ORIGINAL ARTICLE: PEDIATRIC SURGERY

Cite as: Archiv EuroMedica. 2023. 13; 6: e1. DOI 10.35630/2023/13/6.603

Received 26 November 2023;
Accepted 15 December 2023;
Published 18 December 2023

AN INTEGRATED APPROACH TO THE TREATMENT OF CONGENITAL HIP DISLOCATION

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ABSTRACT

The article presents almost forty years of experience in the treatment and follow-up of congenital hip dislocation in 839 children at Tver Children's Regional Clinical Hospital (Russia). An analysis of conservative and surgical treatment methods was carried out taking into account concomitant pathology.

The children were aged from 3 months to 13 years, girls predominated (78%). Bilateral damage to the hip joints was observed in 278 children (33%), unilateral - in 561 children (67%).

Surgical treatment was performed in 312 patients (37.2%).The majority of patients admitted with a diagnosis of congenital hip dislocation were treated conservatively (527 - 62.8%).

Long-term results of treatment (12-27 years from the start of treatment) were monitored in 174 patients. 123 of them (70.7%) obtained good anatomical and functional treatment results (no complaints or functional limitations, anatomically correct formation of the hip joints according to radiation diagnostics), 45 (25.8%) - the treatment results were assessed by us as satisfactory (patients considered themselves healthy, but X-rays revealed subluxation of the femoral head without degenerative-dystrophic changes). In 6 surgically treated patients (3.4%), deforming coxarthrosis occurred, which required endoprosthetics at the age of 27-33 years.

Dysplastic changes in the musculoskeletal system require an integrated approach involving specialists of various profiles at all stages of the child's treatment.

Keywords: congenital hip dislocation, developmental dysplasia of the hip, hip dysplasia, DDH

INTRODUCTION

Congenital dislocation of the hip is a severe form of hip dysplasia, timely and successful treatment of which does not guarantee the preservation of the achieved positive result in the long term [1,2,3].

In the medical practice of orthopedists, a clinical and radiological classification of this pathology is used, based on the identification of four types of hip dysplasia:

- the first type, with a predominance of the pelvic component of the pathology, is characterized by dysplastic changes in the acetabulum; the cavity is shallow, its depth is significantly reduced, the arch of the cavity is short; deviations from the norm of the proximal femur are insignificant or absent;

- the second type, with a predominance of the femoral component of the pathology, appears as excessive antetorsion or valgus deformity of the femoral neck; the acetabulum is slightly affected or its development corresponds to normal indicators;
- the third type is associated with the presence of pronounced deviations both from the acetabulum and from the femoral component of the joint; often each of the components of the hip joint in this type of dysplasia may differ in an extreme degree of underdevelopment;
- the fourth type is characterized by multiplanar hip deformity.

The results of numerous studies have proven that none of the factors, taken separately, answered the question about the etiology of hip dysplasia, therefore this pathology is included in the group of polyetiological diseases [4,5]. Some authors note a combination of congenital hip dislocation with other congenital deformities of the axial skeleton - idiopathic scoliosis, plagiocephaly, muscular torticollis, clubfoot, etc. [6]. The complex pathogenetic mechanisms of congenital hip dislocation determine different management tactics, choice of timing and methods of surgical treatment. The results obtained in the long term do not always satisfy the doctor and the patient.

Purpose of the study: to analyze the results of treatment of congenital hip dislocation, taking into account the existing comorbid pathology and to determine the most effective postoperative tactics.

MATERIALS AND METHODS

A retrospective analysis of the treatment of 839 children with congenital hip dislocation who received medical care in the traumatology and orthopedic department of the Children's Regional Clinical Hospital of Tver (Russia) from 1981 to 2020 was carried out. The children were aged from 3 months to 13 years, girls predominated (78%). Bilateral damage to the hip joints was observed in 278 children (33%), unilateral - in 561 children (67%).

Patients were admitted to the hospital with a diagnosis of congenital hip dislocation. Associated connective tissue pathology was identified in 724 children (86.3%).

RESULTS AND DISCUSSION

The majority of patients admitted with a diagnosis of congenital hip dislocation were treated conservatively (527 - 62.8%). From the neonatal period to 6 months, treatment was carried out using a functional technique using a permanently fixing abductor splint-spacer (the duration of treatment averaged 4-6 months). If there was no centration within 2 months, we moved on to gradual reduction using a functional plaster cast. In case of late diagnosis of hip dislocation at the age of 6 to 12 months, a combined treatment method was used: for a month, the use of an abduction splint-spacer to gradually overcome the retraction of the adductor muscles, then the use of a functional plaster cast to reduce the dislocation and keep the femoral head centered in the socket or overhead method. As a rule, reduction occurred within 2-3 weeks. Only 16 children (3%) under the age of 2 years required reduction under induction anesthesia.

During treatment with spacer splints and plaster casts (age from 3 months to 1 year), limited range of motion in the joints and impaired blood supply to the extremities were noted. Additional examination methods revealed concomitant comorbid pathology and signs of systemic connective tissue disorders. X-ray and functional examination methods (neurosonography, ultrasound of the cervical spine, ultrasound of the heart, ECG) revealed in 68% of patients congenital anatomical changes in the cervical and lumbar spine (dysplastic changes in the form of subluxations, kyphosis or increased lordosis, spinabifida at the level of L4-S1). It has been established that pathology of the upper level of the cervical spine leads to disturbances of the vertebrobasilar circulation, ischemia of brain stem structures and the development of muscle hypotension [4,5].

Subsequent observations of patients initially successfully treated for congenital hip dislocation showed a gradual deterioration in clinical and radiological results already in adolescence due to the development of degenerative changes in the hip joints.

X-ray and functional examination methods revealed congenital anatomical changes in the cervical and lumbar spine in 68% of patients. It has been established that pathology of the upper level of the cervical spine leads to disturbances of the vertebrobasilar circulation, ischemia of brain stem structures and the development of muscle hypotension [7]. Our observations showed that in children with dysplastic changes in the upper level of the cervical spine in the first months of life, there was an asymmetrical position of the head, tension in the cervical-occipital muscles, and hypermobility of the joints of the upper and lower extremities. In the lumbar spine, structural disorders occurred mainly in the L4-L5 and L5-S1 segments. In the process of further development, against the background of muscle hypotonia, asymmetric tension in the muscles of the spinal column persisted, hyperlordosis of the lumbar spine developed, flat-valgus deformation of the feet and pathological internal rotation of the legs were formed.

In the absence of treatment, these pathological disorders contributed to the early development of functional and degenerative changes in the hip joints.

In the process of further development, due to muscle hypotonia, asymmetric tension in the muscles of the spinal column persisted, hyperlordosis of the lumbar spine developed, flat-valgus deformation of the feet and pathological internal rotation of the legs were formed. The use of clinical and radiological diagnostic methods, complex methods of restorative treatment in the early stages of diagnosing hip dislocation made it possible to obtain good and satisfactory outcomes of the disease using only conservative treatment methods.

In this regard, in the complex treatment of children with congenital hip dislocation, we attached great importance to compensation for the clinical manifestations of dysplastic changes in the spinal column throughout the entire period of the child's growth. Depending on the nature of these changes, patients were recommended to wear a Schanz collar for up to 2-6 hours a day for a course of up to 1.5 months with repeated appointments every 3 months, and to wear instep supports and posture correctors in children over 5 years of age. The pediatricians agreed on drug correction of metabolic disorders of connective tissue (B vitamins, long-term Mg preparations, L-carnitine, etc.). The patients were trained in appropriate methods of physical therapy and kinesiotherapy. Massage and physiotherapy courses and health resort treatment were conducted regularly (every 3-5 months).

Surgical treatment was performed in 312 patients (37.2%). Simple open reduction of hip dislocation was performed in 177 patients aged 8 to 18 months. Open reduction of hip dislocation with corrective intertrochanteric osteotomy and/or pelvic osteotomy was performed on 24 children aged 2.5 to 6 years. Intertrochanteric osteotomy for residual hip subluxations after conservative treatment was required in 111 children (including 5 cases in combination with acetabuloplasty). The results of surgical treatment were monitored over a period of 6 months to 18 years. Subsequent observations of patients initially successfully treated for congenital hip dislocation showed a gradual deterioration in clinical and radiological results already in adolescence due to the development of degenerative changes in the hip joints.

Long-term results of treatment (12-27 years from the start of treatment) were monitored in 174 patients. 123 of them (70.7%) obtained good anatomical and functional treatment results (no complaints or functional limitations, anatomically correct formation of the hip joints according to radiation diagnostics), 45 (25.8%) - the treatment results were assessed by us as satisfactory (patients considered themselves healthy, but X-rays revealed subluxation of the femoral head without degenerative-dystrophic changes). In 6 surgically treated patients (3.4%), deforming coxarthrosis occurred, which required endoprosthetics at the age of 27-33 years.

CONCLUSIONS

Children with congenital hip dislocation have various clinical manifestations of spinal dysplasia, the correction of which can improve the outcome of treatment of the underlying pathology. The main method of treating congenital dislocation, in our opinion, is conservative. When started early, complex conservative treatment is always preferable to surgery.

It is not always necessary to surgically eliminate any manifestations of decentration of the femoral head in the acetabulum. Minor residual subluxations of the hip with good or satisfactory function of the hip joint do not require urgent surgical treatment during the patient's growth. The results of treatment depend on the adequate pathology of the choice of method for eliminating congenital hip dislocation and an individual approach to the correction of comorbid pathology.

CONFLICT OF INTERESTS

The authors declare no conflict of interests.

FUNDING

The study had no sponsorship.

AUTHOR CONTRIBUTION

V.V.Murga - study conception, manuscript preparation; L.V.Rasskazov - collection and processing of the material, statistical processing, editing; V.M.Krestyashin - analysis and interpretation of results, drafting the text; N.S.Marasanov – literature search, manuscript preparation.

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