
QUALITY OF LIFE OF PATIENTS BEFORE AND AFTER HIP ENDOPROSTHESIS IMPLANTATION

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Abstract: Purpose: Today, the application of endoprostheses, especially of the hip joint, has become an almost everyday orthopedic procedure. With the development of biomechanics, along with the improvement of surgical techniques, numerous models of endoprostheses are perfected. Painlessness and independent movement of patients with an artificial hip joint is an important factor in improving the quality of life. The objective was to examine the quality of life with pain due to hip diseases and fractures and the quality of life after hip surgery. Methodology: The research was conducted in the period from February to May 2018 in the Special Hospital "Vaso Čuković" Risan. 46 patients of both sexes were included, who filled out a pre-prepared questionnaire about the quality of life before and after hip endoprosthesis installation. Results: after the operation, a large number of patients improved their quality of life, both in the cessation of pain and in mobility itself, the research results speak for themselves. Conclusion: with the installation of a hip endoprosthesis, the pain disappeared, the quality of life is significantly better, without pain, and an independent life without the help of others.

Keywords: hip endoprosthesis, arthroplasty, quality of life

1. INTRODUCTION

According to the World Health Organization (WHO), musculoskeletal diseases are the first cause of disability in the world. It is estimated that around 20%-33% of the total population suffers from a painful musculoskeletal condition (Brennan-Olsen, 2017). Hip fractures are frequent in the elderly population, and are considered very serious injuries with high morbidity, disability and mortality. Hip fractures affect daily life activities and the quality of independent living. Studies reported that mortality rates vary between 6.1% to 8.7% within 30 days and 21% to 30% within one year after fractures. In the elderly, surgery is the primary treatment, but recovery is often slow due to underlying health conditions, which causes anxiety and poor compliance with rehabilitation. ERAS - preoperative treatment of patients has shown effectiveness in reducing postoperative mortality, shortening the length of stay (LOS) and reducing the rate of complications precisely because of adequate preoperative preparation, including adequate care and nutritional support (Gomez, 2019). Common complications in hip surgery, such as delirium, can increase medical costs and postoperative mortality in the elderly. Hip endoprosthesis implantation offers a low risk of major complications, good functional results and significantly better quality of life.

Researchers who investigated the quality of life after endoprosthesis implantation believe that the surgical procedure ensures the greatest improvement in quality of life. Apart from the disease itself (fracture, coxarthrosis of the hip) and its symptoms, there are also a significant number of individual and environmental features that can affect health outcomes, and should be examined during the studies conducted using the EQ-5D-5L questionnaire (Estoque, 2019). The fact that the quality of life after surgery remains high for years underlines the importance of implanting a hip endoprosthesis as a solution to the problem of pain. The functional outcomes of the surgery have in most cases significantly increased independence, as highlighted by researchers in many studies during the 12-month follow-up and, at the final follow-up, 90% of patients returned to their previous occupation without restrictions (Saier, 2017).

Activities of daily living (ADL) and quality of life (QoL) deteriorate significantly after 6 months.

The key factor is the importance of identifying the risks of hip fracture and organizing public health programs for the prevention of hip fracture. In hip fracture patients, postoperative functional quality, recovery, and quality of life are highly correlated with multiple variables, including age, sex, medical complications, and the underlying Charlson Comorbidity Index (CCI). After a hip fracture, if the hip is operated within 24 hours, the patient's mortality risk is reduced. A surgical delay of 21 days indicates significantly worse hip function and quality of life than surgery after 7 days of fracture (Song, 2020).

The number of femoral neck fractures (FNF) in the elderly population is dramatically increasing drastically in the last few decades and will amount to 6.3 million by 2050 (Solarino, 2020). The increasing number of FNFs is also a burden on the health-related quality of life of the global healthcare system. Activity of daily living (ADL) and HRQoL and mobility, pain, mortality and neurocognitive function can be related to surgical performance (Wang, 2022).

Endoprosthesis is the gold standard for displaced fractures of the femur neck in the elderly, with a good outcome, satisfactory joint function, full weight bearing and quick recovery (Dolatowski, 2019).

2. MATERIALS AND METHODS

The aim of the study was to assess patients' health-related quality of life, health-related quality of life that measures the effect of the disease and its symptoms on the patients' quality of life.

The study was conducted in the period from February to May 2018 in the Special Hospital “Vaso Čuković” Risan. 46 patients of both sexes were included, who filled out a pre-prepared questionnaire about the quality of life before and after hip endoprosthesis installation.

As a study instrument, a general questionnaire for the socio-demographic characteristics of the patients was used, which contains eight general questions (age, gender, marital status, level of education, etc.) created by the researcher, and a specialized questionnaire for the quality of life of the patients EQ-5D (Euro Qol group-five dimensions).

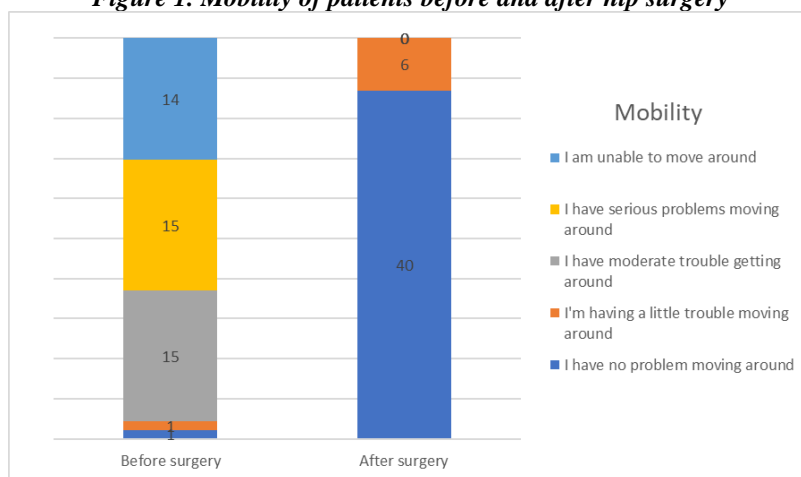
EQ VAS-scale used for research

EQ 5D questionnaire (five dimensions of health status) before and after hip surgery VAS scale was used for the study records the patient's self-rated health on a 20 cm vertical, visual-analog scale with end points labeled as “Best health you can imagine” and “Worst health you can imagine”. This information can be used as a quantitative measure of health as determined by individual patients.

3. RESULTS

The mobility of patients before the hip surgery compared to the mobility after was significantly worse, approximately one third of the patients were unable to move 14 (30.4%), one third had serious problems with movement 15 (32.6%) and one third 15 (32.6%) had moderate problems with movement, while 1 (2.2%) patient had minor problems with movement and 1 (2.2%) had no problems with movement. After hip surgery, the largest number of patients, 40 (87%) had no problems with movement, while only 6 (13%) had minor problems when moving.

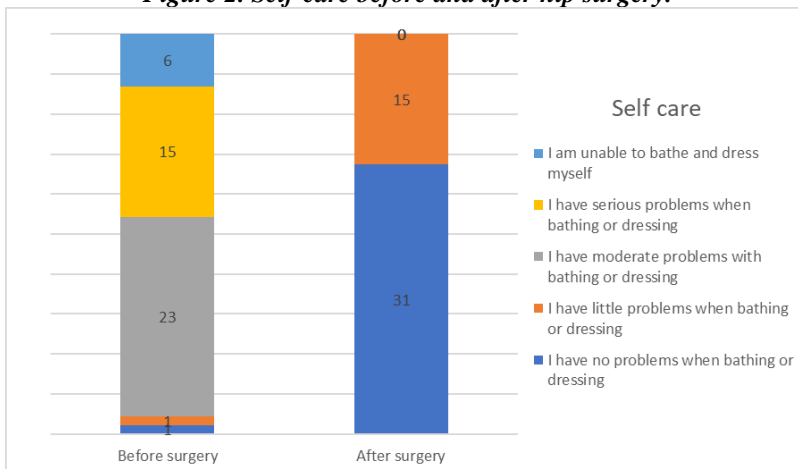
Figure 1. Mobility of patients before and after hip surgery



Self-care before hip surgery compared to that after hip surgery was significantly worse, or 6 (13%) patients were not able to bathe or dress independently, 15 (32.6%) patients had serious problems when bathing or dressing, while half of the patients 23 (50%) had moderate problems when bathing or dressing independently. One (2.2%) patient had minor problems, while 1 (2.2%) patient had no problems when bathing or dressing.

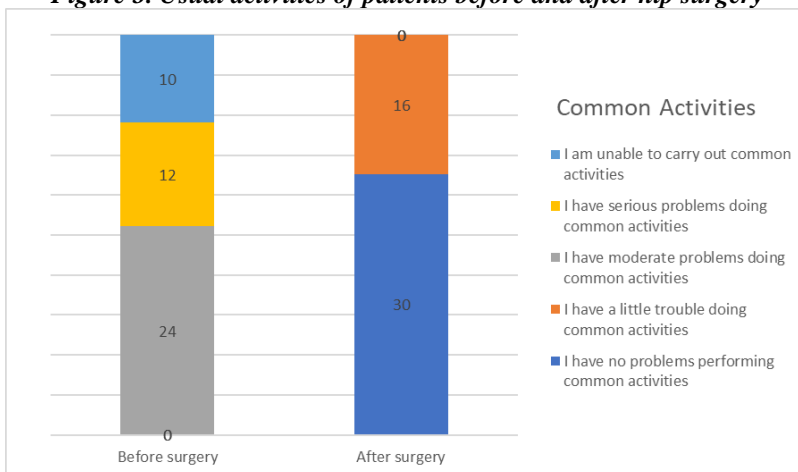
After hip surgery, the majority of 31 (67.4%) patients had no problems with self-care, while 15 (32.6%) patients had little problems with self-care.

Figure 2. Self-care before and after hip surgery.



Half of 24 (52.2%) patients had moderate problems performing usual activities before hip surgery, 12 (26.1%) patients had serious problems, while 10 (21.7%) patients could not perform usual activities at all. After hip surgery, the majority of patients, 30 (65.2%) had no problems performing their usual activities, while 16 (34.8%) patients had minor problems when performing usual activities.

Figure 3. Usual activities of patients before and after hip surgery



4. DISCUSSION

During the study we found out that the quality of life in patients operated on by MIS compared to the classical approach is higher. Also, patients operated with MIS had a lower rate of limping compared to patients operated with the classic approach.

Many municipalities in Greece implement a similar program called “Help at home”. Helping the elderly, the primary care program providing care to the elderly and chronically ill, to cover their physical, mental and emotional needs. This help greatly facilitates the life of elderly patients with hip arthroplasty. Several studies have proven the effectiveness of the program in covering the abovementioned needs is very beneficial (Frengidou, 2019). In other words, elderly people with a hip fracture are more fragile and therefore may require the investment of more health care resources during treatment.

In addition to age, various clinical variables are considered risk factors for mortality after hip fracture surgery. A hip fracture can significantly reduce the quality of life and mobility of the elderly. Hershkovitz et al 2020 and colleagues reported that <10% of hip fracture patients were functionally independent 1 year after surgery and included postoperative rehabilitation (Gutiérrez-Hermosillo, 2020). Health-related QoL is severely impaired after hip fracture. Using the EQ-5D, Amarilla-Donoso et al. (2020) reported a significant reduction in all dimensions from pre-fracture status to postoperative recovery as well as at 1 month. Comorbidities such as dementia, delirium, and

malnutrition are critical risk factors for severe postoperative outcomes after hip fracture. Previous research shows that very often men and women have similar functional recovery and ability to return to life in the community (Orwig, 2022).

Beauchamp-Chalifour P,I (2020). colleagues point out that the HRQoL score after hip arthroplasty in elderly patients with FNF should have shown a rapid recovery in the first 6 months or the first year, during which time the frequency of complications is higher. Some studies have shown that the postoperative outcomes of elderly patients with hip arthroplasty are influenced by factors: physical condition of the patients, rehabilitation measures are important for improving the quality of the patients' recovery (Liu, 2020). The most important item in orthopedic surgery for hip arthroplasty, in addition to functionality, are the benefits of recovery and pain relief after surgery. Age is a risk factor that affects the surgical effect. Clinicians should not only use age as an important reference for performing surgical programs, but should also consider physiological factors (Blom, 2020).

For elderly hip arthroplasty patients, it is relatively difficult to implement postoperative nursing interventions. It is necessary to promote the rehabilitation process, but there are objective factors that make it difficult to apply the same, such as: hearing loss, poor understanding and poor cooperation.

Elderly patients with hip fracture may benefit if psychologists are involved in time to support interventions to achieve potential functional gains, especially in depression (Ayers, 2022). Due to a hip fracture, postponing the operation can have more serious consequences for the patient.

Hip fractures are a common osteoporotic injury in the elderly, causing pain and mobility problems, leading to prolonged bed rest and an increased risk of complications, sometimes life-threatening (Zhong, 2021).

Preoperative functional exercise helps improve the patient's physical function, increases physical tolerance, and promotes postoperative physical recovery. Eating carbohydrates 2 hours before surgery can effectively stimulate the secretion of insulin in the body. This increases insulin sensitivity, improves body tolerance and reduces the risk of aspiration during anesthesia (de Bot, 2020).

5. CONSLUSION

This study suggests that a screening program would be an important factor that could improve functional outcomes and reduce the risk of mortality in older patients with hip fracture.

It is necessary to measure the quality of life in order to better examine these areas, which have a multidimensional role and can affect not only the quality of life but also the mortality of patients.

REFERENCES

- Amarilla-Donoso, F. J., López-Espuela, F., Roncero-Martín, R., Leal-Hernandez, O., Puerto-Parejo, L. M., Aliaga-Vera, I., Toribio-Felipe, R., & Lavado-García, J. M. (2020). Quality of life in elderly people after a hip fracture: a prospective study. *Health and quality of life outcomes*, 18(1), 71. <https://doi.org/10.1186/s12955-020-01314-2>
- Ayers, D. C., Yousef, M., Zheng, H., Yang, W., & Franklin, P. D. (2022). Do Patient Outcomes Vary by Patient Age Following Primary Total Hip Arthroplasty?. *The Journal of arthroplasty*, 37(7S), S510–S516. <https://doi.org/10.1016/j.arth.2022.03.032>
- Blom, A. W., Hunt, L. P., Matharu, G. S., Reed, M. R., & Whitehouse, M. R. (2020). The effect of surgical approach in total hip replacement on outcomes: an analysis of 723,904 elective operations from the National Joint Registry for England, Wales, Northern Ireland and the Isle of Man. *BMC medicine*, 18(1), 242. <https://doi.org/10.1186/s12916-020-01672-0>
- Brennan-Olsen, S. L., Cook, S., Leech, M. T., Bowe, S. J., Kowal, P., Naidoo, N., Ackerman, I. N., Page, R. S., Hosking, S. M., Pasco, J. A., & Mohebbi, M. (2017). Prevalence of arthritis according to age, sex and socioeconomic status in six low and middle income countries: analysis of data from the World Health Organization study on global AGEing and adult health (SAGE) Wave 1. *BMC musculoskeletal disorders*, 18(1), 271. <https://doi.org/10.1186/s12891-017-1624-z>
- de Bot, R. T. A. L., Veldman, H. D., Witlox, A. M., van Rhijn, L. W., & Hilgsmann, M. (2020). Hip protectors are cost-effective in the prevention of hip fractures in patients with high fracture risk. *Osteoporosis international : a journal established as result of cooperation between the European Foundation for Osteoporosis and the National Osteoporosis Foundation of the USA*, 31(7), 1217–1229. <https://doi.org/10.1007/s00198-019-05252-8>
- Dolatowski, F. C., Frihagen, F., Bartels, S., Opland, V., Šaltytė Benth, J., Talsnes, O., Hoelsbrekken, S. E., & Utvåg, S. E. (2019). Screw Fixation Versus Hemiarthroplasty for Nondisplaced Femoral Neck Fractures in Elderly Patients: A Multicenter Randomized Controlled Trial. *The Journal of bone and joint surgery. American volume*, 101(2), 136–144. <https://doi.org/10.2106/JBJS.18.00316>

- Estoque, R. C., Togawa, T., Ooba, M., Gomi, K., Nakamura, S., Hijioka, Y., & Kameyama, Y. (2019). A review of quality of life (QOL) assessments and indicators: Towards a "QOL-Climate" assessment framework. *Ambio*, 48(6), 619–638. <https://doi.org/10.1007/s13280-018-1090-3>
- Frengidou, E., Frengidou, E., Nikolentzos, A., Galanis, P., & Papadopoulou, A. (2019). Investigating user satisfaction with the services provided by the care program "Helping Elderly at Home" and assessing their self-evaluation health level: The case of the program "Helping Elderly at Home" in the municipality of Kilkis. *Rostrum of Asclepius*, 18(4), 357–377. <https://doi.org/10.5281/zenodo.3469096>
- Gomez, M., Marc, C., Talha, A., Ruiz, N., Noublanche, S., Gillibert, A., Bergman, S., Rony, L., Maynard, V., Hubert, L., & Western France Orthopedic Society (SOO) (2019). Fast track care for pertrochanteric hip fractures: How does it impact length of stay and complications?. *Orthopaedics & traumatology, surgery & research : OTSR*, 105(5), 979–984. <https://doi.org/10.1016/j.otsr.2019.04.017>
- Gutiérrez-Hermosillo, H., de León-González, E. D., Medina-Chávez, J. H., Torres-Naranjo, F., Martínez-Cordero, C., & Ferrari, S. (2020). Hand grip strength and early mortality after hip fracture. *Archives of osteoporosis*, 15(1), 185. <https://doi.org/10.1007/s11657-020-00750-3>
- Liu, Y., Chen, X., Zhang, P., & Jiang, B. (2020). Comparing total hip arthroplasty and hemiarthroplasty for the treatment of displaced femoral neck fracture in the active elderly over 75 years old: a systematic review and meta-analysis of randomized control trials. *Journal of orthopaedic surgery and research*, 15(1), 215. <https://doi.org/10.1186/s13018-020-01725-3>
- Orwig, D. L., Abraham, D. S., Hochberg, M. C., Gruber-Baldini, A., Guralnik, J. M., Cappola, A. R., Golden, J., Hicks, G. E., Miller, R. R., Resnick, B., Shardell, M., Sterling, R. S., Bajracharya, R., & Magaziner, J. (2022). Sex Differences in Recovery Across Multiple Domains Among Older Adults With Hip Fracture. *The journals of gerontology. Series A, Biological sciences and medical sciences*, 77(7), 1463–1471. <https://doi.org/10.1093/gerona/glab271>
- Saier, T., Minzlaff, P., Feucht, M. J., Lämmle, L., Burghoff, M., Ihle, C., Imhoff, A. B., & Hinterwimmer, S. (2017). Health-related quality of life after open-wedge high tibial osteotomy. *Knee surgery, sports traumatology, arthroscopy : official journal of the ESSKA*, 25(3), 934–942. <https://doi.org/10.1007/s00167-015-3938-4>
- Solarino, G., Moretti, L., Vicenti, G., Bizzoca, D., Piazzolla, A., & Moretti, B. (2020). Hip hemiarthroplasty with modular neck: is it useful in residents' learning curve? A prospective clinical trial. *Hip international : the journal of clinical and experimental research on hip pathology and therapy*, 30(2_suppl), 30–36. <https://doi.org/10.1177/1120700020964988>
- Song, J., Zhang, G., Liang, J., Bai, C., Dang, X., Wang, K., He, C., & Liu, R. (2020). Effects of delayed hip replacement on postoperative hip function and quality of life in elderly patients with femoral neck fracture. *BMC musculoskeletal disorders*, 21(1), 487. <https://doi.org/10.1186/s12891-020-03521-w>
- Wang, Y., Deng, X., Wang, Z., Zhu, Y., Chen, W., & Zhang, Y. (2022). Total hip arthroplasty or hemiarthroplasty for femoral neck fractures in elderly patients with neuromuscular imbalance. *Aging clinical and experimental research*, 34(11), 2825–2833. <https://doi.org/10.1007/s40520-021-01976-y>
- Zhong, M., Liu, D., Tang, H., Zheng, Y., Bai, Y., Liang, Q., & Yang, X. (2021). Impacts of the perioperative fast track surgery concept on the physical and psychological rehabilitation of total hip arthroplasty: A prospective cohort study of 348 patients. *Medicine*, 100(32), e26869. <https://doi.org/10.1097/MD.00000000000026869>