

A Comparative Study of Survivorship Following Revision Total Knee Arthroplasty for Infection and Aseptic Loosening

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Abstract

Background: Revision total knee arthroplasty (rTKA) is commonly performed for infection and aseptic loosening. This study compares survivorship and clinical outcomes between these two etiologies.

Objectives: To compare implant survivorship, patient-reported outcomes, and complication rates following rTKA performed for infection versus aseptic loosening.

Methodology: A retrospective analysis of 214 patients from the TAAG database was conducted. 107 patients revised for infection were age- and gender-matched with 107 revised for aseptic loosening. Outcomes were assessed using Knee Society Scores (KSS), complication rates, revision rates, and survivorship analysis with a

follow-up of up to 10 years. Statistical analysis was performed using SPSS.

Results: The infection group demonstrated significantly inferior outcomes. Implant survivorship was markedly lower (5.80 ± 4.59 vs. 8.08 ± 5.51 years, $p=0.0012$). The revision rate was nearly four times higher in the infection cohort (18% vs. 4.7%, $p=0.002$), and complication rates were significantly elevated (26.2% vs. 12.1%, $p=0.014$). While both groups showed substantial improvement in Knee Society Scores (KSS), function, and pain at one year, the infection group experienced a progressive and significant decline in all scores at long-term follow-up. By ten years, the infection group's KSS and functional scores had deteriorated to

69.4 and 46.25, respectively, compared to scores above 80 and 59.68 in the aseptic loosening group. Patient dissatisfaction was also consistently higher following revision for infection.

Conclusion: rTKA for infection results in significantly poorer survivorship, higher complication rates, worse clinical outcomes, and lower patient satisfaction compared to revision for aseptic loosening.

Keywords: Revision total knee arthroplasty, Aseptic loosening, Periprosthetic joint infection, Survivorship, Patient-reported outcome measures

Introduction

Total knee arthroplasty is a procedure performed in conditions like degenerative osteoarthritis, inflammatory arthritis, post traumatic degenerative joint conditions where the articular cartilage is damaged. It improves the quality of life by decreasing the pain and improving the function of the joint. Despite the overall success of the surgery, there are some complications such as infection, aseptic loosening of the prosthesis, malpositioning, instability, severe stiffness, periprosthetic fractures, arthrofibrosis, metal hypersensitivity, abnormal joint line problem which affects the clinical outcomes¹.

Revision total knee arthroplasty is a procedure required when the primary total knee arthroplasty procedure fails due to a complication. About 6% of those who undergo Total Knee Arthroplasty (TKA) needs revision surgery². Revision TKA can be a challenging procedure for both the surgeons and the patients. Revision rate is an important outcome measure of any joint replacement surgery². Infection and aseptic loosening are the two most common complications of primary TKA requiring revision surgery. These are also the most complex challenges and may result in poor clinical outcome and overall affecting the quality of life of the patient.

Infection is the most common reason for revision TKA³. Infections caused by the bacterial organism during and after surgery can lead to severe complications, including systemic illness, prolonged hospital stay, and even mortality. This may be attributable to several factors. The patient factors such as immune compromised status diabetes mellitus, smoking, and old age can cause infections⁴. While poor aseptic precautions during the surgical procedure, not using the antibiotic impregnated cement during implantation are iatrogenic causes of infection.

Aseptic loosening is the second most common reason for rTKA. On further categorization, aseptic loosening is the most common cause of late failure. Tibial component loosening is more common than femoral component³. Some of the causes of aseptic loosening are osteolytic wear, cementation technique and motion between tibial insert and metal tray. The aim of this study is to compare the survivorship of revision TKA in patients revised for infection versus those revised for aseptic loosening. Understanding the differential impact of these complications on the longevity of the revision prosthesis.

Materials and Methods

This study is a retrospective analysis of prospectively collected data. Patients who underwent revision knee arthroplasty for post-operative infection and aseptic loosening, were identified, and categorised from the Tayside Arthroplasty Audit Group (TAAG) database. Patients undergoing revision knee arthroplasty for other varied aetiologies other than infection and aseptic loosening such as malpositioning, instability, severe stiffness, periprosthetic fractures and arthrofibrosis were excluded.

The TAAG database established in the 1980s, includes a collection of data for all total hip and knee replacement surgeries performed in the Tayside region of Scotland, UK. Independent clinical audit practitioners collate pre-operative and post-operative data of all the patients undergoing primary and revision arthroplasties. It serves the purpose of an audit and research tool. Based on the Knee Society Scoring System described by Insall et al., 1989⁵, every patient, since 1983 has been invited to participate in a long-term review. Validated outcome measures using the Knee Society Scoring System were used to determine the clinical and functional outcomes in both groups and compared.

Caldicott Guardian approval was obtained to allow access to existing TAAG data. A total of 214 patients who have had revision knee arthroplasty surgery are registered in the TAAG database since 1983 to 2017. These patients underwent revision knee arthroplasty for infection and aseptic loosening. 107 cases who were revised for aseptic loosening were age and gender matched with 107 cases that were revised for Infection. The minimum follow-up period for revision TKA was 1 year and the maximum was 10 years before revision surgery. Assessment used the standard Knee Society Scores. Patient satisfaction was ascertained at each post-operative review. Complication rates were studied in revision TKA groups. Different prostheses were used for different patients depending on the aetiology and patient needs. Standard surgical technique with medial parapatellar incision and arthrotomy was employed in all patients.

Statistical analysis was done using the SPSS v28 software (SPSS Inc., USA). Paired t- test was used for the analysis of Knee Society Pain and Knee Society Function Scores. Pearson Correlation test used to

determine the strength and direction of the linear relationship between: KS Score and KS Function Score, and KS ROM Score, and KS Pain Score. Kaplan Meier Survival Analysis used to analyse survivorship of revision TKA. Chi Square Test used to analyse categorical data complication rates, revision rate.

Knee Society Scoring System (KSS) was used to assess the outcome measures in the present study. Knee Society Scores are collected at pre-operatively and at every post-operative follow-up (1 year, 3 years, 5 years, 10 years). Since the scores are collected at every post-operative patient review, it is possible to compare the scores progressively and evaluate the clinical and functional improvement of the patient.

KSS system consists of two parts – the knee score and the function score. Knee score describes the status of the knee joint. It is calculated as a sum of individual patient scores for pain, clinical scores for range of movement and stability of the knee joint. Pain scores are evaluated using visual analogue scale. Subtractions are done for any extension lag, flexor contractures and malalignment of the joint. Functional score is calculated as total walk able distance and the patient's ability to climb stairs. Subtractions are done for use of any crutches or walking aid by the patient. Final scores are obtained by summing the two scores.

Maximum score in each is 100. Apart from the Knee Society Scores, the patient satisfaction, sources of dissatisfaction, complications rates, revision rate, survival analysis, compared types of revision surgeries. We also have compared our analysis with the literature.

Assessment of outcomes and result interpretation was based on the following criteria: Aetiology of revision, Implant survival years after revision TKA,

Complications after revision TKA, Knee Society Scores for Pain, Function, ROM, and overall scores.

Results

Table 1: Demographic Data

Variable	Aseptic Loosening (N = 107)	Infection (N = 107)	P-value
Age (Mean $\pm$ SD)	70 $\pm$ 8.78 years	71 $\pm$ 9.15 years	>0.9 (NS)
Gender (M/F)	58 / 49	58 / 49	>0.9 (NS)
Side (Right/Left)	60 (56%) / 47 (44%)	48 (45%) / 59 (55%)	0.10 (NS)
BMI (Mean $\pm$ SD)	30 $\pm$ 6.02	29 $\pm$ 5.46	0.038 (S)
Procedure One-Step	102 (95%)	11 (10%)	<0.001 (S)
Two-Step	0 (%)	95 (89%)	
Not Recorded	5 (4.6%)	1 (1%)	
Weeks to Revision (Mean $\pm$ SD)	508 $\pm$ 282.44	128 $\pm$ 258.18	<0.001 (S)
Survival (Years)	8.08 $\pm$ 5.51	5.80 $\pm$ 4.59	0.0012 (S)
Revision Rate	5 (4.7%)	9 (18%)	0.002 (S)
Length of Stay (Days)	6 $\pm$ 4.58	8 $\pm$ 18.08	<0.001 (S)
Complications after revision	12.1%	26.2%	0.0143 (S)
Comorbidities	100 (93%)	79 (74%)	<0.001 (S)

(S) = significant, (NS) = non-significant

A total of 214 patients had undergone revision TKA (rTKA). The data is age and gender matched, there was no statistically significant difference in age and gender distribution between the two groups, indicating that these factors were not associated with either diagnosis. Distribution of BMI patients with aseptic loosening had a slightly higher BMI (30 vs. 29), and this difference was statistically significant ($p = 0.038$). This suggests a potential mechanical stress-related influence of BMI on implant stability.

A stark contrast was observed in procedural approaches, one-step revision was almost exclusively associated with aseptic loosening, while two-step revision was significantly more common in infection cases ($p < 0.001$), reflecting the clinical need for staged management in infected implants. There were 6 cases in

which data was not available. P-value < 0.001 which is statistically significant.

Weeks to Revision

Most revisions for infection happened early, within the first 200 weeks (around 4 years), with a large number occurring within the first 100 weeks. As time goes on, fewer patients need revision, showing a gradual decline in revision cases. A small number of patients had late revisions, even after 800–1200 weeks (15–23 years), but these are less common. The mean duration from primary surgery to revision was substantially longer in the aseptic loosening group (508 weeks) compared to infections (128 weeks), suggesting that aseptic loosening presents later, whereas infections tend to occur earlier.

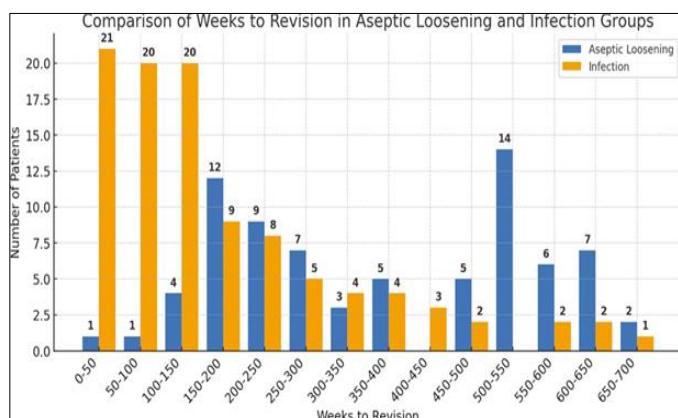


Figure 1: Week to Revision

Revision Rate

Revision Rates there is significant difference in revision rates of two groups In Aseptic Loosening Group, 4.6% i.e. 5 of patients needed revision. Out of those 5 patients, reason for revision not mentioned in one case. Other reasons for revisions were aseptic loosening, infection, femoral implant failure, pain due to instability. In infection Group, a significantly higher 17.8% i.e. 19 patients needed revision compared to aseptic loosening. Most common indication for revision was infection post revision, 6 patients were revised for aseptic loosening, 1 dislocated then become infected, 1 each for tibial loosening, instability and 1 case where cause of revision was not recorded (P- value is 0.002).

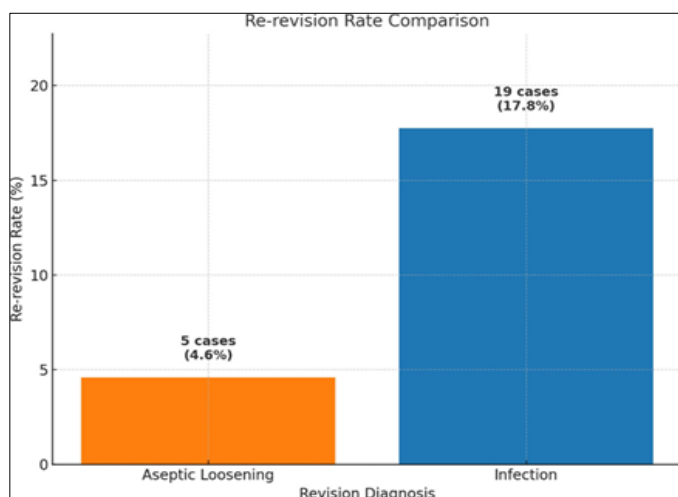


Figure 2: Revision Rates

Complication Rates

Complication Rates shows higher complication rates in infection group than aseptic loosening group. In Aseptic Loosening Group, 12.1% of patients experienced postoperative complications. This represents a relatively lower risk profile, which is consistent with the typically more straightforward surgical course and tissue healing in aseptic cases. In Infection Group, 26.2% of patients experienced complications. This substantially higher rate indicates the complex nature of infection-related revision surgeries, which often involve: Two-stage revision procedures, higher risk of wound healing issues, increased hospital stay, readmission, or systemic complications (p value 0.0143).

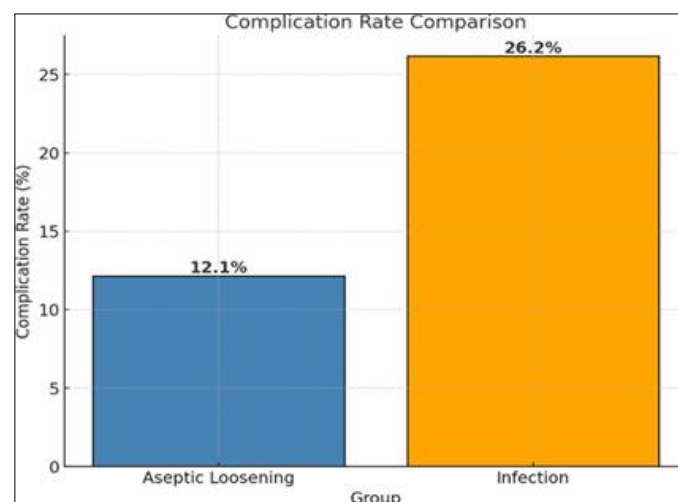


Figure 3: Complication Rates

Complications in Infection vs Aseptic Loosening Cases

Infection-related complications include wound drainage, superficial and deep infections, washout and debridement, and aspiration. Thromboembolic complications such as deep vein thrombosis (DVT) and pulmonary embolism (PE) pose significant risks postoperatively. Neurological complications, including confusion and stroke (cerebral vascular accident), can affect patient recovery. Soft tissue complications include

wound dehiscence, haematoma, haemarthrosis, and skin complications such as discoloured heels or the need for skin grafting.

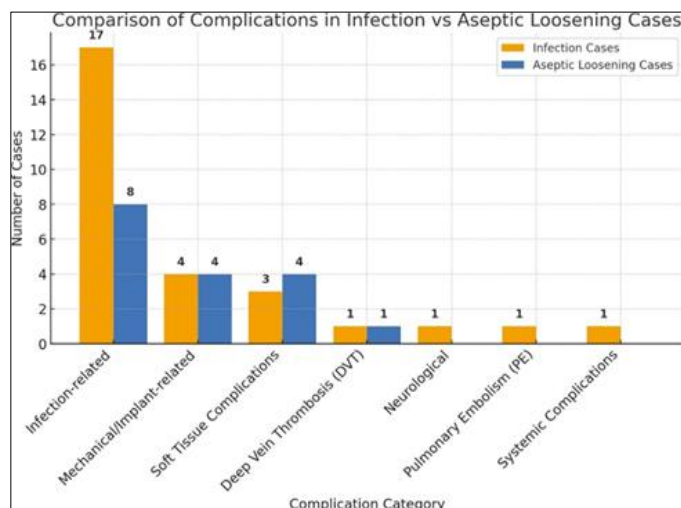


Figure 4: Complications in Infection vs Aseptic Loosening group

Patient Reported Outcome Measures (PROMs)

Knee Society Functional Score Progression

Pre-Operative Function: Patients with Aseptic Loosening started with a slightly better function score (42.55) compared to the Infection group (36.49).

Post-Operative Improvement: Both groups showed marked improvement by 1 year, with scores rising to 59.68 (Aseptic) and 55.76 (Infection). This indicates significant short-term recovery in functional ability after surgery.

Long-Term Trends: Aseptic Loosening patients maintained more stable function scores over time: In contrast, the Infection group showed a progressive decline, with the score dropping to 46.25 by 10 years.

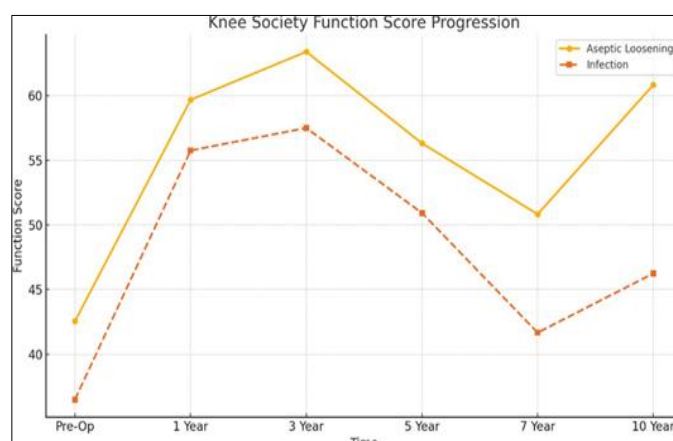


Figure 5: Knee Society Functional Score Progression

Knee Society ROM Progression:

Pre-Operative ROM: Patients with Aseptic Loosening started with a higher average ROM (86.22) compared to those with Infection (81.2).

Post-Operative Improvement: Both groups showed improvement after surgery, but the Aseptic Loosening group had a more significant and sustained gain, peaking at 100.57 at 1 year. The Infection group also improved to 90.48 at 1 year, but the gain was smaller.

Mid-to-Long-Term Follow-Up: ROM in the Aseptic Loosening group remained relatively stable and high over time, indicating good long-term functional outcomes. In contrast, ROM scores in the Infection group declined steadily after the first year, dropping significantly by 7 and 10 years (70 and 66.67, respectively).



Figure 6: Knee Society ROM Progression

Knee Society Pain Score Progression - Aseptic Loosening:

Pre-Operative: The majority of patients reported Moderate (40%) and Severe (53%) pain, indicating significant discomfort before surgery.

1 Year: A dramatic shift is seen, with 56% of patients reporting Mild pain, and a sharp drop in Severe pain to 5%. This suggests substantial pain relief following revision surgery.

3 to 5 Years: Mild pain becomes more consistent, averaging around 20-25%, and severe pain remains low.

7 to 10 Years: Pain scores remain low and stable, with Minimal to no Severe or Moderate pain reported, highlighting durability of pain relief in Aseptic Loosening cases.

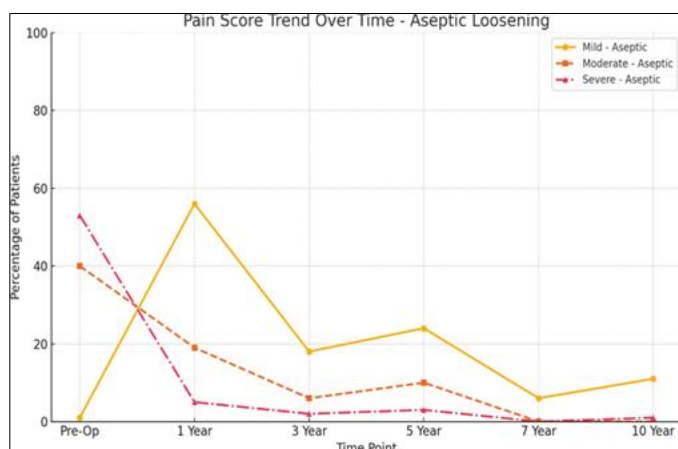


Figure 7: Knee Society Pain Score Progression - Aseptic Loosening

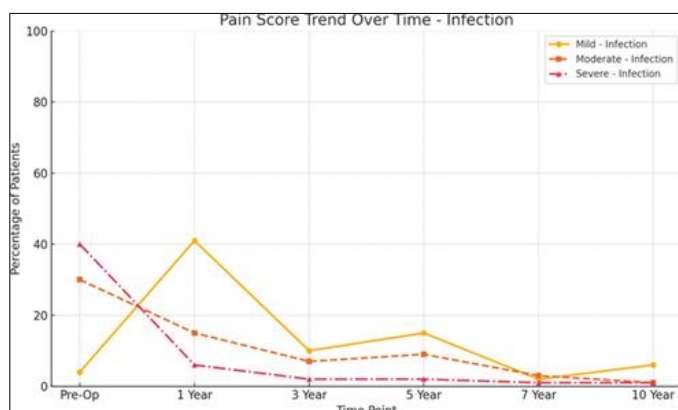


Figure 8: Knee Society Pain Score Progression

Knee Society Score (KSS) Progression- Infection

Pre-Operative Score: Interestingly, the Infection group started with a higher KSS (42.42) compared to Aseptic Loosening patients (35).

Post-Operative Outcomes: Both groups showed significant improvement by 1-year post-revision, reaching 86.46 (Aseptic) and 81.69 (Infection)—demonstrating effective short-term surgical outcomes.

Mid-to-Long-Term Progression: Aseptic Loosening patients maintained higher scores across all follow-up years. Infection group scores declined progressively, especially beyond 5 years, reaching only 69.4 at 10 years, while Aseptic Loosening remained above 80.

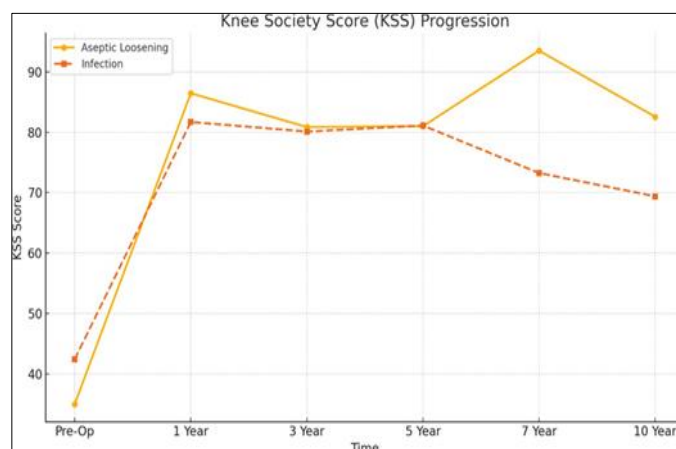


Figure 9: Knee Society Score (KSS) Progression

Patient Dissatisfaction

It was observed that dissatisfaction is consistently higher in the Infection group across all follow-up periods. Aseptic Loosening patients show lower dissatisfaction, especially in the long term. Infection-related revisions appear to have a greater negative impact on long-term patient perception and satisfaction. A low p-value (0.00055) not only demonstrates a significant survival difference but also correlates with worse clinical and subjective outcomes (such as dissatisfaction) in patients undergoing revision TKA for infection versus aseptic loosening.

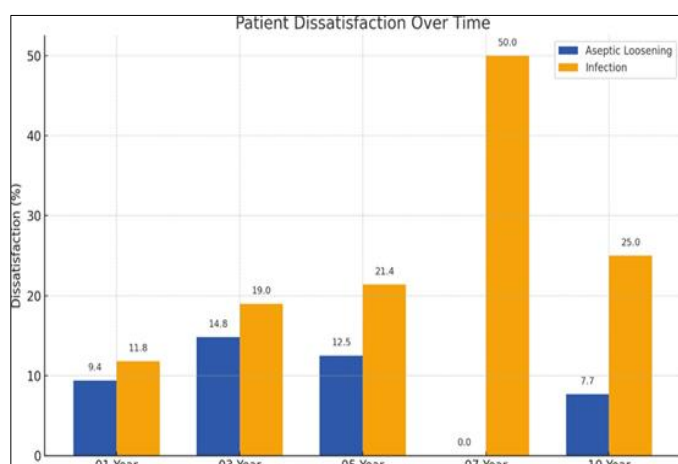


Figure 10: Patient Dissatisfaction Trend over Time

Source of Dissatisfaction

Among the identified factors, pain is the leading cause of dissatisfaction, affecting the highest number of patients. This is followed by infection-related complications, which remain a significant concern, particularly in cases revised for infection. Stiffness and functional limitations also contribute notably, highlighting importance of post-operative rehabilitation and mobility recovery. Instability and implant failure further add to dissatisfaction, often necessitating additional interventions. While reoperations / revisions and cosmetic / sensory issues are reported less frequently, they still play a role in patient experience post-surgery. This analysis underscores the need for improved implant longevity, effective infection prevention, and enhanced post-operative care strategies to reduce dissatisfaction rates in TKA patients.

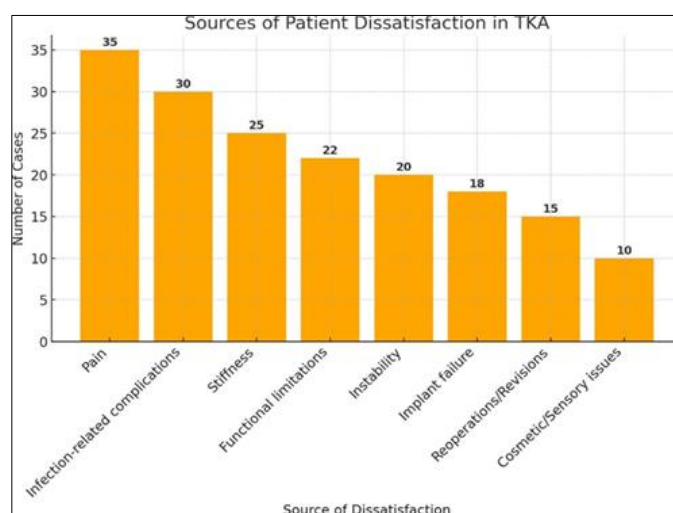


Figure 11: Sources of Dissatisfaction

Infection-related complications are a major concern in infection cases, while pain, stiffness, and functional limitations contribute significantly to both groups (p value 0.055).

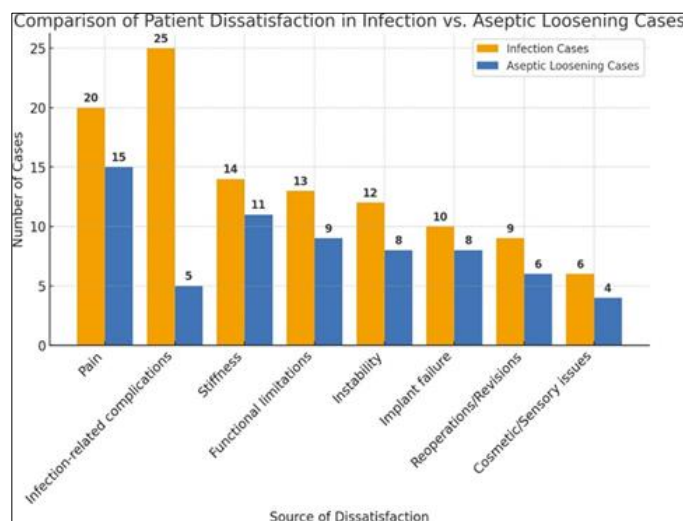


Figure 12: Comparison of Dissatisfaction in Infection vs Aseptic Loosening

Correlation Analysis of Knee Society Score with KS Functional Score, KS ROM, and KS Pain Score

Correlation analysis was performed to assess the relationship between the overall Knee Society Score (KSS) and its subcomponents—KS Functional Score, KS ROM, and KS Pain Score—at multiple postoperative time points (1, 3, 5, 7, and 10 years). Pearson's

correlation coefficient (r) was calculated for both aseptic loosening and infection groups to evaluate the strength and direction of association. In the aseptic loosening group, KSS showed a moderate and statistically significant correlation with KS Functional Score at 1, 3, and 5 years ($r = 0.320, 0.544$, and 0.447 respectively; $p < 0.05$), with little to no correlation at 7 and 10 years.

In contrast, the infection group demonstrated a consistently strong correlation at later time points, with highly significant correlations observed at 5, 7, and 10 years ($r = 0.493, 0.980$, and 0.913 respectively; $p < 0.05$). Similarly, KS ROM Score showed moderate to strong correlations with KSS in both groups, particularly at 1 and 5 years ($r > 0.49$, $p < 0.05$), with a notably strong association in the infection group at 7 years ($r = 0.960$). The strongest correlation was observed between KSS and KS Pain Score, with statistically significant and near- perfect correlations at nearly all time points, especially in the aseptic group ($r = 0.905$ to 0.947) and infection group ($r = 0.941$ to 1.000). These findings suggest that while functional ability and ROM contribute to the overall KSS, pain remains the most strongly aligned subdomain, reinforcing its central role in determining perceived success following revision total

knee arthroplasty. The KS Functional Score also deteriorates with the age of patient.

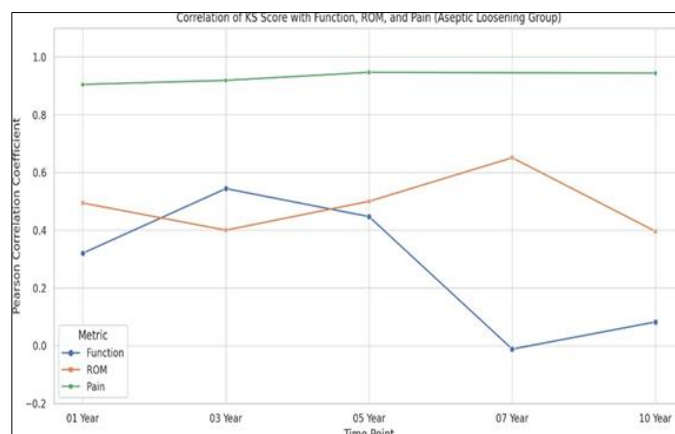


Figure 13: Correlation of KSS with KS Function, KS Rom, KS Pain - Aseptic Loosening

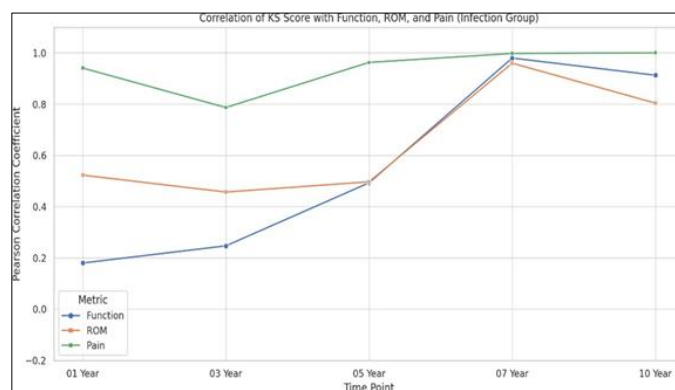


Figure 14: Correlation of KSS with KS Function, KS Rom, KS Pain - Infection

Table 2: Result of Pearson Correlation Coefficient Test for Knee Society Score with KS Functional Score, KS ROM Score and KS Pain

Time Line	KS Function (Aseptic Loosening)	Function (Infection)	ROM (Aseptic Loosening)	ROM (Infection)	Pain (Aseptic Loosening)	Pain (Infection)
01 Year	0.320*	0.18	0.494*	0.523*	0.905*	0.941*
03 Year	0.544*	0.247	0.4	0.457	0.919*	0.787*
05 Year	0.447*	0.493*	0.500*	0.497*	0.947*	0.963*
07 Year	-0.012	0.980*	0.651	0.960*	nan	0.998*
10 Year	0.082	0.913*	0.396	0.804	0.944*	1

Kaplan-Meier Survivorship Graph

At the start of the follow-up (time = 0), both groups had 107 patients each. As time progresses, there is a steeper decline in survival probability in the infection group, suggesting that revisions for infection are more likely to fail earlier and more frequently compared to revisions for aseptic loosening. The survival probability in the infection group drops more significantly over time, especially within the first 5 years.

The log-rank test p-value ($p = 0.00055$) indicates a statistically significant difference in survival between the two groups, confirming that the cause of revision (aseptic loosening vs infection) has a significant impact on implant survivorship. A p-value < 0.05 suggests that this difference is unlikely to have occurred by chance. The “Number at risk” table below the plot shows how many patients were still under observation (at risk of failure) at each time point in both groups. A sharper decrease in the infection group further supports the higher failure rate and reduced durability of implants revised for infection.

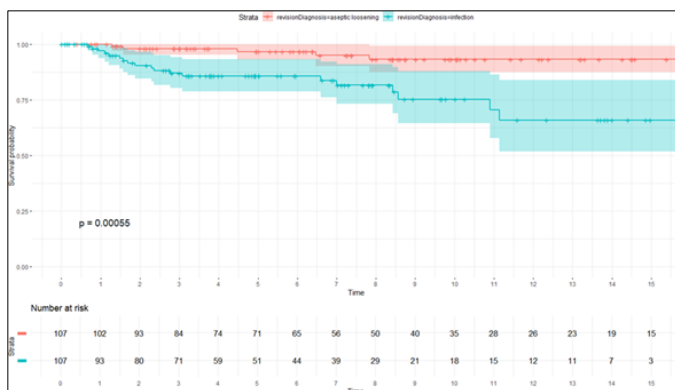


Figure 15: Kaplan Meier Survivorship Graph

Discussion

Patient Demographics

Revision total knee arthroplasty (TKA) is frequently performed in elderly patients, aligning with our study findings where mean patient age was 70 years. This

demographic distribution mirrors reports by Fehring et al., 2001³ and Liodakis et al., 2015⁶ (ages 69-71 years), though slightly older than Labek et al., 2011² and Steven Kurtz, 2007 studies⁽⁷⁾ (67-68 years). Our youngest patient was 46 years (infection-related complications requiring further surgical interventions), while the oldest was 89 years with no significant complications. Approximately 85% were above 60 years.

Hypertension was the most prevalent comorbidity (52%), followed by diabetes mellitus (23%) and cardiac conditions (14%). However, these comorbidities did not significantly influence clinical outcomes or patient satisfaction, consistent with Marchant et al., 2009 findings. Primary revision indications were evenly split between infection and aseptic loosening (50% each), aligning with literature reports by Sharkey et al., 2014⁸ and Fehring et al., 2001³.

Clinical Outcomes

The KSS demonstrated statistically significant improvement from preoperative to postoperative scores at 1 year in both groups. However, long-term follow-up revealed significant differences. At 10-year follow-up, aseptic loosening patients maintained relatively high KSS (approximately 80), while infection group showed significant deterioration (69.4). These findings correlate with existing literature identifying poorer long-term outcomes in infection revisions by Kunutsor et al., 2016⁹ and Fehring et al., 2001³.

Similarly, Knee Society Functional Scores showed initial statistically significant improvement at 1-year follow-up. Aseptic loosening patients maintained higher functional scores throughout the follow-up period, remaining stable around 59.68 at 10 years, while infection group dropped substantially to 46.25. This pattern aligns with Hazelwood et al., 2015⁽¹⁰⁾, reporting

sustained functional benefits in aseptic versus infection-related revisions.

Range of Motion outcomes indicated significant differences between the two groups. Both groups showed immediate postoperative improvement, but aseptic loosening patients achieved significantly better sustained ROM (peak 100.57 at 1 year), while infection patients exhibited progressive deterioration to 66.67 at 10 years. Similar declining ROM trends have been noted by Haleem et al., 2004¹¹, and Rajgor et al., 2023¹².

Knee Society Pain Scores showed dramatic improvements in both groups at 1 year. However, long-term results differed considerably, with infection group experiencing recurrent pain earlier and more frequently. This supports findings by Marchant et al., 2009¹³ and Bongers et al., 2020¹⁴, emphasizing complexity and persistent symptoms in infection-related revisions.

Correlation analysis between KSS and its subcomponents showed significant associations, with pain scores exhibiting the strongest correlation. This indicates pain relief remains the primary determinant influencing patient-perceived outcomes, consistent with Khlopas et al., 2017¹⁵ and Naudie et al., 2012¹⁶.

Quality of life, indirectly measured through clinical outcomes and satisfaction trends, showed significant deterioration in infection-revised patients, aligning with literature consistently reporting inferior quality of life in complex, multi-stage infection revisions as reported by Kunutsor et al., 2016⁹ and Petis et al., 2019¹⁷.

Patient Satisfaction

Patient satisfaction rates differed notably between groups. At one-year follow-up, satisfaction was approximately 90.6% for aseptic loosening but dropped considerably to 88.2% for infection patients. Patient satisfaction correlated strongly with PROMs, with

primary dissatisfaction reasons being persistent pain, limited mobility, and functional impairment.

Our infection group satisfaction rates were lower than previous studies. Hazelwood et al., 2015¹⁰ and Labek et al., 2011² reported satisfaction rates exceeding 85% following aseptic revisions, while Lee et al., 2017⁴ reported >90% for aseptic loosening revisions. Comparable infection-related satisfaction rates (60-65%) were noted by Kunutsor et al., 2016⁹ and Haleem et al., 2004⁽¹¹⁾. Rajgor et al., 2023¹² and Petis et al., 2019¹⁷ similarly highlighted lower infection revision satisfaction due to persistent complications and impaired functional recovery.

Complications

Overall complication rate was relatively high (57 complications among 214 cases), with significantly higher rates in infection group (26.2%) versus aseptic loosening (12.1%). Major complications included persistent pain, reduced functional mobility, recurrent infection, and implant-related mechanical issues.

Infection-related revisions were associated with complex clinical scenarios, frequently requiring multiple surgical interventions or staged revision surgeries. Recurrent infection was the most challenging complication, often leading to extended hospital stays, repeated debridements, and occasionally implant removal or arthrodesis, significantly affecting patient quality of life, mentioned by Petis et al., 2019¹⁷ and Bongers et al., 2020¹⁴.

Aseptic loosening revisions generally presented fewer complications, mainly mechanical issues like instability, persistent pain, stiffness, or limited ROM. Although less severe compared to infection group, these significantly influenced patient satisfaction and clinical outcomes,

aligning with previous reports by Fehring et al., 2001³ and Hazelwood et al., 2015¹⁰.

We reported revision rates of 17.8% for infection group and 4.6% for aseptic loosening group, consistent with existing literature by Kunutsor et al., 2016¹⁰ and Rajgor et al., 2023¹², where infection revisions demonstrate substantially higher rates (15-40%) compared to aseptic loosening revisions (<10%). Several persistent infection cases required reoperations, staged revisions, or extensive antibiotic treatments, aligning with challenging infection-related revision reports by Petis et al., 2019¹⁷ and Rajgor et al., 2023¹².

Strength and Limitations

This study comprehensively analyzed revision TKA outcomes using robust, prospectively collected patient-reported outcome measures from the TAAG database. Key strengths include validated PROMs (Knee Society Scores, functional scores, pain scores), independent data collection reducing potential bias, 10-year longitudinal follow-up, dedicated clinical audit personnel ensuring data integrity, and reliable evidence regarding patient outcomes and implant survivorship.

Study limitations include modest sample size (214 patients) limiting subgroup statistical power, retrospective database analysis with potential selection bias, lack of matched control groups, multiple surgeons introducing surgical technique and postoperative management variability, and 10-year follow-up duration potentially insufficient for comprehensive assessment of very long-term implant survivorship, aseptic loosening, and late complications requiring further investigation.

Conclusion

Revision TKA outcomes differed significantly between infection and aseptic loosening cases, with infection-related revisions yielding substantially poorer results.

Infection patients demonstrated worse patient-reported outcome measures, reduced Knee Society Scores, persistent pain, lower satisfaction, and higher complication rates requiring multiple surgical interventions. Although both groups showed initial postoperative improvement, infection cases experienced notable long-term functional deterioration. Aseptic loosening revisions consistently achieved superior clinical outcomes.

Future prospective investigations with larger patient cohorts are necessary. Revision TKA for infection requires cautious approach given potential for poor outcomes, reduced satisfaction, and heightened complication risks. Patients should receive informed consent regarding higher re-revision surgery rates.

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