

# Postoperative complications in the wound

Postoperative complications in the wound include:

1. infection
2. wound bleeding
3. dehiscence of the wound
4. serom
5. necrosis
6. damage to the skin around the wound
7. healing disorders (hypertrophic granulation, fistulas, reaction to foreign material)

## Normal wound healing (description during rounds)

- subjectively without difficulties
- objectively the patient is afebrile, the dressing does not leak, the wound is calm, no redness, no retention

## Early infections

- predisposing factors are bruised, ischemic or necrotic tissues, hematomas in the wound (therefore it is necessary to remove necroses, drain hematomas, in case of larger coagulum that cannot be drained, prophylactic ATB is administered), septic operations (removal of gangrenous appendix or gallbladder...)
- the infection can affect different layers of the wound (skin and subcutaneous tissue - abscess or phlegmon, fascia - fasciitis...) and spread to deeper organs, body cavities (peritonitis, pleuritis, synovitis, meningitis), or spread lymphogenically or haematogenously
- the main cause is skin microflora (staphylococci, streptococci), more rarely colibacillary infections or anaerobes
- **clinical symptoms:**

1. local - soreness, redness, swelling, odour, collection of pus (fluctuation, oozing between stitches)
2. general - febrile (usually between 38-39 °C, from the 5th postoperative day), leukocytosis, ↑ CRP

- **The process:**

1. dissolving stitches
  2. sampling for bacteriology (swab from the base of the wound)
  3. evacuation of pus
  4. local antiseptics (square with 0.25% Persteril, rinse with Betadine...) and external covering
  5. deployment of ATB in case of a positive smear or general signs of infection
  6. leave the wound to heal per secundam (treat as a chronic infected wound - Inadine, in case of significant secretion Silvercel, Actisorb...) with possible resuture after control of infection in case of a purely granulating wound
- more rarely, in case of extensive suppuration in the subcutaneous tissue (e.g. in diabetics), it is necessary to perform contraincision and drainage, wound lavage (Betadine...)
  - in case of laparotomy wounds it is necessary to observe the base of the wound (whether the fascia is firm, alive), the process may go to the peritoneal cavity (then the symptoms of peritoneal irritation become apparent - ultrasound and CT scan with subsequent puncture and drainage of the abscess or surgical revision is indicated)
  - the mildest form is suppuration in the channels of the skin sutures - it usually subsides after the suture is removed

## Wound bleeding

- the causes are disorders of haemocoagulation, insufficient arrest of bleeding during surgery, ligature slippage...
- **manifestations:**

1. blood soaking through the dressing
2. leakage of blood between stitches, or hematoma formation in the subcutaneous tissue (swelling, feeling of pressure or pulling in the wound, fluctuation without signs of inflammation)
3. anaemia, hypotension in major bleeding

- **treatment:**

1. minor bleeding - pressure bandage, replacement during leakage
2. hematoma - risk of infection - evacuate (cannula between stitches or dissolve them)
3. major bleeding - puncture under local anaesthesia, or wound revision in theatre

- **in addition to perfect** haemostasis during surgery and preoperative adjustment of coagulation (INR values)

below 1.5), insertion of a drain into the subcutaneous tissue (miniredon placed outside the wound, capillary drain placed through the wound between the sutures) is a preventive measure

## Dehiscence of the wound

- **wound edge spacing conditional:**
  - increase in intra-abdominal pressure (during sitting, coughing...) - in these situations, the patient must therefore apply slight pressure against the wound with the hand after surgery
  - technical error during the operation (loosening of sutures), it also occurs regularly in case of infection or hematoma in the wound
- **spacing can affect:**
  1. skin and subcutaneous tissue (typically during infection)
  2. all layers of the wound (incl. fascia - laparotomies result in prolapse of the villi or omentum into the wound with pain, sero-sanguis secretion from the wound, symptoms of paralytic ileus)
  3. fascia under the skin (weakening of the abdominal wall, later formation of a hernia in the scar)
- **treatment:**
  1. cure of infection
  2. drainage of the hematoma - then possible resuture
- as a prevention of hernia in the scar, the patient should always be instructed before discharge not to lift anything heavy for 6 weeks after the operation

## Serom

- collection of serosanguinolent fluid in the wound, usually with wound dehiscence
- **treatment:**
  1. stitches permission
  2. draining the fluid or inserting a capillary drain
  3. later resutura

## Wound necrosis

- affects mainly the edges of the wound, which are ischaemic (deprivation of subcutaneous tissue, excessive traction), or the base of the wound (infection)
- manifests as dry gangrene (dark purple, later black colouration, which gradually demarcates), or as yellowish necrosis of muscle or fat, secondary zinnification may occur
- **treatment** consists in removing the necrosis (and removing the cause - treatment of infection - persteril, suture release)
  1. chemically - hydrogel covered with foil
  2. surgically - removal of necroses with a scalpel, scissors

## Skin damage around the wound

- mainly skin irritation due to allergic (disinfection, patches) or chemical (oozing exudates macerating the skin, especially around drains or fistula formation)
- manifested by exanthema (erythema, papules and pustules, wetting), rarely necrosis
- treatment by removing the cause (bandage instead of plaster) and local treatment (skin protection with creams, ointments - antihistamines, corticosteroids in worse cases of allergies)

## Pathological granulation

- normal granulation tissue (newly formed connective tissue with blood vessels) has a shiny, light red, granular and easily bleeding surface
  - granulation tissue fills the wound during healing per secundam from the base, if it grows to the edges of the skin, it starts to overgrow the epithelium from the edges of the wound (epithelialization) and at the same time the ligament starts to shrivel - scabbing
1. **hypertrophic granulations (caro luxurians)**
    1. granulation tissue overgrowing fungus-like wound margins, reduced fibrotization and epithelialization
    2. the cause is usually persistent purulent secretion or the presence of foreign bodies in the wound
    3. treatment - tolerance of granulation tissue
  2. **weak granulation**
    1. pale, with a glassy to speckled surface
    2. in circulatory disorders (ischemia, venous congestion), in general influences (anemia, cachexia, DM, sepsis...)
    3. the cause must be addressed (local, general condition)

# Fistulas

- in the case of a surgical wound, the fistula represents the communication between the body surface and deeper structures (intestinal lumen - intestinal fistula, peritoneal abscess, periproctal abscess, retroperitoneum) through the wound or through the draining hole

- **the causes of fistula formation can be:**

1. mechanical - foreign material
2. pathological - inflammatory or tumour decay in the wound

- **treatment:**

1. removal of the cause (removal of the foreign body, percutaneous drainage of the abscess, closure of the hole in the intestine with sutures)
2. after removal of the cause, the fistulas close on their own (the organism has created them only as a way of draining pus)
3. fistulas with induced wall or lined with epithelium need to be extirpated

## Reaction to foreign material

- **the presence of foreign material (traumatic foreign bodies, non-absorbable sutures) can lead to:**

1. infection (adhesion of bacteria to the surface of the material with suppuration) - abscesses are formed, which open externally through fistulas, and foreign bodies are expelled through them - "stitch suppuration"
2. inflammatory reaction to a foreign body - formation of granulomas (Schloffer's pseudotumor)

## References

### Sources

- PASTOR, Jan. *Langenbeck's medical web page* [online]. ©2006. [cit. 2011-02-25]. <<https://langenbeck.webs.com/>>.