



Case Report

The early results of gender-specific total knee arthroplasty in Thai patients

Aree Tanavalee^{a,*}, Thana Rojpornpradit^b, Sukree Khumrak^c, Srihatach Ngarmukos^a^a Department of Orthopaedics, Faculty of Medicine, Chulalongkorn University, 1873 Rama IV Road, Bangkok 10330, Thailand^b Department of Orthopaedic Surgery, Srirachon Hospital, 20 Sukhumvit Rd, Prawet, Bangkok 10250, Thailand^c Department of Orthopaedic Surgery, Bangkok-Pattaya Hospital, 301 Sukhumvit Road, Banglamung, Chonburi 20150, Thailand

ARTICLE INFO

Article history:

Received 16 May 2010

Received in revised form 7 September 2010

Accepted 2 October 2010

Keywords:

Total knee arthroplasty

Female

Gender-specific

Femoral component

Knee prosthesis

ABSTRACT

We prospectively evaluated a consecutive series of 314 patients (265 females and 49 males) who underwent unilateral TKA and received an average of 2 years of follow-up. In all patients, a standard (STD) or a gender-specific (GS) femoral component was selected based on the presentation of intra-operative medio-lateral overhanging of the femoral cutting guide over the femoral condyle. There were no significant differences in the pre-operative parameters of both groups. At the last follow-up, both STD and GS groups had similarly improved KS clinical scores (92.9 vs. 92.1 points), function scores (89.5 vs. 89.7 points) and ROM (133.5° vs. 134.1°) with no difference in the rate of lateral retinacular release. The overall percentage of the GS component selection was 52.5% (165/314) and was significantly higher in female patients than male patients (60.8% vs. 8.2%, $p < 0.0001$). In addition, selected GS prostheses increased significantly with increasing femoral size (25% for size C, 53% for size D, 86% for size E, and 100% for size F, respectively). There were no complications or early loosening related to the GS prosthesis. The mean post-operative limb alignment was 5.5° of the anatomical valgus with no difference between groups. We concluded that the GS femoral component did not provide better clinical outcomes than the standard femoral component; however, it provided surgical ease to minimize prosthesis overhanging in patients with narrow femoral condyles.

© 2010 Elsevier B.V. All rights reserved.

1. Introduction

Successful total knee arthroplasty (TKA) results in pain relief and improved quality of life. The number of patients undergoing surgery has been continuously increasing and has displayed a higher proportion of female patients [1–3]. Although studies on the clinical outcomes of TKA using a unisex prosthesis have shown no significant differences between males and females [3–7], several studies have reported differences in knee morphometry between genders [8–12] such as the height/width ratio of the distal femoral condyle, the quadriceps angle and the shape of the distal femur. Additionally, intra-operative studies on TKA have reported that female patients tend to have overhang size-matched femoral components compared to male patients [13,14].

There is a subset of opinion that women may benefit from a different design of the knee prosthesis to fit their anatomical dimensions, resulting in the design of gender-specific (GS) femoral components [15]. According to the claim of the designers, the current GS femoral component has been designed to closely match the major anatomical profiles of female knees [15], enabling less intra-operative

surgical adjustment and reducing the overstuffing of the femoral component on soft tissues. However, a recent study [16] found that both the patient's morphotype and gender differences determine the shape of the distal femur and proximal tibia and should be considered in the design of GS TKA implants.

To our knowledge, there is only a single report [17] on clinical benefits following the use of GS femoral components which described the proportional radiographic profile of GS prostheses and female knees. Thus, the need for GS femoral prostheses is still debated and has led us to compare short-term outcomes of TKA using standard (STD) or GS femoral components. The purpose of the present study was to compare the early results of TKA in patients using STD and GS femoral components and to report the incidence of GS femoral component selection based on intra-operative evaluation.

2. Materials and methods

Between March 2007 and December 2008, a consecutive series of 314 patients who had advanced knee arthritis and were scheduled for unilateral primary TKA were recruited for evaluation. Inclusion criteria included an age from 45 to 85 years, advanced primary osteoarthritis, no previous major knee surgery, no previous knee trauma, no radiographic bone defect, and a body mass index (BMI) less than 30 kg/m². Exclusion criteria included hypertrophic knee arthritis,

* Corresponding author. Tel.: +66 2 256 4212; fax: +66 2 256 4625.

E-mail address: areetana@hotmail.com (A. Tanavalee).

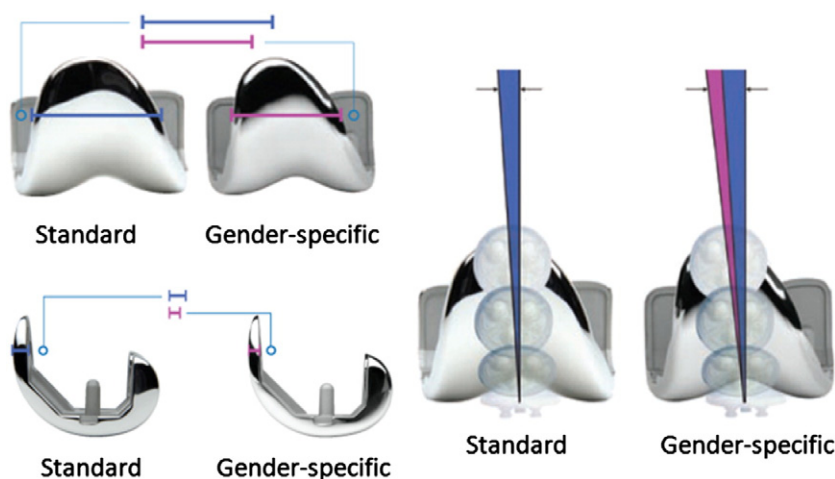


Fig. 1. Differences in prosthetic designs between the standard and gender-specific femoral components, which consists of 3 distinct features, including slender shape in the anterior flange, proportional contouring front-to-back and side-to-side on the distal femur and an increased trochlear groove angle.

intra-operative findings of hypoplasia of the distal femoral condyle or large femoral bone cyst (more than 1.5 cm in diameter). All surgeries were performed by a single surgeon (AT) using a single mini-midvastus surgical approach, a single knee prosthesis system [NexGen Legacy Posterior Stabilized-Flex (NexGen LPS-Flex), Warsaw, IN, USA] with two different types of femoral components (standard or Gender Solutions™) and a single rehabilitation protocol. The follow-up visits were scheduled at 2 weeks, 6 weeks, 3 months, 6 months, 1 year, and every 6 months.

At an average of two years of follow-up, patients were evaluated and, in both groups, the clinical and functional outcomes were compared using the Knee Society (KS) clinical and functional scores [18] and radiographic results. All parameters were measured by two independent observers (TR and SK), and mean values of the measured parameters by both observers were evaluated. According to the KS clinical rating scale [18], a score of 85 to 100 points indicated excellent results, 70 to 84 points indicated good results, 60 to 69 points indicated fair results, and less than 60 points indicated poor results. Serial single-limb standing anteroposterior and lateral radiographs were taken at the preoperative period, the 3- to 6-month follow-up and the yearly follow-up using 14×17 in cassettes. The radiographic limb alignments, which were taken at the preoperative and at the 3- to

6-month periods, were compared. Other abnormal radiographic signs were evaluated at the last radiographic follow-up.

2.1. The gender-specific (GS) femoral component

The Gender Solutions™ femoral component of the NexGen LPS-Flex knee system [15] was specifically designed to match the anatomy of the female distal femur and facilitate knee flexion after TKA. According to the designers [15], the GS femoral component more closely approximates the thickness of the original resected anterior condyle of the female patient. A relatively lateralized patellar sulcus, which increases the patellar sulcus angle of the implant by 3°, enhances patellar tracking and reduces the need for lateral retinacular release. Narrowing the femoral implant medio-laterally for a given AP dimension helps to proportionally seat the implant to fit the female knee shape more accurately (Fig. 1).

2.2. Surgical technique

Following the less invasive-midvastus approach, a 2 to 4 cm dissection along the fiber of vastus medialis obliquus (VMO) was made to gain complete visualization of the whole antero-distal femur

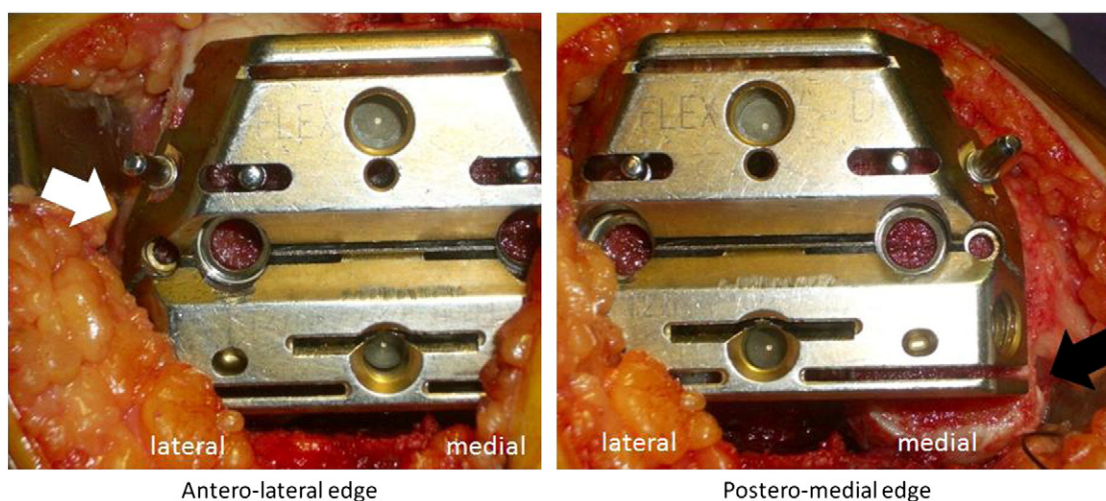


Fig. 2. Following the proper positioning of the femoral finishing guide on the antero-lateral edge of the femoral condyle (white arrow), direct visualization of the cutting guide over the postero-medial edge of the femoral condyle was evaluated for overhang (black arrow).

Download English Version:

<https://daneshyari.com/en/article/4077714>

Download Persian Version:

<https://daneshyari.com/article/4077714>

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