Integumentary – Application of Multilayer Compression Bandage System

SECTION: 4.05
Strength of Evidence Level: 2

Purse:
To provide management and treatment of venous leg ulcers and associated conditions; to provide effective compression; to reduce nursing time required for the treatment of venous leg ulcers; to maintain and control wound exudates; and to provide padded protection for bony prominences.

Considerations:
1. Performed by trained clinician.
2. Wounds are measured weekly or after each dressing change.
3. Ankle-Brachial Index (ABI) should be performed prior to compression therapy.
   [Note: It provides only an indirect measure of peripheral perfusion and cannot be considered accurate in patients with non-compressible vessels e.g. the diabetic patient with vessel calcification.]
   (See Circulatory - Ankle: Brachial Index (ABI).)
4. ABI is performed to distinguish between arterial and venous stasis disease and to determine the appropriateness of compression therapy.
5. See the table in the ABI procedure for list of ABI values and interpretation of results. Do not use compression bandaging systems on patients with an ankle brachial pressure index (ABPI) of less than 0.8, or on diabetic patients with advanced small vessel disease.
6. Values outside the normal range should be reported to the physician and consultation with the physician should occur before proceeding with compression therapy.
7. Contraindications: Unstable heart failure, decreased arterial flow, active wound infection, and/or cellulitis.
8. If the patient is obese and the lower extremity is very large, it may be necessary to apply an additional bandage to accommodate the increased leg size [for example, 1 and 1/2 (one and one-half) bandage]. Wrapping techniques to achieve therapeutic pressures vary with each patient and his or her unique leg shape.
9. Since there are numerous multilayer compression systems available from various manufacturers, each should be used as directed by the manufacturer.

Equipment:
Gloves (sterile, nonsterile)
Clean or sterile scissors
Measuring device
Multilayer Compression System bandage (high compression bandage with or without absorbent padding)
Absorbent dressing as ordered
Wound cleansing supplies
Irrigation solution and supplies, if ordered by physician
Bag for soiled dressing or dirty equipment

Procedure:
1. Verify physician orders.
2. Explain procedure to patient.
3. Open contents of dressing system and supplies, maintaining clean techniques.
5. Carefully remove and discard bandage and dressing.
6. Measure ankle circumference to confirm that, when padded, ankle circumference is greater than 18 cm.
7. Measure wound.
8. Clean wounds with wound cleanser or irrigate, if ordered.
9. Dry the surrounding skin and assess the wound and limb circumference.
10. Remove gloves, decontaminate hands and apply new gloves.
11. Apply dressing as ordered.

Four Layer Compression Bandage System:
1. With the foot flexed in a 90 degree angle, apply layer No. 1, absorbent padding (if needed) starting at the center of the ball of the foot with lower edge of padding at base of toes. Wrap padding without tension around the heel and ankle and continue to wrap in spiral fashion with 50 percent overlap up to popliteal space. Cut off excess padding and secure with tape.
2. Apply Layer No. 2, conformable bandage utilizing same technique as layer No. 1.
3. Apply layer No. 3, long stretch compression bandage utilizing 50 percent overlap, and 50 percent stretch and figure 8 wrap technique up to popliteal space.
4. Apply layer No. 4, self adhesive elastic roll utilizing spiral wrap with 50 percent overlap and 50 percent stretch up to popliteal space.

Three Layered Compression Bandage System:
Follow Steps 1-11 as listed above.
1. With the foot flexed in a 90 degree angle, apply layer No. 1, absorbent padding (if needed) starting at the center of the ball of the foot with lower edge of padding at base of toes. Wrap padding without tension around the heel and ankle and continue to wrap in spiral fashion with 50 percent overlap up to popliteal space. Cut off excess padding and secure with tape.
2. Apply layer No. 2, conformable bandage utilizing same technique as layer No. 1.
3. Apply layer No. 3, self adhesive elastic roll utilizing spiral wrap with 50 percent overlap and 50 percent stretch up to popliteal space.

Two Layer Compression Bandage System:
Follow Steps 1-11 as listed above.
1. With the foot flexed in a 90 degree angle, apply layer No. 1, absorbent padding (if needed) starting at the center of the ball of the foot with lower edge...
of padding at base of toes. Wrap padding without tension around the heel and ankle and continue to wrap in spiral fashion with 50 percent overlap up to popliteal space. Cut off excess padding and secure with tape.

2. Apply layer No. 2, self adhesive elastic roll utilizing spiral wrap with 50 percent overlap and 50 percent stretch (or as indicated by manufacturer to achieve the desired compression) up to popliteal space.

AFTER CARE:

1. Document in patient's record:
   a. Patient's response to procedure.
   b. Temperature and vital signs.
   c. Appearance of the skin and lesions.
   d. Instructions given to patient/caregiver.

2. Instruct patient and/or family how to assess circulatory status in extremity, i.e., color changes, loss of feeling in extremity and swelling due to circulatory compromise.

3. Instruct patient and/or family how to properly remove bandage in case of circulatory compromise.

4. Explain to patient that bandage is to remain for 5 to 7 days and to avoid getting bandage wet.

5. Instruct patient and/or family to notify nurse or physician for circulatory compromise, discomfort, leakage of exudates, or clinical signs of infection.

REFERENCES:

