



Contents lists available at ScienceDirect

The Knee



Factors affecting failure of irrigation and debridement with liner exchange in total knee arthroplasty infection[☆]

Nicholas Bene^a, Xing Li^b, Sumon Nandi^{c,*}

^a Tufts University School of Medicine, Boston, MA, United States of America

^b Dartmouth Geisel School of Medicine, Hanover, NH, United States of America

^c The University of Toledo College of Medicine and Life Sciences, Toledo, OH, United States of America

ARTICLE INFO

Article history:

Received 19 March 2018

Received in revised form 9 June 2018

Accepted 2 July 2018

Available online xxx

Keywords:

Knee

Total knee arthroplasty

Infection

Irrigation and debridement

ABSTRACT

Background: We sought to determine if reoperation-free survival following irrigation and debridement with polyethylene liner exchange of acutely infected primary TKA is affected by: 1) postoperative antibiotic duration; 2) patient characteristics or surgical factors; 3) infecting organism; or 4) whether infection was acute postoperative versus hematogenous.

Methods: Of revision TKAs from 2004 to 2012 (n = 1735), 76 underwent irrigation and debridement (I&D) with liner exchange after primary TKA with mean 3.5-year follow-up. We analyzed those requiring reoperation for infection (n = 21) versus those who did not (n = 55).

Results: Increased duration of postoperative antibiotic therapy (p = 0.0163) decreased reoperation for infection. Atrial fibrillation (p = 0.0053), chronic obstructive pulmonary disease (COPD) (p = 0.0122), more than 15 cells per high powered field (HPF) (p = 0.0124), or higher preoperative C-reactive protein (p = 0.0025) increased reoperation for infection. Incidence of infection recurrence was highest with Methicillin resistant *S. aureus* (MRSA) and lowest with Gram negative organisms. There was no difference in reoperation-free survival between acute postoperative and hematogenous infections.

Conclusion: Reoperation-free survival following I&D with polyethylene liner exchange of acutely infected primary TKA: 1) improves with increased postoperative antibiotic therapy duration so chronic antibiotic suppression should be considered following TKA I&D with liner exchange; 2) is worse with atrial fibrillation, COPD, >15 cells/HPF, preoperative C-reactive protein >500 mg/L, or MRSA so two-stage revision may be favored in these patients; and 3) is equivalent in acute postoperative and hematogenous infections.

© 2018 Elsevier B.V. All rights reserved.

1. Introduction

Numbers of total knee arthroplasty (TKA) revisions are projected to increase at a rate more than double that of primary TKA [1]. Periprosthetic joint infection (PJI) may result in amputation or mortality and is among the most common indications for TKA revision. The cost of PJI to the healthcare system is significant and estimated to surpass 1.62 billion dollars annually by 2020 [2]. Thus, efforts to increase survivorship following TKA revision for PJI are essential.

[☆] Declaration of interests: none.

* Corresponding author at: The University of Toledo College of Medicine and Life Sciences, 3000 Arlington Avenue, Toledo, OH 43614, United States of America.

E-mail address: sumon.nandi@gmail.com (S. Nandi).

Irrigation and debridement (I&D) with modular component exchange for the treatment of acute PJI has a success rate of 40 to 50% [3–6]. It is generally accepted that more severe infections require longer duration of antibiotic therapy. However, the optimal duration of postoperative antibiotic therapy following I&D with modular component exchange has not yet been established [7]. It is widely known virulent organisms are more difficult to treat, and must be treated quickly. While an association between infecting organism, timing of surgery, and TKA I&D with polyethylene liner exchange survival has been identified, findings remain inconsistent in the current literature [3–6]. Other predictors of success following TKA I&D with liner exchange are unclear. Previous investigations of I&D for PJI have included both hips and knees in their cohort, as well as infection following both primary and revision arthroplasties [3,8]. The conclusions of these studies are confounded by the differing propensities for infection in hip versus knee and primary versus revision arthroplasty [9].

The aims of our study were to determine if reoperation-free survival following I&D with polyethylene liner exchange of an acutely infected primary TKA is affected by the following: 1) postoperative antibiotic duration; 2) patient characteristics or surgical factors; 3) infecting organism; or 4) whether the infection was acute postoperative versus acute hematogenous.

2. Methods

2.1. Study design

We utilized a retrospective cohort study design. At a single high-volume orthopedic tertiary referral center from 2004 to 2012, 1735 patients underwent revision TKA (any reoperation following index TKA). Inclusion criterion was the first I&D with polyethylene liner exchange performed for acute PJI (less than four weeks of symptoms) following primary TKA. PJI was diagnosed using Musculoskeletal Infection Society (MSIS) criteria [10]. Exclusion criteria were treatment for PJI of the same knee prior to I&D with liner exchange, two-stage revision TKA, as well as surgery performed less than two years prior to the end of the follow-up period. The two cohorts analyzed within the remaining source population ($n = 76$) were those who required reoperation for infection recurrence ($n = 21$) versus those who did not ($n = 55$) after I&D with polyethylene liner exchange performed for acute PJI (Figure 1). Twenty surgeons fellowship-trained in adult reconstruction performed the cases at a single hospital. The Institutional Review Board at our institution approved this study.

After I&D with liner exchange, all patients were treated with six weeks of intravenous antibiotics, followed by a course of oral antibiotics of varying duration. Type and duration of antibiotic therapy were determined by the infectious disease consult service at our institution based on infecting organism, duration of infection, host factors, and intraoperative findings.

The main study endpoint was reoperation for infection recurrence, as defined by MSIS criteria. Patients revised for any reason other than infection recurrence, and those who were not revised, were censored at the end of the follow-up period. The mean durations of clinical follow-up were as follows: 3.5 years (range 0.1–9.7 years) for the entire patient cohort; 1.3 years (range

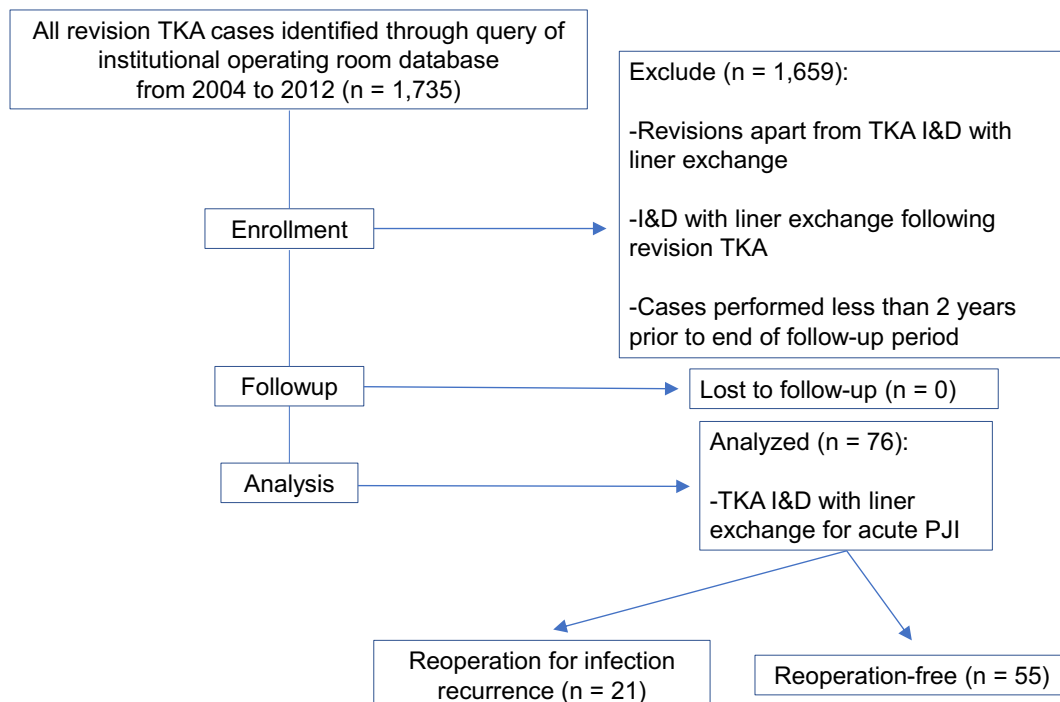


Figure 1. Flowchart for identifying all TKA I&D with liner exchange procedures from 2004 to 2012 and the cohorts analyzed.

Download English Version:

<https://daneshyari.com/en/article/8964698>

Download Persian Version:

<https://daneshyari.com/article/8964698>

[Daneshyari.com](https://daneshyari.com)