Total Hip Arthroplasty Performed Through Direct Anterior Approach Provides Superior Early Outcome

Results of a Randomized, Prospective Study

Javad Parvizi, MD, FRCS*, Camilo Restrepo, MD,
Mitchell G. Maltenfort, PhD, MBA

KEYWORDS

• Total hip • Direct anterior approach • Direct lateral approach • Outcomes • Complications

KEY POINTS

- Total hip arthroplasty (THA) performed through the direct anterior (DA) approach provides better early functional outcomes as measured by the validated functional instruments. These patients are able to return to work and gain functional independence earlier than their counterparts who receive surgery through the direct lateral approach and are subjected to the same postoperative rehabilitation protocols.
- The use of the DA approach, and the lack of need for muscle strengthening, reduces the need for physical therapy following discharge from the hospital. This difference minimizes cost, enhances functional recovery, and allows early return to driving and work.
- Performing THA through a DA approach, particularly without the proper training, may be challenging for the first few cases. Thus, there is a certain level of learning involved with this surgical approach. It is therefore paramount that surgeons unfamiliar with this approach who wish to adopt the DA approach for THA need to subject themselves to extensive cadaveric training.

INTRODUCTION

In recent years total hip arthroplasty (THA) performed through the direct anterior (DA) approach using the Hueter interval has been gaining popularity. This approach uses an internervous and intermuscular access to the hip joint and avoids violation of the abductor muscles or short rotators around the hip. Because of its minimally invasive nature, patients are expected to have a better early functional outcome, at least once the surgeon is beyond the learning curve.[1–6] Numerous level 1 studies have compared the outcomes of THA performed through the DA approach with those of patients receiving THA either through direct lateral (DL) approach or posterolateral approach. In all of these studies, THA performed through the DA approach had better early functional outcome. In addition, patients receiving THA through the DA approach reported returning to daily activities, such as driving, more quickly.[6–8]

Although based on available evidence, early outcomes of THA performed through the DA

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The Rothman Institute at Thomas Jefferson University Hospital, 925 Chestnut Street, Philadelphia, PA 19107, USA
* Corresponding author.
E-mail address: research@rothmaninstitute.com

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approach are superior to THA performed through other approaches, but a few facts still remain unknown.[6] It is not known whether the superior outcome of THA performed through the DA approach applies to the very early time period, (ie, within hours). It is also not known by what time point in the postoperative period the functional outcome of THA done through other approaches catches up with the patients who undergo THA through a DA approach. This article addresses both of these questions and discusses a randomized, prospective study with specific objectives.

MATERIAL AND METHODS

Following institutional review board approval, all patients with end-stage arthritis of the hip needing THA were approached and consented to participate in this randomized, prospective study. The study was also enlisted in http://www.clinicaltrials.gov. Randomization was performed using a random number generator in an electronic spread sheet. Patients were assigned to 1 of 2 groups. One group of patients received THA using the DA approach (modified Smith-Petersen), whereas others were assigned to receive THA using the DL approach (modified Hardinge) (Fig. 1). The study began in February 2012 and enrollment completed in November 2013. During the period of study, 75 patients (84 hips) were recruited into the study. Throughout the same period, 47 other patients were also approached for enrollment but declined to be part of the study. The responses that eliminated participation included preference of a surgical approach (8 patients), unwillingness to participate in the follow-up data collection (3 patients), and not specifically providing a reason (36 patients). All patients undergoing conversion THA, revision THA, or complex THA that required an additional surgical approach or exposure, such as trochanteric slide or osteotomy, were also excluded.

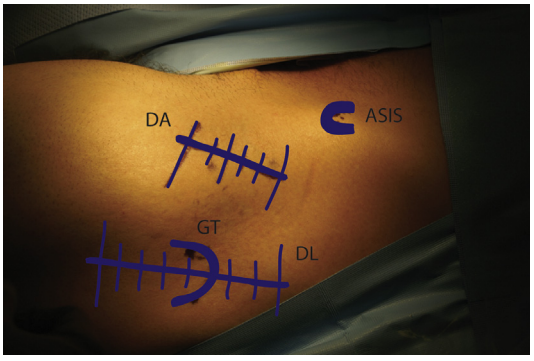

Fig. 1. The anatomic landmarks of the DA and DL incisions. ASIS, anterior superior ischial spine; GT, greater trochanter.

In addition, and as a requirement of the institutional review board, the patients needed to be between the ages of 18 and 75 years, have the underlying diagnosis of osteoarthritis, able to read and comprehend English, and to sign the consent form to participate in the study. Patients with cognitive impairment or severe psychiatric illness that would preclude participation in the protocol mandated procedures were excluded. The purpose of the study and the method, including the randomization, were discussed in detail with the patients before the consent was obtained. The patients were informed that they would receive 1 of 2 surgical approaches, both of which were safe and effective. The risks of the surgical procedure were also discussed in detail with the patients.

All patients were subjected to the same preoperative and postoperative protocols for rehabilitation, pain management, and anticoagulation. There were 18 men (40.9%) and 26 (59.1%) women in the DA group, compared with 14 (35.0%) men and 26 (65%) women in the DL group.

Preoperative Protocol

The patients were evaluated in the outpatient setting. Patients were told they would be subjected to THA using either the DA or the DL approach. Patients were not advised that one was likely to provide better early outcomes than the other. The postoperative analgesia protocol was also discussed in detail; patients were told it would include oral opioid and nonopioid analgesics supplemented by intravenous medications, if needed. The patients were reassured that their pain would be well controlled. The patients were told about the benefits of early ambulation and encouraged to comply with the rehabilitation protocol, which involved assisted ambulation on the day of surgery and twice daily thereafter. Patients were told that home discharge was preferred and family members were encouraged to care for the patient at home.

Surgical Data

All patients received spinal anesthesia using 0.2 mg of DepoMorphine. Intravenous propofol, midazolam, and opioid analgesics such as morphine, fentanyl, or meperidine were administered at the discretion of the anesthesiologist.