fizjoterapia polska

POLISH JOURNAL OF PHYSIOTHERAPY

OFICJALNE PISMO POLSKIEGO TOWARZYSTWA FIZJOTERAPII

THE OFFICIAL JOURNAL OF THE POLISH SOCIETY OF PHYSIOTHERAPY

NR 2/2023 (23) KWARTALNIK ISSN 1642-0136

Przebieg zachorowania na COVID-19 w odniesieniu do zmysłu węchu, smaku i wzroku

The SARS-CoV-2 virus contributes to disorders of the sense of smell, taste and vision by attacking many important structures in human body

Znaczenie systematycznej rehabilitacji na przestrzeni 45 lat pacjentki z rozwojową dysplazją stawu biodrowego

The importance of systematic rehabilitation over 45 yrs of a patient with developmental dysplasia of the hip joint

MATIO®

MATIO sp. z o.o.

to sprawdzony od 7 lat dystrybutor
urządzeń do drenażu dróg oddechowych
amerykańskiej firmy Hillrom

Hill-Rom

The Vest® Airway Clearance System

model 205

MetaNeb™

sprzęt medyczny do drenażu i nebulizacji dla pacjentów w warunkach szpitalnych – ze sprzętu w Polsce korzysta wiele oddziałów rehabilitacji i OIOM

MATIO sp. z o.o., ul. Celna 6, 30-507 Kraków, tel./fax (+4812) 296 41 47,
tel. kom. 511 832 040, e-mail:matio_med@mukowiscydoza.pl, www.matio-med.pl

"ORT" Butterfly®
Biomagnetic System

Rok założenia firmy 1996
www.butterfly-mag.com
tel. 85 743 22 21
kom. **603 299 035**

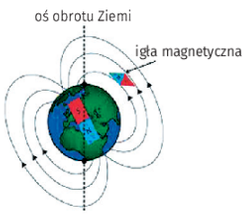
BIOMAGNETOTERAPIA W WYROBACH MEDYCZNYCH „ORT BUTTERFLY”

- BEZ BÓLU, STRESU I BEZ TABLETEK!
- LECZYSZ SIĘ NATURALNIE
- ŚPIĄC, PRACUJĄC, WYPOCZYWAJĄC...
- USUWASZ BÓL I JEGO PRZYCZYNĘ!
- TERAPIA STARA JAK ŚWIAT!
- SPRAWDZA SIĘ I DAJE RADĘ W NIERÓWNEJ WALCE Z PANDEMIĄ – COVID 19!

REGULARNA BIOSTYMULACJA MAGNETYCZNA!

Ogromny potencjał Natury w zwalczaniu smogu energetycznego i autooksydacji, będącej główną przyczyną wszystkich chorób cywilizacyjnych! **Najstarsza Terapia Świata** wspomagająca każdą formę leczenia! Uważa się do dziś, że bez niej nie da się wyleczyć żadnej choroby do końca! **Naturalna Terapia Magnetyczna** Twoje Zdrowie, Twoja Uroda, Odporność i Sprawność do późnej starości! **Wypróbuj** – gdy zawiodły już inne terapie!

Biomagnetoterapia inicjuje ożywienie komórkowe, oczyszcza i „odmładza” krew, podnosząc witalność całego organizmu, który uruchamia intuicyjne procesy obronne, znosząc dyskomfort powodowany bólem, urazem lub stresem, bez konieczności ostrej dawki leków chemicznych...



DLACZEGO CHORUJEMY?
Natężenie sztucznych pól elektromagnetycznych zwiększyło się 100 tys. razy! Naturalne pole magnetyczne Ziemi zmniejszyło swą moc o połowę!

"ORT" Butterfly®
Biomagnetic System

BIOMAGNETYZM - *jako antidotum; jedyne i absolutne; na cancerogenną ekspansję „smogu energetycznego”!*

ZŁOTE LOGO
Międzynarodowych Targów
Rehabilitacja
Łódź IX/2007

Jestem osobistym królikiem doświadczalnym! I żyję – realizując 25 lat wciąż nowe i śmielsze pomysły w wykorzystaniu tej **boskiej energii** naturalnych magnesów! Dzięki nim pokonuję dziś niezliczone przeszkody i przeciwności losu z nieznaną mi przedtem energią i determinacją! To moja pasja! I przeznaczenie!

Najnowsza opinia klienta:

Komentarz ten jest moim osobistym świadectwem zadowolenia z produktów biomagnetycznych „Ort Butterfly”, których używam od 20. lat! Zastanawiam się, zwłaszcza nad fenomenem poduszki (określenie nie jest przypadkowe) zwyczajnie; nie wyobrażam sobie snu i wypoczynku bez magnetycznej „Ort Butterfly” – pod głową! Jej ergonomiczny, przyjazny dla głowy i szyi kształt sprawia, że wysypiam się „po królewsku”. Zabieram ją również ze sobą w bliższe i dalsze podróże! Czyż gdyby była to zwyczajna poduszka, fundowałbym sobie dodatkowy bagaż? Wychwalam więc ją od zarania, polecam i rekomenduję, bo jest tego warta! Bez niej nie wyobrażam sobie prawdziwie relaksacyjnego snu i błogiego, kojącego wyczpoczynku! Dziękuję, że ją Pani stworzyła!

J. Szw. Działdowo (maj 2020)

PS *Poduszki „Ort Butterfly” to prawdziwe arcydziełka robione z wyczuciem i sercem... jak rzeźby Michała Anioła... Polecam wszystkim!*

Zapraszamy do zapoznania się z opiniami użytkowników i ekspertów jakie pojawiły się na przestrzeni ostatnich 10 lat: www.butterfly-mag.com → opinie klientów

3 Kongres Rehabilitacja Polska
Perspektywy rozwoju Fizjoterapii

Organizator

Polskie Towarzystwo Fizjoterapii

Współorganizator

Polskie Towarzystwo Rehabilitacji

8-9 grudnia 2023
Hotel Fabryka Wełny w Pabianicach
strona internetowa: ptf-3kongres.pl

Termin	do 20.08.2023	do 30.10.2023	po 1.11.2023
Student	200	300	550
Członek PTF	300	400	550
Niezrzeszony	400	500	550
Student grupowo (od 10 os)	-	150	200
Lunch 1 dzień	80	110	120
Lunch 2 dni	150	200	210
Bankiet	350	400	450

Streszczenia prac należy przesyłać wyłącznie za pomocą formularza znajdującego się na stronie ptf-3kongres.pl (gdzie znajduje się wykaz tematów oraz wymagania dotyczące plakatów).

Patroni

fizjoterapia polska

Acta Balneologica
Journal of the Polish Balneology and Physical Association

XVII JESIENNE DNI FIZJOTERAPII

Fizjoterapia w praktyce

Janów Lubelski. 29 września – 1 października 2023

POLSKIE TOWARZYSTWO FIZJOTERAPII

ODDZIAŁY

LUBELSKI, PODKARPACKI, MAZOWIECKI

Kolegium Nauk Medycznych Uniwersytetu Rzeszowskiego

Wydział Rehabilitacji – Akademii Wychowania Fizycznego w Warszawie

Prosimy o przesłanie streszczeń referatów na adres: konferencjajdf@gmail.com do dnia 30 czerwca 2023 r.
Organizatorzy przewidują sesję studencką i sesję plakatową.
Opłata konferencyjna obejmuje: uczestnictwo w konferencji, materiały, obiad, przerwy kawowe, warsztaty.
Dodatkowo płatne: ognisko integracyjne w piątek 29 września – 80 zł oraz bankiet w sobotę 30 września – 150 zł.

Uczestnicy	Opłata do 31 lipca 2023	Opłata po 31 lipca 2023
Członkowie: PTF, PSSF, OZZPF	200 zł	240 zł
Studenci	100 zł	140 zł
Pozostałe osoby	250 zł	340 zł

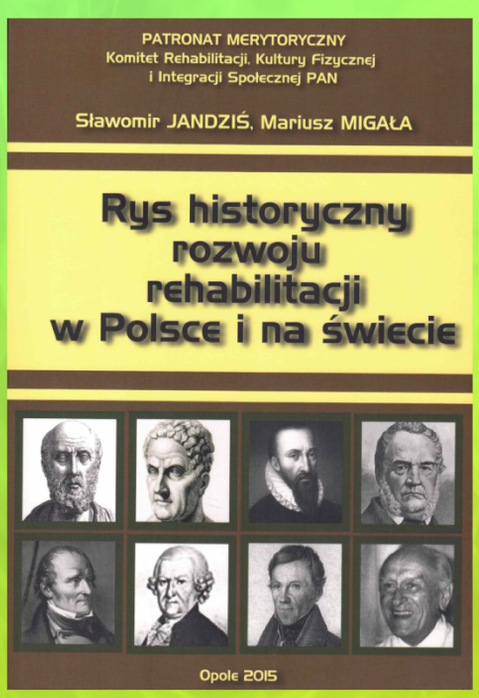
Zgłoszenie uczestnictwa prosimy dokonywać poprzez wpłatę na konto Oddziału Podkarpackiego PTF:
29 9162 0000 2001 0014 1413 0001
oraz przesłanie na pocztę konferencjajdf@gmail.com imienia, nazwiska i miejsca zamieszkania każdego z uczestników konferencji, tytuł naukowy, adres e-mail, nr telefonu, z jakiego oddziału PTF/PSSF/OZZPF lub niezrzeszony, dane do faktury, potwierdzenie dokonania wpłaty za konferencję, ognisko integracyjne oraz bankiet.
Dodatkowe informacje: Sławomir Jandziś 504068500

fizjoterapia polska

STUDIO

sklep internetowy: www.djstudio.shop.pl

w sklepie dostępne między innymi:
·archiwalne numery Fizjoterapii Polskiej w wersji papierowej
·artykuły w wersji elektronicznej
·książki poświęcone fizjoterapii
·prenumerata Fizjoterapii Polskiej



fizjoterapia polska
nr 2/2023 (23)

The importance of systematic rehabilitation over 45 years of a patient with developmental dysplasia of the hip joint (case study)

Znaczenie systematycznej rehabilitacji na przestrzeni 45 lat pacjentki z rozwojową dysplazją stawu biodrowego (studium przypadku)

Eleonora Stefańska-Szachoń[1(A,B,C,D,E,F,G)], Anna Kubsik-Gidlewska[2(A,B,D,E)], Marek Krochmalski[3(C,D)], Marta Woldańska-Okońska[2(A,D,E,F)], Marek Kiljański[3,4 (C,E,G)]

[1]Wydział Nauk Medycznych i Nauk o Zdrowiu, Uniwersytet Technologiczno-Humanistyczny w Radomiu / Faculty of Medical and Health Sciences, University of Technology and Humanities in Radom, Poland
[2]Klinika Chorób Wewnętrznych, Rehabilitacji i Medycyny Fizykalnej w Łodzi / Department of Internal Diseases, Rehabilitation and Physical Medicine in Łódź, Poland
[3]Medical Magnus Clinic w Łodzi / Medical Magnus Clinic in Łódź, Poland
[4]Polskie Stowarzyszenie Specjalistów Fizjoterapii / Polish Society of Physiotherapy Specialists

Abstract

Congenital hip dysplasia is a teratogenic defect and affects 2% of the population; It arises in the fetal period and can be caused by pathological factors from both the mother and the fetus. The hallmark of congenital hip dysplasia is an undeveloped, excessively shallow acetabulum that prevents stabilization of the femoral head, resulting in hip dislocation. In recent years, there has been a shift in understanding of this musculoskeletal defect, based on early clinical and ultrasound findings, to developmental hip dysplasia, which can present as hip subluxation or dislocation. This paper presents the stages of treatment of a patient with developmental hip dysplasia over a 45-year period, the course of rehabilitation, and the effects of improvement after the use of CD34+ stem cells.

Key words:

congenital hip dysplasia, developmental hip dysplasia, CD34+ stem cells, case stage

Streszczenie

Wrodzona dysplazja stawu biodrowego jest wadą teratogenną i dotyczy 2% populacji, powstaje w okresie płodowym i może być spowodowana czynnikami patologicznymi pochodzącymi zarówno ze strony matki, jak i płodu. Cechą charakterystyczną wrodzonej dysplazji stawu biodrowego jest niewykształcona, zbyt płytka panewka, która uniemożliwia stabilizację głowy kości udowej, co w konsekwencji doprowadza do zwichnięcia stawu biodrowego. Na podstawie wczesnych badan klinicznych oraz ultrasonograficznych stwierdzono, że w ostatnich latach nastąpiła zmiana w rozumieniu tej wady narządu ruchu na rzecz rozwojowej dysplazji stawu biodrowego, która może występować pod postacią podwichnięcia lub zwichnięcia stawu biodrowego. W pracy przedstawiono etapy leczenia pacjentki z rozwojową dysplazją stawu biodrowego na przestrzeni 45 lat, przebieg rehabilitacji oraz efekty usprawniania po zastosowaniu komórek macierzystych CD34+.

Słowa kluczowe:

wrodzona dysplazja stawu biodrowego, rozwojowa dysplazja stawu biodrowego, komórki macierzyste CD34+, studium przypadku

doi.org/10.56984/8ZG0DF5B2

Introduction

Congenital hip dislocation and dysplasia (Latin *Luxatio et dysplasia coxae congenita*) occurs before birth in the first 3 months of fetal life. Developmental dysplasia of the hip (DDH) develops later (even after birth) and is preventable. This is a condition in which there is subluxation (the head of the femur remains in partial contact with the pelvis) or dislocation (no contact between the head of the femur and the pelvis) of the hip joint in a newborn or infant. Congenital dysplasia is a teratogenic defect, which in the population affects about 2% of children more often and in most cases it is female than male. It arises in the fetal period and can be caused by pathological factors, both from the side of the mother and the fetus. It is characterized by fixed anatomical and biomechanical changes of the joint, such as: undeveloped acetabulum – shallow, with a steep roof, thickened bottom and often filled with soft tissue. The unshaped part of the joint is unable to stabilize the head of the femur, which in turn is often overgrown in this case. In addition, the labrum turns outward, and the joint capsule lengthens and usually becomes flaccid, and in its central part it may be narrowed and compressed by a taut band of the iliopsoas muscle. This condition can cause a gradual misalignment or dislocation of the hip joint, which can wear down the cartilage and lead to early hip osteoarthritis. Dysplastic hip can also lead to tearing of the acetabular labrum [1]. DDH can be divided into three types: "idiopathic", teratological or neuromuscular. Early clinical and ultrasound studies changed the understanding of the pathogenesis of this musculoskeletal defect. It turned out that this is not a congenital defect, but a developmental defect, and early examinations prevent the femoral head from moving out of the acetabulum, which makes it possible to cure the dysplasia at an early stage [2].

Factors that may contribute to developmental dysplasia of the hip include:

• genetic – the highest probability of the disease occurs in infants in whom one of the parents and one of the siblings has the same defect (about 35% of cases);

• changes in fetal position (approx. 50% of sprains and dysplasias may be caused by the breech position)

• unnatural arrangement of the lower limbs in the mother's womb - excessive hip flexion and thigh abduction or extension of the entire limbs may be the result of oligohydramnios; in primiparous women, in whom the usually strong wall of the uterus makes it difficult for the fetus to move. Such positioning of the limbs is a pathomechanical factor for antetorsion and valgus of the femoral neck, lack of roof and acetabulum formation, as well as stretching and laxity of the joint capsule. The latter may be the result of greater sensitivity to estrogens in females, which explains the more frequent occurrence of the defect in girls. Pregnancy hormones have a relaxing effect on the ligaments, which in physiological conditions strengthen the walls of the joint capsule [3, 4].

The most common symptoms of hip dislocation include: the absence of the femoral head in the acetabulum, which can

doi.org/10.56984/8ZG0DF5B2

be felt by palpation: at the intersection of the femoral vessels with the inguinal ligament, the shift of the femoral trochanter above the line connecting the ischial tubercle with the anterior superior iliac spine, the so-called the Roser–Nelaton line; shortening of the relative length of the limb (measured from the anterior superior iliac spine to the medial malleolus), asymmetry of the gluteal folds, significant limitation of abduction and external rotation movements in the hip joint, positive pumping sign (moving of the thigh along the pelvic axis), positive Allis (Galleazzi) sign characterized by the asymmetry of the position of the horizontal line above the bent knee joints in the chair position, raised lower limbs, the child lying on his back (hips and knees bent to the angle of 90 degrees) [5].

Nowadays, the progress of technology in the fields of medicine gives us access to a variety of diagnostic imaging tests, in particular the popular and already obligatory prelux examination using ultrasound. Thanks to this, we get a full picture of the development of hip joints in infants around 6 weeks of age. Such actions allow for quick and early detection of possible defects and effective treatment in the shortest possible time [2].

Aim of the work

In this paper, a retrospective assessment of the course of the disease and therapeutic activities has been made, spanning almost half a century to the present, with a probable impact on the patient's quality of life today and in the future. The aim of the study was to present the treatment and rehabilitation of a patient with developmental dysplasia of the hip, from infancy to the present day, with the intention of conveying a significant conviction about the importance of early surgical treatment, conservative treatment and rehabilitation in developmental dysplasia of the hip.

The research on CD34+ stem cell therapy for the treatment of chondromalacia, degenerative changes and articular cartilage injuries was approved by the Bioethics Committee at the Medical University of Lodz No. RNN/19/22/KE on 12 April 2022.

A case report

A 44-year-old woman, born in July 1978 at full term, naturally, without any perinatal complications, as a healthy girl with an Apgar score of 10, birth weight 2900 g and length 51 cm, was subjected to this analysis. She was the first child of her healthy, twenty-something parents. She was developing normally until her mother noticed a different positioning of the left lower limb, especially during daily home care. After the initial pediatric consultation, at the age of 5 months, the infant was referred to an orthopedist who, together with a specialist medical consultation, decided to put him in a hip cast for 6 weeks, which was aimed at setting both limbs in the correct position and correcting the observed developmental defect.

After several days of constant anxiety, both the child and the parents, it was decided to consult at the Children's Orthopedic Clinic in Warsaw. There, the cast was immediately removed, and after a thorough examination and X-ray dia-

doi.org/10.56984/8ZG0DF5B2

gnostics, a type IV dislocation of the left hip joint (*luxatio coxae congenita sinistri*) was found in the form of a completely unshaped, shallow acetabulum without a roof and complete displacement of the femoral head. The first steps of treatment were undertaken and overhead traction was applied for 6 weeks, followed by the necessary corrective osteotomy. This lift consists in applying a bandage dressing on both limbs with an adjusted load so that the child's buttocks are lifted slightly above the bed mattress. In the first days, both lower limbs are subjected to the process, straightened in the knee joints and bent to 90 degrees in the hip joints. After about 7–10 days, gradual abduction begins and its range is successively increased to 60 - 70 degrees to achieve repositioning of the head in the acetabulum, which is the main task of the traction device; moreover, this method of treatment reduces the incidence of nutritional disorders of the femoral head in the form of avascular necrosis [6], which is not confirmed by some studies [7].

After a 6-week correction with an "over head" traction, it was decided to secure the obtained position in a plaster cast according to Salter, in abduction and flexion of the lower limbs for the next 3 months. However, as previously assumed and the results of treatment were predicted, complete reposition of the joint could not be performed and a three-stage surgical procedure was necessary in the form of reconstructive redirection osteotomy using the Salter method (the patient was 2 years old), followed by stages of systematic rehabilitation with learning to walk. At the end of 1981, the process of surgical treatment at the early childhood stage was completed. Exercises were a daily duty of the child, who in the following years of life developed properly, attended a public primary school, taking advantage of contacts with peers.

At the turn of the early 1990s, the teenager began puberty and the related hormonal changes in the body, which favored the loss of weight control and weight gain, and each unnecessary kilogram additionally burdened the hip, manifesting itself in the form of pain, which decreased the patient's motivation for daily rehabilitation. As a result, the range of motion decreased and the operated limb was shortened due to developing muscle contractures. It was decided to perform another surgical procedure, which took place at the beginning of 1992 in the form of a salvage osteotomy using the Chiari method and anastomosis of the correction with two Kirschner wires. Placement in a hip cast for 6 weeks was applied. After this time, the anastomosis was surgically removed, but due to the lack of sufficient bone union, it was decided to immobilize again in a plaster cast for another 6 weeks. After a period of 3 months in a hip cast, the stages of rehabilitation were programmed, with the initial total ban on loading the operated limb and subsequent spa treatment until the teenager's full mobility was achieved.

Over the next years, according to the interview with the subject, the hip joint was supported by everyday physical activity with simultaneous success in learning. Completed

doi.org/10.56984/8ZG0DF5B2

studies in the field of Physiotherapy at the Academy of Physical Education in Katowice at the turn of the 20th and 21st centuries were possible at the only such university in Poland, which offered an experimental, 4-year course for people with physical disabilities. The individuality of this form of study consisted in a reduced scale of points and grading, both in sports entrance exams, qualifying for studies, and in later physical activities.

At the age of 28 and 31, the woman gave birth to two healthy sons, the first – naturally, the second – by caesarean section. Loading the joint with two pregnancies, subsequent hormonal changes and, unfortunately, the lack of regularity in rehabilitation slowly caused regression, leading to joint degeneration, i.e. coxarthrosis. Pain in the hip resulted in decreased physical and occupational activity; finally, it was not possible to cover even a short distance without support, e.g. with elbow crutches, daily activities became more and more difficult, the woman required the help of third parties, which was sometimes frustrating, both for her and the household members, and thus had a strong impact negatively on the psyche. Secondary scoliosis joined the aforementioned ailments, which resulted in shortening of the limb and even greater discomfort in moving. The patient underwent many methods of rehabilitation (along with active, resistance, tampering and water exercises, including PNF techniques, proprioceptive neuromuscular facilitation techniques, elements of the Cyriax method), which unfortunately failed to stop the pain and the progressive limitation of range of motion. Therefore, an individual and intensive search for help from many specialists throughout Poland was initiated, where only one recommendation was made everywhere: endoprosthesis. The woman reluctantly recalls her hospital childhood and, knowing the exact surgical procedures, the extent of the operation and the risk factors for implanting an artificial hip joint, she hoped to repair the damaged joint with a less invasive method. "The best hip replacement has an unpredictable but certainly finite life, while the hip treated by osteotomy often lasts a lifetime" [8].

In February 2013, she learned about an innovative, proprietary method of joint regeneration using CD34+ stem cells in Łódź. After the first, initial medical consultation and a thorough assessment of the image of the hip joint from magnetic resonance imaging, she was qualified for the procedure, which was performed in July of the same year. The cells collected and selected from the peripheral blood were introduced into the joint under strict ultrasound control, and tenodesis of the adductor muscle fascia was applied to increase the abduction range of the hip joint. For the first time, there was no need to secure the correction and immobilization in a plaster cast, which resulted in standing upright on the first day after the procedure, and the prospect of walking immediately on crutches, as the subject recalls, was extremely uplifting and filled with optimism. For the first few days the pain was unbearable, the patient rated it 10/10 on the VAS scale, related to the expansion of the joint and increasing its passive mobility, which was carried out right after the cells were administe-

doi.org/10.56984/8ZG0DF5B2

red, i.e. still on the operating table. A specialist team of qualified physiotherapists, together with an original method of a jointly developed algorithm of post-treatment rehabilitation, mobilized to systematic work twice a day, 7 days a week [9, 10].

During the first four days after surgery, the patient was strictly forbidden to put any weight on the operated limb, positioning therapy was applied, and light passive exercises were carried out up to the pain limit, together with gentle traction of the hip joint. Post-isometric muscle relaxation (PIR) of the operated joint, flexion exercises on a CPM splint (to the pain limit) and isometric work of the quadriceps, adductor group, ischiofemoral group and gluteal muscles were an integral part of daily rehabilitation. In the following two weeks, further weight-bearing of the limb and crutch walking were applied. Physical therapy in the form of a sollux lamp with a blue filter was incorporated at this stage of improvement to reduce pain and prepare for exercise. A series of exercises on the CPM splint with increasing range of motion was continued. There was a systematic intensification of passive exercises of the hip joint, and at the end of the second week after surgery, active exercises in weight-bearing with the use of a pulley system in the Universal Exercise Unit; elements of manual therapy in the form of PIR were continued, traction and mobilization of the hip joint were included. Isometric muscle exercises were already part of the introduction of typical muscle strengthening training. Here, isometric exercises of the quadriceps muscle of the thigh in slight flexion (30–40°) with simultaneous contraction of the ischiofemoral muscles were included, as skill formation for exercise concentration. Stretching of the ischiofemoral muscle group proved to be effective, resulting in better muscle flexibility and improved muscle efficiency.

14 days after the procedure, the pain was losing its intensity, the patient described it as 6/10 on the VAS scale, and the hip joint was gaining function. The muscles were starting to work properly again. For the next 4 weeks after returning from hospital, the prohibition of weight bearing on the limb was still maintained and mobility on crutches was recommended. Physical therapy was continued (sollux with a blue filter), including electrostimulation of the quadriceps muscle of the thigh, intensification of exercises from the previous period, beginning active exercises of the gluteal muscles in different initial positions, muscles of the adductor and inversus thigh groups, sensorimotor exercises with a disc on the wall, active exercises for hip flexion and extension on a ball, exercises using the SET method, active exercises of the sciatic-shin group, a stationary bicycle with dosed resistance was included. In the following weeks, a complete absence of soreness, 0/10 on the VAS scale, was observed when performing simple and complex movements, the patient felt increasingly comfortable mentally and physically when performing activities of daily living, and so this projected a progression in the form of further intensification of rehabilitation measures from the previous period. Eight weeks after cell ad-

doi.org/10.56984/8ZG0DF5B2

ministration, it was decided to wean the patient off the elbow crutches, move on to learning to walk and put full weight on the operated limb. After a short period of time, normal, physiological gait phases were observed with even timing of the moment of support without the pathological limp gait that had been evident previously. The further rehabilitation programme included proprioception exercises in supine position with a large ball, exercises with dosed resistance of the quadriceps, ischiofemoral and gluteal muscles, deep muscle exercises for shaping and maintaining correct posture, performed on an unstable surface with the use of BOSU-type discs; sensorimotor exercises and later muscle strength training in open and closed kinematic chains.

The female patient was able to perform activities of daily living with increasing confidence and her mental condition improved as a result. As a certified physiotherapist, she began working on developing a model for further therapeutic management in order to maintain the results achieved. Initially, Thera-Band tapes of different stretching strengths were used in order to be able to work on elastic resistance, which increased the work of all muscle groups and protected the joint from excessive, unwanted strain. The researcher used such rehabilitation equipment that she could easily store at home and test the variety of exercises and their effects on herself (large ball, bands, ankles). The overriding aim of the systematic, continuous therapy was to strengthen all three gluteal muscles (large, medium and small), which resulted, on further observation, in greater stabilisation of the support phase during gait, resulting in fluidity of movement during movement. Naturally, the muscle groups of the anterior, posterior, lateral and medial sides of the thigh, both superficial and deep layers, were not omitted to work as well, so that any movement performed in a given plane and axis would be smooth and take place within the full physiological range. In the six months following surgery, typical strength training was implemented at a frequency of twice a week, using the 'body building' method of the individual muscle groups of the pelvic girdle, thigh, abdomen and lumbar spine using the strength equipment in the room. Equilibrium exercises on an unstable surface were also continued, as well as stretching exercises, stretching and left post-isometric relaxation techniques, which have accompanied the therapy since the first day after surgery. Cycling and swimming were, and still are, a simultaneous form of therapy and active leisure time for the subject. Nordic walking, ergonomics at work and a personalised diet are all aimed at maintaining a normal body weight within the limits of the BMI norm. A history of walking increasingly long distances without fatigue of the limb and without pain was observed, which was impossible before the treatment.

Over a period of 10 years, observations were collected on the various changes that ultimately transformed the mobility, strength and endurance capabilities of the joint after the administration of CD34+ stem cells, and the results were collected, systematised and presented in the tables below.

doi.org/10.56984/8ZG0DF5B2

Table 1. List of ranges of motion in the treated joint and the decreasing angular deficit. Measurements were made with a goniometer. SFTR method [11]

Date	Range of motion in the hip joint	ISOM standard	Sum of deficit
2013.02 Before procedure	S 5 – 0 – 75	15 – 0 – 125	60
	F 20 – 0 – 10	45 – 0 – 25	40
	R (S 90) 25 – 0 – 5	45 – 0 – 45	60
	R (S 0) 30 – 0 – 0	45 – 0 – 40	50
			210
2013.10	S 10 – 0 – 90	15 – 0 – 125	40
	F 30 – 0 – 15	45 – 0 – 25	30
	R (S 90) 35 – 0 – 25	45 – 0 – 45	30
	R (S 0) 30 – 0 – 10	45 – 0 – 40	35
			135
2014	S 15 – 0 – 95	15 – 0 – 125	30
	F 40 – 0 – 20	45 – 0 – 25	10
	R (S 90) 45 – 0 – 25	45 – 0 – 45	20
	R (S 0) 45 – 0 – 15	45 – 0 – 40	30
			90
2015	S 15 – 0 – 95	15 – 0 – 125	30
	F 50 – 0 – 25	45 – 0 – 25	−5
	R (S 90) 45 – 0 – 30	45 – 0 – 45	15
	R (S 0) 45 – 0 – 15	45 – 0 – 40	25
			65
2018	S 15 – 0 – 95	15 – 0 – 125	30
	F 45 – 0 – 25	45 – 0 – 25	0
	R (S 90) 45 – 0 – 30	45 – 0 – 45	15
	R (S 0) 45 – 0 – 15	45 – 0 – 40	25
			70
2020	S 15 – 0 – 95	15 – 0 – 125	30
	F 45 – 0 – 25	45 – 0 – 25	0
	R (S 90) 45 – 0 – 30	45 – 0 – 45	15
	R (S 0) 45 – 0 – 15	45 – 0 – 40	25
			70
2022	S 15 – 0 – 95	15 – 0 – 125	30
	F 45 – 0 – 25	45 – 0 – 25	0
	R (S 90) 45 – 0 – 30	45 – 0 – 45	15
	R (S 0) 45 – 0 – 15	45 – 0 – 40	25
			70
2023	S 25 – 0 – 95	15 – 0 – 125	20
	F 55 – 0 – 35	45 – 0 – 25	−10
	R (S 90) 45 – 0 – 30	45 – 0 – 45	15
	R (S 0) 45 – 0 – 15	45 – 0 – 40	25
			50

S – sagital (sagittal plane) for flexion and extension movements
F – frontal (frontal plane) – abduction and adduction
T - transverse (transverse plane) - reversing and reversing
R – rotation (rotational movements) – external and internal rotation

doi.org/10.56984/8ZG0DF5B2

Table 2. Summary of muscle strength measurements in hip joint movements according to the Lovett scale and test [12], where: 2 denotes a marked, visible contraction of the muscle and the ability to perform the movement with the assistance of the examiner and with the limb relieved – movement carried out parallel to the ground (25% of the force), 3 – ability to perform a given movement to the full extent overcoming the force of gravity – movement perpendicular to the ground (50% of the force), 4 – movement to the full extent with little resistance (75% of the force), 5 – normal muscle strength, movement with maximum resistance (100% of the force)

Group of muscle	Year			
	2013	2015	2019	2022 / 2023
Flexors	3	4	5	5
Extensors	3	4	5	5
Adductores	3	4	5	5
Abductores	3	4	5	5
Internal rotatores	2	4	5	5
External rotatores	3	4	5	5

Table 3. Summary of decreasing difference in lower limb circumference, measured with a tailor's meter at individual thigh segments, where P_1 short is the measurement of the mass of the gluteus maximus muscle and is measured in standing or lying supine from the greater ileum to the gluteal crevice; P_1 long – the mass of the gluteal muscles, measured lying on the unexamined side, from the pubic symphysis to the gluteal crevice; U_1 – the measurement of the thigh at the thickest point, i.e. the muscle mass: adductors, quadriceps, adductors, ischiofemoral, measured in supine position; U_2 – measurement of the thigh 10 cm from the base of the patella, to determine the mass of the quadriceps of the thigh, especially the m. medial vastus muscle

Date	Limb girths measurement [13]		
		right	left
2013	P_1 short	28	21
	P_1 long	54	46
	U_1	54	48
	U_2	43	40
2015	P_1 short	25	22
	P_1 long	51	47
	U_1	52	48
	U_2	42	41
2018	P_1 short	25	23
	P_1 long	52	48
	U_1	52	48
	U_2	42	42

doi.org/10.56984/8ZG0DF5B2

Date		Limb girths measurement [13]	
		right	left
2022	P_1 short	25	23
	P_1 long	51	49
	U_1	52	49
	U_2	42	42
2023	P_1 short	25	23
	P_1 long	52	49
	U_1	54	50
	U_2	44	42

Objectives achieved (maintained and sustained to date):
- maintaining an almost full range of mobility of the hip joint
- strengthening strength and mass of individual muscle groups
- improving endurance
- mental and physical comfort when performing all activities of daily living
- return to or commencement of favourite sports [strength sports, fitness]
- full return to active work
- no soreness when performing simple and complex movements

Photographic documentation

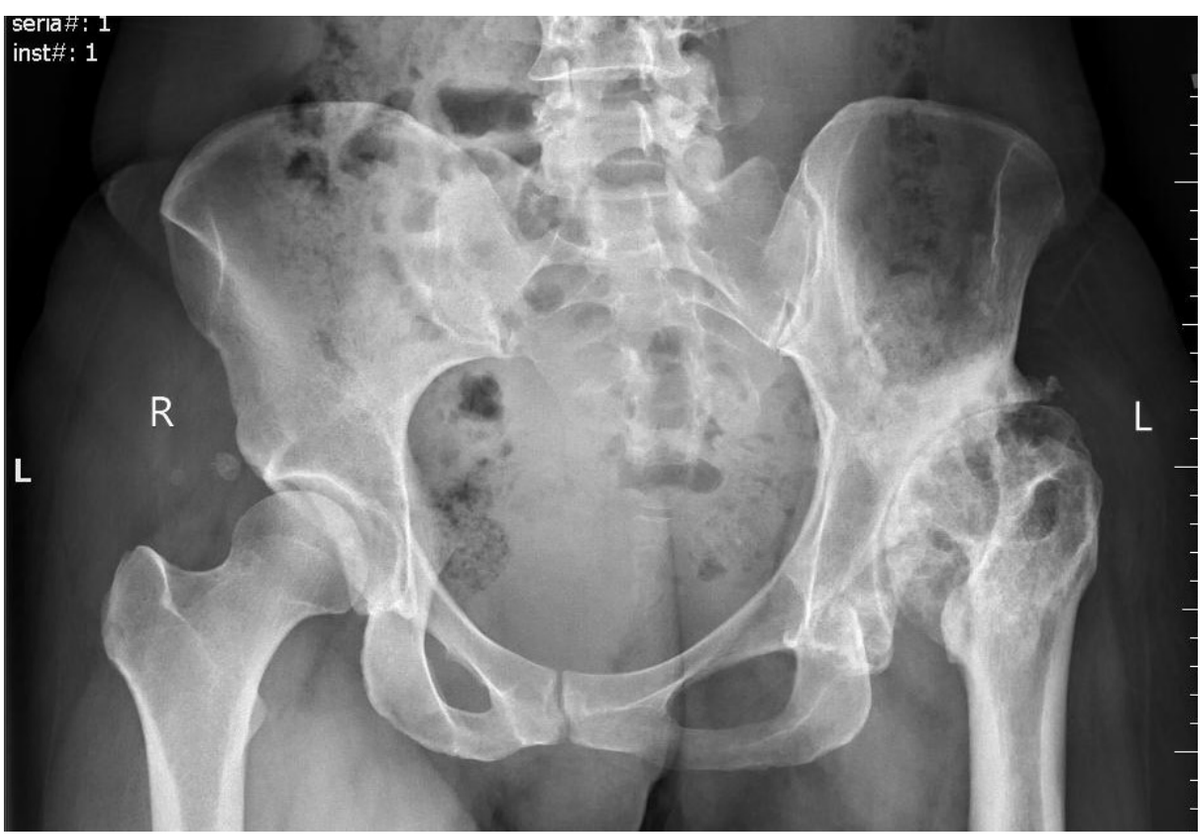


Figure 1. Year 2017

doi.org/10.56984/8ZG0DF5B2

Figure 2. Year 2018

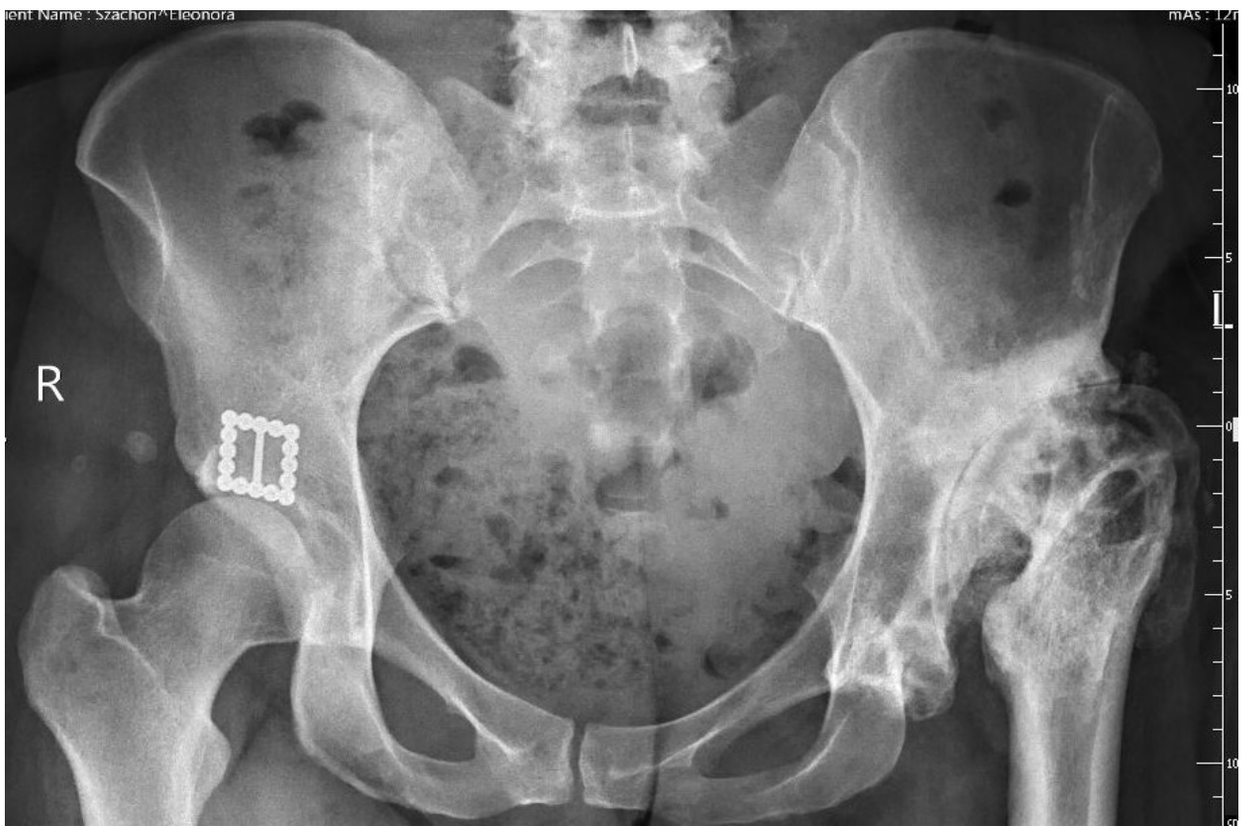


Figure 3. Year 2019

doi.org/10.56984/8ZG0DF5B2

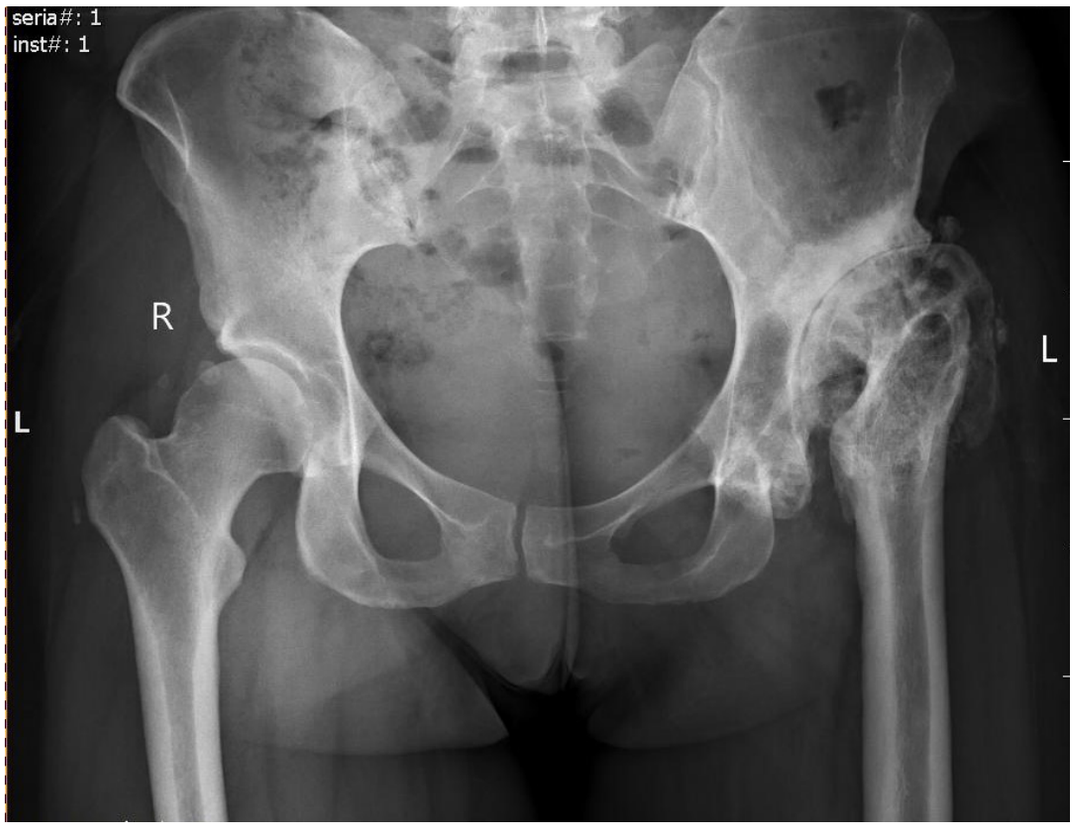


Figure 4. Year 2022

All the X-ray images presented above, taken over the last six years, show the same non-physiological position of the femoral head in relation to the acetabulum of the pelvic bone in the left hip joint. The head is distorted and greatly enlarged, set in internal rotation; femoral neck – shortened and almost invisible; both the greater and lesser trochanters do not have specific, physiological anatomical structures; the acetabulum is flattened and elongated with irregular contours; the joint space is significantly narrowed in relation to the right hip joint, and all bone structures of the joint have thinning clearly visible in the pictures, including some geodes [14].

Summary and conclusions

Developmental hip dysplasia (DDH) is a spectrum of anatomical abnormalities of the hip joint in which the femoral head has an abnormal relationship to the acetabulum. Most studies report an incidence of between 1 and 34 cases per 1,000 live births, and differences may be due to different diagnostic methods and timing of assessment. Risk factors include female sex, positive family history, pelvic position and thrombocele. The clinical picture of DDH depends on the age of the child, with neonates presenting with hip instability, infants presenting with limited hip abduction on examination, and older children and adolescents presenting with gait abnormalities in the form of limping, joint pain and/or osteoarthritis [12].

Hip dysplasia is a major precursor to osteoarthritis and occurs in 20% to 40% of patients with hip osteoarthritis. Increased mechanical loading on the cartilage matrix with damage to the acetabular rim is the main pathomechanism of degeneration [13]. Patients are increasingly seeking new and innovative treat-

doi.org/10.56984/8ZG0DF5B2

ments to preserve their joint and avoid endoprosthesis. One such solution is treatment with CD34+ stem cells [10].

Rehabilitation is an indispensable part of any surgical procedure. Our aim is always to restore the disabled person to full or maximum physical and mental capacity to enable active participation in social and working life. As can be seen from the above analysis of a single clinical case, over the course of many years, any slightest interruption in physical activity and disruption of regularity will always result in a regression in treatment. In addition, it is important to keep in mind the maintenance of a normal body weight, a proper diet, possible supplementation and the indispensable periodic check-ups, so as not to introduce the body to other conditions that can also affect the disruption of the continuity of physical activity. It is important to observe one's body and learn to listen to it, because just as we change over the years, our entire body undergoes many changes that are worth analysing and, if necessary, to be able to react in time and eliminate negative actions.

A comprehensive assessment of the hip joint and making a definitive diagnosis cannot be limited to the radiological analysis visible on X-rays, but should also take into account the functional state of the joint. The range of mobility should be examined and muscular strength assessed, as the osteochondral structures may be deformed and damaged and the muscular system will support the function of the joint. This is the case in the case described; in others, the situation may be the opposite: the joint may show a normal anatomical structure and functionally signal limitations. In this context, in both cases, the dynamic examination is essential to identify a possible dysfunction and is crucial in assessing functional abnormalities and allows the proper repair process to be programmed.

Adres do korespondencji / Corresponding author

Eleonora Stefańska-Szachoń

e-mail: eleonora.szachon@gmail.com

Piśmiennictwo/ References

1. https://www.hss.edu/condition-list_hip-dysplasia.asp dostęp 4.03.2023.
2. Sewell M.D., Eastwood D.M., Screening and treatment in developmental dysplasia of the hip - where do we go from here? Int. Orthop. 2011 Sep; 35 (9): 1359-67. doi: 10.1007/s00264-011-1257-z. Epub 2011 May 7. PMID: 21553044; PMCID: PMC3167447.
3. Vasilcova, V.; AlHarthi, M.; AlAmri, N.; Sagat, P.; Bartik, P.; Jawadi, A.H.; Zvonar, M. Developmental Dysplasia of the Hip: Prevalence and Correlation with Other Diagnoses in Physiotherapy Practice - A 5-Year Retrospective Review. Children 2022, 9, 247. https://doi.org/10.3390/children9020247.
4. Pavone, V.; de Cristo, C.; Vescio, A.; Lucenti L.; Sapienza, M.; Sessa, G.; Pavone, P.; Testa, G. Szyna dynamiczna i statyczna w leczeniu rozwojowej dysplazji stawu biodrowego: przegląd systematyczny. Dzieci 2021, 8 , 104. https://doi.org/10.3390/children8020104.
5. Pulik Ł., Płoszka K., Romaniuk K., Sibilska A., Jedynak A., Tołwiński I., Kumięga P., Wojtyński P., Łęgosz P., Impact of Multiple Factors on the Incidence of Developmental Dysplasia of the Hip: Risk Assessment Tool. Medicina (Kaunas). 2022 Aug 25; 58 (9): 1158. doi: 10.3390/medicina58091158.
6. Waśko M., Pietrzak Sz., Szarejko A., Parol W., Czubak J., Wyniki radiologiczne leczenia rozwojowej dysplazji stawów biodrowych wyciągiem ponad głową u dzieci niechodzących, Ortopedia Traumatologia Rehabilitacja, vol. 19, 2017.
7. Park K.B., Vaidya V.N., Shin H., Kwak Y.H., Prereduction traction for the prevention of avascular necrosis before closed reduction for developmental dysplasia of the hip: a meta-analysis. Ther. Clin. Risk. Manag. 2018 Jul 24; 14: 1253-1260. doi: 10.2147/TCRM.S166531.
8. Müller M.E., Słowo wstępne do „Osteoarthritis of the hip" R. Bombelli, 1976. https://poitr.pl/attachments/article/573/operacje-naprawcze.pdf
9. Hoang D.M., Pham P.T., Bach T.Q., Ngo A.T.L., Nguyen Q.T., Phan T.T.K., Nguyen G.H., Le P.T.T., Hoang V.T., Forsyth N.R., Heke M., Nguyen L.T., Stem cell-based therapy for human diseases. Signal Transduct Target Ther. 2022 Aug 6; 7 (1): 272. doi: 10.1038/s41392-022-01134-4.
10. Kubsik-Gidlewska A., Klupiński K., Krochmalski M., Krochmalski J., Klimkiewicz P., Woldańska-Okońska M., CD34+ Stem Cell Treatment for Knee Osteoarthritis: A Treatment and Rehabilitation Algorithm. J. Rehabil. Med. Clin. Commun. 2018 Nov 14; 3:1000012. doi: 10.2340/20030711-1000012.
11. Tully E. The practical guide to range of motion assessment. Br. J. Sports Med. 2005 Apr; 39 (4): 245. doi: 10.1136/bjsm.2003.006114. PMCID: PMC1725184.
12. Luca Gala, John Cloisy, Paul E Beaule. Hip dysplasia in the youg adult. J. Bone Joint Surg. Am. 2016; 6; 98 (1): 63-73. PMID: 26738905 DOI: 10.2106/JBJS.O.00109
13. Shahryar Noordin, Masood Umer, Kamrad Hafeez, Haq Nawaz. Developmnetal dysplasia of the hip. Orthop. Rev. (Pavia) 2010; 23; 2 (2): 19. doi: 10.4081/or.2010.e19
14. Dygut, J.; Sułko, J.; Guevara-Lora, I.; Piwowar, M. Secondary (Late) Developmental Dysplasia of the Hip with Displacement: From Case Studies to a Proposition for a Modified Diagnostic Path. Diagnostics 2022, 12, 1472. https://doi.org/10.3390/diagnostics12061472