



Technical tip

Modified arthroscopic Brostrom procedure



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ABSTRACT

The open modified Brostrom anatomic repair technique is widely accepted as the reference standard for lateral ankle stabilization. However, there is high incidence of intra-articular pathologies associated with chronic lateral ankle instability which may not be addressed by an isolated open Brostrom procedure. Arthroscopic Brostrom procedure with suture anchor has been described for anatomic repair of chronic lateral ankle instability and management of intra-articular lesions. However, the complication rates seemed to be higher than open Brostrom procedure. Modification of the arthroscopic Brostrom procedure with the use of bone tunnel may reduce the risk of certain complications.

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1. Introduction

Ankle sprain is one of the most common sport injuries and may sometimes result in chronic lateral ankle instability. Nonoperative therapy including functional rehabilitation is recommended initially. Surgery will be indicated for those patients in whom nonoperative attempts fail. The surgical options can be grouped into 2 main categories: anatomic and nonanatomic repair of the lateral ligament complex. The open modified Brostrom anatomic repair technique is widely accepted as the reference standard for lateral ankle stabilization [1]. However, there is high incidence of intra-articular pathologies associated with chronic lateral ankle instability which may not be addressed by an isolated open Brostrom procedure [1–5]. Patient age, the talar tilt angle, and varus inclination of the ankle are risk factors for severe chondral damage of the ankle in patients with a prolonged history of lateral ankle instability [6]. These associated intra-articular pathologies have been shown to result in poor clinical outcome if they are not addressed together with the lateral ligamentous repair [7–9]. These pathologies may not be detected by preoperative magnetic resonance imaging [7,10,11]. Some authors then advocated ankle arthroscopy to assess and treat the intra-articular pathologies followed by the open Brostrom procedure [2–4,7,9,12]. Surgeons were interested in stabilization of the lateral ankle ligaments through the ankle arthroscopy in order to simultaneously addressing lateral ankle instability from an arthroscopic approach

and avoid an additional open procedure. Arthroscopic or arthroscopically assisted lateral ankle ligament reconstruction, such as plication, staples, suture anchor, and thermal shrinkage, has then been reported [1,13–16]. Arthroscopic Brostrom procedure with suture anchor has been described for anatomic repair of chronic lateral ankle instability and management of intra-articular lesions. The clinical results were reported to be good [1,14–16]. However, the complication rates seemed to be higher than open Brostrom procedure [17]. We describe a modification of the arthroscopic Brostrom procedure in order to reduce the risk of some of the potential complications.

2. Description of technique

The patient is put in supine position. A thigh tourniquet is applied to provide a bloodless surgical field. Ankle arthroscopy is performed using the anteromedial and anterolateral portals. The ankle joint is examined for any concomitant pathology e.g. osteochondral lesion and treated accordingly. Any hypertrophic synovium is debrided and the scar tissue covering the anterior surface of the lateral malleolus is resected. The fibrous tissue of the anterolateral capsule is left untouched for subsequent anchorage of sutures. The anterior cortex of the lateral malleolus is ablated to prepare for subsequent capsular and ligamentous adhesion. PDS-1 suture is used to anchor the anterolateral capsule including the anterior talofibular ligament and the inferior extensor retinaculum. The suture is passed from intra-articular outwards through the anterolateral portal by an eyed needle. The needle should not be pointed to the talar neck which is the insertion of the anterior talofibular ligament. Instead, it points plantar-distally in order to

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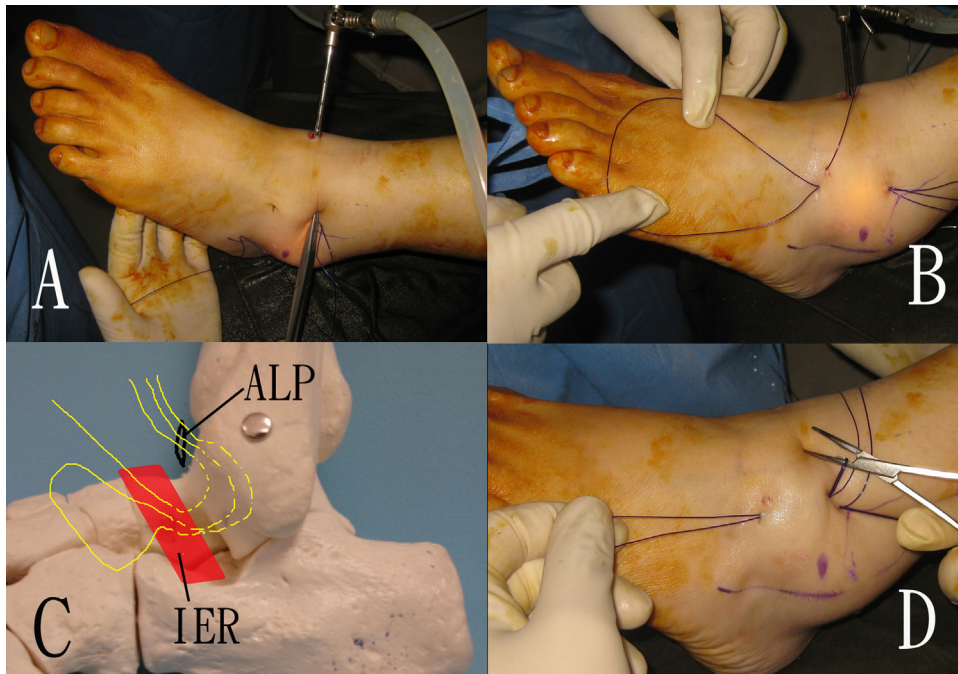


Fig. 1. The suture is passed from intra-articular outwards through the anterolateral portal by an eyed needle (A). Another suture loop is passed through the anterolateral capsule and the inferior extensor retinaculum about 1.5–2 cm from the first suture (B, C). Both the first suture and the suture loop are retrieved to the anterolateral portal at the surface of the inferior extensor retinaculum (D). ALP: anterolateral portal. IER: inferior extensor retinaculum.

avoid entrapment of the extensor tendons and the peroneus tertius. It is important to avoid injury to the subcutaneous vessels, superficial peroneal nerve and the peroneal tendons. The tendons and the intermediate dorsal cutaneous branch of superficial peroneal nerve can be marked before the procedure. The nerve can be identified by plantarflexion of the fourth toe. The subcutaneous vessels can be seen by the light of the arthroscope. Another suture loop is passed through the anterolateral capsule and the inferior extensor retinaculum about 1.5–2 cm from the

first suture. Both the first suture and the suture loop are retrieved to the anterolateral portal at the surface of the inferior extensor retinaculum (Fig. 1). The first suture was brought through the capsule and retinaculum again by the suture loop. The procedure is repeated and then two sutures anchoring the capsule and retinaculum are brought to the anterolateral portal (Fig. 2). Two 2.5 mm bone tunnels are made at the lateral malleolus and are about 1.5 cm apart at the anterior surface of the malleolus and convergent towards the posterior surface. The drilling is guided by

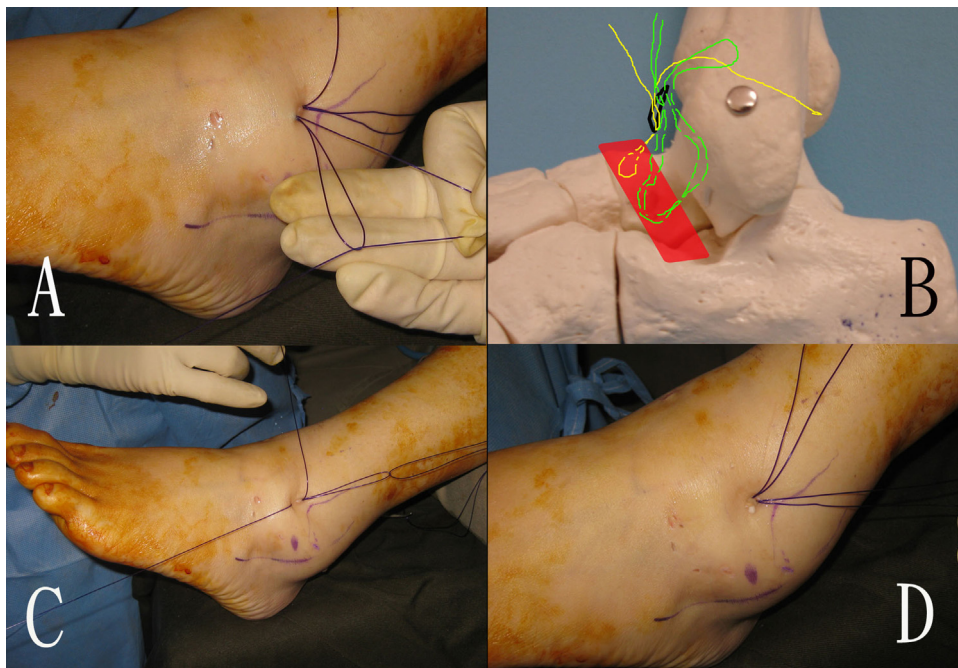


Fig. 2. The suture loop acted as suture retriever (A, B). The first suture was brought through the capsule and retinaculum again by the suture loop (C). The procedure is repeated and then two sutures anchoring the capsule and retinaculum are brought to the anterolateral portal (D).

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