Introduction: Joint arthroplasty is one of the most popular procedures in medicine, with high success rates, tremendous benefits to the well-being of a large patient population, and continuously increasing demand for more and better joint replacements. Despite the proven success, implant associated infection remains an immensely destructive complication that leads to repeat surgical interventions, extensive disability, and long rehabilitation. Infection harms both the patient and society at large with increasing costs, pain, and suffering. In the present study, the characteristics and mid-term to long-term outcomes of TKA-associated infections treated with different types of approaches were evaluated.

Materials and Methods: We performed a retrospective study of the results of 71 infected TKA treated between August 1993 and August 2005. The data included medical records, age, gender, affected joint, the underlying diagnosis leading to the index knee replacement, preprosthetic infection classification, patients' comorbidities, periprosthetic infection diagnostic criteria, signs and symptoms of infection, laboratory parameters of infection, microbiology and histopathology results, imaging procedures, surgical and antimicrobial therapy, treatment modality, complications, complications' treatment, follow up, and treatment results. The Knee Society rating score was used to assess functional outcome. All statistical analyses were completed using SAS statistical software (Statistical Analysis System, Cary, NC). The Kaplan-Meier survival method was used to estimate long-term, postoperative survival free of major reoperation for infection or mechanical failure. Paired t tests or Wilcoxon signed-rank tests were used where appropriate to assess the association of preoperative and postoperative Knee Society scores. P values ≤ 0.05 were considered to be statistically significant.

Results: Thirty-four of the index arthroplasties had been done at our institution and 37 were done elsewhere and referred to us for the care of the infected knee arthroplasty. Table 1 summarises demographic data of TKA-associated infection in 71 patients and follow-up time. All patients had a minimum of 2 years of follow-up. Thirty-three patients had risk-factors for prosthetic joint-associated infection as presented in Table 2. Many of these patients had more than one risk-factors. Table 3 presents infection’s characteristics in our patients population. Preoperative knee aspiration yielded a positive culture in 57 cases (80.1%). In five knees two organisms were cultured. In five cases that yielded negative culture in knee aspirate, the intra-operative cultures were positive. The rest of the cases were diagnosed identifying gross purulence surrounding the prosthesis at the time of removal of the prosthesis, acute inflammation on operative histopathologic examination, or a sinus tract communicated with the prosthesis. The main pathogens isolated from cases of total knee arthroplasty infections were Coagulase-negative staphylococci methicillin-sensitive 13 (18.5%), Coagulase-negative staphylococci methicillin-resistant 13 (18.5%), Staphylococcus aureus methicillin-sensitive 8 (11.2%), Staphylococcus aureus methicillin-resistant 8 (11.2%), Enterococci 5 (7%), Beta-hemolytic Streptococcus group B 3 (4.2%), alpha-hemolytic Streptococcus 3 (4.2%), Streptococcus viridans 3 (4.2%). The treatment methods of first TKA infection was two-stage exchange in 59 (83%), debridement and retention - 5 (7.2%), arthrodesis - 5 (7.2%), excision arthroplasty as definitive - 1 (1.4%), antibiotic impregnated rod-spacer as definitive - 1 (1.4%). At final followup, 17 knees (24%) had required reoperation: 10 knees (14%) - component removal for reinfection; 2 (2.5%) - hematoma I&D; 1 (1.4%) - revision for stem end pain; 1 (1.4%) - open reduction for dislocation; 1 (1.4%) - painful hardware removal; 1 (1.4%) – amputation. Two knees were reinfected 3 times, three knees – two times. The median time to first reoperation for reinfection was 1.2 years (range, 0.04–2.5 years). By Kaplan-Meier survival analysis the estimated survivals free of reoperation for infection were 90.5% (confidence intervals, 85.3–96.1%) at 5 years and 82% (confidence intervals, 70.3–94.5%) at 10 years. In particular, the estimated survivals free of reinfection for 5 years and 10 years were 90.9% and 87.1%, respectively in patients who were not immunocompromised and 89.4% and 72.3%, respectively, in those who were immunocompromised. The Knee Society scores: Pain scores improved (p < 0.01), Preoperative 46 points (0–89), Postoperative 51 points (3–100); ROM improved (p < 0.01), Preoperative ROM 116° (30°–118°), ROM at last follow-up 100°.