

# Fascia Lata Graft for Correction of Boutonniere Deformity

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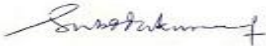

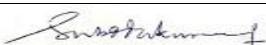
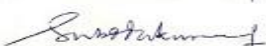
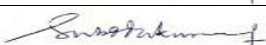
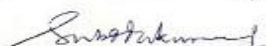
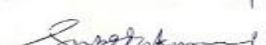

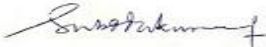
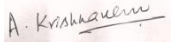

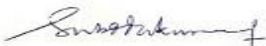
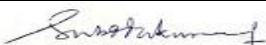

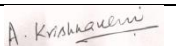
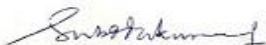
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**Organization, Place and date of which the manuscript was presented as part at a meeting**

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Contribution Details:

	Contributor 1	Contributor 2	Contributor 3
Concept			
Design			
Definition of Intellectual Content			
Literature search			
Clinical studies			
Experimental studies			
Data acquisition			
Data analysis			
Statistical analysis			
Manuscript preparation			
Manuscript editing			
Manuscript review			
Guarantor			

**Abstract:** Introduction: Boutonniere deformity is characterized by flexion at proximal interphalangeal joint, hyper-extension at distal interphalangeal joint, resulting from dorsal disruption of the extensor at the proximal interphalangeal joint. Fixed deformity with contractures will result if neglected. Splints and exercises are tried and surgery is contemplated on supple joints, in those without response on conservative management. Aims: To demonstrate our experience with Fascia lata tendon grafting for the correction of the deformity. Methodology: 25 year old male computer operator had Post-traumatic Boutonniere deformity of Left Middle finger. Post physiotherapy with supple joints, proximal interphalangeal joint was fixed in extension with K-wire. Fascia-lata graft was used to bridge the extensor tendon defect. The volarly displaced Lateral bands were mobilized towards the reconstructed central tendon. Results: Satisfactory functional recovery was obtained using Fascia-lata graft.

**Keywords:** Boutonniere's deformity, Fascia-lata tendon graft, proximal interphalangeal joint, base of middle Phalanx, Lateral bands, K-wire.

**Key Messages:** Fascia-lata is a useful source of Tendon graft and surgery with tendon graft enabled good functional recovery. Physiotherapy is needed to keep the joints supple before surgery and to regain mobility after surgery.

## 1. Introduction

Boutonniere deformity in a finger results from disruption of the central extensor tendon at the proximal interphalangeal joint, along with volar migration of the lateral bands and is characterized by flexion at proximal interphalangeal joint and hyper-extension at distal interphalangeal joint<sup>1,2</sup> and will lead to fixed deformity with contractures if not treated<sup>2</sup>.

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Prevention of the development of the deformity is best and is done by early splintage and exercises<sup>3</sup>. Surgery as tendon procedure is done for the secondary deformity<sup>4</sup> with the joint being supple.

## 2. Material and Methods

A 25 year old male computer operator presented with complaints of bent left middle finger, and difficulty in performing fine tasks since 1 year. Patient had history of crush injury to left middle finger one year ago in a road traffic accident, with history of surgery of the wound on the finger and splintage for four months but there was no improvement. Patient was doing regular physiotherapy. On examination there was scar on the dorsal aspect of left middle finger over the area of proximal phalanx with the finger in Boutonniere's deformity. There was limitation of extension at proximal interphalangeal joint and of flexion at the distal interphalangeal joint. Both the joints were supple (Figures 1 & 2). X-ray of the left hand showed the joint spaces of the Interphalangeal joints of the Left Middle finger to be normal (Figure 3).

## 3. Our Technique

Under tourniquet control and left Axillary nerve block, zig-zag incisions were made on the dorsum of left middle finger (Figure 4). Skin flaps were raised (Figure 5). Cut end of central slip was found on proximal phalanx on its middle third with lot of adhesions to the capsule on the dorsum of proximal interphalangeal joint (Figures 6,12, 13). Adhesions on the dorsum of proximal interphalangeal joint were released, primary approximation of the central tendon was not possible<sup>4</sup>. Lateral bands were mobilized from their volar position towards dorsal side. K- wire was passed across proximal interphalangeal joint in extension (Figures 6,7).

Fascia lata graft harvested from left thigh under short General anaesthesia, while the surgery was underway on the left middle finger. Fascia Lata graft was passed through a hole drilled transversely across the base of Middle Phalanx (Figure 6) and brought in a "U" shaped fashion and then sutured to the cut proximal end of central slip found lying near the base of proximal phalanx, and thus eventually the continuity of Central extensor tendon to the base of middle Phalanx was obtained, bridging the three centimeter defect. Lateral bands after mobilization were sutured to the fascia lata graft for centralization (Figures 8, 14, 15). Tourniquet was removed. Skin flaps were sutured after securing haemostasis (Figure 9). Post-operatively Plaster of Paris splint was applied placing the hand in neutral position. Sutures were removed at the end of two weeks (Figure 10). Splint and K-wire were removed at the end of three weeks (Figure 11). Physiotherapy was continued. On follow-up, at the end of three months, patient was quite satisfied with the functional recovery (Figures 16,17,18, 19, 20).

## 4. Discussion

Boutonniere's deformity is a rarity in our set-up. Splintage with physiotherapy failed to correct the deformity and surgery was needed<sup>4</sup>. Procedures like Tenotomies<sup>5</sup>, Lateral band transfer<sup>1,6</sup>, Tendon transfer have been described to correct the Boutonniere deformity. The deformity has been corrected using the fascia-lata graft along with pre and post-operative physiotherapy to utmost satisfaction of the patient. Palmaris longus was not present on clinical examination on the left wrist. The right sided Palmaris longus graft was not tried.

The graft was used as figure of "U" to bridge the defect, unlike the usage by Littler in the form of figure of "eight",<sup>8</sup> to prevent the tension on closure of the skin flaps. Usage of Tendon graft for correction of Boutonniere deformity is rare and that of usage of Fascia lata is not reported in the literature.

## 5. Acknowledgement

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## 6. Conflicting Interest: None

## 7. Prior Publication: Not done

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### **CONTRIBUTOR'S FORM**

**Manuscript Title:** Fascia lata graft for correction of Boutonniere deformity

**Manuscript number:**

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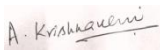
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Date signed. 8 -07-2015

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1. Frontal view of the deformity of the middle finger



2. Lateral photograph of the deformity of the middle finger in the left hand



3. X-ray showing no fracture



4. Markings



5. Raising the flaps



6. K-wiring of PIPJ with absent central extensor tendon



7. Fascia-lata graft across the base of middle phalanx





8. Fascia-lata bridging the defect of Central tendon with lateral bands moved towards the graft



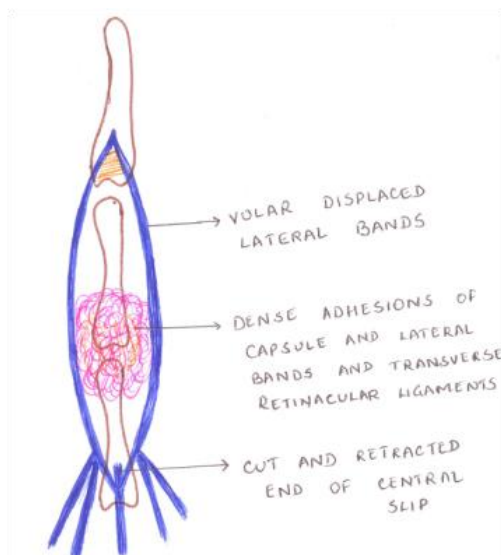
9. Wound closure



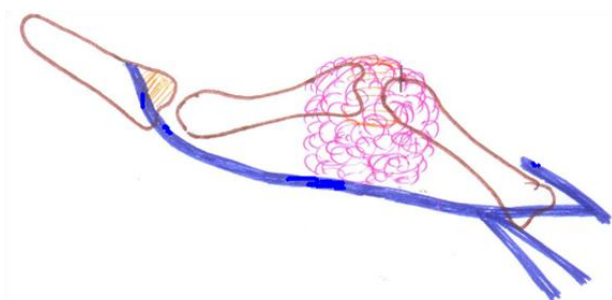
10. On P.O. day 5



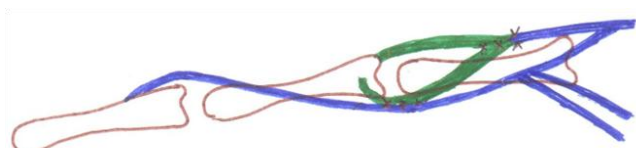
11. At the end of 3 weeks



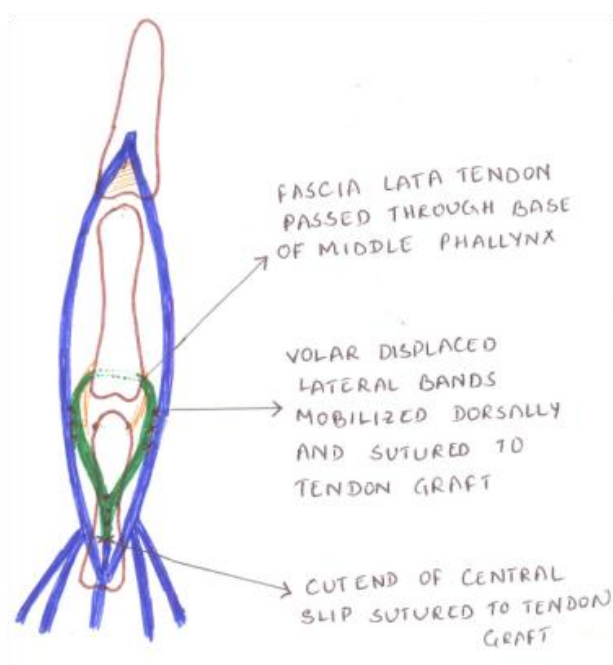
12. Line diagram showing the absence of central tendon



13. Lateral line diagram showing the absence of central tendon



14. Line diagram showing the reconstruction of central tendon



15. Lateral line diagram showing the reconstruction of central tendon



16. At the end of 3 months



17. Lateral view of the finger at the end of 3 months



18. Flexion of the fingers in lateral view



19. Flexion of the fingers in frontal view





Flexion of the finger both at PIPJ and DIPJ