

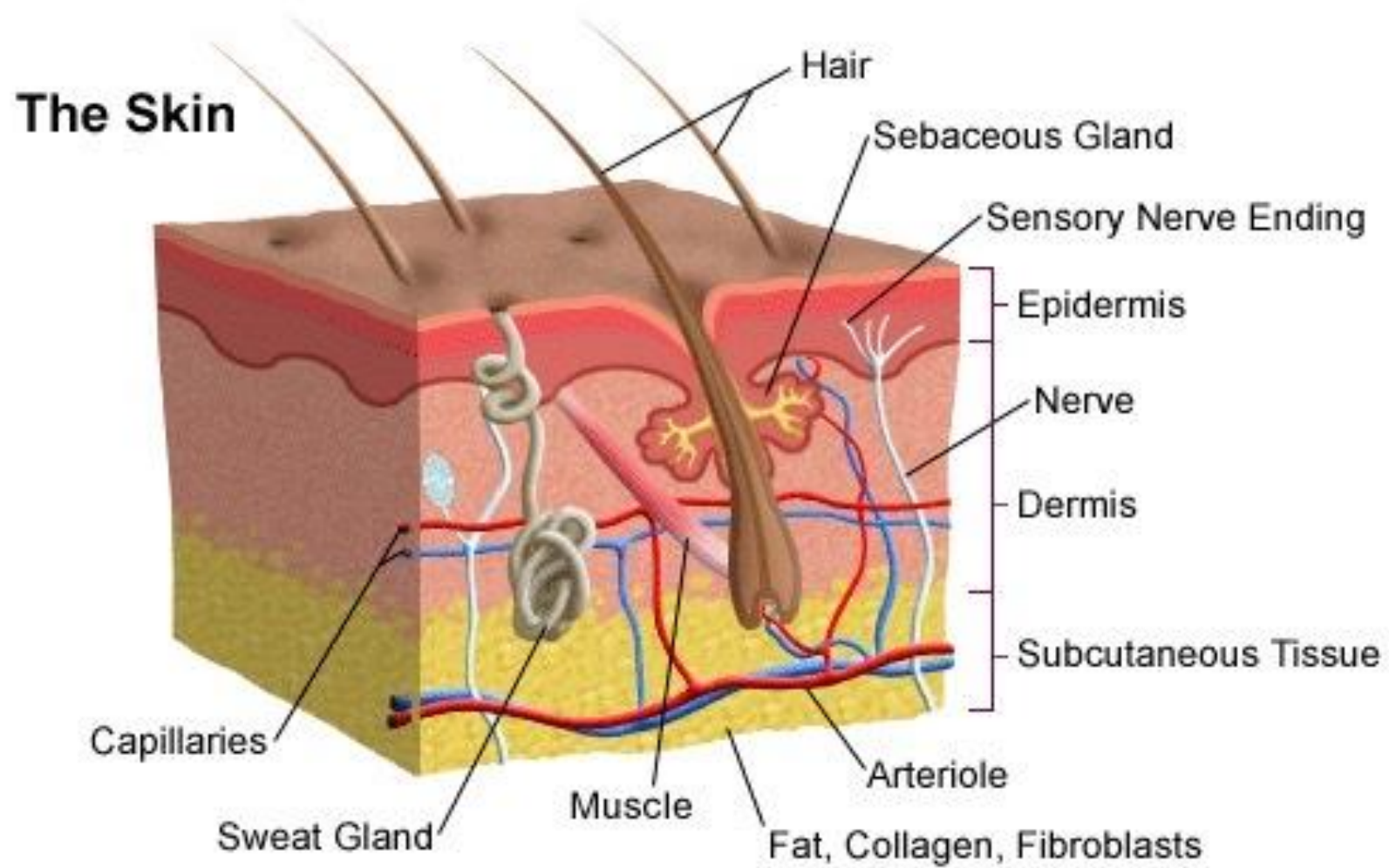
# SKIN AND SKIN SUTURES



# WHAT WILL WE LEARN?

1. *What is the skin and what is its structure?*
2. *What are the requirements for suture material for the skin and adipose tissue?*
3. *What are the main sutures used on the skin?*

# SKIN STRUCTURE





# BASIC PRINCIPLES OF USING SUTURE MATERIALS ON THE SKIN:

- The use of materials such as **silk and catgut should be limited** because they cause the most pronounced tissue reaction.
- The use of chrome-plated catgut or fast-absorbing vicryl of small diameter is indicated when suturing skin wounds in the scalp, the posterior surface of the auricles, as well as mucous membranes of the oral cavity, nose, etc.
- All suture materials must be used with **atraumatic** needles.
- During the closure of skin wounds, it is advisable to use **synthetic monofilament** materials that **do not** possess **wick properties**, allow more accurate matching of tissues, are sufficiently strong and cause **a minimal reaction of the surrounding tissues**.



OU, SH\*T



# SUTURING THE SKIN

## Conditions

1. Lack of pronounced tension when comparing the edges of the wound.
2. Good blood supply to the edges of the skin.
3. No signs of local infection or tissue necrosis

## Requirements

- Precise adaptation of the wound edges (precision)
- No cavities and pockets
- Minimal trauma
- Elimination of skin tension
- Maximum hemostatic effect
- Cosmetic effect
- Complete removal or biodegradation possible
- Quick application and removal
- Compliance with natural wound drainage
- Using the minimum amount of suture material in the wound cavity



# SUTURING THE SKIN

**Strict symmetry** - suture enter and exit must be at the same distance from the edges of the skin.

When capturing an excessive amount of tissue into the suture (more than 1.5 cm from the edge of the incision)

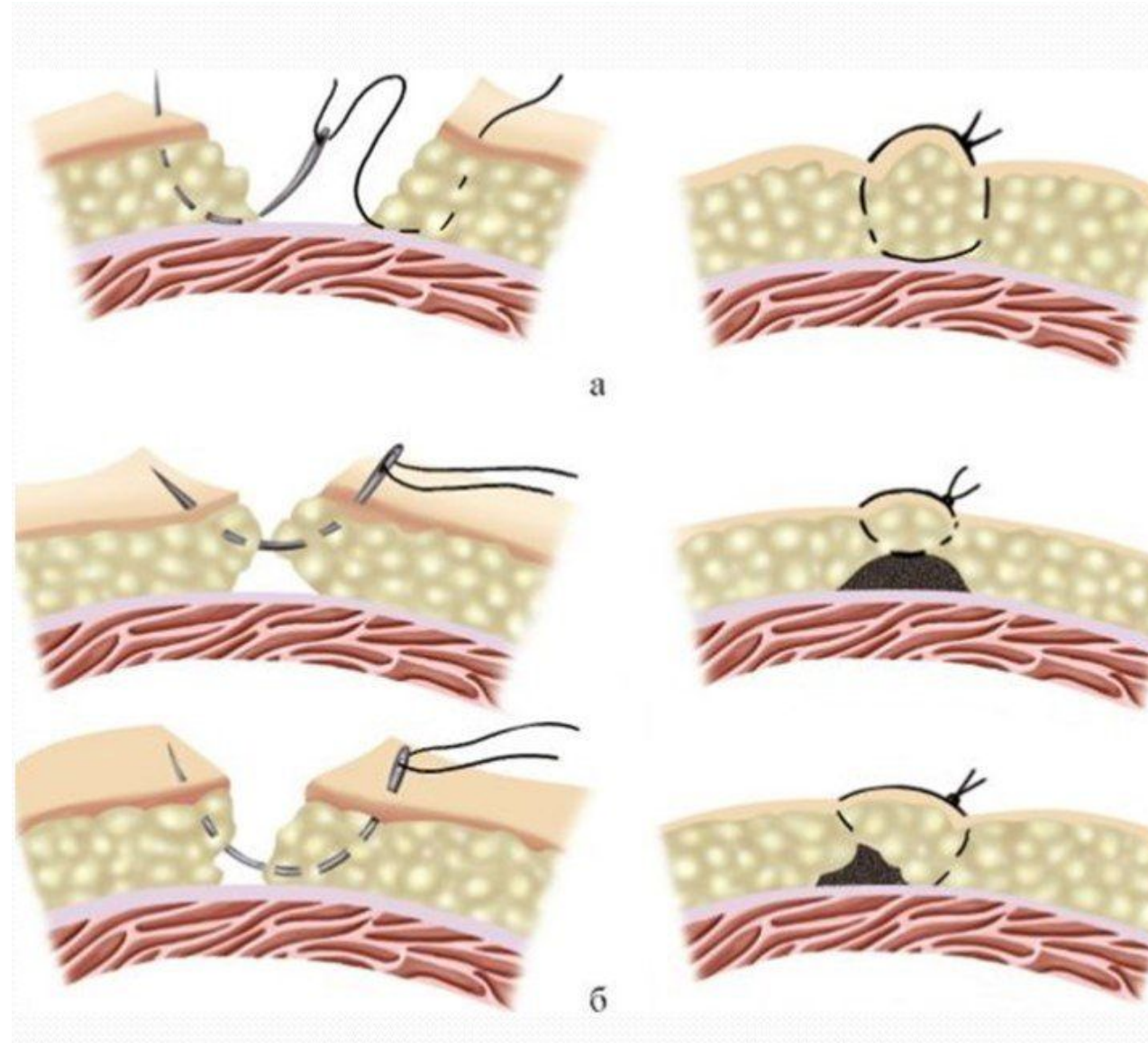
—more effort to tighten the seams ->

-skin corrugation

-local violation of its blood supply

□ necrosis

□ a rough postoperative scar with the formation of transverse (relative to the main scar) scar lines.





# TYPES OF SUTURES

## CLASSIFICATION

### By overlay technique:

1. Simple separate
2. Continuous (wrapped, submersible, mattress, cosmetic)
3. U-shaped
4. Z-shaped

### In relation to the surface of the skin

1. Vertical (circular, U-shaped)
2. Horizontal

### By overlay method:

1. Manual
2. Mechanical

### In relation to the wound:

1. External
2. Internal



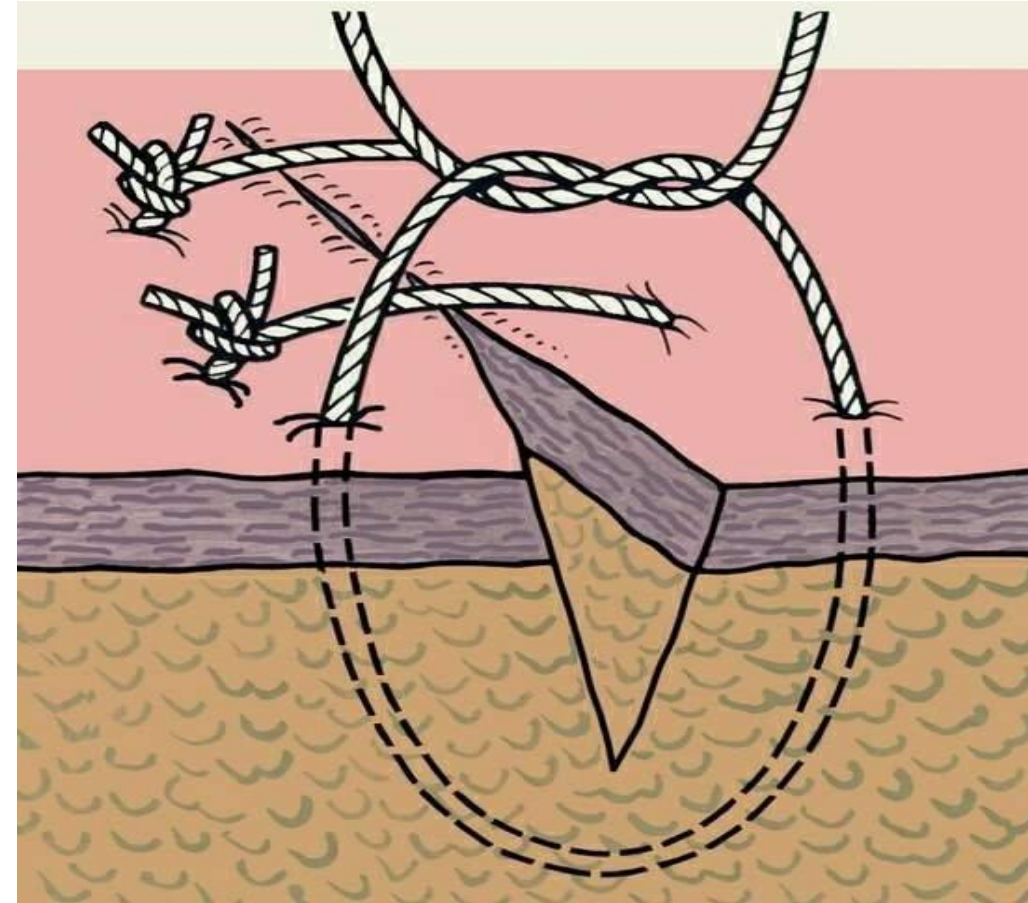
# MAIN SKIN SUTURES



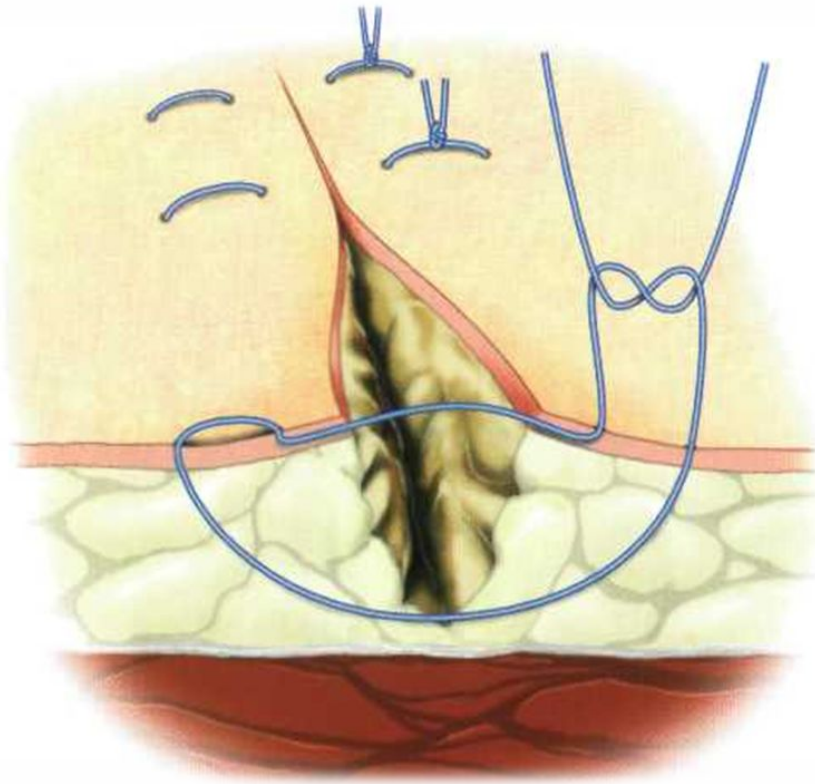
# SIMPLE KNOTTED SUTURE

A simple separate suture is able to provide a good connection of the wound edges without the formation of "dead space", which is achieved by comparing the layers of the dermis and subcutaneous adipose tissue.

When applying sutures, the needle is injected and punctured at a **distance of 0.5-1 cm from the edge of the wound**. Performing an injection and a puncture, the axis of the needle point is **perpendicular** to the skin surface. Drawing the needle parallel to the skin increases the power we use on the needle and deforms it.

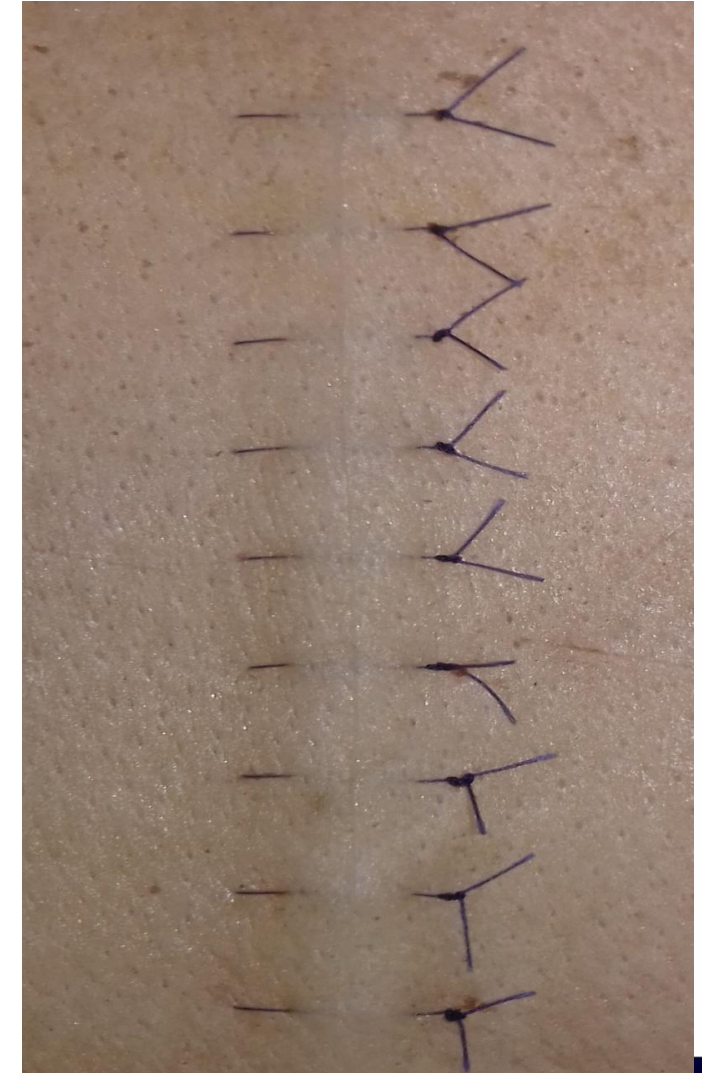


# VERTICAL SUTURE BY DONATI-MC.MILLEN



It is used in cases where the edges of the wound are excessively raised, mobilized or have an unequal and at the same time significant thickness

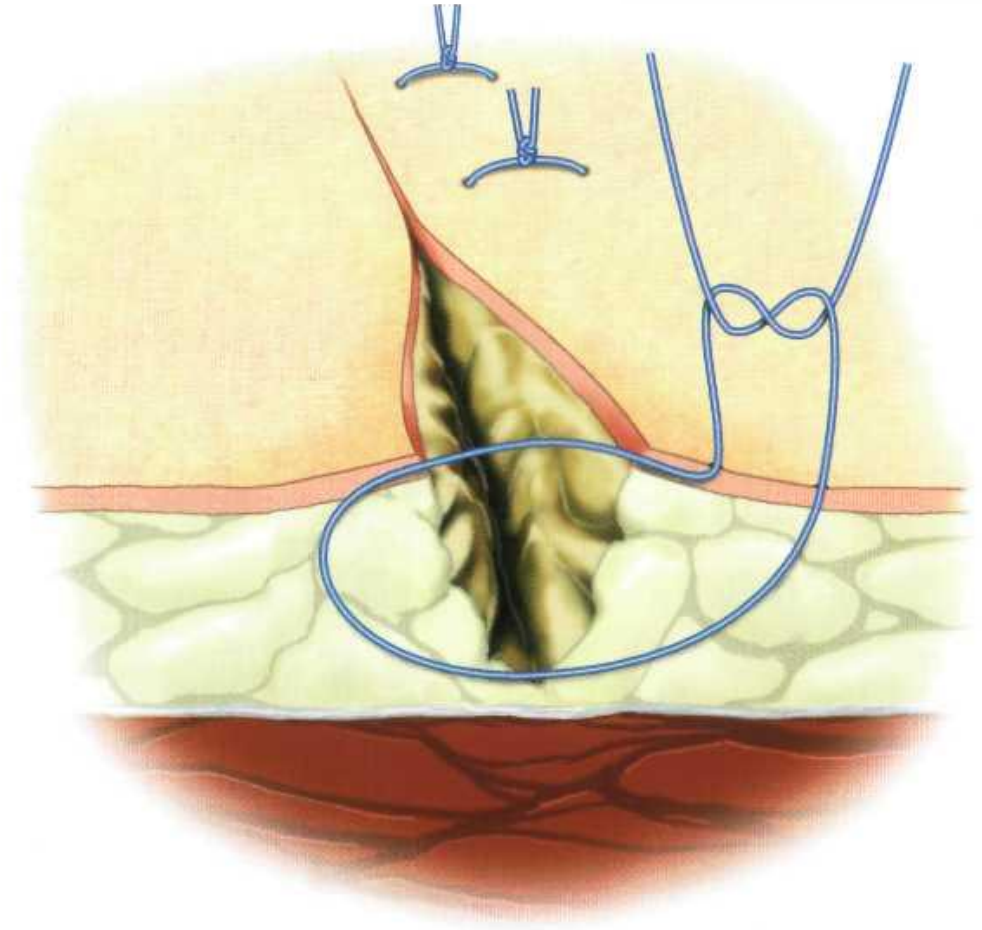
The imposition of a vertical mattress suture begins with injecting the needle into the skin at a great distance from the edge of the wound (1 - 2 cm), and, passing at the level of the deepest point of the wound, the needle is punctured on the other side at a symmetrical point. Then the superficial part of the stitch is applied with the needle being held at a minimum distance from the edge of the wound.



# MODIFIED VERTICAL SUTURE BY ALLGOWER

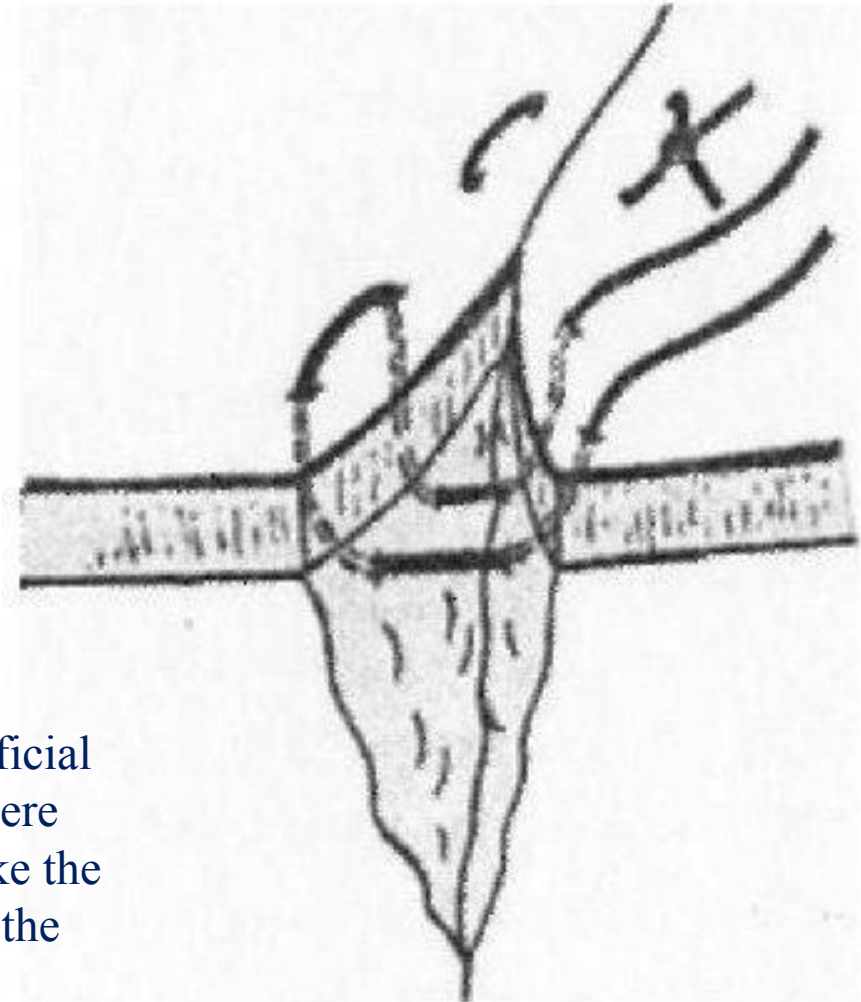
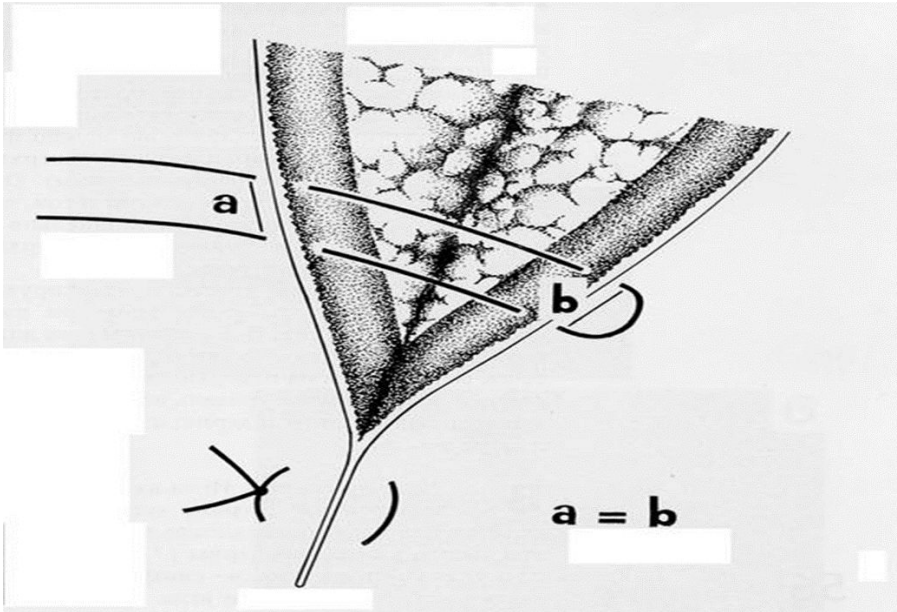
To improve the aesthetic properties, the ends of the thread are passed through the dermis and subcutis without puncture to the skin surface on the other side.

A good adaptation of the wound edges can be ensured by the «Allgower» suture, although if subcutaneous fat, thread eruption is not excluded.





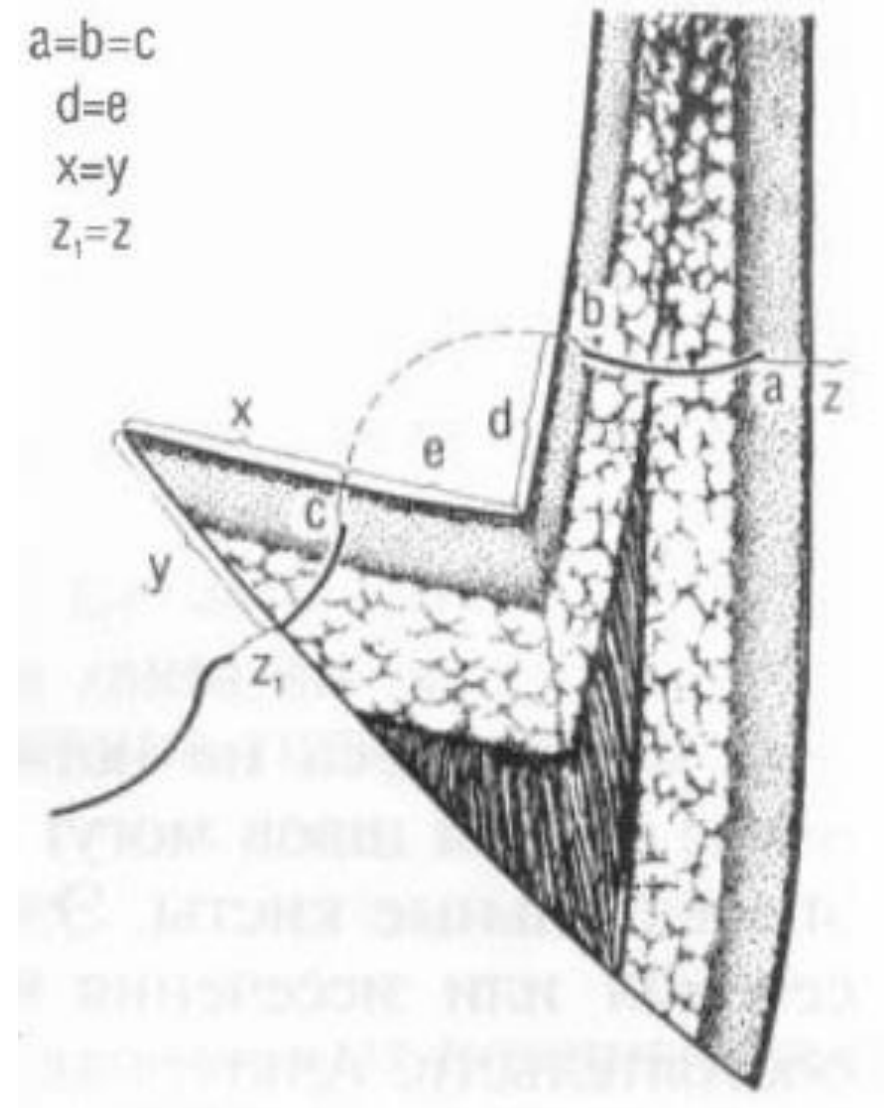
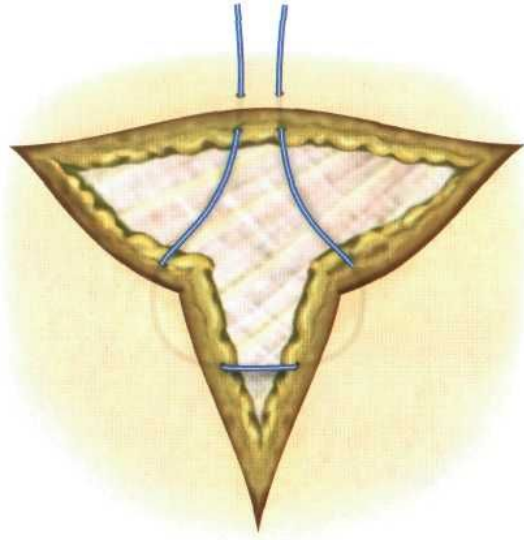
# HORIZONTAL U-SHAPED SUTURE



The horizontal mattress suture is used to join the edges of superficial wounds and can provide good alignment, especially in cases where some inversion of the sutured skin edges must be ensured. Unlike the previous type of seam, the stitch is positioned horizontally with the capture of the same amount of tissues ( $a = b$ )

# SEMI-SUBMERSIBLE SUTURE

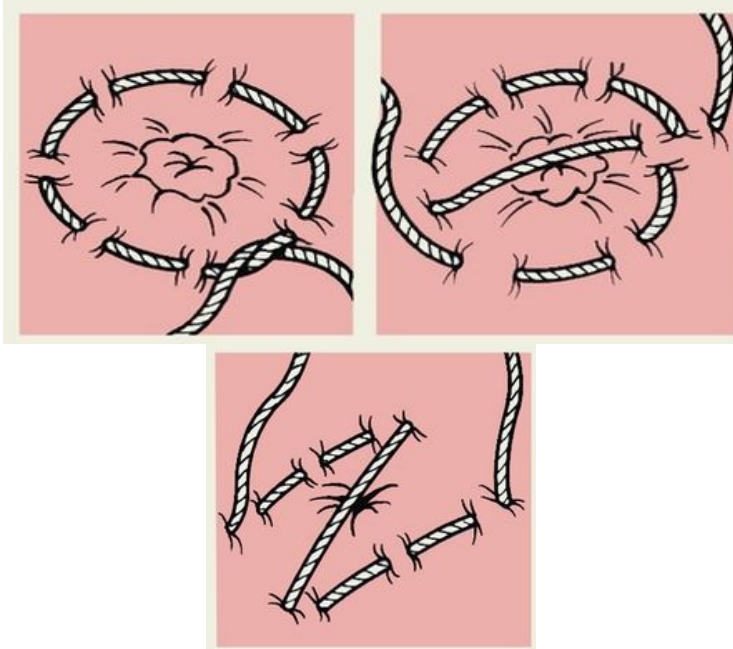
Effective for closing V-shaped wounds. The use of this suture prevents necrosis of the V-tip, which can occur with a simple knotted suture. It is also used to suture a skin flap to the recipient substrate.





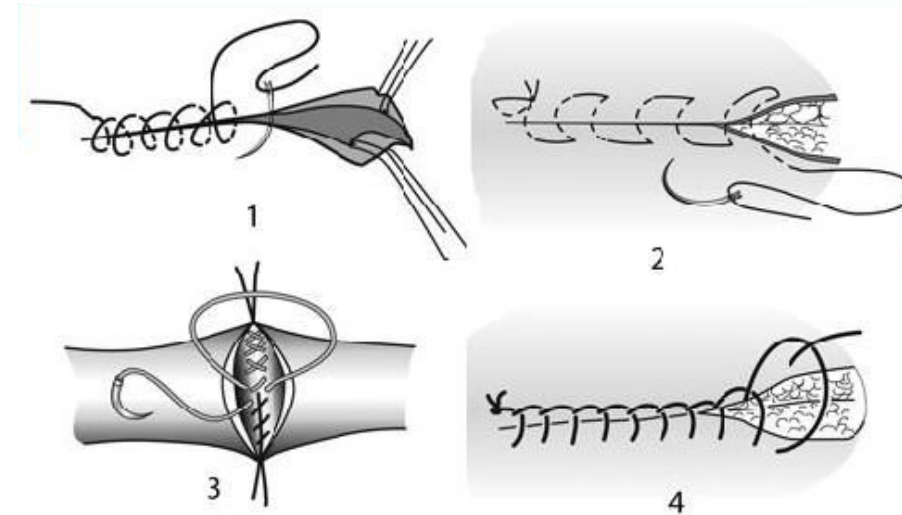
# TYPES OF CONTINUOUS SUTURES

## Planar



- simple purse string suture;
- S-shaped purse string suture by Rusanov;
- Z-shaped purse string suture by Salten.

## Volume

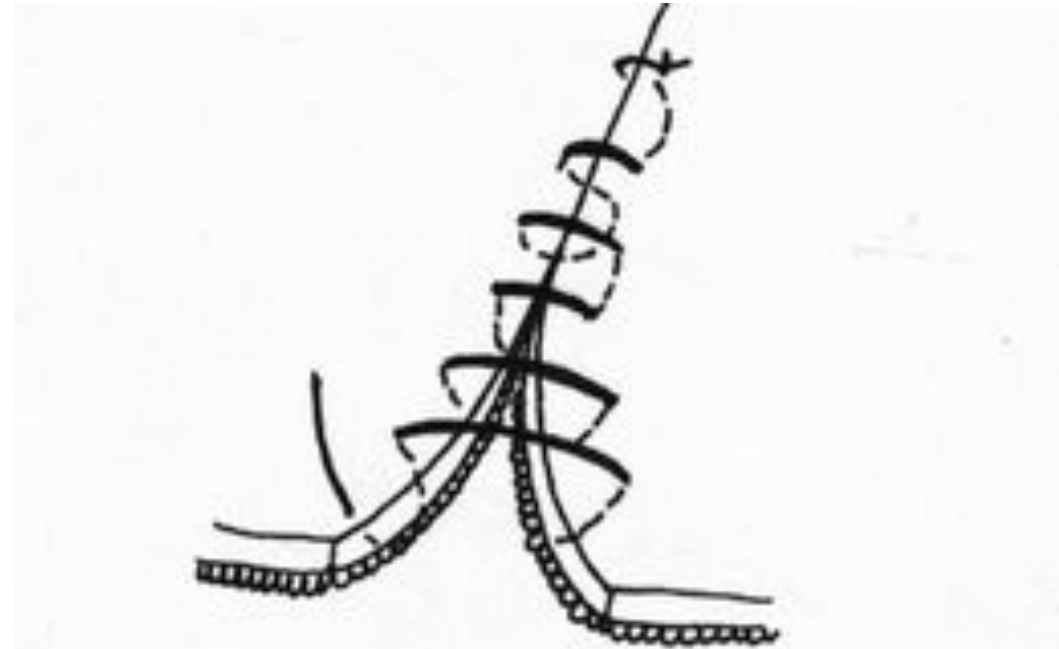


- wrapped;
- mattress;
- cruciform;
- continuous with overlap (Reverden-Multanovsky).

# CONTINUOUS WRAPPED SUTURE

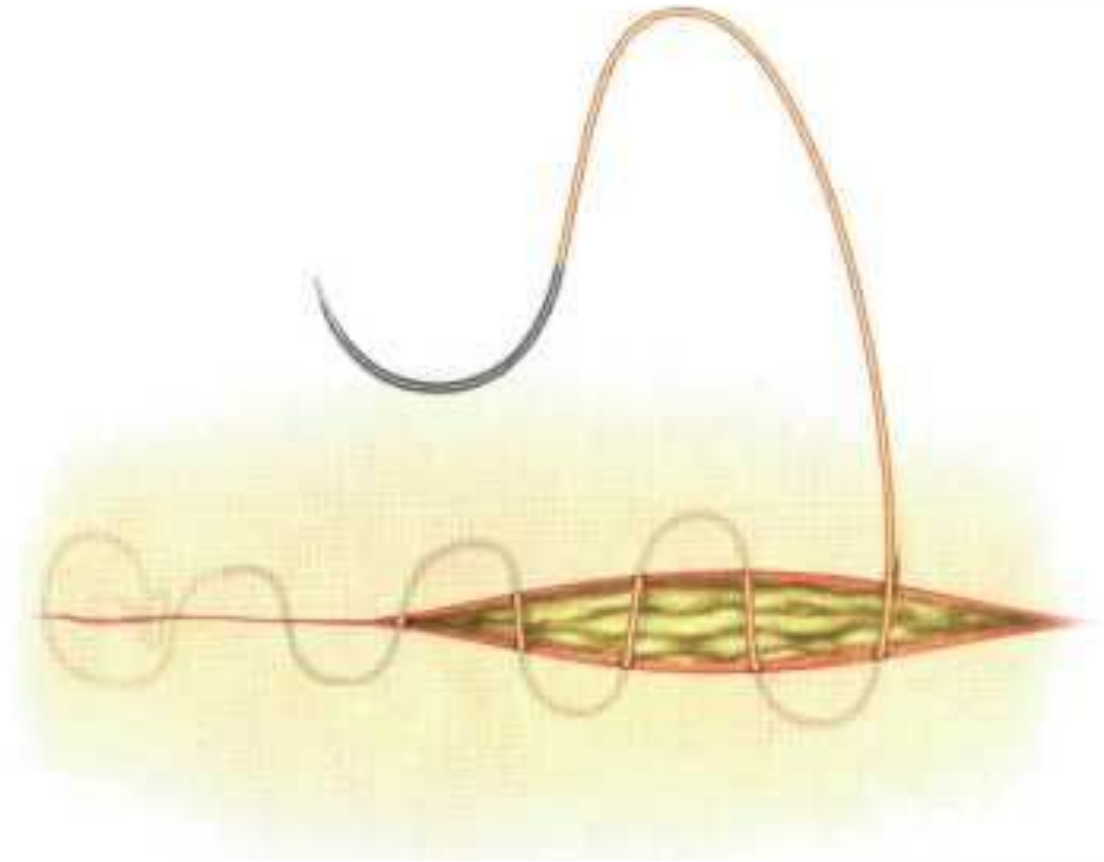
A continuous suture is applied with a long thread from one end of the wound to the other. The first knot is tied at the beginning of the suture after the first puncture of the needle, the last at the end, after the wound is sutured.

The suture allows good adaptation of the edges of the skin, hemostasis, but at the same time microcirculation at the edges of the wound and the cosmetic result remain unsatisfactory.

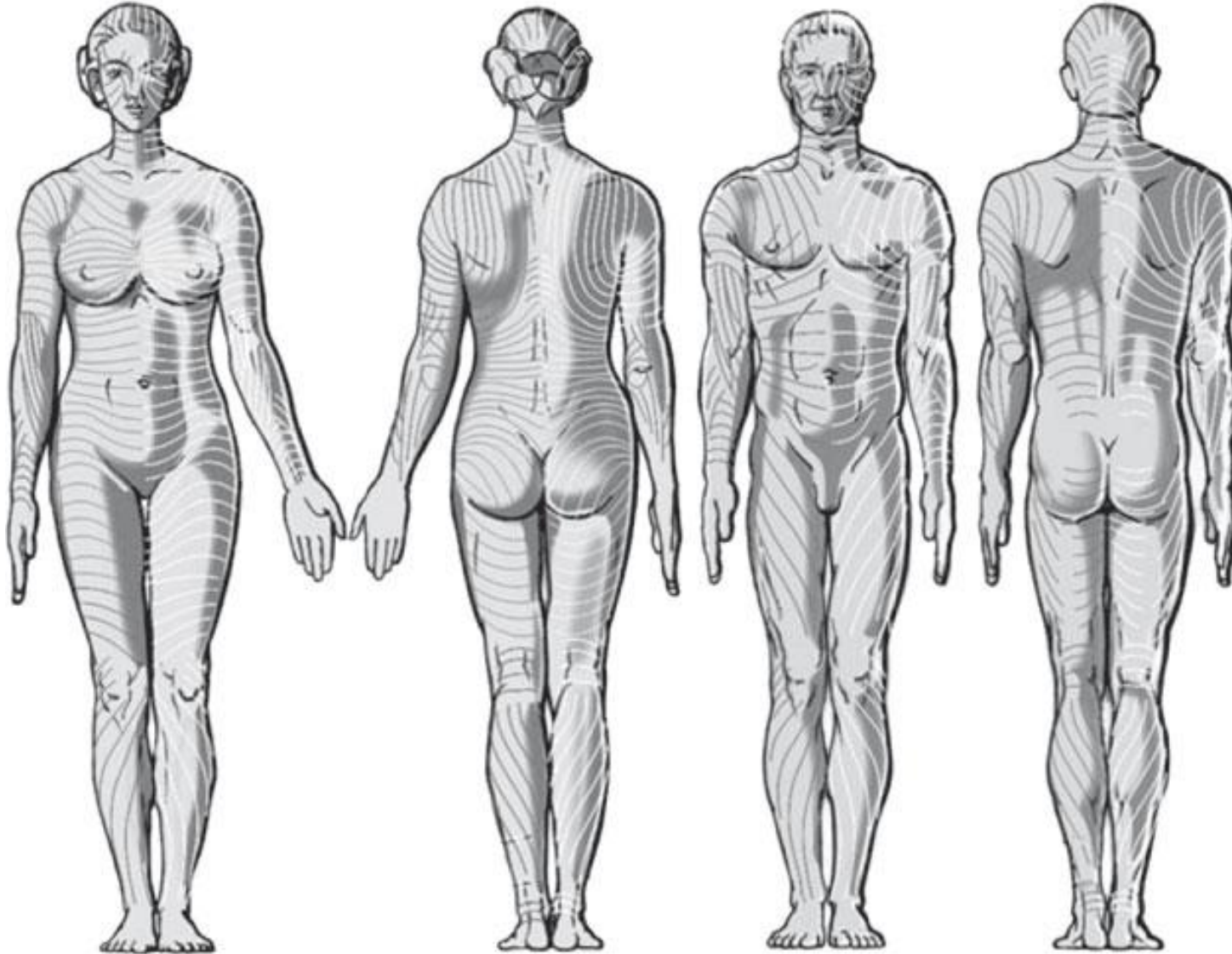


# HALSTED INTRADERMAL SUTURE (COSMETIC INTRADERMAL)

For the correct imposition of the intradermal suture, the needles are inserted at a distance of 1 cm from the edge of the incision. The needle is then sequentially passed through the thickness of the dermis, capturing sections of the same length on each side so that the needle puncture point on one side coincides with the injection point on the other



# LANGER LINES







# EXAM: SKIN SUTURE

## 1st stage.

Theoretical exam of the skin suture

## 2nd stage. Simple knotted sutures and sutures by Donati

Length of incision - 7cm

3 simple knotted sutures and 3 Donati sutures must be applied.

The maximum execution time is 10 minutes.

### Criteria:

1. Uniformity - 2 points

- evenness of the injection from the edge of the wound - 1 point
- uniformity of indentation between sutures - 1 point

2. Correct instruments usage - 1 point, the correctness of loading the thread into the needle, the position of the needle in the needle holder, apodactyl work with tweezers and needle holder are assessed.

3. Assessment of sutures - max 6 points.

- 1 correct knot - 1 point, the reduction of the wound edges, their comparison, the correctness of the loops, the reliability of the knot are assessed.

4. Estimation of the execution time - max 3 points

5 minutes - 3 points

7 minutes - 2 points

9 minutes - 1 point

The level is considered passed if the examinee scored 9 points.





# EXAM: SKIN SUTURE

## 3rd stage. Intradermal Halstead suture.

The length of incision is 8 cm.

The maximum execution time is 15 minutes.

### Criteria:

#### 1. Cosmetic effectiveness.

- Uniformity of the first puncture and the last puncture at the ends of the incision, correct fixation of the thread with a knot tied instrumentally - 1 point
- The depth of injections into the dermis, without touching the subcutaneous fat - 1-1.5 mm from the surface - 1 point.
- Strength of seam retraction, smoothness of the tightened surface, without pulling the skin - 1 point.

#### 2. Correct use of instruments when applying an intradermal suture, correct rotation of the needle holder, etc. - 1 point.

#### 3. Evaluation of arcs.

- the same degree of bending of arcs - 1 point
- the same size of arcs - 1 point
- the injection of the next arc starts from the injection of the previous one, without indents - 1 point

#### 4. Lead time.

7 minutes - 3 points


10 minutes - 2 points

12 minutes - 1 point.

**The stage is considered passed if the examinee scored 7 points.**



# THANK YOU FOR THE ATTENTION!

1 % 

**BYE**

