Use of Infant Feeding Tube for Staged Flexor Tendon Reconstruction

Ananta A. Kulkarni · Suhas V. Abhyankar ·
Madhuri Kulkarni · Rohit R. Singh

Received: 27 December 2013 / Accepted: 21 January 2014 / Published online: 8 February 2014
© Association of Surgeons of India 2014

Abstract A two-stage flexor tendon reconstruction using a silicone rod in the first stage and a free tendon graft through the pseudo sheath formed around the silicone in the second stage was described by Hunter and Salisbury for a neglected and failed flexor tendon reconstruction. We are describing a technique where we have used an infant feeding tube as a substitute for silicone rods, which substantially reduces the cost of procedure but delivers the same results.

Keywords Hand injury · Silicone rod · Infant feeding tube · Zone 2 injury

Introduction

The reconstruction of a neglected and failed flexor tendon repair in zone 2 of the hand is difficult because of scarring. A two-stage flexor tendon reconstruction using a silicone rod in the first stage and a free tendon graft through the pseudo sheath formed around the silicone in the second stage was described by Hunter and Salisbury in 1971. Most of these patients have injuries of both flexor tendons with lots of scarring. In most of these patients, primary tendon lesion is missed; in few, it is a failed primary repair.

Case History

We are presenting here a case of a 20-year-old man, with a history of neglected injury to his left hand. On examination, he

had lots of scarring on palmar aspect of his left index and middle fingers with an inability to flex both with stiff proximal interphalangeal joint (PIP) and DIP joints. After vigorous active and passive physiotherapy sessions, we decided to explore both fingers after achieving supple joints. Index showed injury to both flexors in zone 2 with scarring, and A2 pulley was intact. Middle showed intact flexors but stuck to the PIP joint. So, tenolysis was done in the middle finger, and two-stage reconstructions were planned for the index finger (Figs. 1 and 2). Since silicone rod is not easily available and very costly, we decided to use an infant feeding tube no. 10 as a tendon implant as it is easily available and very cheap; the cost of the infant feeding tube being 30 INR (US 50 Cents). The duration between the injury and the first stage was 6 months. There was no evidence of rejection, infection, extrusion or skin necrosis after the first stage. The second stage was carried out with the use of palmaris longus as a tendon graft, after physiotherapy for 3 months. Patient has good functional recovery.

Discussion

Hunter and Salisbury in 1971 described a two-stage reconstruction using a silicone rod and a free tendon transfer for a neglected and failed tendon repair. In the first stage of reconstruction, after a rigorous physiotherapy to overcome the stiffness, flexor tendons are exposed by Brunner incision into the palm, scar tissue and tendon remnants are excised and A-2 and A-4 pulleys are preserved or reconstructed using the tendon graft. A silicone rod with a size corresponding to the flexor digitorum superficialis (FDS) diameter is passed through the pulley system and sutured distally to the distal flexor digitorum profundus (FDP) stump. The proximal end of the implant is left free in the palm at the level of the lumbrical origin. After 1 week of immobilisation, passive range of

A. A. Kulkarni (✉)
Department of Plastic Surgery, Padmashree Dr D Y Patil Hospital
and Research Centre, Sector-5, Nerul, Navi Mumbai,
Maharashtra 400 706, India
e-mail: anantakulkarni@hotmail.com

Fig. 1 Stage 1, infant feeding tube used to create pseudo sheath

Fig. 2 Stage 2, palmaris longus used as a graft

motion (ROM) started. The goal is to achieve a full passive flexion until the second stage.

In the second stage, performed 8–12 weeks after the first stage, the palm is opened and the proximal end of the silicone rod is identified, adhesions are dissected and a tendon graft (palmaris longus or FDS) is sutured to the implant. Through the separate incision, the distal end of the implant is identified and freed. By traction on the implant, the tendon graft is threaded through the new sheath and delivered into the distal wound. The free distal end of the tendon is attached to the distal FDP stump after adjusting proper tension. The proximal end of the graft is woven into the tendon of the motor using Pulvertaft's technique. A dorsal splint is applied to hold the wrist in 40° flexion and fingers in intrinsic plus position, and passive ROM started for 3 weeks and later on, active ROM for 3 weeks [1].

Conventional one-stage secondary flexor tendon surgery is not always followed by a satisfactory function. In a two-stage reconstruction, the hand remains less traumatised, less painful and more supple, but there is some incidence of reaction to the silicone rod and a chance of infection and extrusion and the cost factor remains a problem in poor patients [2]. So we think that in poor patients, infant feeding tube will be a good alternative as a tendon implant.

References

1. Abdul-Kader MH, Amin MA (2010) Two-stage reconstruction for flexor tendon injuries in zone II using a silicone rod and pedicled sublimis tendon graft. *Indian J Plast Surg* 43(1):14–20, Epub 2010/10/07
2. Elliot D (2011) Staged tendon grafts and soft tissue coverage. *Indian J Plast Surg* 44(2):327–336, Epub 2011/10/25