

Synovial Fistula as a Complication of Release of A1 Pulley for Trigger Finger

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Introduction

Open release of A1 pulleys for trigger finger has been considered a minor and relatively safe procedure with a low complications rate [3]. Surgical technique consisted of a transverse skin incision over the A1 pulley, identification and longitudinal division of the A1 pulley. Some studies have shown complication rates ranging from 11 to 43 %, most of them being minor [3–6].

Synovial fistula (communication between a synovial or tenosynovial space and the external skin) in the palm is rare. It was described as a complication of fish fin injury, lacerations of the palm, pellet gun injury, and release of A1 pulleys for trigger finger [7]. Some studies showed a higher rate of wound complications, in patients who had intra-operative steroid injection, patients who had two or more surgeries in the same digit for trigger finger release, and patient who underwent extensive dissection in the first surgery [7]. Diabetes mellitus and preoperative steroid injections aren't mentioned as risk factors. The most commonly reported synovial fistulas are those following arthroscopy of the knee [8, 9]. The precise rate of synovial fistula as a complication of release of A1 pulleys for trigger finger is not known because of its low

incidence. This article describes two cases of synovial fistula after release of A1 pulleys. The objective of our article is to draw attention to the chain of events and the approach to the patient with tenosynovial fistula after release of A1 pulley for trigger finger.

First Case

A 62 years old male, with medical history of obesity, hypertension and hyperlipidemia, admitted to our hospital clinic with 6 months complaints of pain, and paroxysmal “locking” of the ring finger of his right hand. No history of trauma, sprain, animal bite, or puncture wound.

Physical examination revealed tenderness and swelling of the fourth ray metacarpophalangeal joint, flexion and extension of the finger provoked pain and sensation of “snapping”. No nodular lesions were felt.

The patient was diagnosed as suffering from trigger finger and was treated ambulatory with immobilization, finger splint, non steroidal anti inflammatory drugs, and two steroids injections with no improvement, and was referred for surgery.

He underwent an open release of A1 pulley under local anesthesia. A week later, the patient was admitted to our clinic for routine follow up, stitches were removed, and physical examination was completely normal.

A month later the wound was still open, small amount of clear serotic discharge was apparent and the fluid increased with active finger motion, no pus, no redness, no pain, only slight tenderness. C reactive protein, and erythrocytes sedimentation rate were slightly elevated, and white blood cell count was within the normal range. Wound cultures for aerobic and anaerobic bacteria as well as Gram stain were negative. The patient was diagnosed as suffering from tenosynovial fistula and 2 days later, underwent excision of the fistula using “Boat snitch incision”, debridement of the

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fistula and 1 mm of clinically normal skin, leaving clear and healthy margins, which were primary closed. A week after the second surgery, stitches were removed, no discharge, no signs of infection, and range of motion was limited.

A month later, normal physical examination. Four years later, the patient regain full range of motion, minimal scar and no pain.

Second Case

A 62 years old female, with medical history of Diabetes mellitus type 2, obesity, and hypertension, admitted to our hospital clinic with 2 months complaints of pain, and limited range of motion of her right hand thumb.

No history of trauma, sprain, animal bite, or puncture wound.

Physical examination revealed tenderness of the first ray metacarpophalangeal joint, flexion and extension of the finger provoked pain and sensation of “snapping”. Other pathologies such as De Quervain’s tenosynovitis, and osteoarthritis were ruled out. She was diagnosed as suffering from trigger finger. The patient was treated ambulatory with immobilization using finger splint, non steroidal anti inflammatory drugs, and steroids injections with partial improvement, and was referred for surgery. She underwent an open release of A1 pulley under local anesthesia. A week later, the patient was admitted to our clinic for routine follow up, stitches were removed, and physical examination was completely normal. A month later, wound was still open, serotic discharge was apparent, no pus, no redness, and no pain (Fig. 1). C reactive protein and white blood cell count were within the normal range, and erythrocytes sedimentation rate was slightly elevated. The patient was treated locally with iodine dressings and intravenous Amoxicillin Clavulanate (Augmentin) 1 g three times a day with no improvement within a week of follow up, and eventually underwent a surgical excision of the fistula. Three



Fig. 2 Synovial fistula

days after the second surgery, there was still serotic discharge. The patient was treated with oral non steroidal anti inflammatory drugs and with wrist brace. A week later, stitches were removed, there was still serotic discharge, and range of motion was limited. With no improvement, the patient underwent a vast surgical excision of the fistula and attached tissue including the A1 pulley and the skin was primary closed using a local flap (Figs. 2, 3, and 4). A week after the third surgery, no discharge, slight tenderness, limited range of motion, no signs of infection. Two weeks later, stitches were removed, no discharge, no tenderness, and range of motion was substantially better. One year after the first surgery, the patient had a full range of motion, no pain, and minimal scar.

Discussion

Trigger finger is a common hand disorder encountered by many hand surgeons.

There are open and percutaneous surgical methods for treatment. Some studies have shown that the percutaneous surgical technique is an effective, convenient and cost-effective method with a low complication rate, and is therefore

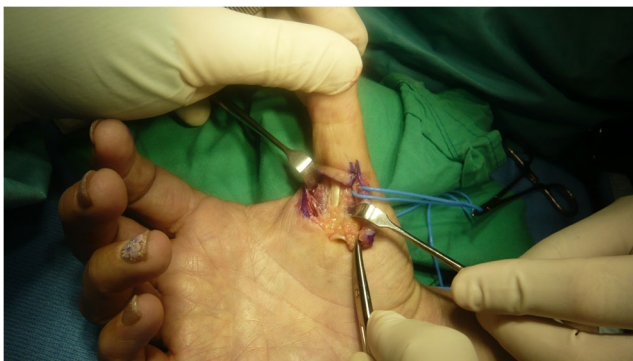


Fig. 1 Vast surgical excision of the fistula

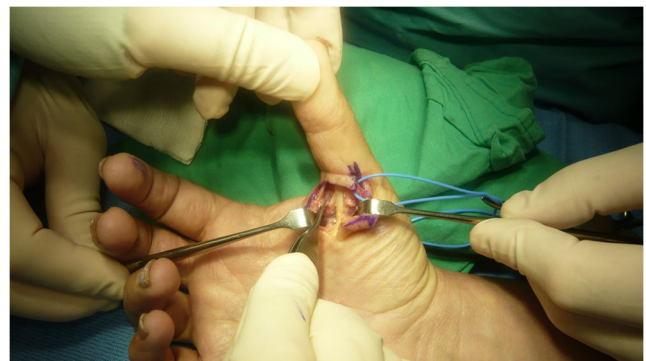


Fig. 3 Vast surgical excision of the fistula

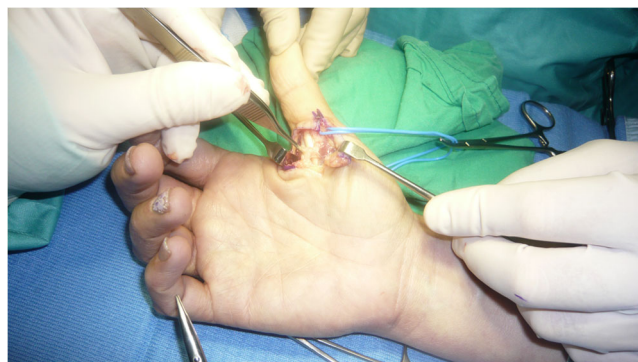


Fig. 4 Vast surgical excision of the fistula

a preferable alternative to open surgery [1]. However, a cadaver study has shown that out of 54 fingers, in which percutaneous release of A1 pulley was performed, only 39(72 %) A1 pulleys were completely released [2].

Tenosynovial fistula is a rare complication of open release of A1 pulley for trigger finger. The precise rate of synovial fistula as a complication of release of A1 pulleys for trigger finger is not known because of its low incidence. Naam described 15 patients with tenosynovial fistula in the palm. Within which six patients had multiple surgeries for stenosing flexor tenosynovitis. Out of 15 patients, 4 patients had unsuccessful closure of the fistula [7]. Will et al. described 1 patient with tenosynovial fistula out of 43 patients who had had 78 open trigger finger release by a single surgeon [3].

Naam mentioned intra-operative steroid injection, patients who had two or more surgeries in the same digit for trigger finger release, and patient who underwent extensive dissection in the first surgery as risk factors for wound complications in the palm [7]. In our study, the first patient has not presented any significant risk factor for the development of tenosynovial fistula, yet, the fistula has appeared. The second patient suffers from diabetes mellitus type 2 which is a risk factor for surgical wound complications [10] in general, but is not known as risk factor for tenosynovial fistula in the palm. However, both patients had given preoperative steroid injection.

Laboratory tests should be taken routinely. Complete blood cell count should be taken, C reactive protein and Erythrocyte sedimentation rate are expected to be higher in infectious states rather than inflammation only, according to our medical experience, although the limit is not clear. Wound cultures should be taken and a sample should be sent to Gram stain and pathologic examination. Although not described in current literature, viral and fungal infection should be ruled out. In our study, wound cutlers were negative for aerobic and anaerobic

bacteria as well as gram stain, and the second patient was treated empirically with intravenous Amoxicillin Clavulanate (Augmentin) with no improvement.

Unlike tenosynovial fistula following arthroscopy of the knee, which is treated successfully with antibiotic and immobilization [8], while accruing in the palm, surgical treatment is almost always warranted. Naam et al. reported of 15 patients with tenosynovial fistula. All of them were treated conservatively for 7 weeks with immobilization, dressings, and some of them with antibiotic, unsuccessfully, and eventually underwent a surgical excision of the fistula. Four of which had had an unsuccessful closure of the fistula and had underwent a second surgery [7]. In our study, the second patient was treated with iodine dressing, immobilization and intravenous augmenting with no improvement and eventually underwent a surgical excision of the fistula. The excision turned out to be incomplete, however, and the patient was forced to undergo a vaster excision of the fistula.

The limitations of our study is the facts that only two cases were described, and that samples of the excised fistulas weren't pathologically examined, which would rule out other pathologies (e.g. infection).

Distinguishing synovial fistula from wound infection is a major challenge, since signs of tenosynovial fistula such as redness, tenderness, discharge, and limited range of motion may mimic wound infection. However, according to our experience, presentation of wound infection is more severe, discharge is murky, and pus may appear.

Both patients had presented wound dehiscence, with clear serotic discharge which was aggravated by flexion of the finger, no pus and no redness. The first patient presented slight tenderness in the surgical site. Wound cultures for aerobic and anaerobic bacteria were negative.

Complete resolution of symptoms are expected but may take a while. The first patient had resolution of symptoms after 2 months and the second patient after 4 months. Both of the patients regained full range of motion, minimal scar, normal grip, no recurrences, and pain free.

In summery, fistula formation is a rare complication of release of A1 pulley for trigger finger, yet, the surgeon must be aware of it, and to be familiar with signs, symptoms, diagnosis and treatment.

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Ethical Standards The study has been approved by the ethic committee and has therefore been performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki and its later amendments.

Both of the patients gave their informed consent prior to their inclusion in the study.

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