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# Single-Stage Flexor Tendon Graft Reconstruction of the Fifth Finger: A Case Report

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## Article History

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**Abstract:** **Case Report**

Flexor tendon injuries, particularly in zone II of the hand, represent a surgical challenge. Secondary reconstruction following failed primary repair often involves a two-stage tendon graft. However, in selected cases, a single-stage reconstruction can yield favorable outcomes. We present the case of a 20-year-old woman with a history of failed primary repair of the flexor digitorum superficialis (FDS) and flexor digitorum profundus (FDP) tendons of the fifth finger. She was successfully treated with a single-stage tendon graft using the palmaris longus tendon. The postoperative course included 4 weeks of immobilization followed by 20 sessions of passive and active rehabilitation. At 3 months, she recovered satisfactory flexion with good functional outcomes. This case supports the role of single-stage grafting in well-selected patients.

**Keywords:** Flexor tendon injury, Zone II, Single-stage tendon graft, Palmaris longus, Hand surgery.



## INTRODUCTION

Flexor tendon injuries of the long fingers remain a significant surgical challenge, particularly when involving zone II — the so-called “no man’s land” — where the risk of adhesions is high. Primary repair is the treatment of choice in the acute phase. However, early failure or loss to follow-up can result in late complications such as joint stiffness, secondary rupture, or disabling adhesions. In such cases, secondary reconstruction using tendon grafting is indicated, traditionally performed in two stages. Nevertheless, single-stage tendon grafting can be a viable alternative in carefully selected cases. We report the case of a young woman who presented with flexion loss of the fifth digit following failed primary repair of both flexor tendons and was successfully managed with a single-stage tendon graft using the palmaris longus tendon.

## Case Report

A 20-year-old right-handed woman, with no significant past medical history, sustained a deep laceration to the left hand resulting in complete transection of the flexor digitorum superficialis (FDS) and flexor digitorum profundus (FDP) tendons of the fifth digit. An emergency surgical repair was performed at another facility. However, the patient was lost to follow-up and returned several months later with persistent stiffness and inability to actively flex the fifth finger.

On examination, passive flexion of the interphalangeal joints was preserved, with no signs of infection or fixed joint contracture. Ultrasound and intraoperative findings confirmed discontinuity of the FDP tendon with a relatively supple tendon bed. A single-stage tendon graft was planned.

The palmaris longus tendon was harvested and used as a free graft to

reconstruct the FDP, passed beneath the excised remnants of the FDS. The graft was secured using standard tendon repair techniques. The digit was immobilized in an intrinsic-plus position for 4 weeks, followed by a rehabilitation protocol consisting of 20 sessions of passive then active mobilization.

The postoperative course was favorable, with progressive recovery of flexion. At 3 months, the patient demonstrated active distal interphalangeal joint flexion greater than 70°, corresponding to a "good" result according to the Strickland grading system. She was able to return to normal hand function in daily activities.

**Figure 1: Before the Tendon Graft**

**Figure 2: After Tendon Graft + Rehabilitation Protocol**

**Figure 3: After Tendon Graft + Rehabilitation Protocol**

## DISCUSSION

Combined injuries of the FDS and FDP tendons in the fifth digit are relatively rare and often complex to manage, particularly in delayed settings. In our case, the failure of the primary repair, likely due to adhesion formation or secondary rupture, led to functional impairment requiring reconstructive surgery.

The decision to proceed with a single-stage tendon graft was based on several favorable factors: the patient's young age, absence of joint stiffness, preservation of passive mobility, and a relatively healthy tendon bed. The palmaris longus tendon remains a widely accepted choice for grafting due to its appropriate length, diameter, and minimal donor site morbidity.

Our case aligns with the findings of Tang (2007), who reported good outcomes in 70–85% of selected single-stage flexor tendon reconstructions. Similarly, Amadio *et al.*, (1989) found comparable outcomes between one- and two-stage procedures when performed in a suitable environment. Although some authors, such as Strickland and Glogovac (1980), have expressed caution regarding single-stage repairs in the fifth digit due to anatomical constraints, our successful outcome suggests that favorable results are achievable when indications are carefully assessed.

The rehabilitation protocol is crucial to the success of tendon grafting. Early but protected mobilization has been shown to reduce adhesion formation and improve tendon glide, as emphasized by Gelberman *et al*., (1983). In our patient, a combination of immobilization followed by supervised passive and active mobilization enabled satisfactory functional recovery.

## CONCLUSION

Single-stage flexor tendon grafting is a valid treatment option for failed primary repairs, provided that the tendon bed is favorable and joint stiffness is absent. Our case illustrates that this approach can yield good functional results even in the fifth digit, which is often considered less favorable for direct grafting. Proper patient selection and adherence to a structured postoperative rehabilitation protocol are essential to optimize outcomes.

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