

## Prevention of Nosebleeds and Modern Clinical Diagnostic Methods

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**Abstract:** These methods of treatment require anesthesiological and resuscitation support (local, regional and general anesthesia can be performed). In case of severe blood loss, transfusions of colloid and crystalloid preparations, as well as transfusions of blood components, are performed.

Epistaxis is the most common form of external bleeding, accompanied by a runny nose, often associated with facial trauma, and occurs in both adults and children.

The most common damage to blood vessels occurs in the area of the nasal septum. The development of bleeding from the structures in the bridge of the nose often occurs in patients with atherosclerosis, blood diseases, or during surgical interventions on the nose for therapeutic or aesthetic purposes.

**Key points:** treatment, diagnosis, blood in urine, stool.

Hypertension can cause frequent and severe nosebleeds that develop when the patient is completely well (in this case, the diagnosis according to ICD-10 is “hypertensive crisis complicated by nosebleeds”).

Nosebleeds most commonly occur in men because in women estrogens (female sex hormones) strengthen the walls of blood vessels.

### **Symptoms of nosebleeds**

The day before, the patient may have the following symptoms: stuffy nose, feeling of pressure, tightness or pain in the nose.

Depending on the intensity of the bleeding, patients may complain of:

nosebleeds;

Dizziness;

palpitations, increased pulse;

general weakness, impaired consciousness;

Pain in the nose area.

Diagnosis of nosebleeds

Diagnosis is not difficult and includes a conversation with the patient, general and local examinations, as well as laboratory and instrumental research methods (if necessary).

May indicate a pathology of the blood coagulation system:

increased bleeding of the gums, even when brushing teeth;

Blood in urine, stool;

Tendency to form bruises all over the body;

Taking certain medications (NSAIDs, antiplatelet agents, anticoagulants).

During the examination, bleeding from one or two nostrils of varying intensity was noted. Signs of increased bleeding in the body may appear - bruises, telangiectasias.

The doctor examines the front parts of the nose using a lamp, a head mirror and a nasal dilator. If the bleeding is not strong, then no further examination of the nasal cavity is performed. If it is a lot, then for a more detailed examination and to determine the source of the bleeding, the following is performed:

video rhinoscopy;

posterior rhinoscopy;

endoscopic endonasal examination of the nasal cavity, nasopharynx and paranasal sinuses.

To assess the severity of the patient's condition, blood pressure is measured, heart rate and respiratory rate are calculated. In severe cases, tachycardia, hypotension and hemorrhagic shock may occur.

### **Disadvantages:**

Signs of bleeding on the skin;

use of anticoagulants;

development of hemorrhagic shock;

Ineffectiveness of treatment with a tampon impregnated with vasoconstrictors, even when pressing on a vein;

frequent runny nose for unknown reasons.

The doctor may order the following laboratory tests:

general blood test with determination of hemoglobin, red blood cells, leukocyte formula, platelets, ESR;

general urinalysis;

biochemical blood test with determination of total protein, bilirubin, ALT, AST, creatinine, glucose;

Examination of coagulation hemostasis with determination of prothrombin time, partial thromboplastin time, activated partial thromboplastin time;

Blood group, Rh factor, erythrocyte phenotype.

If an oncological process or a foreign body is suspected, a contrast-enhanced computed tomography of the skull and a carotid angiography may be ordered.

### **First aid for nosebleeds, rules of conduct**

The most common cause is damage to the blood vessels in the front part of the nose, which is accompanied by minor bleeding that easily stops on its own.

If you have a nosebleed, follow these steps:

calm down;

If the bleeding is severe, call an ambulance.

hold the nose with your fingers for 5-10 minutes;

Apply cold to the bridge of the nose;

If ineffective, moisten the tampon with one of the following: oxymetazoline, ephedrine, xylometazoline, hydrogen peroxide and insert it into the nose for another 10 minutes.

It is not recommended to throw your head up or lie down, otherwise blood may enter the stomach and irritate its mucous membrane. This can lead to bloody vomiting. You should not drink coffee, as it provokes high blood pressure and recurrence of the disease.

treatment of nosebleeds

In case of prolonged and heavy bleeding, the patient should be treated in the ENT department.

Conservative and surgical methods are used to stop the bleeding. The doctor may cauterize the veins in the front of the nose with silver nitrate or electrocautery and insert a nasal foam pad lubricated with antibacterial ointment.

**Pharmacotherapy to stop nosebleeds includes:**

increase the formation of blood clots and prevent their dissolution (aminocaproic acid, tranexamic acid, etamsylate);

those with anti-inflammatory and analgesic effects (glucocorticoids, non-steroidal anti-inflammatory drugs, analgesics, including opioids);

Prevention of the development of infectious complications (penicillin antibiotics, cephalosporins, macrolides, fluoroquinolones);

Reduce soft tissue swelling, restore nasal breathing (adrenergic agonists, topical saline solutions and antihistamines);

Strengthening the renewal of the mucous membrane (dexpanthenol).

Surgical treatment is performed as follows:

anterior and posterior tamponade of the nasal cavity, insertion of special nasal balloons;

Connecting the internal and external carotid arteries with a clip;

endovascular embolization of vessels under X-ray navigation control.

With anterior tamponade, a strip of gauze moistened with petroleum jelly (length can be up to 175 cm) is inserted in a zigzag pattern into the front part of the nose. With posterior tamponade, two long, threaded hard tampons are inserted from the nasopharynx. A catheter is inserted from the front through the nasal passage into the oral cavity, a tampon thread is attached to it. When the catheter is pulled out of the nose, the nasal cavities are closed with a tampon. Next, a tampon is performed on the front, the free ends of the tampon threads are fixed in the pharynx and nostrils. Tampons are removed on the 4th-5th day. To prevent infectious complications and hypoxia, the patient is prescribed oxygen therapy and systemic antibiotic therapy.

If blood enters the intestines in patients with severe liver disease (to prevent blood breakdown and ammonia release), a cleansing enema is administered, laxatives, sorbents and non-absorbable antibiotics (neomycin) are prescribed.

During treatment, the patient is not recommended to use clopidogrel, acetylsalicylic acid, heparin or warfarin.

During the interview, they determine the factors that contributed to the bleeding (blowing, sneezing, picking the nose), concomitant diseases and conditions (including pregnancy, liver cirrhosis, HIV, hereditary diseases, tumor process) and how long ago it occurred. When did the bleeding start, what measures were taken to stop it, will it stop, how often do similar cases occur?

prevention of nosebleeds

After stopping the nosebleed, it is recommended to prevent recurrence:

Taking capillary-stabilizing medications (vitamin C);  
Food enrichment with plant fiber (fruits, herbs, vegetables);  
exercise regularly;

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