CASE STUDY

CONTENTS

Rehabilitation of a patient after total endoprosthesis of the hip joint removal so-called "hanging hip". Case report

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ABSTRACT

The aim of our study is to present the problem of rehabilitation of a patient after endoprosthesis surgery and an attempt to revise the endoprosthesis and then leave the hip hanging. This case study describes an 80-year-old woman who underwent left hip replacement due to primary severe arthrosis. The patient had undergone an unsuccessful attempt at endoprosthesis revision after multiple dislocation of the prosthesis, which ended in an infection of the surgical wound. The operating team decided to remove the revision endoprosthesis, leaving the hip hanging. The challenge for the treatment team was to rehabilitate the patient, aiming to adapt her to her new situation and make her as independent as possible. The final treatment outcome according to the treatment team was satisfactory. The patient achieved relative independence of movement. At discharge home, she had no symptoms of infection of the infected hip and did not report pain related to the operated hip joint. Radical hip replacement surgery is a method that provides the patient with a pain-free life and a relative return to independence and function in daily life.

KEY WORDS: endoprosthesis, revision, rehabilitation, hanging hip

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INTRODUCTION

Ageing is a natural stage of human life. Primary arthrosis is a form of joint degeneration that develops without an obvious external cause. It is mainly associated with the body's ageing process, which leads to the natural wearing down of joint cartilage. In addition, the obesity epidemic is expected to further increase the incidence [1]. Every day, one in 13 people takes painkillers due to severe hip discomfort [2]. Factors that increase the risk of osteoarthritis include, in addition to older age, obesity, genetic predisposition, repetitive stress and strain from work, and weakness of the muscles surrounding the joint. Due to increasing life expectancy, the prevalence of osteoarthritis in middle-aged and older people is increasing every year [3]. The quality of life of people suffering from this disease is clearly reduced compared to the healthy population. With the introduction of total hip replacement (THR) surgery, the symptoms of osteoarthritis can be reduced and patients' quality of life improved. THR is widely used in the treatment of osteoarthritis, helping to restore joint function impaired by the degenerative process and, more importantly, relieving patients of ongoing pain. [4]. Severe primary hip arthrosis, if general health permits, is most commonly treated surgically by implantation of a total artificial hip joint [5].

As with any surgical procedure, hip alloplasty carries a risk of complications that, instead of having a positive impact, may significantly reduce the patient's quality of life and prolong the need for the patient to remain under constant medical supervision, which has a significant social and economic impact [6]. The most common surgical site complications include deep and superficial wound infections [7], septic or aseptic dehiscence [8] and peri-prosthetic fractures [9].

One of the most difficult complications of total hip replacement is infection in the implant area, with an incidence of 0.5% to 2.5%. [7]. In 1928, when the antibiotics necessary to treat infection were not widely available, English Gathorne orthopaedic surgeon Robert Girdlestone described a method of femoral head resection to relieve pain and eliminate the source of infection [10]. Today, this method is used in cases of irreversible failure of total hip replacement due to severe loss of bone stock, risk of recurrent infection or poor general condition of the patient and is sometimes

Fig. 1. X-ray left hip with primary serve arthrosis before replacement.

Fig. 2. X-ray with dislocated left hip endoprosthesis.

the only valid and definitive solution – the cement and prosthesis are resected without attempting to implant a new hip replacement [11].

The multi-morbidity of the elderly person and the prolonged period of hospitalisation due to multiple dislocations of the prosthesis and infection is a challenge for the whole treatment team as well as the family. Prolonged immobilisation and pain are risk factors for post-operative complications, reducing the chance of recovery, so starting early post-operative rehabilitation as soon as possible in a patient with a hanging hip increases the chances of returning to independence [12].

AIM

The aim of our study is to present the problem of rehabilitation of an 80-year-old female patient after endoprosthesis surgery and an attempt to revise the endoprosthesis and then leave the hip hanging.

CASE STUDY

A patient aged 80 years was scheduled to be admitted to the Department of Trauma and Orthopaedic Surgery due to primary severe arthrosis of the left hip joint. The planned treatment included insertion

Fig. 3. X-ray with "hanging hip".

of a left hip replacement (Fig. 1). The patient had not walked for about 6 months until the day of surgery. The procedure went well and according to the accepted standards of treatment in the department. On the second postoperative day, the patient started uprighting and locomotion training with the help of orthopaedic supplies. In addition, she was instructed by the medical staff which movements to avoid in the first weeks after the insertion of the artificial hip joint. Due to the patient's poor general physical condition, the rehabilitation process was slower than standard. Unfortunately, during her stay at the rehabilitation department, the endoprosthesis dislocated five times (Fig. 2). Orthopaedic surgeons adjusted the joint four times in the operating theatre setting and once at the bedside under local anaesthesia. In addition, during this time, the patient was diagnosed with SARS-CoV2 virus, which prolonged the waiting time for a second revision endoprosthesis insertion surgery and her isolation for one week until a negative test result was obtained. After a period of 4 weeks, revision surgery of the left hip joint was performed. In the following two weeks, attempts were made to verticalise the patient. Unfortunately, pain in the area of the affected hip prevented the physiotherapy team from uprighting and learning to walk. A follow-up CT scan of the operated joint was performed where a loosening of the hip acetabulum was visualised and a postoperative wound infection was found. The treatment team decided to operate to remove the revision endoprosthesis, leaving the hip hanging (Fig. 3).

The patient's additional comorbidities were hypertension, gout, left renal hypoplasia with failure of both kidneys and rupture of the rotator cone tendons of the left shoulder joint In the post-operative period, anticoagulant prophylaxis, anti-oedema management and analgesic pharmacotherapy were administered.

Due to the patient's multiple surgeries and weakness and isolation associated with SARS-CoV2 disease, the rehabilitation team encountered difficulties in improving the patient. The long period of immobilisation resulted in a longer adaptation to high positions such as standing and walking. Cardiorespiratory training and general conditioning training were important in rehabilitation. Due to very weak hip stabiliser muscles (gluteal muscles) – Lovett 2 and hip flexors – Lovett 2, the patient rotated the affected limb outwards during walking and gait was inefficient. She was able to walk short distances with the help of a high balcony and a second person (Fig. 4). In addition, she required assistance with transfer from to bed and back. Due to problems with her left shoulder joint and general poor fitness, it was not possible to teach her to walk with low support or elbow canes. Throughout the stay, rehabilitation included exercises such as: general development, cardiovascular and respiratory, isometric exercises for the muscles of the lower limbs, buttocks and abdomen, active free exercises for the lower and

Fig. 4. Patient with a left 'hanging hip' moving with the help of a high walking frame.

upper limbs, a rotor for the upper and lower limbs with mechanical assistance, and gait re-education with a high walking frame.

The patient was discharged home in overall good condition with orthopaedic supplies in the form of a wheelchair, high balcony and corrective shoes for the left leg (Fig. 5). The patient and family were instructed on how to assist her during transfer, walking and activities of daily living.

The final treatment outcome according to the treatment team was satisfactory. Given the patient's multimorbidity and postoperative complications, she achieved relative independence of movement. On discharge home, she had no symptoms of infection of the infected hip and reported no complaints of pain related to the operated hip joint.

DISCUSSION

There are few reports in the literature addressing the problem of the pendulous hip remaining in a patient after a failed hip replacement, despite the fact that it is not an uncommon and foreign problem in today's medicine. The lack of standards of management in the rehabilitation of patients with a hanging hip and the multimorbidity makes it a complex medical problem.

Typically, the risk of prosthesis dislocation is estimated at 2-3% and some sources report as high as 10%, with an even higher risk of 20% for revision surgery [9]. The most common causes of prosthesis dislocation are reported to be improper implant positioning and the patient's failure to comply with post-operative instructions to exclude movements predisposing to prosthesis dislocation and to maintain safe body positions. The incidence of artificial joint dislocation is less frequent with anterior access and a large head. In case of joint dislocation, the operating physician repositions the endoprosthesis under general anaesthesia [13].

In the clinical case in question, there was up to five dislocations of the operated joint, the prosthesis coming loose. Consequently, the decision was made to have revision prosthetic surgery of the left hip joint. An infection developed in the surgical wound. Risk factors for early peri-prosthesis infections are estimated to include

Fig. 5. Photo of corrected left lower limb shoe approximately 4 cm.

male gender, advanced age, diabetes, giant obesity, long duration of surgery and previous revision surgery. [14]. According to US data, the rate of peri-prosthetic hip infections is approximately 2.18%. In critical cases of peri-prosthesis infection, it is necessary to remove the prosthesis component (dealloplasty), replace them with cemented walkers with an antibiotic for a period of several weeks and repeat alloplasty after removal of the implant [15]. Sometimes realloplasty is not possible and the operating physician decides to leave the hip hanging, as in the case of the 80-year-old patient whose case we describe.

Significant medical developments, including in the field of revision hip replacement, have revolutionised the treatment of failed primary total hip replacements. The decision to perform Girdlestone surgery should be considered as a salvage procedure and performed as a last resort, especially for medically substandard and functionally impaired patients. Such patients should be warned to expect limb shortening and being dependent on orthopaedic aids for walking after surgery [16].

As many as 100% of patients who underwent Girdlestone resection arthroplasty following complications of unsuccessful endoprosthesis reported pain relief. This procedure appears to be a viable option to achieve pain relief and control infection at the expense of limited mobility in a specific subgroup of patients with failed surgical treatment of hip injury [17].

According to a study by Truszczyńska-Baszak et al. that aimed to assess postural stability and functional impairment in patients after hip replacement, the patient scores obtained showed great difficulty in maintaining stability and showed statistically significant differences in most of the analysed parameters in patients after hip replacement removal. They concluded that special attention and targeted physiotherapy should be given to patients after hip replacement removal, due to impaired stability and functional status, in order to prevent falls and improve their functioning in activities of daily living [18].

According to Girdlestone et al, the procedure to remove the prosthesis reduces health status, functional status and quality of life. Patients with a hanging hip after hip endoprosthesis infection were compared with healthy controls, patients after lower limb amputation and patients after myocardial infarction. It was noted that patients after the Girdlestone procedure showed reduced health status and quality of life compared with each of the above groups. [19].

Basu et al. described that the overall mortality rate after surgery was 41%, but all surviving patients had complete resolution of infection and 65% had adequate pain control. None of the patients were able to move without assistance, although 29% of patients were able to navigate stairs and 29% were able to walk outside [20].

There has been little research to determine rehabilitation management strategies after Girdlestone surgery in such patients. Unfortunately, to date, no clear and evidence-based guidelines are available for the standard rehabilitation management of such patients.

CONCLUSIONS

Radical hip removal surgery is a method that provides the patient with a pain-free life and a relative return to independence and function in daily life.

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CONFLICT OF INTEREST

The Authors declare no conflict of interest.

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