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Post-operative rehabilitation of a distal biceps brachii tendon reattachment in a weightlifter: a case report.

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Objective: *To describe the successful rehabilitation of a distal biceps brachii tendon reattachment following an acute traumatic tendon rupture.*

Clinical Features: *A 30-year-old weightlifter presented five days post-op after a left distal biceps tendon repair. A three month one pound weight-restriction was recommended by the attending surgeon. Active and passive elbow and wrist range of motion were markedly reduced with profuse post-operative swelling and bruising noted upon initial inspection.*

Intervention and Outcome: *An accelerated treatment program was prescribed that included soft tissue therapy, scar mobilization, laser therapy, kinesiology tape and rehabilitative exercise. A novel training method known as blood flow restriction (BFR) training was utilized throughout the rehabilitative process to maximize recovery and retain muscle mass and strength. The weightlifter returned to near pre-injury activity level*

Objectif : *Décrire le succès de la rééducation du tendon distal du biceps brachial après une rupture traumatique aiguë.*

Caractéristiques cliniques : *Un haltérophile de 30 ans s'est présenté cinq jours après avoir subi une chirurgie de réparation du tendon distal du biceps brachial gauche. Le chirurgien ayant pratiqué l'intervention avait recommandé de limiter la levée de poids à l'épaule à une livre pendant trois mois. Au premier examen, on a noté une réduction considérable de l'amplitude de mouvement à la mobilisation active et passive du coude et du poignet, ainsi qu'un œdème postopératoire important et de multiples ecchymoses.*

Intervention et résultat : *On a prescrit un programme thérapeutique intensif comprenant le traitement des tissus mous, le massage des tissus cicatriciels, des traitements au laser, l'application de ruban de kinésiologie et des exercices de rééducation. Pendant toute la rééducation, on a eu recours à une nouvelle technique d'entraînement appelée « entraînement avec restriction du flux sanguin » pour favoriser au maximum la récupération, la prise de masse musculaire et le retour de la force musculaire. Au bout de 3,5 mois,*

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after 3.5 months. Treatment, exercise and BFR protocols are provided.

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KEY WORDS: chiropractic, biceps brachii, post-operative, rehabilitation, blood flow restriction training

l'haltérophile a pu pratiquer son sport presque comme il le faisait avant sa blessure. Les protocoles du traitement, des exercices et de l'entraînement avec restriction du flux sanguin sont expliqués.

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MOTS CLÉS : chiropratique, biceps brachial, post-opératoire, rééducation, entraînement avec restriction du flux sanguin.

Introduction

The biceps brachii is an anterior arm muscle composed of two heads which bridge the shoulder girdle to the forearm. The distal biceps tendon from the two heads may converge or remain anatomically separate before they attach to the radial tuberosity.[1] Despite this variance in tendon anatomy, the biceps short head attaches more distal than that of the bicep long head on the radial tuberosity.[2] The orientation of the biceps short head primarily contributes to elbow flexion strength while the biceps long head primarily provides supination strength while the elbow is in a flexed position.[1,2]

Rupture of the distal biceps tendon is uncommon and is reported to account for only 3% of biceps tears.[3-5] Rupture of the distal biceps tendon is usually traumatic[1] and most commonly occurs in males[1,2,4,6], athletes[1-4] ,weightlifters[1,4,7], and laborers[1,4] between the ages of 40 and 60[2,4]. The tendon is usually injured when a strong and abrupt extension force is placed on the elbow and is resisted with the demand on the tendon exceeding its capacity to resist the motion.[1-3,6] Lifting a heavy object, catching a heavy falling object, or grabbing a fixed object while falling are a few ways in which the distal biceps tendon is commonly ruptured.[1]

Both operative and non-operative management of distal biceps ruptures are cited in the literature with operative care consistently demonstrating superior improvements in flexion and supination strength.[1-4,7] Single and two-incision techniques have been performed for anatomical re-attachment of the distal biceps tendon. Both procedures yield similar results in terms of patient safety and functional outcomes.[3,7] Non-operative care is typically reserved for patients reluctant to undergo surgery, accepting of functional and strength limitations, medically compromised, or who are presenting with a chronic rupture.[3]

A physiotherapy[2,8] or rehabilitation program[1,2,5,6] is recommended following a distal biceps rupture regardless of the type of intervention performed. Despite these recommendations, there is no consensus on what constitutes an optimal rehabilitation program.[1,6] Traditionally, post-operative rehabilitation consisted of up to six weeks of immobilization followed by gradual passive and active elbow and forearm ranges of motion with strength training commencing after two or three months.[8] Full activity or return to sport is typically assumed four to six months post-op.[2,6] More recently, early[2,5] and unrestricted[3] ranges of motion has been proposed in uncomplicated tendon repairs since the repair strength is greater than the force produced by an unweighted forearm[3]. Furthermore, strengthening of the upper back and shoulder girdle has also been recommended to help the patient return to full activity.[2]

Muscle atrophy and reduced muscle strength is a common side effect of prolonged unloading of muscle tissue through bed rest or immobilization.[9] Traditionally, resistance training has been used to mitigate this phenomenon with loads of >70% maximal voluntary contraction (MVC) recommended to optimize this process.[10] Blood flow restriction (BFR) or occlusion training has demonstrated similar changes in upper and lower limb muscle strength and hypertrophy using much lower loads when compared to traditional high-load resistance training.[11-13] BFR with low load resistance training provides a practical progression from immobilization to high load resistance training in injured populations who cannot withstand the early mechanical stress from higher loads.[11,13-15]

The purpose of this case report is to present the successful and accelerated multimodal rehabilitation program for a distal biceps tendon repair in a weightlifter following an acute traumatic tendon rupture. To the author's knowledge there are no case reports written on rehabilitation of a distal biceps tendon repair using BFR as an integral part of the rehabilitation process.

Case Presentation

A 35-year-old male weightlifter and strength and conditioning (S&C) coach presented five days post-op after the reattachment of his left distal biceps brachii tendon following a traumatic full rupture of the structure. The injury occurred while spotting a client during a push press exercise. While spotting the exercise, the client let go of the bar during its descent and the weightlifter reflexively grabbed it with his arm above 90 degrees of forward flexion and the elbow at full extension. The weightlifter experienced an immediate sharp and audible tearing sensation with mild to moderate swelling in the left cubital fossa. The complaint was diagnosed as a partial tear of the distal biceps tendon at a walk-in clinic the same day of the injury. Continued pain and substantial limitations in function led to a second diagnosis of a complete rupture of the distal biceps tendon being made by an orthopedic surgeon three days later. The weightlifter underwent surgical reattachment of the distal biceps brachii tendon the following day using a single incision technique. A second incision became necessary during the operation due to the degree of biceps retraction that was present during the procedure. A short course of Tylenol 3 was prescribed for the first three days post-op. The arm was immobilized in a soft cast and the weightlifter was advised to use a sling while at work. The surgeon recommended a lifting restriction of one pound on the left arm for three months.

During the initial consult, the weightlifter reported his pain was a 5/10 on the Numeric Pain Rating Scale (NPRS) and characterized it as a deep and profuse achiness with movement and at rest. The weightlifter reported a marked loss of left elbow, forearm and grip strength and mobility and occasional cramping in the forearm flexors and extensors since the operation.

A Disabilities of the Arm, Shoulder and Hand (DASH) and a Mayo Elbow Performance Index score was obtained during the initial examination. The DASH indicated a high degree of disability with a score of 87.5 in the primary module and a score of 100 for both the work (S&C coach) and sport (weightlifting) modules. The Mayo Elbow Performance Index indicated poor elbow performance with an initial score of 20.

Figure 1.
Post-operative anterior aspect of distal arm and proximal forearm.

No red flags were identified during the initial examination. The weightlifter reported weekly physical activity consisting of strength training and ice hockey in addition to the demands of his coaching position. He reported an alcohol consumption of one beer per day, caffeine consumption of one coffee or tea per day and no history of smoking. No allergies were reported. The only medication taken by the weightlifter at the time of the initial examination was 200mg of Advil as needed for pain relief. Advil consumption lasted one day following the initial appointment. No dietary supplements were taken throughout the course of the rehabilitation process. The weightlifter averaged seven hours of sleep throughout the rehabilitative process. No past or present conditions, illnesses or surgeries were reported. The weightlifter reported a history of minor hip and low back injuries, all of which have been managed with conservative care.

Clinical Findings

Visual inspection revealed profuse swelling throughout the extensor and flexor surfaces of the forearm, the dorsal aspect of the hand and all five digits. 18 staples over two incision sites were noted at the distal arm and proximal forearm with bruising noted around the incisions (Figure 1).

Passive elbow range of motion was limited to 40-100° of flexion-extension and active elbow range of motion was severely limited to 70-80° of elbow flexion-extension due to pain. Active wrist flexion, extension and supination were limited to 40°, pronation was limited to 30° and radial and ulnar devation were limited to 15° via visual estimation with patient reported achiness throughout the forearm with all movements. Flexion and extension ranges of motion for all digits were full with achiness reported throughout the forearm with both motions. Palpation revealed firm distention throughout the arm and forearm tissues. Resting tension was noted in both the biceps brachii and brachialis muscles.

Therapeutic Intervention

The weightlifter underwent a course of two treatments per week for 15 weeks. Exercise descriptions, treatment, and notable end of week patient progressions are provided in Table 1. The kinesiotaping application was applied in a weave pattern over the anterior aspect of the arm and forearm during the first five sessions, steering clear of the incision sites in an attempt to promote lymphatic drainage in the area. Compression and elevation of the arm was advised during this time. Laser therapy using a post-surgical setting of seven minutes at 6.5W for a total of 2730.0 J (LiteCure Lightforce™ Pro) was also applied along the incision sites and the attachment point of the biceps brachii tendon during the first 10 sessions.

Soft tissue therapy using Functional Range Release® techniques began three weeks following the initial appointment once the bruising and swelling in the arm and forearm and the scabbing over the incision sites were no longer present. Functional Range Release® is a hands-on method of assessing anatomic structures through palpating at tissue-appropriate depth and tension at rest and through movement to delineate between healthy and aberrant tissue motion. Manual tissue-specific inputs are then applied to the target tissues depending on the findings garnered by the assessment process. Soft tissue treatment initially began as scar mobilization and was then gradually applied to the other affected upper extremity tissues which most commonly presented in the anterior aspect of the arm and anterior and posterior aspect of the forearm.

Blood flow restriction (BFR) training started during the third week using the 30-15-15-15 protocol. The 30-15-15-15 protocol consists of one set of 30 repetitions followed by three sets of 15 repetitions, all with a 30 second break between sets. The weightlifter was required to complete the protocol without the cuff and with no reported fatigued or discomfort before the BFR training commenced. A WelchAllyn® blood pressure cuff was used with a pressure reading of 80mmHg with the arm at rest during each session. The protocol initially began with no external weight held by the affected arm in a wrist neutral position. Weight progressions and changes in wrist position are outlined in Table 1.

Exercises, many of which are grounded in Functional Range Conditioning® principles, were introduced immediately following the initial consultation. Exercises during the first few weeks of treatment were mostly open kinetic chain (OKC) movements to promote lymphatic drainage and early mobilization of the injured tissue. Controlled articular rotations (CARs) were prescribed to maintain and improve the ranges of motion for the wrist and shoulder articulations. Isometric loading of the biceps tendon using the opposite arm for resistance application commenced during week four. By week eight, external load was prescribed using a series of multi-joint exercises. Weekly exercise progressions with desired joint loading angles, % maximal voluntary contraction (MVC), and repetition and set counts are provided in Table 1.

A Disabilities of the Arm, Shoulder and Hand (DASH), Mayo Elbow Performance Index score and an NPRS score was obtained again 3.5 months after his initial presentation. The DASH indicated a score of 5 in the primary module and a score of 6.25 for the work (strength and conditioning coach) module and a score of 25 for the sport (weightlifting) module. It was the weightlifters belief that the degree of disability expressed in the sport module was largely influenced by the relative deconditioning that occurred following the injury. He was able to complete all of the multi-joint exercises that he could perform prior to the injury, however, the training load (sets/reps and weight) were not at pre-injury levels. The Mayo Elbow Performance Index indicated excellent elbow performance with a re-evaluation score of 95. The NPRS score was 0/10.

The weightlifter was discharged from care at 3.5 months post-op as he was leaving the country for several months.

Discussion

Rupture of the distal biceps brachii tendon is an uncom-

Table 1.
Exercise and treatment progression for distal biceps brachii tendon reattachment.

Timeline	Exercise Description	Treatment	End of Week Patient Progression
Week 1	Daily – OKC CARs of the scapulothoracic joint, glenohumeral, and radiocarpal joints with elbow in fixed, pain-free position. 10-12 rotations clockwise and counter-clockwise Daily – Alternating active finger flexion and extension to tolerance Daily – Passive and active-assisted elbow flexion and extension to tolerance, arm on table at shoulder height with furniture moving pad under forearm. 3x 5-6 repetitions	Lymphatic drainage Kinesiotape application Laser therapy, post-surgical setting – 7 minutes at 6.5W = 2730.0J (LiteCure Lightforce™ Pro)	No swelling in hand & digits. ↓ swelling & bruising around incision sites. AROM digit flexion & extension no longer painful, fist clenching – aching sensation. AROM elbow extension 60°, flexion 110° before ache. AROM forearm supination 60° & pronation 45°, mild ache at end ranges.
Week 2	Daily – Week 1 OKC exercises Daily – Passive & active-assisted elbow flexion and extension repetition count ↑ 3x 10-12 repetitions Daily – Passive & active-assisted elbow flexion & extension with the arm at side 3x 5-6 repetitions	Lymphatic drainage Kinesiotape application Laser therapy, post-surgical setting – 7 minutes at 6.5W = 2730.0J (LiteCure Lightforce™ Pro)	Pain-free elbow extension 75°.
Week 3	Daily – Week 1 OKC CARs Daily – Week 2 exercises Daily – Quadruped CKC scapulothoracic CARs, elbow extended to tolerance. 3x 5-6 repetitions per direction	Laser therapy, post-surgical setting – 7 minutes at 6.5W = 2730.0J (LiteCure Lightforce™ Pro) Scar mobilization techniques BFR training, 30-15-15-15 protocol. Bodyweight, wrist neutral	No swelling or bruising in arm or forearm. AROM elbow flexion 125° & extension 80°. AROM wrist pronation 60° & supination 75°, both non-painful & limited by 10°.
Week 4	Daily – Week 1 OKC CARs Daily – Week 2-3 exercises Daily – Isometric elbow flexion & extension, wrist neutral, <5% MVC at 60°, 90° and 120°, 30 seconds each	Laser therapy, post-surgical setting – 7 minutes at 6.5W = 2730.0J (LiteCure Lightforce™ Pro) Scar mobilization techniques Soft tissue therapy of affected upper extremity tissues BFR training, 30-15-15-15 protocol. Bodyweight, wrist neutral	AROM wrist pronation 65° & supination 80° both non-painful. AROM elbow extension full & non-painful.
Week 5	Daily – Week 1 OKC CARs Daily – Week 2-4 exercises Daily – Isometric forearm pronation & supination, <5% MVC at pain-free end range, 30 seconds each	Scar mobilization techniques Soft tissue therapy of affected upper extremity tissues BFR training, 30-15-15-15 protocol. 1lbs, wrist neutral	AROM elbow flexion 135°.

Legend: OKC = Open kinetic chain; CARs = Controlled articular rotations; AROM = Active range of motion; ROM = range of motion; BFR = Blood flow restriction; MVC = Maximal voluntary contraction; RPE = Rate of perceived exertion; ADLs = Activities of daily living; lbs = pounds.

Timeline	Exercise Description	Treatment	End of Week Patient Progression
Week 6 & 7	Daily – Week 1 OKC CARs Daily – Week 2-5 exercises Daily – Isometric hold sets doubled for elbow flexion & extension & forearm supination & pronation	Scar mobilization techniques Soft tissue therapy of affected upper extremity tissues BFR training, 30-15-15-15 protocol. 1lbs, wrist supinated	AROM wrist pronation & supination full & non-painful.
Week 8 & 9	Daily – Week 1 OKC CARs Daily – Week 2-7 exercises Isometric hold intensity increased to 10% MVC 3x/week – Bench press 10kg bar, full ROM or to tolerance. 3x 8 repetitions	Scar mobilization techniques Soft tissue therapy of affected upper extremity tissues BFR training, 30-15-15-15 protocol. 1.5lbs, forearm neutral to supination throughout movement	Patient reported improvement in strength via RPE with ADLs and work tasks.
Week 10 & 11	Daily – Week 1 OKC CARs Week 2-9 exercises Bench press increased to 15kg 3x/week – Bent over row 15kg bar. 3x 8 repetitions	Scar mobilization techniques Soft tissue therapy of affected upper extremity tissues BFR training, 30-15-15-15 protocol. 4lbs, wrist supinated	Patient reported improvement in strength via RPE with ADLs and work tasks. Patient reported sensation that L arm now larger than the R due to earlier contact of the forearm against the arm with full AROM elbow flexion. 2cm increase in arm circumference on left.
Week 12	Daily – Week 1 OKC CARs Week 2-11 exercises 3x/week – Dumbbell shoulder press 12kg per arm. 3x 8 repetitions	Scar mobilization techniques Soft tissue therapy of affected upper extremity tissues BFR training, 30-15-15-15 protocol. 4lbs, wrist supinated	Patient reported improvement in strength via RPE with ADLs and work tasks.
Week 13	Daily – Week 1 OKC CARs Week 2-12 exercises Bench press increased to 20kg Bent over row increased to 20kg 3x/week – Push press 15kg bar 3x 6 repetitions 3x/week – Single-arm kettlebell deadlift 16kg 3x 8 repetitions	Scar mobilization techniques Soft tissue therapy of affected upper extremity tissues BFR training, 30-15-15-15 protocol. 4lbs, wrist supinated	Patient reported improvement in strength via RPE with ADLs and work tasks.
Week 13-14	Daily – Week 1 OKC CARs Week 2-13 exercises Push press increased to 20kg 3x/week – Barbell snatch 25kg 3x 4 repetitions	Scar mobilization techniques Soft tissue therapy of affected upper extremity tissues BFR training, 30-15-15-15 protocol. 4lbs, wrist supinated	Patient reported improvement in strength via RPE with ADLs and work tasks.

Legend: OKC = Open kinetic chain; CARs = Controlled articular rotations; AROM = Active range of motion; ROM = range of motion; BFR = Blood flow restriction; MVC = Maximal voluntary contraction; RPE = Rate of perceived exertion; ADLs = Activities of daily living; lbs = pounds.

mon clinical condition as it only accounts for 3% of biceps tendon ruptures.[3-5] The distal biceps tendon is a thin band-like structure which most commonly ruptures from its insertion on the radius rather than the mid-substance or musculotendinous junction of the tendon.[1] Tendon rupture can cause a gross deformity of the arm due to proximal retraction of the muscle belly. If the tendon remains attached to the lacertus fibrosis despite its rupture off the radial tuberosity, retraction of the biceps brachii may be less pronounced and may lead to a diagnosis of a partial biceps tear.[2,3] It is possible that the weightlifter's distal biceps tendon remained attached to the lacertus fibrosis given his initial diagnosis of a partial biceps tear. However, the surgeon required a second incision during his single incision procedure due to difficulty accessing the retracted biceps brachii. It is unclear if the initial diagnosis was incorrect or if retraction of the tissues progressed between his initial consultation and his surgical procedure.

It was imperative to have an accelerated recovery resulting in full and unrestricted activity of the affected limb given the demands of the weightlifter's job. Several therapeutic modalities were implemented in the management of this case. Kinesiotaping, laser therapy, scar mobilization and Functional Range Release® techniques were employed to promote the tissue healing response and improve the integrity of the affected area.

Both bone and soft tissue injuries undergo three phases of healing with the first stage commencing immediately after injury and the final stages continuing for several weeks to months post-injury.[16] Many factors influence the healing process including nutritional and physical activity status, alcohol and drug use and the presence of concurrent medical conditions.[17] The weightlifter reported using a short course of Tylenol 3 for the first three days post-op and Advil for the first eight days post-op to alleviate the throbbing pain he experienced in the cubital fossa and forearm post-surgery. Non-steroidal anti-inflammatory drugs (NSAIDs) such as Advil have an unfavorable effect on tissue healing by impairing the inflammatory response needed for adequate collagen synthesis during bone and soft tissue repair.[16] Although not classified as an NSAID, Tylenol is thought to provide analgesia by acting on several pathways including the cyclooxygenase enzymes that are integral to the inflammatory process.[18] The evidence is less clear on Tylenol having a detrimental effect on tissue healing but it should be considered given this possible mechanism of action. During the initial consult, the weightlifter was encouraged to limit drug intake and fortunately it was discontinued early in the rehabilitation process. The weightlifter also reported an alcohol intake of one beer per day. Alcohol intake has shown to have an unfavorable effect on bone healing[17] and protein synthesis.[19] It is not known if alcohol consumption remained consistent throughout the rehabilitation process.

The exercises prescribed during the first seven weeks of rehabilitation encouraged maximal range of motion of the upper extremity articulations provided that the movements elicited no more than mild discomfort around the surgical site. Emerging evidence supports early[2,5] and unrestricted[3] movement of the elbow following uncomplicated distal biceps tendon repairs. Aggressive post-operative rehabilitation of the injury is also advocated for an accelerated return to full activity[2] and is reportedly safe during uncomplicated tendon repairs given that the repair strength is greater than the force produced by an unweighted forearm[3].

Despite the recommendation for early and unrestricted post-operative range of motion, it is generally accepted that subjecting the distal biceps tendon to external load should be kept to a minimum in the early stages of rehabilitation so that the reattachment site has time to heal. External loads of greater than 1lbs was introduced by week 8 despite the surgeons recommendation for a 1lbs weight restriction until 12 weeks post-op. This decision was multifactorial and largely based on both the safety profile for introducing external load by the eight week mark[1,5,6,8] and the patient's determination to start strengthening the affected area earlier than the surgeons recommendation. No increase in adverse events have been reported with external load applications of one to two pounds being placed on the tendon by the six to eight week mark post-operatively.[1,5,6]

BFR training commenced three weeks post-op in an effort to mitigate the loss in biceps strength and mass as a result of the post-op weight restriction recommended to the weightlifter. BFR has been shown to diminish strength loss and muscle atrophy absent of muscular contraction[9,12] and when paired with external loads of 20-30% MVC, it has been shown to have a similar effect on muscle hypertrophy and strength that is comparable to resistance training with loads >70% MVC[11-13]. Numerous hypotheses have been proposed for the favorable effects of BFR training such as responses to altered metabolite concentrations[9,10,12], momentary ischemia[10], and hypoxia[10], fluid shifts via cellular swelling[13], increased motor unit recruitment[12], reactive hyperemia[12], increases in glycogen storage[10], and the propagation of satellite cells[12]. Regardless of the mechanism, the stimulus appears to rely on activating the mechanistic target of rapamycin (mTOR) cellular pathway which is involved in cellular proliferation.[12]

BFR training during the early post-operative rehabilitation of the biceps brachii may also have a favorable effect on the osteo-tendinous junction of the reattachment site. Increases in interosseous pressure is thought to occur through BFR training[13] and may influence fluid shifts through the capillary networks found in bony structures[20]. BFR training has shown to impact bone healing properties through metabolic markers that reduce osteoclast activity.[20] It is possible that this response is due to changes in the endothelial cells lining these vascular networks since they've been shown to contribute to both bone resorption and formation.[20]

The 30-15-15-15 is a common BFR protocol[12,13,15,20] and was employed for all BFR training used in this case. The protocol was performed initially with no external weight and was gradually increased up to four pounds. An external load equating to 10-30% MVC is often used with BFR training[11,12,20] however conservative loads much lower than 10-30% MVC were used given earlier recommendations for post-op external weight restrictions.

It is interesting to note that despite the lower MVC used for the BFR training and the marked reduction in use of the affected limb due to his weight restriction relative to pre-injury activity levels, the weightlifter reported the sensation of his injured, non-dominant arm being larger the his non-injured, dominant arm after five weeks of BFR training. Unprompted to consider changes in arm girth, he commented on how he felt as though his forearm would contact the bicep earlier on the left side if he were to flex at both elbow articulations. Measurement of arm circumference was then taken bilaterally by measuring midway between the acromion process and cubital fossa. A difference of two centimetre greater circumference was noted on the left non-dominant arm relative to the right, dominant arm. It is possible that the BFR training resulted in muscle hypertrophy using loads less than the 20-30% MVC that has been cited in the literature. However, this remains speculative since arm circumference was not measured during the weightlifter's initial presentation.

The author acknowledges this case was not without its limitations. Although the author recollects the weightlifter reporting a substantial improvement in pain and function during the appointment following the first BFR session, it is difficult to determine how beneficial the effects of the BFR training was for the weightlifter given the multimodal rehabilitative approach. It is likely that each element of the treatment and rehabilitation had varying degrees of importance depending on each stage of the healing process. Compliance with post-operative recommendations following distal biceps brachii reattachment is also known to be highly variable with some patients exceeding activity recommendations.[6] The weightlifter voiced his determination to begin rehabilitation earlier than the surgeons orders. It is possible the weightlifter could have performed more physical activity than was prescribed during his recovery.

Summary

Distal biceps brachii tendon rupture is an uncommon injury that accounts for only 3% of biceps brachii tears.[3-5] Although return to pre-injury activity levels is often reported following surgical intervention[2,5], there is no consensus with regards to the means in which the pre-injury activity levels should be achieved and timeframes vary from three to six months for return to sport[1,6]. This case demonstrates the successful and accelerated rehabilitation of a post-surgical biceps brachii tendon repair and makes use of a novel training modality which, to the authors knowledge, has not been documented in prior case reports. Clinicians may find BFR training to be a suitable modality to improve patient outcomes and compliment other aspects of their treatment when dealing with distal biceps tendon repair rehabilitation, or rehabilitation for other conditions when low levels of external load are advised.

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