Congenital deformities of the spine, bones and joints

Diagnosis, treatment

Speaker PhD Iurii Piven

Scientific – methodical study topic

Congenital deformity relate to complex orthopedic pathology musculoskeletal system. Their disadvantages are based on the development of individual entities skeleton, ligaments, muscle tissue, which child development progress. Clinical signs depend on the type of strain, characterized by the child's age and depending on the location of pathology specific symptoms. At an early age may be less pronounced, however, as early as 3-4 months of life appear more clearly, and the 2-year note their parents. Large and important feature in these pathologies is the early detection of strains ranging from hospital.

Educational goals lectures

¬ Tolearn the most common deformity of musculoskeletal system, etiopathogenesis, examination techniques such patients;

¬ To master the methods of the closed reposition of congenital hip dislocation;

¬ Familiar with clinical symptoms and indications for treatment of children with congenital clubfoot and torticollis;

¬ To master the skills survey, imposing cast, cribs; extraction of adhesive.

Goal future personal development specialist

1. Convince students in the practical sense of the topic.
2. Train sense of professional responsibility and general ethical as future doctors.
3. Promote a healthy lifestyle, explain to students the harm of smoking, alcoholism, be in gin dusty areas, etc.
4. Generate ideas about the need for preventive measures against family planning.

Plan and organizational structure lectures

The presentation of lectures plan: Thematic lecture

Congenital abnormality RSA

Problem situations, tasks.

1.Overview of congenital diseases of musculoskeletal system.

2. Congenital dislocation of the hip. The clinic, diagnosis, treatment.

3.Congenital clubfoot. The clinic, diagnosis, treatment.

4.Congenital muscular torticollis. Clinic, diagnostics, treatment.

5. Syndactylism. Polydactylism. The clinic, diagnosis, treatment

6. Scoliosis. Clinic, diagnostics, treatment.

The final stage

1. Summary of lectures, general conclusions
2. The answers to possible questions.
3. Tasks for self.

MINISTRY OF HEALTH OF UKRAINE

NO A 521 26.07.2006

On approval of Protocols for diagnosis and treatment of diseases and injuries of musculoskeletal system in children
Pursuant to the Presidential Instruction No. 1-1 / 252 of March 6, 2003, and in order to harmonize the requirements for the volume and quality of medical care for children
with diseases and injuries of the musculoskeletal system

ORDER:

1. To approve Protocols for diagnostics and treatment of diseases and injuries of musculoskeletal system in children (hereinafter - Protocols):
1.1. Protocol for the diagnosis and treatment of hip joint dysplasia and congenital thigh (attachment);

1.2. Protocol for diagnosis and treatment of congenital muscle curvature (attached);

1.3. Protocol for the diagnosis and treatment of congenital cliché in

Diagnosis of congenital hip dislocation:

In the anamnesis of the mother: heredity, anomalies of development of the uterus, adverse pregnancy (threat of interruption, infectious diseases, medication, buttocks, lateral position, multiple pregnancy, low water and high water), pathological birth.

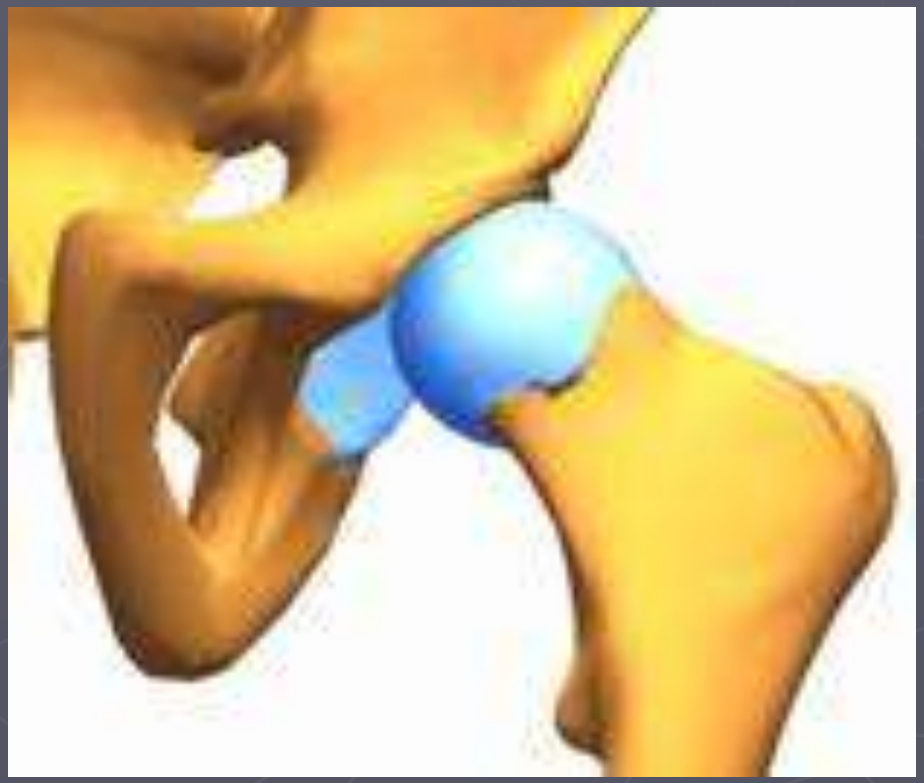
PROTOCOL for diagnosis and treatment of hip joint dysplasia and congenital thigh Code Q68 (according to ICD-10)

classification

- 1. Unstability thighs - clinically, sonographically and radiographically determines the violation of the formation of the hip joint, but without disturbance of the relations between the joint surfaces.

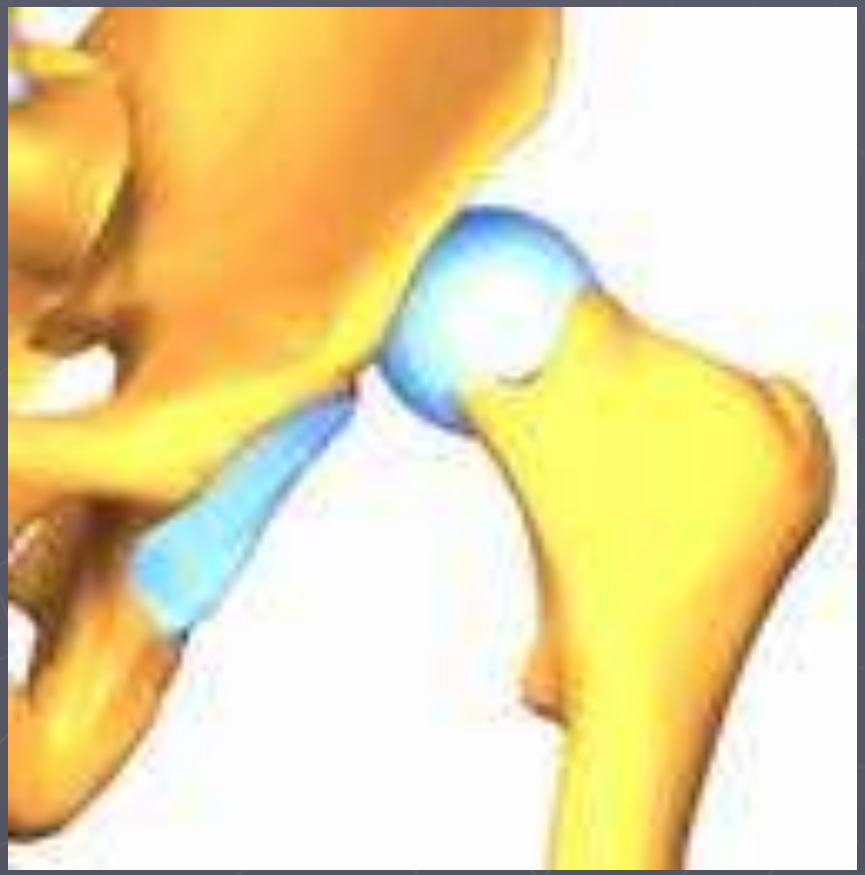
PROTOCOL for diagnosis and treatment of hip joint dysplasia and congenital thigh Code Q68 (according to ICD-10)

- 2. Subluxation thighs - slight displacement of the femoral head due to valgus deformity of the neck and antetorsiya. The head does not extend beyond the limbus. There is a primary and a secondary subluxation (stored after the femoral head is managed).



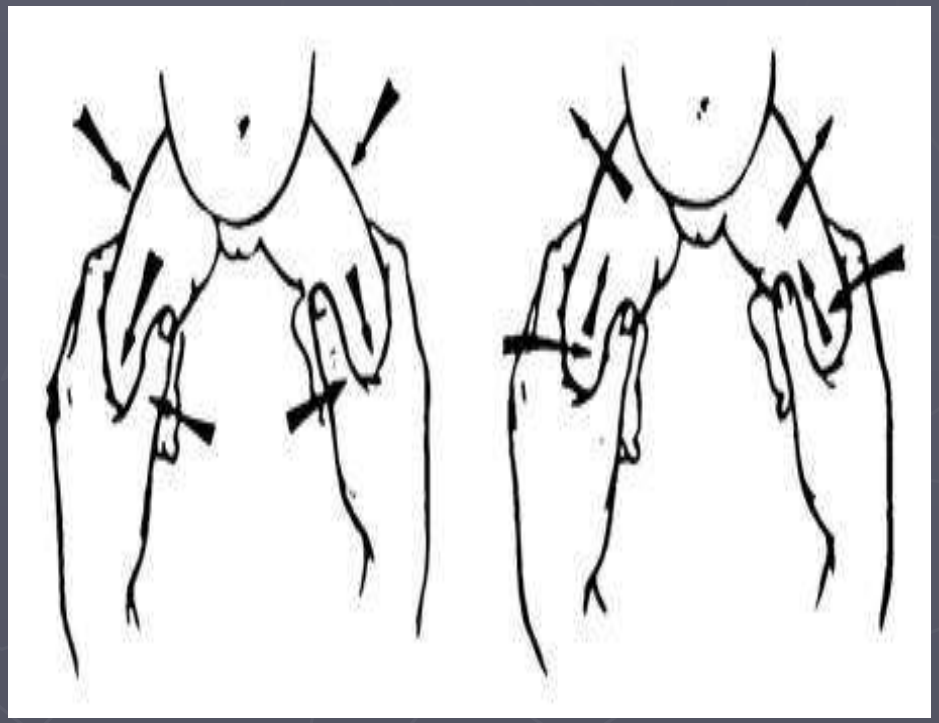
PROTOCOL for diagnosis and treatment of hip joint dysplasia and congenital thigh Code Q68 (according to ICD-10)

- 3. Dislocation hip - the head is located outside the depression. There are, depending on the direction of dislocation: - lateral or anterior-lateral; - nadacetabular; - ileal.



Review Data:

- - a symptom of Ortolani;
- - limitation of removal of hips (normally at the newborn of 90 degrees. in 1 month - 80 degrees. by the end of 1 year - 60 degrees);



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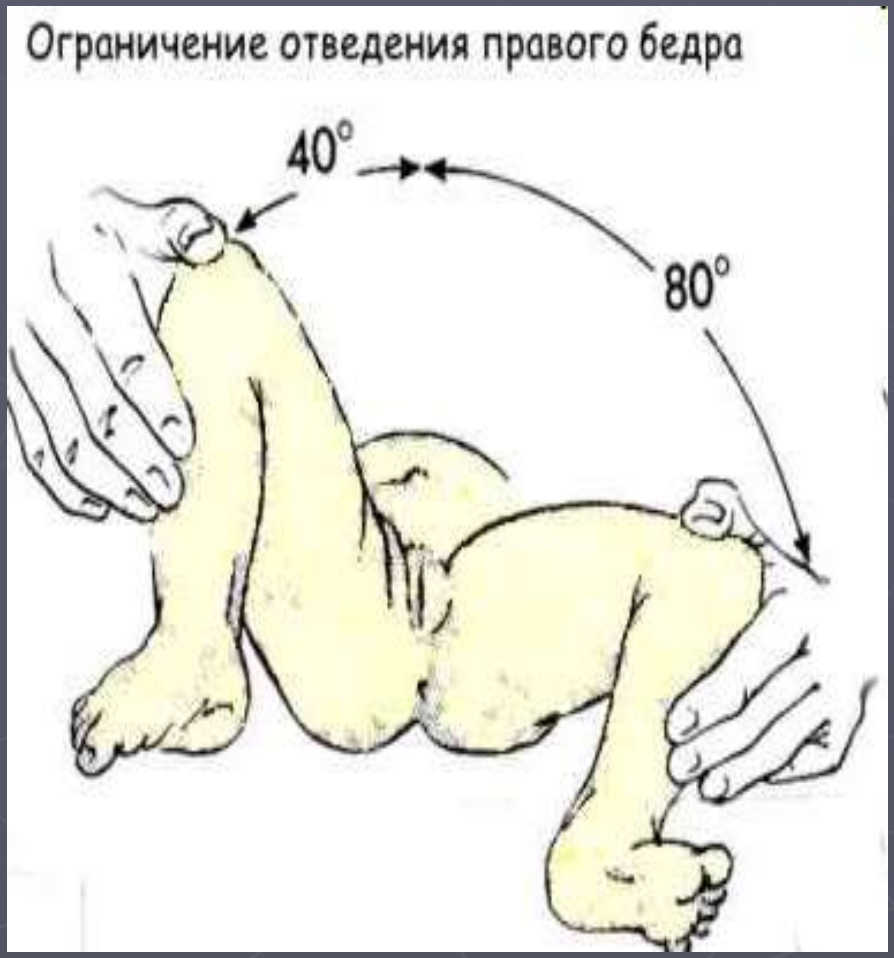


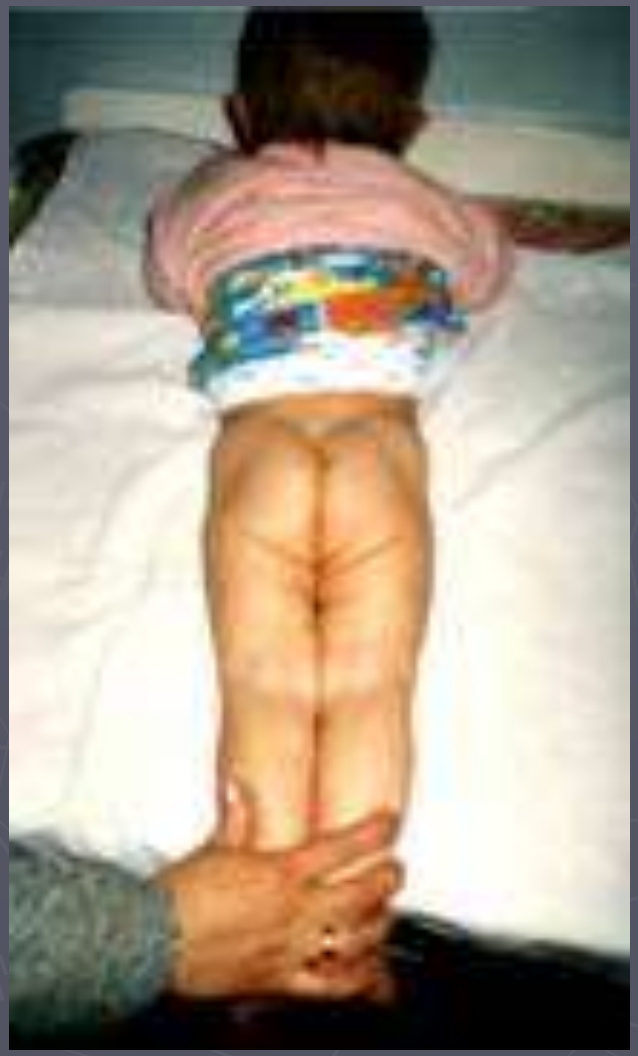
Review Data:

- - asymmetry of skin folds (gluteal, femoral, asymmetry of the sexual gap);
- - Patelson's symptom;
- - external rotation of the thigh;
- - limb shortening.

Review Data:

- limb shortening.

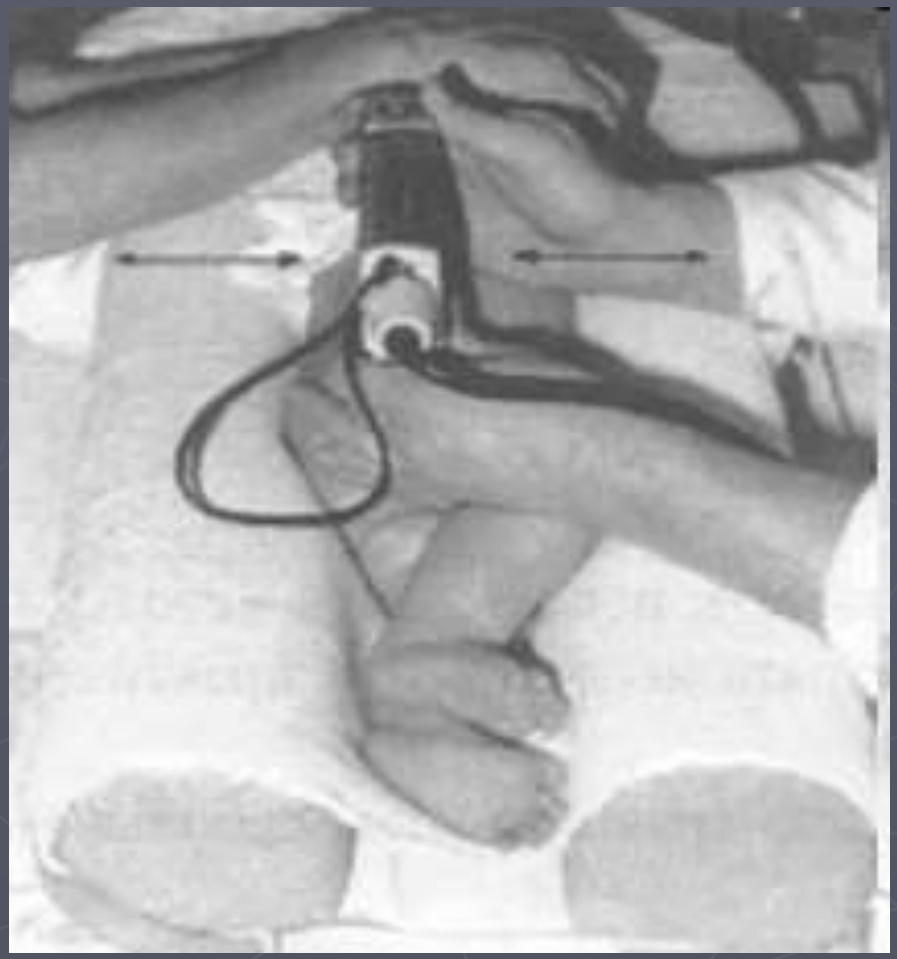
Review Data:



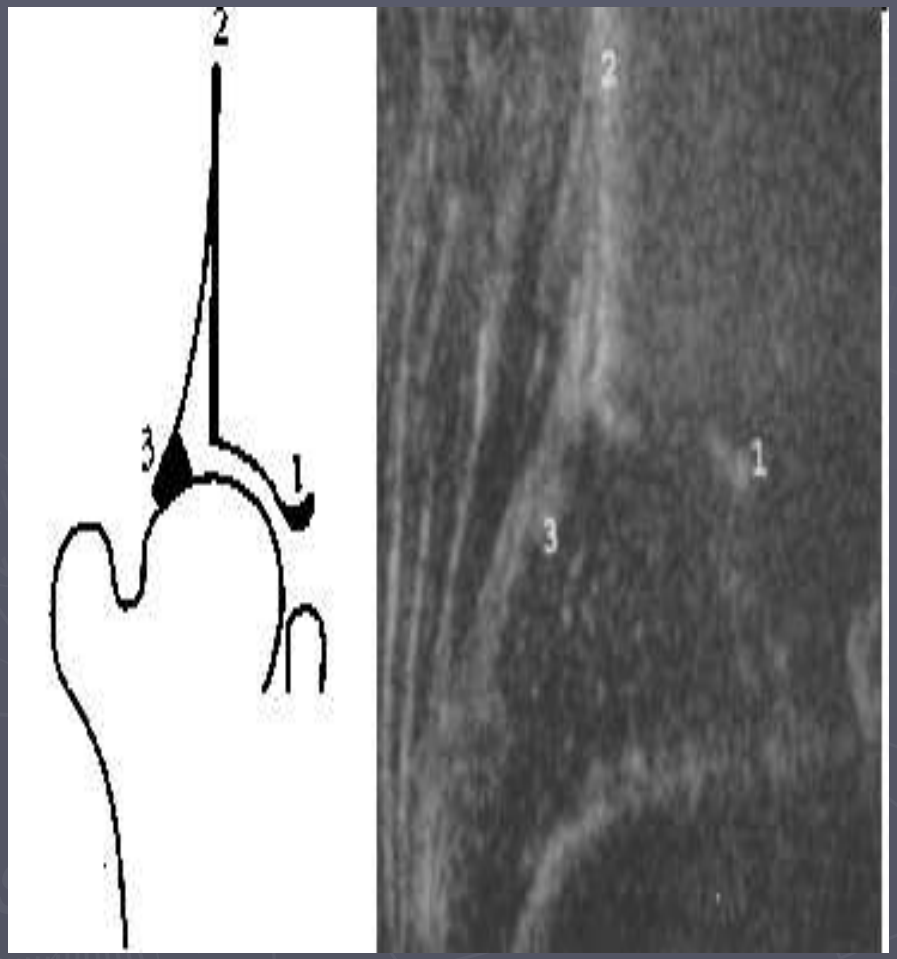
- - asymmetry of skin folds (gluteal, femoral, asymmetry of the sexual gap);

Sonographic survey data. The technique of ultrasound birth defects of the formation of the hip joint (VNFTS), which is currently used around the world, was developed by Professor R. Graf in the late 70's of XX century.

- The hip joint is considered mature if the alpha angle is> 60 degrees and the beta angle is <55 degrees. Dysplasia: alpha angle 59 - 43 degrees, and beta angle> 55 degrees. Subtitle: alpha angle <43 deg, beta> 77 deg. Wicked - alpha <43 deg, and beta angle> 77 deg.



Sonographic survey data.



- Working classification of the maturity of the vehicle. The degree of maturity of the vehicle

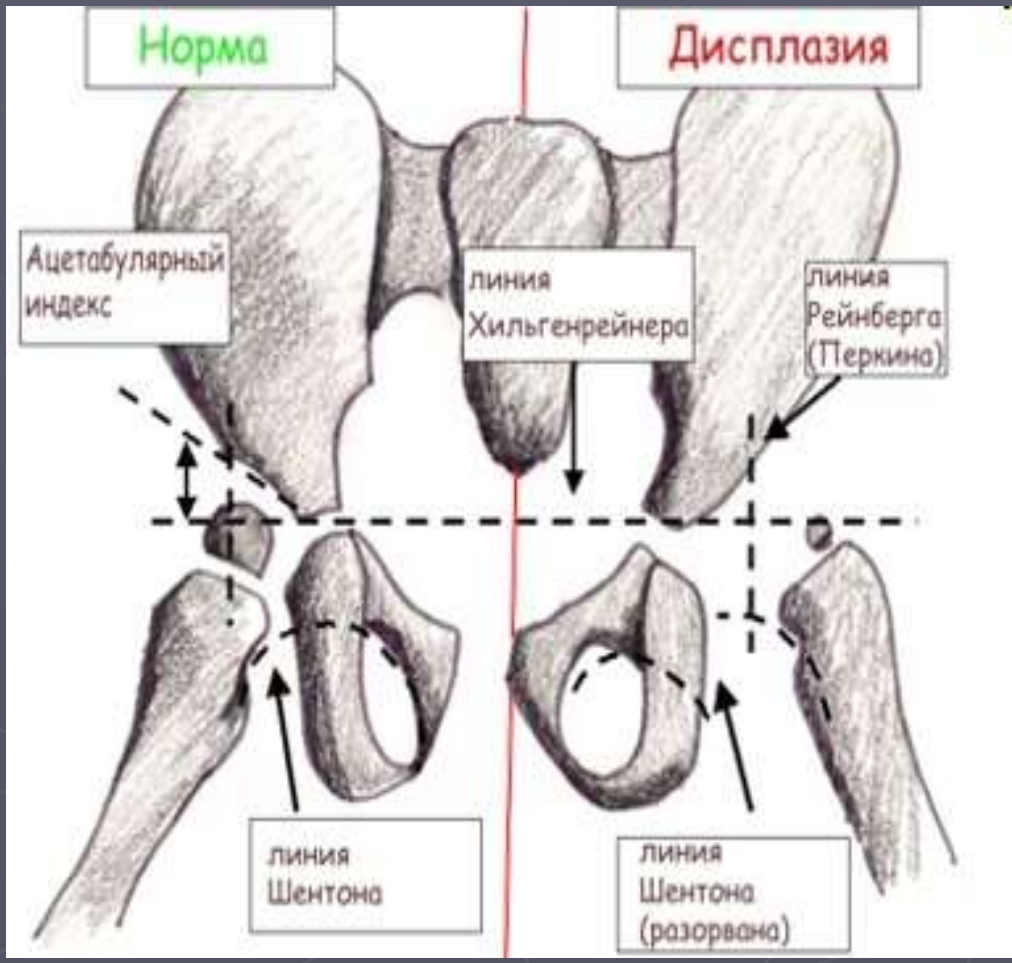
- by A. Ya. Vovchenko by R. Graf
- 1. Normal Ia, b; IIa +
- 2. Slow formation of IIa, IIb
- 3. Dysplasia IIc, d
- 4. Subluxation of TBS IIIa, b
- 5. Dislocation of the thigh IV

X-ray data.

- The radiograph is performed at the age of 3 months. The angle of inclination of the roof of the acetabulum is normally at the age of 3 months 25,0 + - 3,5 degrees., In 24 months. - 18,0 + - 3,5 deg., The distance h in the norm is 8-10 mm, the distance d is not more than 4 mm, the Shenton line is in the norm of a regular arcuate shape. The presence and size of the ossicles of the ossification of the femoral heads are considered (appears at the age of 3-5 months).

X-ray data.

- Increasing the value of the acetabular index above the age limit, decreasing the distance h and increasing the distance d are signs of hip dysplasia.



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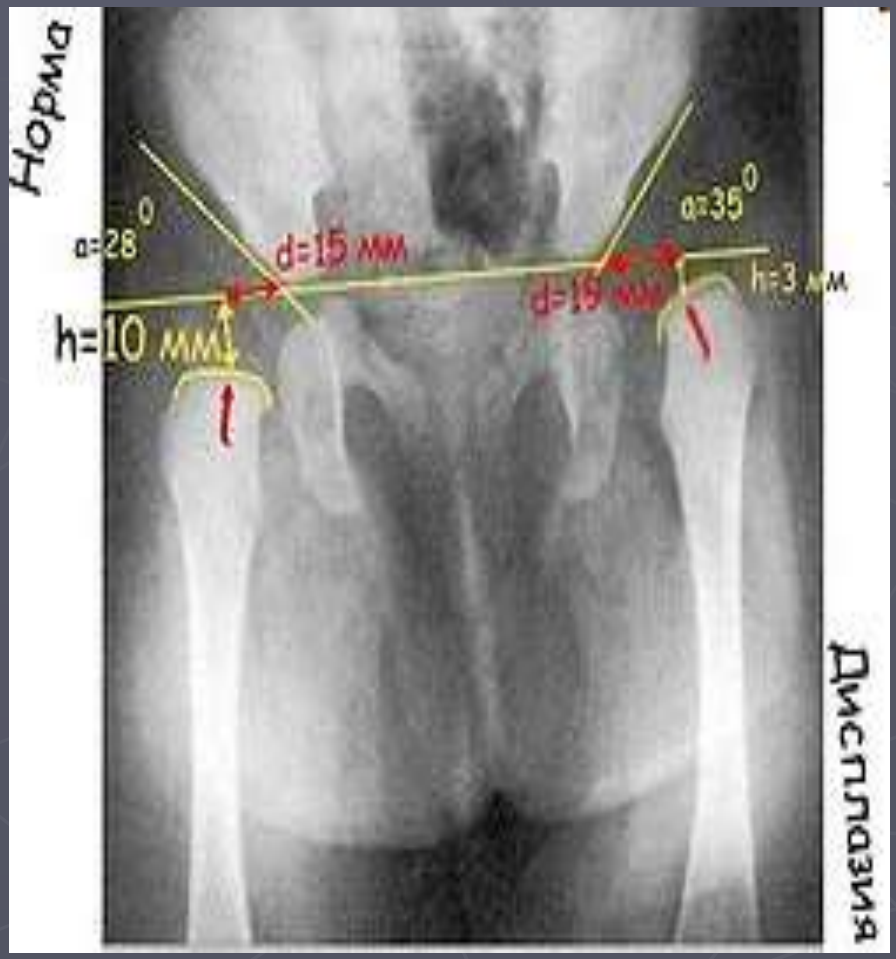


Treatment of congenital thigh.

- Conservative treatment:
- - early start of treatment provides the best results;
- - Ortolani symptom is positive at the age of 6 months (indicates the possibility of the head in the acetabulum) - treatment begins with fixation of the legs in Pavlik's stirrups, and then continues in Gnevkovsky's apparatus;

Treatment of congenital thigh.

- - Ortolani symptom is negative, treatment begins with fixation in Pavlik's aspirations for a period of 2 weeks. If management is achieved, then treatment is continued in the Gnevkovsky apparatus;
- - after 2 weeks of treatment in the stirrups did not recover, then the treatment is continued by imposing a functional adhesive plaster;

Pavlik stirrups

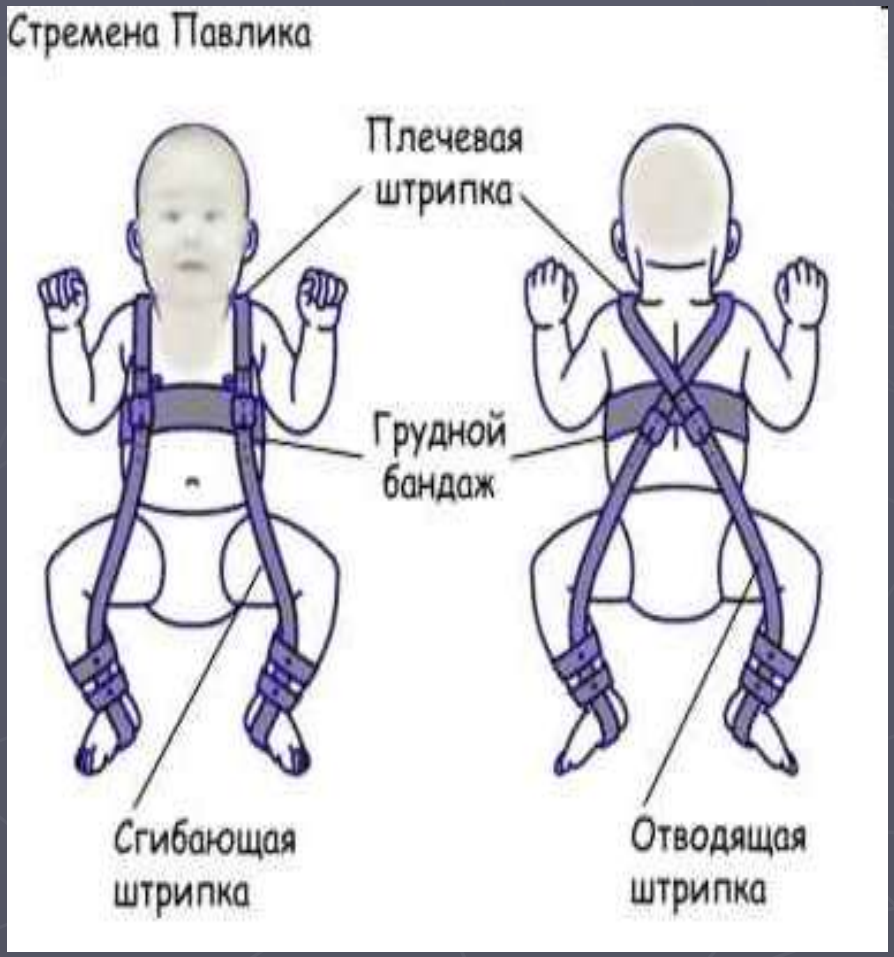
- In 1946, in Prague, Czech orthopedist Arnold Pavlik reported the successful treatment of congenital hip dislocation using a new, as he called it, "functional treatment". In those years, rigid structures restricting movement in the hip joints were used to give flexion and removal of the thighs. A frequent complication of this treatment was the severe aseptic necrosis of the femoral head (30% of children treated).

- Pavlik thus defined the essence of his invention:

- "The principle of this method is to ensure that the child's legs are flexed at the knee and hip joints using stirrups. It is known that neither the adult nor the child is able to hold these lower extremities in flexion. It is not physiological, the muscles are tired quickly and the legs are bred. This is what the hip joint needs to treat dysplasia ... The joint movements are free. This is what the infant joint needs for recovery, as the hip joint is the body of motion. "

Pavlik stirrups

- Since then, treatment of hip joint dysplasia with the use of Pavlik's stirrups has been the gold standard of pediatric orthopedics. In modern form, Pavlik's stirrup is an orthopedic product, made of soft fabric consisting of a breast band (bra), shoulder straps (straps), recoil pins that have "behind the knee", bending front bands and bandages located at the ankle joint.



Treatment of congenital thigh.

- - at the age of more than 6 months treatment of congenital thigh starts with adhesive plaster (or adhesive) stretching. On a radiograph after reaching a hip angle of 180 degrees, the heads of the thighs should be at the level of the triangular cartilage, which is a sign of exertion. The head of the thigh should be palpated in the area of the Scarpovian triangle;

Treatment of congenital thigh.

- if during the treatment by functional adhesive plaster stretching of the supine control is impossible to achieve, then perform closed exertion of the thigh under general anesthesia and fixation in the gypsum bandage by Lawrence. Be sure to perform X-ray control in gypsum;

Treatment of congenital thigh.

- In 1896 Adolf Lorenz published the first cases of treatment of congenital dislocation of the thigh with the help of bloodless exercise followed by prolonged fixation of the legs with a coxitic gypsum bandage in the flexion and abduction position in the hip joint at right angles (Lorenz's first position). Closed control of dislocation is carried out for children from 2 to 6 years. Up to 2 years of age, the thigh dislocation management is quite effective, and functional methods are usually used (diverting tires or Pavlik's stirrups), except after the dislocation, it is necessary to keep the baby in a plaster bandage for about 6 months, and this method is not recommended until the child learns to behave neatly. After 5 years of age, bloodless control of the dislocation is technically difficult or even impossible. In these cases, use surgical treatment - open management.

- In some cases, the management of high hip dislocation is possible by the method of skeletal stretching in children aged 1.5 to 6-8 years. The greater the child's age, the greater the likelihood of needing to complete surgical treatment.

Treatment of congenital thigh.

- treatment of congenital thigh is considered complete after receiving satisfactory radiographs;
- - treatment of congenital thigh and hip dysplasia at all stages is carried out jointly with a pediatrician, neurologist and physiotherapist.
- Children are prescribed massage, exercise therapy, electrophoresis with calcium chloride, cocarboxylase and vitamin C for hip joints, UV irradiation, vitamin D and calcium preparations

Massage and therapeutic gymnastics

- The task of exercise therapy is to strengthen the muscles of the hip joint and to organize the motor activity of the child, sufficient for complete physical development. The goal is to stabilize the hip joint, restore normal volume of movement and improve the health of the child. Therapeutic gymnastics is used at all stages of conservative treatment and has its own peculiarities at the stage of leg breeding, at the stage of retention and at the stage of rehabilitation after removal of orthopedic products.

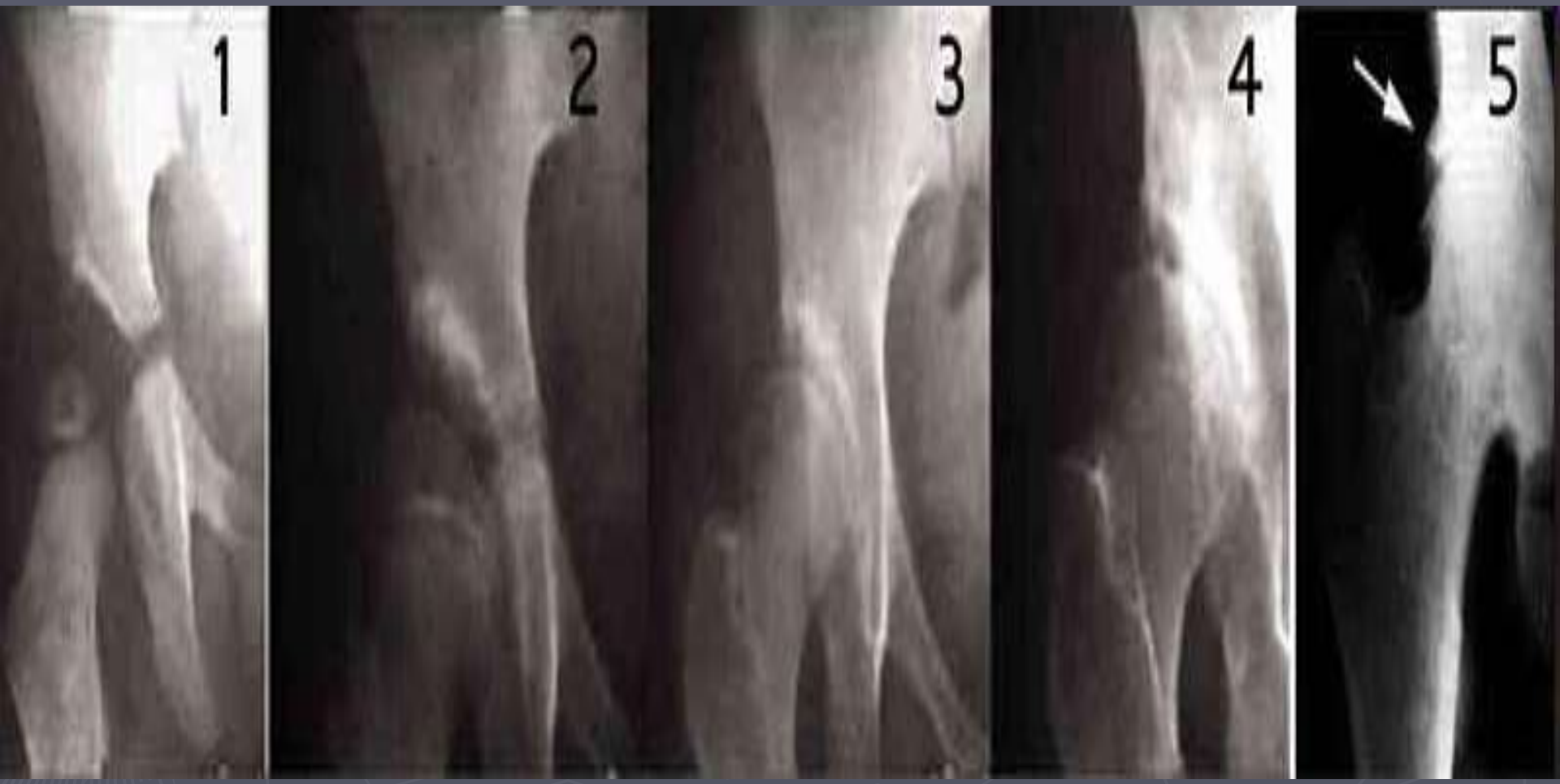
Treatment of congenital thigh. surgical treatment

- used for reaching a child of 1 year.
- Indications for surgical treatment of congenital thigh:
- - the absence of closed control of the upper thigh (high twist, pronounced antetorsia and valgus deformity of the neck, a significant degree of underdevelopment of the depression);
- - relaxation after closed exercise;
- - Diagnosis of a subluxation over the age of 2 years.

Types of surgery:

- - open control from the thigh;
- - open management, which is accompanied by reconstruction of the proximal femur and roof of the acetabulum (Salter, Hari, Pemberton surgery, devalgating derotation osteotomies);
- - palliative surgery.

The hip of a patient with signs of dysplasia at the age of 1 (1), 14 (2), 18 (3), 32 (4) and 42 (5) years. Development of severe dysplastic coxarthrosis in a patient aged 32 years.



The baby with congenital thigh is on dispensary under 16 years

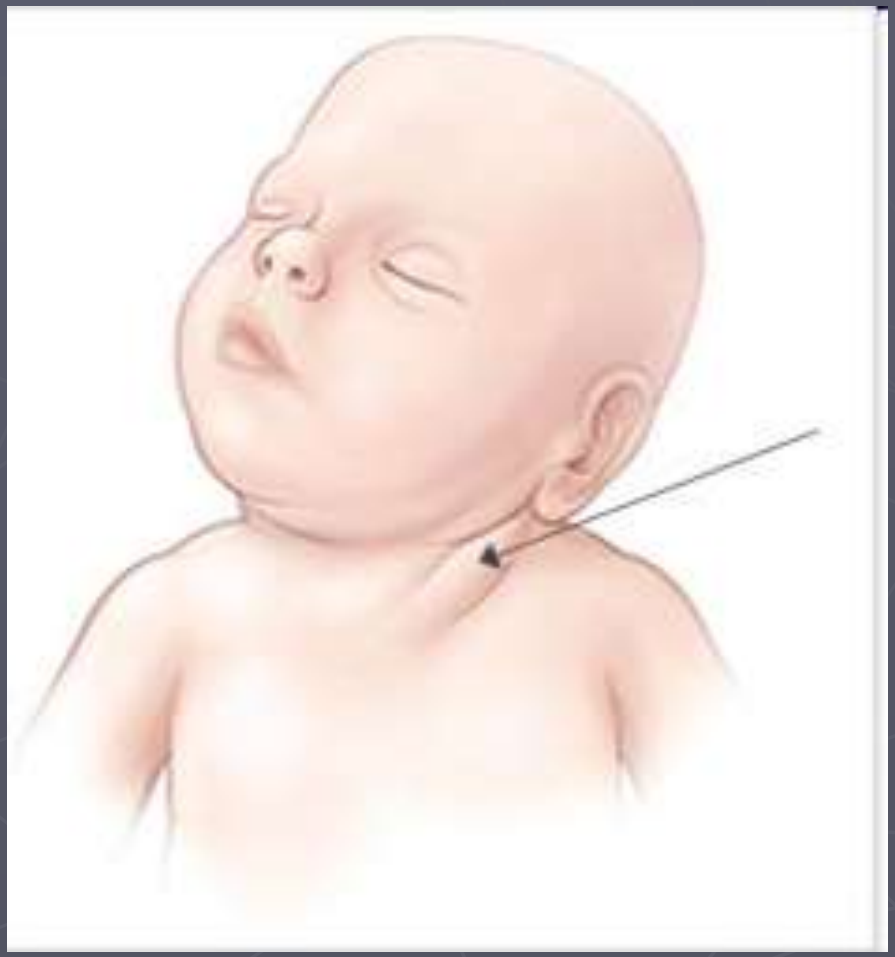
PROTOCOL for diagnosis and treatment of congenital muscle curvature Code Q68.0 (according to ICD-10)

- The tortuosity is a deformity of the neck, characterized by the wrong position of the head - its tilting to the side and turning to the opposite direction.

Classification: I. By the number of muscles affected: 1. One-sided (right or left). 2. Two-sided.

According to morphometric data:

- **1 degree: shortening of the sternum, clavicle and mastoid muscle up to 2 cm, the angle of inclination of the head in the front plane to 5-8 degrees.**
- **2 degree: shortening of the sternum, clavicle and mastoid muscle to 3 cm, the angle of inclination of the head in the front plane to 12 degrees.**
- **3 degree: shortening of the sternum, clavicle and mastoid muscle more than 3 cm, the angle of inclination of the head in the frontal plane is more than 12 degrees.**



Diagnosis:

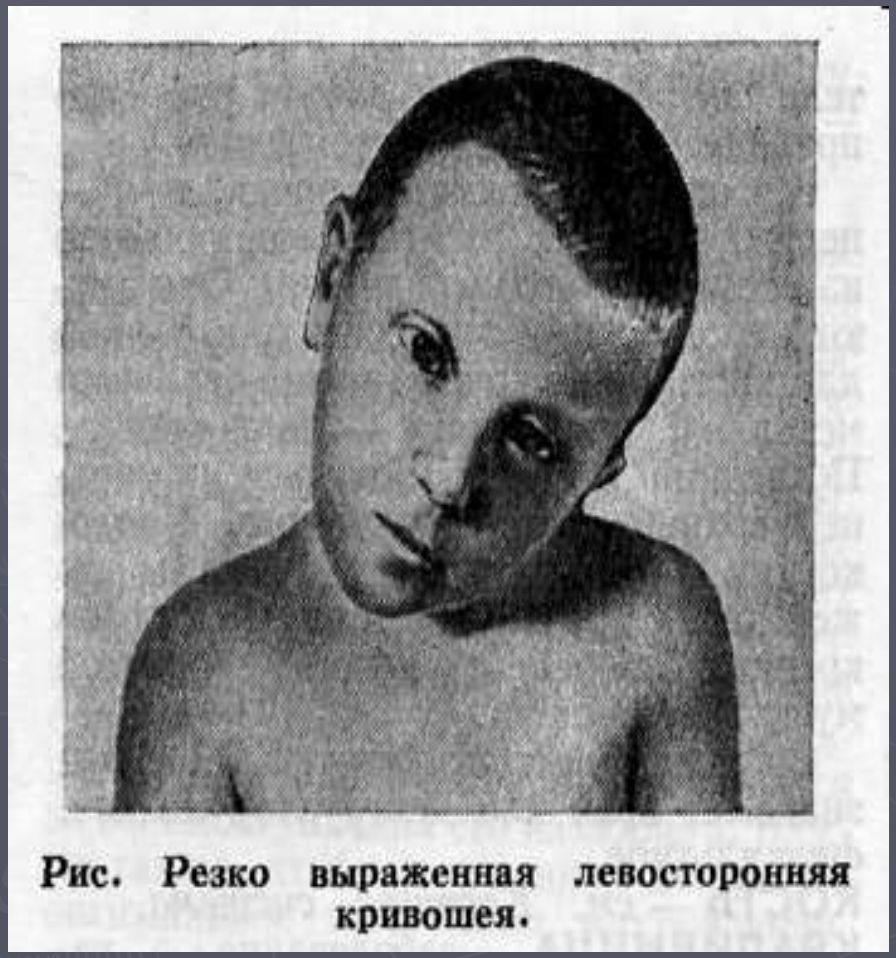


Рис. Резко выраженная левосторонняя кривошея.

- 1. History:
- - Incorrect placement of the fetus in the uterine cavity.
- - Damage to the sternum, clavicle and mastoid muscle during childbirth.
- - Pre-natal inflammation or ischemia of the sternocleidomastoid muscle.

Diagnosis:

- 2. Review data:
- - Swelling and density, not soldered to the underlying tissues, and tightening of the sternoclavicular-mastoid muscle in the first 7-10 days of the baby's life.
- - Tilting your head to the side and turning it backwards.
- - Asymmetry of skin folds (deeper on the affected side).
- - Palpation from 3 weeks after birth on the middle third of the sternoclavicular-mastoid muscle shows a dense and elastic formation of various sizes (1 x 1 cm, 2 x 2 cm), which increases to the 6th week after birth. What is the sign of inflammation of the soft tissues over the seal there. But it should be borne in mind that after the 6th week of the baby's life, the seal gradually diminishes and completely resorbs and degenerates into a connective tissue strand by the 3-12th month of life.
- - Reduced volume of head movements.
- - Shortening of the sternoclavicular-mastoid muscle from 2 to 3 cm or more.
- - Rotation of the head in the front plane from 5 degrees. up to 12 grad. and more.
- - Asymmetry (plagiocephaly) and hemihipoplasia of the skull and face at 3-6 years.

- - High standing of the upper arm and shoulder blades on the side of the lesion, thus changing the shape of the clavicle and mastoid process, the direction of the auditory course.
- - Curvature of the spine:
- Type 1 - curvature of the cervical spine only.
- Type 2 - curvature of the cervical and thoracic spine.
- Type 3 - curvature of the cervical and thoracic, lumbar spine.
- When shortening both sternal and clavicular muscles, the baby's head is tilted back so that the nape is close to the back and the face is turned up or forward. As a rule, the movements of the head are sharply restricted, mainly in the sagittal plane, the cervical spine is shortened.

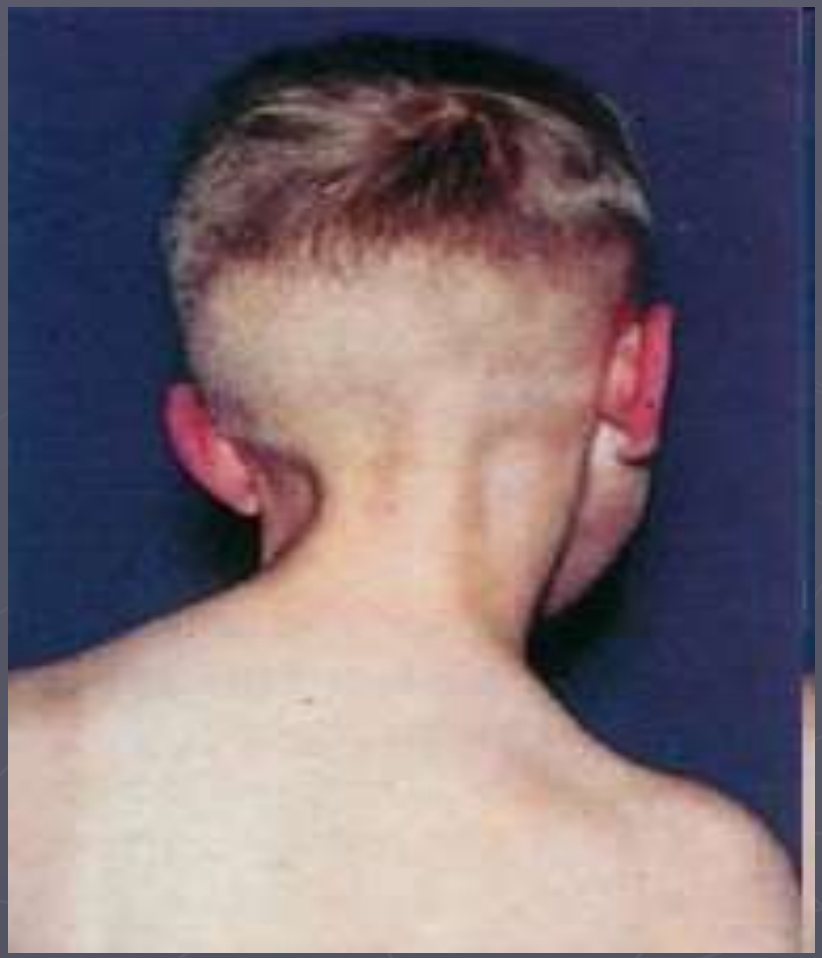
- Radiographic examination is not informative enough and is relevant only for differential diagnosis.

sonography date

- Sonographic examination reveals fibrotic changes of the affected muscle, comparing the thickness and echogenicity of both sternocleidomastoid muscles (the affected muscle is thicker than healthy; the echogenicity of the diseased muscle is increased).

Differential diagnostics:

- **Congenital muscle curvature should be differentiated from:**
- **1. Acquired forms of muscle curvature (changes of subcutaneous muscle, acute and chronic myositis of the sternum, clavicle and mastoid muscle, Grisel's disease).**
- **2. Congenital (Klippel-Feil's disease, cuneiform vertebrae, cervical ribs) and acquired (dislocation and fracture of cervical vertebrae, destruction of cervical vertebrae (tuberculosis, cancer, osteomyelitis, metastases), spondyloarthritis, rickets, arthritis and rickets.**
- **3. Neurogenic curvatures (spastic and flaccid paralysis of the cervical muscles, reflex tortuosity in diseases of the mastoid, parotid gland, clavicle).**
- **4. Dermo- and desmogenic curves (congenital folds of the neck, scars after significant damage to the skin, inflammation and trauma to deep tissues).**
- **5. Secondary curvatures (with inflammation of the eyes, ears, lymph nodes, etc.).**



Treatment

- I. Conservative:
- - Corrective styling (the child is placed with the healthy side against the wall so that it turns its head, in response to the irritants, towards the affected muscle).
- - Correction with a cotton-gauze "collar" by Chance.
- - Physiotherapy: paraffin applications and electrophoresis with potassium iodide (only in the presence of dense-elastic formation of the sternal-clavicular-mastoid muscle).
- lymph nodes, etc.).

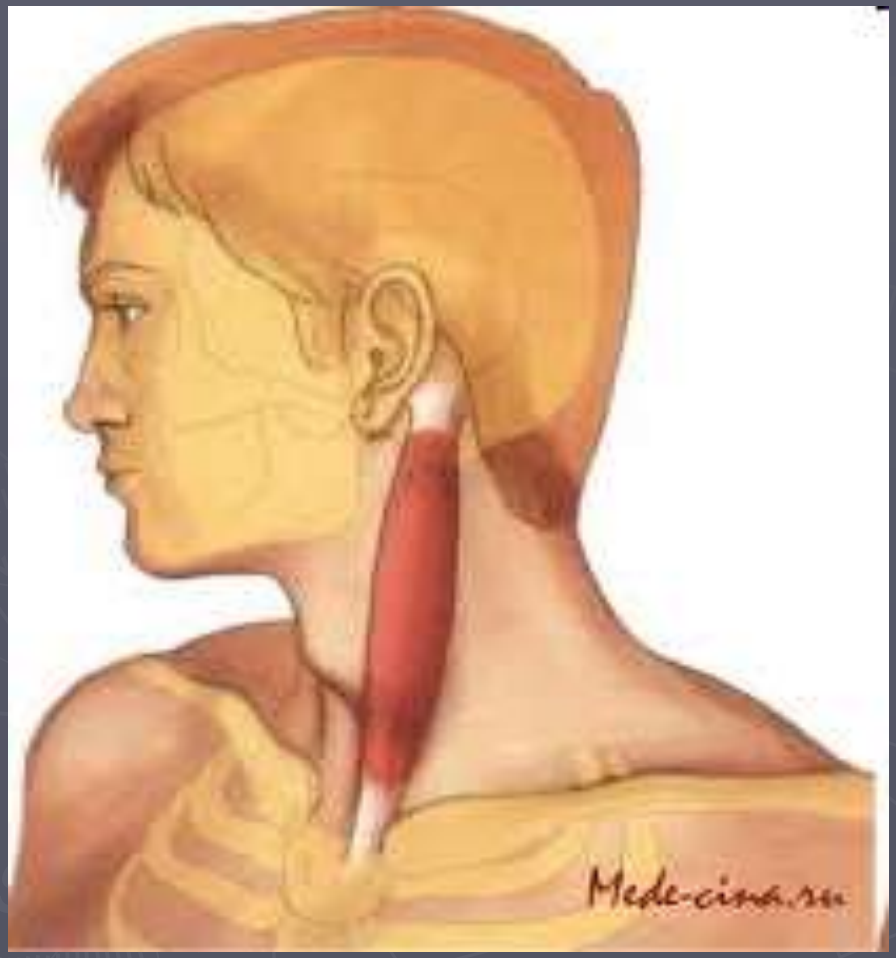
Treatment

- - Exercise therapy (head tilts in the patient and healthy sides), massage of the sternoclavicular and mastoid muscles (light and relaxing the affected muscle and toning healthy muscle), trapezius muscle and facial muscles.

Treatment

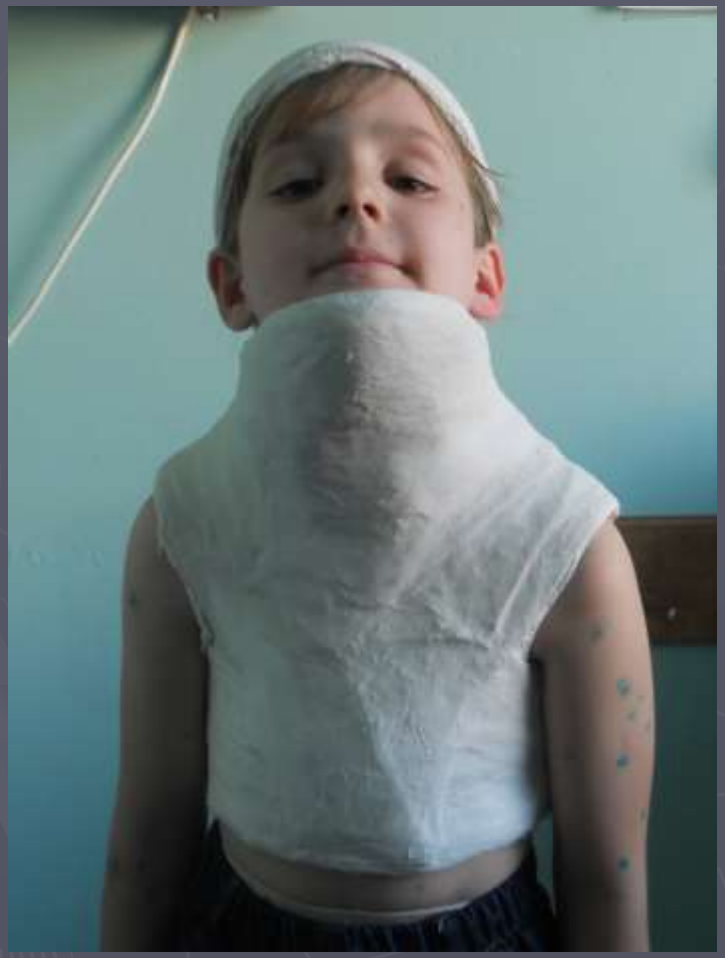
- Surgical: optimal age from 1 to 3 years. But the decisive argument for the transition to this method of treatment is the progression of deformation against the background of full and systematic conservative treatment;

Treatment

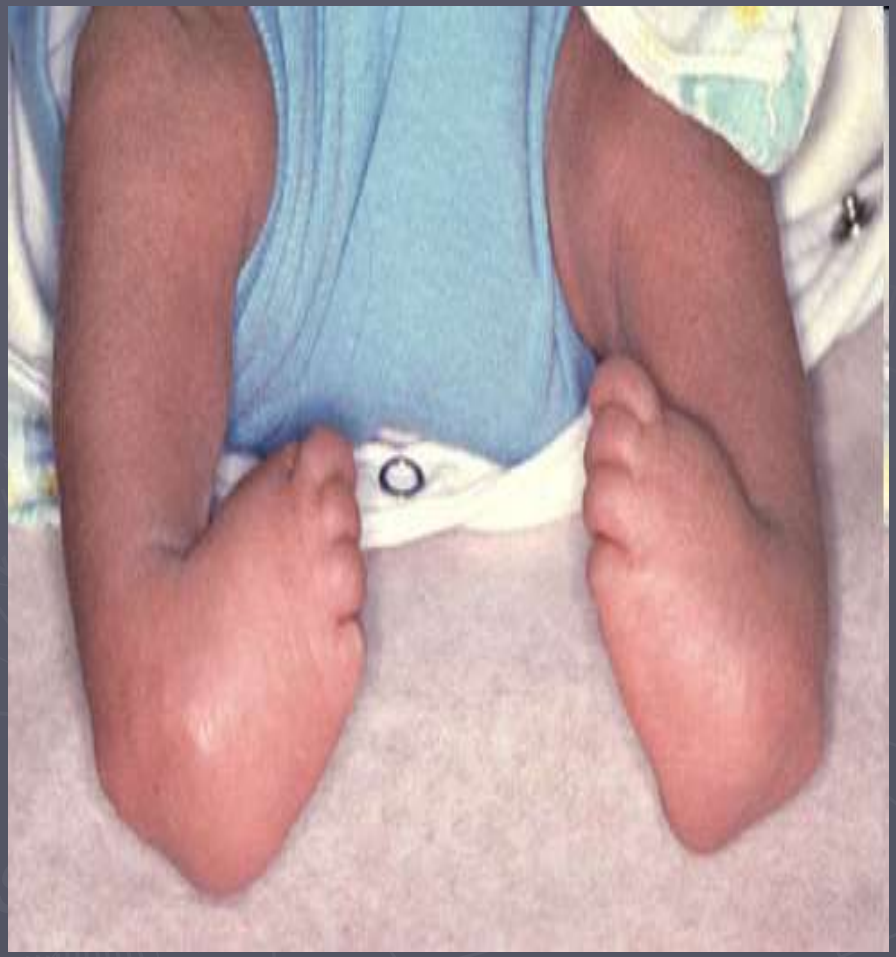


- unipolar myotomy of the thoracic-clavicular-mastoid muscle with a "collar" fixation by Schantz in the position of hypercorrection;
- - bipolar myotomy of the thoracic-clavicular-mastoid muscle with a "collar" fixation by Shantz in the position of hypercorrection;
- - myoplastic lengthening of the sternum, clavicle and mastoid muscle.

Treatment

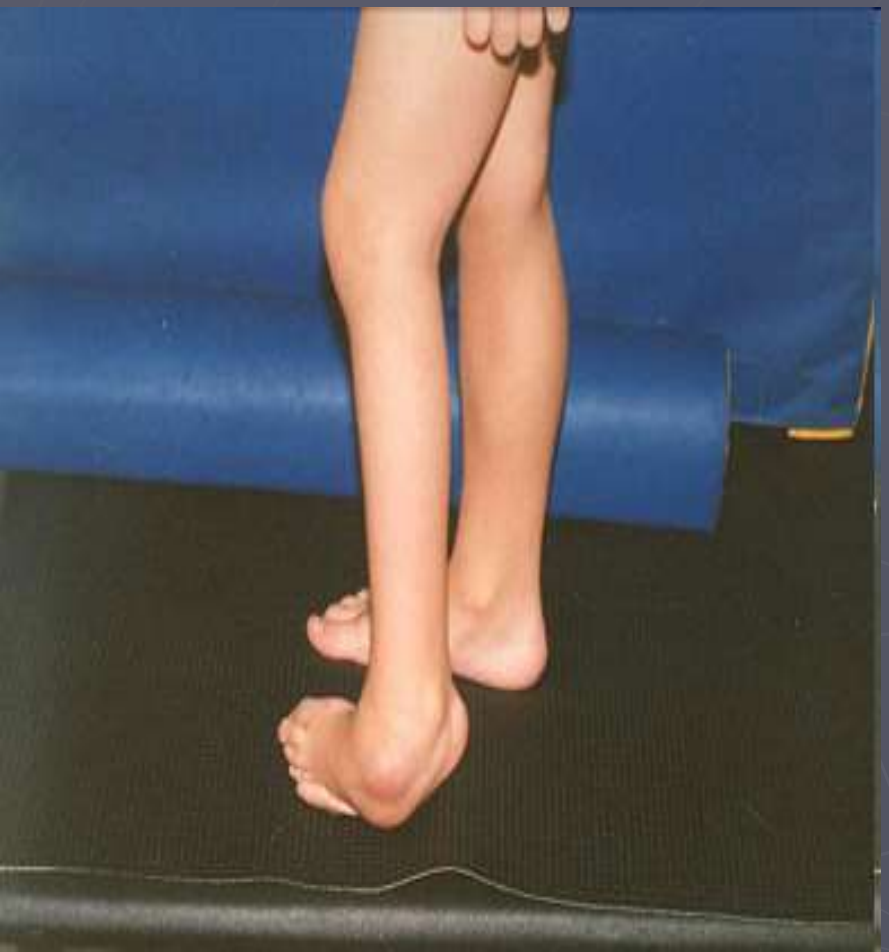


PROTOCOL FOR THE DIAGNOSIS AND TREATMENT OF CONGENITAL CLYSHOGOSIS IN CHILDREN Code for ICD-10 Q66



- Classification:
- 1. Typical congenital clubfoot (idiopathic embryonic malformation of the lower extremity, characterized by dysplasia and stable dislocation of all structures of the foot, especially its middle and posterior divisions).
- 2. Positive congenital claw (idiopathic fetal malformation of the lower extremity, characterized by shortening of the soft-tissue structures on the posterior-lateral surface of the lower leg and foot without primary deformation of the bone and joint apparatus).

Clover-foot is one of the most common birth defects, accounting for approximately one infant out of every thousand newborns. Around 100,000 new cases of cliché are occurring worldwide each year. Most often, foot-and-mouth disease occurs in countries without adequate health care, leaving the infant to find himself or herself unable to live.



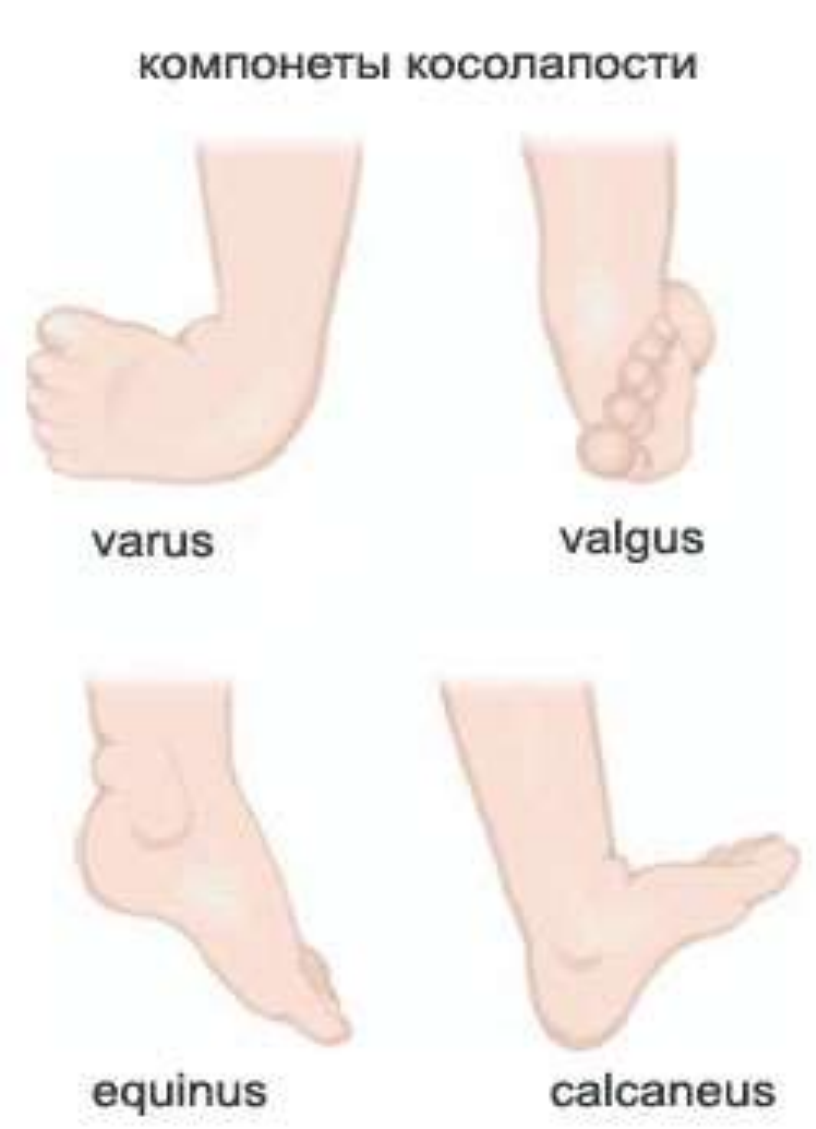
- 3. Secondary congenital tick bite:
- - Neurogenic, due to perinatal CNS lesion;
- - myelodysplastic deformity (occurs as a result of muscular dystonia in children with dysphrophic status);
- - claw-foot disease due to congenital lesions of the peripheral neuromuscular apparatus of the lower extremity (congenital lesions of the tibial nerve, amniotic constrictions, etc.).
- 4. Arthro-influenza cephalopods.

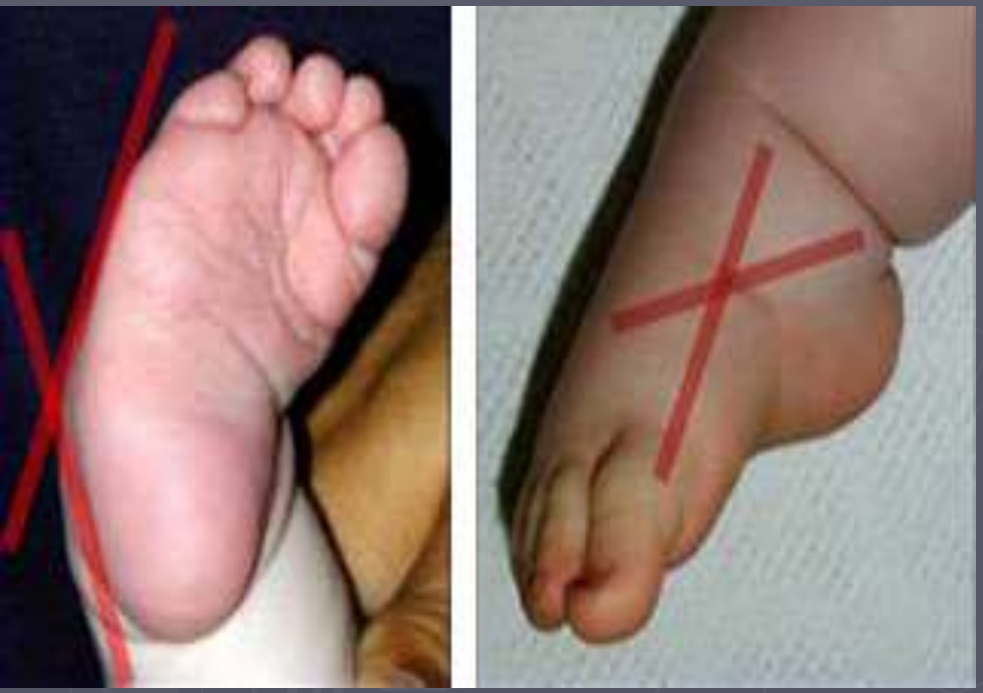
- Diagnosis:
- 1. History:
- - male
- - heredity
- - presence of concomitant orthopedic pathology.

There are 5-10 per 1,000 newborns

- Approximately in 10% of cases, the claw-foot is combined with such malformations as the hare, the wolf's mouth, syndactyly, etc. There are three main clinical signs for congenital cliché: adduction (bringing the anterior, and sometimes the middle parts of the foot), supination (lowering of the outer and lowering of the outer and lower parts of the foot). elevated the inner edge of the entire foot) and the equinox (increased plantar flexion of the foot).

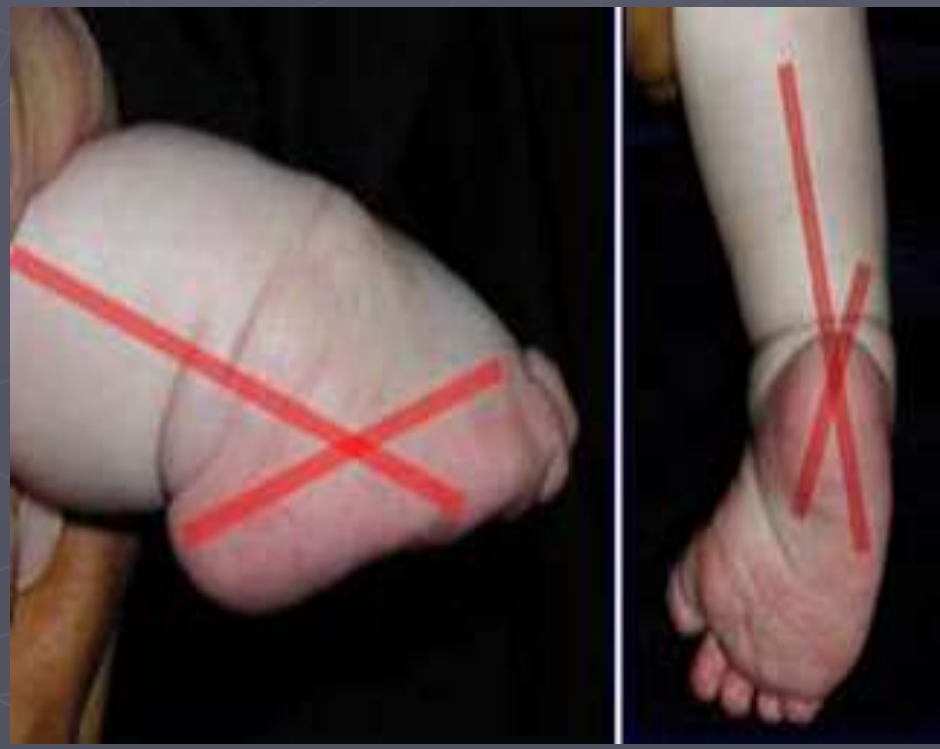
- 2. Objective study data:
- - the foot is in a pathological position - rotated to the middle, marked plantar flexion, bringing the front of the foot;
- - Hypotrophy of the tibia muscles;
- - presence of amniotic septum, other abnormalities of foot development;
- - the child must be examined for concomitant orthopedic pathology (hip joint dysplasia, muscle curvature, scoliosis).





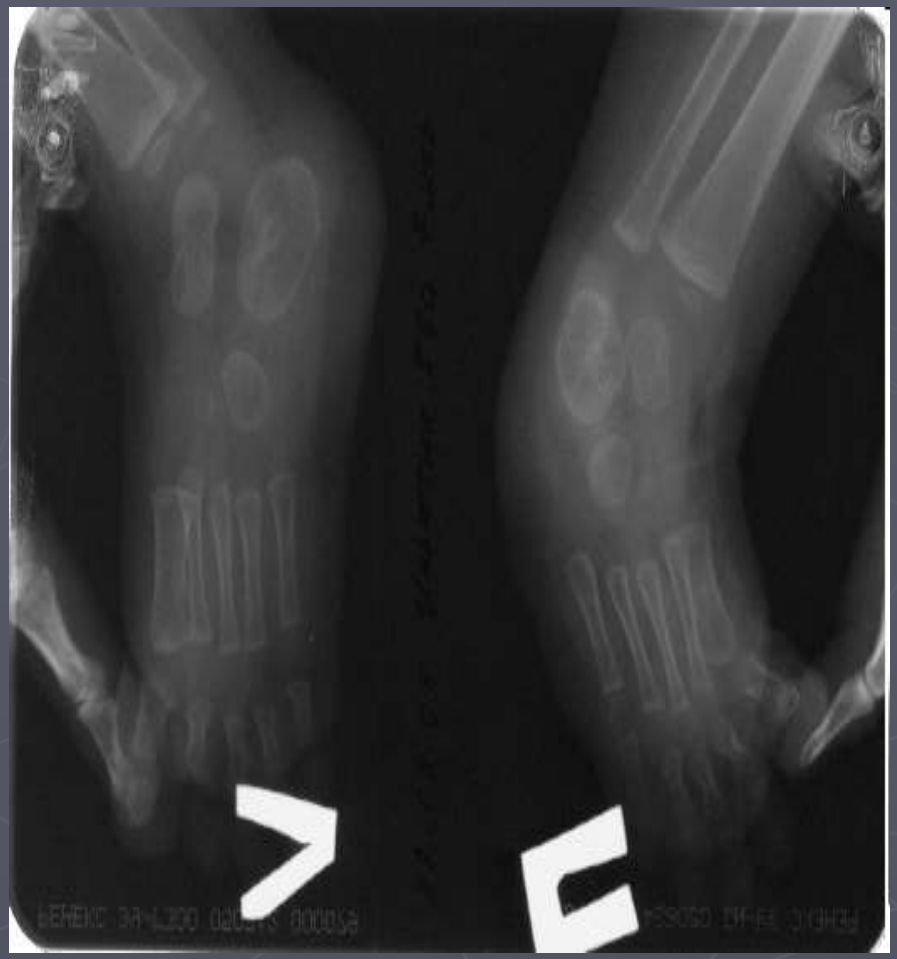
Bringing, increasing the arch of the foot

Equinus (plantar flexion of the foot), varus heel



X-ray examination:

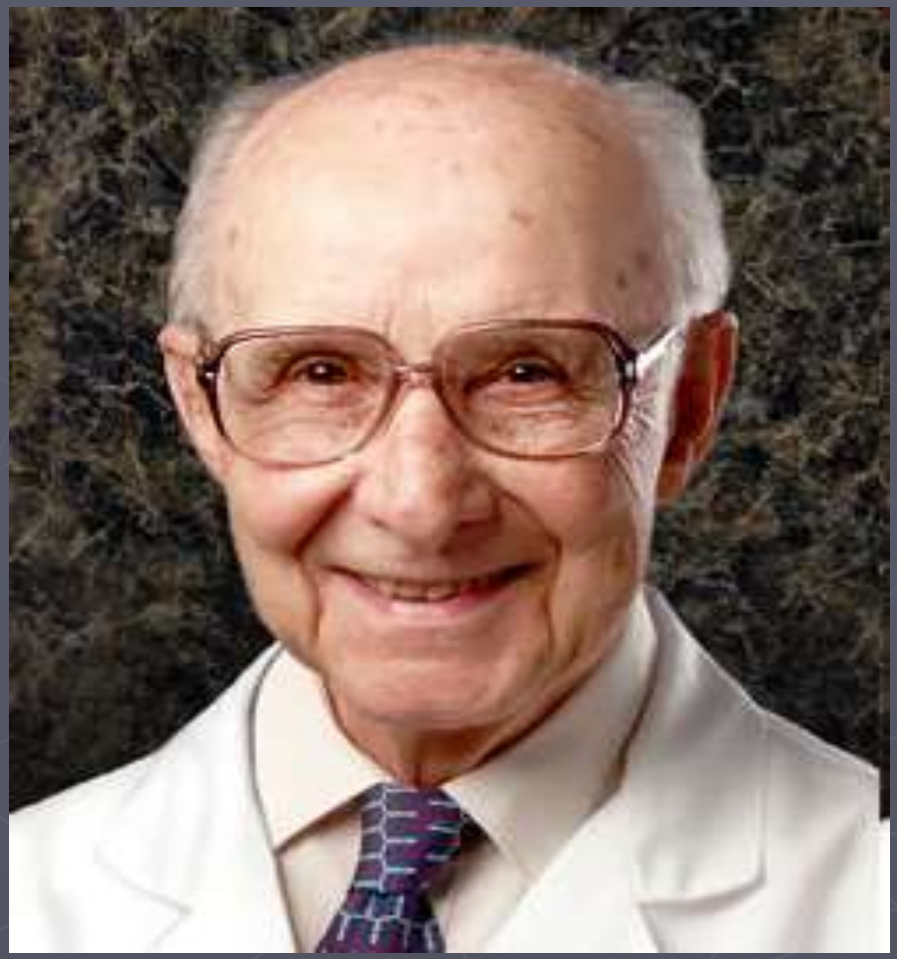
- X-ray in the anterior-posterior projection (in the position of maximum correction of the varus of the foot), in the lateral projection (in the position of maximal dorsal flexion of the foot), in the lateral projection (in the position of the maximal plantar flexion of the foot and the maximum correction of the varus).



Treatment: 1. Conservative treatment:

- - begins with the first days of a child's life;
- - Fink bandage up to 12 days of life;
- - stage longitudinal circular gypsum gypsum dressings with consistent correction of deformation components (bringing the front of the foot, varus deformity, foot equinus);
- - change of dressings once every 2 weeks;
- - the achieved degree of correction is fixed by gypsum dressings for 3-6 months (change of dressings once every 3-4 weeks) with the subsequent transition to emolytic tufts for 1-2 years, and then orthopedic shoes.

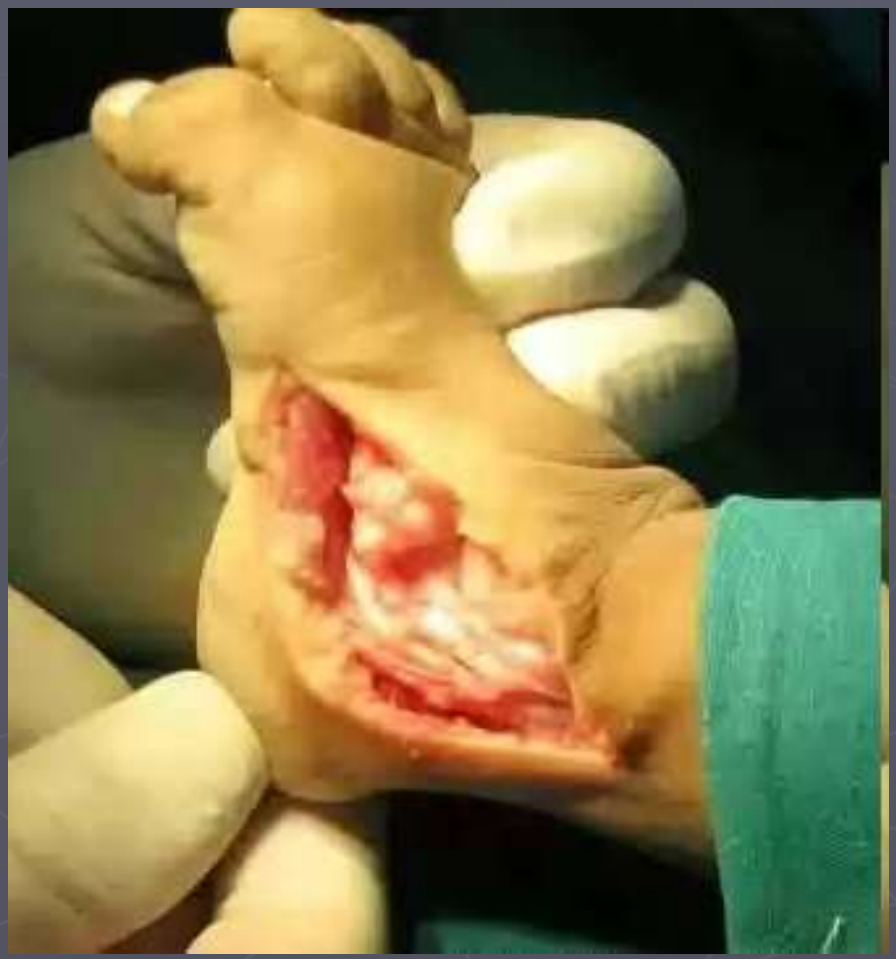
- Dr. Ponseti has developed a treatment method that is
- effective, simple, minimally aggressive,
- inexpensive, and which is ideal for all countries and
- cultures.
- Long-term research over 35 years
- show that the feet that were cured by the method
- Ponsets are flexible and painless.



Surgical treatment

- The indication for surgical treatment is a severe degree of deformity, which is not corrected by conservative methods.
- Types of surgical interventions:
- - radical surgery on the soft tissues of the foot on the hook;
- - operations with the use of external fixation apparatus;
- - correcting osteotomies.

Surgical treatment



- 3. In the period of rehabilitation treatment includes exercise therapy, massage, paraffin applications, stimulation of the muscles of the lower extremity.
- Required -
- orthopedic shoes

- It is impossible to prevent the development of birth defects of the musculoskeletal system, so timely diagnosis and early treatment are extremely important.

Any questions?

Thank you!