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Gluteal Tendon Repair Using an Endoscopic Transosseous-Equivalent Double-Row Repair Technique

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Abstract

Background: Surgical repair of gluteal tendon tears can be performed through the endoscopic and open approaches[1-3]. Past literature suggests that the endoscopic approach has a decreased risk of postoperative complications and retearing, with similar functional outcomes, compared with the open approach[4,5]. Therefore, the endoscopic approach is being established as a safer option for gluteal tendon repair[4,5]. The endoscopic approach can be performed through several different techniques, including single-row (SR), conventional double-row (DR), and side-to-side (SS) repair[6-10]. However, for full-thickness tears, a technique with superior strength and stability is required. Thus, we present an endoscopic transosseous-equivalent double-row (TOE-DR) repair technique that is minimally invasive, allows for a tension-free repair, and approximates the tendon to the gluteal footprint[6-12].

Description: The patient is positioned in the lateral decubitus position, utilizing silicone-padded pegboards and padding on the osseous prominences. An obturator placed into a 7.0-mm cannula is utilized to create 4 peritrochanteric portals[1]. Specifically, the proximal direct lateral portal (PDLP) is made 6 cm proximal and the distal direct lateral portal (DDLP) is made 6 cm distal to the center point of the greater trochanter along the long axis of the femur. The anterolateral portal (ALP) and posterolateral portal (PLP) are made parallel to the vastus ridge through the gluteal footprint. A 17-gauge needle is inserted at a 45° inclination through the DDLP, and insufflation with 30 mL saline solution of the deep peritrochanteric space is performed. The PDLP is made under direct visualization with use of tip-to-tip triangulation with the DDLP, followed by ALP and PLP placement under direct visualization. Next, a greater trochanteric bursectomy is performed, and the tear site is assessed with use of a tissue grasper during hip range of motion for dynamic tear visualization. A shaver is utilized to debride degenerative tissue around the

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tendon and gluteal footprints. TOE repair of the tear is performed with use of a DR technique with the anchors placed at a 45° angle. The proximal row is placed into the center of the footprint, and the distal row is placed into the vastus ridge. A suture shuttle is utilized to facilitate passing of the suture limbs, after which the suture is tied in a sliding Weston knot with multiple half-hitches.

Alternatives: An alternative surgical technique is the open approach[1-5]. Alternative constructs include SR, SS, and conventional DR[5]. Alternative nonoperative treatments include physical therapy with gait training, the use of NSAIDs, and trochanteric bursal injections[13-16].

Rationale: The endoscopic approach has lower postoperative complication rates regarding retearing and infection compared with the open approach[4,5,7]. Furthermore, TOE-DR repair provides superior gluteal footprint coverage compared with SR repair[8,9,11]. Therefore, endoscopic TOE-DR repair is beneficial to patients who require additional strength and stability of the repair site.

Expected Outcomes: Significant increases in hip abduction strength ($p = 0.021$) and resolution of the Trendelenburg sign ($p = 0.0019$) have been demonstrated at 2 years postoperatively[1]. Patients also had significant improvements in functional outcomes and pain scores, including the mHHS ($p < 0.001$), HOS-ADL ($p < 0.001$), HOS-SSS ($p < 0.001$), NAHS ($p < 0.001$), iHOT-33 ($p < 0.001$), LEFS ($p < 0.001$), and VAS pain score ($p = 0.024$) at 2 years.

Important Tips:

- Postoperative use of a walker has been shown to promote favorable functional outcomes[7]. Therefore, a walker is recommended as an ambulatory aid in all patients for a minimum of 3 months postoperatively or until the Trendelenburg sign and gait are eliminated.
- A 17-gauge needle should be placed at a 45° angle to create the DDLP. This approach will maximize access and maneuverability to carry out the repair, including placement of anchors and suture shuttling and tiedown.
- Place suture anchors at a deadman's angle to reduce tension at the suture and increase resistance to anchor pullout[17,18].
- Patients with substantial retraction and/or fatty atrophy of the gluteal tendons may not be good candidates for this technique, as these factors would preclude successful repair or improvement in function.
- Excessive pelvic tilt with an unbalanced gait can place substantial stress on the repair site and increase risk of retearing.
- Counseling of patients on complying with the prehabilitation and rehabilitation protocol is imperative for a successful repair.

Acronyms and Abbreviations:

- TOE = transosseous-equivalent
- DR = double-row
- SR = single-row
- SS = side-to-side
- iHOT-33 = International Hip Outcome Tool-33
- HOS-ADL = Hip Outcome Score–Activities of Daily Living
- HOS-SSS = Hip Outcome Score–Sports Specific Subscale
- mHHS = modified Harris hip score
- VAS = visual analog scale

- NSAID = nonsteroidal anti-inflammatory drug
- PDLP = proximal direct lateral portal
- DDLP = distal direct lateral portal
- ALP = anterolateral portal
- PLP = posterolateral portal
- AP = anterior posterior
- DVT = deep vein thrombosis
- MRI = magnetic resonance imaging
- PROM = patient reported outcome measure
- MCID = minimal clinically important difference
- ROM = range of motion
- NAHS = Non-Arthritic Hip Score
- LEFS = Lower Extremity Functional Scale

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