Traumatology and Orthopaedics of Kazakhstan
ISSN - e2789-9640

https://doi.org/10.52889/1684-9280-2025-76-3-jto001
Original article

Comparative evaluation of clinical outcomes of using articulating and non-articulating cement spacers in the first stage of treatment of periprosthetic infection

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Received: 02.05.2025
Accepted: 11.06.2025
Published: 30.06.2025

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Citation: Trauma & Ortho Kaz, 2025, 76 (3), jto001

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Abstract

Periprosthetic joint infection (PJI) remains one of the most serious complications in modern orthopedic practice, particularly after knee arthroplasty. The incidence of PJI ranges from 0.5–2.0% after primary knee arthroplasty and up to 22% after revision procedures. In Kazakhstan, 403 cases of PJI involving large joints were officially registered in 2023.

Objective. This study aims to evaluate the clinical outcomes of articulating and static (non-articulating) cement spacers used during the first stage of two-stage revision knee arthroplasty for PJI.

Methods**.** For a randomized study, 20 patients were selected, divided into 2 groups of 10 people. The first group received an articulating cement spacer in the knee joint, while the second group received a non-articulating (static) cement spacer. Both groups included 8 women and 2 men. Median age was 64 years (IQR: 57–69) in the articulating spacer group and 62 years (IQR: 56.5–67) in the non-articulating group. Clinical and radiological evaluations were conducted 12 months postoperatively.

Results. Our study found no significant differences in baseline characteristics, hospital stay, or duration of surgery. Functional outcomes were significantly better in the

articulating group based on Knee Society Score (knee: 82 vs. 38.2; function: 70 vs. 35; p< 0.001) and Oxford Knee Score (35 vs. 25; p=0.0014). Radiographic analysis showed cement-bone lucency in 100% of non-articulating spacers and 40% of articulating spacers (p = 0.0034). At 12 months, PJI recurrence was 20% in both groups.
Conclusions. Articulating spacers offer functional advantages over static ones, particularly in delayed reimplantation, by preserving mobility and improving interim quality of life.

Keywords: cement spacer, articulating spacer, non-articulating spacer, periprosthetic joint infection.

1. Introduction

One of the main problems of modern orthopedics is the development of peri-implant infection. Among all peri-implant infections, periprosthetic joint infection of large joints occupies a special place [1]. According to world statistics, periprosthetic joint infection (PJI) after primary total knee arthroplasty (TKA) varies from 0.5 to 2.0%, and after revision arthroplasty from 0.95-22% [2]. According to the statistical digest on the provision of traumatological and orthopedic care to the population in the Republic of Kazakhstan in 2023, 403 cases of periprosthetic infection of large joints were officially registered [3].

Two-stage revision is the gold standard for the treatment of periprosthetic infection and, at the first stage, consists of complete removal of the endoprosthesis components, thorough debridement with removal of infected soft and bone tissues, sanitation of the knee joint cavity with antiseptic solutions and installation of a cement spacer with an antibiotic. At the second stage, once the infection has been fully eradicated, revision arthroplasty is recommended. This involves removal of the cement spacer and implantation of a revision endoprosthesis [4].

There are two main types of cement spacers - articulating (dynamic) and non-articulating (static). The fundamental difference between these two types of spacers is that when using an articulating spacer, it is possible to maintain movements in the knee joint, and when installing a non-articulating spacer, the knee joint remains in a position of full extension [5]. Both methods are widely used both in world practice and in the Republic of Kazakhstan.

Each of the two methods has certain advantages and disadvantages. Thus, an articulating spacer allows you to maintain the range of motion in the knee joint and is more comfortable for the patient, but due to the preservation of metal and polymer components, it may be associated with a higher risk of re-infection [6]. A non-articulated spacer, in turn, does not prolong the surgical intervention, does not contain metal and polymer components in its structure that come into contact with tissues, but at the same time the range of motion in the knee joint is completely lost, and can limit the axial load on the limb [7].

The purpose of this study is to evaluate the clinical outcomes of using an articulated and non-articulated cement spacer in the first stage of treatment of periprosthetic infection.

2. Materials and Methods

The study was conducted at the National Scientific Center of Traumatology and Orthopedics named after academician N.D. Batpenov in Astana. Patients were divided into 2 groups of 10 patients each. All patients signed informed consent for treatment, surgery, data collection and publication of data.

The study was conducted at the National Scientific Center of Traumatology and Orthopedics named after academician N.D. Batpenov in Astana. Patients were divided into 2 groups of 10 patients each. All patients signed informed consent for treatment, surgery, data collection and publication of data.

Patients were included in the study according *to the following criteria*:

- Patients with an established diagnosis of periprosthetic infection of the knee joint, requiring surgical treatment;
- Patient age from 45 to 79 years;

- Patients' consent to participate in the study.

The exclusion criteria were as follows:

- Patients with an established diagnosis of periprosthetic infection of the knee joint, refusing surgical treatment or undergoing a course of conservative therapy;
- Patient age under 45 and over 79 years;
- Hemiparesis on the side of the proposed operation;
- Neoplasms of other localizations with or without metastases;
- Patient's refusal from the study.

In the first group, 10 patients underwent surgical intervention in the volume of arthrotomy, endoprosthesis removal, revision, sanitation, installation of an articulating cement spacer with an antibiotic of the knee joint. In the second group, patients underwent surgical intervention in the volume of arthrotomy, endoprosthesis removal, revision, sanitation, installation of a non-articulating cement spacer with an antibiotic of the knee joint.

When assessing the groups by gender, age, concomitant diseases, the number of previous revision surgeries, no differences were found between the groups.

Evaluation of clinical efficacy between the groups was carried out according to the following indicators: the number of hospital beds; the number of bed days spent in the intensive care unit; the duration of the operation; assessment of knee joint function, radiographic stability, the number of relapses of cases of periprosthetic infection. Control evaluation of the results was carried out 12 months after the operation. Knee joint function was assessed using the Knee Society Score scale (KSS) and the Oxford Knee Score questionnaire (OKS). Radiographic evaluation of the appearance of radiolucent lines at the cement/bone interface of the endoprosthesis was performed using the Modern Knee Society Radiographic Evaluation System.

The surgical technique of arthrotomy, endoprosthesis removal, revision, debridement, and installation of a cement spacer with an antibiotic in the knee joint included the following steps: An incision was made along the old postoperative scar; the scar was excised if necessary. Then, medial arthrotomy of the knee joint was performed, bending around the patella (Figure 1). Resection of scar adhesions was performed and the patella was mobilized. Then, the endoprosthesis components were removed one by one and thorough tissue debridement was performed (Figure 2). The joint cavity was abundantly washed with antiseptic solutions and exposed to povidone-iodine solution for 5 minutes.

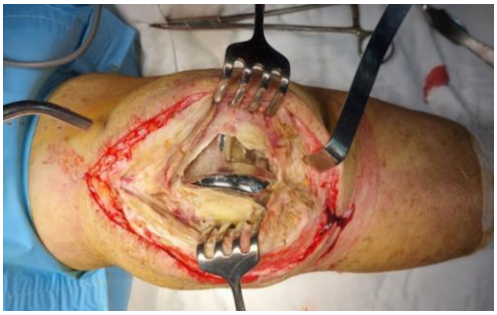

Figure 1 – Medial arthrotomy of the knee joint. The unstable component of the knee joint endoprosthesis is visualized

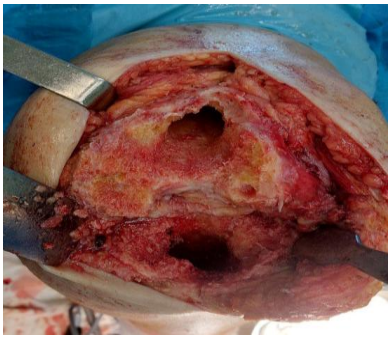

Figure 2 – View of the knee joint after debridement

Further, the technique differed depending on the type of spacer. When installing an articulating spacer, after exposure, the trial femoral components and liner were installed (Figure 3). The liner was additionally reinforced with a rod and covered with bone cement. After installing the reinforced liner, the femoral component was installed. Then the range of motion and stability of the knee joint were checked. The wound was sutured layer by layer and drained.

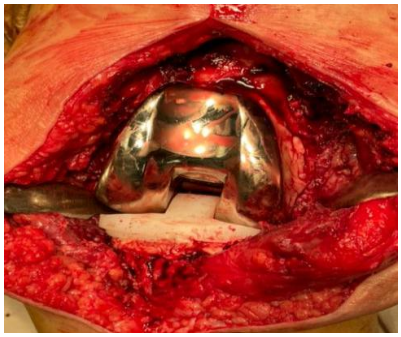

Figure 3 – Installed articulating cement spacer of the knee joint

When installing a non-articulated cement spacer, bone cement with an antibiotic was prepared after exposure and installed in the knee joint cavity (Figure 4). The knee joint was in a position of full extension and traction. After polymerization of the bone cement, the stability of the knee joint was assessed. The wound was sutured layer by layer and drained. The knee joint was fixed with a bandage.

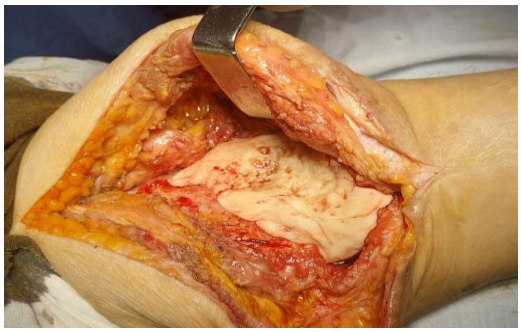

Figure 4 – Installed articulating cement spacer of the knee joint

All data were recorded and processed using Microsoft Excel from the Microsoft Office 2019 package and Statistica 13.0 software for statistical analysis developed by Statsoft. Statistical processing of the obtained data was carried out using the nonparametric Mann-Whitney criterion for quantitative data and the parametric Pearson's criterion $\chi 2$ (chi-squared) for qualitative data. Differences between the groups were considered significant at $p<0.05$ [8].

3. Results

There were 8 women (80%) and 2 men (20%) in each group. The median age of patients was 64 years (Q25-Q75; 57-69) in the first group and 62 years (Q25-Q75; 56.5-67) in the second group. The median number of previous revisions in the first group was 1 (Q25-Q75; 1- 2), in the second group 2 (Q25-Q75; 1.5-2). There were no statistically significant differences between the groups for the presented criteria. When comparing in the articulating spacer group, the median hospital stay of patients was 18 days (Q25-Q75; 16 - 23). In the non-articulated spacer group, the median was 18 days (Q25-Q75; 15 - 23) ($p = 0.56$).

The median number of days in the intensive care unit for the first group was 1 day (Q25-Q75; 0-1), for the second group also 1 day (Q25-Q75; 1-1), (p = 0.42).

The median duration of surgery in the first group was 120 minutes (Q25 - Q75; 116.25 - 128.75), in the second group 117.5 minutes (Q25-75; 111.25-120) (p = 0.25). Evaluation of knee joint function using the Knee Society Score scale showed a median number of knee points in the articulating spacer group of 82 points (Q25 - Q75; 69.75 - 83), in the non-articulating spacer group 38.2 points (Q25-Q75; 32.25-41) (p=0.00015). The median number of functional points in the first group was 70 points (Q25 - Q75; 62.5 - 80), in the control group 35 points (Q25-Q75; 30-40) (p=0.00055). When assessing according to the Oxford Knee Score scale, the median score in the first group was 35 points (Q25-Q75; 30-40), in the second group 25 points (Q25-Q75; 21-25) (p=0.0014).

When assessing the radiographic stability of the spacer components in the non-articulated spacer group, radiographic clear lines were found at the cement/bone interface in all cases (100%). This radiographic picture indicates the presence of mobility between the bone cement and bone, indicating the moment of lack of complete fixation of the non-articulated cement spacer in the bed. In the articulating spacer group, 4 cases (40%) of radiographic clear lines at the cement/bone interface were detected. In this case, a statistically significant difference was revealed between the groups (χ^2 =8.57; p=0.0034). At 12 months postoperatively, there were 2 cases (20%) of periprosthetic infection in the articulating spacer group, and 2 cases of recurrent periprosthetic infection (20%) in the non-articulating spacer group.

4. Discussion

The choice between articulating and static cement spacers in two-stage revision total knee arthroplasty for periprosthetic joint infection remains a topic of debate. Numerous studies have highlighted the clinical advantages and disadvantages of each type.

Articulating spacers offer superior postoperative range of motion (ROM), better functional outcomes, and improved patient satisfaction. According to Nahhas et al., patients treated with articulating spacers demonstrated significantly higher Knee Society Scores and faster recovery of knee mobility after reimplantation compared to those with static spacers [9].

Similar findings were confirmed by Warwick et al., who observed a reduced need for quadriceps release and easier exposure at second-stage surgery [6].

However, articulating spacers are associated with increased complexity in fabrication and may carry a higher risk of spacer dislocation or instability, especially in cases with poor soft tissue or severe bone loss. Additionally, certain designs (e.g., metal-on-poly articulating spacers) may induce more wear debris, though clinical significance remains unclear [9].

Static (non-articulating) spacers, on the other hand, provide superior joint stability and are generally preferred in cases of severe bone defects, ligament insufficiency, or extensor mechanism disruption. They are simpler to construct and offer strong local antibiotic delivery due to their bulk cement volume. Nevertheless, several studies report inferior functional results and limited postoperative ROM. For example, Mian et al. observed increased stiffness and longer rehabilitation periods in patients receiving static spacers [10].

The infection eradication rates between the two types remain comparable across most studies, with success rates ranging from 85–95% for both designs. However, as shown in the meta-analysis by Voleti et al., articulating spacers may result in fewer manipulations under anesthesia and improved long-term joint function [11].

Limitations of current evidence include heterogeneity in spacer design, surgical technique, and follow-up duration. More randomized controlled trials are required to determine the ideal spacer selection based on individual patient characteristics and infection severity.

5. Conclusions

In this comparative study, the use of an articulating antibiotic-loaded cement spacer demonstrated clear functional advantages over the static design. The articulating spacer preserved weight-bearing capacity and range of motion in the knee joint, resulting in superior functional outcomes. Furthermore,

its use may offer additional benefits in cases where prolonged delay before second-stage reimplantation is required, maintaining joint mobility and improving patient quality of life during the interim period.

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

Funding. The authors declare that there is no funding.

Author Contributions. Conceptualization - S.B.; methodology - A.B.; formal analysis - A.B.; investigation - R.A.; resources - A.B.; data curation - A.M.; writing – original draft preparation - Ye.A., A.A.; writing – review and editing - Zh.R., A.K.; visualization - S.B.; supervision - A.B.; project administration - A.B. All authors have read and agreed to the published version of the manuscript.

References

1. Nelson, S. B., Pinkney, J. A., Chen, A. F., & Tande, A. J. (2023). Periprosthetic joint infection: current clinical challenges. *Clinical Infectious Diseases*, *77*(7), e34-e45. https://doi.org/10.1093/cid/ciad360

2. Mavrogenis, A. F., Pala, E., Angelini, A., Calabro, T., Romagnoli, C., Romantini, M., ... & Ruggieri, P. (2015). Infected prostheses after lower-extremity bone tumor resection: clinical outcomes of 100 patients. *Surgical infections*, *16*(3), 267-275. https://doi.org/10.1089/sur.2014.085

3. Джаксыбекова Г.К., Искаков Е.С., Мусина Г.А., Бекболаткызы Н. Основные показатели травматологической и ортопедической помощи населению Республики Казахстан в 2022 году. Астана, 2023. Электронный ресурс. Режим доступа: https://cloud.mail.ru/public/MS4C/PapiY4z8Y

Dzhaksybekova G.K., Iskakov E.S., Musina G.A., Bekbolatkyzy N. Osnovnyye pokazateli travmatologicheskoy i ortopedicheskoy pomoshchi naseleniju Respubliki Kazakhstan v 2022 godu. (The main indicators of traumatological and orthopedic care to the population of the Republic of Kazakhstan in 2022) [in Russian]. Astana, 2023. Jelektronnyj resurs. Rezhim dostupa: https://cloud.mail.ru/public/MS4C/PapiY4z8Y

4. Kubista, B., Hartzler, R. U., Wood, C. M., Osmon, D. R., Hanssen, A. D., & Lewallen, D. G. (2012). Reinfection after two-stage revision for periprosthetic infection of total knee arthroplasty. *International orthopaedics*, *36*, 65-71.https://doi.org/10.1007/s00264-011-1267-x

5. Charette, R. S., & Melnic, C. M. (2018). Two-stage revision arthroplasty for the treatment of prosthetic joint infection. *Current reviews in musculoskeletal medicine*, *11*, 332-340. https://doi.org/10.1007/s12178-018-9495-y

6. Warwick, H. S., Tan, T. L., Weiser, L., Shau, D. N., Barry, J. J., & Hansen, E. N. (2023). Comparison of static and articulating spacers after periprosthetic joint infection. *JAAOS Global Research & Reviews*, *7*(2), e22. https://doi.org/10.5435/JAAOSGlobal-D-22-00284

7. Oliva, F., Ziello, S., & Maffulli, N. (2023). Knee Spacers in Periprosthetic Joint Infections: A Narrative Review. *Muscles, Ligaments & Tendons Journal (MLTJ)*, *13*(2). https://doi.org/10.32098/mltj.02.2023.06

8. Койчубеков Б.К. Биостатистика: учеб. пособие. – Алматы: Издательство «Эверо», 2015, 152 с. Электронный ресурс. Режим доступа: https://webirbis.qmu.kz/en/lib/document/BOOK/3453482D-5308-4B94-8A83-1B49DD8DDB44/

Koychubekov B.K. Biostatistika: ucheb. Posobiye (Biostatistics: a textbook) [in Russian]. Almaty: Izdatel'stvo «Evero», 2015, 152 p. Jelektronnyj resurs. Rezhim dostupa: https://webirbis.qmu.kz/en/lib/document/BOOK/3453482D-5308-4B94-8A83-1B49DD8DDB44/

9. Nahhas, C. R., Chalmers, P. N., Parvizi, J., Sporer, S. M., Berend, K. R., Moric, M., ... & Della Valle, C. J. (2020). A randomized trial of static and articulating spacers for the treatment of infection following total knee arthroplasty. *JBJS*, *102*(9), 778-787. https://doi.org/10.2106/JBJS.19.00915

10. Mian, H. M., Lyons, J. G., Perrin, J., Froehle, A. W., & Krishnamurthy, A. B. (2022). A review of current practices in periprosthetic joint infection debridement and revision arthroplasty. *Arthroplasty*, *4*(1), 31.https://doi.org/10.1186/s42836-022-00136-5

11. Voleti, P. B., Baldwin, K. D., & Lee, G. C. (2013). Use of static or articulating spacers for infection following total knee arthroplasty: a systematic literature review. *JBJS*, *95*(17), 1594-1599. https://doi.org/10.2106/JBJS.L.01461

Тізе буынының протезмаңы инфекциясын емдеудің бірінші кезеңінде артикуляциялық және буынсыз цемент спейсерлерді қолданудың клиникалық нәтижелерін салыстырмалы бағалау

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Түйіндеме

Тізе буынының протезмаңы инфекциясы (ПМИ) қазіргі ортопедиялық тәжірибеде, әсіресе тізе буындарын протездеуден кейін ең ауыр асқынулардың бірі болып қала береді. ПМИ жиілігі тізе буынының бастапқы артропластикасынан кейін 0,5-тен 2,0%-ға дейін және қайта қарау процедураларынан кейін 22%-ға дейін ауытқиды. Қазақстанда 2023 жылы ірі буындарды қамтитын 403 ПМИ жағдайы ресми түрде тіркелген.

Бұл зерттеу ПМИ үшін екі сатылы ревизиялық тізе артропластикасының бірінші кезеңінде артикуляциялық және статикалық (буынсыз, артикуляциялық емес) цемент спейсерлерді қолданудың клиникалық нәтижелерін бағалауға бағытталған.

Әдістері. Рандомизацияланған зерттеуге әрқайсысы 10 адамнан тұратын 2 топқа бөлінген барлығы 20 науқас таңдалды. Бірінші топтағы науқастардың тізе буынына артикуляциялық цемент спейсер, ал екінші топқа тізе буынына статикалық цемент спейсер орнатылды. Екі топта 8 әйел және 2 ер адам болды. Артикуляциялық спрейлер тобында орташа жас 64 жасты (квартильаралық диапазон: 57–69) және буынсыз спасер тобында 62 жасты (квартильаралық диапазон: 56,5–67) құрады. Емнің нәтижелерін клиникалық және рентгенографиялық бағалау отадан 12 ай өткеннен кейін жүргізілді.

Нәтижелері. Негізгі сипаттамаларда салыстырғанда, ауруханада өткізген уақыт немесе отаның ұзақтығында айтарлықтай айырмашылықтар табылмады. Функционалдық нәтижелер Knee Society Index

бойынша (тізе: 82 (38,2-ге қарсы); функция: 70 (35-ке қарсы); p<0,001) және Оксфорд тізе индексі бойынша (35 (25-ке қарсы); p=0,001)), негізіндегі артикуляциялық спейсер тобында айтарлықтай жақсы болды. Рентгенографиялық талдау 100% жағдайда артикуляциялық емес спейсерде және 40% жағдайда артикуляциялық спейсерде (p=0,0034) цемент/сүйек ағаруын көрсетті. 12 айдан кейін ПМИ қайталануы екі топта да 20% құрады.

Қорытынды. Артикуляциялық спейсердің функционалдық артықшылығы статикалықтарға қарағанда, әсіресе кешіктірілген реимплантацияда, ұтқырлықты сақтауда және уақытша өмір сапасын жақсартуда байқалады.

Түйін сөздер: цементтік спейсер, артикуляциялық спейсер, буынсыз спейсер, протезмаңы инфекциясы.

Сравнительная оценка клинических результатов применения артикулирующих и неартикулирующих цементных спейсеров при первом этапе лечения перипротезной инфекции коленного сустава

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Резюме

Перипротезная инфекция (ППИ) остается одним из самых серьезных осложнений в современной ортопедической практике, особенно после эндопротезирования коленного сустава. Частота ППИ составляет от 0,5 до 2,0% после первичного эндопротезирования коленного сустава и до 22% после ревизионных процедур. В Казахстане в 2023 году официально зарегистрировано 403 случая ППИ, затрагивающих крупные суставы.

Цель исследования: оценить клинические результаты применения артикулирующих и статических (неартикулирующих) цементных спейсеров на первом этапе двухэтапного ревизионного эндопротезирования коленного сустава при ППИ.

Методы. В рандомизированное исследование были включены 20 пациентов, разделенных на 2 группы по 10 человек. В первой группе пациентам был установлен артикулирующий цементный спейсер коленного сустава, во второй — неартикулирующий цементный спейсер коленного сустава. В обеих группах было 8 женщин и 2 мужчин. Медианный возраст составил 64 года (межквартильный размах: 57–69) в группе с артикулирующего спейсера и 62 года (межквартильный размах: 56,5–67) в группе неартикулирующего спейсера. Клиническая и рентгенологическая оценка результатов хирургического вмешательства проводилась через 12 месяцев после операции.

Результаты. В результате нашего исследования не было обнаружено существенных различий в исходных характеристиках, пребывании в больнице или продолжительности операции. Функциональные результаты были значительно лучше в группе с артикулирующими спейсерами на основе индекса Knee Society (колено: 82 против 38,2; функция: 70 против 35; $p<0,001$) и индекса Oxford Knee (35 против 25; $p=0,0014$). Рентгенографический анализ показал просветление цемента/кости в 100% случаев с неартикулирующими спейсерами и в 40% случаев с артикуляционными спейсерами ($p=0,0034$). Через 12 месяцев рецидив ППИ составил 20% в обеих группах.

Выводы. Артикулирующие спейсеры демонстрируют функциональные преимущества по сравнению со статическими, особенно при отсроченной реимплантации, сохраняя подвижность и улучшая временное качество жизни.

Ключевые слова: цементный спейсер, артикулирующий спейсер, неартикулирующий спейсер, перипротезная инфекция.