



Original Article

Characterization of hip and knee arthroplasties and factors associated with infection[☆]



Cibele Zdebsky da Silva Pinto^a, Francine Taporosky Alpendre^{b,*},
Christiane Johnscher Niebel Stier^c, Eliane Cristina Sanches Maziero^b,
Paulo Gilberto Cimbalista de Alencar^d, Elaine Drehmer de Almeida Cruz^b

^a Department of Nursing, Universidade Federal do Paraná (UFPR), Curitiba, PR, Brazil

^b Nursing Post-graduate Program, Universidade Federal do Paraná (UFPR), Curitiba, PR, Brazil

^c Hospital Infection Control Service, Hospital de Clínicas, Universidade Federal do Paraná (UFPR), Curitiba, PR, Brazil

^d Hip and Knee Surgery Service, Hospital de Clínicas, Universidade Federal do Paraná (UFPR), Curitiba, PR, Brazil

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ABSTRACT

Objective: To characterize arthroplasty procedures, calculate the surgical infection rate and identify related risk factors.

Methods: This was a retrospective cohort study. Data on operations performed between 2010 and 2012 were gathered from documental sources and were analyzed with the aid of statistical software, using Fisher's exact test, Student's t test and the nonparametric Mann-Whitney and Wilcoxon tests.

Results: 421 total arthroplasty procedures performed on 346 patients were analyzed, of which 208 were on the knee and 213 on the hip. It was found that 18 patients (4.3%) were infected. Among these, 15 (83.33%) were reoperated and 2 (15.74%) died. The prevalence of infection in primary total hip arthroplasty procedures was 3%; in primary total knee arthroplasty, 6.14%; and in revision of total knee arthroplasty, 3.45%. *Staphylococcus aureus* was prevalent. The length of the surgical procedure showed a tendency toward being a risk factor ($p=0.067$).

Conclusion: The prevalence of infection in cases of primary total knee arthroplasty was greater than in other cases. No statistically significant risk factors for infection were identified.

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[☆] Study carried out at Hospital de Clínicas, Universidade Federal do Paraná (UFPR), Curitiba, PR, Brazil.

* Corresponding author.

E-mail: franalpendre@gmail.com (F.T. Alpendre).

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Caracterização de artroplastias de quadril e joelho e fatores associados à infecção

R E S U M O

Palavras-chave:

Segurança do paciente
Infecção hospitalar
Artroplastia
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Objetivo: Caracterizar as artroplastias, calcular a taxa de infecção cirúrgica e identificar fatores de risco relacionados.

Métodos: Estudo de coorte retrospectivo. Os dados das cirurgias feitas entre 2010 e 2012 foram coletados em fontes documentais e analisados com auxílio de programa estatístico e testes exato de Fisher, t de Student e não paramétrico de Mann-Whitney e Wilcoxon.

Resultados: Foram analisadas 421 artroplastias totais em 346 pacientes, 208 de joelho e 213 de quadril; 18 (4,3%) pacientes infectaram; entre esses, 15(83,33%) foram reoperados e dois (15,74%) evoluíram para óbito. A prevalência de infecção em artroplastia total de quadril primária foi de 3%, em artroplastia total de joelho primária de 6,14% e em revisão de artroplastia total de joelho de 3,45%; *Staphylococcus aureus* foi prevalente. O tempo de duração da cirurgia indicou uma tendência como fator de risco ($p=0,067$).

Conclusão: A prevalência de infecção em artroplastia total de joelho primária foi superior às demais e não foram identificados fatores de risco para infecção com significância estatística.

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Introduction

Of the 234 million surgeries performed in the world in 2004, the equivalent of one operation for every 25 people, two million resulted in death in the perioperative period and approximately seven million had complications, of which 50% were considered preventable.

Considering the magnitude of the problem, in 2009 the World Health Organization (WHO) established 10 objectives aiming to ensure and promote the surgical patient's safety; the sixth objective recommends that the health team use known methods to minimize the risk of surgical infection and the tenth deliberates that hospitals and public health systems must establish surveillance on the surgical capacity, volume and results.¹ Thus, it is considered that epidemiological studies can contribute to the planning of prevention measures for surgical infections and improve the provided quality of care.

The surgical site infection (SSI) is one of the most severe complications and defined as one that manifests within 30 days after the surgical procedure. In surgical procedures that include implant or prosthesis, a period of up to one year after surgery is considered as a diagnostic criterion.²

For the Center for Diseases Control and Prevention, in the United States of America, SSI is responsible for approximately 17% of all healthcare-associated infections (HAI)³; in Brazil, it is the third most frequent infection, affecting between 14% to 16% of hospitalized patients⁴ and for the WHO, this complaint represents 37% of all infections.¹ The SSI can be classified as superficial or deep; those considered superficial are the ones involving only the skin and the subcutaneous layer, whereas those involving deep incision tissue, such as fascia and muscles, are considered deep.⁴

Among the orthopedic surgical procedures that include prostheses, the total hip arthroplasty (THA) and total knee arthroplasty (TKA) are performed for the treatment of chronic refractory pain, mostly caused by osteoarthritis,

lesions caused by rheumatoid arthritis, avascular necrosis and fractures.⁵ The arthroplasty provides better quality of life; however, among the possible complications the occurrence of postoperative infection stands out.^{6,7} This is considered a severe complication due to the morbidity associated with prolonged hospitalization and need for surgical reinterventions and may result in shortening of the affected limb, severe deformities and death.⁷

The National Health Surveillance Agency of Brazil recognizes the importance of preventive actions and experimentally launched in 2014 the National Arthroplasty Register program. This initiative will allow the surveillance of implants and based on the database and epidemiological studies, the establishment of actions to reduce risks, assess the quality of implants, as well as prevent postoperative complications, which will contribute to the safety of surgical patients.⁸

A rapid clinical and laboratory diagnosis of SSI in joint prostheses may increase the chances of solving the problem, as they are severe and high-cost events⁹ and the knowledge of these complications' epidemiology will contribute to their prevention. Epidemiological surveillance, reporting of infection cases and information feedback to the surgical team are also strategies in the prevention of these diseases, in addition to stimulating the multidisciplinary team's commitment.¹⁰

In this sense, the epidemiology of cases of arthroplasties that have developed infection contributes to promote corrective and preventive actions, as well as promote the safety of the surgical patient. Therefore, the aims of this study were to characterize arthroplasties, calculate the surgical infection rate and identify associated risk factors.

Method

This is a retrospective cohort study, which used prospectively collected data, approved by the Research Ethics Committee under registration number 1102.027.11.04/CAAE

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