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Кафедра общей хирургии

А. Н. ДЕШУК

## **ДЕСМУРГИЯ**

*Пособие для студентов факультета иностранных учащихся  
с английским языком обучения  
(специальность 1-79 01 01 «Лечебное дело»)*

A. N. DZIASHUK

## **DESMURGY**

*Manual for the Medical Faculty for International Students  
(Course of studies in English)*

Гродно  
ГрГМУ  
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Пособие представляет собой учебный наглядный материал, в котором рассматриваются важнейшие вопросы, связанные с мягким перевязочным материалом, методами его применения в практической хирургии. Пособие содержит множество актуальных рисунков для более полного и доступного понимания вариантов и этапов бинтования.

Пособие рассчитано на студентов факультета иностранных учащихся, изучающих курс «Общая хирургия», тему «Десмургия» на английском языке.

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The manual is an educational visual material which addresses the most important issues related to soft dressings, methods of its application in practical surgery. The manual contains many relevant pictures for a more complete and accessible understanding of the options and stages of bandaging.

The Manual is designed for foreign students who study General Surgery, topic Desmurgy.

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## **FOREWORD**

In the practice of any medical worker, the imposition of a dressing is often a manipulation, especially for doctors and nurses of surgical specialties. There is no doubt that a timely and correctly applied dressing is the key to a successful course of the pathological process, the onset of earlier rehabilitation and recovery of the patient.

In practice, often it is necessary to observe the careless, and sometimes incorrect application of bandages. This especially applies to bandage dressings, the execution of which requires certain knowledge and skills. In addition, even such a conservative section as desmurgy has undergone some changes over time. This is due primarily to the emergence of new materials and technologies. These circumstances compelled us to generalize the available experience and share our thoughts on this issue.

## DEFINITION AND CLASSIFICATION OF DRESSINGS

Desmurgy (desmos – bandage, ergon – case) – the doctrine of medical dressings.

The bandage is a remedy for treating the affected part of the body, be it a wound surface or bone tissue damage. In a narrower sense, a bandage is understood as a method of covering an affected area for a specific purpose: for treatment, keeping the dressing, protecting against external factors, creating immobility in fractures, providing pressure in case of bleeding, etc.

Dressing is a medical and diagnostic procedure, including the removal of the old bandage, the performance of diagnostic and therapeutic measures, as well as the replacement of the bandage.

The dressing material is natural, synthetic, semi-synthetic materials that possess the properties necessary for medical dressings (atraumaticity, plasticity, elasticity, strength, hygroscopicity, air permeability, etc.).

Dressing means – products from dressings (one or several) used for solving specific problems.

There are many different bandages that require systematization. Dressings are classified according to different signs.

### *Classification by the kind of dressing material:*

- 1) gauze bandages (soft);
- 2) bandages from various tissues (soft);
- 3) POP dressings (hardening);
- 4) tire bandages (rigid);
- 5) special bandages.

### *Classification according to purpose:*

- 1) protective dressing;
- 2) drug dressing;
- 3) haemostatic bandage (pressing);
- 4) immobilizing dressing:
  - a) transport;
  - b) medical;



- 5) corrective;
- 6) bandage with extension;
- 7) occlusive dressing.

*Classification by the method of fixing the dressing:*

- 1) glutinous;
- 2) adhesive tape;
- 3) slinging;
- 4) scarf;
- 5) T-shaped;
- 6) bandage:
  - circular;
  - spiral;
  - creeping;
  - cross-shaped or eight-shaped;
  - spica;
  - tortoise;
  - returning;
  - bandage using a mesh-tube elastic bandage;
  - bandage with the use of a tubular knitted bandage.

*Classification by nature and purpose of immobilization:*

- 1) for transport immobilization:
  - soft immobilizing dressings;
  - tire immobilizing dressings;
  - curing immobilizing dressings;
- 2) for therapeutic immobilization:
  - immobilizing dressings using medical tires;
  - immobilizing dressings with the use of extensively-compression apparatus;
  - immobilizing dressings with the use of mounting rails and devices for constant traction;
  - curing immobilizing dressings.

## HISTORY OF THE DESMURGY DEVELOPMENT

**Ancient Indian treatises:** information about the use of cotton, silk, etc. as dressing material.

**Ancient Egypt:** the imposition of fixed bandages in fractures.

**Ancient Greece:** Hippocrates (IV century BC) applied bandages with wine, alum, ointments, etc. The cap of Hippocrates.

**Ancient Rome:** in the I century AD Cornelius Celsus tamponed wounds with bleeding from them.

**Doctor Galen** (II century AD): a great experience in the treatment of wounds and bandages, healed clavicle fractures with a sling-like bandage.

**Avicenna** (Abu-Ali Ibn-Sina) (X-XI century): the doctrine of wounds, fractures, the use of plaster casts.

In the Middle Ages, the French physician Ambroise Paré proposed the ligation of blood vessels from bleeding from a wound.

Significant development of the teaching of wounds received in the XIX century. And it was connected with numerous wars, which are always accompanied by damage to the soft and bony tissues. These circumstances forced the surgeons to develop funds for the treatment of wounds. There was a concept about the protection of wounds from the influence of the external environment.

The great Russian surgeon N.I. Pirogov in his works (1854, 1866) describes varieties of dressings, the technique of their application, determines the role of dressing material in the spread of inflammatory processes.

English surgeon D. Lister (1867), based on the discoveries of L. Pasteur and analysis of the causes of death of patients after operations, came to the conclusion that the cause of complications are bacteria. Lister first used a wound dressed with a 5% solution of carbolic acid to treat wounds. This was the beginning of an antiseptic trend in surgical work.

Developed by the students of N.I. Pirogov E. Bergman and K. Schimmelbusch (1890), the principle of asepsis says: "Everything that comes into contact with the wound must be sterile."

In the first half of the twentieth century were published works on desmurgies, belonging to G.I. Turner and A.I. To Velikoretsky.

In recent years, new ways of fixing the dressing material have appeared, often without shortcomings.

It should not be forgotten that even now soft bandages are the main means of fixing the dressing in the treatment of injuries.

## **BANDAGE DRESSINGS**

### **BANDAGE. THE RULES OF BANDAGING**

The most common bandages are bandage, which are made of gauze and have certain properties: modularity, elasticity, strength, hygroscopicity, relative simplicity of application.

Gauze, rolled up from one end, is called a single-headed, and rolled on two sides – double-headed. "One-headed" bandage consists of a head (rolled part) and a beginning – a free part.

The side of the bandage facing the body is called the back, and the head facing the head is called the "belly" (figure 1).



**Figure 1. – Medical bandage**

Gauze bandages come in different sizes: width 3–14 cm, length 7–10 m. Bandages are made from gauze cloth, which rolls to the desired width. Currently, this is done automatically.

#### **The rules of bandaging**

The requirements for the bandage concern the patient, the medical staff, as well as the bandage itself.

## **Requirements for the patient**

1. The patient should be in a position convenient for him.
2. The bandage should be maximally accessible.
3. An important condition is to find the patient in a horizontal position (prevention of syncope, collapse). This especially is applied when bandaging the abdomen, pelvis, hip. But for many patients, in a satisfactory condition, with minor injuries, the application of a dressing is possible in the sitting position.
4. The bandaged part of the body should be in a physiological position, especially when applied for a long period of time.
5. The part of the body on which the bandage is applied should be immovable.
6. It is better to apply a bandage so that the bandaged part is located at the level of the lower sections of the chest of the bandage.

## **Requirements for the bandage**

1. The bandage should be done facing the patient in order to observe his condition.
2. Binding involves 3 points:
  - imposition of the initial part of the bandage;
  - superposition of the actual movements;
  - securing the bandage.
3. Bandage starts from the periphery with the subsequent advance to the center.
4. The tension of the bandage should be uniform throughout.
5. The head of the bandage is held in the right hand, the beginning of the bandage is in the left, with the back facing the bandage surface.
6. Hands during bandaging do not detach from the bandaged surface, and the bandage does not stretch through the air.
7. Each previous round overlaps the next by  $\frac{1}{2}$  or  $\frac{2}{3}$  of the width of the bandage.
8. The dressing is fixed as follows: the end of the bandage is cut with scissors, both ends are crossed and tied to the knot. Cross and knot should not lie on the affected area. To fix the end of the bandage, you can bend it under the last circular move or pin it with a pin.

9. To remove the dressing, it is cut at some distance from the injury site, or from the opposite side. The bandage can also be unwound, collecting it in one hand, then in another, at a short distance from the affected area.

### **Requirements to the bandage**

1. The applied dressing should not cause the patient unpleasant sensations.

2. After the bandage is finished, it is necessary to check the correctness of the dressing application, which should fully cover the affected part of the body and not create circulatory disturbances.

3. An important requirement for the dressing is its aesthetic shape.

### **MAIN TYPES OF THE BANDAGES**

The existence of different versions of dressings is due to several factors: the anatomical features of the bandaged area, the physiological position of the limb, the similarity of body parts with certain geometric figures, the severity of the muscles and subcutaneous fat.

There are the following main types of bandages:

- circular bandage;
- spiral bandage;
- creeping bandage;
- tortoise (convergent and divergent) bandage;
- spica bandage;
- returning bandage;
- cross-shaped dressing.

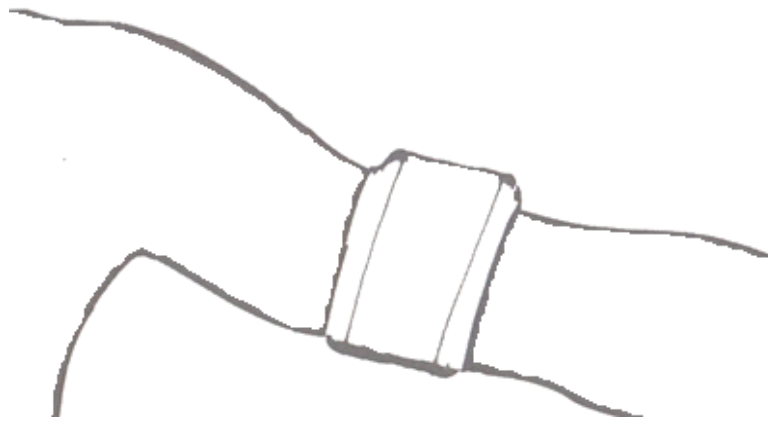
#### **Circular bandage**

Scope: the dressing is applied to parts of the body that have a cylindrical shape, such as the lower third of the forearm, the middle of

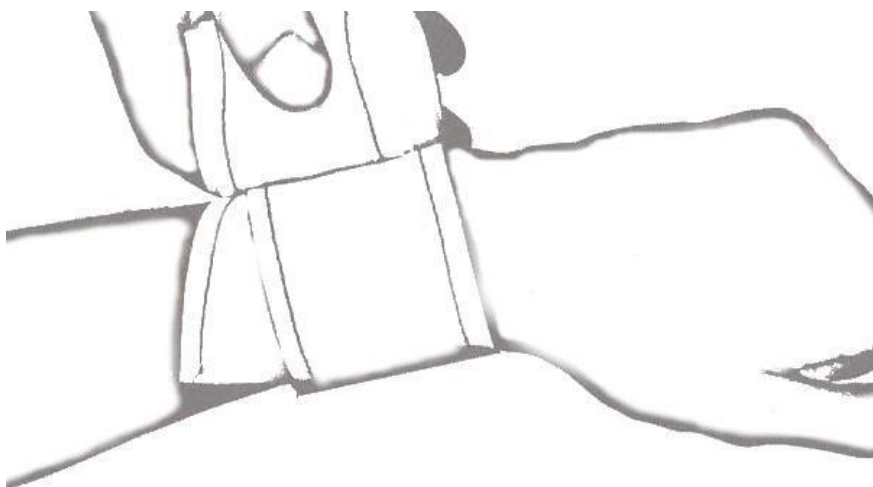
the shoulder, the lower third of the shin, the lower third of the thigh, the frontal region.

Technique: the bandage is applied from left to right, covering the banded area circularly, with each subsequent round closing the previous one completely. This bandage begins and ends almost any bandage bandage.

It's disadvantage is that the circular bandage can be displaced. To strengthen the dressing, the first round can be applied to the area greased with glue or use the following technique: the first round is superimposed in an oblique direction, the second round is circular, and the third covers the bent edge of the beginning (figure 2, 3, 4).



**Figure 2. – Circular bandage on mid/3 of the shoulder**



**Figure 3. – Circular bandage on the lower/3 of the forearm**



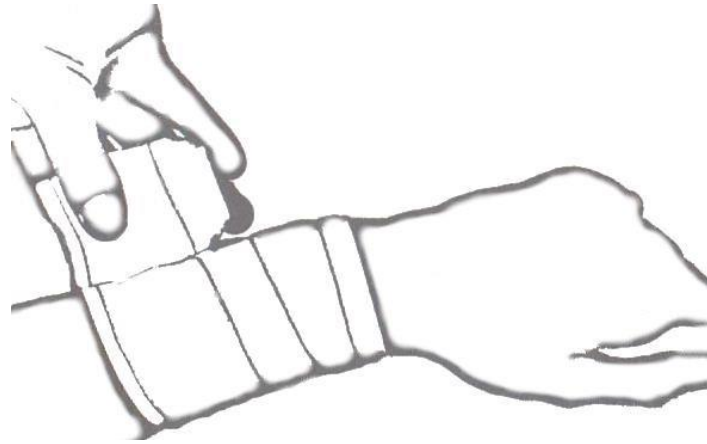
**Figure 4. – Circular dressing on the lower/3 of the shin**

### **Spiral bandage**

Scope: this type of dressing is applied when it is required to bandage a significant part of the body (limbs, chest, abdomen).

Technique: start bandaging by applying 2–3 circular rounds or from the bottom up (upward bandage), or from top to bottom (descending bandage). Each subsequent round covers the previous half or 2/3. If the spiral bandage is superimposed on a part of the body that has a cylindrical shape, then use circular turns, but in the case of the transition of this form into a conical (shin, forearm), the following technique is used, called an inflection: in the place where the broader part of the limb begins, with the finger of the free hand, press the lower edge of the last round, the bandage is turned over to 45° and its upper edge becomes lower. Moreover, the more uneven is the surface, the smaller is the angle of inflection. The kink is repeated several times, switching to conventional spiral tours if it's necessary. The dressing is completed by applying 2–3 circular rounds and fixing it in one of the ways (figure 5, 6, 7).

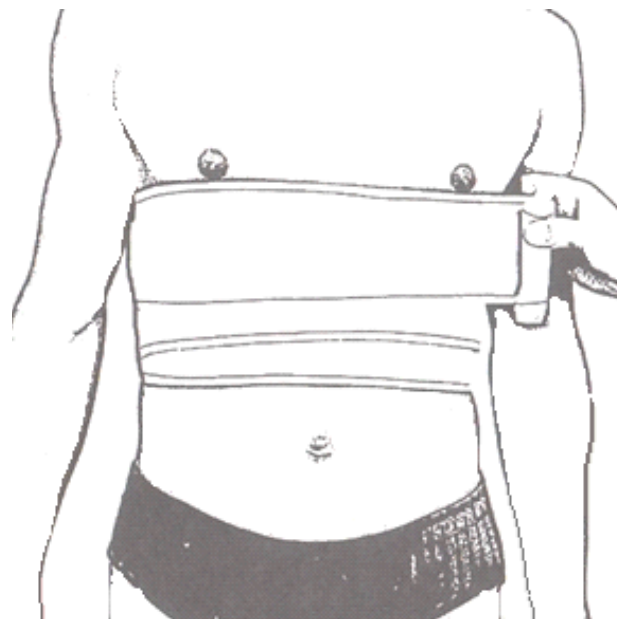




**Figure 5. – Spiral bandage on the forearm**



**Figure 6. – Spiral bandage on the forearm with inflection**



**Figure 7. – Spiral bandage on the abdomen**

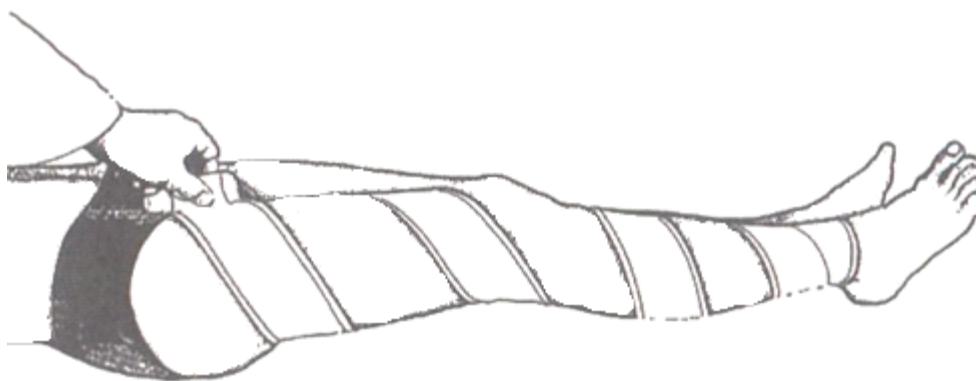
## **Creeping bandage**

Scope: the bandage is used mainly on the limbs to fix the dressing. It can perform an independent role, but often precedes other types of dressings, for example spiral.

Technique: the bandage begins with superposition of circular tours in the distal parts of the limb, then the tours rise in the proximal direction. The distance between rounds is equal to the width of the bandage (figure 8, 9).



**Figure 8. – Creeping bandage on the upper limb**



**Figure 9. – Creeping bandage on the lower limb**

## **Cross-shaped (eight-shaped) dressing**

Scope: it is used for bandaging the forehead, the occipital region, the back surface of the neck, chest, ankle, shoulder, hip joints.

Technique of execution: when applying this dressing, the bandages are repeated several times and remind the figure "8". When a cruciform bandage is applied, they cross at a point that is located in the projection of the affected part of the body. Begin and finish the bandage with circular bandages.



**Figure 10. – Cross-shaped headband**



**Figure 11. – Cross-shaped bandage on the back**

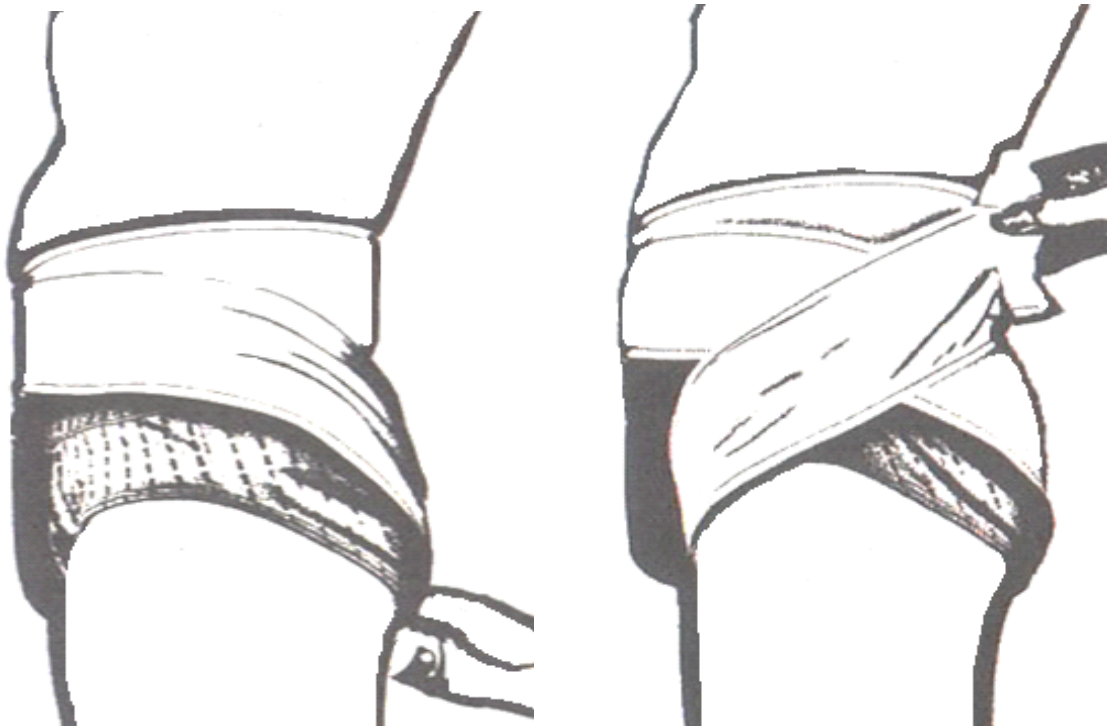


**Figure 12. – Cross-shaped dressing on the ankle**

### **Spica bandage**

Scope: shoulder joint, hip joint.

Technique of execution: this bandage can be considered as a variant of the cruciform bandage, only in this case the crossing of the bandage runs occurs not in one point, but along the line. In appearance this bandage resembles an ear.



A

B



C

**Figure 13. – Spica bandage on the hip joint**

### **Tortoise bandage**

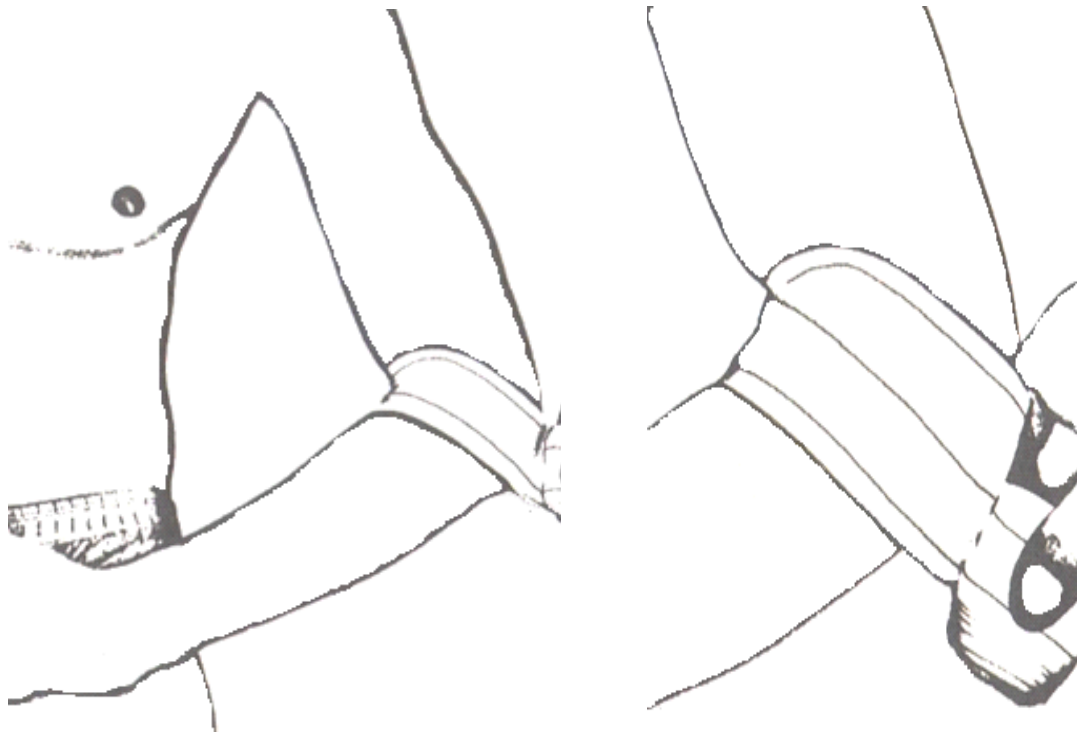
Scope: elbow joint, knee joint.

Technique of execution: in the base lie the eight-shaped passages of the bandage, which intersect on the bending surface of the joint, or diverge and in this case it will be divergent.

Divergent bandage: the first round is circular and passes through the most protruding point of the joint. The next moves of the bandage go higher and lower, crossing on the bending surface, successively covering the previous  $\frac{2}{3}$  until the entire area of the affected area is completely closed.

Convergent dressing begins with circular moves below and above the joint with a cross on the bending surface. Then the band moves closer to each other until the bandage is completely closed.

And in the first and second case the joint should be bent! (figure 14, 15).



A

B

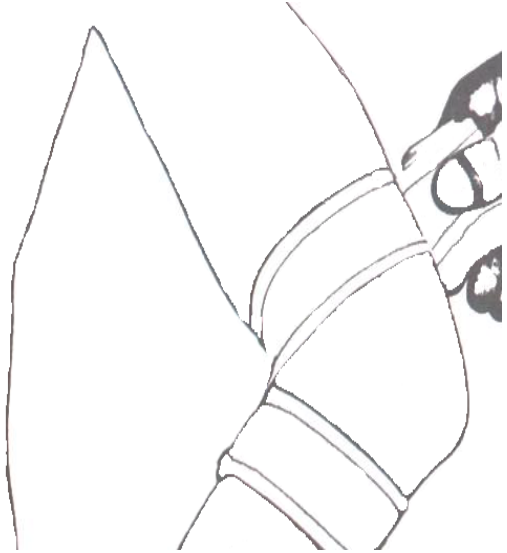


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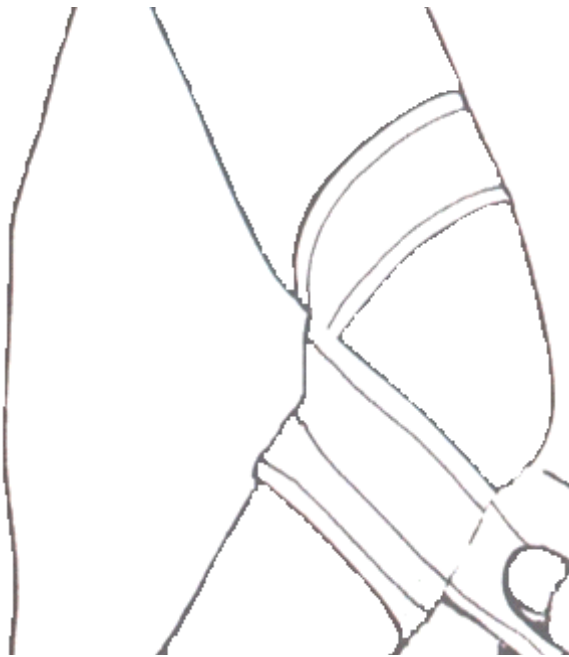
**Figure 14. – Tortoise divergent bandage on the elbow joint**



A



B



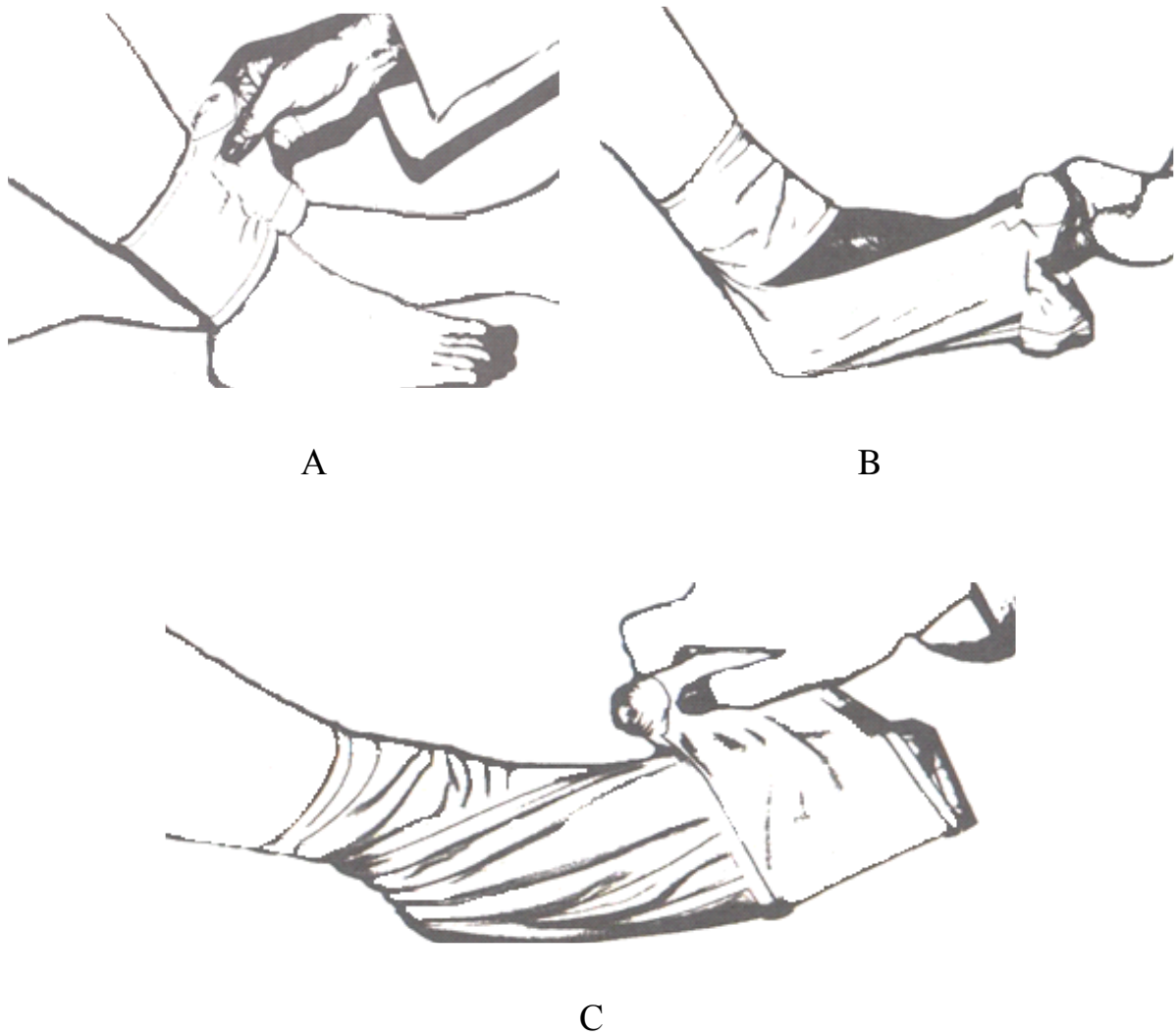
C

**Figure 15. – Tortoise convergent bandage on the elbow joint**

## Returning bandage

Scope: the dressing is superimposed on the head, brush, foot, limb stump.

Technique: in the case of this dressing, circular tours alternate with longitudinal, returning, sequentially covering the affected surface (figure 16).



**Figure 16. – Returning bandage on the foot**



## **BANDAGES ON THE DIFFERENT PARTS OF THE BODY**

### **Head and neck bandages**

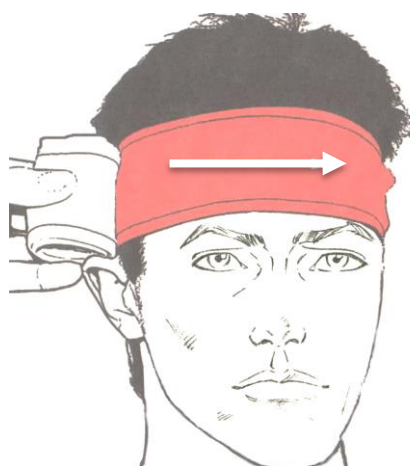
Indications for the application of dressings on the head can serve: soft tissue damage, accompanied by bleeding, postoperative wounds, inflammatory processes.

The following bandages can be applied to the head:

- circular;
- returning;
- Hippocrates cap;
- cap;
- on one eye (monocular);
- on both eyes (binocular);
- Neapolitan;
- cross-shaped.

### ***Circular bandage***

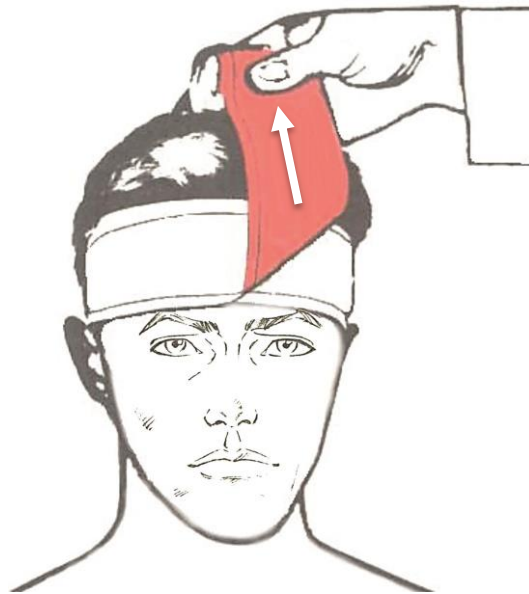
The dressing is intended for closing the frontal, temporal and occipital areas. To apply it, bandages with a width of 5–7 cm are used. Circular tours are applied one on top of the other, providing uniform compression in all areas. A special feature of the dressing is also its simple technical carrying out (figure 17).



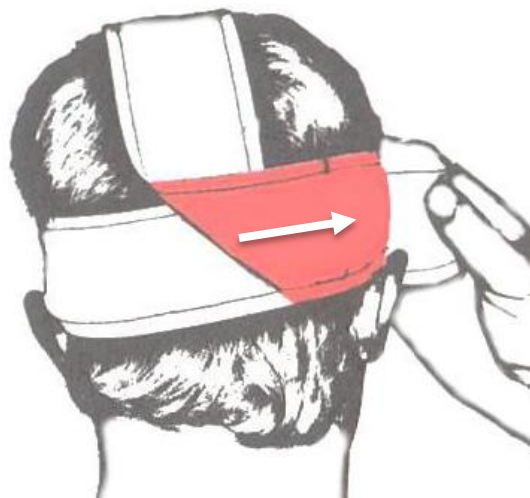
**Figure 17. – Circular head bandage**

## ***Returning bandage***

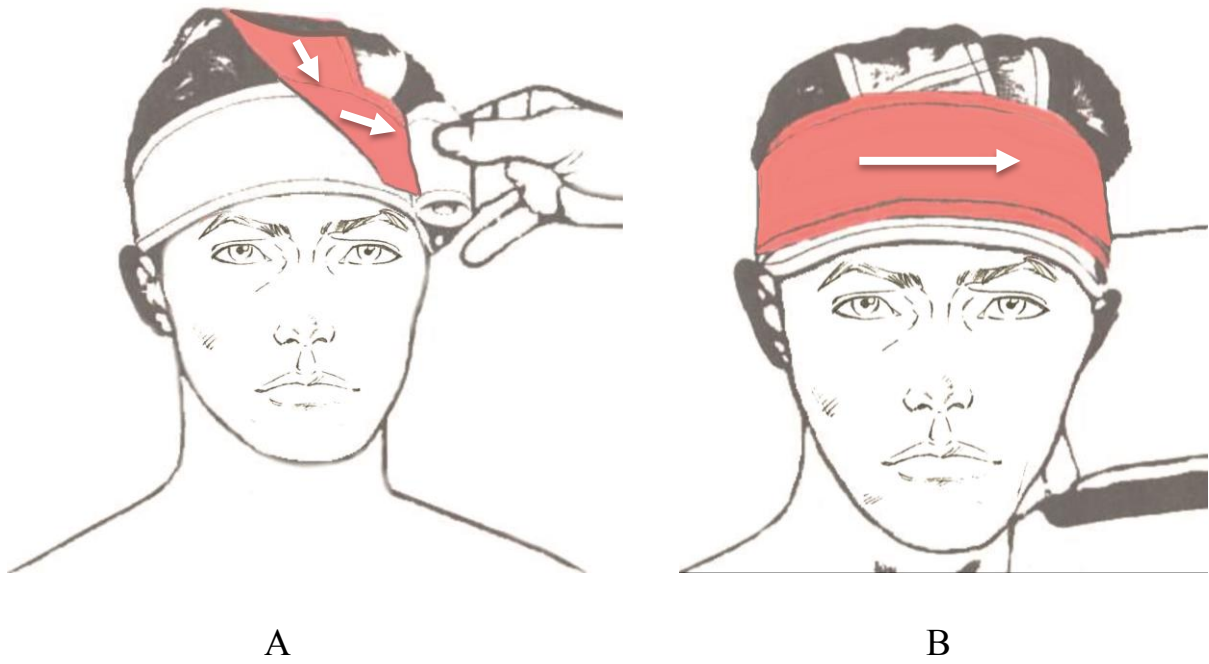
In those cases where it is required to close a large area of damage to the cranial vault, a return bandage is applied. It can be imposed in two ways: first, the backbone of the skull is laid back from the frontal region to the occipital region, making bends there and there. Sagittal tours are fixed by circular. And in the manner indicated in figures 18-22.



**Figure 18. – After superimposition of circular tours, a kink in the frontal area is performed, and the bandage is guided through the arch to the occipital region**



**Figure 19. – In the occipital region, one more inflection is made, and the bandage goes in the circular direction, fixing the sagittal tour**



**Figure 20. – In the frontal region, the second and subsequent inflections (A) are made, and the sagittal passages are successively combined with the circular tours (B) until the entire arch is closed**



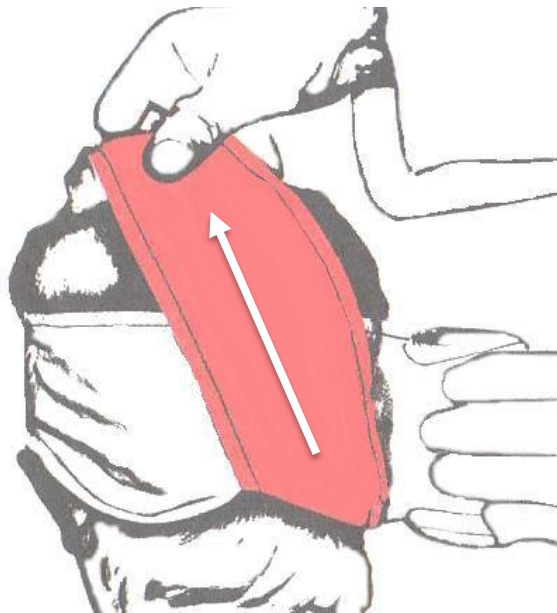
**Figure 21. – Dressing in finished form**

## ***Hippocrates Cap***

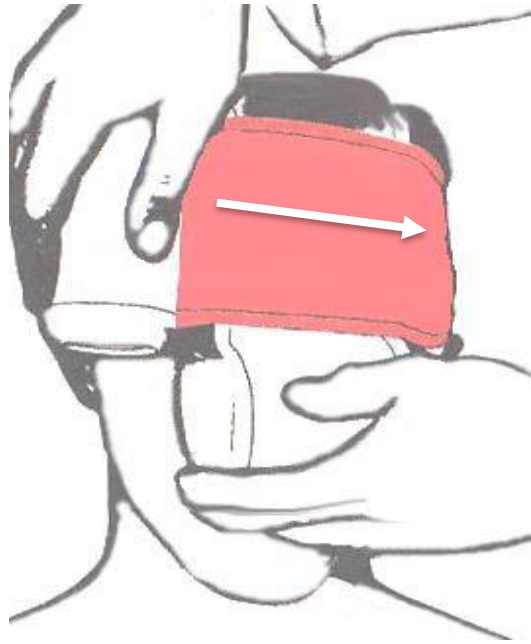
The cap of Hippocrates is a kind of a coming back bandage. It is imposed by a double-headed bandage.



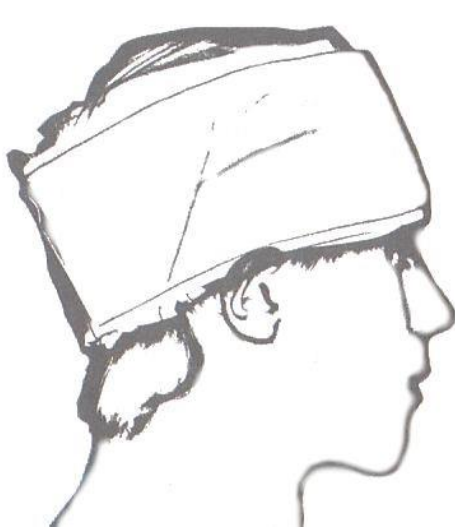
**Figure 22. – Two-headed bandage is put on the frontal region, and its heads are rolled out in opposite directions over the auricles**



**Figure 23. – In the nape of the occiput bandage crosses, then one head continues circular movement, and the other goes in the direction of the forehead along the midline**



**Figure 24. – In the frontal region, the sagittal tour occurs with the circular one, passes under it, makes an inflection and returns to the occipital region (right or left)**



A

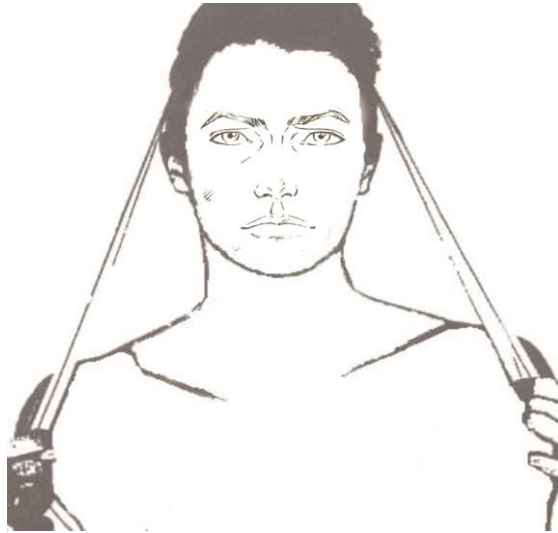


B

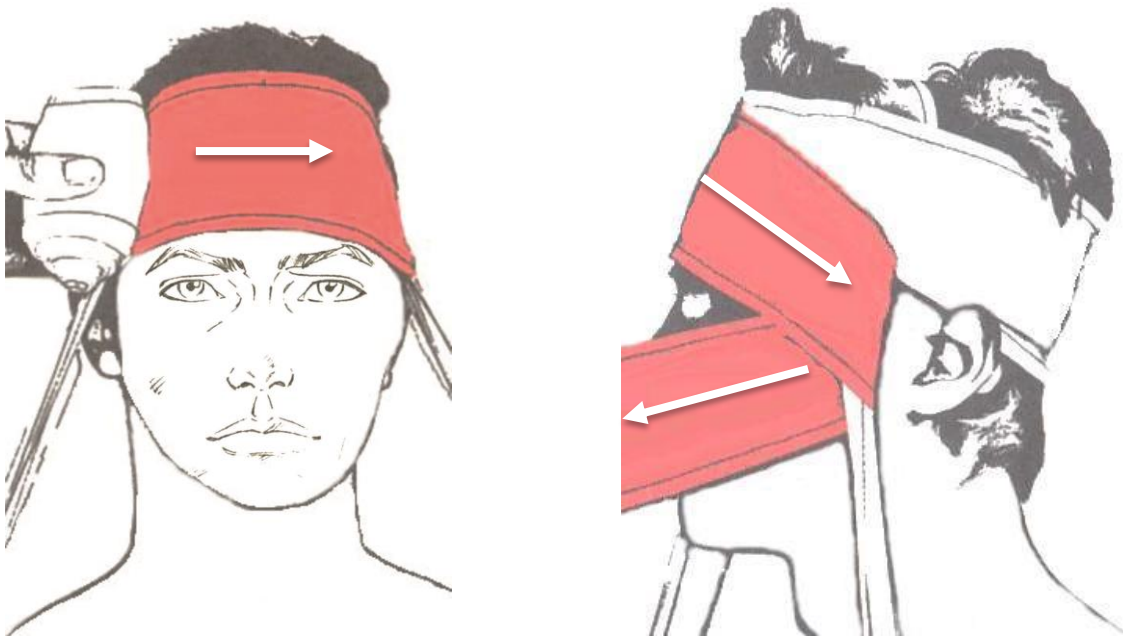
**Figure 25. – In the occipital region, the bandage crosses again, repeating the previous moves, covering the archway to the right, then to the left of the midline. And so before the end of the bandage (A, B)**

## Cap

This bandage is technically simpler than the previous ones and, moreover, more reliably fixes the dressing material in various parts of the cranial vault.



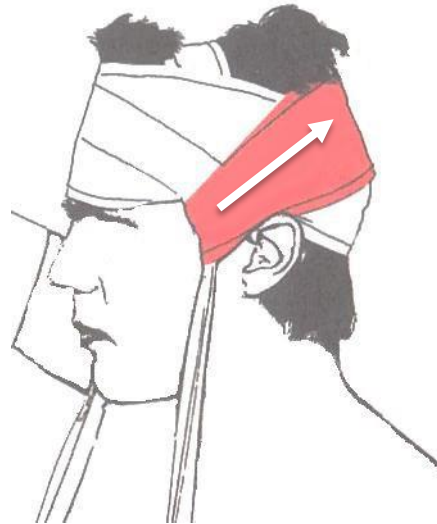
**Figure 26. – The first round is superimposed with a bandage about 1 m long in the form of a ribbon that goes through the parietal region, the ends are stretched and somewhat diverted**



A

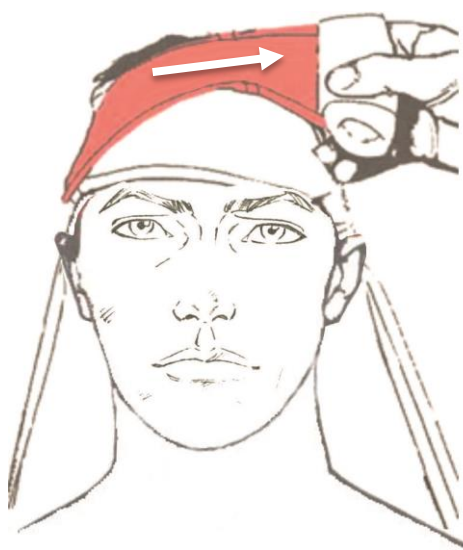
B





C

**Figure 27. – Overlay of circular tours (A); reaching the bandage, the bandage is wound around it (B) and leads to the back, covering the occipital region (C)**



A

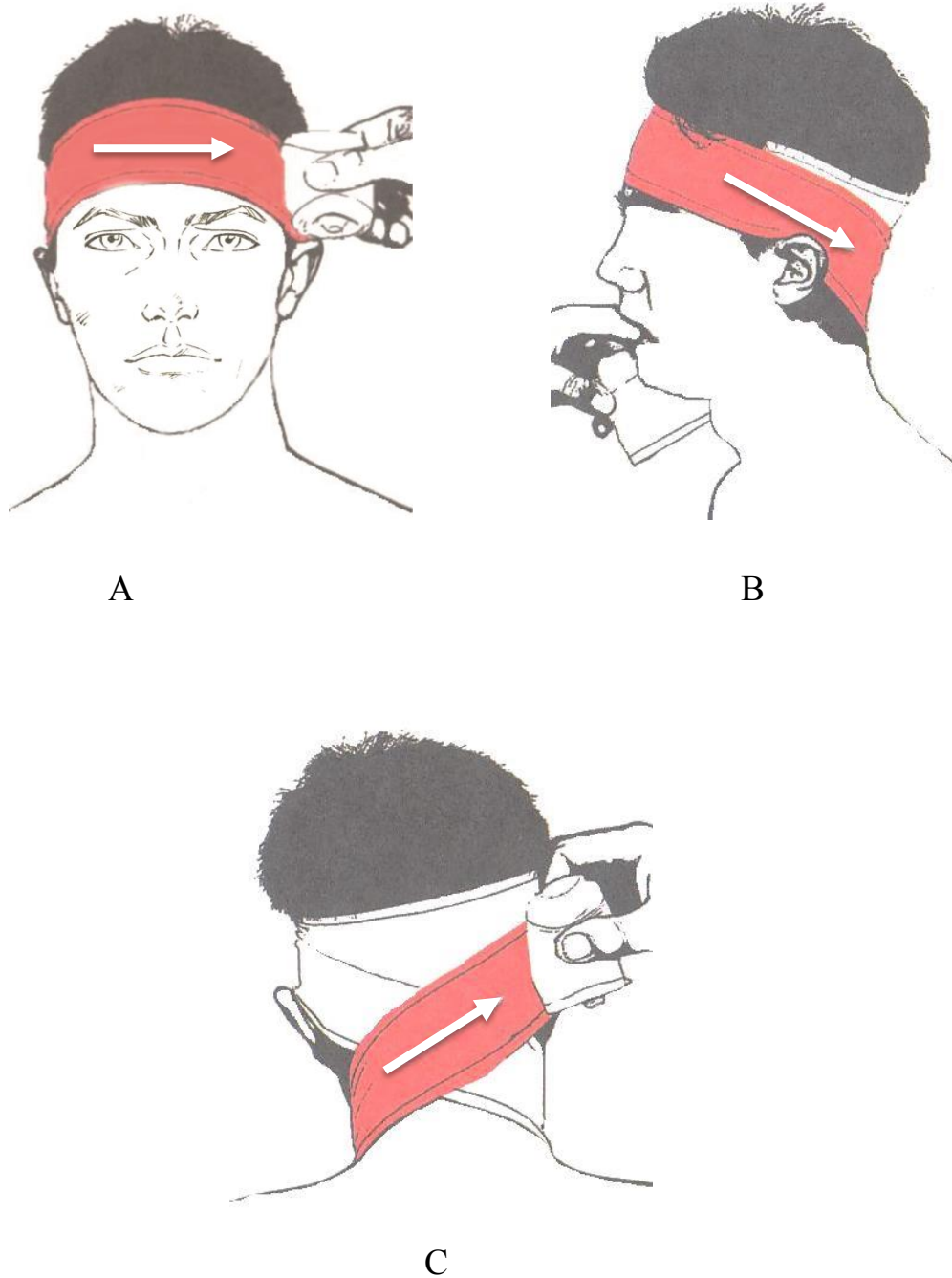


B

**Figure 28. – On the opposite side, the bandage is also wound around the string and goes anteriorly, covering the frontal region (A). Consistently, approaching behind and in front to the parietal region, the entire cranial vault is covered. The end of the bandage is attached to the string, and it is tied under the chin**

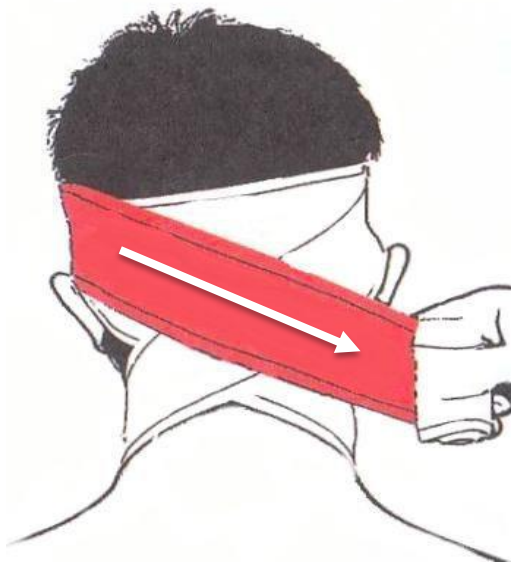
### ***Cross-shaped (eight-shaped) bandage***

The dressing is applied in cases where it is necessary to close the occipital region and the back surface of the neck.

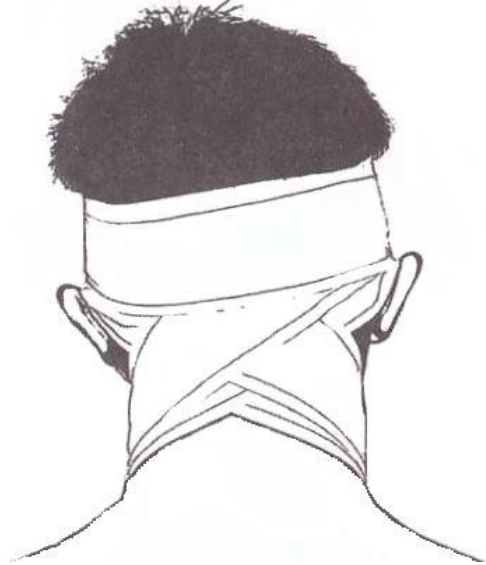


**Figure 29. – The first two or three rounds are circular (A). Then the bandage is carried over the left ear and successively lowered to the posterior, right lateral, anterior, left lateral surface of the neck (B), then the bandage ascends obliquely up to the occipital region, passes over the right ear and returns to the forehead region (C)**





A



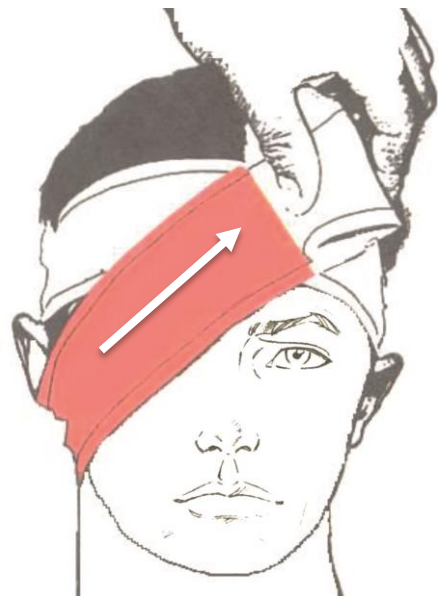
B

**Figure 30. – The beat is repeated again (A).  
The final form of the bandage (B)**

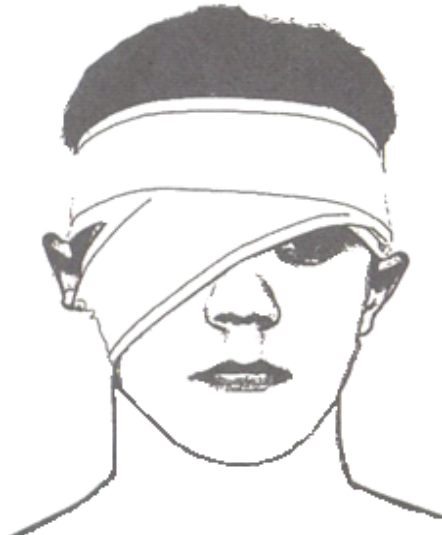
***Bandage on the right eye (monocular)***



A



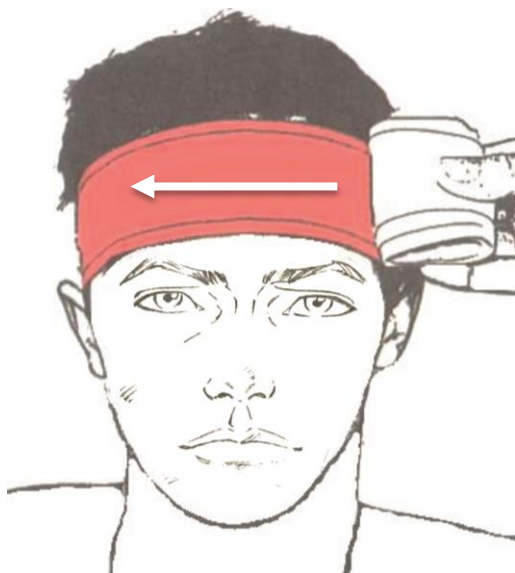
B



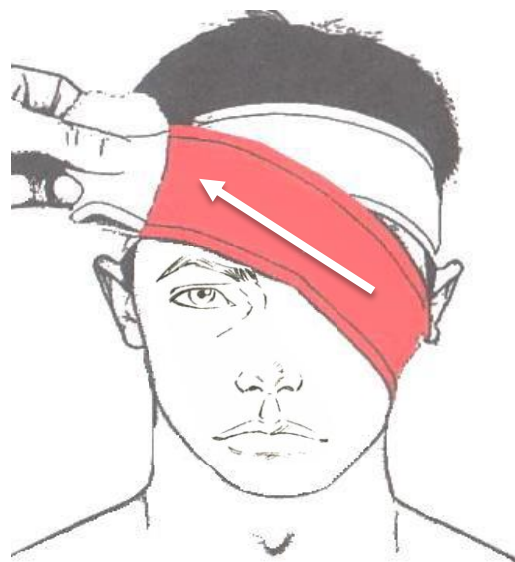
C

**Figure 31. – The dressing begins with the application of 2–3 circular rounds (A), then the bandage goes in an oblique direction to the occipital region, passes under the right auricle, rises obliquely upward to the right eye, nose bridge, frontal region (B), the cycle ends with a circular tour (C). Everything repeats in the same sequence several times**

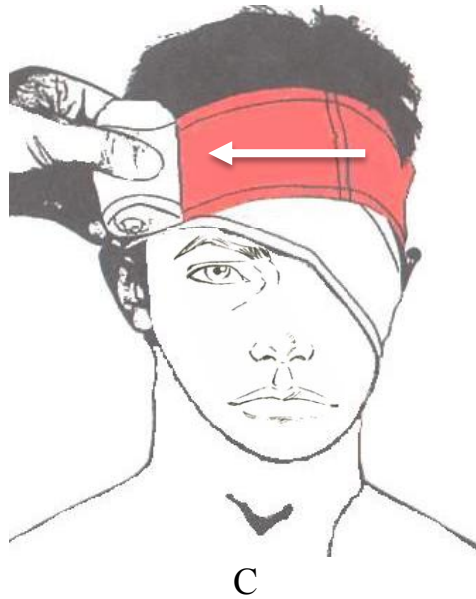
***Bandage on the left eye (monocular)***



A



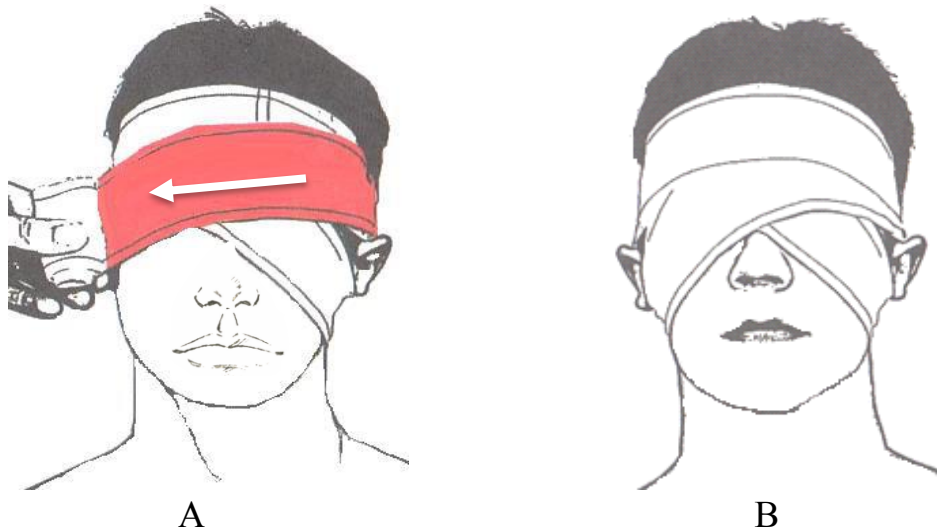
B



**Figure 32. – The head of the bandage is in the left hand, circular tours go from the right to the left (A), then the bandage goes obliquely down in the occipital region, passes under the auricle, rises obliquely upward to the left eye, nose bridge, forehead area (B), the dressing passes into circular tour and everything is repeated in the same sequence several times (C)**

***Bandage on the both eyes (binocular)***

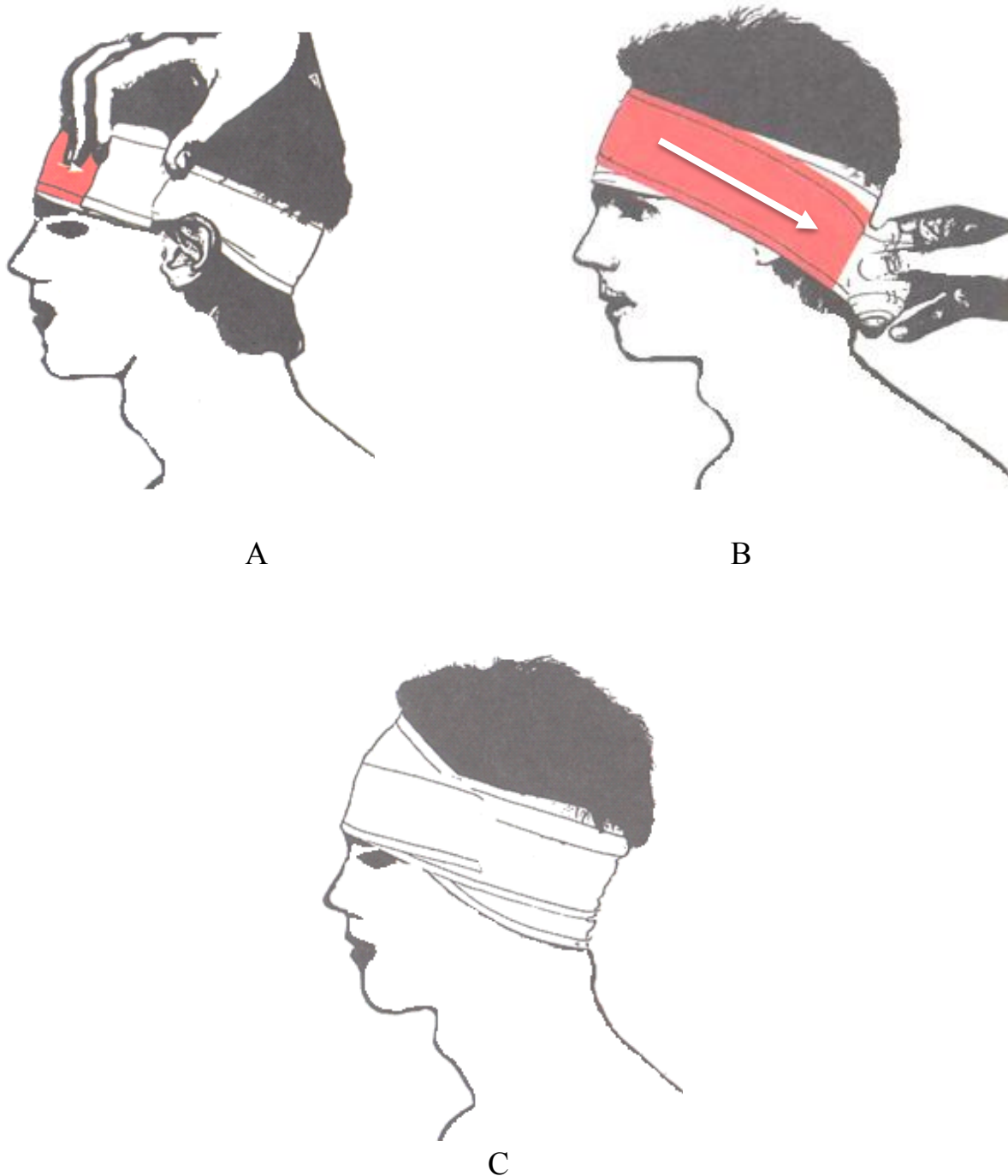
Usually it begins as a bandage on the right eye, but you can do it by starting applying a bandage to your left eye. In this case, the following movements of the bandage are performed.



**Figure 33. – After applying a tour to the left eye and fixing it with a circular tour, the bandage passes over the left ear auricle (A), then descends obliquely downwards through the bridge of the nose to the right eye, passes under the right auricle to the occiput. The bandage ends with circular tours (B)**

### ***Neapolitan bandage***

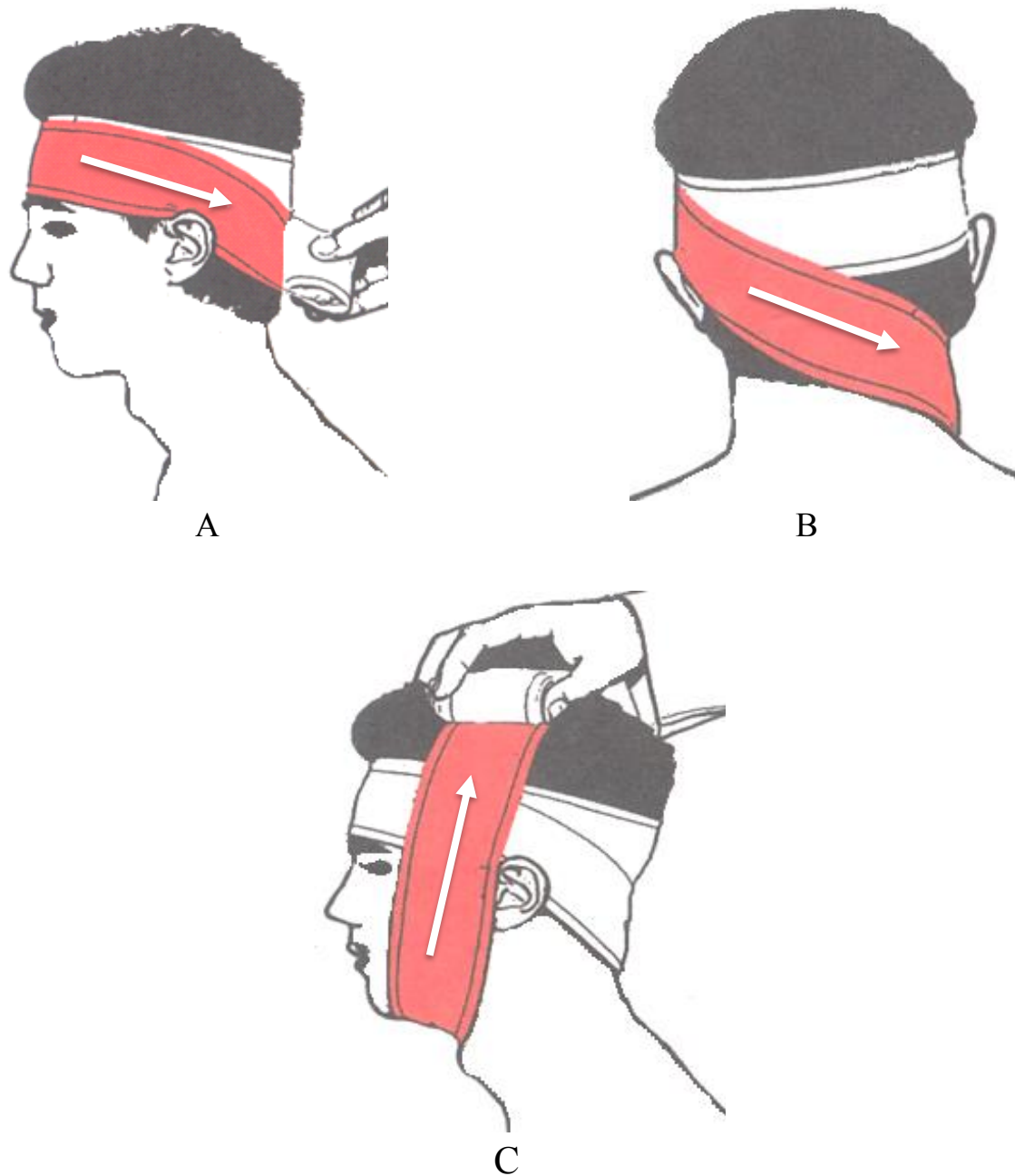
The dressing is superimposed on the ear region, the mastoid area.



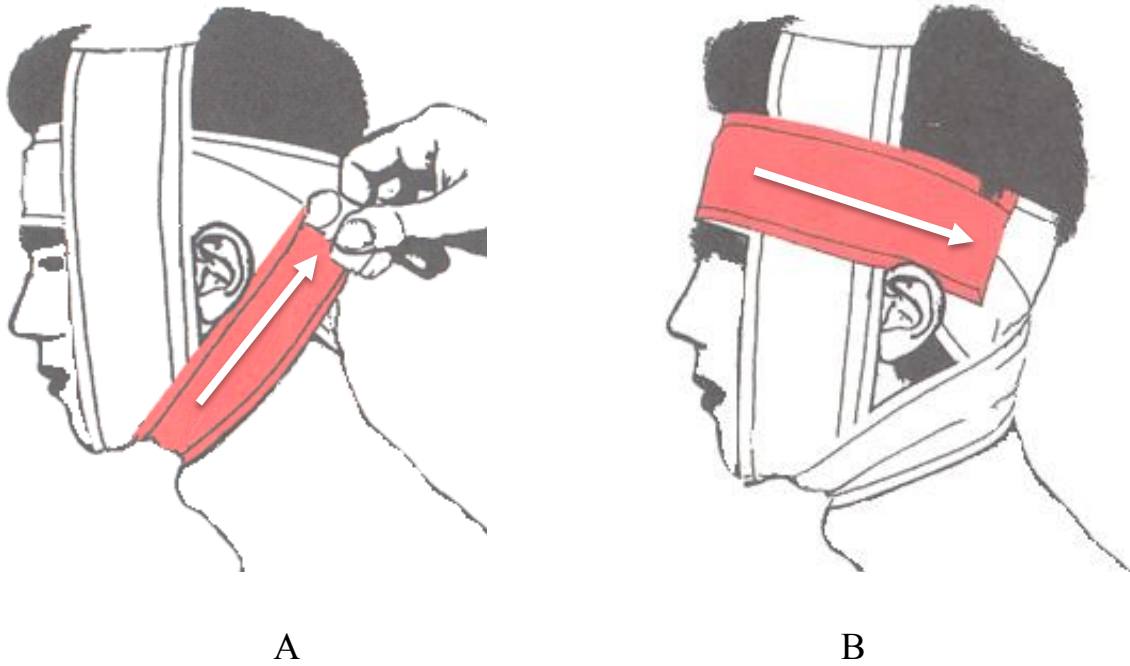
**Figure 34. – The bandage begins with circular rounds over the ear auricles (A), then the bandage moves down the sick side lower and lower (B), closing the affected area. The dressing is fixed by circular strokes (C)**

## ***Bridle***

The dressing can be used to apply to the parietal and submandibular areas.



**Figure 35. – After applying a circular tour to the head, the bandage is led to the occipital region above the auricle (A), then the bandage is directed to the posterior side surface of the neck (B), then the bandage is carried under the lower jaw, along the left cheek, rising upwards to the parietal region and the opposite side of the face (C)**



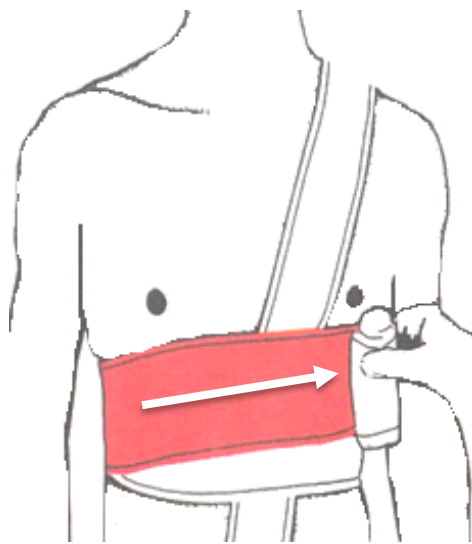
**Figure 36. – The next round is sent from under the jaw area below the left ear to the occipital region, where the bandage turns into a circular tour (A). The turns of the bandage are repeated, the bandage is finished (B)**

### **Chest bandages**

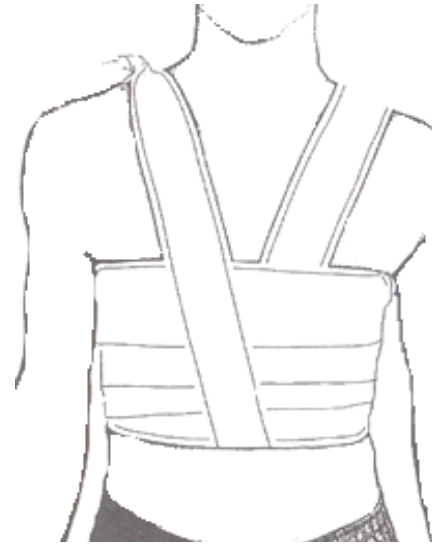
#### ***Spiral bandage on the thorax***

The dressing is superimposed on the lower/3 and mid/3 of the thorax. For better fixation, a "sword belt" is used (a bandage made from the bandage with a length of 2.3-2.5 m, which is thrown over the left shoulder).





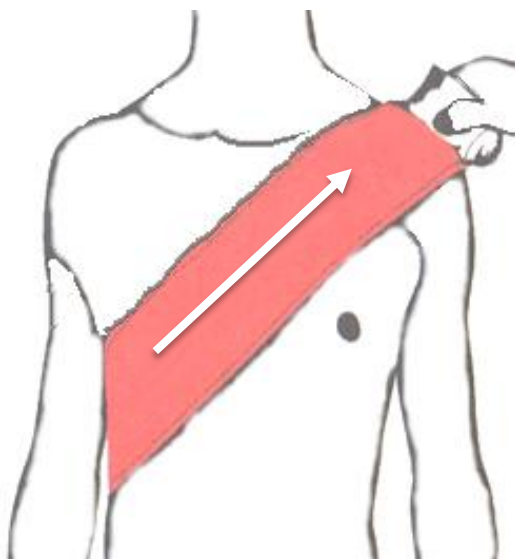
A



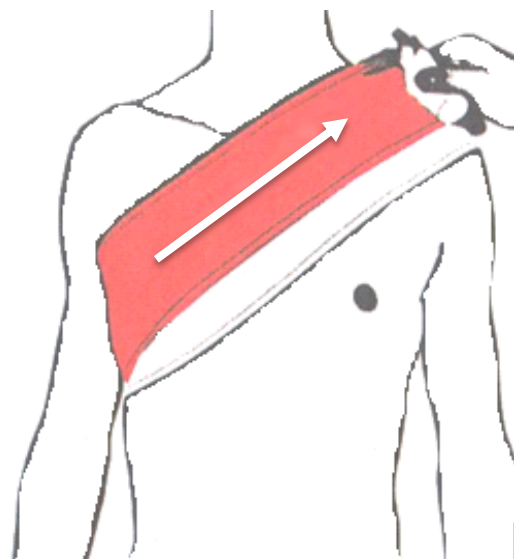
B

**Figure 37. – The first circular rounds in the lower/3 of the chest are banded with a "sword belt" (A). The following tours of the bandage rise in a spiral to the armpits, closing the previous 2/3. The ends of the "sword belt" are connected above the right shoulder. The final form of the bandage (B)**

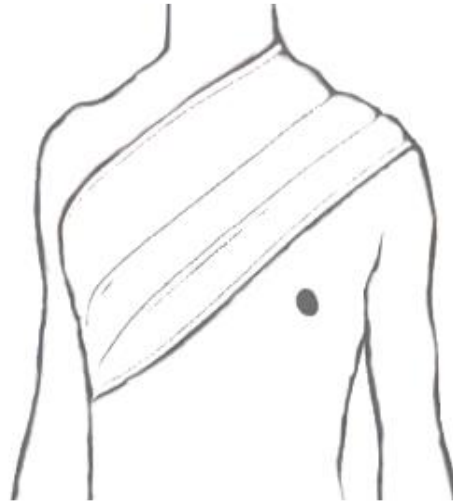
***Oblique bandage on the chest***



A



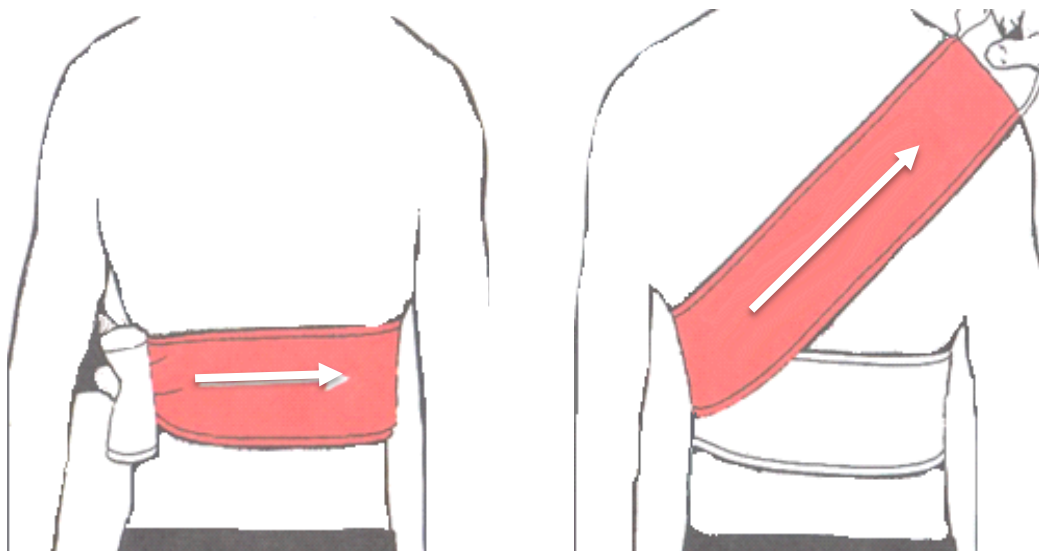
B



C

**Figure 38. – The dressing begins in mid/3 on the lateral surface of the chest on the right side. Bandage goes obliquely upward on the shoulder, then on the back to the beginning of the tour (A). The next moves of the bandage rise higher, closing the previous two by 2/3 (B). The final form of the bandage (C)**

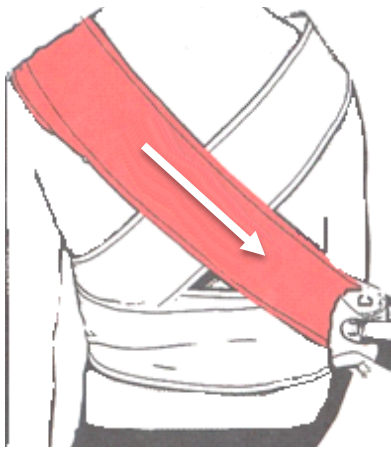
***Cross-shaped bandage on the posterior surface of the chest***



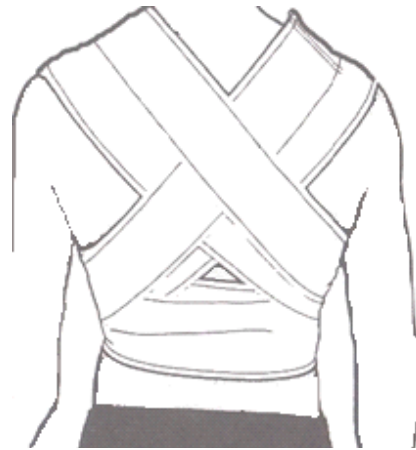
A

B





C

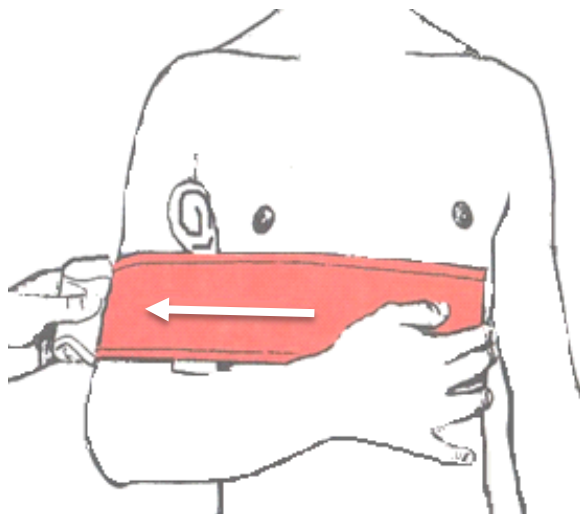


D

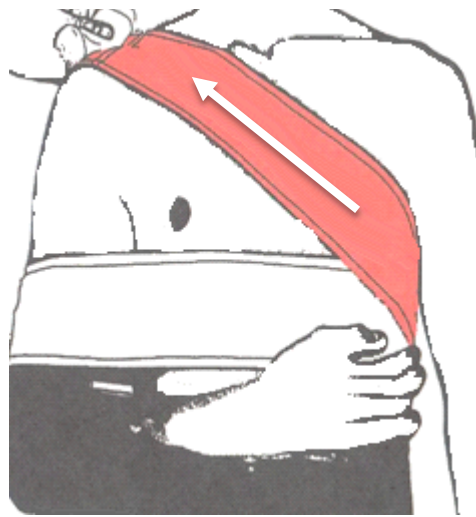
**Figure 39. – The patient is turned back to the doctor. In lower/3 of the chest, from left to right, impose circular strokes (2–3) (A). Next, the bandage is led along the back obliquely upward through the right shoulder, obliquely down the front surface, the lateral surface of the chest, turning into a circular tour (B). Then the bandage is led to the lateral surface of the chest on the right, lifts obliquely up the front surface, onto the left shoulder and obliquely down the back, ending the cycle with a circular tour. The moves are repeated 2–5 times (C). The final form of the bandage (D)**

### ***Desault's bandage***

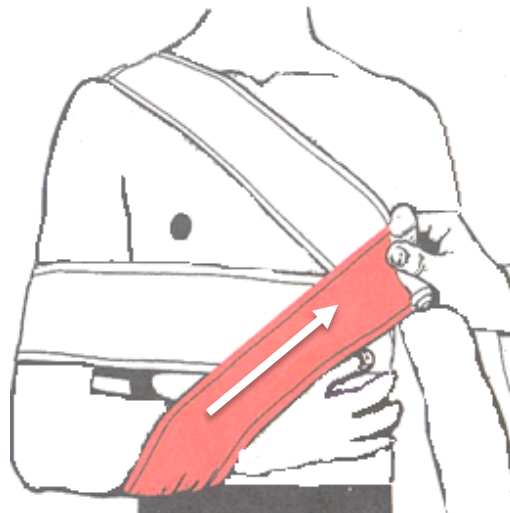
The bandage is used for fractures of the clavicle, shoulder, after the shoulder dislocation was corrected. In case of a fracture of the clavicle, a cotton-gauze cushion is inserted into the axillary region to eliminate the displacement of the fragments. For such bandages use a bandage 10 cm wide.



A

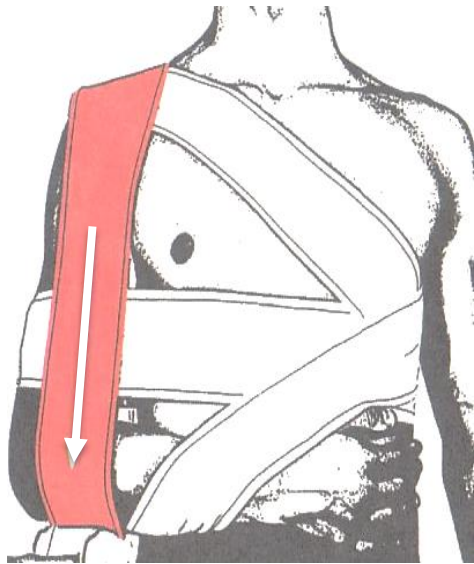


B

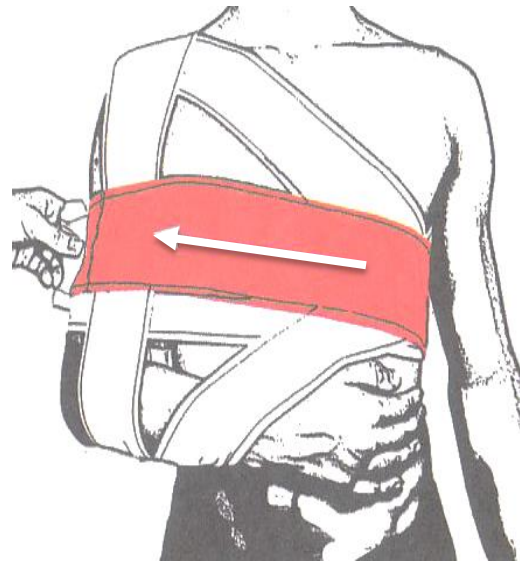


C

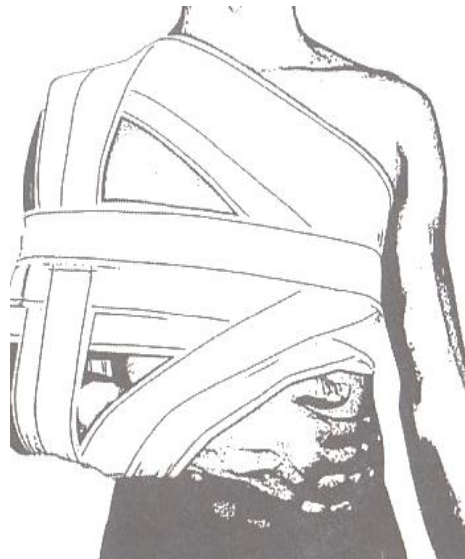
**Figure 40. – The bandage starts with circular rounds that go to the shoulder of the affected side and fix it to the trunk (A), then the bandage goes to the armpit area of the healthy side, rises to the shoulder of the affected side and over the upper surface of the shoulder descends on the forearm (B). On the forearm, the bandage goes in an oblique direction to the armpit area of the healthy side and passes through the back to the affected shoulder (C)**



A



B



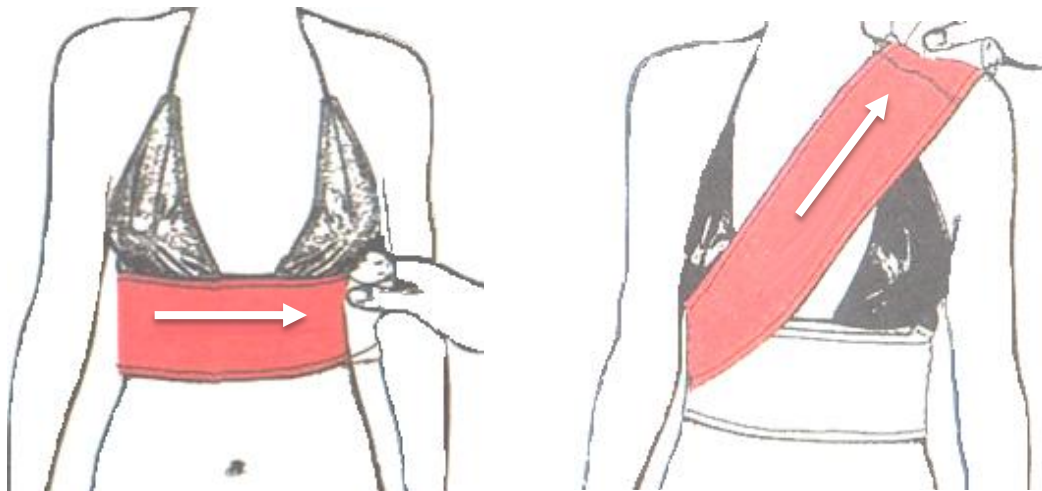
C

**Figure 41. – From the shoulder strap, the bandage descends the front surface of the shoulder on the elbow joint (A), bends around it, follows the back and returns, repeats the course of the circular tour (B). Further, the bandage moves are repeated in the same sequence all the steps described above (4–5 times). The dressing is finished (C)**

### ***Supporting bandage on the mammary gland (right)***

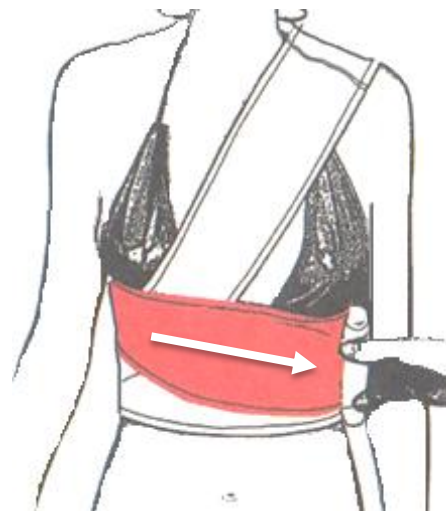
Indications: lactostasis, serous-infiltrative forms of mastitis, after operations on the mammary gland.

The bandage is superimposed on one or both mammary glands.



A

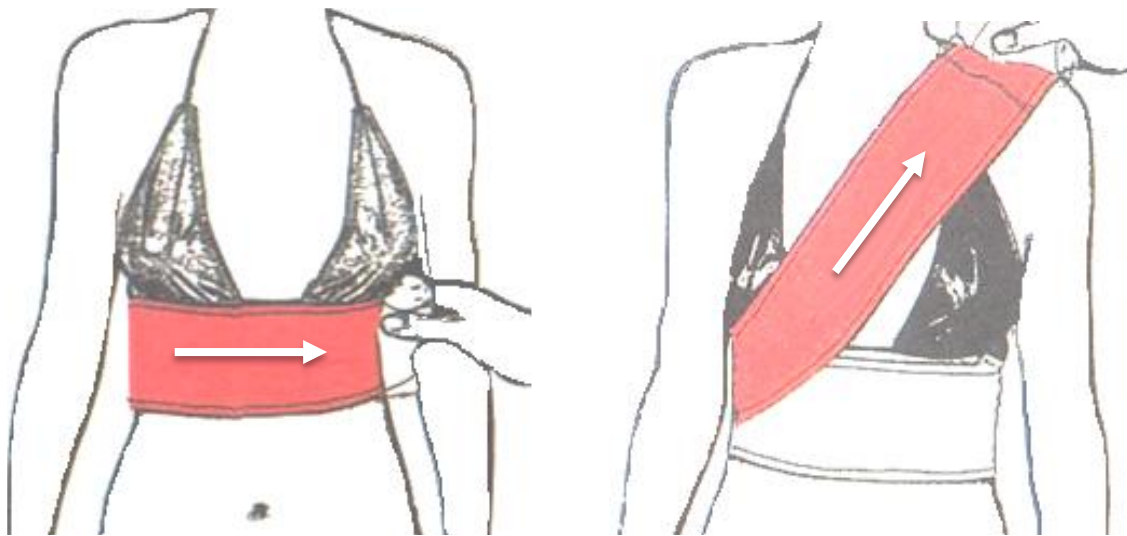
B



C

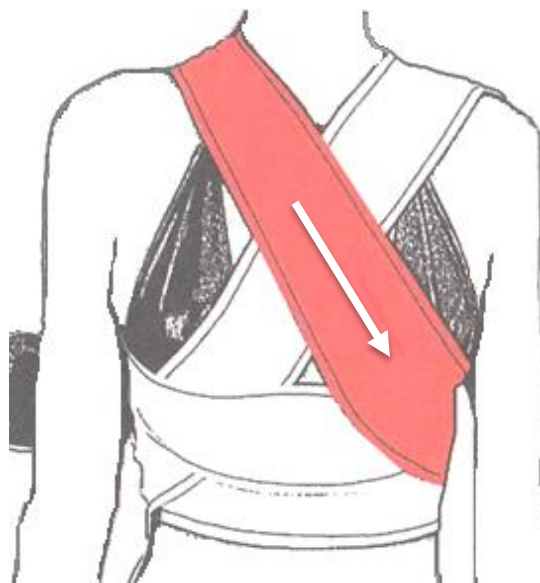
**Figure 42. – The dressing begins with circular strokes in the lower/3 of thorax (under the mammary glands), from right to left (in case the mammary gland is right, if left – from left to right) (A). Then the bandage goes through the lower inner quadrant of the right breast, lifting the gland, rises to the left shoulder, goes to the back, and then to the horizontal tour, which passes above the previous one through the outer quadrant and also raises the gland (B, C). The moves are repeated, overlapping the previous 2/3, until all the gland is closed, except for the nipple and areola**

***Supporting bandage on the both mammary glands***



A

B



C

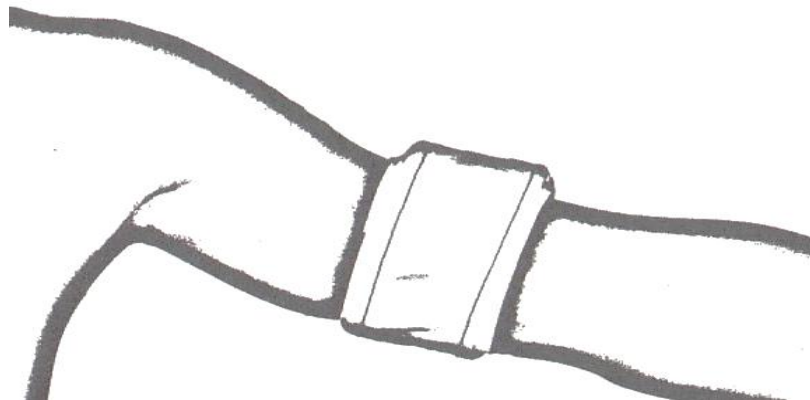
**Figure 43. – The circular round is superimposed in the lower/3 of the chest, from the right to the left (A), from the right breast to the obliquely upward, on the left shoulder there is a tour that descends the back to the right half of the chest and turns into a circular tour (B), then, passing on the back through the right shoulder, descends on the front surface of the chest, goes under the left breast (lifting it) and goes to the horizontal tour (C)**



**Figure 44. – Circular and diagonal strokes of the bandage are repeated, alternating and, closing, close the mammary glands.  
The final form of the bandage**

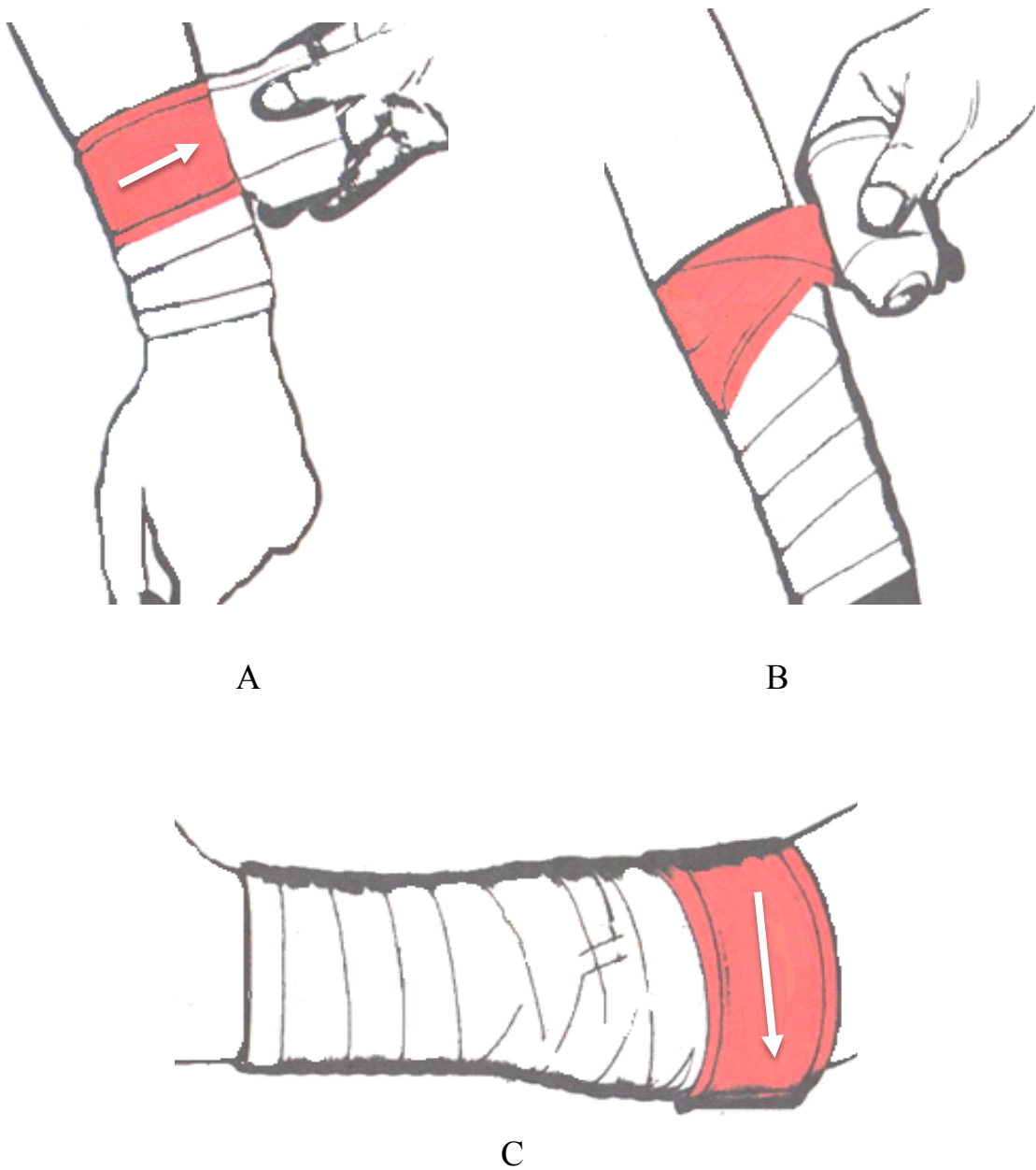
## **Bandages on the forearm and shoulder**

### ***Circular bandage on the shoulder***



**Figure 45. – The first round is placed around the shoulder in it's lower/3, and the subsequent round repeats the course of the first and overlaps each other**

***Spiral bandage on the forearm***

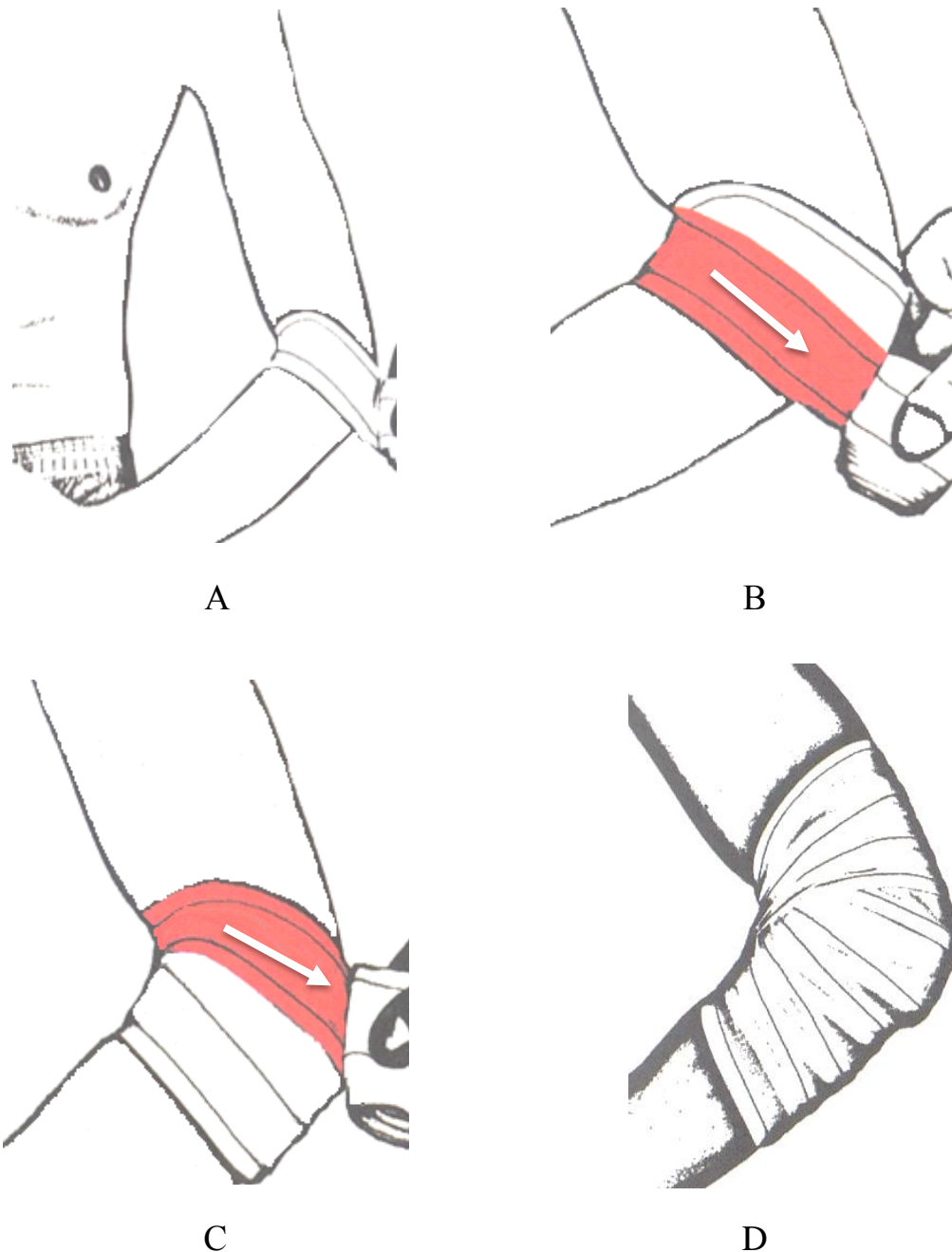


**Figure 46. – After overlapping circular rounds in the lower/3 of the forearm, the bandage rises upward (A) upwards (A), reaching mid/3, performing the kinks of the bandage, rising to the elbow joint (B), the dressing ends with a circular stroke (C)**



### ***Tortoise divergent bandage on the elbow joint***

The dressing is applied on the bent limb at the elbow joint, at 90° angle.

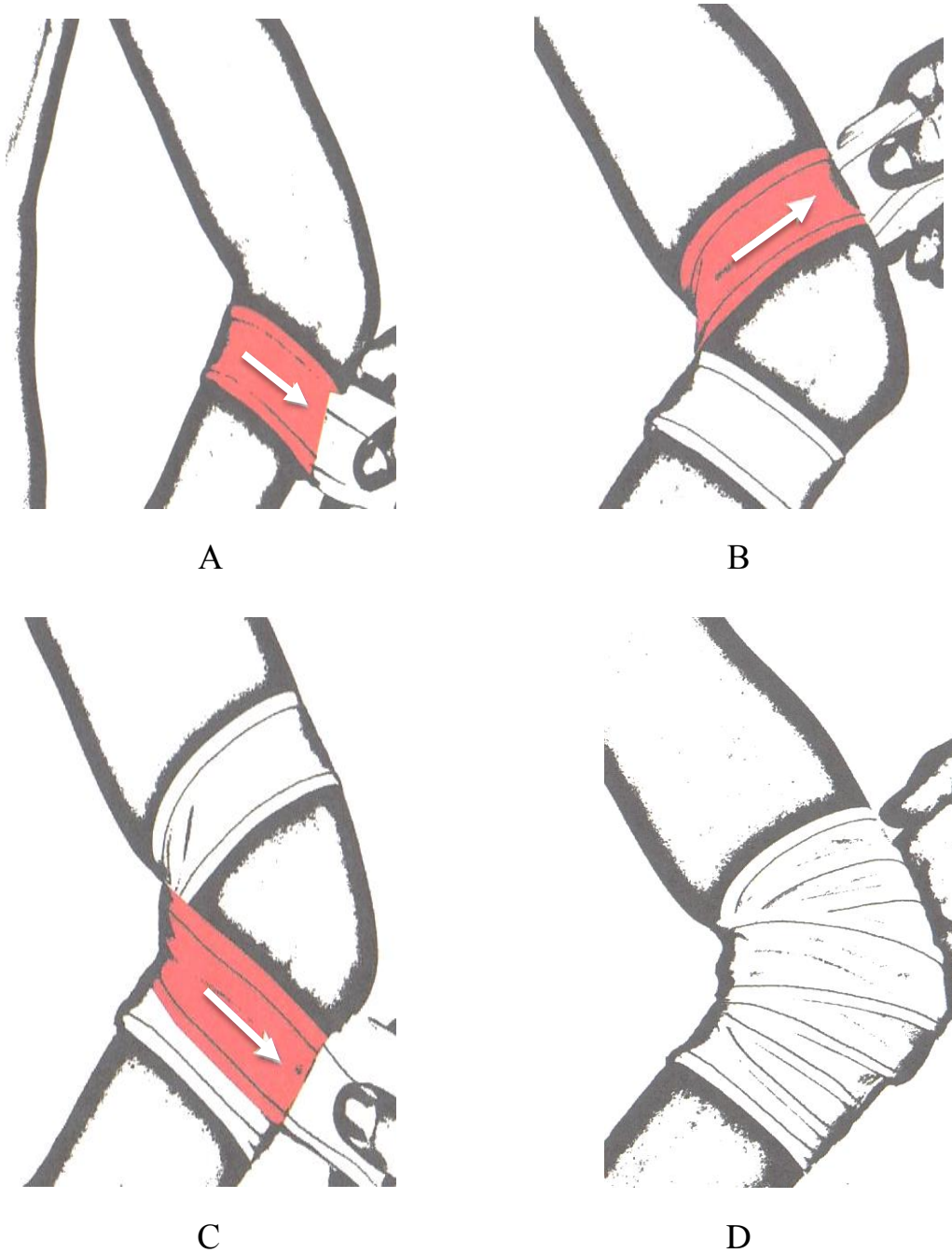


**Figure 47. – The dressing begins with circular strokes passing through the region of the elbow joint (A), the next round is carried lower (on the forearm), overlapping the previous by 2/3 (B), then through the front surface of the joint, the bandage rises on the shoulder, also closing the previous one on 2/3 (C), then the turns go alternately below the joint, then higher, closing it (D)**



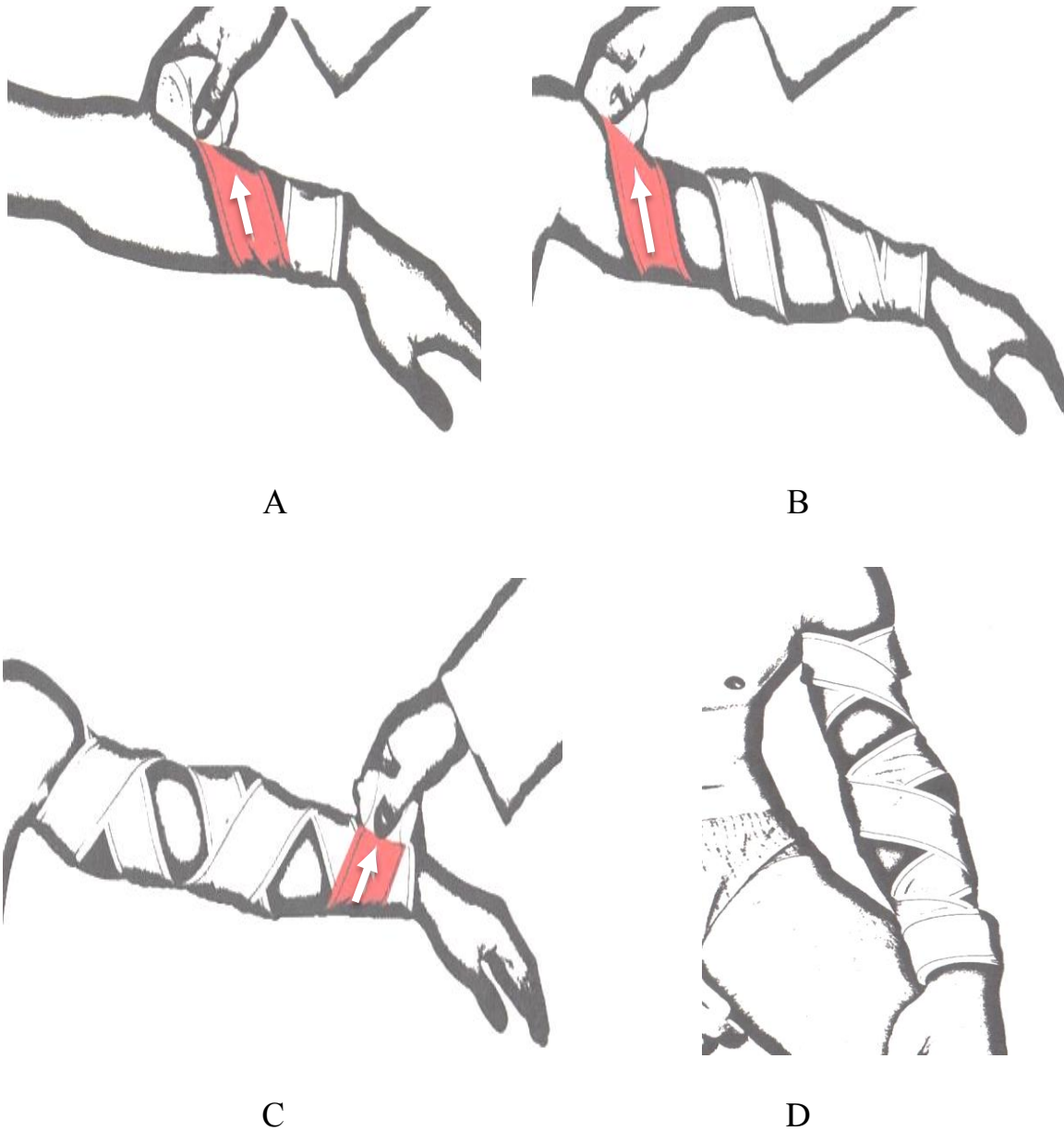
### ***Tortoise convergent bandage on the elbow joint***

The dressing is applied when bending at the elbow joint is 90°.



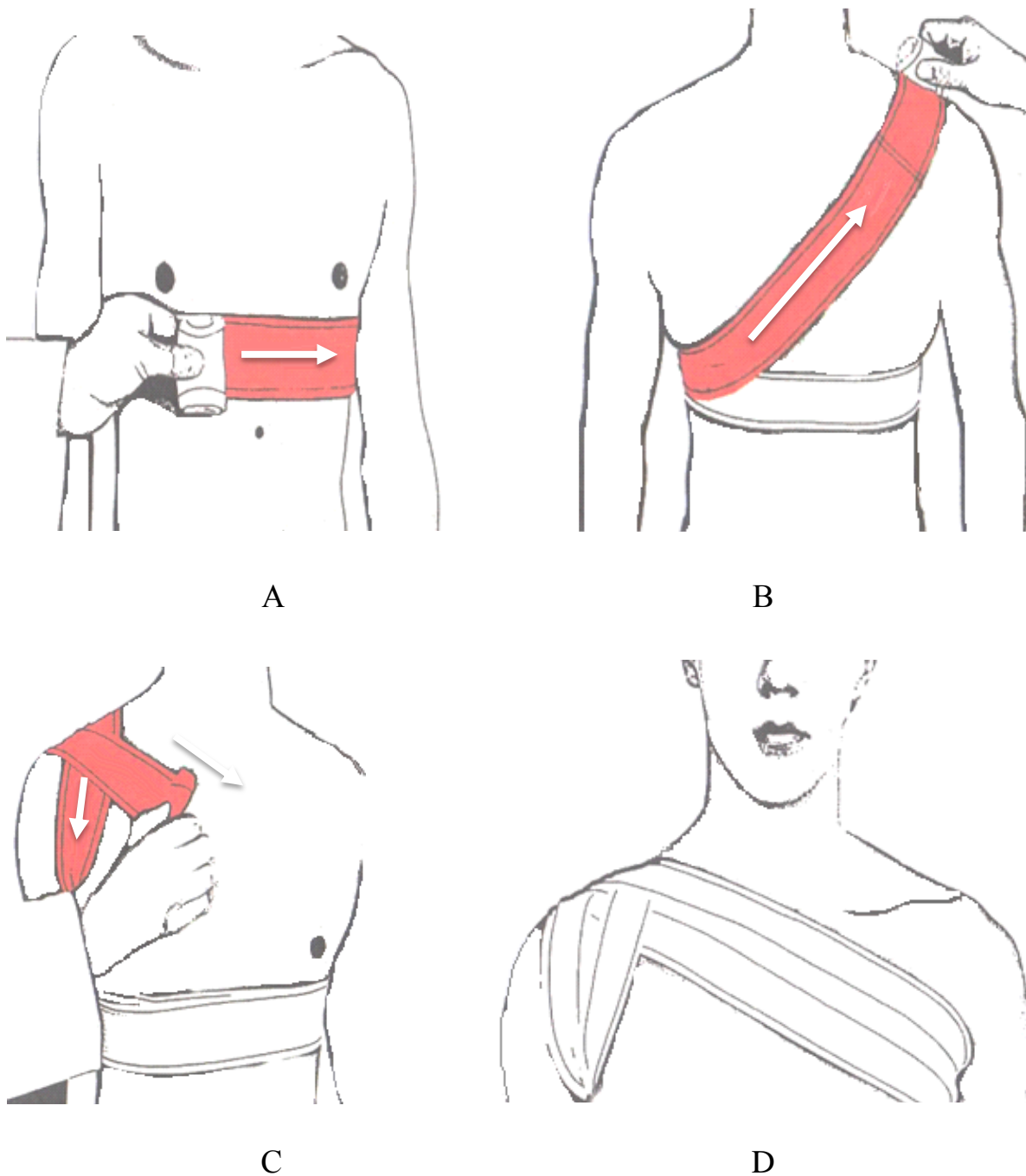
**Figure 48. – The dressing begins from 2–3 circular moves in the upper/3 of the forearm (A), then the bandage is skewed along the flexural surface of the elbow joint to the lower/3 of the shoulder (B), bypassing the shoulder on the back surface, the bandage is skewed, passing over the forearm, but already higher than the previous one, overlapping it by 2/3 (C), repeating, the moves of the bandage approach and converge in the region of the elbow (D)**

***Creeping bandage on the upper limb***



**Figure 49. – The dressing begins with circular rounds in the lower/3 from the forearm, then the bandage rises obliquely upward (A), the intervals between rounds rising to upper/3 of the shoulder are equal to the width of the bandage applied (B). The dressing can be completed by circular tours. If necessary, the bandage moves back down and the bandage ends in the lower/3 of forearm with circular strokes (C).  
Dressing in finished form (D)**

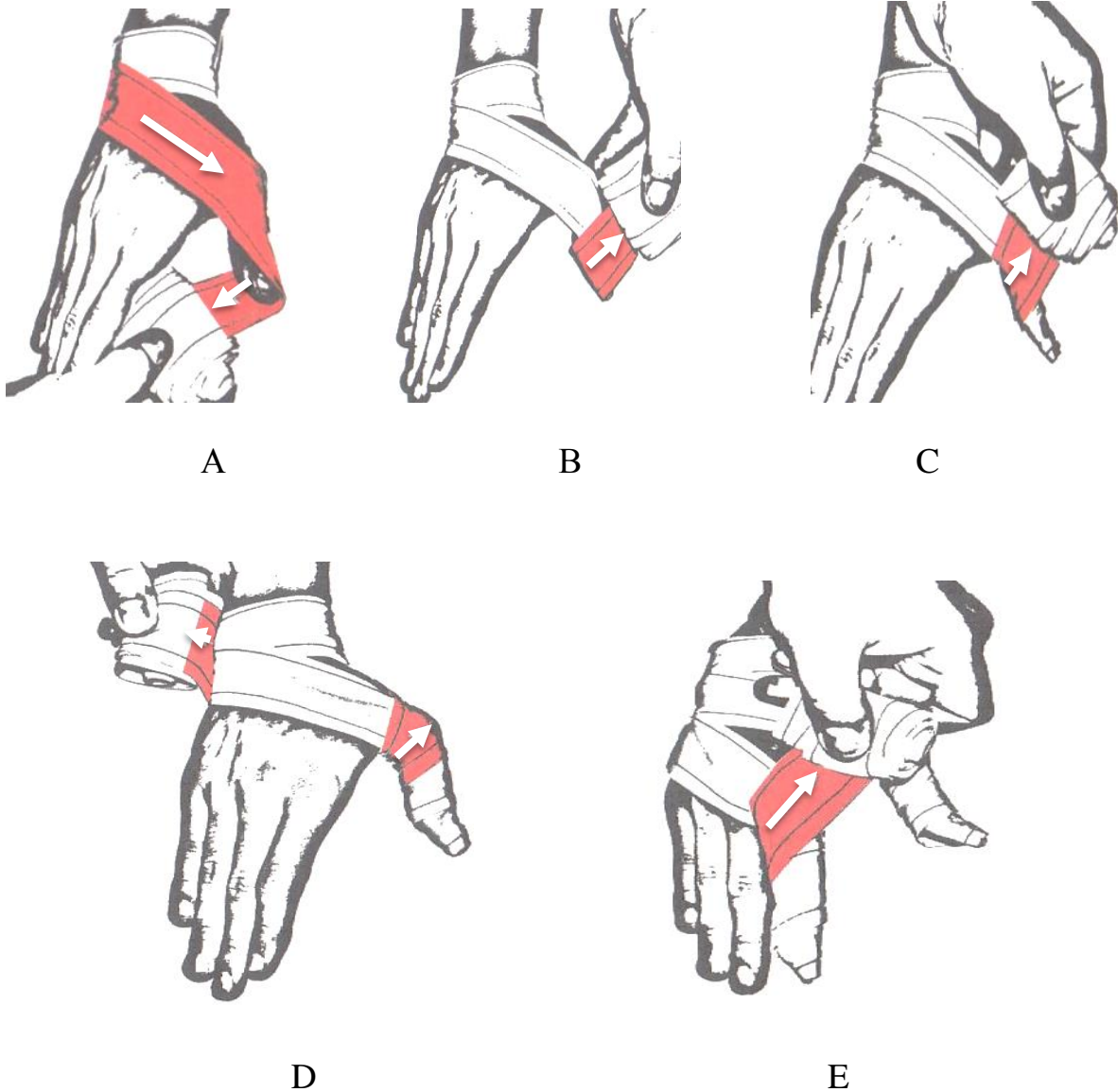
***Spica bandage on the humeral joint's area***



**Figure 50. – The first moves of the bandage are circular, left to right, on the upper/3 of the chest (A), then the bandage is guided through the left axillary region to the back and right shoulder (B), the bandage is carried anterior to the shoulder joint (C), then the bandage is led along the front surface of the chest to the left axillary region and through the back again to the right shoulder, then around the shoulder and shoulder, but overlapping the previous moves above by 2/3. Tours are repeated, closing the entire area (D)**

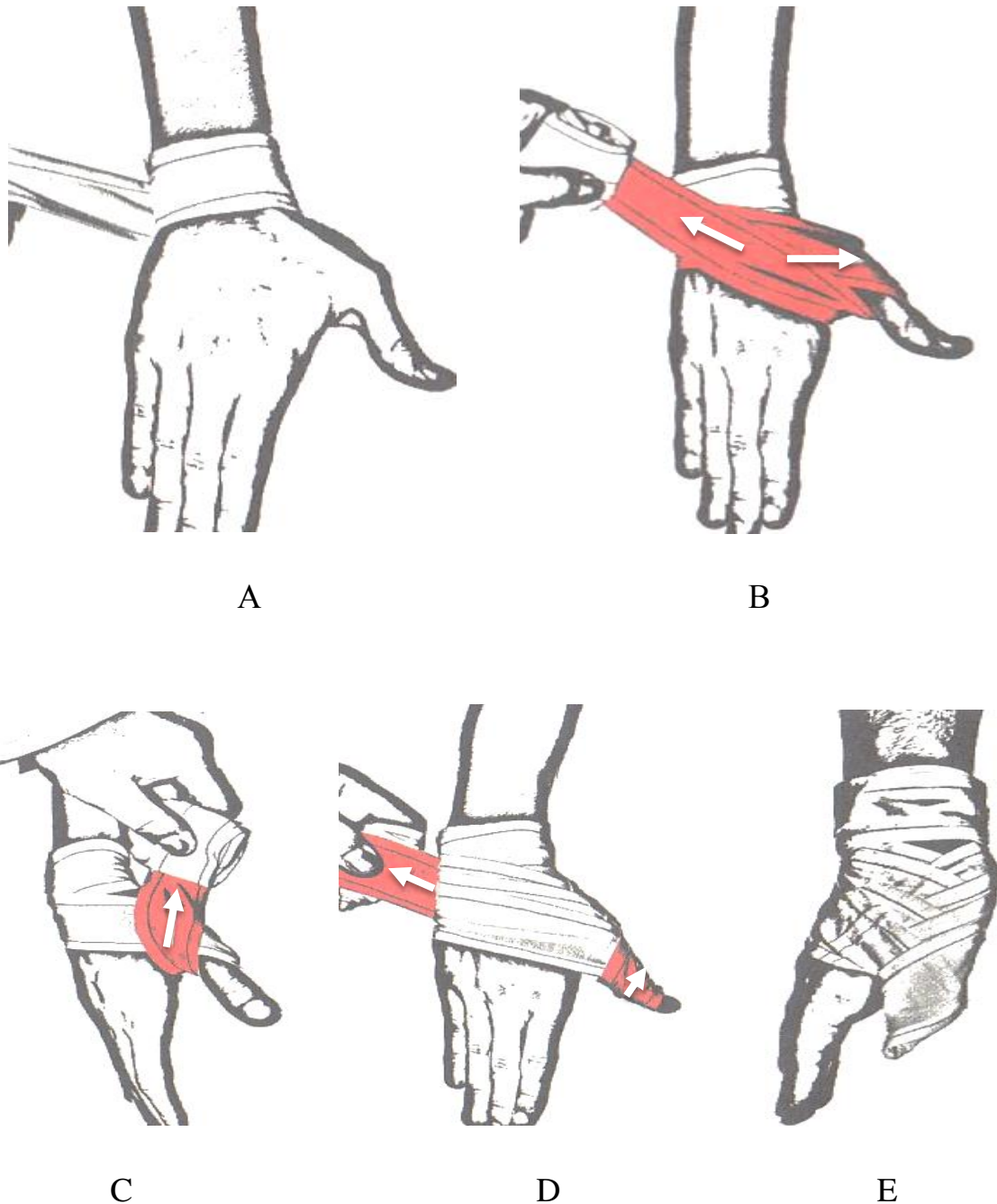
## Bandages on the hand

### *Spiral bandage on the 1<sup>st</sup> and 2<sup>nd</sup> fingers*



**Figure 51. – After placing circular rounds in the lower/3 of the forearm, the bandage leads to the 1st finger of the hand (A), then a move is made around the distal phalanx (from left to right) (B), the next spiral tour passes along the main phalange (C), then the bandage on the palmar surface returns to the forearm, turning into circular tours (D), the dressing on the 2nd, 3rd, 4th, 5th fingers (E) is also applied in the same way**

***Spica bandage on the basis of a thumb***



**Figure 52. – The bandage begins with the circular movements of the bandage in the lower/3 of the forearm (A), then the bandage is conducted along the back surface of the hand, round the proximal phalanx of the 1st finger (B), return the bandage through the back surface of the wrist to the foreface of the forearm, tour (C), the following tours of the bandage on the finger lead in the direction of the distal phalanx, closing the previous rounds to 2/3 (D), the bandage in the finished form (E)**



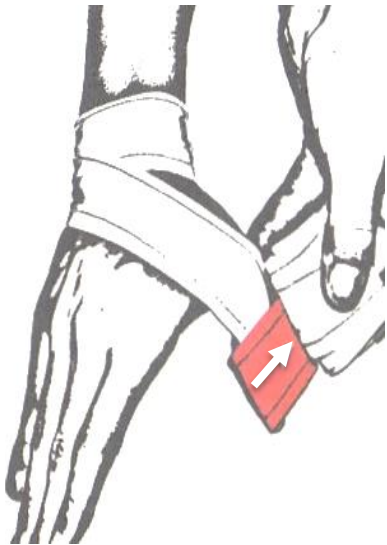
***Bandage "Glove"***



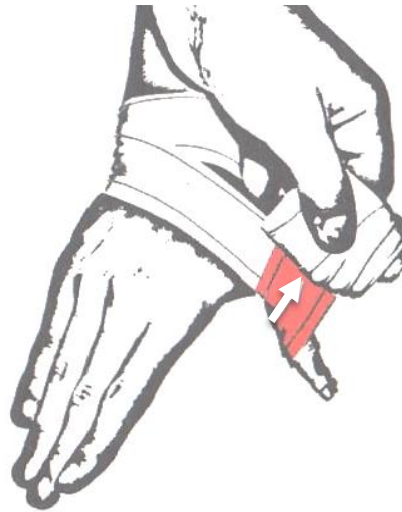
A



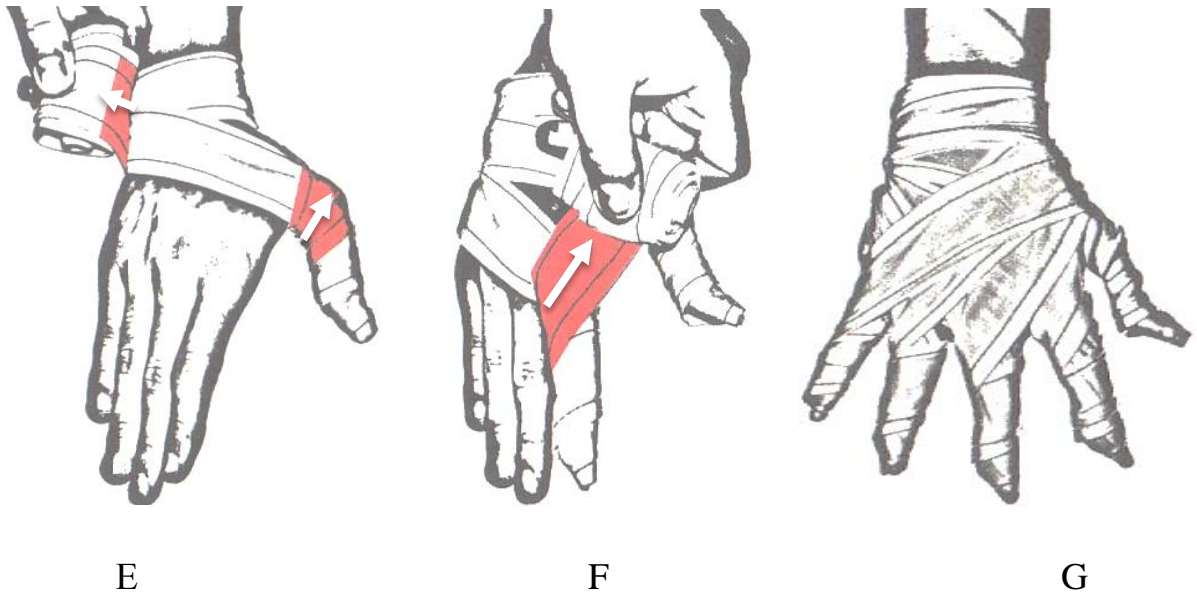
B



C

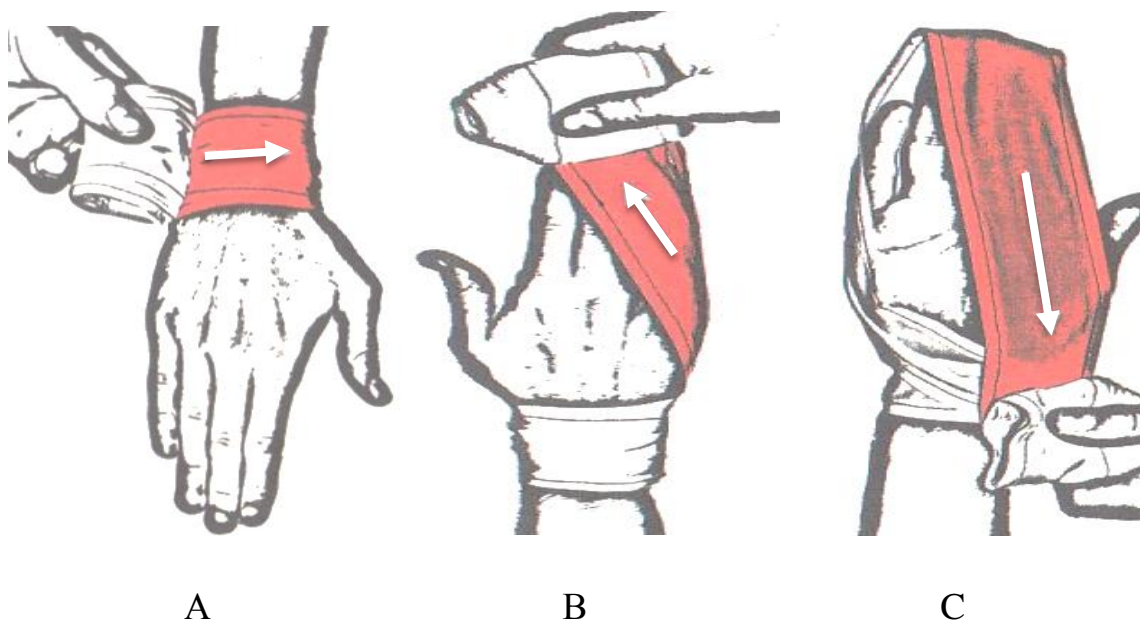


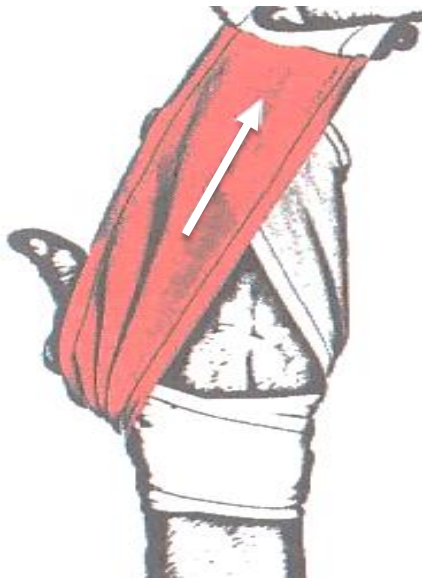
D



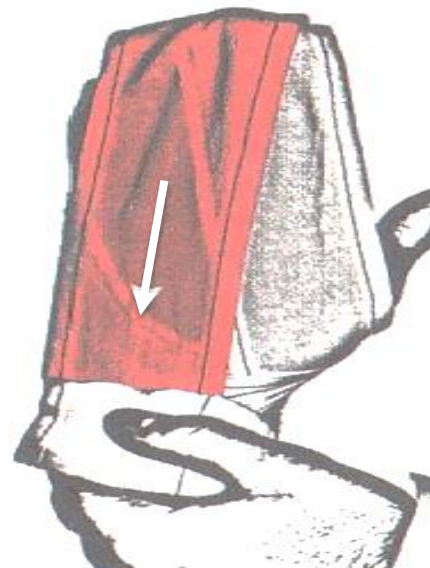
**Figure 53. – The first rounds of the bandage are circular and pass into the lower/3 of the forearm (A), then the bandage is conducted along the back surface of the hand to the distal phalanx of the 1st finger (B), a spiral tour is applied on the nail phalanx (C), then a spiral tour on the main phalanx with the transition to the palmar surface and the circular tour on the forearm (D, E), the same applies to the spiral bandage on the 2nd finger (F), all the fingers (G) are successively closed**

***Returning bandage on the hand***

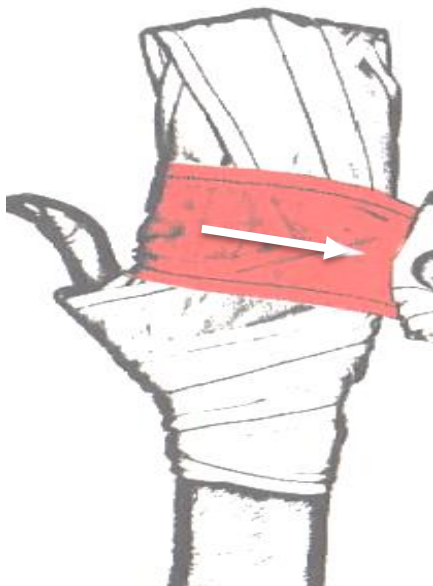




D



E



F

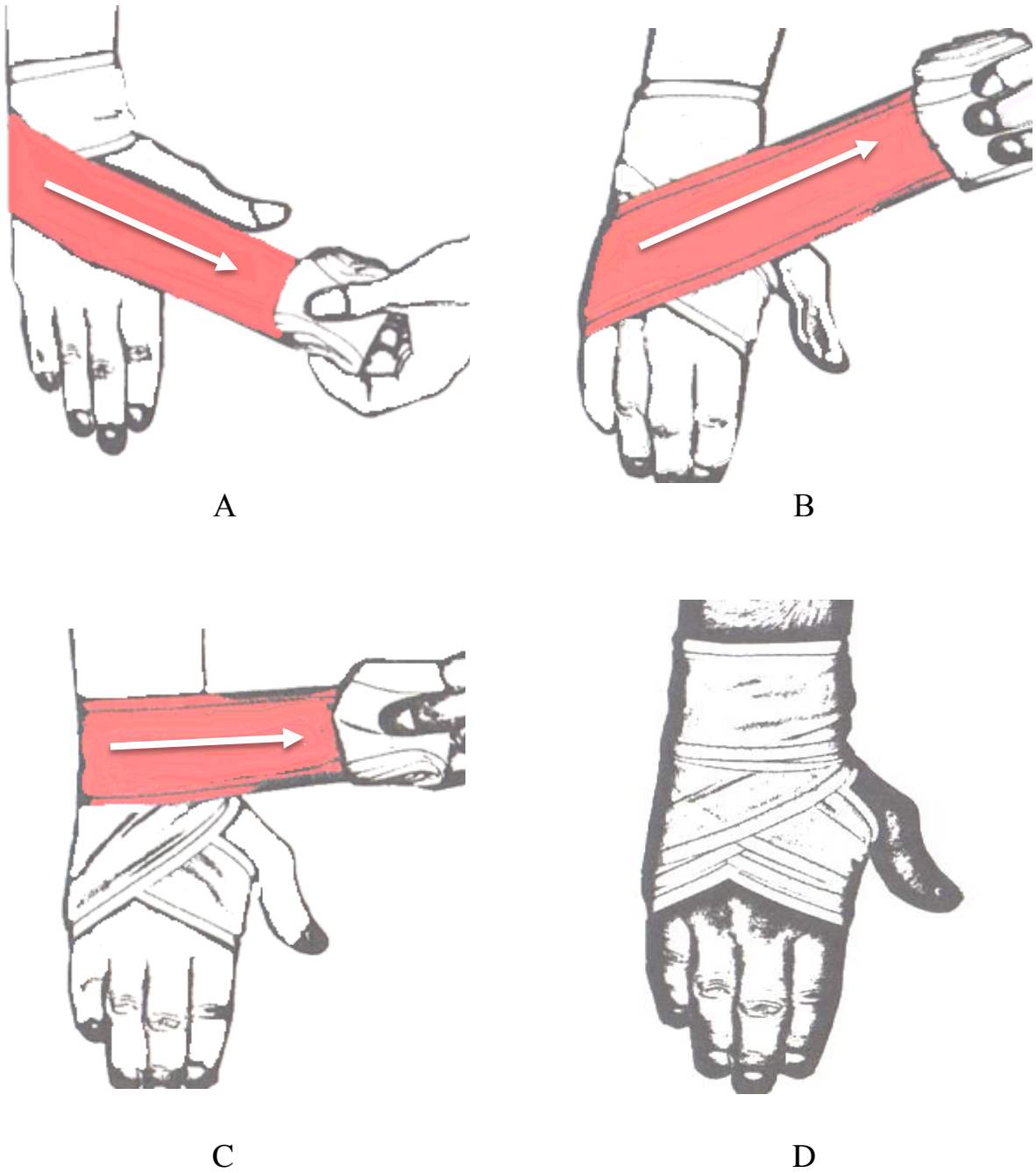


G

**Figure 54. – The bandage begins with circular rounds in the lower/3 of the forearm (A), then the bandage is led from the ulnar side to the back surface of the hand, bending it over the fingertips (B), then the bandage is carried along the palmar surface to the radial side and go to lower/3 of the forearm in the circular round (C). Next, the bandage is guided from the radial side along the back surface to the tips of the fingers (D), by folding the bandage through the fingers it is carried along the palmar surface to the ulnar side, also turning into the circular tour (E). Returning rounds are put downward spiral, which then go up (F). The dressing is finished (G)**



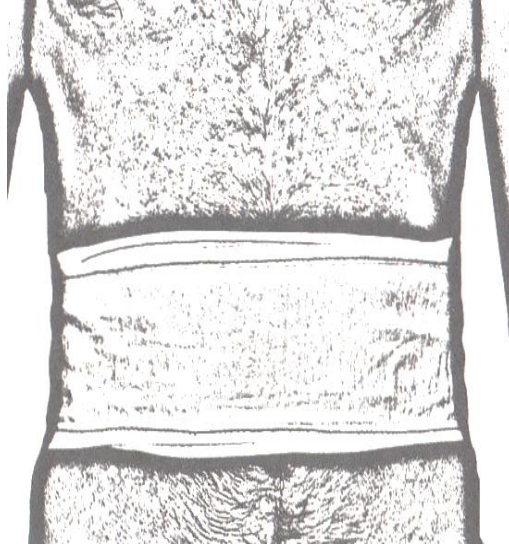
***Cross-shaped bandage on the hand***



**Figure 55. – After overlapping circular tours, the bandage leads obliquely along the back surface of the hand (A), then the bandage through the palm surface is returned to the rear and leads it upward to the forearm, making a cross (B), then a circular tour is performed, and the bandages are repeated (C). The dressing is finished (D)**

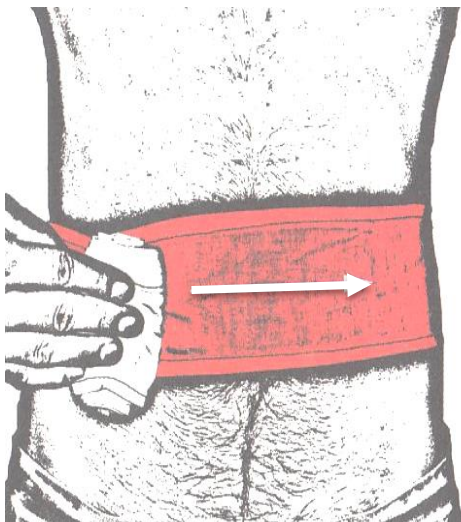
## Bandages on the abdomen

### *Circular bandage on the abdomen*



**Figure 56. – Bandage leads around the abdomen, overlapping tours to each other**

### *Spiral bandage on the abdomen*



A

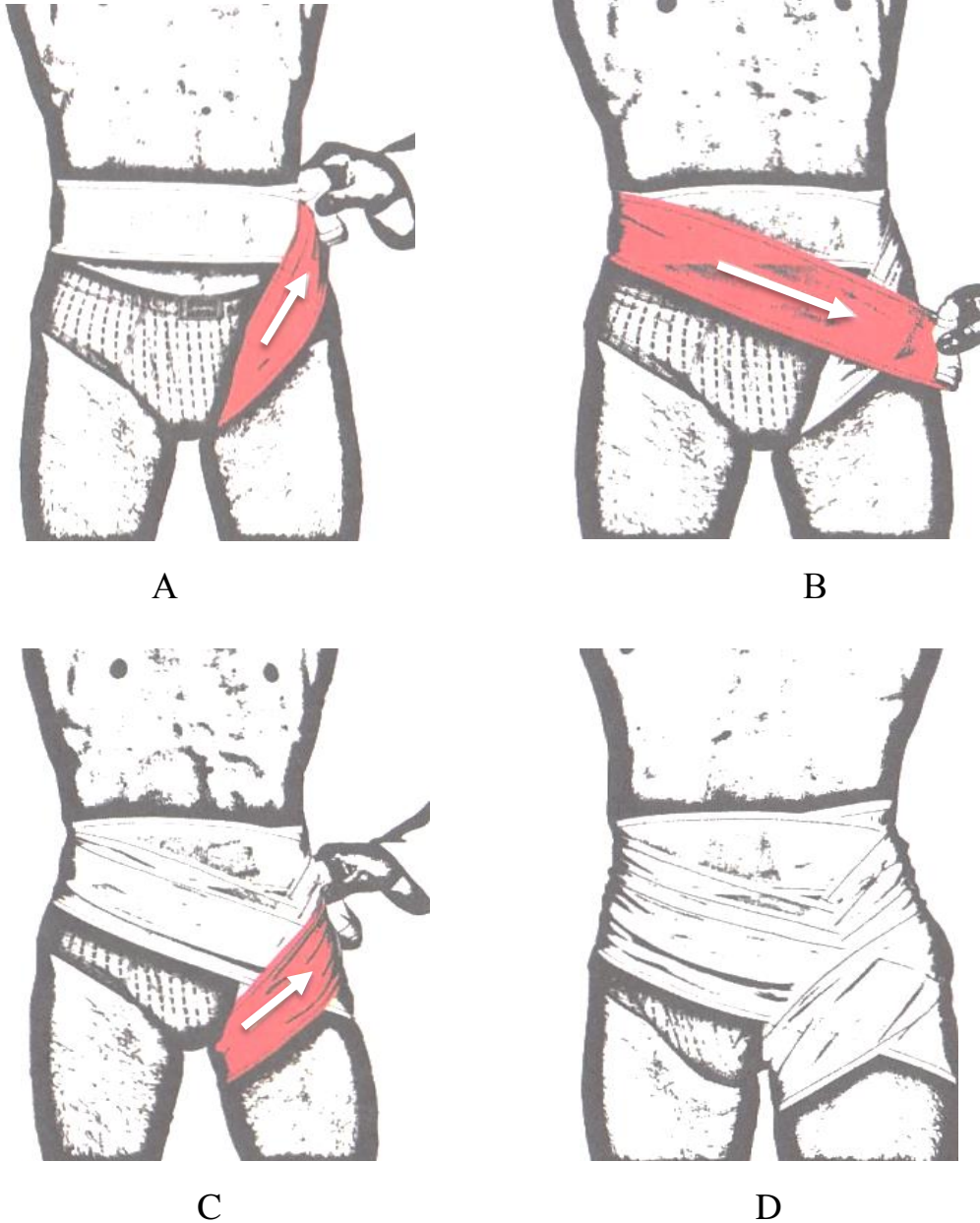


B

**Figure 57. –The bandage begins with circular tours (A), the next rounds go up, closing the underlying rounds by 2/3 (B)**

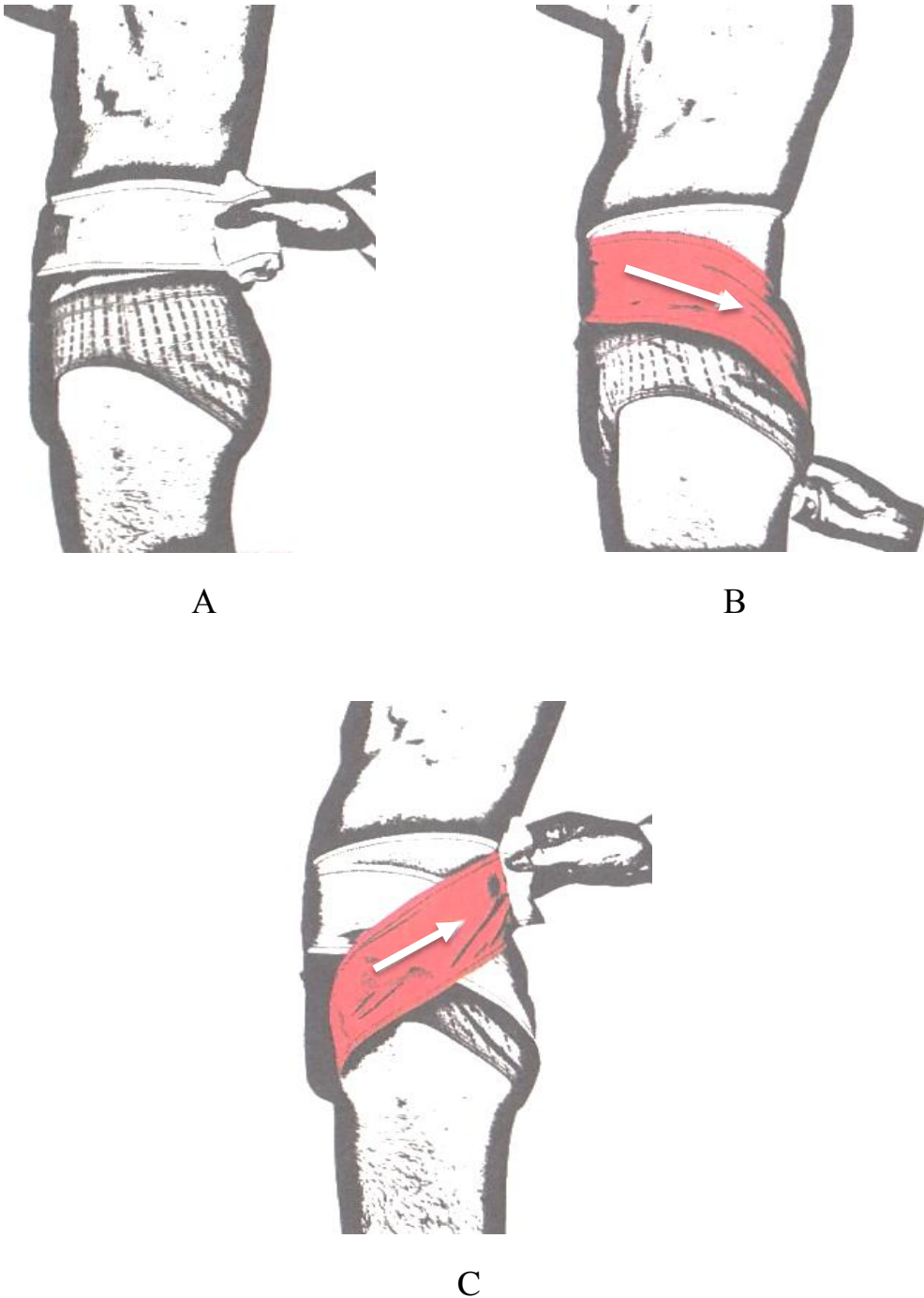
## Bandages on the pelvis region

### *Spica bandage on the inguinal region*



**Figure 58. – After applying a circular tour to the abdomen, the bandage is led through the gluteal region, to the perineum and inguinal region, then the bandage is lifted obliquely upward into the lumbar region of the bandage side, then to the opposite side (A), from the lumbar region, opposite side (B), the bandage again returns to the inguinal region, it is directed obliquely to the lumbar region (C), the crossing tours of the bandage each time are displaced in the distal direction closing previous 2/3. The dressing is finished (D)**

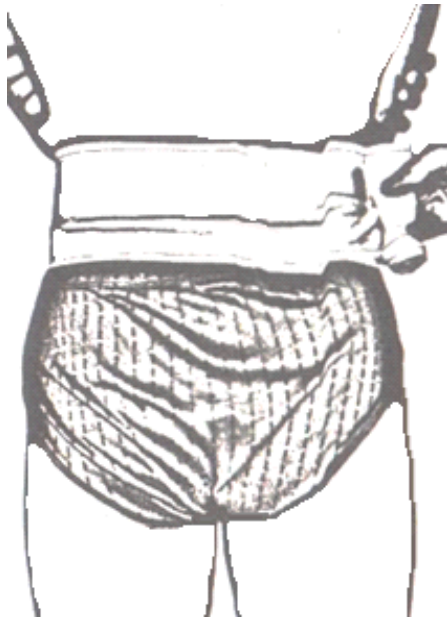
***Spica bandage on of the hip joint region***



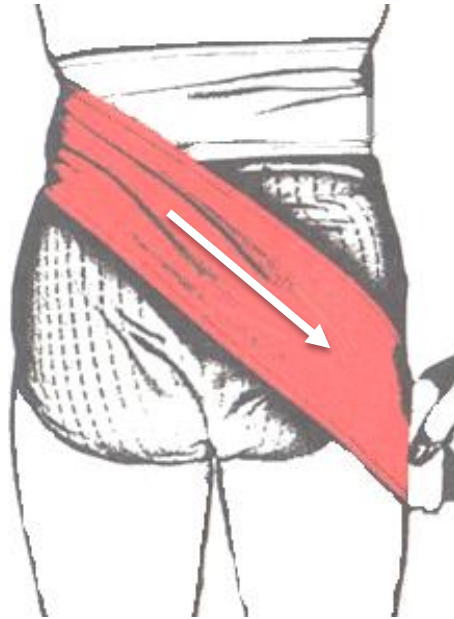
**Figure 59. – The dressing begins with circular tours on the abdomen (A), then the bandage is led obliquely and laterally through a large spit (B), then the bandage is conducted around the thigh in the upper/3, returning it to the lateral surface, to the area of the large trochanter, there is a cross with the previous round, and the bandage is translated into a circular tour on the abdomen (C). The turns of the bandage are repeated, shifting downwards, and each next round closes the previous one by 2/3**



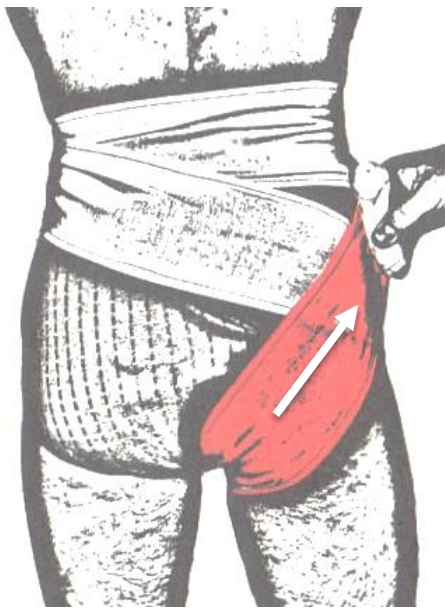
***Spica bandage on the gluteal region***



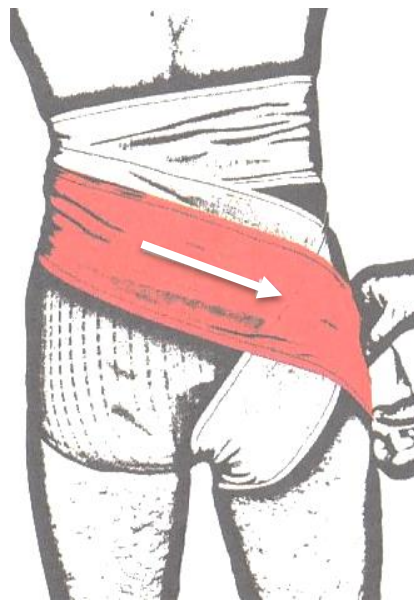
A



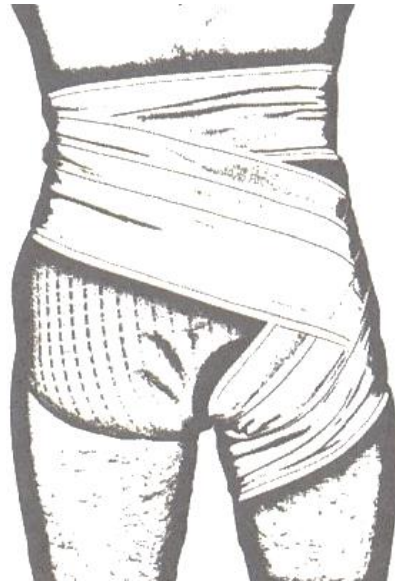
B



C



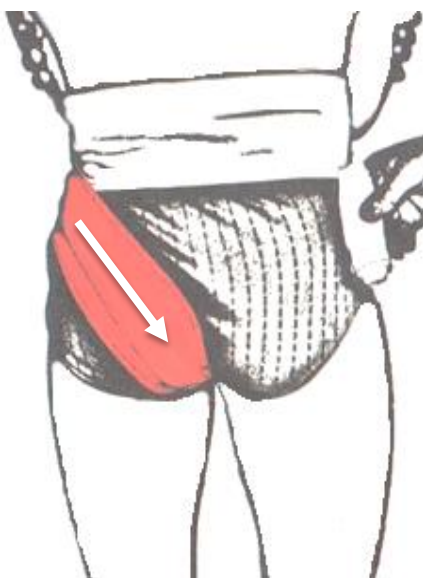
D



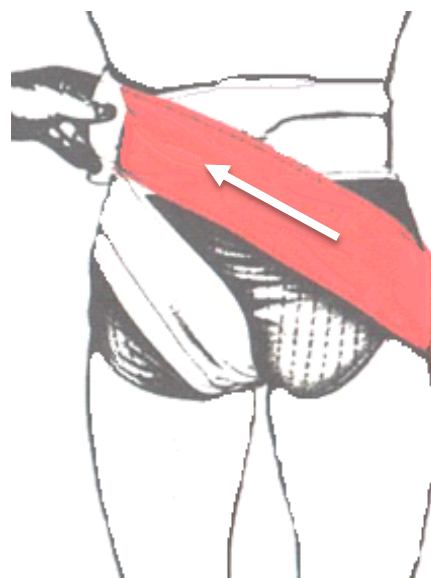
E

**Figure 60. – The dressing begins with circular rounds on the abdomen (A), then the bandage is directed downward and lateral through the center of the gluteal region to the outer, anterior and inner surface in the upper/3 of the hip (B), then the bandage is guided through the center of the gluteal region, pointing it upwards and laterally, turning into a circular tour (C), the band's moves are repeated, shifting downwards, and each next round closes the previous round by 2/3 (D). The dressing is finished (E)**

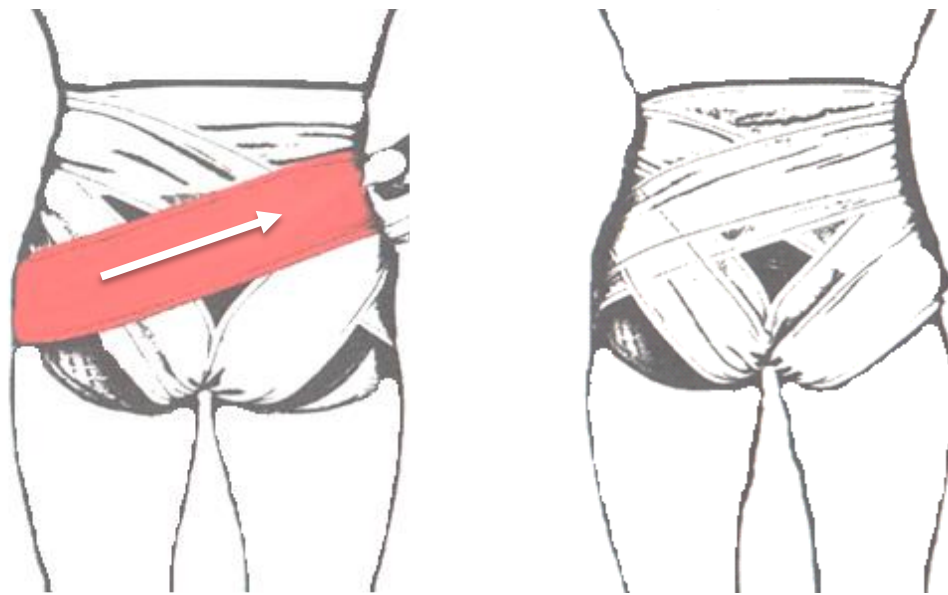
***Cross-shaped bandage on the perineum***



A

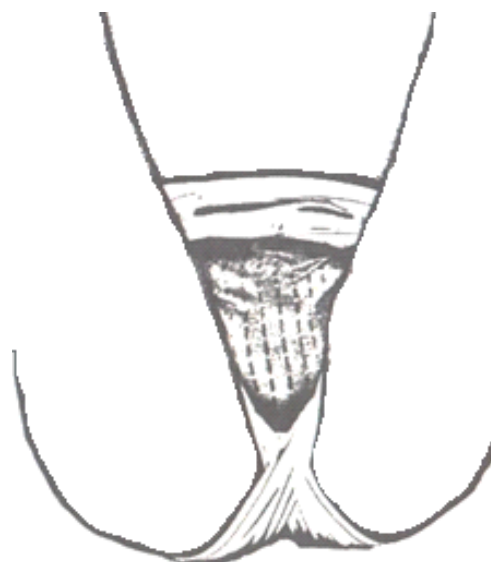


B



C

D



E

**Figure 61. – After overlapping circular tours on the abdomen, the bandage is led through a large spit and the left gluteal region diagonally to the perineum (A). Then, from the perineum, the bandage is led to the front surface of the right femur in the upper/3, a large spit, up diagonally, through the gluteal region to the left lateral surface of the abdomen, and then to the anterior (B). Passing from the front surface of the abdomen to the side, the bandage is guided through the right gluteal region to the right lumbar region and turns into a circular tour (C). The movements of the bandage are repeated, and as a result, a cross-shaped dressing (D) is formed on the perineum. The dressing is finished (E)**

## Bandages on the lower limb

### *Circular bandage on the shin*



A



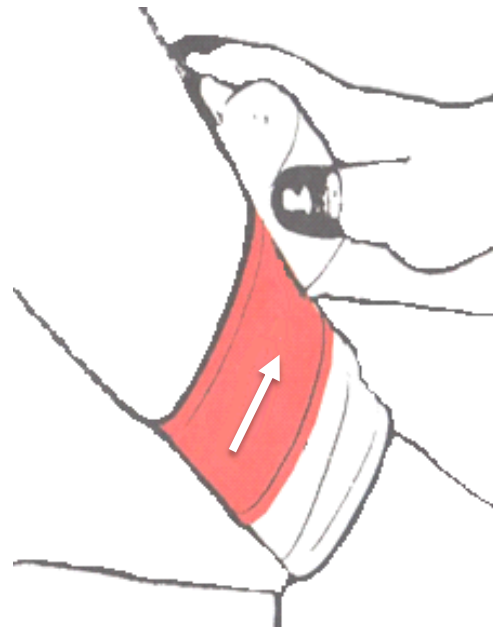
B

**Figure 62. – The first and subsequent rounds are superimposed on each other in the lower/3 of the shin (A). The dressing is finished (B)**

### *Spiral bandage on the shin*

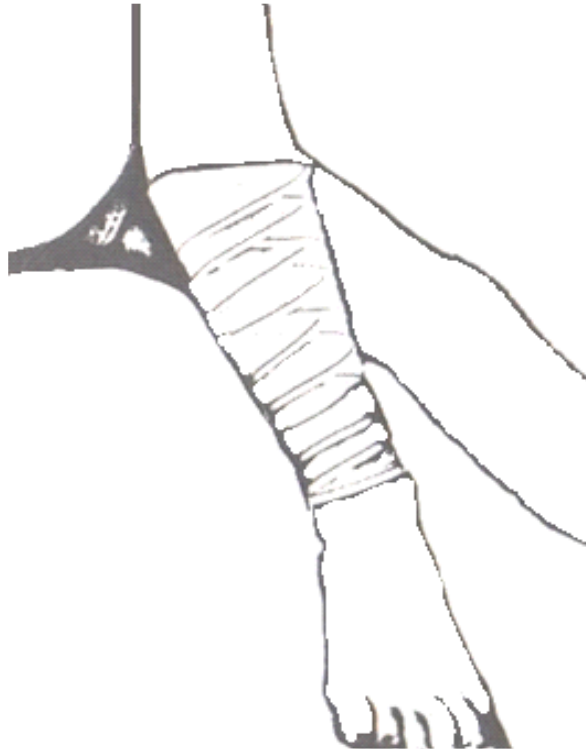


A



B

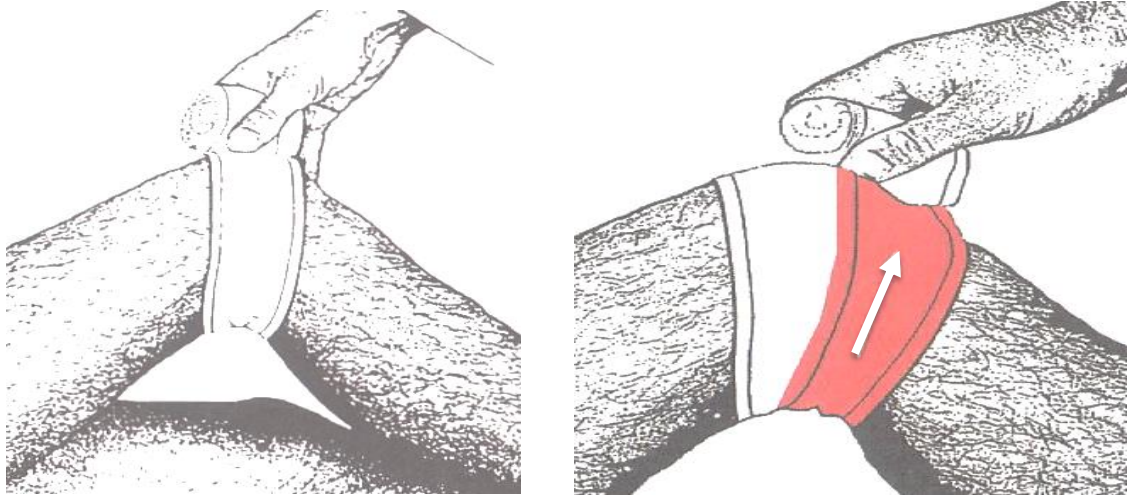




C

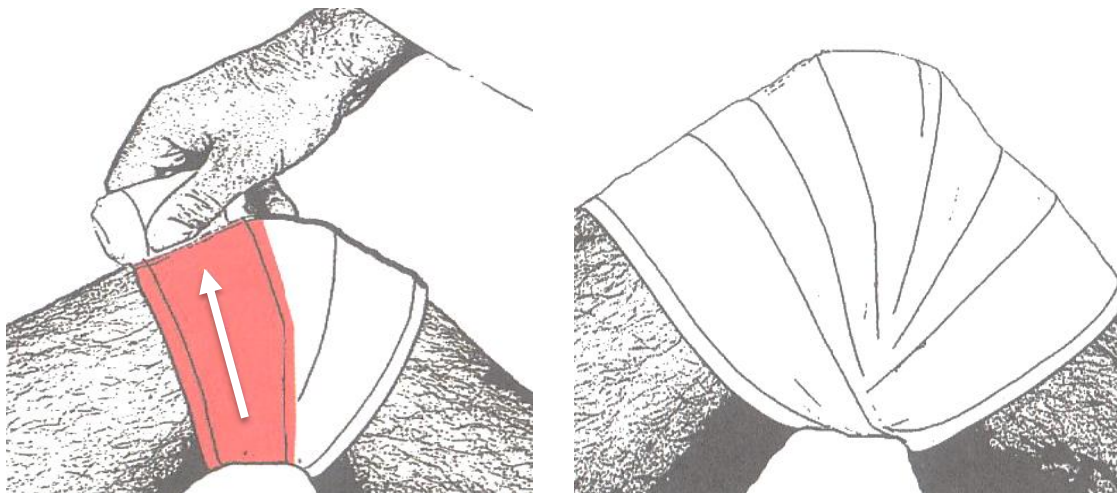
**Figure 63. – After applying the first round in the lower/3 of the shin, the bandage rises in a spiral upward. Each subsequent round closes the previous one by 1/2 or 1/3 (A). Thus, the bandage is brought to mid/3 of the shin (B), continuing the spiral movements of the bandage, in upper/3, it is turned over to 45<sup>0</sup>, the dressing ends at the knee joint**

***Divergent tortoise bandage on the knee joint***



A

B



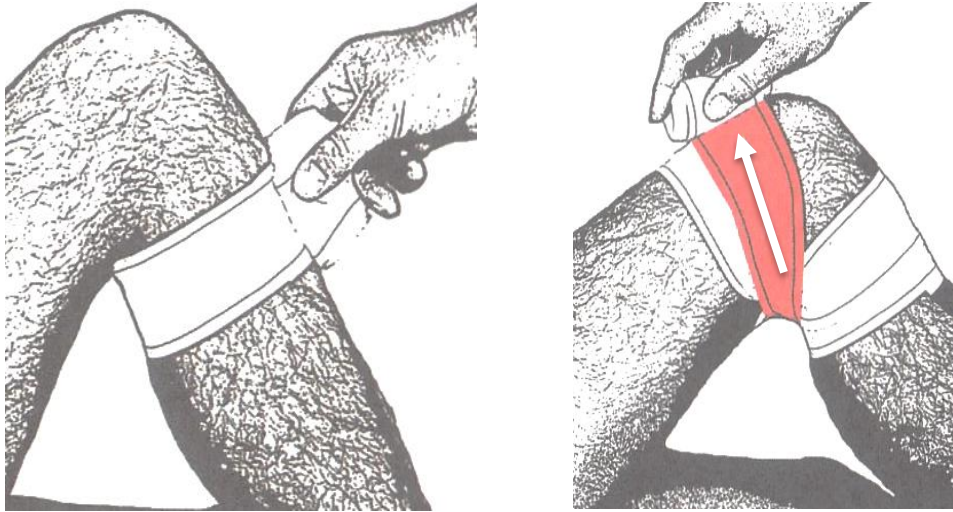
C

D

**Figure 64. – The first circle is circular, it is led through the nasal cup, popliteal region (A). The next move is directed downwards, overlapping the first by 2/3, returning to the popliteal region (B). Further from the popliteal fossa, the bandage is conducted above the first round, also closing it by 2/3, continuing to move through the popliteal fossa to the shin (C).**

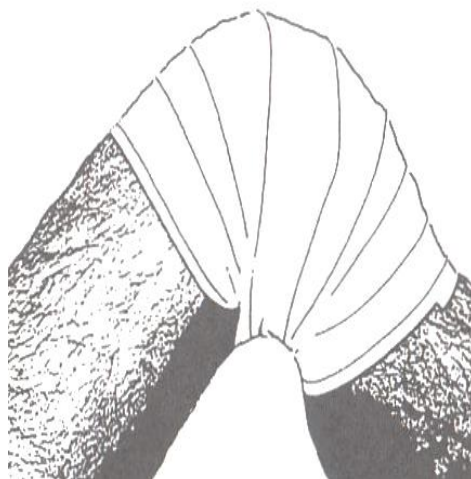
**Bandage moves are repeated, crossed in the popliteal fossa and cover the entire area of the knee joint (D)**

***Convergent tortoise bandage on the knee joint***



A

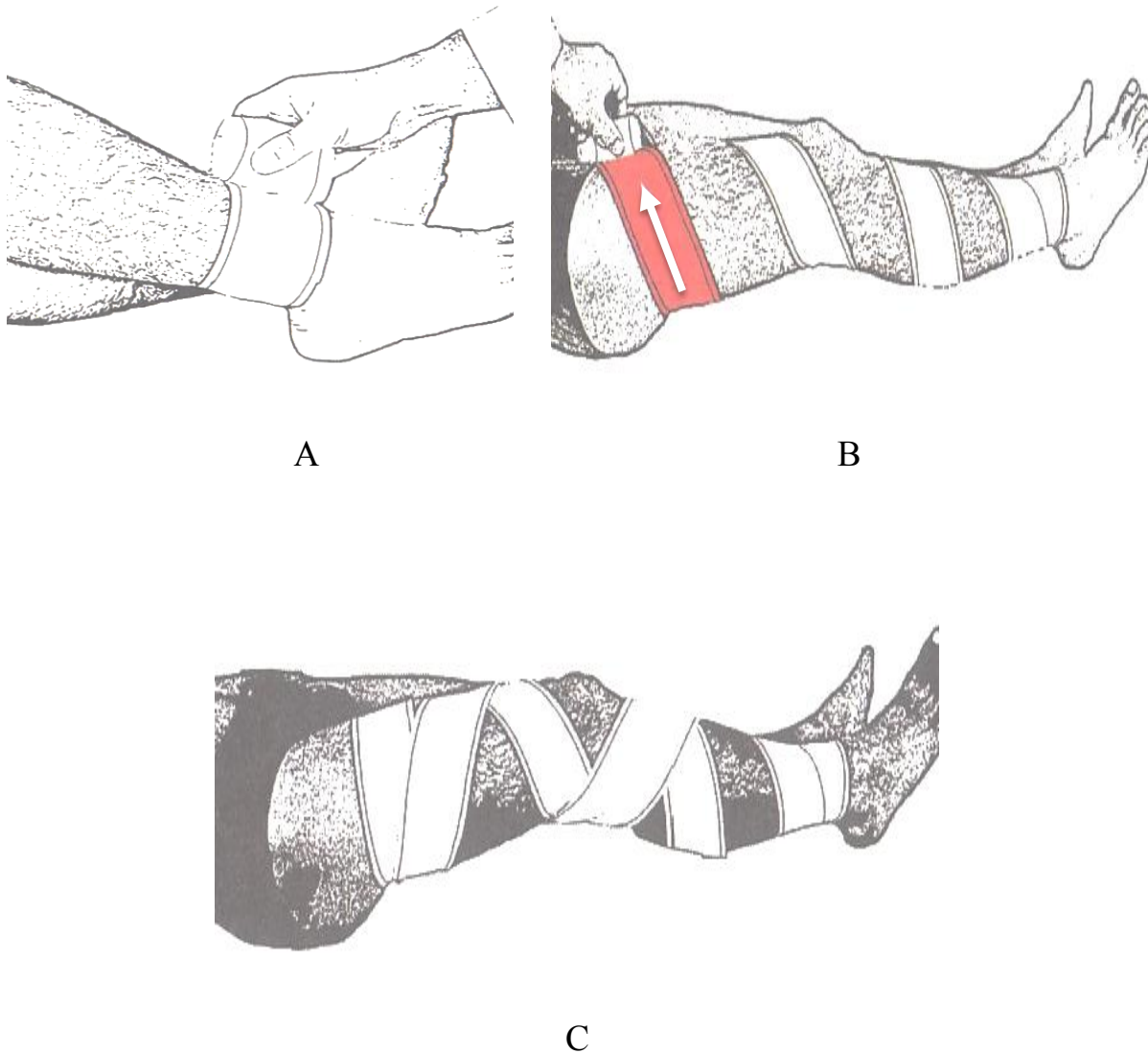
B



C

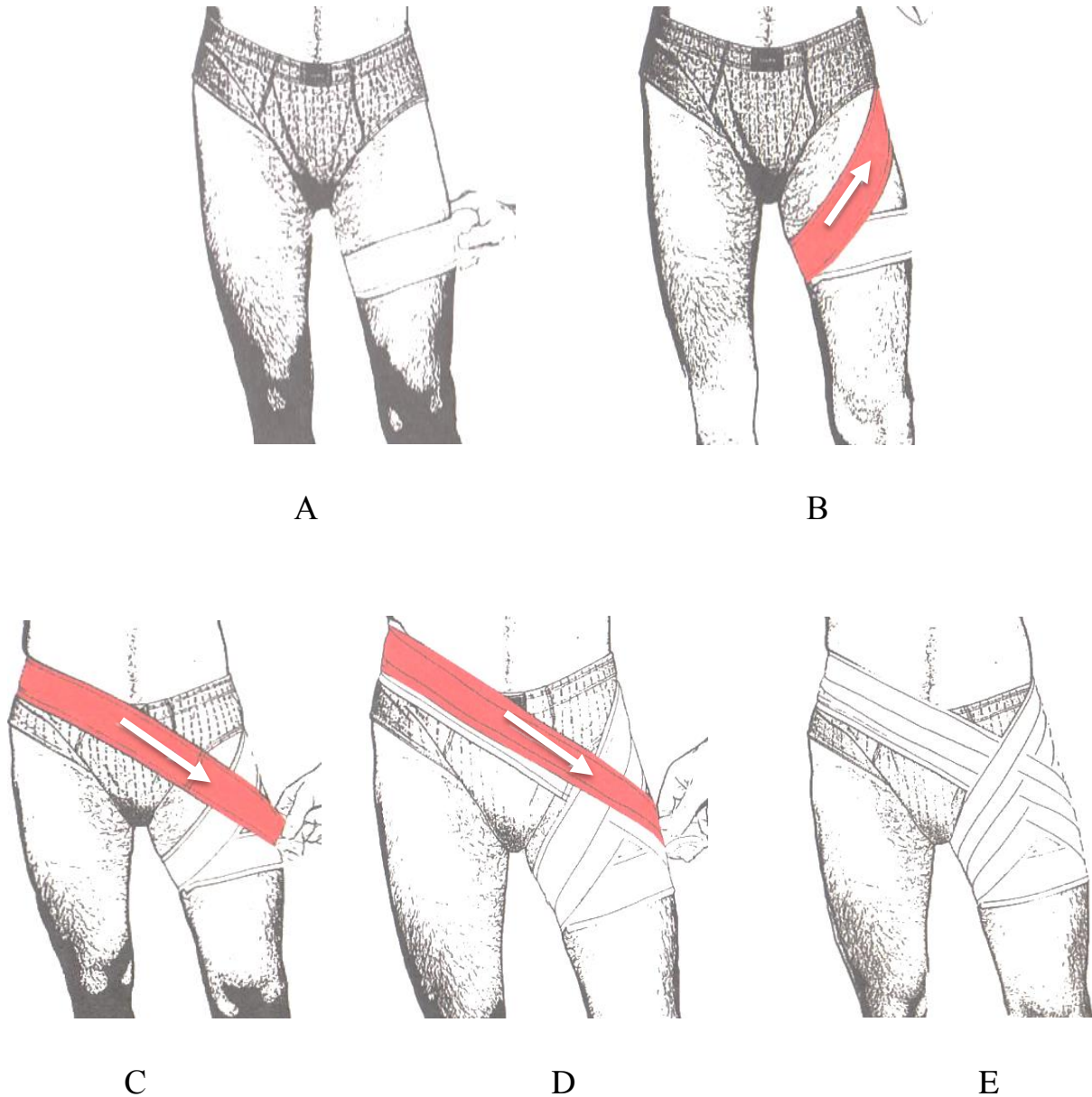
**Figure 65. – The dressing begins with round tours in the upper/3 of the shin (A), then the bandage is directed up through the popliteal fossa to the lower/3 of the hip, lead it along the anterior and lateral surface of the thigh, popliteal region, crossing there with the previous ascending tour. Next, they move to the region of the knee joint, but above the right, circular (B). Repeating the movements resembling the writing of the number «8», the bandage moves closer, crossing in the popliteal region, covering the entire area of the knee joint (C)**

***Creeping bandage on the lower limb***



**Figure 66. – The dressing begins with circular rounds in the lower/3 of the shin (A), then the bandage moves up the spiral up to the upper/3 of the thigh (B). The distance between rounds is equal to the width of the bandage. The dressing can be completed by circular rounds in the upper/3 of the hip, but it can be supplemented by running it in the distal direction and finished with circular strokes in the lower/3 of the shin (C)**

***Spica bandage on the upper/3 of hip***



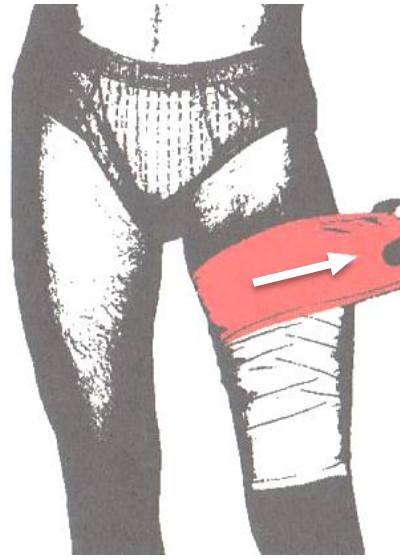
**Figure 67. The first are superimposed circular rounds in the upper/3 of the hip (A), then the bandage is led upward from the inside to the outside, along the front surface of the thigh through a large spit on the lumbar region of the opposite side (B). From the lumbar region, the bandage is guided along the front abdominal wall to the bandage thigh where the bandage turns around it, crosses with the previous one, and again returns through the large spit to the opposite lumbar region, displacing proximally by 2/3 of the width of the bandage (C). Repeatedly repeating, the bandage moves cover the area in the upper/3 of the thigh (D). The dressing is finished (E)**



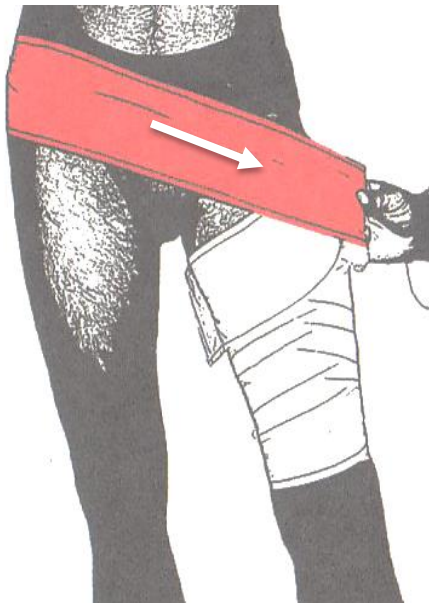
***Combined bandage on the hip***



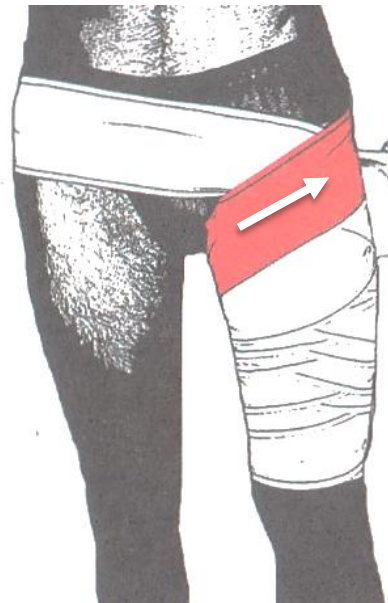
A



B



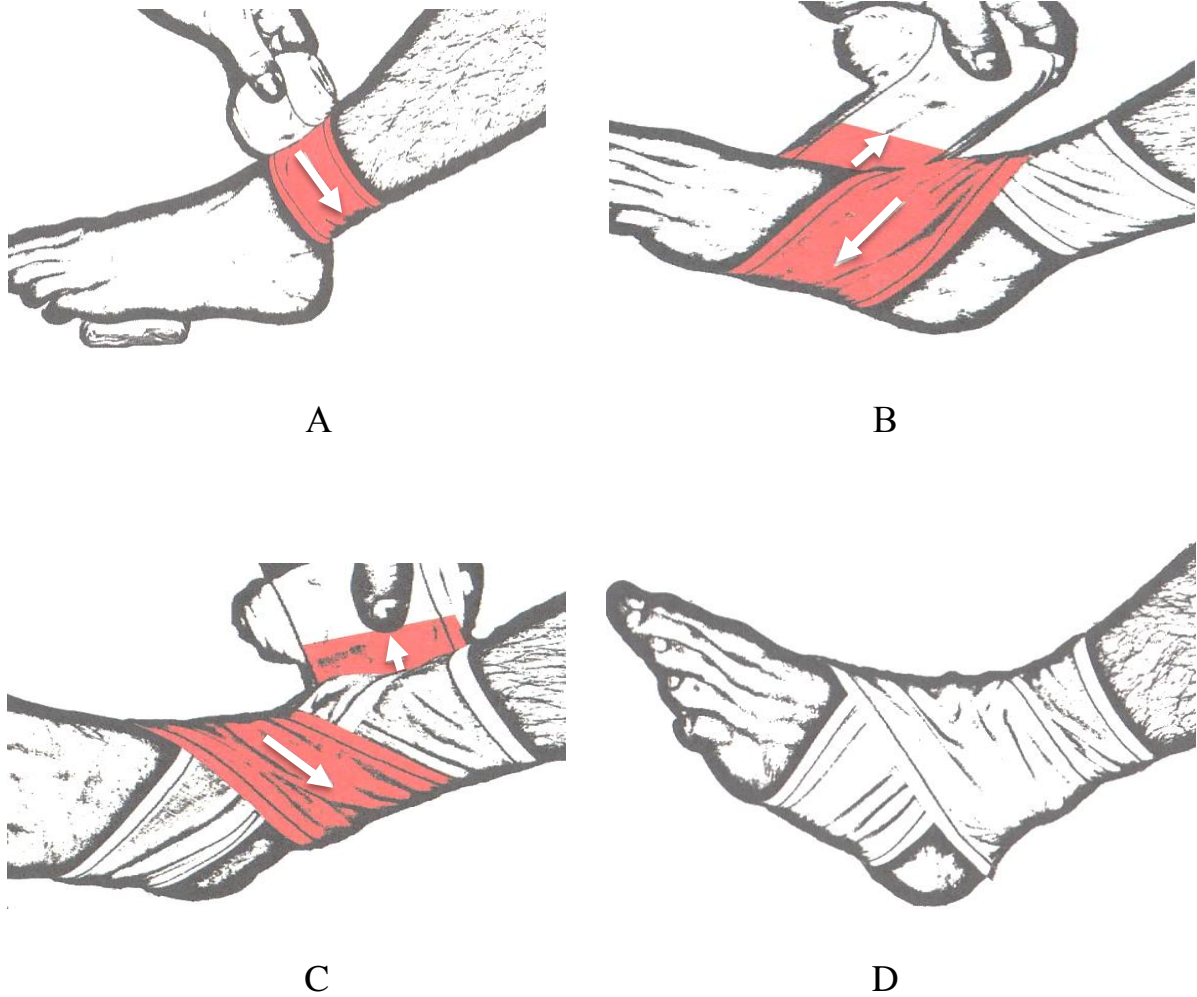
C



D

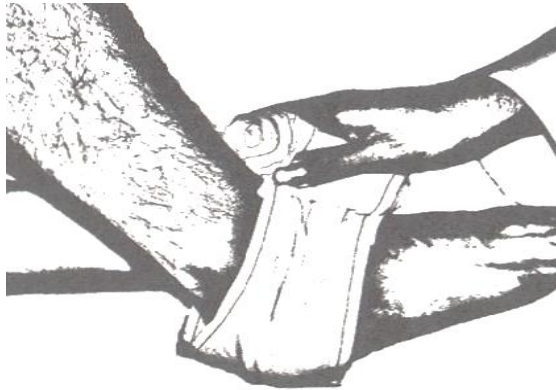
**Figure 68. – The dressing begins with circular rounds in the lower/3 of the hip (A), then continues in the form of spiral strokes to the border of mid/3 and upper/3 of the thigh (B), then the circular dressing passes into a spica bandage superimposed on upper/3 of the thigh (C)  
The dressing is finished (D)**

***Cross-shaped bandage on the ankle joint region***

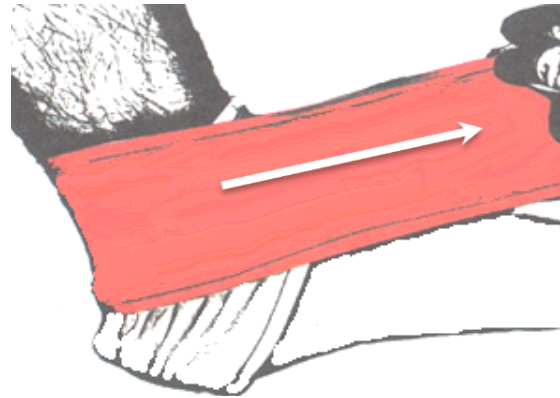


**Figure 69. – The dressing begins with circular rounds in the lower/3 of the shin (from left to right) (A), then the bandage is led through the back surface of the foot to the lateral and, skirting the plantar and medial surfaces, cross the front surface of the ankle (B). Each eight-shaped course ends in lower/3 of the shin circularly (C), the dressing is finished (D)**

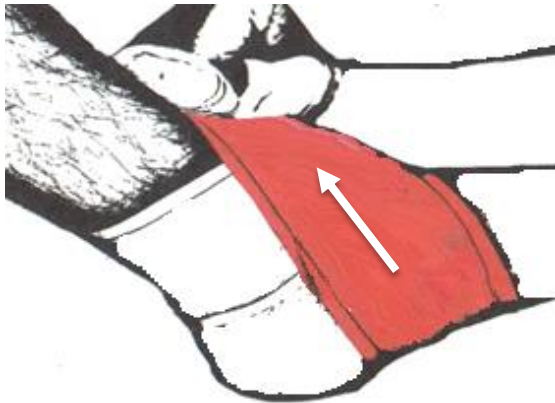
***Tortoise divergent bandage on the ankle joint region***



A



B



C

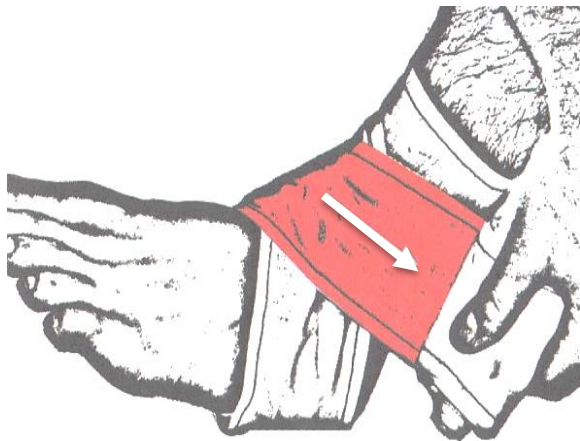


D

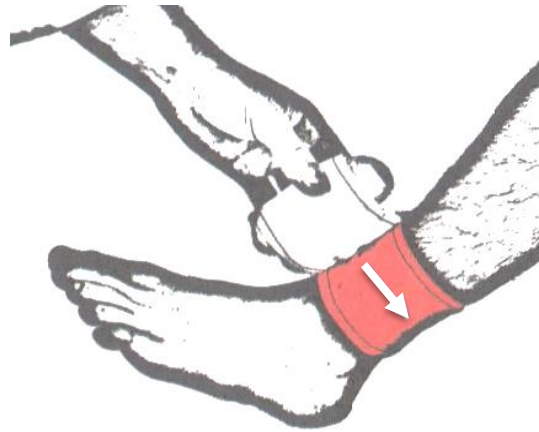
**Figure 70. – The first rounds pass through the heel area and the anterior surface of the ankle (A), after applying the first round the bandage is directed proximal to the first (B), then distal (C). In this case, the tours of the bandage cross on the anterior surface of the ankle joint and diverge. The dressing is finished (D)**



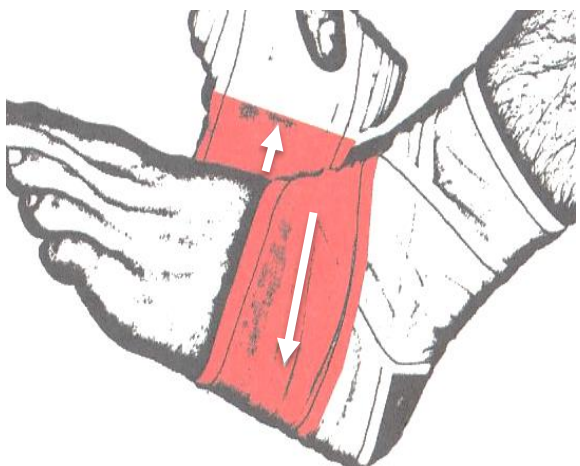
***Tortoise convergent bandage on the ankle joint region***



A



B



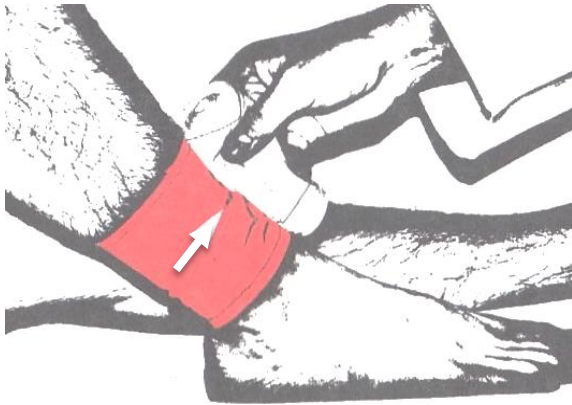
C



D

**Figure 71. – The first round is circular, it is applied to the lower/3 of the shin, immediately above the joint (A), then the bandage is carried to the foot, performing eight movements (B), the tour of the bandage approaches the heel area (C). The dressing is finished (D)**

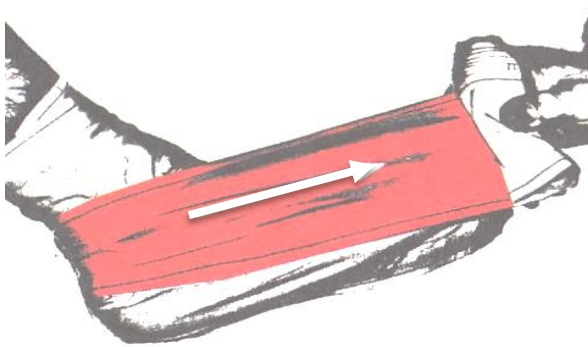
***Returning bandage on the foot***



A



B



C



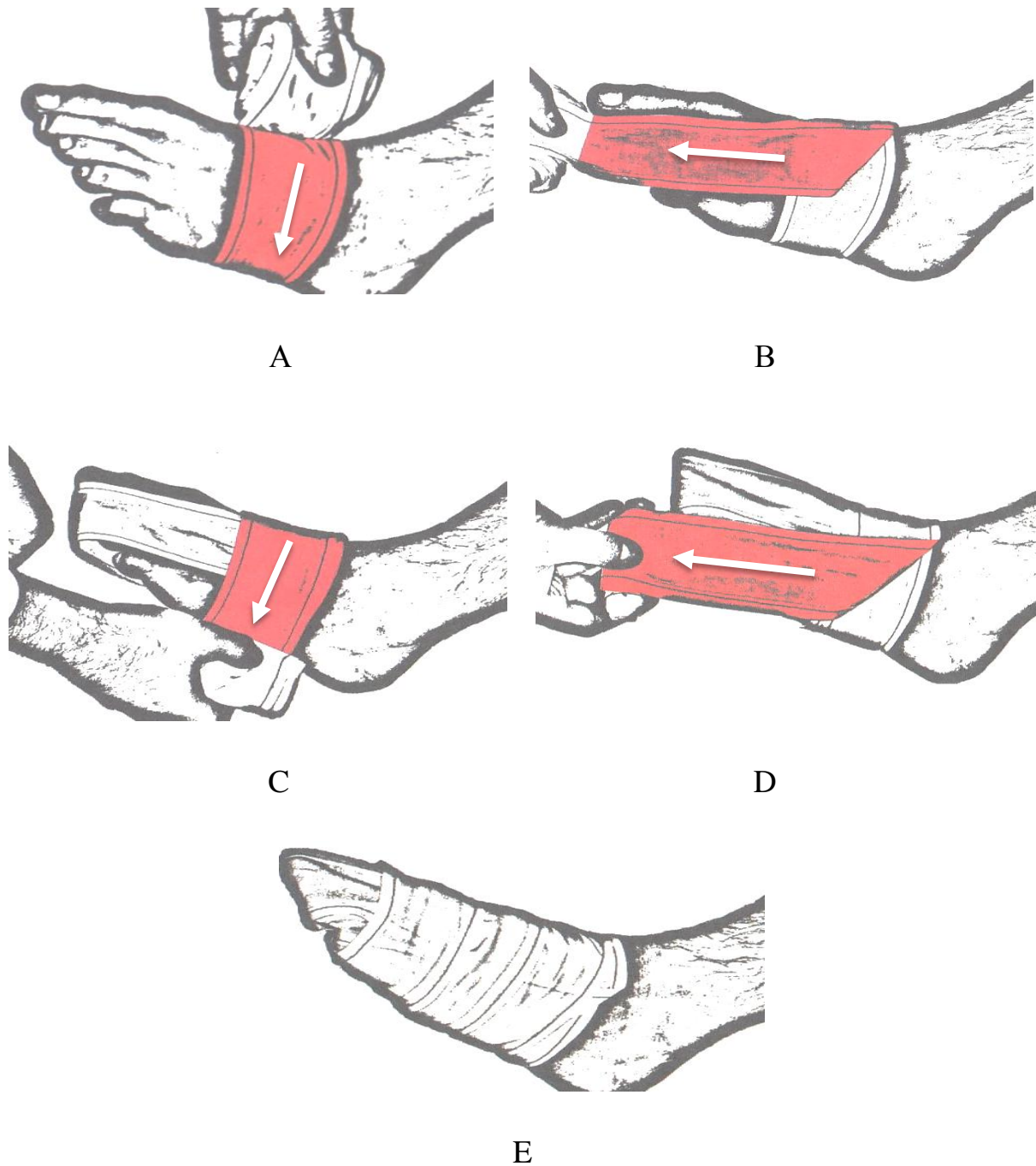
D



E

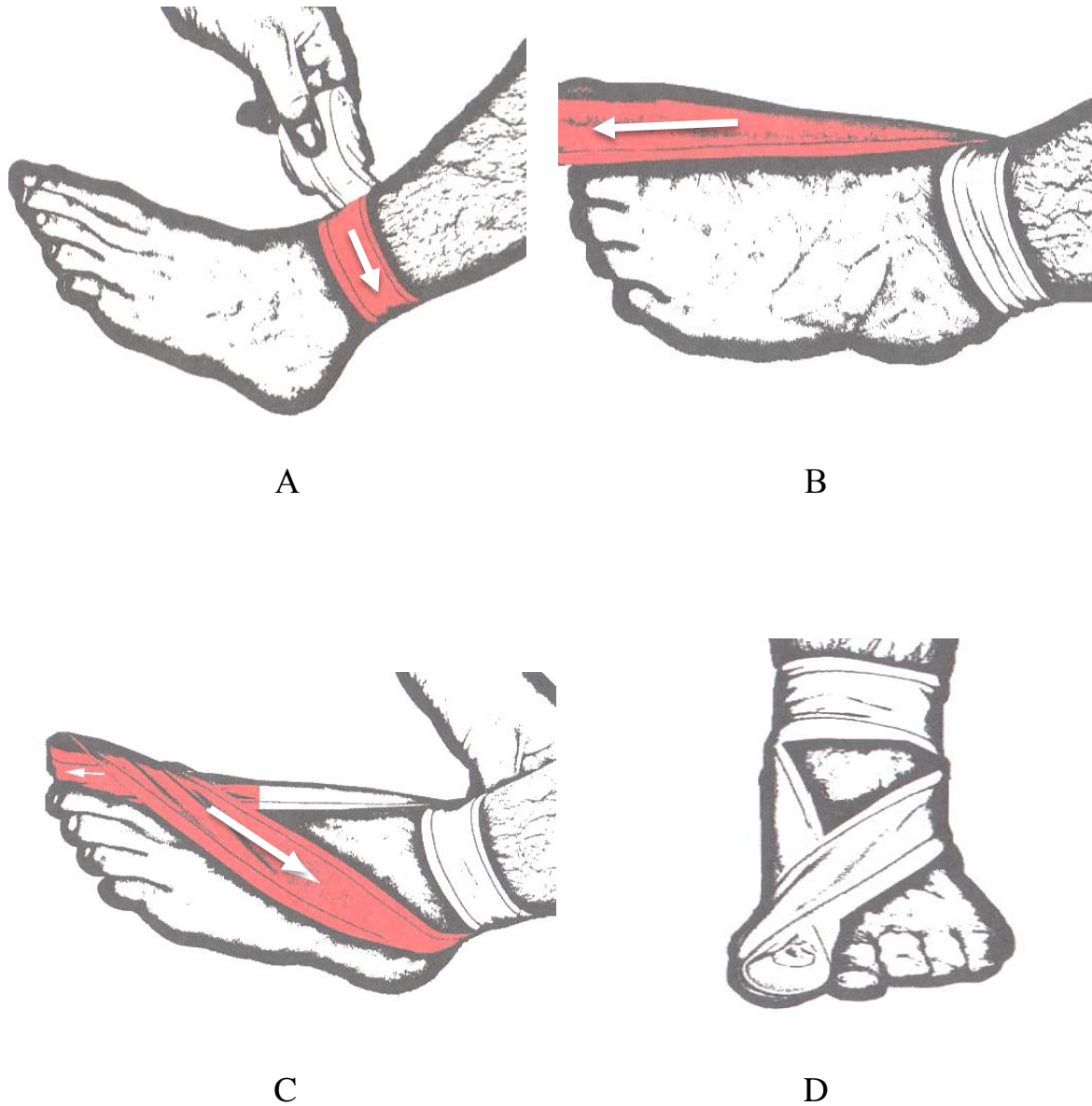
**Figure 72. – The dressing begins with a circular tour (A), the bandage is guided along the outer surface of the foot, then through the nail phalanx of the fingers to the inner and back surfaces (B). Next, the bandage makes one more turn (C), a spiral bandage (D) is applied to the returning rounds. The dressing is finished (E)**

***Returning bandage on the distal parts of the foot***



**Figure 73. – The first circular tours are superimposed in the region of the tarsal bones (A); on the back surface, the bandage is bent, and it is directed towards the nail phalanges (B). Next, the bandage, circling the fingertips, comes back along the plantar surface to the place of the first circular tour and a second circular tour is put on top of the returning one (C). Returning tours alternate with circular ones until the bandage (D) closes. The dressing is finished (E)**

***Spica bandage on the 1<sup>st</sup> finger of foot***

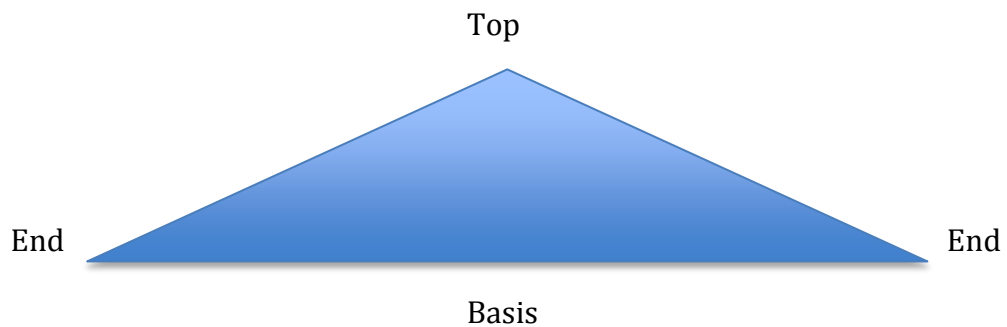


**Figure 74. – The first round is circular and is superimposed on the lower/3 of the shin (A), the bandage is directed to the nail phalanx of the 1st finger of the foot (B). Around the phalanx, a turn is made and the bandage returns to the shin, while a cross is made with the previous round (C). Repeat the strokes, complete the bandage with a circular tour in the lower/3 of the shin (D)**



## TRIANGULAR BANDAGES

Triangular bandages are more often used in the provision of first aid for some injuries (bruises, fractures) and inflammatory diseases. As a rule, these bandages are improvised and can be made from any fabric (gauze, sheet, etc.). The form of the bandage corresponds to its name and is a piece of fabric of a triangular shape. In the scarf, the base, the top, the two ends and the middle are distinguished (figure 75).



**Figure 75. – Triangular bandage**

### *Triangular bandage on the head*



A

B



C

**Figure 76. – Initial position: the bandage is located in the middle of the parietal region, the apex descends from the region, the base is on the occipital region, both ends are lowered at the sides (A).**

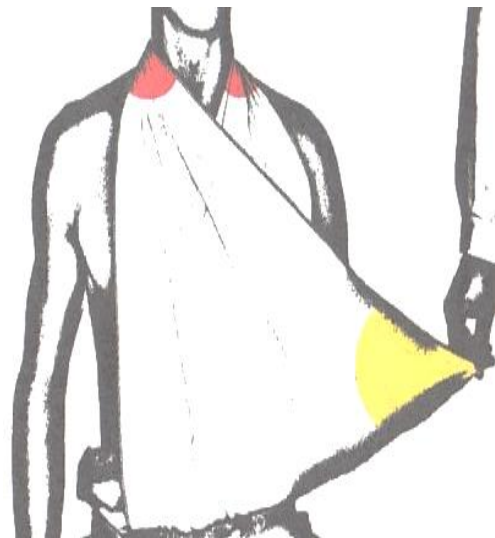
**Both ends are connected in the frontal region (B).**

**The tip is bent through the connected ends and fixed above them (C)**

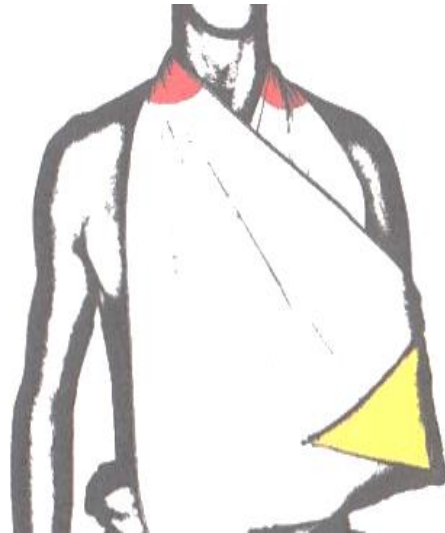
***Triangular bandage on the upper limb – sling***



A



B



C

**Figure 77. – Initial position: the kerchief is placed on the front surface of the body from the side where there is a lesion. And the base corresponds to the axis of the body, the upper end is thrown across the foreleg, the lower end is hanging down to the knees, and the tip points toward the elbow joint. The elbow joint is bent at right angles (A). The lower end is directed to the posterior surface of the neck from the opposite side, where it is connected to the upper end (B). The top is led to the front surface and fixed (C)**

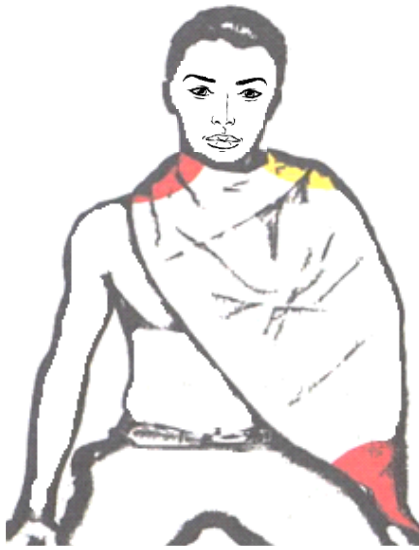
***Triangular bandage for hanging the upper limb (simple sling)***



**Figure 78. – Initial position: the arm is bent at right angle. The kerchief is folded in the form of a scarf, then brought under the lower/3 of the forearm and it's ends are connected on the back surface of the neck**



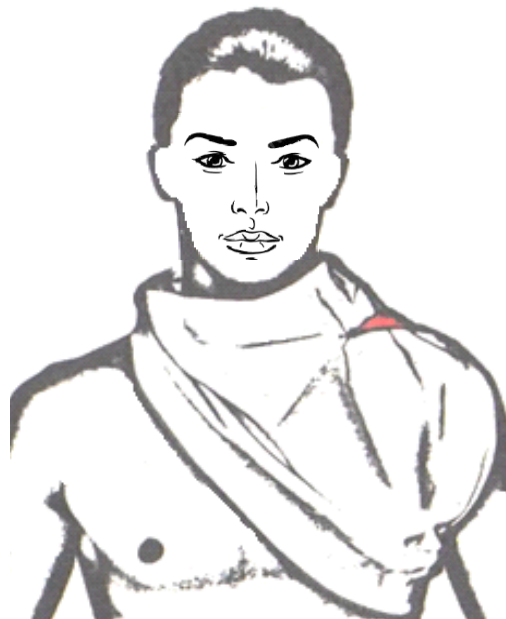
***Triangular bandage on the front surface of the chest and the area of the foreleg***



A



B



C

**Figure 79. – Initial position: the scarf is superimposed on the front surface of the trunk and shoulder. And the upper end is located on the forearm of the opposite side, the lower end hangs to the knees, the top on the side of the shoulder (A). The upper end and the top are connected on the back surface of the neck (B). The lower end is led through the axillary region of the affected side, along the posterior surface of the shoulder joint, to the shoulder region and fixed there (C)**

***Triangular bandage on the humeral joint region***



A



B



C

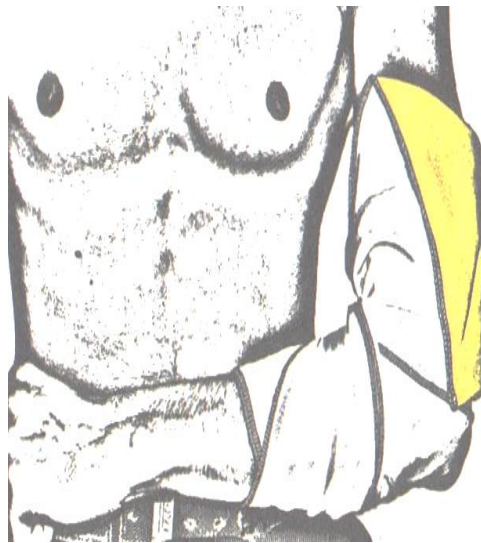
**Figure 80. – Initial position: the scarf is superimposed so that the top is located on the side of the neck and is fixed with an oblique bandage bandage, the base and ends hang from the shoulder joint (A). Then the front end is guided along the inner surface of the shoulder back, and the front end forward (B). Both ends are connected (C)**

***Triangular bandage on the elbow joint region***



A

B



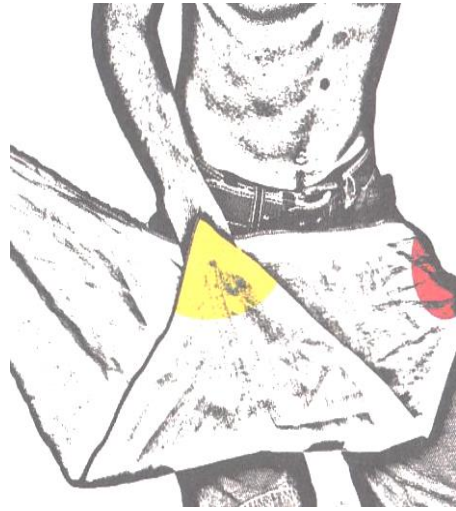
C

**Figure 81. – Initial position: the scarf is laid on the elbow joint bent at right angles in such a way that the base is placed on the forearm, the top on the shoulder, both ends hang, one on the inside, the other with the outside (A). On the forearm, both ends move towards each other, cross over and lead over the shoulder, where they are tied (B). The dressing is finished (C)**

***Triangular bandage on the hand***



A



B



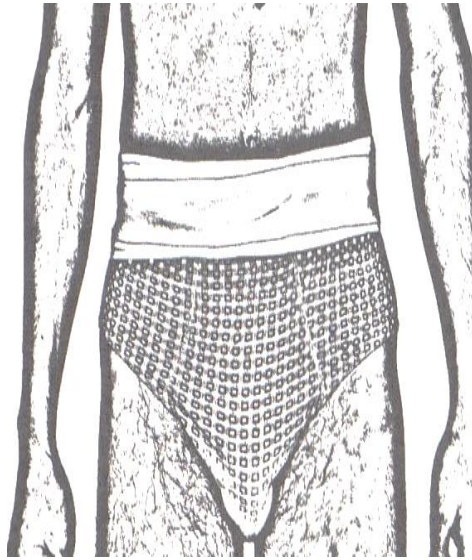
C



D

**Figure 82. – Initial position: the hand is located on the kerchief and faces its palmar surface. The base on the level of the wrist joint, the top is directed towards the fingers (A). The top is led along the back surface of the wrist to the wrist joint (B). Then both ends are connected above the top (C). The dressing is finished (D)**

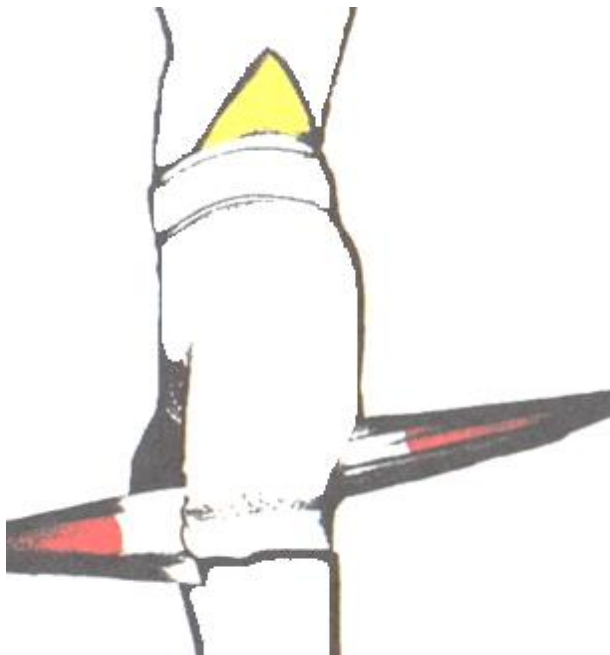
***Triangular bandage on the hip joint region***



A



B



C

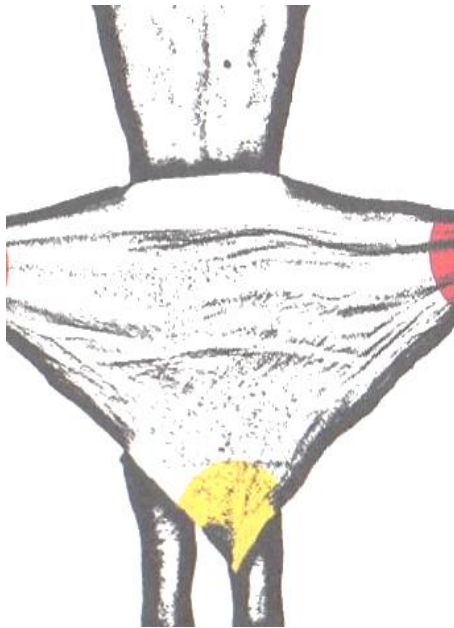


D

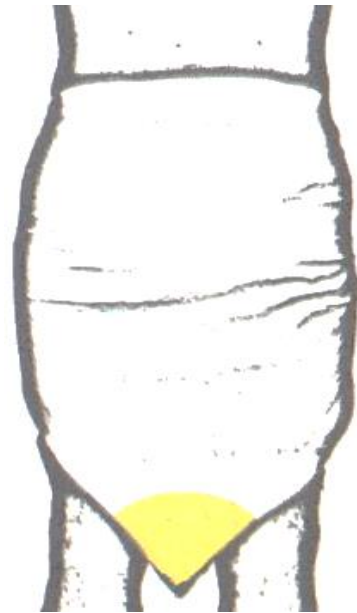
**Figure 83. – Initial position: a circular bandage is applied on the abdomen (A). Under it, on the lateral surface, the top of the scarf is brought. The middle is located on the region of the hip joint, the ends descend to the hip in front and behind (B). Both ends are directed to the inner surface of the thigh and around it (C). The ends are connected on the outer surface of the thigh. The dressing is finished (D)**



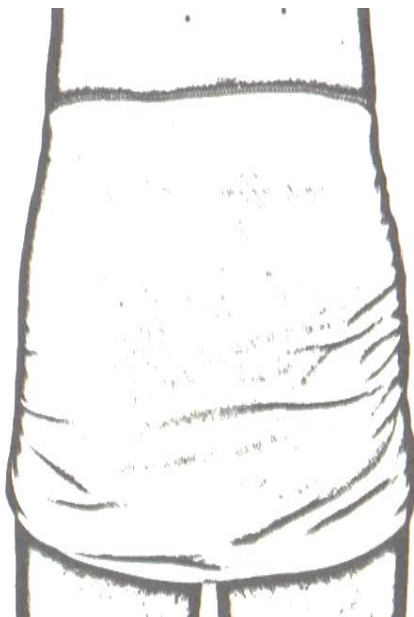
***Triangular bandage on the both gluteus areas and peritoneum***



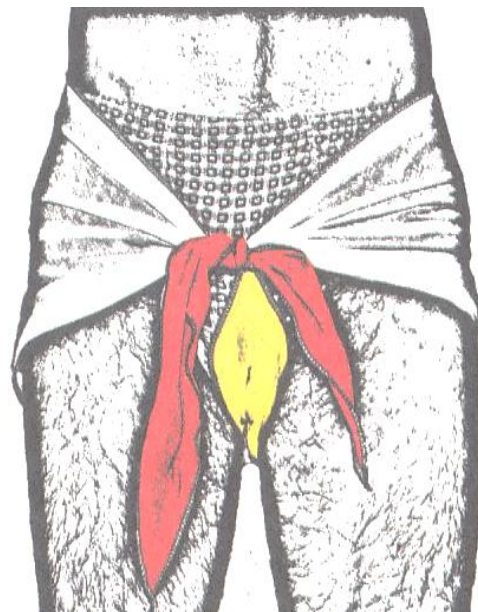
A



B



C



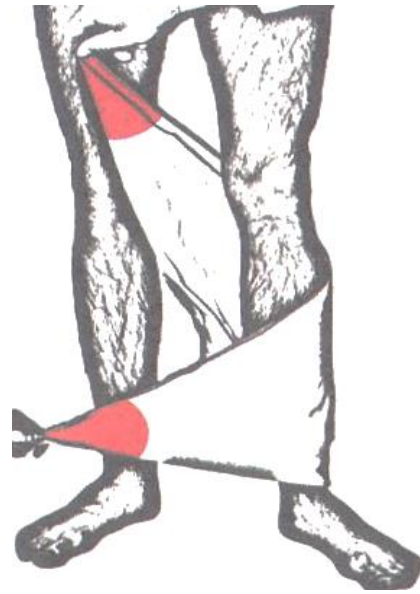
D

**Figure 84. – The scarf is superimposed on the gluteal regions, with the base upward (A). Both ends are directed anteriorly and are connected on the abdomen (B). Then the apex is led through the perineum and connects it to the already connected ends (C). The dressing is finished (D)**

***Triangular bandage on the shin***



A



B



C

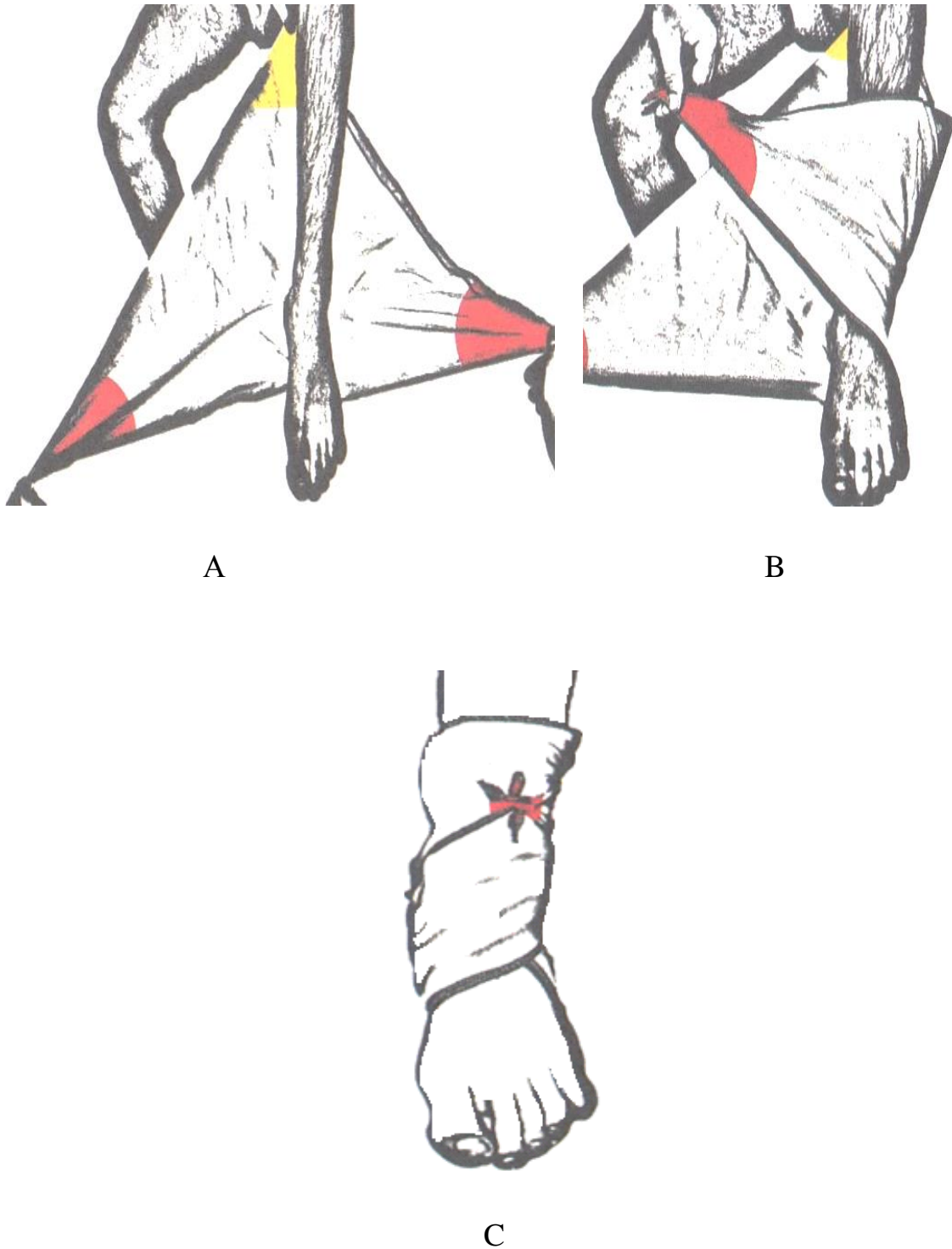


D

**Figure 85. – Initial position: the kerchief is applied to the front surface of the shin. At the same time, one end is above the knee joint and from the outside, and the lower one is lower and medial than the inner ankle (A). Both ends are directed in opposite directions (B). The shin closes, and the ends are connected together (C). The dressing is finished (D)**



***Triangular bandage on the ankle joint region***

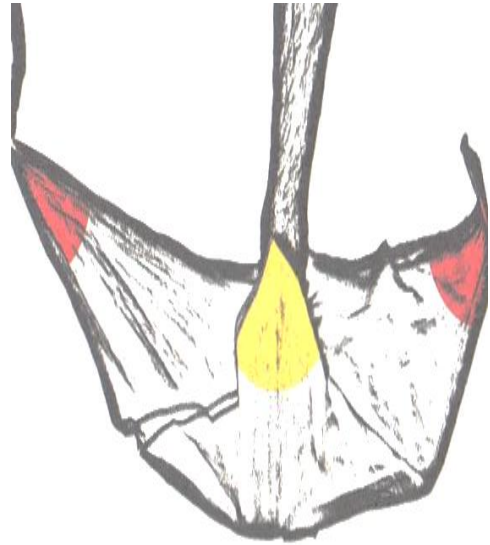


**Figure 86. – The base of the kerchief is located under the arch of the foot, the apex pointing towards the calcaneus (A). The ends are directed towards each other, skirting the front ankle joint (B). After completing the movement around the shin, they are connected on the front surface (C)**

***Triangular bandage in the foot***



A



B



C



D

**Figure 87. – Initial position: the scarf is superimposed on the plantar surface of the foot. The top is directed towards the fingers (A). The top is directed, bending over the fingertips, to the rear of the foot (B). The ends of the scarf, forming a cross at the rear, are directed to the back surface of the ankle and tied (C). The dressing is finished (D)**

## FOUR-TAILED (SLING) BANDAGES

The bandage got its name because it is similar in appearance to the common for throwing shells – a sling. The dressing can be made from a piece of bandage. For this purpose, the bandage is cut from both ends along the middle, untouched. The dressing is applied to various parts of the body, including: the nose, the occipital, parietal, frontal areas, the humerus and elbow joint, etc.

Sling-like bandages, unlike bandages, are less complicated, but they have fewer functional capabilities. Therefore, they can be used, basically, in those cases when it is required to keep the dressing material on the affected area.



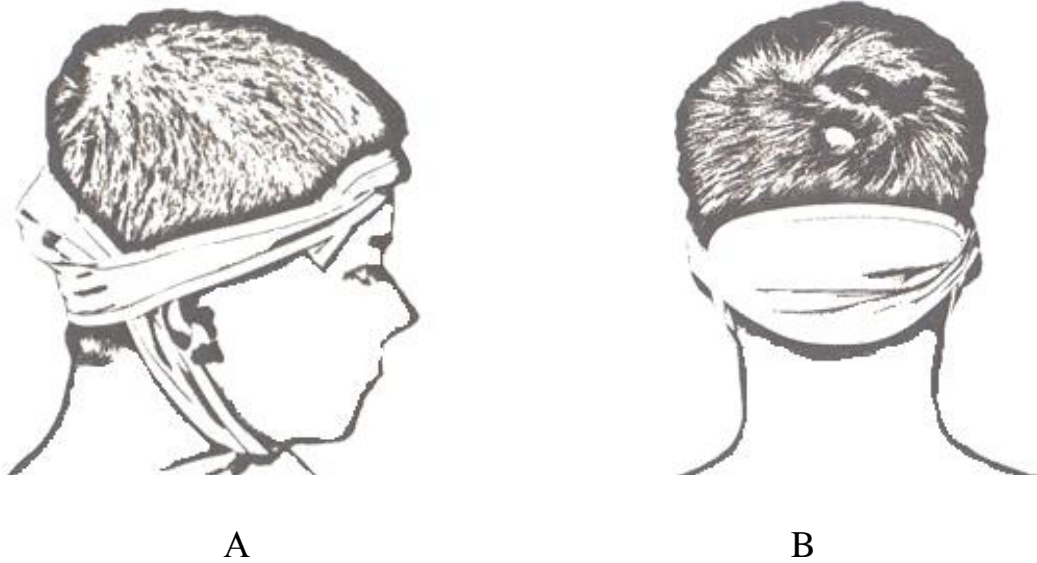
Figure 88. – Four-tailed (sling) bandage

### *Sling bandage on the parietal region*



Figure 89. – The middle is superimposed on the parietal region, the posterior ends are connected in the chin area, and the anterior in the occipital region (A). The dressing is finished (B)

***Sling bandage on the occipital region***



**Figure 90. – The middle is superimposed on the occipital region, the lower ends are connected in the frontal region, and the upper ones are connected on the chin (A). The dressing is finished (B)**

***Sling bandage on the frontal region***



**Figure 91. – The middle of the bandage is superimposed on the frontal region, and the upper and lower ends, crossing in the temporal areas, are directed to the occipital region and there are tied (A). The dressing is finished (B)**

***Sling bandage on the nose***



A



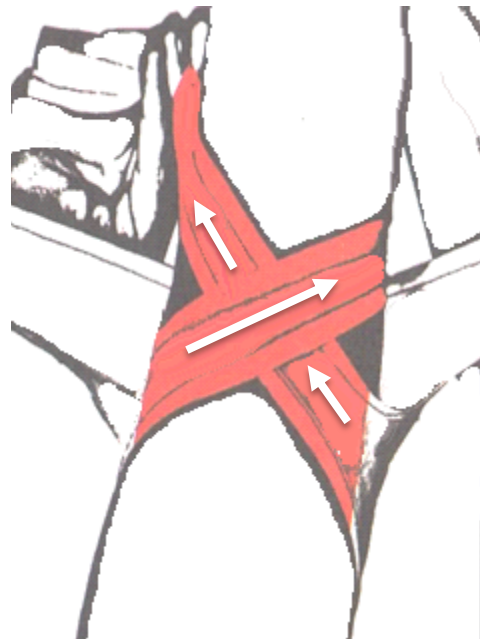
B

**Figure 92. – The middle is superimposed on the nose. The ends, crossing to the left and to the right of it, go to the occipital region, where they connect (A). The dressing is finished (B)**

***Sling bandage on the elbow joint region***

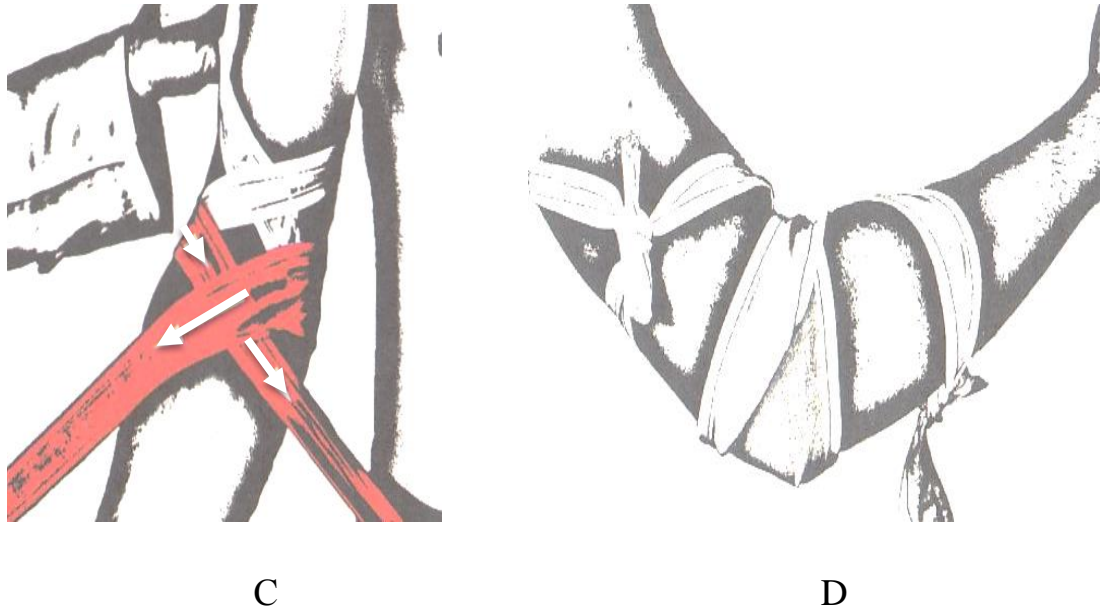


A



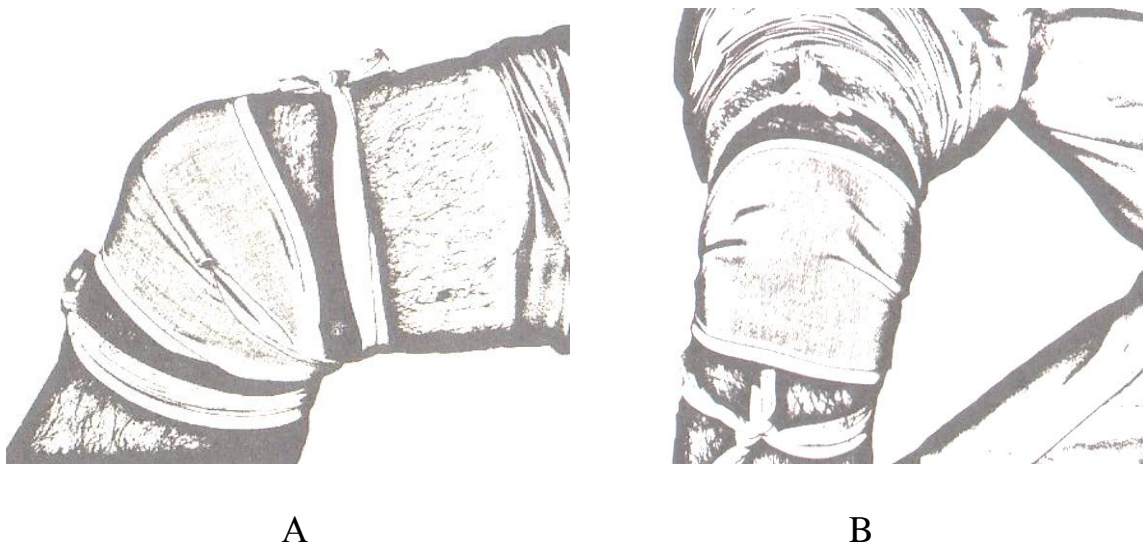
B





**Figure 93. – The middle of the bandage is superimposed on the posterior surface of the elbow joint (A), the lower ends rise to the lower/3 of the shoulder, forming a cross in the ulnar fossa, and they are connected (B). The upper ends are directed to the forearm, crossing also in the ulnar fossa, and they are connected (C). The dressing is finished (D)**

***Sling bandage on the knee joint region***



**Figure 94. – The middle of the dressing is superimposed on the front surface of the knee joint. The upper ends, crossing in the popliteal fossa, bind in the upper/3 of the shin, and the lower ones in the lower/3 of the thigh (A). The dressing is finished (B)**

***Sling bandage on the heel area***



A



B



C

**Figure 95. – The middle of the bandage is superimposed on the heel area. The upper ends lead to the anterior surface of the ankle, where they cross over the back surface of the foot on the plantar and back, where they bind (A). The lower ends are directed to the anterior surface of the ankle, form a cross, then around lower/3 of the shin, where they are tied (B). The dressing is finished (C)**



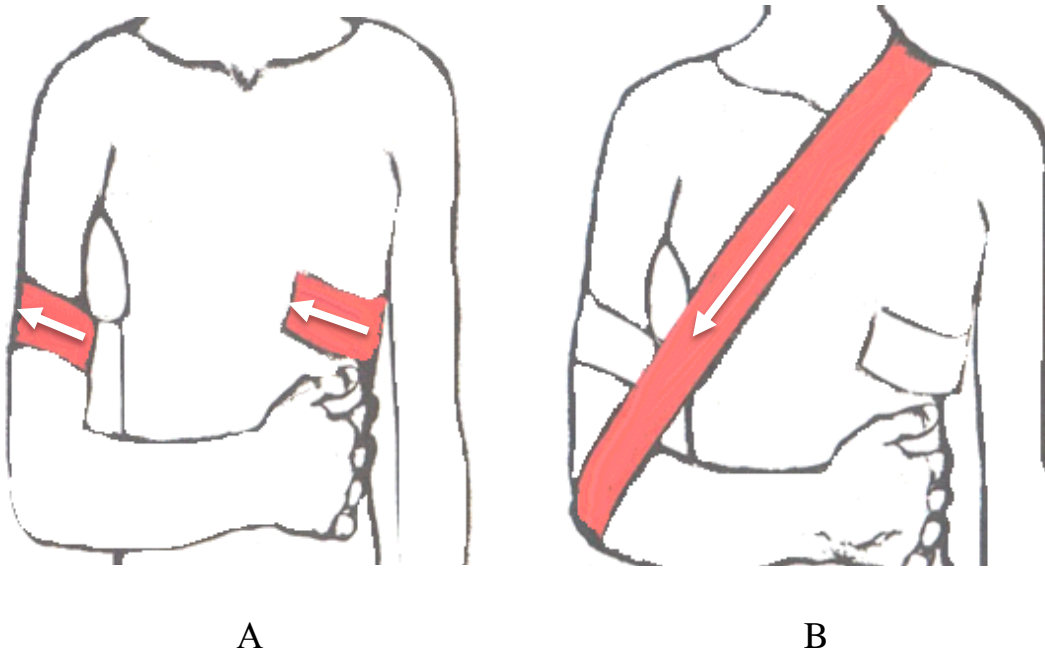
# ADHESIVE BANDAGES AND DRESSINGS FROM TUBE ELASTIC BAND

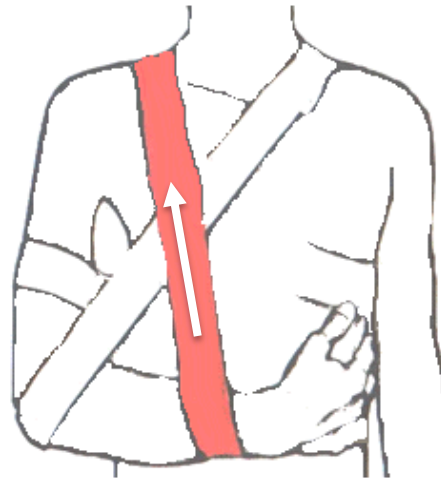
## ADHESIVE BANDAGES

Adhesive (glue) bandages, as a rule, are used to hold the bandaging material, the edges of the wound, to protect the postoperative wound. In some cases, adhesive (leukoplastic) dressing is used as an immobilizing bandage – the Sayr bandage, which is used for fractures of the clavicle.

Adhesive bandages include: colloidal, master-free (glue), adhesive tape. The reference literature describes methods of use, as well as their negative aspects. Currently, ready-made adhesive bandages of various sizes and purposes are used in surgical practice. They do not irritate the skin and have hypoallergenic properties. For the production of modern elastic, fixing plasters, an air- and vapor-permeable non-woven fabric is used, which does not irritate the skin with acrylic adhesive.

### *Adhesive bandage by Sayr*

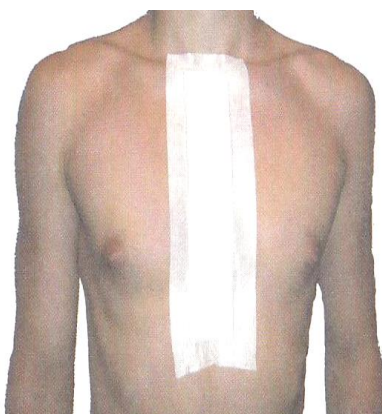




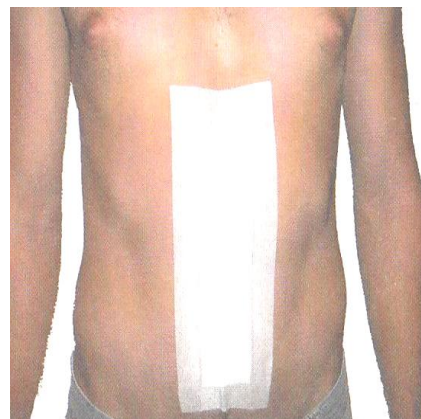
C

**Figure 96. – Initial position: the arm is bent at the elbow joint at a right angle. In the axillary region, a cotton–gauze pad is laid. Adhesive tape with a width of 5–7 cm. The dressing begins with a circular tour in the mid/3 of the shoulder on the affected side, the tape is led along the back to the nipple area from the opposite side. This removes the shoulder (A). The next round leads from a healthy shoulder strap, obliquely downward, under the elbow joint of the affected side, then through the back to the starting point. This ensures that the shoulder is raised upward (B). Next, a circular round is placed on the lower/3 of the forearm and the ribbon is guided through the damaged forearm to the scapular area. On the fracture region, under the patch, a cotton–gauze pad is applied. The dressing is finished (C)**

***Ready-made adhesive aseptic dressings for different parts of the body***



A



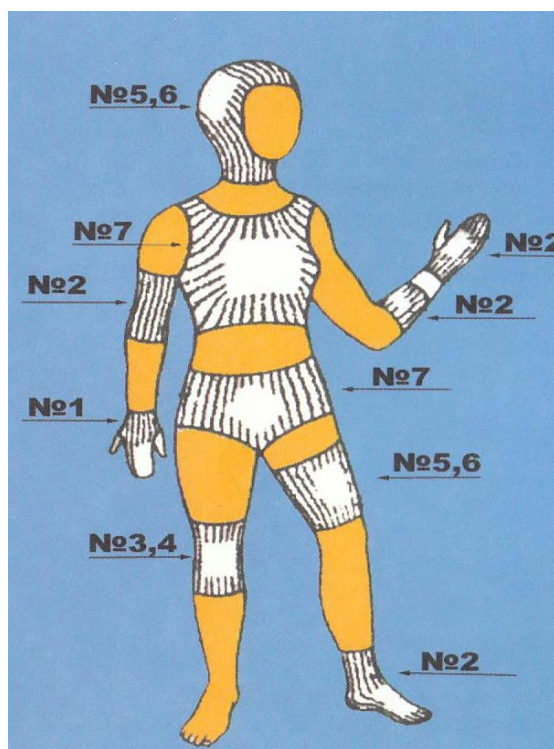
B

**Figure 97. – Aseptic adhesive dressing on the sternum (A). Adhesive aseptic bandage on the anterior abdominal wall (B)**

### ***Tubular elastic bandage (Retylast)***

Tubular elastic bandage is used to fix the bandaging material on various parts of the body. The bandage is available in 7 sizes (figure 98).

Method of application: the wound is covered by sterile material. A piece of the length required for the dressing is cut off from a bandage of the appropriate size. When the dressing is applied, the bandage stretches the bandage with the hands held inside, and apply it to the bandage area. The additional fixation is not required. If it's necessary, cuts are made in the bandage wall.



**Figure 98. – Tubular elastic bandages**

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