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Unicondylar knee arthroplasty — pros and cons (literature review)

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In the modern world, despite the increased availability of high-tech orthopedic care, the number of patients with gonarthrosis does not decrease, and thanks to public awareness, more and more people turn to orthopedists for surgical help. Due to its high efficiency, the leading role in the treatment of terminal gonarthrosis has been firmly occupied by total knee arthroplasty for more than four decades. Unicondylar knee arthroplasty in patients with unilateral arthrosis allows to largely preserve physiological kinematics, to achieve minimal bone and soft tissue traumatization during surgery and, as a result, to obtain a higher functional result. The objective of the work is to analyze the data of the world literature regarding unicondylar knee arthroplasty, its advantages and disadvantages. Material and methods. The authors analyzed the publications devoted to single-condylar knee arthroplasty from the Google search engine, scientific and metric electronic databases PubMed, Medline and other relevant sources of scientific and medical information. Correct patient selection is vital to ensure a successful outcome with OEKS. The main indication for OEKS is deforming arthrosis of the II–III century. with a predominant lesion of the internal part of the knee joint and varus deformation of the lower limb or with a more pronounced pathology of the external part of the knee joint and valgus deformation of the lower limb. Results. The authors analyzed the literature sources on single-condylar endoprosthesis of the knee joint. Indications, contraindications, biomechanical features, type of endoprosthesis fixation, type of endoprosthesis platform, features of lateral gonarthrosis, and complications of single-condylar knee arthroplasty are determined. Conclusions. The analysis of selected literary sources showed that single-condylar arthroplasty of the knee joint is an effective means of preserving the bone. However, careful patient selection and precision of surgical technique remain the key to a successful outcome.

У сучасному світі, незважаючи на збільшення доступності високотехнологічної ортопедичної допомоги, кількість пацієнтів із гонартрозом не зменшується, і завдяки поінформованості населення все більше людей звертаються до ортопедів за хірургічною допомогою. Через свою високу ефективність провідну роль у лікуванні гонартрозу III–IV ст. протягом уже понад чотирьох десятиліть міцно зайняла операція тотального ендопротезування колінного суглоба. Одновирісткове ендопротезування колінного суглоба (ОЕКС) у пацієнтів із монолатеральним артрозом дозволяє переважно зберегти фізіологічну кінематику, досягти мінімальної травматизації кістки і м'яких тканин під час хірургічного втручання і, як наслідок, отримати більш високий функціональний результат. Мета. Проаналізувати джерела світової літератури щодо ОЕКС, його переваг і недоліків. Матеріал і методи. Авторами вивчено публікації, які розглядають одновирісткове ендопротезування колінного суглоба з пошукової системи Google, науково-метричних електронних баз даних PubMed, Medline та інших релевантних джерел науково-медичної інформації. Правильний відбір пацієнтів життєво важливий для забезпечення успішного результату з ОЕКС. Основним показанням до ОЕКС є деформівний артроз II–III ст. з переважним ураженням внутрішнього відділу колінного суглоба та варусною деформацією нижньої кінцівки або з більш вираженою патологією зовнішнього відділу колінного суглоба та вальгусною деформацією нижньої кінцівки. Результати. Проаналізовано та вивчено наведені в літературі показання, протипоказання, біомеханічні особливості, способи фіксації ендопротеза, встановлюваної платформи, особливості в разі латерального гонартрозу та ускладнення під час проведення ОЕКС. Висновки. Проведений аналіз відібраних літературних джерел показав, що ОЕКС є ефективною методикою для збереження кістки. Проте обережний добір пацієнтів і точність хірургічної техніки залишаються ключем до успішного результату. Ключові слова. Одновирісткове ендопротезування, колінний суглоб, гонартроз.

Keywords. Unicondylar arthroplasty, knee joint, gonarthrosis

Introduction

In today's world, despite the increased availability of high-tech orthopedic care, the number of patients with gonarthrosis does not decrease, and due to public awareness, more and more people seek orthopedic surgical care. Osteoarthritis (OA) is diagnosed in 13 % of the population aged 18 to 35 years, and in the age group from 60 to 69 years, its share is almost 87 % [1].

Studies have shown that every 5 kg gain in weight increases the risk of knee OA by 36 % [2].

Due to its high efficiency, the leading role in the treatment of stage 3–4 gonarthrosis has been firmly occupied by total knee arthroplasty (TKA) for four decades. But it is important for orthopedic surgeons and their patients to consider that one of the serious limitations of this particular intervention is that patients often expect more from the operation than it can give them [3–5].

Patients with a unilateral (mainly damage to the internal or external parts of the joint) pathological process after endoprosthetic surgery expect not only the relief of pain syndrome, but also the return of the lost level of motor activity, which is directly associated with their perception of the quality of life. For them, an adequate alternative can be a partial or unicondylar knee arthroplasty (UKA), which allows to largely preserve physiological kinematics, achieve minimal bone and soft tissue trauma during surgery and, as a result, obtain a higher functional result [6].

In the structure of monolateral gonarthrosis, a degenerative lesion of the medial part of the knee joint with the formation of a varus deformity is most often diagnosed. The number of patients with valgus deformity is much smaller and is about 10–15 % of the total number of patients with gonarthrosis [7–9].

Literary sources indicate that unicondylar knee arthroplasty (UKA) accounted for 8.6 % of primary knee arthroplasty in 2017, which is lower (16.9 %) than in 2003 [10]. A similar level of use of UKA in 2017 (8.9 %) was reported from the National Joint Register of England and Wales (NJREW), and it remained stable over the last decade [10–11].

However, unicondylar arthroplasty remains a technically more difficult procedure than total knee replacement. As is known from the Swedish Arthroplasty Register, the frequency of revision interventions for different models of unicondylar arthroplasty after 10 years varies from 3 to 17 %, with an average of 10 %, while for total joint replacement it is only 4 % [12].

Purpose: to analyze the sources of world literature on unicondylar knee arthroplasty, its advantages and disadvantages.

Material and methods

The authors analyzed the publications dealing with the issue of unicondylar knee arthroplasty from the Google search engine, scientific and metric electronic databases PubMed, Medline and other relevant sources of scientific and medical information.

1. Indications

Correct patient selection is vital to ensure a successful outcome with UKA. Medial UKA can be considered in all patients with anteromedial osteoarthritis (OA), with corrected deformity, intact knee ligaments, if the preserved range of motion is less than 150, with a flexion contracture. UKA should be avoided in individuals with inflammatory arthropathies and used with caution after previously performed high tibial osteotomies [10].

The main indication for UKA is deformable 2^{nd}–3^{rd} stage arthrosis with a predominant lesion of the internal part of the knee joint and varus deformation of the lower limb or with a more pronounced disorder of the external part of the knee joint and valgus deformation of the lower limb [13, 14].

Many authors agree that UKA is a highly effective surgical intervention for unilateral gonarthrosis with a number of advantages over total arthroplasty. These include less intraoperative traumatization of soft tissues, a low level of perioperative blood loss, a greater range of movements that the patient can perform after endoprosthesis, which allows restoring close to natural kinematics of the knee joint [15, 16].

UKA may be an optimal choice for obese patients, especially if they are young. Proponents of this intervention believe that it can potentially be used in 50 % of patients requiring knee replacement, with this proportion being higher in younger individuals [17].

In order to achieve the best results, it is necessary to strictly follow the instructions for the UKA. A candidate patient must have a knee with anteromedial osteoarthritis, with a varus-valgus deformity of less than 15°, with limited flexion of less than 10°, and an intact anterior cruciate ligament (ACL) [18].

Quite numerous studies prove that 25–48 % of people with OA knee joint damage are candidates for UKA [19, 20].

Lateral one-compartment knee arthroplasty gives excellent functional results and graft survival in properly selected patients [21].

One-compartment endoprosthesis is an effective method of treatment of focal osteonecrosis of the me-

dial condyle of the femur in the late stages. Loss of fixation of the component to the femoral condyle was not considered a major problem, as there was only one instability of the femoral component due to aseptic loosening, even though a large part of the femoral condyle was affected [22].

2. Contraindications

UKA should be avoided in patients with inflammatory arthropathies, and should be used with caution in case of previously performed high tibial osteotomy. Under conditions of complete loss of cartilage and/or avascular necrosis or partial loss of cartilage thickness, persistent pain occurs and the frequency of repeated examinations increases 6 times [10].

Care should be taken when expanding the indications for performing medial UKA in patients with insufficiency of the ligamentous apparatus, especially in the presence of varus deformity of the knee joint with deficiency of the anterior cruciate ligament [23].

Patellofemoral osteoarthritis is not an absolute contraindication to UKA. The authors [24] consider the effect of degeneration of the lateral patellofemoral joint to be unclear and require further research. In our opinion, patellofemoral arthrosis is often dysplastic in nature [25].

We consider it necessary to dwell separately on the indications for intervention in obese patients

Obesity is considered a major risk factor for osteoarthritis, so the consequences of this increase are directly correlated with the growth of osteoarthritis and, in particular, OA of the knee joint [26]. E. Cavaignac et al. proved that obesity does not have an adverse effect on UKA with a 10-year survival rate of 92 % [27]. Similarly, D. Murray et al. in a prospective study of 2,438 subjects in Oxford (Great Britain) found that an increase in body mass index (BMI) was not associated with an increase in the frequency of refusals [28]. On the contrary, A. Kandil et al. found that the overall frequency of short-term revisions in obese patients who underwent UKA is twice as high as in patients without this disorder [29].

A meta-analysis conducted by O. Musbahi et al. [30] proves that a higher BMI does not lead to a significant deterioration of the results in patients with UKA, therefore, patients in this category should not be excluded based on BMI indicators alone. However, the frequency of repeated examinations for unexplained pain in these patients is the highest.

3. Biomechanics

UKA allows more accurate coordination of knee kinematics due to the preservation of the cruciate ligaments, as well as the intact contralateral part of the knee and patellofemoral joints [31–33]. This leads to restoration of normal gait, as well as reduced perioperative trauma, greater range of motion, and faster rehabilitation [34, 35].

However, comparing the kinetic indicators of the gait assessment of patients who underwent total and single condylar replacement of the knee joint, the authors [36] obtained results that are relevant from the point of view of wear of prostheses. In both groups, the non-operated knees had significantly higher kinematic properties, in contrast to the operated ones. This means that after unilateral joint replacement for any type of surgery, the non-operated knee joint still bears more load. Using dynamic metrics of daily activity, clear differences in gait between different types of arthroplasty were established. A more natural loading scheme can be achieved under the conditions of single-component endoprostheses [37].

The postoperative period in patients with UKA is close to the physiological presentation with better walking speed, symmetry of time and step duration than in patients after TKA. The variant of surgical treatment of arthrosis of the medial part of the knee joint with the help of UKA leads to a better gait than in TKA [38].

4. Fixation — cementless or cemented

Theoretically, TKA should be an ideal implant for cementless fixation (in young patients and under conditions of high bone quality). Oxford TKA is the world's most implanted unicondylar endoprosthesis manufactured in the USA. Good long-term survival rates of this prosthesis after 10 years (98 %) and after 20 years (91 %) are known [39, 40]. According to the NJR (National Joint Registry) [41], aseptic loosening is considered one of the most frequent reasons for re-intervention and accounts for 37 % of all re-interventions after UKA. Its main causes may be improper cement, wrong technique or incorrect indications for surgery. Errors during cementation are possible, especially in the case of a minimally invasive surgical technique used during the implantation of UKA [42].

Cementless fixation may reduce problems associated with inadequate cementation technique, improving endoprosthesis survival [43, 44].

R. Stempin et al. describe the survival of 74.3 % of single-condylar endoprostheses during a 6-year follow-up, however, they do not recommend the widespread use of cementless fixation, because they note radiological displacement. To assess the migration of components, the authors used radiostereometric analysis and found that the tibial component was significantly reduced in the case of cementless UKA fixation compared to cemented fixation (0.28 mm vs. 0.09 mm) in the first year after surgery [45].

M. Basso et al. [46] studied LCS (Low Contact Stress, Depuy) of both the first and second generation of cement. A total of 40 knees were treated with the cementless composition of the second generation of the LCS generation. The median follow-up period was 132 months (the longest in the literature we found). The frequency of revisions for medial UKA for eleven years is 18.3 % (repeated intervention was in 29 patients). In 14 cases, the revision required only the replacement of the rolling bearing. Some authors have encouraged the use of this type of implant, especially in more active and younger patients. It was also evaluated by other researchers, who calculated that survival after 5 years was 89.7 % during a repeated examination of 6 patients [47].

As noted by H. Pandit et al. [48] cementless fixation requires less surgical time. The authors published a randomized controlled trial of 30 patients who underwent cementless unicondylar arthroplasty and 32 patients with cemented fixation of UKA. Implant survival was 100 %, in one case there was a repeat operation 10 days after the intervention for hematoma removal, sanitation and bearing replacement.

The authors presented the results of the treatment of 76 patients who underwent UKA with cementless fixation [49]. They added a biomimetic to the ceramic framework inside the tibial and femoral pins for better fixation. However, in the group of patients who received treatment, there was a corresponding percentage of focal necrosis of the medial condyle of the femur (32 patients, 42.1 %), and this disorder was detected in them during the revision. In fact, out of 19 examined patients, 13 were diagnosed with avascular necrosis with aseptic loosening of the femoral component, which served as a prerequisite for revision prosthetic repair.

However, cement fixation of UKA showed fuller radiolucent lines (24% vs. 0%) compared to cementless UKA. In 2015, N. Hooper et al. [50] published their clinical and radiological results of a 5-year follow-up of 150 patients with cementless fixation of UKA. They recorded excellent functional results for 5 years, and only 2 patients underwent revision of the prosthesis components with TKA, which indicates a 98.7 % survival rate of UKA.

Although cement fixation is used in most UKA designs [51], the minimally invasive technique can lead to problems with the cement under conditions of insertion or extrusion [46–51]. Extruded cement can break off and become a free body, creating wear and tear on both the replaced surface and the normal articular cartilage in the exposed parts of the knee. Cementless UKA is a way to reduce these failures and achieve stronger long-term fixation. Therefore, in recent years, the cementless UKA has become an increasingly popular construction [52].

In the 2018 NJREW report, cementless UKAs had a slightly higher 10-year survival rate — 87.3 %, compared to cemented ones — 85.1 % [11].

Some unusual complications have been reported for cementless UKA, namely early subsidence of the tibial component into a valgus position [58]. Studies on the dead also confirm that cementless implants are more prone to periprosthetic fracture of the tibial plateau, although this may be due to technical errors during the operation (for example, a deep posterior cortical section of the tibia and perforation of the posterior cortical layer during the preparation of the carina) [52].

Cementless UKA is a surgical option that allows for a low frequency of revisions. Further qualitative long-term studies would allow to better clarify the complications, clinical and radiological results of this promising technique of fixation [46].

Overall, cementless UKA is a promising technology, although further research is needed, but currently cement fixation remains the gold standard.

5. Mobile and fixed platform

Fixed or moving bearing are the two main concepts of UKA design [59–61]. Although the theoretical advantages of moving-bearing prostheses over fixed ones are becoming more popular [62], advances in polyethylene manufacturing have significantly reduced wear in fixed-bearing designs [63]. Polyethylene wear is no longer a serious problem for a design with a moving bearing, so the choice of design for UKA remains quite controversial [64]. There is no significant difference in the early results of unicondylar arthroplasty with fixed and movable platforms during the treatment of single compartment osteoarthritis of the knee joint. Long-term complications and frequency of revisions of the two prostheses require further multicenter clinical study with a large sample [65, 66].

6. Features of UKA in lateral gonarthrosis

We consider it necessary to dwell separately on unicondylar arthroplasty for this disorder. The relevance of the post-traumatic etiology of lateral gonarthrosis is confirmed by the frequency of tibial plateau fractures among intra-articular fractures of the lower extremities (10 %), of which 90 % are injuries of the lateral condyle [67]. It is difficult to evaluate the effectiveness of unicondylar arthroplasty of the lateral part of the knee joint, because there are very few patients for whom orthopedists choose partial arthroplasty for the surgical treatment of gonar-

throsis combined with valgus deformity. According to literature sources, only 1 % of the number of patients undergo lateral UKA during replacement of the joint with an artificial one [68–71]. When evaluating patients of this category, it is very important to consider that osteoarthritis of the lateral part of the knee joint often has a post-traumatic etiology (damage to the external meniscus, fractures of the lateral condyle of the tibia or femur) and less often, unlike the medial one, it is idiopathic [6]. The limitations of this surgical intervention are the small number of profiled patients in the gonarthrosis population, possible technical difficulties, concomitant perioperative risks, and the wary attitude of doctors to the intervention, because it is much less practiced than TKA. Among other things, the difficulties of treating patients with lateral gonarthrosis are also associated with the features of valgus deformity, which causes difficulties in performing soft tissue balance, using connected structures or using special surgical techniques during surgery [7, 72]. Under the conditions of early observation, lateral unicondylar endoprosthesis using a modified surgical technique and an implant specially designed for the lateral department is a reliable method of treatment of isolated lateral femoral-tibial arthrosis in the presence of certain indications [73, 74]. Lateral UKA for secondary OA, in relation to the tibial plateau fracture, was effective in restoring joint function, improving clinical outcomes, and correcting the position of the lower extremities. Clinical results and 9-year survival did not differ from lateral UKA for primary OA. Therefore, lateral UKA should be considered a valid option for the treatment of lateral post-traumatic OA in case of carefully selected patients [75]. Dome-shaped lateral UKA is a good alternative to total knee arthroplasty in the treatment of lateral OA. The frequency of dislocations (4 %) is high. It is recommended to assess the stability of the support during the operation. If the bearing can be easily displaced, a fixed rather than a mobile version of the Oxford lateral tibial component should be inserted instead [76].

7. Complications

In the first decades of the development of knee arthroplasty technologies, the number of complications after its partial replacement was greater than after total replacement, ranging from 5 to 55 % [77–80]. By the end of the 1980s, after the accumulation of clinical experience and a clearer formulation of indications and contraindications for single condylar endoprosthesis, as well as improvement of materials and structures of endoprostheses, tools for their installation, there was a tendency towards a reduction in the number of complications [81]. In the period from 2008 to 2019, 84 patients underwent revision of single-compartment knee arthroplasty [82]. S. Han et al. report that the audit risk is higher under UKA than in the case of TKA. [83].

7.1. Aseptic instability

Aseptic instability is the most common cause of premature failure of UKA, which accounts for 28 to 59.2 % of all UKA cases. This trend has been reported in several international registries, including Sweden, England/Wales, Australia, and Italy [84–86], as well as a few case studies in the US [87, 88]. However, the total number of aseptic instability is almost 1.5–2.7 % in the medium-term perspective of observation [84]. One of the reasons may be knee arthroscopy within two years before UKA, due to the conversion of UKA to TKA and a higher rate of failure of UKA due to aseptic instability [89].

7.2. Progression of arthrosis

Under the conditions of correctly selected patients and correct surgical technique, the risk of progression of arthrosis after UKA is low. At least 10-year follow-up by some authors revealed a revision rate of 4.2 % due to progression of lateral OA [90]. However, increased arthrosis is the most common cause of medium-term (5–10 years) and long-term (> 10 years) failure in UKA [54]. Diagnosis of osteoarthritis in single-condylar knee prostheses is a natural course of a degenerative disease and a reason for repeated surgery [91].

7.3. Numbness

Numbness in the area of the knee joint is a fairly common problem a year after UKA. The length of the surgical incision and the thigh-to-calf ratio are related to the degree of numbness. The presence and degree of numbness did not affect the assessment of functional results during the year after surgery. The analysis of this study allows accurate preoperative counseling regarding numbness and its consequences for patients who have undergone UKA [92].

7.4. Infectious complications

The authors [93] conducted a cohort study, which demonstrates that the rates of surgical site infection (SSI) and PPI (periprosthetic infection) were significantly lower for UKA than for TKA. Other factors associated with both SSI and PPI were male gender, BMI (body mass index) > 30 kg/m^2, renal dysfunction, and summer season.

The share of SSI or PPI for UKA was 0.9 and 0.3 %, respectively; while for TKA they were 1.9 and 0.6 % [93].

Male gender and obesity were positive risk factors for SSI or PPI after TKA [94–97].

This study also demonstrates that chronic liver or kidney disease is significantly associated with SSI or PPI after TKA [93].

Seasonal influence on SSI is another documented predictor that has been reported in various fields of surgery. Especially in the field of orthopedics, previous reports based on large cohorts have shown that TKA or spine surgery in summer showed a higher prevalence of SSI or PPI compared to other seasons [98–101]. Shorter surgical time for UKA compared to TKA is a possible reason for the decrease in the proportion of SSI or PPI [102].

According to Japanese national database, the proportion of SSI and PPI in UKA is lower compared to TKA. We believe that the results of this study provide surgeons with useful information for consideration of the main treatment option for unicondylar osteoarthritis of the knee joint, especially in patients with different risks for SSI and PPI [93].

7.5. Plateau fracture

The frequency of fractures of the tibial plateau, due to UKA, can be low, but fatal and difficult to treat. Its pathogenesis is determined by factors related to the procedure; in the event of a fracture, treatment should be based on the degree of displacement, stability of implant fixation, etc. [103].

A customized 3D-printed guide template can help reduce operative time, reduce blood loss, and improve short-term clinical outcomes in patients after UKA surgery [104].

8. Comparison of UKA and TKA

UKA and TKA are excellent methods of treatment for isolated osteoarthritis of the medial compartment with similar functional results, quality of life and satisfaction after 10 years [105].

Although TKA achieves excellent results, there remains a part of patients who are not completely satisfied and suffer from functional disorders of activity and persistent postoperative pain [106]. In a multicenter study, D. Nam et al. [107] reported that although 90 % of individuals after TKA were generally satisfied with the functioning of their knee, only 66 % considered it to be «normal» and almost half complained of residual symptoms and functional problems. It is possible to improve the functional results after TKA with another concept of implants [108].

UKA is a less invasive procedure than TKA, and therefore the risks of these operations differ. This is reported in both American and global research publications [109].

In the analysis of NJREW A. Liddle et al. [110] established that the average length of stay, the frequency of medical complications (thromboembolism, myocardial infarction, stroke, and re-hospitalization) is greater for TKA than TKA [111]. Analyzing 46 primary knee replacements from the same registry, it was found that 45-day mortality was significantly lower in the case of UKA than in TKA, with a risk ratio of 0.32 ($P < 0.0005$). In order to achieve greater short-term efficacy, patients with bilateral knee osteoarthritis should be treated according to their own pathological changes [112, 113].

One of the issues that arise during UKA is the conversion of UKA to TKA. The authors [114] carried out a meta-analysis of 5 of 233 studies with the participation of 536 adult patients (revised group of UKA, n = 209; primary TKA, n = 327), which were suitable for inclusion in the meta-analysis. Conversion of UKA to TKA occurs due to worse clinical consequences. In addition, the authors noted that the conversion of UKA to TKA is more difficult than performing the primary TKA. Nevertheless, patients who underwent conversion of UKA to TKA have the same length of hospital stay, complications, and frequency of revisions as patients after primary TKA. UKA is associated with fewer perioperative complications, but a higher rate of revisions, compared to TKA, and is independent of the underlying condition that caused the primary implantation [115]. The authors [116] testify to the insufficient use of the potential for faster recovery after UKA in the conditions of accelerated treatment.

The introduction of robotic systems significantly compensates for the shortcomings and errors of traditional UKA surgery. With the help of such systems, the intervention is better than during conventional surgery (higher accuracy of implantation, balance of soft tissues, indicators of functions and patient satisfaction, frequency of complications, recovery curve of gait in the short term). However, the mid-term and long-term results of UKA using a robotic system require further study [116]. Some researchers found complications related to this system, but there was no significant difference in overall complication rates between the two groups. The robotic system has a lower frequency of revisions compared to the traditional UKA method according to the conclusions of short-term observation [117].

Robotic surgery is becoming increasingly popular in unicondylar knee arthroplasty because it allows surgeons to more precisely plan and achieve the task at hand during surgery. Cost remains an issue, and it is not yet known whether robotic surgery will improve long-term survival after knee arthroplasty [118–120].

As reported by the authors [121], compared with a manual procedure, robotic unicompartmental knee arthroplasty offers advantages, including shorter hospital stays, lower postoperative pain scores, and improved functional outcomes.

Pain, symptom, exercise, and quality of life scales showed significant recovery at 1–2 years postoperatively, but not at 2–3 years. To evaluate the effectiveness of the Oxford UKA, surgeons should receive clinical results 2 years after surgery [122, 123].

There are studies that describe the promising clinical results of both simultaneous and staged bi-UKA, although the number of long-term follow-up studies is limited. K. Wada et al. conclude that both single-moment and staged bi-UKA demonstrated good functional results. However, the scope and level of evidence is generally small for the studies included in this review, and data on long-term outcomes remain limited. It is currently known that bi-UKA is a feasible and viable option for the surgical treatment of two-component femoral-tibial OA in carefully selected patients [124].

The overall survival of UKA for medial OA was 95.3 and 91.3 %, respectively, after 5–10 years [125]. After 15 years, the survival of components without revision is 92 % [126].

Taking into account the mistakes of surgeons when performing knee arthroplasty, it should be noted that in the case of low professional experience, worse results occur. Physicians with little experience are recommended to strictly adhere to the design of UKA operation to achieve excellent clinical results after it [127].

The subjective parameters of the patients were significantly better for UKA. In this study, after implantation of a unicondylar knee arthroplasty, patients demonstrated lower pain scores, less need for analgesics, and better subjective parameters in the early postoperative period [128].

Most patients with osteoarthritis of the knee joint may prefer UKA due to the systematic identification of advantages over the procedure of knee arthroplasty [129].

Individual condylar knee arthroplasty can improve clinical and functional outcomes in patients with isolated medial knee osteoarthritis [130].

The further development of surgical techniques, prosthesis designs and robotic technologies of UKA will continue to be used [131].

The results obtained by the authors [132] show that outpatient knee arthroplasty in a separate outpatient surgery center is a safe and reasonable alternative to traditional inpatient treatment.

Conclusions

Over the past 50 years, UKA has become more widely used in orthopedics as an effective way to restore the function of the knee joint. However, careful selection of patients and precision of surgical technique remain the key to a successful outcome.

In this review, we aimed to analyze the current controversies and assess the status and role of UKA in the treatment of knee osteoarthritis. Good results in the treatment of osteoarthritis of the knee joint could be achieved by choosing the appropriate methods and correctly applying UKA in the future.

Conflict of interest. The authors declare no conflict of interest.

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UNICONDYLAR KNEE ARTHROPLASTY — PROS AND CONS
(LITERATURE REVIEW)

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