



Original Article

Amputation after failure or complication of total knee arthroplasty: prevalence, etiology and functional outcomes^{☆,☆☆}

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ABSTRACT

Objective: Identify the etiology and incidence, as well to assess functional outcomes of patients, undergoing lower limb amputation after failure or complication of total knee arthroplasty. These patients were treated at the Center for Knee Surgery at the National Institute of Traumatology and Orthopedics (INTO), during the period of January 2001 to December 2010.

Methods: The patients were interviewed and their charts were retrospectively analyzed to evaluate their functional outcome.

Results: The incidence of amputation due to failure or complication of total knee arthroplasty was 0.41% in 2409 cases. Recurrent deep infection was the cause of amputation in 81% of cases, being *Staphylococcus aureus* and *Pseudomonas aeruginosa* the most frequent germs. Vascular complications and periprosthetic fracture associated to metaphyseal bone loss were also causes of amputation. In our study, 44% of amputees patients were using orthosis and 62.5% have had the ability to walk.

Conclusion: Incidence of 0.41%, being the main cause recurrent infection. The functional outcome is limited, and the fitting achieved in 44% of patients and only 62.5% are ambulatory.

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^{☆☆} Study conducted at the Knee Surgery Center, Instituto Nacional de Traumatologia e Ortopedia, Rio de Janeiro, RJ, Brazil.

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Amputação após falha ou complicação de artroplastia total de joelho: incidência, etiologia e resultados funcionais

R E S U M O

Palavras-chave:

Complicações pós-operatórias
Amputação
Artroplastia do joelho

Objetivo: Identificar a etiologia e a incidência da amputação do membro inferior após falha ou complicação da artroplastia total de joelho e avaliar os resultados funcionais dos pacientes tratados pelo Centro de Cirurgia de Joelho do Instituto Nacional de Traumatologia e Ortopedia (Into) entre janeiro de 2001 e dezembro de 2010.

Métodos: Os prontuários foram retrospectivamente analisados para coleta dos dados e entrevista para avaliação do resultado funcional.

Resultados: A incidência de amputação em decorrência de falha ou complicação após 2.409 artroplastias totais de joelho foi de 0.41%. Infecção profunda recorrente foi causa de amputação em 81% dos casos. Os germes mais frequentes foram *Staphylococcus aureus* e *Pseudomonas aeruginosa*. Complicações vasculares e fratura periprotética associada a perda óssea metafisária representaram indicação em menor número de casos. Em nosso estudo, 44% dos pacientes amputados apresentam-se protetizados e 62.5% apresentavam capacidade de deambulação.

Conclusões: Incidência de 0.41% e principal causa infecção recorrente. O resultado funcional é limitado, a protetização foi alcançada em 44% dos pacientes e somente 62.5% são deambuladores.

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Introduction

The concept of improving joint function through modification of its surface was proposed by Verneuil¹ in 1860, by means of interposition of soft tissues for joint reconstruction. In this procedure, despite pain reduction and increased mobility, the joint stability achieved was unsatisfactory and gave rise to impaired functional results.

Today, total knee arthroplasty (TKA) is an effective option, with a high success rate in treating cases of advanced destruction of this joint caused by primary or secondary osteoarthritis. It provides considerable pain relief, correction of deformities and improvement of limb function, and consequently better quality of life for these patients.^{2,3}

In medium and long-term clinical evaluations, several authors have demonstrated good or excellent results in more than 90% of their patients who received knee prostheses.⁴⁻⁶ In other studies, the degree of satisfaction reported by patients has been analyzed, and these reports have corroborated the satisfactory data, with good or excellent results in around 90% of the patients.⁷⁻⁹

In several centers around the world, the durability of these implants with maintenance of joint adequate function has been shown to be greater than 92%, 13-15 years after the initial surgery.⁸⁻¹²

Because of the satisfactory results, the increased life expectancy among the population and the better quality of life that is sought, the numbers of TKA procedures is currently increasing. In 2002, in the United States, there was a 5% increase in the number of TKAs performed in relation to the previous years.¹³ Kurtz et al.¹⁴ estimated that by the year 2030, the number of primary TKA procedures performed in that country would increase by 670%.

In some cases, after several years of durability and adequate functioning, arthroplasty may present failure. In such cases, revision surgery becomes necessary, and satisfactory clinical results are often obtained.^{15,16} In other cases, arthroplasty may present failure or complications that are difficult to deal with.

Recurrent infection at prosthesis sites, cutaneous or vascular complications and significant loss of bone stock are challenging problems that are difficult to solve and which sometimes have unsatisfactory results. In these situations, arthrodesis and resection arthroplasty are management options for limb salvage. However, in some cases, the treatment may be unsuccessful and these patients become candidates for limb amputation.

Materials and methods

The aims of this study were to identify the etiology and incidence of lower-limb amputation after failure of or complications from TKA, and to evaluate the functional results among patients treated at the Knee Surgery Center of the National Institute of Traumatology and Orthopedics (INTO) between January 2001 and December 2010.

This study was submitted for evaluation and approval by the Research Ethics Committee of INTO and was conducted at the Knee Surgery Center of this institution.

The patients included in this study underwent amputation of all or part of a lower limb consequent to failure or complications after conventional primary TKA. Patients who underwent amputation due to failure of or complications from surgical procedures other than knee prosthesis implantation were excluded.

The medical files were retrospectively analyzed in order to gather demographic data, indications for primary

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