Gluteus Maximus Transfer for Trendelenburg Gait Following Total Hip Arthroplasty

Karen Nelson

Melissa Martinez

Fremont Scott

JJ Goldman

K Chaiyasate

Follow this and additional works at: https://scholarlycommons.henryford.com/merf2019caserpt

Recommended Citation
Nelson, Karen; Martinez, Melissa; Scott, Fremont; Goldman, JJ; and Chaiyasate, K, "Gluteus Maximus Transfer for Trendelenburg Gait Following Total Hip Arthroplasty" (2019). Case Reports. 93.
https://scholarlycommons.henryford.com/merf2019caserpt/93

This Poster is brought to you for free and open access by the Medical Education Research Forum 2019 at Henry Ford Health System Scholarly Commons. It has been accepted for inclusion in Case Reports by an authorized administrator of Henry Ford Health System Scholarly Commons. For more information, please contact acabrer4@hfhs.org.
Gluteus Maximus Transfer for Trendelenburg Gait Following Total Hip Arthroplasty

MM Martinez, KE Nelson DO, JJ Goldman MD, FL Scott DO, K Chaiyasate MD
Henry Ford Health System, Clinton Township, Michigan

Abstract

Introduction: Lateral approach total hip arthroplasty (THA) accounts for 12% of the total hip reconstructions performed annually. Approximately 4.4% of these patients experience postoperative rupture of the gluteus medius (routinely taken down and repaired during the surgery), resulting in loss of abduction and a contralateral hip drop (Trendelenburg gait). While functional muscle transfer has been proposed for use at the time of implant revision surgery, to our knowledge, no report exists of dynamic repair in patients with a Trendelenburg gait, warranting further clinical study.

Case Report

A 47 year old female patient underwent left total hip arthroplasty for primary osteoarthritis through an anterolateral approach. Her past medical history does include systemic arterial hypertension, hypercholesterolemia, and stroke without residual deficits. Five months after her initial surgery, and completion of her 12 weeks of routine physical therapy, she had persistent weakness and abnormal gait. She underwent MRI which revealed rupture of the gluteus medius and minimus. She then underwent left gluteus medius repair with suture bone anchors. She again continued to have weakness in hip abduction with a Trendelenburg gait even after completing 8 sessions of physical therapy. She was sent to another orthopedic surgeon for a second opinion and it was recommended that she undergo a functional muscle transfer versus a tendon allograft reconstruction. At that time she had an EMG which revealed normal neurologic function. A review of the literature was performed, and joint decision making was utilized to consent for a superior gluteus maximus transfer. An interdisciplinary team (plastic and orthopedic surgery) performed the surgery with a modified technique previously described by Whiteside at the time of hip revision.

The patient was placed in a lateral decubitus position and an incision was carried out through the prior incision and extended superiorly in a curvilinear fashion towards the PSIS. The gluteus maximus muscle and tensor fascia lata with the iliotibial band were exposed. Approximately half of the gluteus maximus muscle was split in line with it’s fibers and carried down to the fascia lata which was split in line with its fibers. The gluteus maximus flap was elevated to produce a triangular shaped flap. It was noted at this time that there was no deficiency of the posterior short external rotators or capsule and the second limb of the flap was not dissected. The greater trochanter was propped with a rasp down to bleeding bone utilizing the proximal 4cm of the greater trochanter. Next the proximal vastus lateralis was dissected in a T shape, subperiosteally down to bone. 8 bone tunnels were drilled into the greater trochanter. The flap was laid into the groove and a heavy non absorbable suture was used to anchor the flap to bone. This was tensioned with the hip in 15 degrees of abduction. The very distal end of the flap was sewn into the anterior aspect of the hip capsule.

Surgery was performed in 2 hours and 49 minutes. Postoperative course was uneventful. Post operatively the patient was placed in a hip abduction orthosis. She was toe touch weight bearing for 6 weeks with progressive weight bearing since then. She was made full weight bearing at 3 months post-onset, the patient has a significant increase in abduction strength (0-1 to 2-3). The patient is able to stand without hip drop but continues to require extensive physical therapy for balance and gait given the 2 years of atrophy and maladaptation. The patient reports improvement in quality of life, and physical therapy notes indicate improvement across all gait, stance, and strength studies.

Conclusion: The superior gluteus maximus muscle transfer for gluteus medius rupture is a viable option in patients with Trendelenburg gait, warranting further clinical study.

References


Figure 1. Pictured on the left are preoperative radiographs of the left hip demonstrating severe degenerative osteoarthitis. Pictured on the right are immediate post operative radiographs following left total hip arthroplasty.

Figure 2. Pictured on the left is an MRI of the Left hip demonstrating complete rupture of the gluteus medius.

Figure 3. Pictured on the right is an Intraoperative image demonstrating rupture of the gluteus medius and minimus.

Figure 4. Intraoperative image demonstrating the triangular shaped anterior gluteus maximus muscle flap. The image on the right is the final position of the tendon over the greater trochanter.

Figure 5. Intraoperative image demonstrating the final suture into the greater trochanter with closure of the muscle.

Figure 6. 4 month followup image without a hip drop.