist



Thigh



Bust



Figure 1. To determine correct garment size, compare the standard measurements to the manufacturing sizing charts.

Current fashion trends over the past decade have promoted clothing that is loose and comfortable with minimal structure, frequently causing patients to approach wearing a constricted garment with great concern and uncertainty. In addition to

patient understanding of why compression provided by a constrictive garment is required, it is helpful to involve patients in the process of garment sizing and selection, providing some interest and allure. An explanation of what specific body areas will need

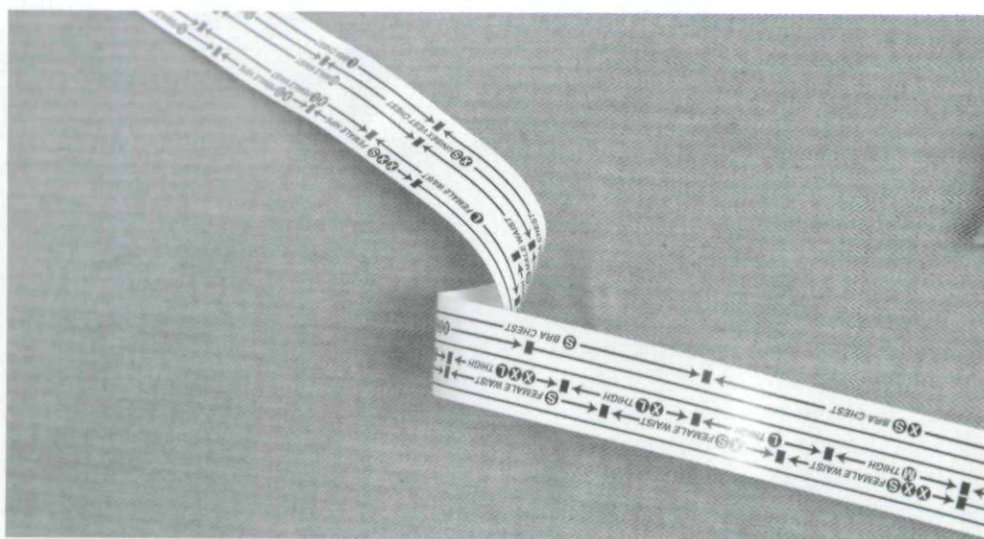


Figure 2. A specially designed tape measure included in the *Marena Patient Measuring System* provided by Marena.

to be measured to ensure proper garment sizing and fit helps eliminate possible embarrassment or discomfort. Continued reinforcement that compression provided by the garment will affect recovery and surgical results is also recommended.

Convenience of multiple garments and ease of garment care should be included in patient education to help eliminate specific garment-related concerns. A review of written, take-home, postoperative instructions providing guidelines for how long the compression garment should be worn, when it can be removed, and for what length of time it can be removed eliminates delayed questions or confusion.

Patient understanding and compliance can be assisted by including the following:

- Involve the patient in the sizing process by explaining specific body zones that will be measured to determine proper garment size.
- Assist the patient with the correct way to put on the compression garment; whenever possible, stretching the garment using the flat of a full hand, then releasing the garment in place.
- Explain the need and advantage of multiple garments for staged wear and how to correctly launder garments.
- Cautioning to avoid long fingernails from puncturing the fabric, to always pull using, seams, fasteners, and double layers of fabric using the flat surface of the hand.

STAFF TRAINING

Medical professionals must understand the technical aspects and benefits of postoperative compression and how it can best be provided. They must

also be prepared to convey this information in simple understandable terminology to their patients. Staff members who will be ordering compression garments must be knowledgeable about the quality of the garments they recommend and how measurements and proper sizing are determined. Garment manufactures are valuable resources for information and staff training. The more knowledgeable the medical professional is the easier the fitting, sizing, patient education, and patient compliance are. All of which will produce better patient understanding and aesthetic surgical results.

CONCLUSION

Currently, the most frequently performed cosmetic surgical performed is lipoplasty. An important part of lipoplasty healing and recovery requires the use of postoperative compression garments for an extended period of time to achieve the best possible and desired aesthetic result. Required compression can be provided by a quality garment that is properly sized and fitted to meet the challenge of postoperative healing, patient comfort, and compliance. A staff trained in understanding the importance of proper garment selection and sizing and the necessity of patient education is a valuable asset to every plastic surgery practice.

REFERENCES

- Gladfelter, J. (2000). Compression garments: A discussion. *INAMED Academy Continuing Education Series*, 4(11).
- Radhakrishnaiah. (2000). *Like skin, Only better. Textile science that heals comfortably*. An article written for the Marena Group.

Compression Garments 101

Instructions:

- Read the article that begins on page 73.
- Take the test, recording your answers in the test answers section (Section B) of the CE enrollment form. Each question has only one correct answer.
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LEARNING OBJECTIVES: After reading this article and taking this test, the nurse will be able to:

1. Explain the need for post-operative compression and the benefits of post-operative compression garments.
 2. Describe issues in the use of compression garments, including fabric, measurements and sizing, patient understanding and compliance, and staff training.
1. **The need for tissue compression following surgery relates to the**
 - a. homeostatic immune response.
 - b. trauma and insult to the underlying body structures involved.
 - c. tissue dehydration that occurs from surgical stress.
 - d. electrolyte imbalance that occurs from the immune response.
 2. **What is the purpose of gentle external compression distributed evenly on the skin surface through the use of a compression garment?**
 - a. assist in increasing external skin tension
 - b. assist in rebuilding new capillaries
 - c. force body fluids to deeper tissues
 - d. force body fluids to subcutaneous tissues
 3. **The use of compression garments following surgery can reduce edema by**
 - a. increasing capillary osmotic pressure.
 - b. decreasing capillary osmotic pressure.
 - c. compressing and flushing potentially harmful body fluids away from the skin.
 - d. minimizing compression on small blood vessels and capillaries.
 4. **Which post-operative risk can be minimized by using compression garments to decrease accumulation of harmful fluids?**
 - a. pressure ulcer formation
 - b. infection
 - c. orthostatic hypotension
 - d. bruising
 5. **Compression-provided support post-operatively helps improve**
 - a. comfort.
 - b. pain control.
 - c. wound healing.
 - d. infection.
 6. **The fabric that should be used in compression garments must**
 - a. restrict the patient's movements.
 - b. allow the patient to move without restriction.
 - c. be hard and stiff.
 - d. be soft and shear.
 7. **Construction of a compression garment must provide for which of the following?**
 - a. external padding to help prevent bruising from accidental trauma
 - b. extra fabric in order to accommodate weight gain
 - c. all zippers and fasteners on the inside of the garment
 - d. all seams on the outside of the garment
 8. **The design of the compression garment must do all of the following except**
 - a. follow current fashion trends in order to promote compliance.
 - b. provide availability of staged garments for proper compliance.
 - c. allow garment accessibility for ease in putting on and taking off.
 - d. accommodate body functions.
 9. **What is one of the most frequent reasons for lack of patient compliance with a compression garment?**
 - a. appearance of the garment
 - b. complaint of discomfort
 - c. length of time needed for therapy
 - d. inability of the garment to retain its shape
 10. **Which of the following usually determines and identifies the body areas that will require compression?**
 - a. surgical procedure
 - b. garment manufacturer
 - c. patient's physical examination
 - d. patient's symptoms
 11. **Which tool can assist the nurse in taking patients' measurements for compression garments?**
 - a. Compression Garment Measuring System
 - b. Compression Garment Measuring Tape and Sizing Chart Protocol
 - c. Patient Measuring System
 - d. Patient Sizing Chart Protocol
 12. **Which of the following is recommended for extremely tall patients requiring a full body compression garment?**
 - a. custom-tailor a single garment
 - b. select a single garment that properly fits the upper body
 - c. select a single garment that properly fits the lower body
 - d. use separate properly fitting garments

13. The recommendation for patients wearing compression garments for extended periods of time is the use of
- multiple garments.
 - all nonzippered garments.
 - zippered garments.
 - first-stage compression garments only and continuously.
14. Following lipoplasty procedures which of the following may assist with patient compliance with a compression garment?
- changing to a nonzippered garment
 - changing to a zippered garment
 - removing the garment when sleeping
 - removing the garment when awake
15. For how long are compression garments normally worn following lipoplasty procedures?
- 12 hr a day while awake, 7 days a week, for 1 month
 - 12 hr a day while asleep, 7 days a week, for 3 months
 - 24 hr a day, 7 days a week, for 2 weeks or until the wound has healed
 - 24 hr a day, 7 days a week, for 3 weeks to 6 months

16. According to this article, which of the following can assist in patient understanding and compliance with compression garments?
- involving the patient in the material selection and design process
 - encouraging the patient to attend a group training session
 - involving the patient in the sizing process
 - having the patient talk with the garment manufacturer representative
17. How is a compression garment correctly applied?
- Stretch the garment using long fingernails, then release the garment in place.
 - Stretch the garment using the flat of a full hand, then release the garment in place.
 - Roll the garment into a 3-inch roll, then unroll into place.
 - Roll the garment inside out, then unroll into place.
18. A valuable resource for information and staff training about compression garments is the
- garment manufacturer.
 - plastic surgeon.
 - surgical nurse.
 - plastic surgeon's office nurse.

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