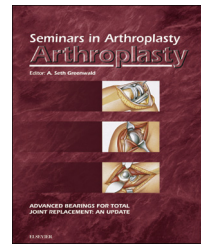


Available online at www.sciencedirect.com

ScienceDirect

www.elsevier.com/locate/semarthroplasty

Endpoint: When revision arthroplasty is no longer an option



Bryan D. Haughom, MD, Aaron G. Rosenberg, MD, and Brian K. Park, MD*

Department of Orthopaedic Surgery, Rush University Medical Center, 1611 W. Harrison St, Suite 201, Chicago, IL 60612

ARTICLE INFO

Keywords:

total hip
infection
bone loss
resection arthroplasty

ABSTRACT

The volume of revision total hip arthroplasty (THA) is increasing. While the tools to address these complex patients have improved over recent decades, hip reconstructive surgeons will no-doubt be confronted with difficult cases, and the consideration of salvage procedures must be undertaken. In the face of significant medical comorbidities, chronic infection, soft tissue concerns, and bone loss there comes a time when the risk of revision, both in terms of complication as well as poor outcome, becomes untenable. This article reviews the research surrounding the salvage options following failed THA, namely amputation, arthrodesis, resection arthroplasty, and benign neglect.

© 2016 Elsevier Inc. All rights reserved.

1. Introduction

Recent epidemiological estimates indicate significant growth in the number of hip arthroplasties performed in the United States, with an estimated greater than 500,000 primary total hip replacements performed annually by the year 2020–2030 [1–4]. The observed increase in Total Hip Arthroplasty (THA) volume is partially explained by an expansion of the indications for hip replacement. Where once only the most debilitated patients were selected to undergo THA, the dramatic impact on quality of life has prompted many surgeons to broaden their indications for hip arthroplasty. At both ends of the spectrum, younger active and older lower demand patients are undergoing hip replacement. Furthermore, patients with more medical comorbidities are also receiving hip arthroplasties. These factors may help partially explain

not only the increase in volume, but also the associated increase in the observed and expected need for revision THAs in the future [3–5]. Current reports indicate more than 50,000 revision THAs are performed annually in this country, with projections indicating up to a 137% increase by the year 2030 [3–5].

While significant advancements in revision arthroplasty components instrumentation have facilitated the effectiveness of revision hip replacement, even in extremely challenging situations, there are times when repeated revision arthroplasty becomes contra-indicated. Although the restoration of function and the alleviation of pain remain central tenets of orthopaedic surgery, and in particular arthroplasty surgery, we, as surgeons must not forget the principal of *primum nil nocere* (“first, do no harm”). We must weigh the risks of revision hip arthroplasty in a poor host against the

Neither Dr. Haughom nor Dr. Park has any disclosures to declare. Dr. Rosenberg receives royalties, is a paid consultant and presenter for, and owns stock in Zimmer. Dr. Rosenberg sits on the editorial or governing board of, and receives royalties, financial or material support from Wolters Kluwer Health—Lippincott.

No external funding or support was received for the preparation of this article.

All work for this article was conducted at Rush University Medical Center.

*Corresponding author.

E-mail address: brianparkmd@gmail.com (B.K. Park).

<http://dx.doi.org/10.1053/j.sart.2016.06.030>

1045-4527/© 2016 Elsevier Inc. All rights reserved.

potential benefits. In the face of significant medical comorbidities, chronic infection, soft tissue concerns, and bone loss there comes a time when the risk of revision, both in terms of complication as well as poor outcome, becomes untenable.

Once this point is reached, a frank discussion with the patient must be undertaken outlining the potential treatment options. These treatment options include symptomatic treatment and benign neglect, amputation, arthrodesis, or resection arthroplasty. While none of these options are ideal, it is important to understand the literature behind each of these treatment options in order to best guide our choices and inform our patients.

2. Is arthroplasty no longer an option?

While there are no true absolute contraindications to a revision hip arthroplasty, there are numerous relative contraindications which can be separated into several categories: medical comorbidities, soft tissue coverage concerns, poor bone stock, and chronic infection refractory to standard treatment.

A number of studies in recent years have highlighted both modifiable and non-modifiable risk factors for complications and mortality in hip arthroplasty including advanced age, increased body mass as well as the presence of significant cardiac, pulmonary, renal, hepatic, and immune disease [6–20]. In fact, there now exist a number of risk calculators and prediction tools to help guide decisions and counsel patients [10,16]. Furthermore, we strongly encourage consultation with your medical colleagues to help determine an accurate risk assessment. While medical input is essential, it is only one of the factors that must be considered so in all but the most extreme settings, the decision to preclude a patient from revision surgery remains at the discretion of the surgeon.

Despite improved metrics for diagnosis, as well as a better understanding of how to treat periprosthetic joint infections (PJI), they still represent the most significant biologic factors which may prevent successful revision. Periprosthetic joint infections remain an all-too-common cause of revision THA, with multiple reports demonstrating PJI to be the indication for revision in 15% of cases [5,21]. While many cases of chronic PJI can be successfully treated with a two-stage exchange, certain hosts (such as those with malnourishment, immunodeficiency, or obesity) and certain pathogens (e.g., resistant staphylococcal species) have been shown to be difficult to eradicate [22–26]. The vast majority of cases that fail two-stage exchange warrant reimplantation, however, recent reports evaluating repeat two-stage exchange show dismal outcomes. Kalra et al. evaluated 11 repeat two-stage exchanges from a single institution, and demonstrated a 64% recurrence rate [25]. In the appropriate patient, however, chronic antibiotic suppression has been shown to be an effective way to promote component retention and prevent repeat revision [27]. Other series demonstrate the efficacy of resection arthroplasty in eradicating infection in setting of a poor host or stubborn pathogen. Thus, refractory chronic infection is not inherently a reason to avoid revision or repeat revision surgery. However, surgeons and patients alike

must understand their chances of success with revision surgery as well as their alternative options (e.g., chronic suppression, resection arthroplasty, etc.).

Advances in cementless fixation revolutionized revision total hip arthroplasty, particularly in the setting of significant femoral and pelvic bone loss where reconstructions were once impossible (Fig. 1). Modern porous metal coatings and structural augments, as well as significant advances in component design (e.g., modular, tapered implants and total femoral replacement prostheses) now afford surgeons many more options than were once available. Furthermore, oncological prostheses as well as total femur replacements now exist in the armamentarium of the reconstructive surgeon to combat significant bone loss. Yet, despite these methods to deal with bone loss, surgeons are confronted with scenarios where reconstruction remains untenable. Although no true absolute contraindications exist with respect to bone loss, surgeons must consider the patient as a whole. One must consider the bone stock, the likelihood of operative success, patient medical comorbidities, and their overall functional level when deciding to reconstruct. For example, an elderly bed-bound patient with multiple significant medical comorbidities would not necessarily benefit from a complex revision, and might be better off with a resection arthroplasty. Ultimately these challenging treatment decisions must be undertaken with the collective input of the patient as well as our internal medicine colleagues.

The soft tissue envelope surrounding the hip is substantial and forgiving. Despite the fact that flap coverage is rarely necessary, several varieties of flaps have been devised and reported in the literature [28–30]. The more pressing issue for hip surgeons relates to the health of the skin overlying the hip. In the setting of chronic infection or multiply operated hips, however, there may be issues with regards to obtaining reliable closure primarily. Thus consultation with a plastic surgeon may be advised. However, the majority of soft tissue concerns can be addressed and are rarely a true barrier to revision. Consideration should be given to potentially temporizing your revision until the health of the local tissues has improved (i.e., once an infection has cleared). Nevertheless, soft tissue coverage issues may require substantial surgical procedures (e.g., flaps), which may be ill advised in certain hosts.

3. Symptomatic treatment/benign neglect

Symptomatic treatment and benign neglect remain viable options in certain clinical scenarios—namely in patients with chronic pain, chronic infections amenable to suppressive antibiotics, and those with unacceptable perioperative risk. In the case of chronic pain, without an impending fracture, patients can often be managed with medications. Furthermore, in the case of chronic infections that have proven refractory to standard treatment (e.g., two-stage exchange), several papers have illustrated the utility of chronic antibiotic suppression following a debridement and retention of components [27–33] ranging from 65% [33] to 86.2% [32]. And in the only comparative study on the topic, Siquiera et al. demonstrated a statistically significant benefit of chronic

Download English Version:

<https://daneshyari.com/en/article/5712390>

Download Persian Version:

<https://daneshyari.com/article/5712390>

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