LARS™

Advanced Hip Abductor Augmentation

An overview

Corin

Responsible Innovation

Greater trochanteric pain syndrome: A novel use for LARS™ in hip abductor repair

What is the prevalence of GTPS?

Greater Trochanteric Pain Syndrome (GTPS) or trochanteric bursitis is estimated to affect between 10% and 25% of the population in industrialised societies[1,2,3]. Fearon *et al* found that people with GTPS had low levels of full time work participation with pain and dysfunction levels indistinguishable from patients with severe osteoarthritis (OA) of the hip, awaiting total hip arthroplasty[4].

In a large, multicentre study involving over 3000 middle-age to elderly adults, Segal *et al*[3] found the prevalence of GTPS to be higher in women and patients with coexisting Lower Back Pain (LBP), OA, Ilio-Tibial Band (ITB) tenderness and obesity. The higher reported incidence in these patients suggest that altered lower limb biomechanics and abnormal force vectors across the hip may predispose patients to GTPS[1].

What is GTPS attributable to?

Recent improvements in the understanding of the pathology of GTPS have revealed that tears of the gluteus medius or minimus muscles or their tendinous insertions, similar to rotator cuff tears seen in the shoulder[5], are the most common cause of GTPS[1,6,7]. Furthermore, 22% of patients with intra-capsular femoral neck fractures demonstrated abductor tendon tears with a chronic degenerate appearance[5].

Diagnosis of gluteal tendon tears can be confirmed by MRI scan with 91% accuracy[8].

Do current treatment modalities work?

Current conservative treatment options, involving non-steroidal anti-inflammatory medications, physiotherapy and corticosteroid injections, tend to show high symptom recurrence rates at one year[9].

Whilst Walsh *et al*[10] reported approximately 90% good results with suture repair alone, patients were required to remain non-weight bearing for 6 weeks. Other studies using suture and anchor based surgical repairs have demonstrated good initial pain relief but high re-rupture rates of up to 31% at 12 months[9].

How is LARS™ different in gluteal repairs?

Rotator cuff repairs are routinely protected in an abduction sling, but this is impractical in gluteal tendon repairs. Early mobilisation may be a contributing factor to the high re-rupture rates seen with traditional suture based repairs. The use of LARS™ to augment the repair is seen as an attempt to decrease the mechanical stress of the repair in the ambulating patient, providing an improved mechanical environment to facilitate healing rates.

LARS™ is a third generation synthetic, incorporating a high strength, novel design technology which minimises post-operative strength loss and material degradation[11,12,13]. As an augment, LARS™ provides immediate strength and stability to the repair, with increased resistance to elongation and low re-rupture rates, thereby potentially facilitating rapid return to function and pain elimination post surgery[14,15,16].

The reason to reinforce

Is there any clinical evidence for gluteal repairs with LARS™?

Recent short term evidence from studies published in Australia and the UK demonstrate promising results with LARS™ for gluteal tendon repairs and reinforcement.

Bucher *et al*[14]

Patients with hip abductor tears that had failed to respond to conservative treatments were treated surgically with a LARS™ ligament used to augment a suture based repair.

Significant improvements were reported for all patient reported outcome measures. All patients were satisfied or very satisfied with the procedure at 12 months.


Orthopaedic Surgery

Synthetic Ligaments in Hip S

Gluteal tendon repair augmente ligament: surgical technique ar

ORIGINAL ARTICLE

Gluteal tendon reconstruction in association with hip arthroplasty

Bajwa *et al*[15]

Hip abductor repair was performed in conjunction with total hip replacement on 24 patients. Surgical treatment included direct transosseous sutures, suture anchors, LARS™ ligament or a combination.

'There was significant improvement in the mean HOOS (p<0.05) post-operatively in all domains... We believe that gluteal tendon reconstruction (including the use of LARS™) should be considered in all patients in whom there is gluteal tendon damage found at the time of hip arthroplasty'

Holroyd and Fern[16]

Review of the use of synthetics in hip surgery as an option for reinforcing repairs of the abductor tendons.

Described using LARS™ in repairing gluteal tendon tears either following total hip replacement or diagnosis of GTPS.

The evidence base

Gluteal tendon repair augmented with a synthetic ligament: surgical technique and a case series[13]

Bucher TA, Darcy P, Ebert JR, Smith A, Janes G.

Abstract

We describe an augmented surgical repair technique for gluteus minimus and medius tears, along with a supportive case series. A consecutive series of 22 patients presenting with clinical and radiological findings consistent with hip abductor tears, who had undergone failed prior conservative treatments, were prospectively recruited. Patients underwent open bursectomy, Y-iliotibial release, debridement of the diseased tendon, decortication of the trochanteric foot-plate and reattachment augmented with a LARS ligament through a trans-osseous tunnel, together with suture anchors. All patients were assessed pre- and postoperatively to 12 months with the Oxford Hip Score (OHS), the Short-Form Health Survey (SF-36) and a Visual Analogue Pain Scale (VAS), while a satisfaction scale was employed at 12 months. A statistically significant improvement ($p<0.05$) was observed for all patient reported outcome measures, while all patients were at least 'satisfied' with the procedure at 12 months. One patient reported some lateral hip discomfort at 10 months, and removal of the LARS interference screw provided immediate relief. One patient had a urological catheter-related complication. With no other complications and no clinical failures of the repair, we believe the technique to be safe and reliable, whilst reducing the incidence of re-tears as reported in the existing literature.

TABLE 1 - PREOPERATIVE, POSTOPERATIVE AND CHANGE SCORES IN PATIENT REPORTED OUTCOMES

	Mean (SD)	Difference from baseline (95% CI)	p-value
Oxford Hip Score			
Baseline	22.4 (7.3)		
3 month	35.0 (7.7)	12.6 (8.9 to 16.3)	<0.001
6 month	38.3 (6.3)	15.9 (12.5 to 19.3)	<0.001
12 month	41.1 (6.5)	18.7 (15.3 to 22.1)	<0.001
SF-36 PCS			
Baseline	29.7 (6.4)		
12 month	44.4 (11.3)	14.7 (10.4 to 19.0)	<0.001
SF-36 MCS			
Baseline	45.8 (11.5)		
12 month	52.5 (8.6)	6.7 (1.7 to 11.7)	<0.009
VAS			
Baseline	7.1 (1.3)		
12 month	1.6 (1.4)	-5.5 (-6.2 to -4.8)	<0.001

The evidence base

Gluteal tendon reconstruction in association with hip arthroplasty[14]

Bajwa AS, Campbell DG, Comely AS, Lewis PL.

Abstract

We studied a prospective cohort of patients in whom gluteal tendon reconstruction was undertaken in association with hip arthroplasty. Over the course of 10 years, 24 patients had gluteal tendon reconstruction performed either at the time of hip arthroplasty or post-operatively, using the Ligament Augment and Reconstruction System (LARS), suture anchors, direct suture to bone, or a combination of these techniques. All patients were assessed clinically and by patient-centred outcome measures, including the hip disability and osteoarthritis score (HOOS). The mean post-operative HOOS was significantly better than pre-operative score ($p < 0.05$). The mean post operative score in the domains of symptoms, pain, activities of daily living (ADL), sports and quality of life (QoL) was 72 (SD 12.8), 73 (SD 15.9), 71 (SD 11.8), 54 (SD 22.6) and 57 (SD 21.76) respectively. There were two failures of gluteal tendon reconstruction which required revision using LARS. One patient died of an unrelated cause. Surgical intervention should be considered in gluteal tendinopathy at the time of hip arthroplasty or when symptoms occur following arthroplasty.

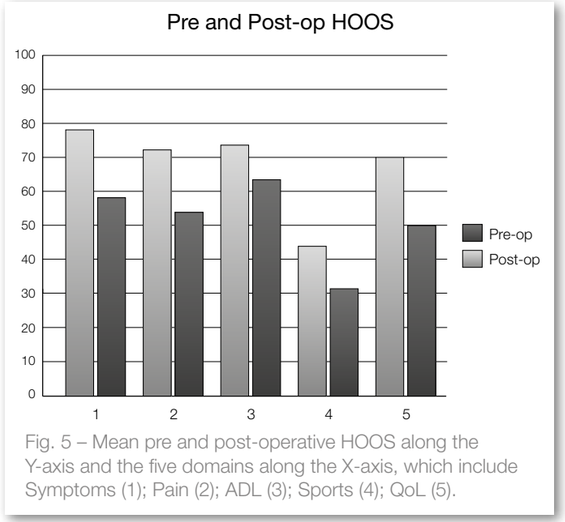
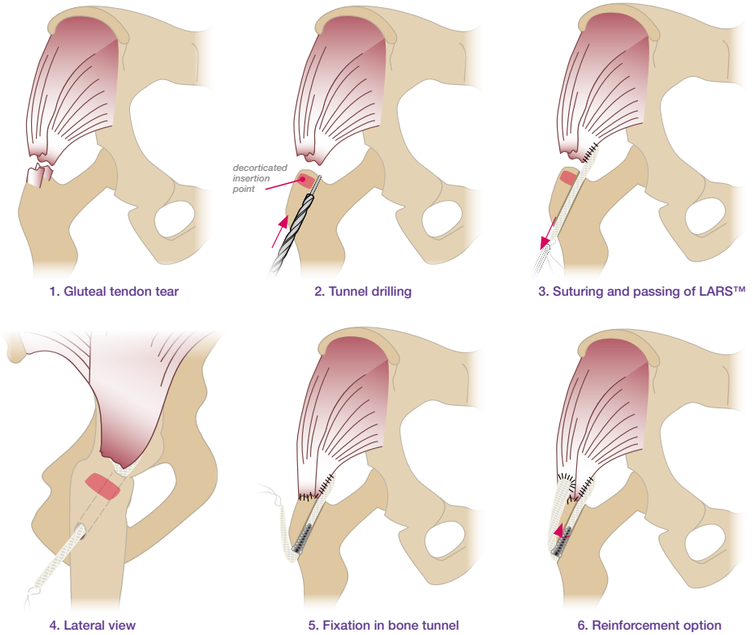


Fig. 5 – Mean pre and post-operative HOOS along the Y-axis and the five domains along the X-axis, which include Symptoms (1); Pain (2); ADL (3); Sports (4); QoL (5).

Summary of surgical technique



Ordering information

104.135 IT32RA

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