REVIEW ARTICLE

Evaluation of Technical Differences in Arthroscopic Lateral Ligament Stabilization for Chronic Ankle Instability: A Review

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Abstract

Background: Chronic ankle instability is among one of the most common pathological conditions in physically active individuals. Modified Broström is considered the gold standard for chronic ankle instability, which has failed conservative management. The arthroscopic modified Broström repair appears to be a reasonable alternative to open stabilization. This review attempts to assimilate the available literature on the arthroscopic technique of chronic lateral ankle instability and tries to bring out the technical differences in operative technique

Materials and methods: A systematic search using databases PubMed, Embase, and Scopus was performed using the keywords and Boolean operators ["chronic ankle instability" or "lateral ankle instability" or " anterior talofibular ligament (ATFL)"] and ("arthroscopy") and ("Broström" or "Broström-Gould" or 'surgery'). Out of the total of 299 studies evaluated, 21 were included in the final analysis. Technical data, including operative techniques, were extracted from all articles, and data were tabulated and analyzed by the authors.

Results: While all methods described in the literature have shown good outcomes, arthroscopic techniques described in the literature are varied, and this variation stems from several factors, including a difference in training, local implant and equipment availability, perceived stability, and personal preference.

Conclusion: This review attempts to assimilate the available literature on the arthroscopic technique of chronic lateral ankle instability and tries to bring out the technical differences in operative techniques that have been described in the literature for this procedure. More evidence in the form of level 1 studies have to be done to prove the superiority of one technique over the other and to judge which technique of the various technical options gives the best results in terms of function, complications, and reinjury rates.

Keywords: Arthroscopy, Broström, Chronic ankle instability, Lateral ligament repair.

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Introduction

Chronic ankle instability is among one of the most common pathological conditions in professional as well as recreational athletes. Anatomical lateral ligament stabilization using the Broström technique was first advocated in 1966,[1] which was subsequently modified by Gould et al. to include part of the inferior extensor retinaculum (IER) in the repair. This technique is considered the gold standard for chronic instability of the ankle.

The modified technique of arthroscopic Broström repair appears to be a reasonable alternative to open stabilization. It not only provides the advantages of minimally invasive surgery but also avoids several complications arising from the disruption of adjoining anatomical structures and additionally provides better cosmesis.[2] There have been few studies in the past decade describing the arthroscopic Broström procedure, and they either have been technical descriptions, cadaveric studies, and case series, or comparative studies either comparing one arthroscopic technique to the other or comparing the open procedure to arthroscopic procedures.[3]

Most available literature does not describe a uniform operative technique, with each author advocating a separate technique for arthroscopic lateral ligament stabilization. This review attempts to assimilate the available literature on the arthroscopic technique of chronic lateral ankle instability and tries to bring out the technical differences in operative techniques that have been described in the literature for this procedure. A comprehensive critical examination of recent available literature offers clinicians and foot and ankle surgeons an evidence-based approach for managing chronic lateral ankle instability using arthroscopic technique and deciding for themselves which technique suits them best based on available resources.

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Materials and Methods

A systematic search using databases Embase, Scopus, and PubMed was performed using predetermined keywords and Boolean operators ("chronic ankle instability" or "lateral ankle instability" or "ATFL") and ("arthroscopy") and ("Broström" or "Broström-Gould" or "surgery"). Three review authors independently Identified studies of relevance which were carried out separately by three study reviewers. Data extraction was carried out using prespecified forms having defined findings by the three review authors. A flow diagram was created depicting the process of including as well as excluding studies which are depicted in Flowchart 1. Limitation of language was applied, and only articles whose full text was available in English were included. Cadaveric studies, studies without surgical technique descriptions, and case reports were excluded. This systematic study integrates the preferred reporting items for systematic reviews and meta-analyses (PRISMA) assertion (Flowchart 1).[4]

A systematic search of the literature in e-databases was conducted for the last 20 years till November 2021, using the keyword combinations enlisted previously. The findings of the research question were synthesized narratively in view of the heterogeneity of data collection and study designs. The authors of the present study used population, intervention, control, and outcomes criteria for including and excluding studies, and out of the total 299 studies evaluated, 21 were finally included in the final analysis. Technical data, including operative technique, was extracted from all articles, and data were tabulated and analyzed by the authors. The details of surgery were tabulated, and differences in operative technique, including surgical tips, were brought out and compared qualitatively. Studies that didn't describe the operative technique in detail were excluded from the analysis.[5] Additionally, cadaveric studies were also excluded from the analysis.[6]

Results

Study Design

A total of 21 studies were included in the final analysis. Of the 21 studies, six are technical descriptions that describe the operative technique used by an author for carrying out arthroscopic lateral ligament anatomic repair; there are six case series with a total of 250 patients of all six series combined; four studies compared open technique with arthroscopic Broström repair and similarly, five included studies were comparisons between two arthroscopic techniques. In total, the number of patients who were operated upon by arthroscopic anatomic lateral ligament stabilization, which was included for analysis of surgical technique, was 758. Of the studies comparing open with arthroscopic technique, two were retrospective cohort studies, one prospective cohort, and one was a randomized control trial. Similarly, among the studies comparing various arthroscopic techniques, four studies were retrospective cohorts, while one was a randomized control trial. As previously specified, there were a total of six case series. The details pertaining to the study design have been specified in Table 1.

While most authors have described the use of a 4 mm arthroscope for carrying out lateral ligament stabilization, few have used a 3 or a 2.7 mm system. All surgical procedures begin with surgical housekeeping of the ankle impingement. There is a sufficient clearing of the lateral gutter till the ATFL footprint becomes visible. The intra-articular pathology in the form of talar osteochondral lesions (osteochondritis dissecans lesions) was then evaluated and managed based on their size and depth. Lastly, the ATFL footprint is cleared till a bleeding bony bed on the fibula is attained. These steps are more or less common in all technical descriptions in the literature.

Portals

A standard anteromedial and anterolateral (AL) portal is described by all authors uniformly for both the above-mentioned steps as well as for carrying out the repair, including steps like anchor placement and suture shuttling. The use of a third portal or an accessory portal has been used by most authors, with a few exceptions for either suture passage or suture passing device insertion. Some authors have also used a fourth portal when the number of sutures/anchors is exceeded for simplicity of technique and to avoid future confusion (Table 2).

Securing the Lateral Ligaments

A suture-passing device like the SutureLasso or a Mini Scorpion is the device of choice for passing sutures through the ATFL and lateral capsule. While most authors prefer to take a single pass through the lateral soft tissue structures, a few authors have used double or even triple passes through the lateral ligaments. The

Flowchart 1: Preferred reporting items for systematic reviews and meta-analyses (PRISMA)—the PRISMA flow diagram for all included and excluded studies

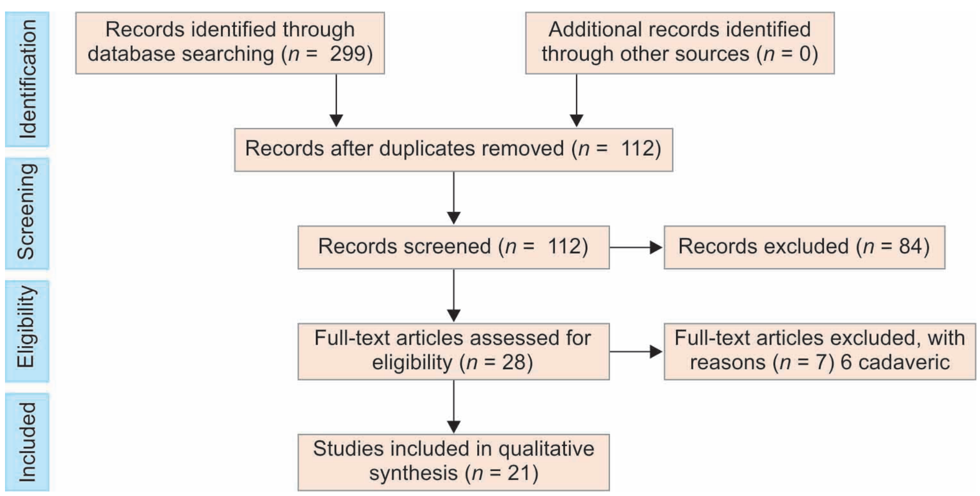

Table 1: Details of study design of studies describing arthroscopic lateral ligament stabilization of ankle

Author name	*Year*	*Article title*	*Study design*	*Number of cases undergoing arthroscopic Broström*
Technical descriptions/surgical techniques				
Guillo and Odagiri[7]	2019	All inside endoscopic Broström-Gould technique	Technical description	–
Acevedo and Mangone[1]	2015	Arthroscopic Broström technique	Technical description	–
Prissel and Roukis[8]	2014	Anatomical lateral ankle stabilization for revision and complex primary lateral ankle stabilization a technique guide.pdf	Technical description	–
Pellegrini et al. [9]	2019	Knotless modified arthroscopic Broström technique for ankle instability	Technical description	–
Lui[10]	2015	Modified arthroscopic Broström procedure	Technical description	–
Cottom and Richardson[11]	2016	The "all inside" arthroscopic Broström procedure augmented with a proximal suture anchor/ an innovative technique.pdf	Technical description	–
Case series				
Nery et al.[12]	2011	Arthroscopic-assisted Broström-Gould for chronic ankle instability	Case series	38
Yeo et al.[13]	2021	Knotless all-inside arthroscopic modified Broström procedure for lateral ankle instability	Case series	28
Yeo et al.[14]	2017	Comparison of outcomes in patients with generalized ligamentous laxity and without generalized laxity in the arthroscopic modified Broström operation for chronic lateral ankle instability	Retrospective cohort (RCT) (between patients with and without hyperlaxity)	99
Moradi and Cengiz[15]	2021	Modified arthroscopic Broström procedure using a soft anchor for chronic lateral ankle instability: short-term follow-up results	Case series	14
Comparative studies (arthroscopic vs open technique)				
Rigby[16]	2018	A comparison of the "all inside" arthroscopic Broström procedure with the traditional open modified Broström-Gould technique: a review of 62 patients	RCT	30
Yeo et al.[17]	2016	Comparison of all inside arthroscopic and open techniques for the modified Broström procedure for ankle instability	RCT	26
Zhou et al.[18]	2020	All inside arthroscopic modified Broström technique to repair ATFL provides a similar outcome compared with open Broström-Gould procedure	RCT	31
Li et al.[19]	2017	Activity level and function 2 years after AFTL repair	RCT	23
Comparative studies (between arthroscopic techniques)				
Ulku et al.[20]	2019	Arthroscopic suture tape internal bracing is safe as arthroscopic modified Broström repair in the treatment of chronic ankle instability	RCT	31 ABR
				30 AST
Feng[21]	2020	Functional comparison of horizontal mattress suture versus free-edge suture in the all-inside arthroscopic Broström–Gould procedure for chronic lateral ankle instability	RCT	31 Horizontal mattress suture group
				37 Free-end suture group
Feng[22]	2020	All inside arthroscopic modified Broström-Gould procedures for chronic lateral ankle instability with and without ATFL remnant repair produced similar functional results	RCT	ATFL remnant repaired 49
				ATFL remnant not repaired 35

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Author name	*Year*	*Article title*	*Study design*	*Number of cases undergoing arthroscopic Broström*
Cottom[23]	2018	Analysis of two different arthroscopic Broström repair constructs for treatment of chronic lateral ankle instability in 110 patients: a retrospective cohort study	RCT	75 Additional suture anchor technique
				35 Knotless suture anchor technique
Feng[24]	2020	Functional results of all-inside arthroscopic Broström-Gould surgery with 2 anchors versus single anchor	RCT	36 single anchor
				39 double anchor

Table 2: Surgical and technical details of arthroscopic techniques used

Author name	*Year*	*Arthroscope size*	*Portals made*	*Portal 3*	*Additional portals*
Technical descriptions/surgical techniques					
Guillo and Odagiri[7]	2019	4 mm	3	1 cm anterior to midpoint of 5th metatarsal and tip of lateral malleolus	
Acevedo and Mangone[1]	2015	NS	2 (anteromedial and AL)	N/A	
Prissel and Roukis[8]	2014	NS	3 (anteromedial and AL) and port 3	Laterally at the level of the proximal talar neck	If the CFL reconstruction—distal to the tip of the fibula based on topographic anatomy and care taken to ensure that the portal placement remains superior to the peroneal tendons while maintaining access to the lateral calcaneal wall
Pellegrini et al.[9]	2019	3 mm	2		
Lui[10]	2015	NS	2		
Cottom and Richardson[11]	2016	4 mm	3	Between classic port 1 and 2–1 cm in length	
Case series					
Nery et al.[12]	2011	2.7 mm	3 (anteromedial and AL) and port 3	1.5 cm below AL	No
Yeo et al.[13]	2021	NS	2	None	No
Yeo et al.[14]	2017	NS	5	Two anteroinferior portals and over inferior sinus tarsi	Yes, total 5
Moradi and cengiz[15]	2021	NS	3	Yes, 1–1.5 cm anterior to lateral portal	Yes, 1–1.5 cm anterior to lateral portal
Comparative studies (arthroscopic vs open technique)					
Rigby[16]	2018	NS	3 (anteromedial and AL) and port 3	Yes, between the two sutures passed from the same anchor	Yes, between the two sutures passed from the same anchor 5 mm in size
Yeo et al.[17]	2016	NS	4	Yes accessory AL portal and far lateral portal	Accessory AL over sinus tarsi and far lateral over the anterior fibula
Zhou et al.[18]	2020	4 mm	3 (anteromedial and AL) and port 3		The accessory AL portal was established under127 transillumination, which was located 1.5 cm distal from the AL portal.

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Author name	*Year*	*Arthroscope size*	*Portals made*	*Portal 3*	*Additional portals*
Li et al.[19]	2017	NS	3 (anteromedial and AL) and port 3	Accessory AL; details not given	Accessory AL; details not given
Comparative studies (between arthroscopic techniques)					
Ulku et al.[20]	2019	NS	3 (anteromedial and AL) and port 3	Accessory AL; details not given	Accessory AL; details not given
		NS	3 (anteromedial and AL) and port 3	Accessory AL; details not given	Accessory AL; details not given
Feng[21]	2020		3 (anteromedial and AL) and port 3	Accessory anterior portal; details not given	Accessory anterior portal; details not given
			3 (anteromedial and AL) and port 3	Accessory anterior portal; details not given	Accessory anterior portal; details not given
Feng[22]	2020	NS	3 (anteromedial and AL) and port 3	Accessory anterior portal; details not given	Accessory anterior portal; details not given
		NS	3 (anteromedial and AL) and port 3	Accessory anterior portal; details not given	Accessory anterior portal; details not given
Cottom[23]	2018	4 mm		Yes, between sites 2 and 3 of the suture passage and one directly over the fibula	Yes, between sites 2 and 3 of the suture passage (1–1.5 cm distal and anterior to distal fibula) and one directly over the fibula 3 cm proximal to the tip of the fibula in the midline
				Yes, 3 cm distal to the fibula	Yes, 3 cm distal to the fibula
Feng[24]	2020	NS	NS	NS	NS

IER has been included in the repair by authors by keeping the first bite at least 1.5 cm away from the tip of the fibula. Additionally, some authors have passed sutures under the extensor retinaculum rather than taking bites through the retinaculum. This requires long suture passages both underneath the retinaculum as well as in the subcutaneous plane.

The addition of Gould modification in the form of using the IER as part of the repair has been used by most authors either as part of the first bit or additional bites through the IER or, as previously mentioned going underneath the retinaculum. The description of securing lateral ligaments is specified in detail in Table 3.

Fibula Fixation

The anchor sizes and make are variable based on local availability and manufacturer differences. Most authors have used one or two anchors, which are either single or double-loaded with sutures. Some have used up to four anchors on the fibula to give a more widespread anchorage to the fibula. A few authors have used an additional anchor on the fibula to make the repair double row. Inside-out suture passage has been used by Ulku et al., while some have used all inside techniques with sutures not coming out of any of the portals in any of the steps. A rare few authors have used an internal brace device arthroscopically with the additional use of fluoroscopy for identifying tibial footprint. The technical descriptions have been summarized in Table 4.

Postoperative Rehabilitation

Despite the use of comparable techniques, most authors rely on a rather variable postoperative rehabilitation. There are stark differences in terms of weight-bearing, with some authors allowing weight-bearing as tolerated (WBAT) as early as the second postoperative day while others wait up to 4 weeks to allow weight-bearing on the affected limb. The consensus seems to lie in return to sports, with most authors allowing the return to noncompetitive and rehabilitative sports by 12 weeks. Use of an orthotic in the first 4 weeks has been mandated by most, but the rehabilitation is much accelerated when an internal brace has been used (Table 5).

Discussion

Ankle sprains are fairly common in a physically active population in any developing or developed society. Over 80% of ankle sprains involve the lateral ligament. In over 20% of these people, chronic lateral ligament instability develops, and this often needs operative repair of the lateral ligament complex. Arthroscopic techniques described in the literature are varied, and this variation stems from a number of factors, including differences in training, local implant and equipment availability, perceived stability, and personal preference. While all methods described in the literature have shown good outcomes, the authors of the present study wish to assimilate evidence from all studies irrespective of study design.

The lateral ligamentous complex is constituted by the ATFL, calcaneo fibular ligament (CFL), and posterior TFL. Of the 3 ligaments, the ATFL is the weakest link of the lateral ligament complex with minimal load to failure with respect to the other two components of the complex. Additionally, it has been found that functional instability may be brought on by a rupture of the ATFL's superior band, which presents with clinical symptoms of instability but normal ligament evaluation. The ligament's two bands may be torn in patients with mechanical instability.

The CFL begins just behind the lateral malleolus' tip and travels deep to the peroneal tendons before inserting on the lateral calcaneal wall. The peroneal tubercle is posterosuperior to this

Table 3: Securing lateral ligament, ATFL, lateral capsule with/without IER as described in various arthroscopic techniques

Author name	*Year*	*Suture passing device*	*Number of passes through ATFL ligament*
Technical descriptions/surgical techniques			
Guillo and Odagiri[7]	2019	Mini Scorpion (Arthrex)	2
Acevedo and Mangone[1]	2015	Didn't explicitly say, but they are Arthrex consultants	Two sets of sutures used
Prissel and Roukis[8]	2014	NS	NS
Pellegrini et al.[9]	2019	Knotless SutureTak anchor - Arthrex	2—looped suture
Lui[10]	2015	NS	2
Cottom and Richardson[11]	2016	NS	NS
Case series			
Nery et al.[12]	2011	Over a 1.5 cm incision made	2
Yeo et al.[13]	2021	By giving stab incisions distal to the inferior retinaculum and passing sutures around it	Two sets of sutures used
Yeo et al.[14]	2017	Over the retinaculum	2
Moradi and cengiz[15]	2021	Over the retinaculum	One per anchor. Total four
Comparative studies (arthroscopic vs open technique)			
Rigby[16]	2018	SutureLasso with loaded nitinol wire	One per anchor-taking capsule, inferior retinaculum, and ATFL
Yeo et al.[17]	2016	Penetrator	One per anchor-taking capsule, inferior retinaculum, and ATFL
Zhou et al.[18]	2020	90° straight suture hook (SutureLasso)	One per anchor-taking capsule, inferior retinaculum, and ATFL
Li et al.[19]	2017	Tissue penetrating device	One per anchor
Comparative studies (between arthroscopic techniques)			
Ulku et al.[20]	2019	Suture passing device	One per anchor
		Not passed	None
Feng[21]	2020	NS	One per anchor-taking capsule, inferior retinaculum, and ATFL
		NS	One per anchor-taking capsule, inferior retinaculum, and ATFL
Feng[22]	2020	NS	One per anchor-taking capsule, inferior retinaculum, and ATFL
		NS	One per anchor-taking capsule, inferior retinaculum, and ATFL
Cottom[23]	2018	Micro SutureLasso with loaded nitinol wire	One per anchor-taking capsule, inferior retinaculum, and ATFL
		Micro SutureLasso with loaded nitinol wire	
Feng[24]	2020	NS	Single per anchor as per figure
			Single per anchor as per figure

Table 4: Details of fibular anchorage in various studies described in the literature

Author name	*Year*	*Number of anchors used on the fibula*	*Gould modification (IER inclusion in repair)*
Technical descriptions/surgical techniques			
Guillo and Odagiri[7]	2019	3	Yes
Acevedo and Mangone[1]	2015	2	No?
Prissel and Roukis[8]	2014	3	ArthoBroström—functionally the same as Gould modification
Pellegrini et al.[9]	2019	2	Yes—penetrate the IER
Lui[10]	2015	2	Yes
Cottom and Richardson[11]	2016	3	Yes—penetrate the IER
Case series			
Nery et al.[12]	2011	1	Yes
Yeo et al.[13]	2021	2	Yes—over the retinaculum but not through
Yeo et al.[14]	2017	1	Yes

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Author name	*Year*	*Number of anchors used on the fibula*	*Gould modification (IER inclusion in repair)*
Moradi and Cengiz[15]	2021	1	Yes—over the retinaculum but not through
Comparative studies (open vs arthroscopic techniques)			
Rigby[16]	2018	2	Yes
Yeo et al.[17]	2016	2	Yes
Zhou et al.[18]	2020	1 or 2	Yes
Li et al.[19]	2017	1 or 2	No
Comparative studies (Between arthroscopic techniques)			
Ulku et al.[20]	2019	1	No
		Two—one each for talus and fibula	No
Feng[21]	2020	1	Yes
		1	Yes
Feng[22]	2020	1	Yes
		1	Yes
Cottom[23]	2018	Three; two on footprints and one in midline fibula	Yes
		4	Yes
Feng[24]	2020	1	Yes
		2	Yes

Table 5: Describing variation in postoperative rehabilitation protocol followed by various authors

Author name	*Year*	*Postoperative rehabilitation protocol*
Technical descriptions		
Guillo and Odagiri[7]	2019	Non-weight-bearing (NWB) 2 weeks, orthotic 2 weeks, athletic activity 12 weeks
Acevedo and Mangone[1]	2015	NBW 0–2 weeks, WBAT 2–4 weeks, 6+ weeks formal PT week orthotics
Prissel and Roukis[8]	2014	NBW 0–2 weeks, then WBAT in boot
Pellegrini et al. [9]	2019	WBAT 0–2 weeks, 2–6 weeks full WB, and PT
Lui[10]	2015	NS
Cottom and Richardson[11]	2016	CAM boot and WBAT on the post on day 3; 2 week WBAT and PT
Case Series		
Nery et al. [12]	2011	NBW 0–2 week, WBAT 2–4 week, 6+ week Formal PT week orthotics, 12 week sports
Yeo et al. [13]	2021	NBW 0–2 weeks, WBAT 2–4 weeks, 6+ weeks formal PT week orthotics, 10 week sports
Yeo et al. [14]	2017	NBW 0–2 week, WBAT 2–4 weeks, 6+ week formal PT week orthotics, 12 week sports
Moradi and cengiz[15]	2021	NWB 6 week, ROM after 3 weeks, WB after 6 weeks
Comparative Studies (open vs arthroscopic techniques)		
Rigby[16]	2018	3 days WBAT, 3 weeks ROM, 4 weeks normal footwear
Yeo et al.[17]	2016	NWB 2 weeks, ROM 4 weeks, orthotic 4–6 weeks, athletic activity 12 weeks
Zhou et al.[18]	2020	NWB 4 weeks, orthotic 2 weeks, strengthening exercises 6 weeks
Li et al.[19]	2017	NWB 2 weeks, orthotic 2 weeks, ROM 2 weeks
Comparative studies (between arthroscopic techniques)		
Ulku et al.[20]	2019	NWB 4 weeks, cast 4 weeks, 6 weeks proprioceptive training
		NWB 4 weeks, cast 4 weeks, 6 weeks proprioceptive training
Feng[21]	2020	NWB 2 weeks, ROM 2 days, 6 weeks orthotic, 8 weeks resumption of ADL
		NWB 2 weeks, ROM 2 days, 6 weeks orthotic, 8 weeks resumption of ADL
Feng[22]	2020	NWB 2 weeks, ROM 2 weeks, 6 weeks physiotherapy
		NWB 2 weeks, ROM 2 weeks, 6 weeks physiotherapy
Cottom[23]	2018	WBAT after 3 days in CAM
		NS
Feng[24]	2020	4 weeks brace, 8 weeks ROM, 12 weeks resumption of physical activities
		4 weeks brace, 8 weeks ROM, 12 weeks resumption of physical activities

NS, not specified; NBW, not bearing-weight; NWB, non-weight-bearing; PT, physical therapy; CAM, controlled ankle motion; ROM, range of motion; ADL, activities of daily living footprint. The CFL offers subtalar support that extends across the subtalar and tibiotalar joints since it crosses both joints. There is enough evidence in the literature to conclude that direct repair of this ligament is sufficient for successful results. The IER is incorporated into the ArthroBroström repair, and biomechanical tests demonstrate that the IER, with its calcaneal attachments, further stabilizes the modified Broström repair. It has been demonstrated that IER works similarly to the CFL in stabilizing the subtalar joint. According to published research, the crural fascia is accidentally employed instead of the IER. The IER is crossed by the superficial peroneal nerve (SPN), which could enhance the risk of iatrogenic damage.

The development of arthroscopic procedures for lateral ligament stabilization of the ankle has the potential to speed up postoperative recovery while reducing morbidity and offering a single method to treat concurrent impinging lesions as well as intraarticular lesions of the talus. During arthroscopic lateral ankle ligament repair, in addition to the SPN, the sural nerve and the peroneal tendons may also be in danger. The majority of authors have shown with diligence how crucial it is to establish a safe zone in order to prevent the trapping of vulnerable structures. According to a prior study, introducing sutures at least 15 mm anterior to the distal fibula while holding the ankle in a neutral position increases the chances of incorporating enough IER. Authors of the present study thus advocate the use of IER in the repair of lateral ligament, and the same can be done without complications by sticking to the safe zone concepts which have been sufficiently described and adhered to by most authors.

In order to prevent problems with posterior penetration, Yoshimura et al. researched the best location for suture anchors and suggested setting them at an angle of <45 to the longitudinal axis of the fibula. Despite the historically successful open approach and the encouraging outcomes of arthroscopic Broström-Gould procedures, early rehabilitation for athletes has led some researchers to compare the initial strength of open repairs to unaltered ankle ligaments in cadavers. According to reports, the repaired ATFL was at least 50% less strong than the original, complete ATFL.

An internal bracing made of suture tape might strengthen the repair. So, in cadaveric models, a repair with an interior suture tape brace was as strong and stiff as an intact ATFL. In cadaveric investigations, the internal brace group showed the maximum torque to failure and angle to failure, resulting in greater stability. Additionally, the internal brace group did not experience the most typical form of failure in the native ATFL, which was a rupture in the midportion of the ATFL. Their findings imply that the internal brace guards against the most typical reason for ATFL rupture and might lessen the risk of further injuries.

Although the authors have not found that to be a problem when the internal brace construct is placed in the correct anatomic location and strict adherence to the published technique is followed by placing a hemostat under the internal brace before it is secured, some investigators have expressed concerns about the internal brace construct over restraining the joint.

Arthroscopic lateral ligament repair with or without the use of an internal brace has progressed in the various methods used over the past decade and has been accepted by foot and ankle surgeons worldwide. This study gives a novice foot and ankle surgeon all available options with respect to the arthroscopic technique of performing arthroscopic or arthroscopic-assisted lateral ligament stabilization of the ankle. Moreover, for a surgeon performing arthroscopic Broström repair, this study provides a sum-up of various techniques done by his contemporaries around the world, giving him further options in terms of expanding his armamentarium and increasing versatility.

Conclusion

While all arthroscopic techniques of lateral ligament repair described are supposed to give good to excellent outcomes giving the surgeon freedom to choose whichever technique he/she wants to use based on local availability and resource limitations. More evidence in the form of level 1 studies have to be done to prove the superiority of one technique over the other and to judge which technique of the various technical options gives the best results in terms of function, complications, and reinjury rates.

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