AN ANATOMIC APPROACH IN THE SURGICAL MANAGEMENT OF CHRONIC SUBLUXING PERONEAL TENDONS

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INTRODUCTION

Subluxing peroneal tendons may present clinically in two distinct manners. The first is a posttraumatic state evident immediately following an acute episode, or presenting later with a history of recent antecedent trauma. The second manner of presentation is a chronic subluxing state with an insidious progression of pain about the peroneal tendons. The chronic variety of this condition is not necessarily associated with any traumatic event. Separate and distinct pathologic and anatomic implications are involved depending on which subluxing state exists. The key difference between the two forms of tendon dislocation is based upon the relationship of the deep fascia and superior peroneal retinaculum to the peroneal tendons and the distal fibula.

The posttraumatic state represents either a subperiosteal dissection of the superior peroneal retinaculum and deep fascia from the fibula, or an avulsion fracture of the fibula with the adherent superior peroneal retinaculum and deep fascia. The deep fascia is torn or else it has avulsed bone. Therefore, the peroneal tendons "dislocate" from within the peroneal compartment. The chronic state represents a stretching, redundancy, or pouching effect of the superior peroneal retinaculum and deep fascia permitting "displacement" of the peroneal tendons within an intact compartment. No tissue has been torn, nor bone avulsed. Both states permit migration of the peroneal tendons laterally from their anatomic position posterior to the fibula. Appreciation of these anatomic basics is critical to understanding the surgical approach presented.

A review of the multitude of surgical procedures for this condition is not presented here. The reader is referred to the references for this purpose. This text represents an anatomic approach to the chronic subluxing peroneal state. The surgical technique represents a reduction of the deep fascial redundancy with reinsertion into the fibula. The technical approach will be outlined here with emphasis on the anatomy and the suture techniques employed.

ILLUSTRATED TECHNIQUE

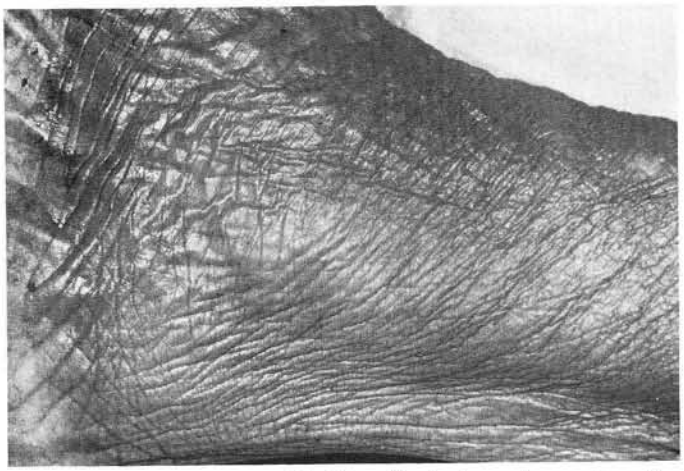

Fig. 1A. Lateral perspective of the left ankle in the supine position. The plantar foot is to the left of the figure.

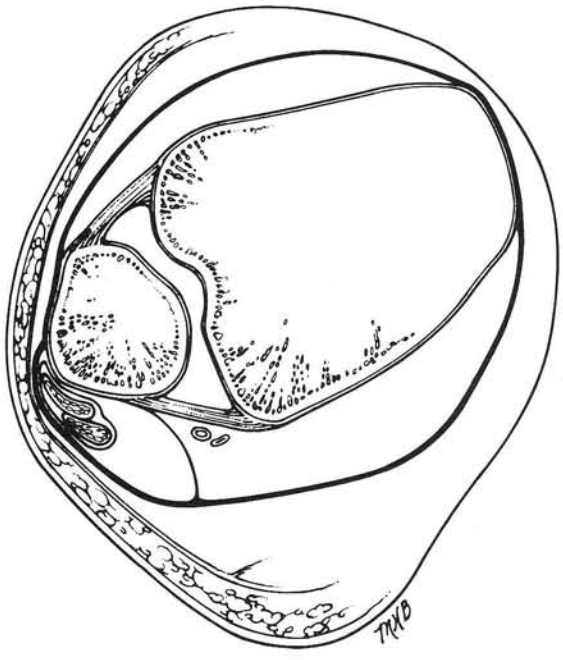

Fig. 1B. Diagrammatic cross section of the clinical perspective presented. These clinical and diagrammatic perspectives will be maintained throughout the text.

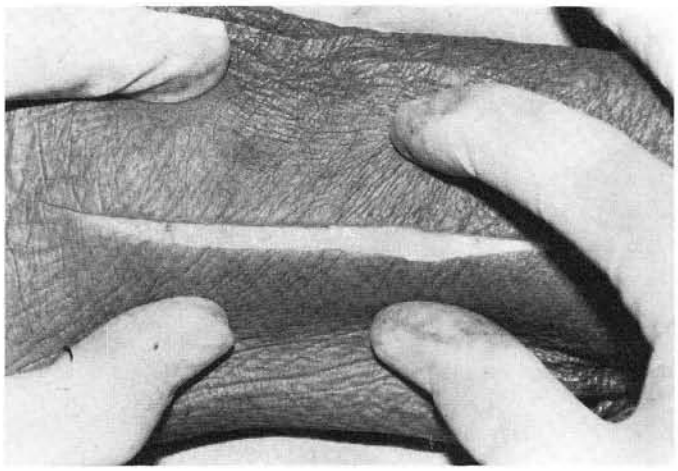

Fig. 2A. An 8cm incision is placed just posterior to the palpable posterior division of the anterior border of the fibula overlying the peroneal compartment.

Fig. 2B. Cross sectional diagrammatic presentation.

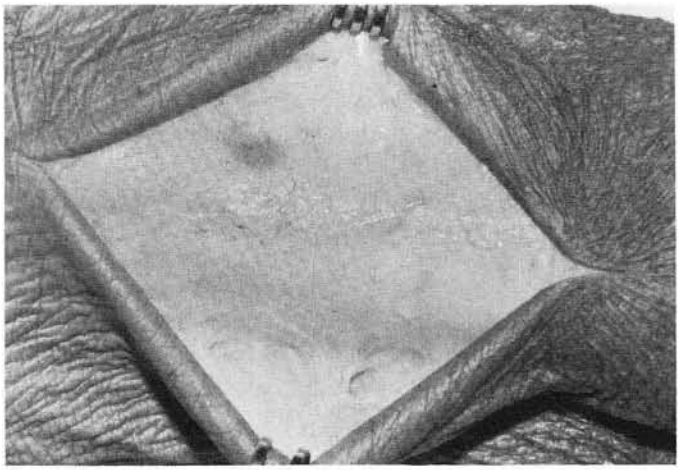

Fig. 3A. The superficial fascia has been reflexed with the skin, exposing the deep fascial layer and the superior peroneal retinaculum that overlays the peroneal and the lateral subcutaneous surface of the fibula.

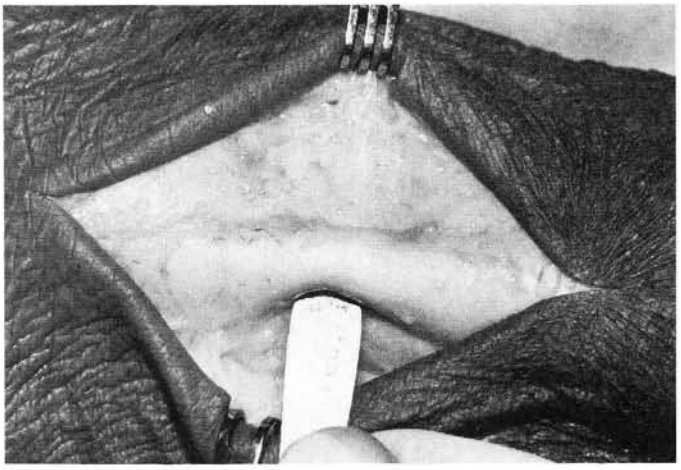

Fig. 3B. Patho-anatomy of the chronic subluxing peroneal tendons with displacement of the peroneal while still within their anatomic compartment. The deep fascial insertions are intact.

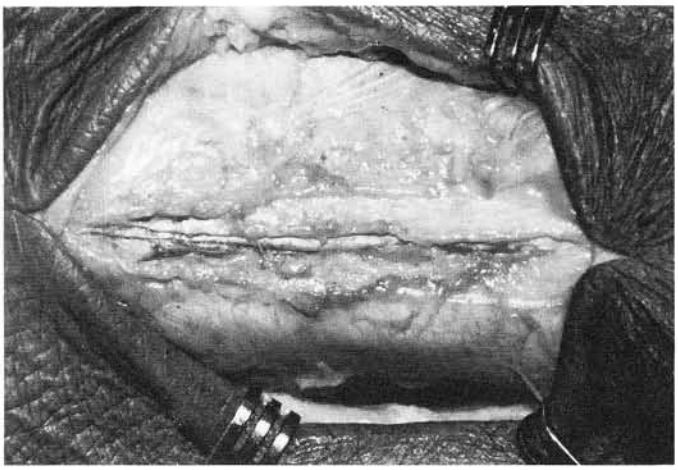

Fig. 4A. The deep fascial incision is placed onto the lateral surface of the fibula just superior to the palpable osseous crest known as the posterior division of the anterior border of the fibula.

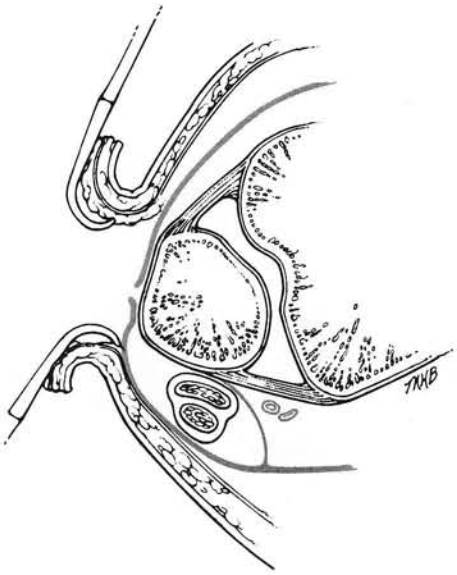

Fig. 4B. Cross sectional diagrammatic presentation.

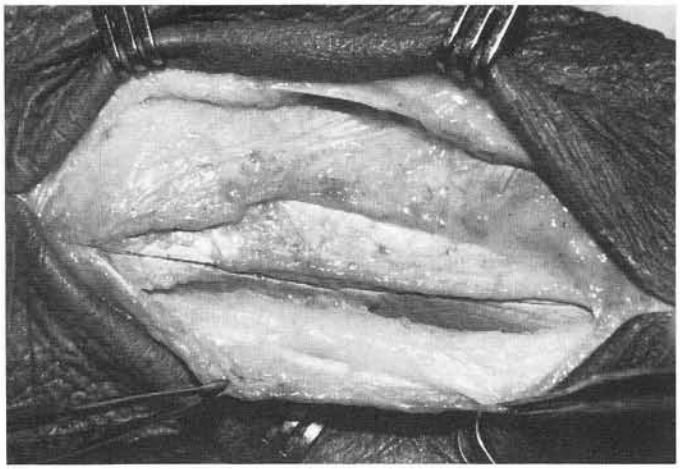

Fig. 5A. The periosteal incision is placed as the deep fascial incision just superior to the posterior division of the anterior border of the fibula. The peroneal are retracted within their tendon sheaths posteriorly with the deep fascial layer.

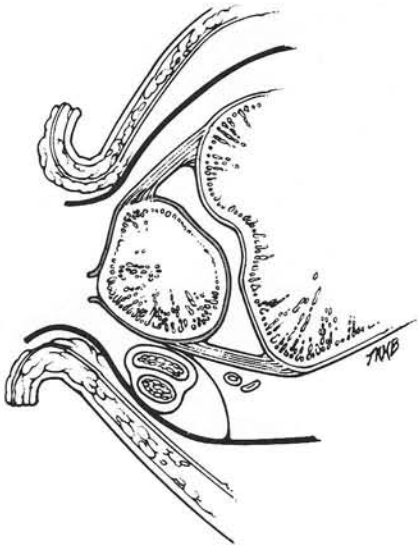

Fig. 5B. Cross sectional diagrammatic presentation.

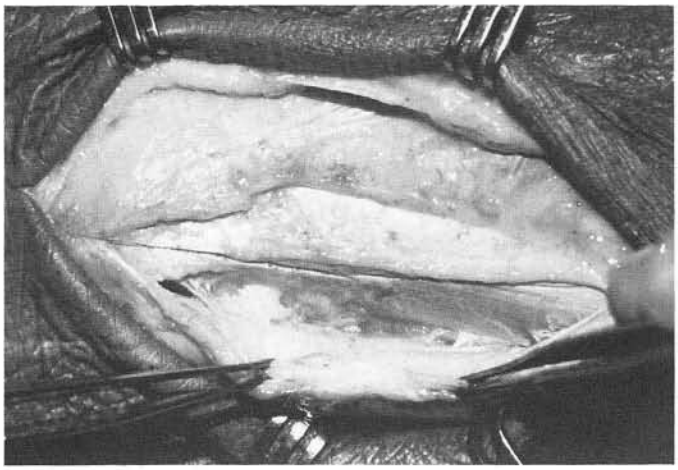

Fig. 6A. Pre-reflection periosteum.

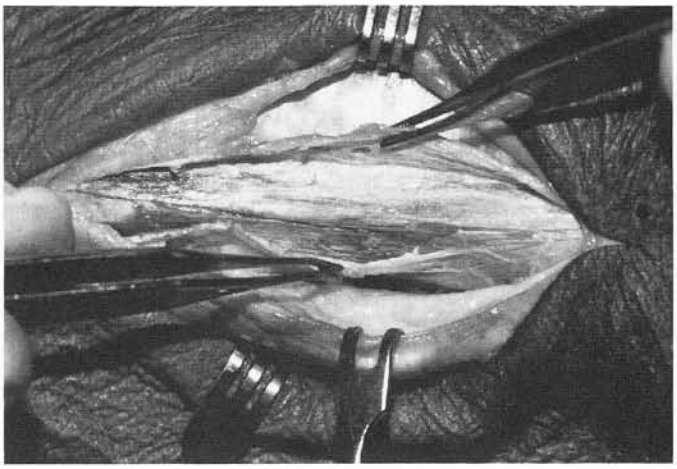

Fig. 6B. Postreflection periosteum from the fibula exposing the posterior division of the anterior border crest of the fibula. Note the thickness of the periosteum superiorly and marked thinness interiorly.

Fig. 7A. Distal perspective following the peroneal tendons to the posterior fibular malleolar area.

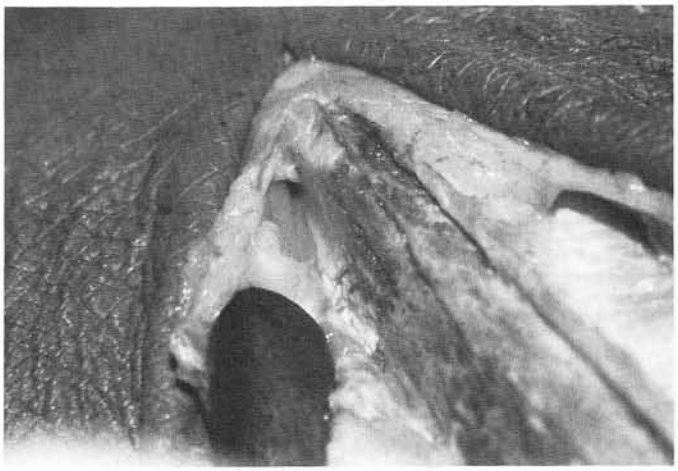

Fig. 7B. Closer perspective demonstrating exit of peroneal from their common sheath and osteocarticagenous peroneal groove of fibula.

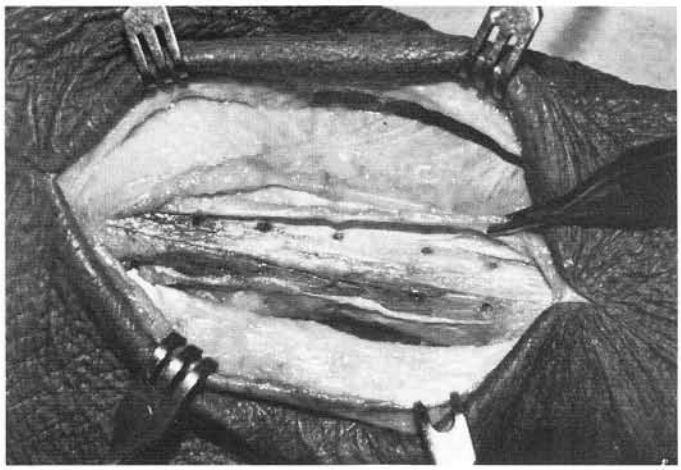

Fig. 8A. A series of five drill holes are placed from the lateral surface to the posterior surface of the fibula. The most distal drill is just overlying the peroneal groove area.

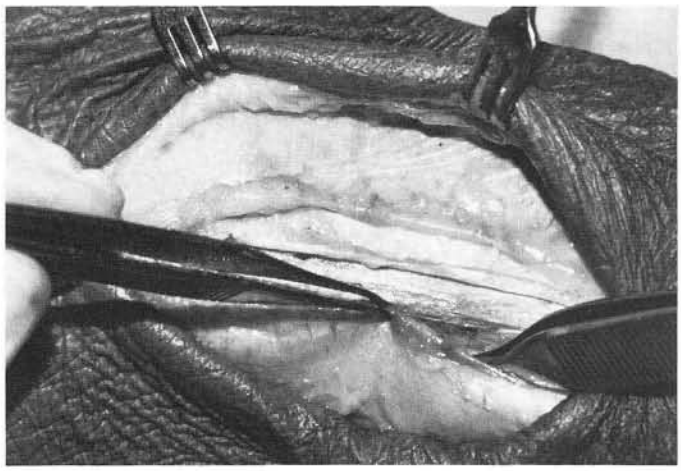

Fig. 9A. Deep fascia is tensed into position with angle pick-ups on the left as a testing maneuver to evaluate potential degree of correction. Right pick-up is tucking the peroneal and their sheath into position.

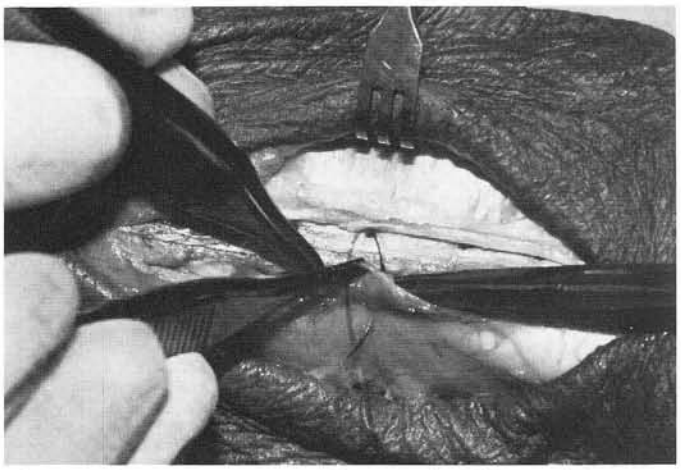

Fig. 10A. The suturing maneuver is begun. It should be noted that sutures through the deep fascia and bone are all first seated and stated, then tied in unison. This permits good visualization of the suture maneuver throughout. A 2-0 nonabsorbable polyester suture is recommended.

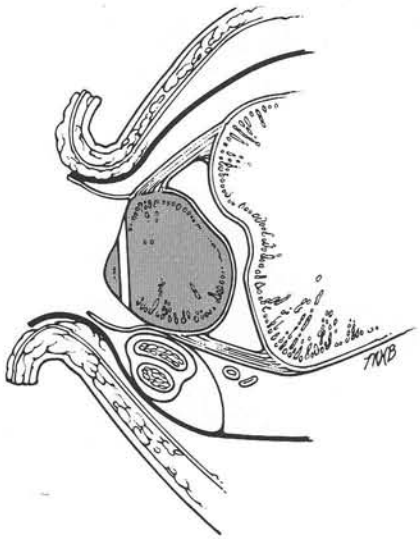

Fig. 8B. Cross sectional diagrammatic presentation.

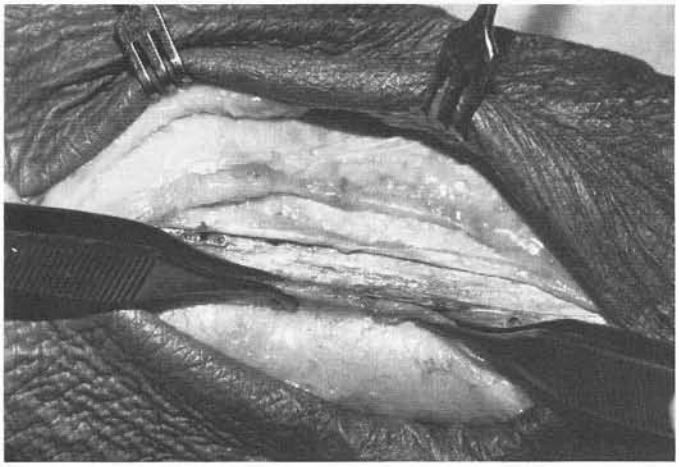

Fig. 9B. The degree of redundancy plication is assessed for placement of sutures to reestablish the deep fascial insertion.

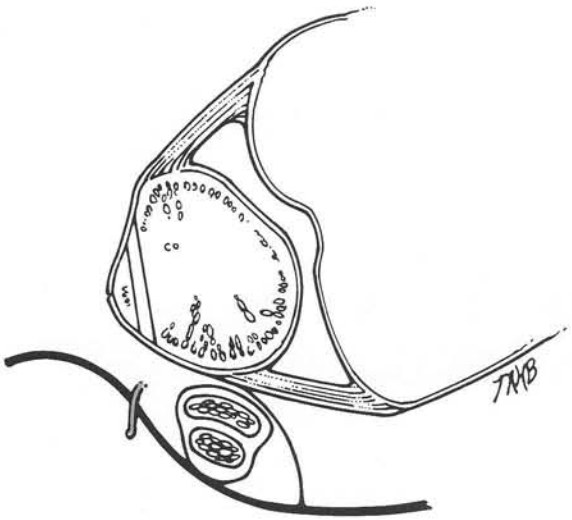

Fig. 10B. Diagrammatic cross section presentation of suture from within to without deep fascia.

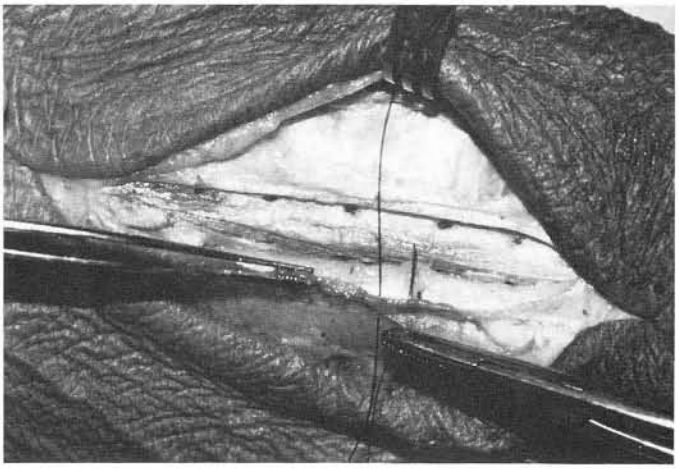

Fig. 11A. The suture begins from within the deep fascia to without. The tag for tying is then deep to the deep fascia. This permits a buried knot for the suture that is less clinically prominent. The suture is then brought back from without the deep fascia to within.

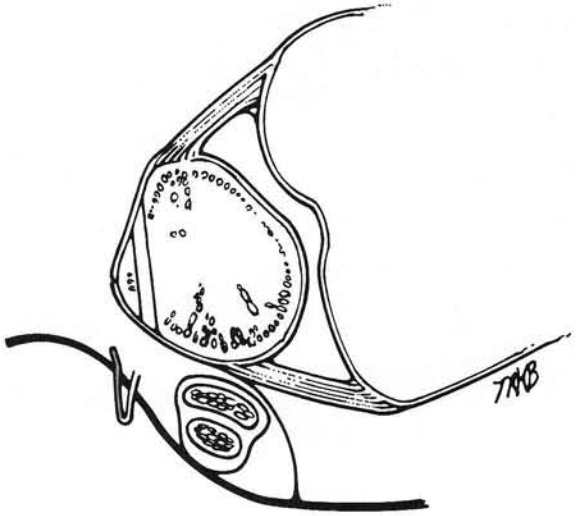

Fig. 11B. Diagrammatic cross section presentation.

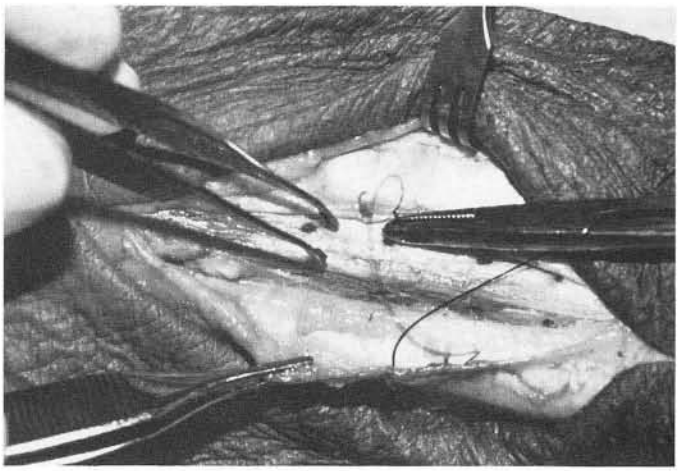

Fig. 12A. The suture is then placed through the fibular drill hole from the lateral to the posterior surface.

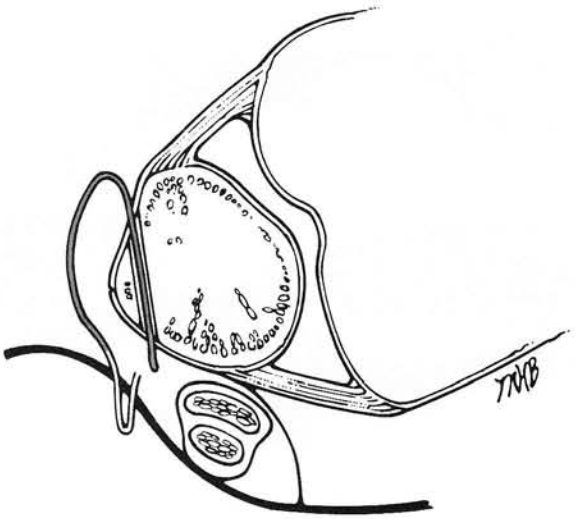

Fig. 12B. Diagrammatic cross sectional presentation.

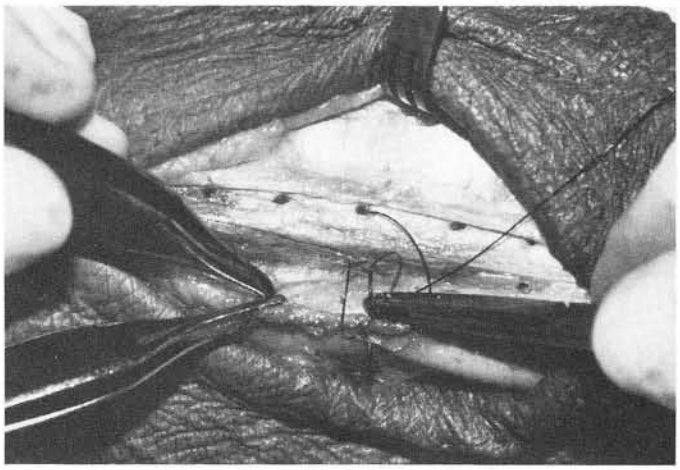

Fig. 13A. A second pass identical to the first is placed to provide strength to the repair. The suture is passed through deep fascia from deep superficial. Care is always taken not to engage the peroneal tendons or their sheath.

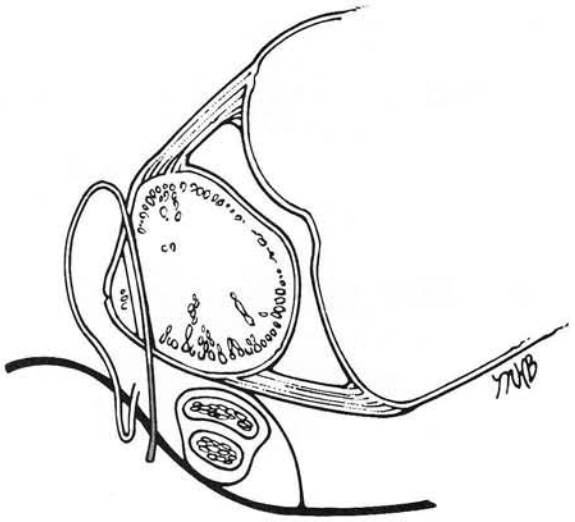

Fig. 13B. Cross sectional presentation.

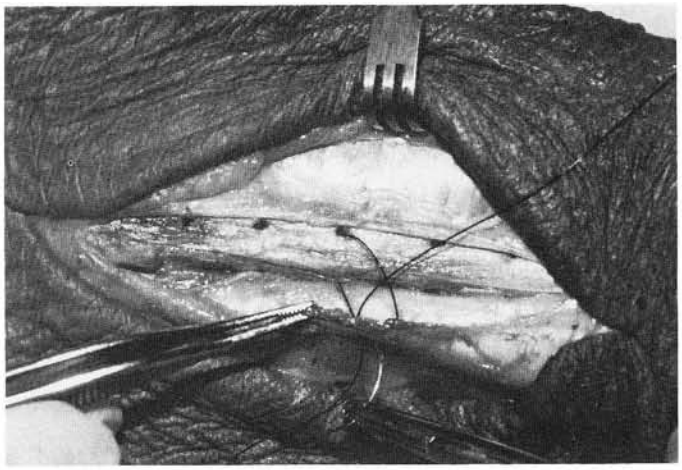

Fig. 14A. The suture is passed back through the deep fascia, close but not through the same spot as the prior suture pass.

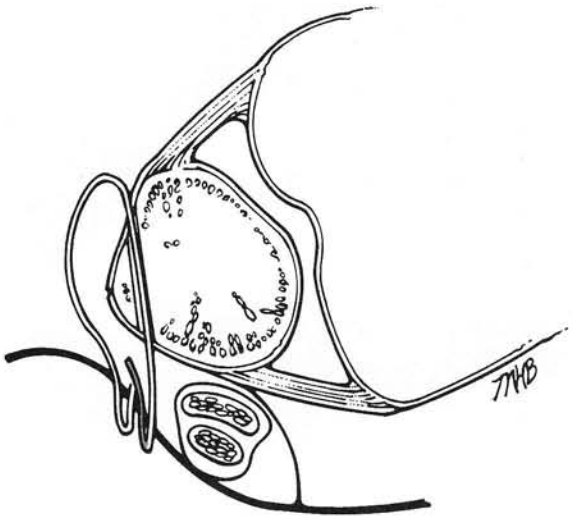

Fig. 14B. Cross sectional presentation.

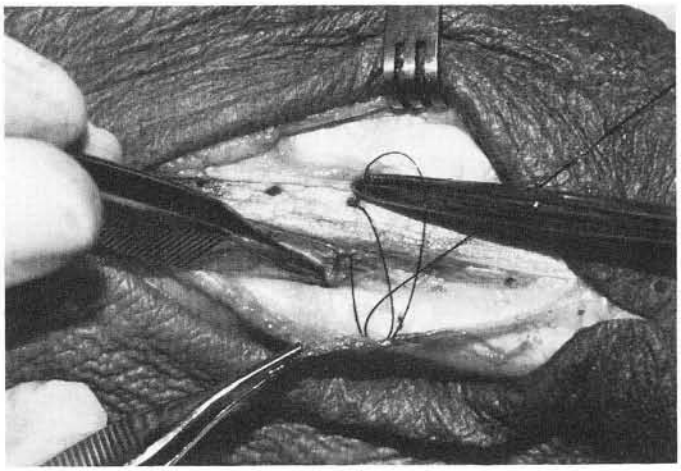

Fig. 15A. The suture is routed through the same fibular drill hole for a second pass. It is again directed from the lateral to the posterior surface.

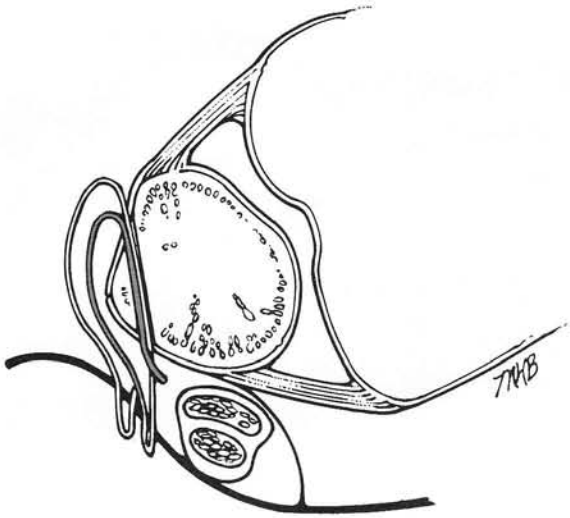

Fig. 15B. Cross sectional presentation.

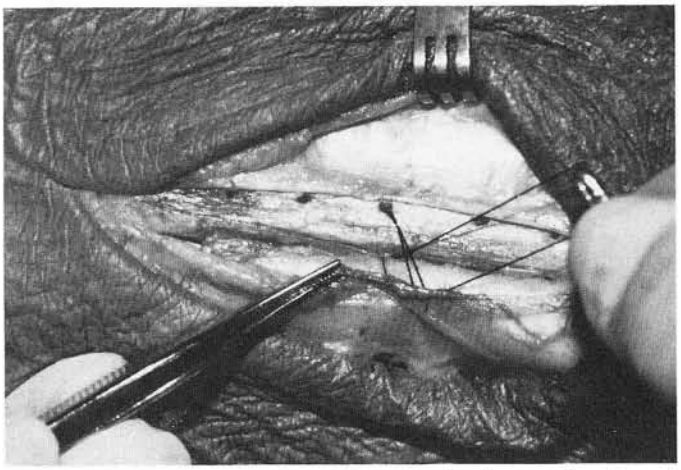

Fig. 16A. The suture ends are inspected to ensure the absence of tangles and the freedom to lay a satisfactory and secure tie. The adequacy of the deep fascial redundancy plication is also assessed.

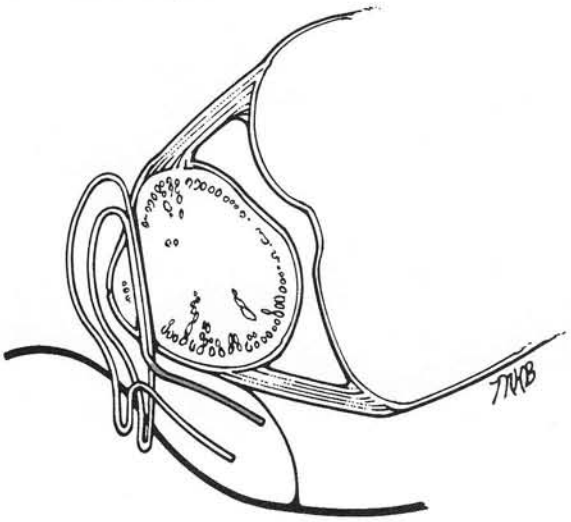

Fig. 16B. Cross sectional presentation.

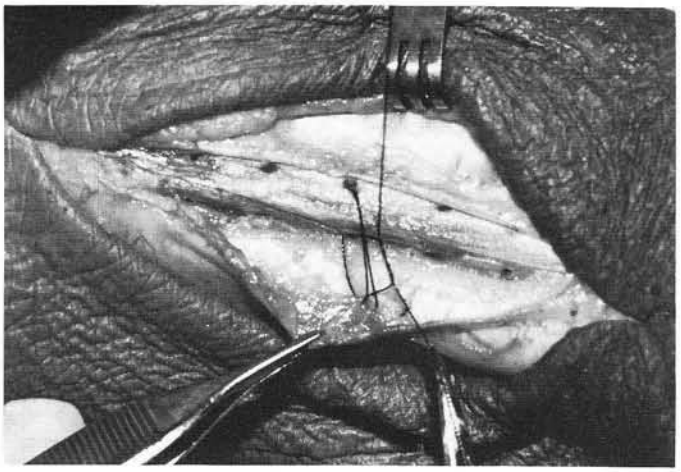

Fig. 17A. The first throw of the surgeon's knot falling into place deep within the repair of the deep fascial layer to the fibula.

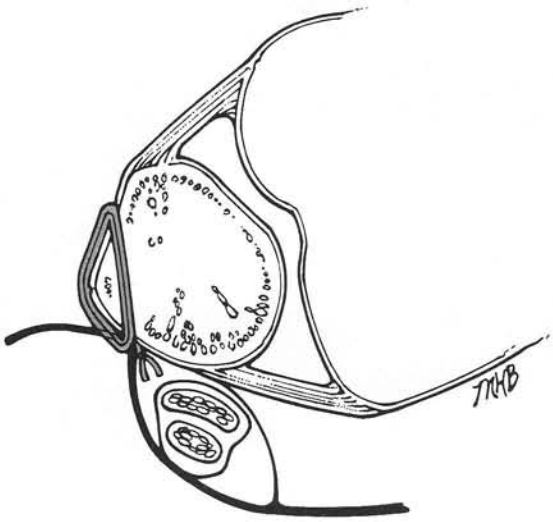

Fig. 17B. Gross sectional presentation.

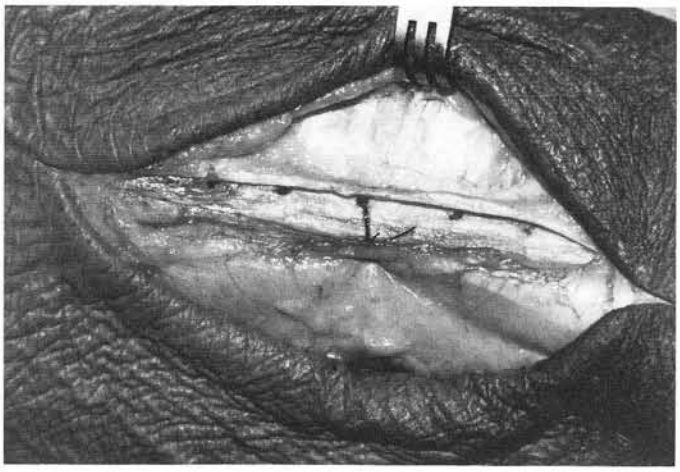

Fig. 18A. Final completed suturing maneuver securing deep fascia to the fibula and plication of fascial redundancy.

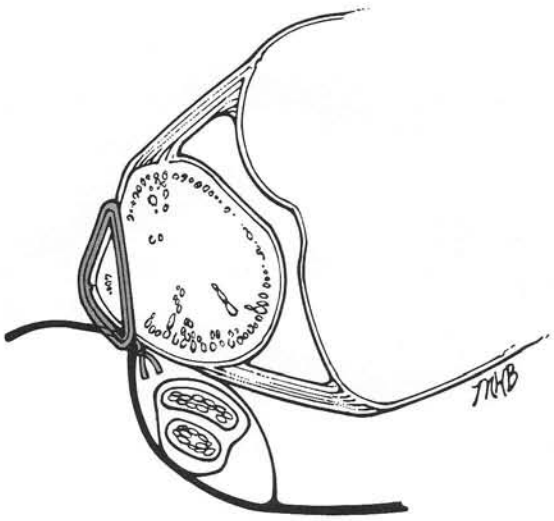

Fig. 18B. Cross sectional presentation.

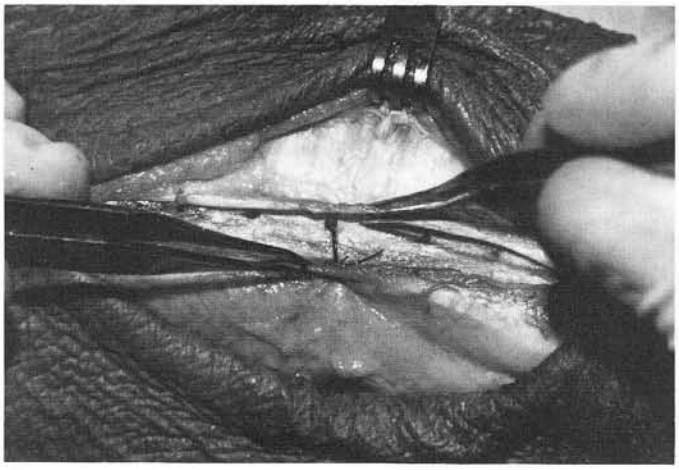

Fig. 19A. The superior margin of the deep fascial incision can now be secured to the lip of the deep fascial repair interiorly. This closure further serves to reinforce the closure and bury the nonabsorbable suture and knots within the repair.

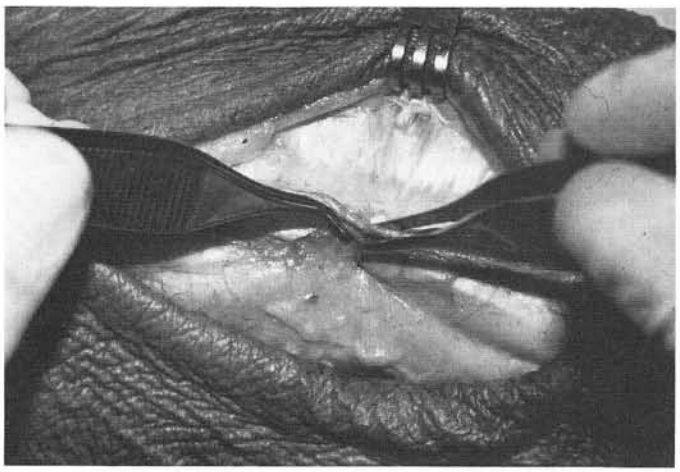

Fig. 19B. Closure demonstrated with pickups prior to suture repair.

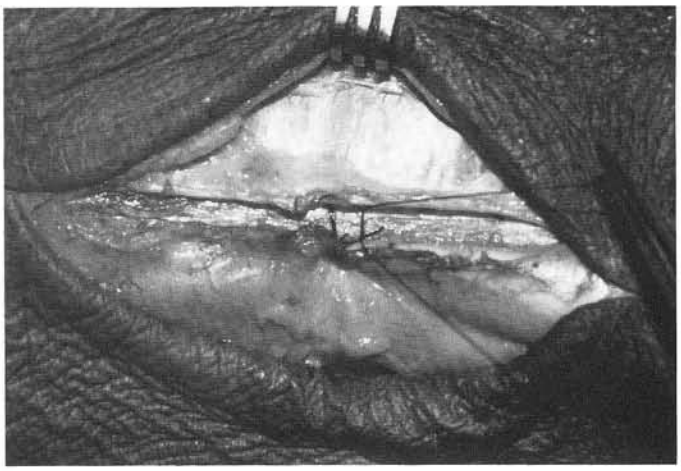

Fig. 20A. Buried knot, absorbable, over-and-over, suture closure of deep fascial margins.

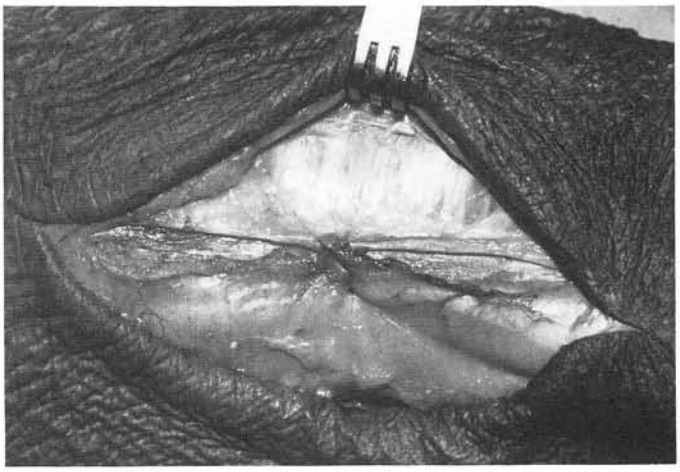

Fig. 20B. Final appearance of deep fascial repair at one site only of entire peroneal deep fascial repair.

DISCUSSION

A basically simple, yet effective means of repairing chronic subluxing peroneal tendons has been presented. The technique addresses the problem anatomically with little disruption of local anatomy. A below-knee weight bearing cast is worn for six weeks, followed by supportive wraps and ankle splinting for an additional 6 - 8 weeks. Guarded athletic activity with progression to tolerance is initiated 8 weeks postoperatively. The procedure has been successfully employed on 5 legs in 3 patients with a minimum of 2 years follow-up. Excellent results have been reported to date. No evidence of recurrence of deformity or return of discomfort has been noted.

Suggested Reading

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