

THE DOUBLE ARMED SUTURE LOST-THREAD (DAS-LT). A FIVE-THREAD, CORE SUTURE, FOR PRIMARY FLEXOR TENDONS REPAIR WITH IMMEDIATE ACTIVE MOBILIZATION OF THE FINGERS.

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Introduction

After traumatic lacerations, in spite of recent progress, there hasn't yet been any significant improvement in functional results in flexor tendons treatment. In fact the failure of tendon repair is due to the rupture or adhesion of repaired tendons in the digital sheath. We report outcomes obtained with the *Double Armed Suture Lost-Thread* (DAS-LT), a *five-strand suture*, having 60.5 N repair strength which allows active and immediate mobilization of the finger after tendon suture. The linear breaking strength and elongation at failure of suture is normally determined at 35 Newton. In the DAS-LT, mechanical properties of four strands 3-0 monofilament nylon achieve 54.4 N (manufactory value for each strand 3-0 monofilament nylon is 13.6 N –USPI 1306.1308- and for the running thread 5-0 the value is 6.1N (1, 2).

Methods

The *Double Armed Suture* is constituted by a first *grasping* criss-cross suture. The second *locking* criss-cross suture starts and ends 1 cm proximally and distally the first tenorrhaphy; both are performed on the same line with nylon monofilament 3/0. The first tenorrhaphy is then reinforced and protected by the second *locking* suture from muscular stress, during immediate active motion; the double suture is completed by an epitendon *simple-locking peripheral running suture* 5/0 nylon monofilament. The DAS-LT is *strictly situated on the median and lateral line* of tendon thickness (*core suture*); this collocation ensures the blood supply (vincula tendinum) of posterior portion of the severed stumps and preserves the sliding surface of the anterior half of flexor tendon (avascular); the interfascicular vascularization of two halves of the repaired tendon is even respected. Moreover the *median and lateral collocation of the suture* avoids anterior impingement of repaired tendon stumps on pulleys, during finger flexion; the knots are situated on the protected lateral and median side of flexor tendon, at one and two cm far of section healing line. Since 1996 to 2002 sixty-two flexor tendons were repaired in the digital sheath of the fingers by the *Double Armed Suture lost-thread*. Primary and delayed primary repair (1-2 weeks post injury) were performed on 48 injured finger flexor tendon; 14 *DAS-LT* were also utilized for early secondary repair (3-4 weeks post injury) in which tendon extrinsic vascularity was definitely compromised.

Results

Soon after the suture, patient was encouraged to flex actively the finger. Hand therapy started only at 3-4 weeks. The follow-up evaluation (3 y, 6 m. an average) by means of the american assessment TAM, showed excellent results for 45 flexor tendons (72.5 %); good for 11 tendons (17.5 %); fair for 2 tendons (3.5 %); poor for 4 tendons (6.5 %).

Discussion

The development of surgical techniques has led to the increasing availability of different procedures to ensure earlier repair of flexor tendon lacerations. The *Double Armed Suture Lost-Thread* is a very strong tenorrhaphy which allows an active finger mobilization and an immediate function even preceding the biological consolidation of injured tendon. *The lateral and median collocation* of this *five-strand, core suture* modifies also the tendon ellipsoid shape in a 8 figure, corresponding to two circles whose diameter, ray of the curve and its anterior sliding surface and friction are reduced of 50%. Moreover, during active flexion, the core-position of DAS LT offers the main central resistance, relieving the sutured peripheral fibres from pulling strains due to tendon angular flexion around the pulleys during the grip. At last, our special procedure of *lateral enlargement and lateral synovial sheath closure* avoids also the anterior suture impingement and preserves synovial fluid into the sheath necessary for tendon gliding and *per primam* epitendon repair (3).



The Rehabilitation of Sports Muscle and Tendon Injuries

Conclusion

The *Double Armed Suture Lost-Thread* is an advanced alternative and an actually innovative technique in comparison with other procedures performed today; it is recommended in severe tendon lacerations for an immediate active rehabilitation of finger function.

References

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