

Immunotherapy in pediatric surgery. Purulent Infection.

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Classification of the surgical infections

- Acute surgical infections.
- Chronic surgical infections.

Acute purulent surgical infections

- Acute purulent aerobic infections.
- Acute anaerobic infections.
- Acute specific infections.
- Viral infections.

Acute Purulent Aerobic Infections

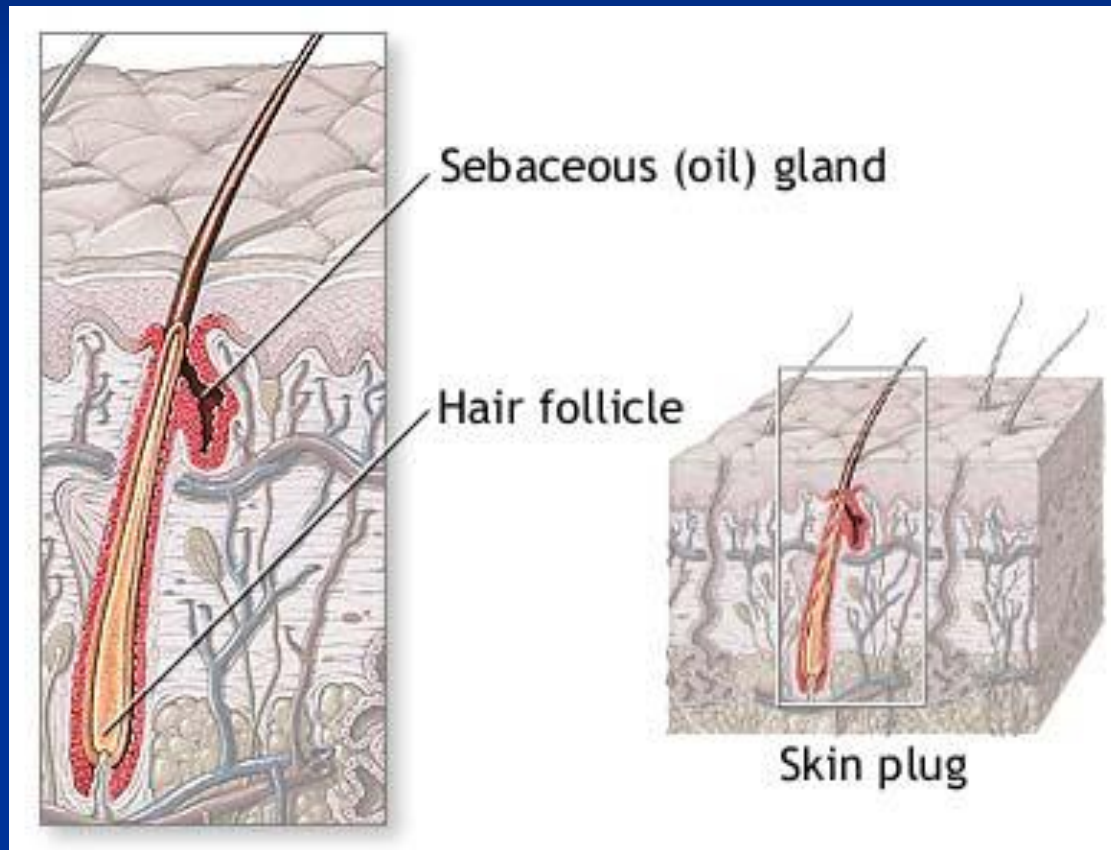
- The cause of the most frequently purulent surgical infections it's:
 - Staphylococcal infections.
 - Streptococcal infections.
 - Gram - negative infections.
 - Mixed bacterial infections.

Five classical local signs of inflammation are:

- Heat-the inflamed area feels warmer than the surrounding tissues.
- Redness of the skin over the inflamed area.
- Tenderness, due to the pressure of exudate on the surrounding nerves.
- Swelling.
- Loss of function-an inflamed tissue does not perform possible its physiological function.

Boil (Furuncles)

- Boil constitute one of the very widespread purulent diseases of the hair follicle and sebaceous



Boil (Furuncles)



Boil (Furuncles)



Complications

- boil may lead to cellulitis, particularly in those whose power of immunity is less.
- boils may also lead to infection of the neighbouring hair follicles where numbers of hair follicles are too many (e.g. axilla) leading to hidradenitis.
- boils usually secondarily infect the regional lymph nodes.

Hydradenitis



Treatment

- The general health of the patient has to be improved, as boils often occur in individuals with debility and ill-health.
- Incision is usually unnecessary as the pustule is very small. Only a touch of iodine on the skin pustule will hasten necrosis of the overlying skin and help the pus to drain out.
- If escape of pus does not occur spontaneously or with application of iodine, removal of the affected hair allows ready escape of pus.
- Antibiotic is usually not required.
- After escape of pus this placet should be cleaned twice with a suitable disinfectant e.g. hexachlorophene.
- If boils are recurrent, diabetes should be excluded.

Carbuncles

- After penetration of pyogenic bacteria under the skin through hair follicles and sebaceous glands the process spreads in depth, if the conditions are unfavourable to the body, and affects considerable sections of subcutaneous tissue. It is an infective gangrene of the subcutaneous tissue due to Staphylococcal (*Staphylococcus aureus*) infection. Gram-negative bacilli and Streptococci may be found coincidentally.

Furuncles and Carbuncles

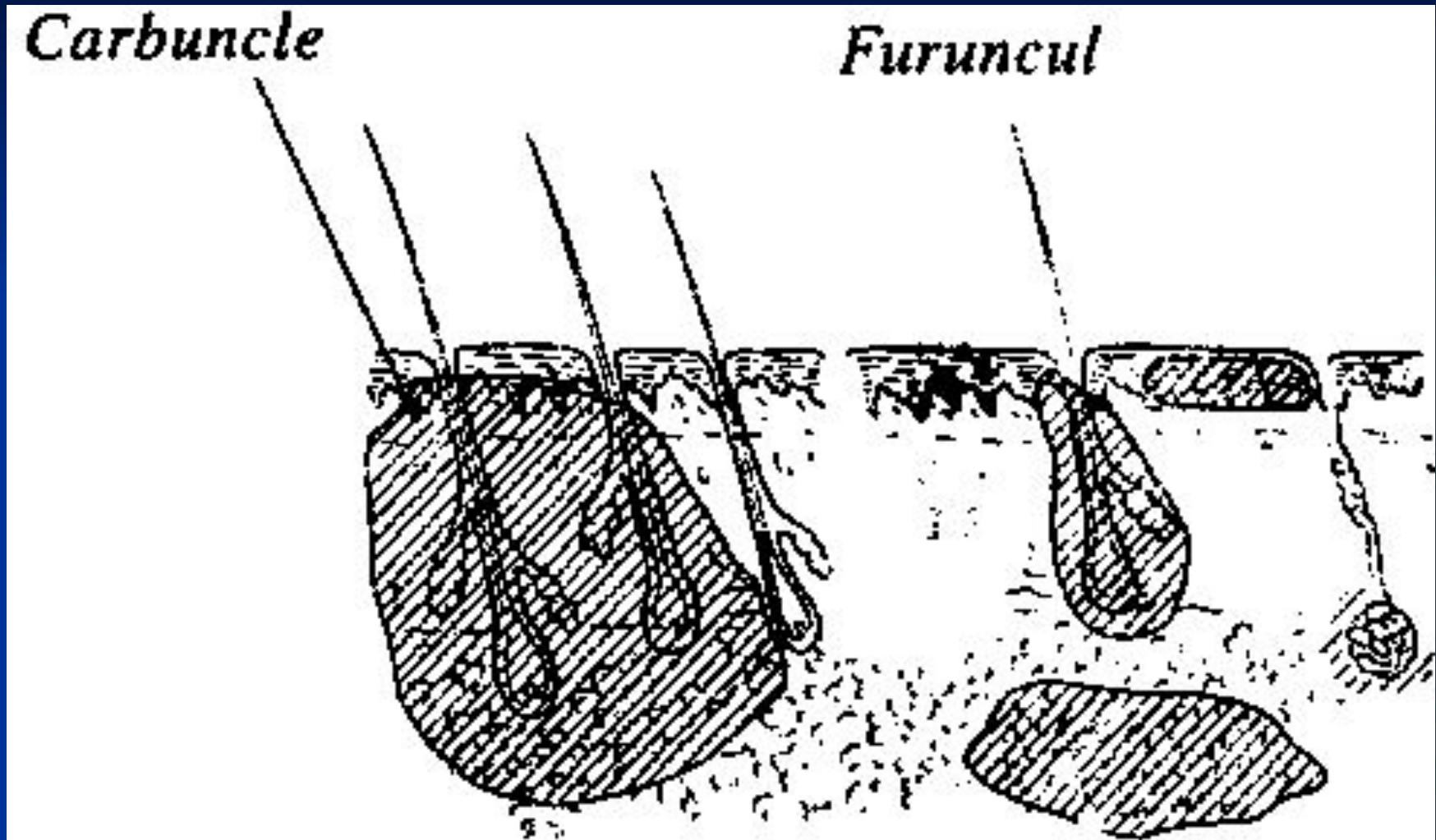


Fig.1 *purulent processes at the skin and underskin tissue*

Carbuncle



Antrax Carbuncle



Treatment:

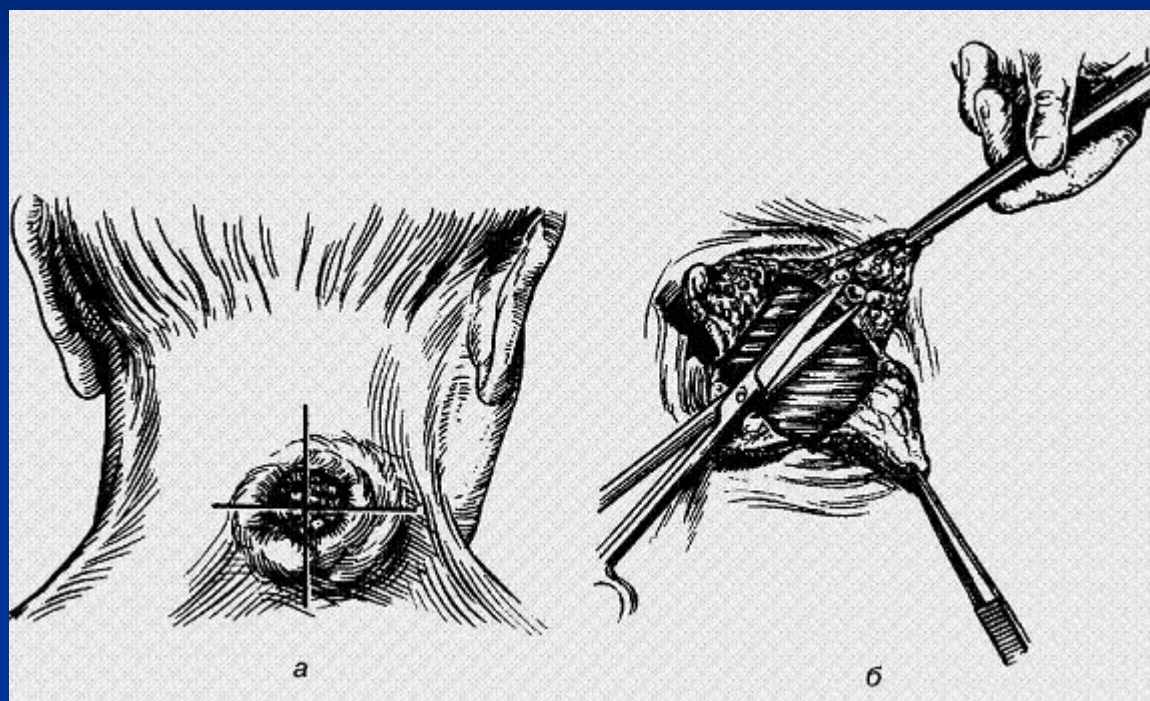
- a) improvement of the general health of the patient should be brought about.
- b) proper antibiotic should be started immediately from the culture and sensitivity test. If the surface openings have not formed, a synthetic penicillin e.g. erythromycin may be used. At this time a paste composed of anhydrous magnesium sulphate and glycerin may be applied or S. S. Mag Sulph powder is used on a moisten cotton and placed on the affected area. This will exercise a valuable osmotic effect and will not only reduce oedema but also will help to burst the carbuncle. Hot compress is helpful before bursting. It may be supplemented by infra-red or short wave diathermy.

Operation may be required:

- a) when toxaemia and pain persist even after a course of antibiotics and
- b) when the carbuncle is more than 2 inches in diameter. It must be remembered that incision is never made unless there is softening in the centre.

Technique. A large cruciate incision is made extending up to the margin of the inflammatory zone. Sloughs should be cleared with a piece of gauze. Epices of the four skin flaps are generously excised. The wound is covered with vaseline gauze or sofratulle dressing. The part should be kept in perfect rest for a week and antibiotic is continued till resolution.

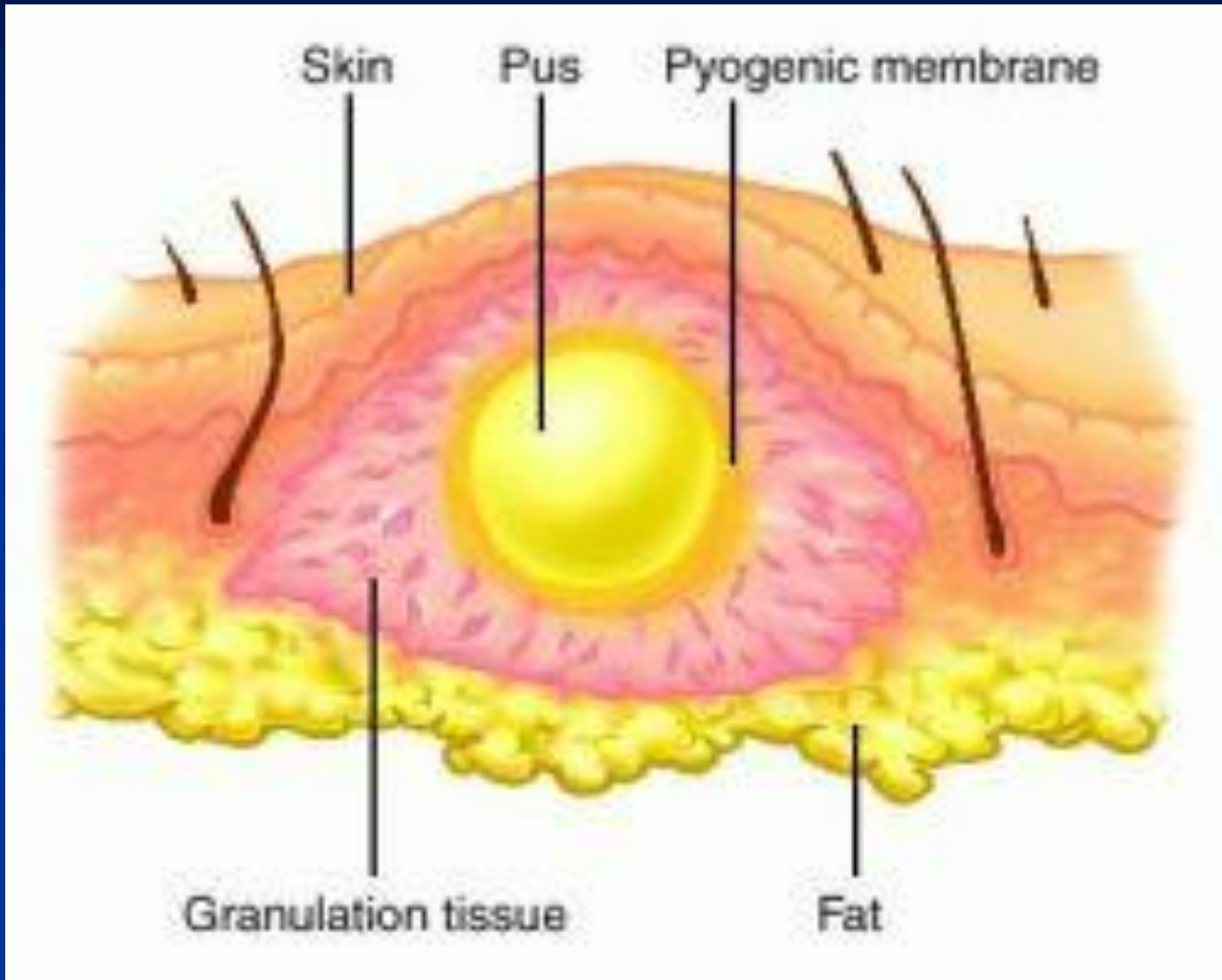
Рассечение карбункула (а) и иссечение некротизированных тканей (б).



Abscess

- An abscess is a cavity filled with pus and lined by a pyogenic membrane. This pyogenic membrane consists of dead tissue cells and a wall of granulation tissue consisting for the most part of phagocytic histiocytes.

Abscess



Abscess



Special Investigations.

Nowadays various sophisticated investigations have been introduced to correctly located and accurately diagnosed abscess cavities in different parts of the body. The various methods are:

- a) conventional radiology is only successful when there is air or gas with pus. This examination then reveals fluid levels, e.g. subphrenic abscess, lung abscess, etc. Sometimes presence of pus is suggested by opacity, e. g. in the nasal antrum, pleural cavity, etc.
- b) isotope scanning is helpful in locating collection of pus or site of infection by accumulation of radioactive technique after its intravenous injection. This is mostly used as diagnostic tool in demonstrating brain abscess, hepatic abscess and osteomyelitis. Similarly radioactive gallium scan is sometimes used to detect pelvic, perinephric, mediastinal or subphrenic abscesses.
- c) ultrasound is of considerable value in the diagnosis of gallbladder stones or empyema and also to detect abscesses in the liver or spleen.
- d) CT scan is particularly helpful to distinguish between abscess and tumour by showing necrotic centre in case of abscess. It is helpful to locate abscess cavity inside the abdomen as also in the brain.

Treatment:

1. In the initial stage, when the pus is not localised, conservative treatment may be advised. The affected part is elevated and given rest. A suitable antibiotic should be started.
2. When the pus has been localised, it should be drained. The old adage holds true today also where there is pus, let it out.

So the basic principle of treatment of an abscess is:

- a) to drain the pus;
- b) to send a sample of pus for culture and sensitivity test;
- c) to give proper antibiotic.

Erysipelas

- It is an acute inflammation of the lymphatics of the skin or mucous membrane.

The causative organism is usually *Streptococcus haemolyticus*.

Erysipelas



Erysipelas



Erysipelas



Lymphangitis

- A spread of infection along the lymphatic system is manifested in a disease of the lymphatic vessels and lymph nodes. Inflammation of the lymphatic vessels (lymphangitis) is one of the frequent complications of infected wounds, especially during the first weeks following injury, and of local purulent diseases.

Lymphangitis



Treatment

- The treatment of lymphangitis consists primarily in elimination of its cause (incision of the abscess, pockets of the wound, etc.) and in giving the affected organ complete rest.

Mastitis

- Mastitis - is inflammation of lactic gland tissue. There is distinguished lactation mastitis at nursing mothers, mastitis of newborns and in period of pubescence.

Mastitis



