Technical note

Late reconstruction of the anterior distal tibiofibular syndesmosis

Good outcome in 9 patients

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We present a new, anatomic reconstruction of the anterior tibiofibular syndesmosis of the ankle for chronic instability.

Technique (Figure)

An oblique anterolateral incision is made 4 cm above the joint space starting over the fibula directed towards the distal tibia. Attention must be paid to the intermediate dorsal cutaneous nerve, which crosses superficially on the anteromedial side of the wound.

The slack anterior tibiofibular ligament is identified and is carefully dissected free. Its insertion in the tibia is lined out by cautery, and thereafter osteotomized and mobilized with a bone block of 0.7×0.7 cm. A gutter is made in the tibia, directed medially and slightly proximally. A screw is placed above the syndesmosis in the fibula and tibia, through 4 cortices, with the foot in maximal plantar flexion and compression of the mortise. After medialization, the bone block is secured with a small screw. The syndesmotic screw is then turned loose 2 twists, while the foot is forced in dorsalflexion, which increases the tension of the ligament and allows the ankle joint to obtain its neutral position.

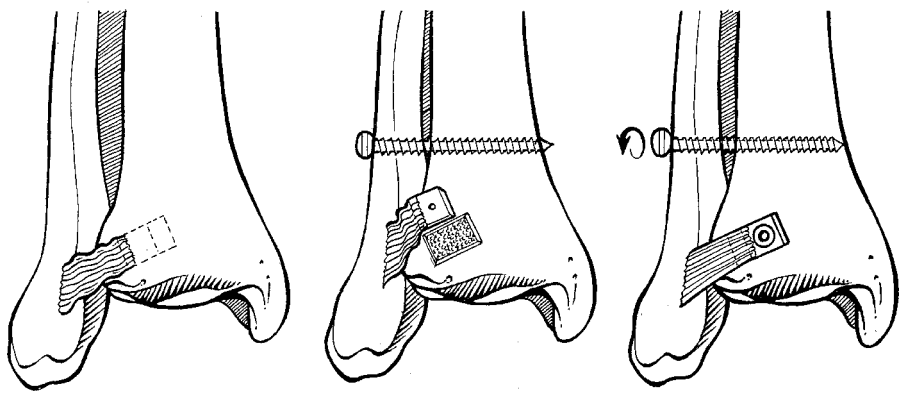

Figure. The new, anatomic reconstruction of the anterior tibiofibular syndesmosis of the ankle for chronic instability. The tibial insertion of the slack anterior tibiofibular ligament is lined out by cautery, osteotomized and mobilized with a bone block. A gutter is made in the tibia, directed medially and slightly proximally. A screw is placed above the syndesmosis for compression of the mortise. After medialization, the bone block is secured with a small screw. The syndesmotic screw is then turned loose 2 twists, while the foot is forced in dorsal flexion, which allows the ankle joint to obtain its neutral position.

Pre- and postoperative ankle scores according to Karlsson (1991), Tegner and Lysholm (1985) and Sefton et al. (1979)

Case	Sex, age (yrs)	Follow-up (months)	Pre/postop Karlsson score	Pre/postop Tegner score	Postop Sefton score	Degenerative changes [a]	Complication
1	M 23	43	42 / 100	3 / 7	1	1 / 0	–
2	F 42	38	17 / 47	0 / 2	3	2 / 1	SRD [b]
3	F 17	43	72 / 87	6 / 7	2	0 / 0	–
4	F 25	48	77 / 87	1 / 6	1	0 / 0	Entrapment [c]
5	F 28	46	22 / 87	0 / 4	2	0 / 0	SRD
6	M 17	56	40 / 60	2 / 3	3	1 / 0	–
7	M 39	62	52 / 100	2 / 7	1	0 / 1	–
8	M 45	41	65 / 87	5 / 5	2	0 / 0	–
9	F 17	44	32 / 59	5 / 5	3	0 / 0	–

[a] Radiographic degenerative changes showing scores on the affected side/ unaffected side at follow-up
Grade 0: normal joint or subchondral sclerosis, Grade 1: osteophytes, without joint space narrowing,
Grade 2: joint space narrowing with or without osteophytes
[b] SRD: sympathic reflex dystrophy
[c] Entrapment: of intermediate dorsal cutaneous nerve

After 6 weeks of no weight bearing in a below-knee plaster, the syndesmotic screw is removed and full weight bearing is allowed.

Patients (Table)

9 patients with arthroscopically-confirmed instability of the syndesmosis (i.e., wide, hypermobile on testing and easily accessible for the test probe) were operated on with this technique. All complained of pain, 7 of feelings of giving way and of swelling. The mean duration of symptoms was 27 (4–102) months. Other diagnoses, like lateral instability or chondral damage of the talus, were excluded.

The mean follow-up was 45 (38–62) months. After reconstruction, all considered the ankle to be improved, none complained of instability. Transient sympathic reflex dystrophy was seen in 2 patients and entrapment of the intermediate dorsal cutaneous nerve in scar tissue in 1 patient.

Discussion

Syndesmotic injuries are usually seen in combination with ankle fractures, but can occur isolated as well. They are estimated to occur in 1–11 % of ankle sprains (Cedell 1975, Hopkinson et al. 1990) and result mainly from external rotation, and/or dorsiflexion injury (Rasmussen et al. 1982). Patients tend to have more complaints than in ordinary lateral collateral ligament injury, a longer period of recovery (Hopkinson et al. 1990) and more residual complaints, due to impingement of scar tissue (Ogilvie-Harris and Reed 1994) or chronic instability (Close 1956).

Good results with impingement have been reported after shaving scar tissue in the syndesmosis (Ogilvie-Harris and Reed 1994). Kelikian and Kelikian (1985) described a method for reconstruction of the anterior syndesmosis by tenodesis with the extensor tendon of the fifth or fourth toe, or with the plantaris tendon, fascia or dura mater. Beals and Manoli (1998) presented a case of late syndesmotic reconstruction after ankle fracture involving removal of scar tissue medial and lateral in the talocrural joint, and reconstruction of the anterior syndesmosis with use of a cuff of firm fibrous tissue and placement of a syndesmotic screw. We found, even in late cases, that the distal tibiofibular ligament, though slack, is always present. By analogy with the reconstruction of the talofibular ligament, one may assume that an anatomic repair using the original tibiofibular ligament should be better (Bahr et al. 1997). Our technique for an anatomic repair of the anterior tibiofibular syndesmosis of the ankle has not, to the best of our knowledge, been described before, and the results given here are encouraging.

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