Case report

UDC: 615.8:616.728.2-007.1-089.843
doi: 10.5633/amm.2025.0216

COMPLEXITY OF REHABILITATION AFTER SIMULTANEOUS BILATERAL INSTALLATION OF ENDOPROSTHESIS IN A PATIENT WITH DEVELOPMENTAL HIP DYSPLASIA: CASE REPORT

Vuk Pejčić[1], Vukota Radovanović[1], Ana Jovanović[1], Milica Kostić[1], Božidar Janković[1], Bratislav Cvetković[1], Mirjana Kocić[1,2]

The gold standard for the treatment of advanced coxarthrosis is the installation of a total hip endoprosthesis. Degenerative hip disease occurs bilaterally in about 42%. The operation is usually performed first on one hip, and after at least 6 months on the other hip. Rarely, this operation is performed simultaneously on both hips, which represents a more demanding operation as well as rehabilitation. This paper is a case report of a patient with good results of functional recovery after bilateral simultaneous hip arthroplasty, who was followed prospectively from the 5th postoperative day until the end of the 3rd.month after surgery. The patient suffered from secondary bilateral coxarthrosis, which is the result of a developmental disorder of the hips. The good recovery results of this patient with simultaneous bilateral hip arthroplasty can be explained by the selection of a good patient selection for simultaneous bilateral arthroplasty, well-chosen endoprostheses, well-done surgery and timely and adequate rehabilitation.

Acta Medica Medianae 2025;64(2):131–136.

Key words: *hip arthroplasty, coxarthrosis, developmental hip disorder*

[1]University Clinical Center of Niš, Clinic for Physical Medicine and Rehabilitation, Niš, Serbia
[2]University of Niš, Faculty of Medicine, Department of Physical Medicine and Occupational Medicine, Niš, Serbia

Contact: Vuk Pejčić
48 dr Zorana Djindjića Blvd., 18000 Niš, Serbia
E-mail: vukpejcic96@gmail.com

Introduction

Coxarthrosis belongs to a heterogeneous group of diseases with different etiologies, but similar biological, morphological and clinical characteristics (1). Advanced coxarthrosis significantly affects the functional capacity and quality of life of affected persons. The gold standard in the treatment of advanced coxarthrosis is the installation of a total hip endoprosthesis. Degenerative hip disease occurs bilaterally in about 42% of people and it is estimated that about 25% of people with bilateral coxarthrosis require bilateral installation of hip endoprostheses. This operation is usually performed first on one hip, and after at least 6 months on the other hip. Less often, this operation is performed simultaneously on both hips, which represents a more demanding operation, as well as rehabilitation (2). This type of intervention in young people, without existing comorbidities, with adequately preserved musculature of the lower extremities may have an advantage over surgery in two acts.

Case report

This case report is a prospective study that followed the patient A.R. from the 5th postoperative day to the end of the 3rd month after the operation. This is a 28-year-old male patient with simultaneous bilateral hip arthroplasty (short-stem endoprosthesis used) due to secondary bilateral coxarthrosis, which is a consequence of a developmental disorder of the hips as part of achondroplasia, which was diagnosed at birth. The patient was operated at the Clinic for Academican prof. dr Milorad Mitković of the University Clinical Center (UKC) Niš, where the acute phase of rehabilitation began. On the 5th postoperative day, he was transferred to the Clinic for Physical Medicine and Rehabilitation of the University Clinical Center Niš, where the inpatient post-acute phase of rehabilitation was carried out, which lasted 25 days, until the 30th postoperative day. The first symptoms of the disease began in early childhood in the form of difficulty moving and pain in the groin area. In the last couple of years, there has been a significant worsening of symptoms. Bilateral advanced coxarthrosis was recorded on the roentgenogram of the hips, and after a detailed examination, the installation of

bilateral hip endoprostheses was indicated. Simultaneous bilateral installation of total cementless hip endoprostheses was performed with an antero-lateral (Watson Jones) approach on April 8, 2024. at Clinical for ortopedic (Figure 1). Immediately after the operation, the patient's physiatrist recorded a lesion of the *n. femoralis* of the right leg, and postoperatively there was an inability to actively extend the lower leg in the knee joint, but the patient was able to perform a palpable static contraction of the quadriceps, and the gross muscle strength (GMS) of the quadriceps was rated 1 according to the Manual Muscle Test (MMT). Immediately after the operation, acute rehabilitation at the Clinical for ortopedic Surgery and Traumatology was started. On the 5th postoperative day, the patient was transferred to the Clinic, where post-acute rehabilitation continued. On admission, swelling of both upper legs was recorded, more pronounced on the left by 2 cm. Mobility in the hip joints was limited, with absent active extension in the right knee joint and decreased sensation in the front of the right upper leg. Active movements in the right hip: Flexion with the knee extended 0°, Flexion with the knee bent 0°, Abduction 10°, Extension 0°. Active movements in the left hip: Flexion with the knee extended 0°, Flexion with the knee bent 0°, Abduction 10°, Extension 0° (Table 1). Mobility in other joint segments of the lower extremities was functional. Gross muscle strength (GMS) for flexors of both hips was 1+, GMS for m. quadriceps of the right leg was 1 per MMT (Table 2). The transfer to the vertical position was possible with the generous help of 2 physiotherapists, after which walking was possible in the pilot hole with support on the forearms, a few steps with full support on the left and partial support on the right leg (Figure 2, Figure 5). According to the Numerical Pain Rating Scale (NPRS), the pain was 3 (Table 3). The Harris hip score (HHS) on admission was 20. Inpatient rehabilitation at the Clinic for Physical Medicine and Rehabilitation included kinesitherapy, occupational therapy, electrotherapy, and magnetic therapy. Kinesitherapy therapy included breathing exercises, exercises to strengthen the GMS of the upper extremities, active relief exercises for both hips in order to increase the range of motion, and passive exercises to extend the right hamstring. The walk was first performed in the pilot walker, with support on both legs (more on the left), and after the 10th postoperative day, the patient started walking with the help of underarm crutches (Figure 3). Exercises were performed to the limit of pain, 3 times a day. Also, occupational therapy was carried out in bed. Of the electrical procedures, interference currents were applied to the hip area, as well as a low-frequency pulsed magnetic field for the hip area according to the program for conditions after endoprosthesis installation. At discharge, a significant improvement in the patient's condition was noted. The patient moved using axillary crutches with support on both legs. The swelling of the upper legs was reduced by 2 cm on the left leg and 1 cm on the right compared to the reception, mobility was improved in both hip joints, and extension in the right knee joint was improved. Active movements in the left hip: Flexion with extended knee 55°, Flexion with bent knee 80°, Abduction 25°, Extension 0°. Active movements of the left knee: Flexion 100°, Extension normal. Active movements in the right hip: Flexion with the knee extended 35°, Flexion with the knee bent 40°, Abduction 20°, Extension 0°. Active movements in the right knee: Flexion 80°, Extension normal. There was a subjective improvement of sensibility on the front of the right thigh. The gross muscle strength of the pelvic femoral musculature was strengthened and was rated as 3 on the MMT in both legs. The Harris hip score at discharge was 41. According to the NPRS scale, the pain was 2 at discharge. At the check up that was 3 months after the operation, the continuous progress of the patient was recorded. The patient moved without aid (Figure 4, Figure 6). There was no swelling, but there is still evidence of hypertrophy of the musculature of both legs as a whole. In addition, the mobility in both hips as well as in the right knee has improved. Active movements in the left hip: Flexion with extended knee 75°, Flexion with bent knee 90°, Abduction 50°, Extension 20°. Active movements in the right hip: Flexion with extended knee 55°, Flexion with bent knee 85°, Abduction 45°, Extension 20°. Active movements in the right knee: Flexion 100°, Extension normal. Gross muscle strength of the pelvic femoral musculature was strengthened and was rated 4 for the left leg and 4 for the right leg. The gross muscle strength (GMS) of the right m. quadriceps was 5. The Harris hip score 3 months after discharge was 81. According to the NPRS scale, the pain was 0.3 months after the operation.

Figure 1. RTG post operation

Table 1. Hip mobility on admission, discharge, 3 months after surgery

	F(O) L	F(O) D	F(S) L	F(S)-D	E-L	E-D	ABD-L	ABD-D
On admission	0°	0°	0°	0°	0°	0°	10°	10°
Discgarge	55°	35°	80°	40°	0°	0°	25°	20°
3 months post op	75°	55°	90°	85°	20°	20°	50°	45°

F(O) Flexion with knee extended, F(S) Flexion with knee bent, ABD abduction, E extension

Table 2. GMS of the m. quadriceps of the right leg

	GMS m. quadriceps right leg
On admission	1
Discharge	2+
3 months post operation	4

Figure 2. Walk in the pilot hole with the help of 2 therapists at the reception
Figure 5. Standing up at the reception with the help of 2 therapists

Table 3. Pain assessed on the basis of the numerical pain scale (NRPS 0−10)

NPRS	On admission	Discarge	3 months post operation
Rating	3	2	0

Figure 3. Gait with axillary crutches at discharge

Figure 4. Walking without aid 3 months after the operation
Figure 6. Getting up from a chair 3 months after the operation

Discussion

Our paper is a case report of a patient with good functional recovery results after bilateral simultaneous hip arthroplasty, who we followed prospectively from the 5th postoperative day until the end of 3 months after the operation due to secondary bilateral coxarthrosis, which is a consequence of a developmental disorder of the hips. In the literature, it is pointed out that patients who are proposed to have both hips replaced with artificial ones must meet certain conditions in terms of adequate health status, and preservation of the musculature, which is why the selection of good candidates is very important. Some works deal with the comparison of recovery, complications, and economic costs between the simultaneous bilateral replacement of both hips and the classic approach with 2 operations with a time interval of no less than 6 months. Simultaneous bilateral hip arthroplasty represents the replacement of both hips with a total hip endoprosthesis during one hospitalization, under one anesthesia (3). According to a study from 2016, there are benefits in favor of simultaneous replacement of both hips due to a lower frequency of deep vein thrombosis (DVT) and other major systemic complications compared to the classic approach (4). Systemic studies from 2019 (5)

have similar conclusions, the results of which also speak in favor of a lower frequency of complications (DVT, respiratory complications, pulmonary thrombosis) with simultaneous replacement. A good selection of patients for surgery probably influenced the good results of these studies.

However, there are studies whose results do not agree with the above-mentioned claims, but claim that there is no statistically significant difference between these two approaches in the functional sense and in the number of complications (6).

There are studies that claim the opposite, that simultaneous bilateral total hip arthroplasty is associated with a greater number of complications. The complications listed are pulmonary embolism, kidney failure, increased need for blood transfusions. In the conclusion of this cohort study, it is stated that the most important thing is the good selection of patients, which is the conclusion of this paper (7).

Conclusion

Good results of functional recovery of a patient with simultaneous bilateral hip arthroplasty were presented, which can be explained by good patient selection for simultaneous bilateral arthroplasty, well-chosen endoprosthesis with a short stem that preserves bone tissue, well-done surgery and timely and adequate rehabilitation. It is important to point out that not every patient with bilateral coxarthrosis is a good candidate for this type of surgery, but mostly younger and healthier patients. A very important influence on the final results of this complex operation was timely and adequate rehabilitation, with emphasis on early verticalization and walking with the help of adequate aid.

References

1. Tikhilov R, Lila A, Kochish A, Alekseeva L, Shubnyakov I, Denisov A, et al. Coxarthrosis. Clinic, diagnosis and treatment: clinical guidelines. NN Priorov Journal of Traumatology and Orthopedics 2022;29(1):87-112. [CrossRef]
2. Muskus M, Rojas J, Gutiérrez C, Guio J, Bonilla G, Llinás A. Bilateral Hip Arthroplasty: When Is It Safe to Operate the Second Hip? A Systematic Review. Biomed Res Int 2018;2018:3150349. [CrossRef][PubMed]
3. Tsiridis E, Pavlou G, Charity J, Tsiridis E, Gie G, West R. The safety and efficacy of bilateral simultaneous total hip replacement: an analysis of 2063 cases. J Bone Joint Surg Br 2008;90:1005–12. [CrossRef][PubMed]
4. Shao H, Chen CL, Maltenfort MG, Restrepo C, Rothman RH, Chen AF. Bilateral total hip arthroplasty: 1-stage or 2-stage? A meta-analysis. J Arthroplasty 2017;32:689–95. [CrossRef][PubMed]
5. Huang L, Xu T, Li P, Xu Y, Xia L, Zhao Z. Comparison of mortality and complications between bilateral simultaneous and staged total hip arthroplasty: a systematic review and meta-analysis. Medicine 2019;98:e16774. [CrossRef][PubMed]
6. Micicoi G, Bernard de Dompsure R, Boileau P, Trojani C. Comparative study of bilateral total hip arthroplasty in one or two stages. Orthop Traumatol Surg Res 2022;108(6):103359. [CrossRef][PubMed]
7. Liu KC, Richardson MK, Mayfield CK, Kistler NM, Christ AB, Heckmann ND. Increased Complication Risk Associated With Simultaneous Bilateral Total Hip Arthroplasty: A Contemporary, Matched Cohort Analysis. J Arthroplasty 2023;38(12):2661-6.e1. [CrossRef][PubMed]

Prikaz bolesnika **UDC: 615.8:616.728.2-007.1-089.843**
doi: 10.5633/amm.2025.0216

KOMPLEKSNOST REHABILITACIJE NAKON ISTOVREMENE OBOSTRANE UGRADNJE ENDOPROTEZA KOD PACIJENTA SA RAZVOJNOM DISPLAZIJOM KUKOVA: PRIKAZ SLUČAJA

Vuk Pejčić[1], Vukota Radovanović[1], Ana Jovanović[1], Milica Kostić[1], Božidar Janković[1], Bratislav Cvetković[1], Mirjana Kocić[1,2]

[1]Univerzitetski klinički centar Niš, Klinika za fizikalnu medicinu i rehabilitaciju, Niš, Srbija
[2]Univerzitet u Nišu, Medicinski fakultet, Katedra za fizikalnu medicinu i medicinu rada, Niš, Srbija

Kontakt: Vuk Pejčić
Bulevar dr Zorana Đinđića 81, 18000 Niš, Srbija
E-mail: vukpejcic96@gmail.com

Zlatni standard u lečenju uznapredovale koksartroze predstavlja ugradnja totalne endoproteze kuka. Degenerativno oboljenje kuka javlja se bilateralno u oko 42% slučaja. Operacija se najčešće obavlja najpre na jednom kuku, a posle najmanje šest meseci i na drugom kuku. Ređe se ova operacija obavlja i na jednom i na drugom kuku u isto vreme; tada su i operacija i rehabilitacija komplikovanije. U ovom radu se predstavlja slučaj pacijenta kod kojeg su rezultati funkcionalnog oporavka posle bilateralne simultano urađene artroplastike kukova bili dobri. Pacijent je praćen prospektivno od petog dana posle operacije do kraja trećeg meseca posle operacije. Pacijent je bolovao od sekundarne bilateralne koksartroze, koja predstavlja posledicu razvojnog poremećaja kukova. Dobri rezultati postignuti u oporavku ovog pacijenta sa simultano urađenom bilateralnom artroplastikom kukova mogu se objasniti dobrom selekcijom pacijenta za simultanu bilateralnu artroplastiku, dobro odabranim endoprotezama, uspešno obavljenom operacijom i pravovremenom i adekvatnom rehabilitacijom.

Acta Medica Medianae 2025; 64(2):131–136.

***Ključne reči**: artroplastika kukova, koksartroza, razvojni poremećaj kukova*