Percutaneous Trigger Thumb Release with 18 Guage Needle

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Objective: *The aim of the present study was to determine the clinical results and safety of percutaneous release in trigger thumbs.*
Material and Method: *Forty-five thumbs of 43 patients were percutaneous released under local anesthesia. Pain score were calculated in the preoperative and postoperative periods.*
Results: *Forty-three thumbs was successful release. Two thumbs had signs of discomfort and triggering because of incomplete release. These patients underwent open release. Superficial tendon lacerations were seen during these open procedures. There were no wound complications or signs of digital nerve or artery injury in any of the patients. The preoperative mean VAS was 30.6 (20-36). This decreased to 3.5 (0-5) at the first postoperative month ($p < 0.05$) and to 2.1 (0-3; $p < 0.05$) at the second month. When the VAS scores at the first and second months were compared, the difference was statistically significant.*
Conclusion: *Percutaneous release of trigger thumbs is a cheap, safe and effective procedure with a low rate of complications.*

Keywords: *Trigger thumb release*

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Trigger thumb is characterized by pain, swelling, the limitation of finger motion and a triggering sensation[1]. The primary pathology is thickening of the annular pulley with resultant entrapment of the flexor tendon. When failed conservative treatment, release of the annular pulley is usually recommended[2-4]. Since Lorthioir[5] first described a technique of percutaneous release, several methods using various instruments have been reported with satisfactory results and few complications[6-9]. In the present study, the author evaluated the results of percutaneous release in patients with trigger thumb.

Material and Method

The author undertook a retrospective analysis of 43 patients who underwent percutaneous trigger thumb release at the HRH Princess Maha Chakri Sirindhorn Medical Center during the period from July 2006 to June 2010. Age, sex, duration of symptom, underlying diseases, pain score and complications were included in analysis.

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Operative technique: The procedure was carried out in the outpatient department under local anesthesia. The point of triggering at the annular pulley was located by palpation. These were located at the metacarpophalangeal crease. Location of the pulley needed to be carefully outlined by positioning the thumb in abduction, slightly flexing the wrist and supinating the forearm. The 18 guage needle was inserted distally to the metacarpophalangeal crease, in the centre of the thumb. The proximal edge of the pulley is identified with the tip of the needle at the level of the metacarpophalangeal crease. Care must be taken not to extend the tip too proximally because of the proximity of radial digital nerve. All patients were seen at one week, four weeks and eight weeks after operation. The results were classified as satisfactory if the treated thumb no longer clicked or locked and as unsatisfactory if there was persistent discomfort or if open surgery had been required.

Statistical analysis

The data were analysed using a paired samples t-test. The results were considered significant if $p < 0.05$.

Results

There were 29 women and 14 men with a mean age of 48.3 years (30 to 62). The mean duration of

symptoms before treatment was 6.4 months (2 to 30). Twenty patients had diabetes mellitus and 3 had rheumatoid arthritis. Ten patients had had a carpal tunnel release earlier in the same hand. All of thumbs had failed a trial of treatment by steroid injection at least once before percutaneous release. Both thumbs were involved in 2 patients. All thumbs were graded according to the severity of symptoms. In grade 1, there were no triggering, but uneven finger movements. In grade 2, triggering was actively correctable, in grade 3, it was usually correctable by the other hand and in grade 4 the digit was locked. Twenty thumbs (44.4%) were graded as grade 2, 24 (53.3%) as grade 3 and 1 (2.2%) as grade 4. The mean operative time was 12 min (8-16). When the patients were reexamined on the seventh postoperative day, 43 (95.6%) thumbs had total relief of symptoms with a painless full range of motion of the thumb with no objective or subjective triggering sensation (mean VAS = 6; range, 2-12). The remaining two thumbs (4.4%) had incomplete relief of symptoms (mean VAS = 40; range, 35-50). They were given oral and topical NSAIDs treatment and hyper extension exercises and were re-examined 4 weeks later. The symptom did not improve in any of these patients and all underwent open release of the annular pulley. Intraoperative observation revealed incomplete release of the annular pulley. The average operative time for these open release procedure was 20 (18-25) minutes starting with the administration of the local anesthetic. These patients were reexamined at the first postoperative week, their symptoms were relieved except for a slight discomfort remained at the incision site. All were satisfied with the results of the surgery and had returned fully to work and sports activities (mean VAS = 2; range, 0-4). The preoperative mean VAS was 30.6 (20-36). This score decreased to 3.5 (0-5) at the first postoperative month ($p < 0.05$) and to 2.1 (0-3) ($p < 0.05$) at the second month postoperatively. Regardless of the final type of treatment (percutaneous or open), none of our patients had complications such as inflammation, edema, digital nerve injury. During open release procedure, the author saw laceration of the flexor pollicis longus tendon, but these finding did not interfere with the function of the tendon. There were no wound complications or signs of digital nerve or artery injury.

Discussion

In patients who failed to conservative treatment, open release of the annular pulley is an accepted treatment method in trigger thumb. Despite its success, when compared to percutaneous release, it has disadvantages such as surgical site pain and potential complications such as digital artery or nerve injury[7]. Percutaneous release was first done in 1958. The success rates reaching 90% have been reported[8,9]. In the present study, the success rate was 95% (43/45). In cadaveric studies, damage to the flexor tendons were seen following percutaneous release. The author also detected longitudinal tears in patients who underwent open release, but neither percutaneously nor open released patients had any thumb dysfunction. The problem in percutaneous release was the proximity of the digital nerves with the needle insertion site. Digital nerves are just a few millimeters away from the annular pulley[10]. Because of this relation of the nerve with the pulley, some authors do not favor percutaneous release[10, 11].There were incomplete release in the initial attempt. These failures in our hands were attributed to our inexperience during the learning curve period.

Conclusion

Percutaneous release is a simple, safe, effective and cheap method of treatment in the management of the trigger thumb. Nerve damage and tendon injury are reported by others as potential complications of this procedure. Tendon laceration were observed in the present study. Percutaneous trigger thumb release is alternative method for trigger thumb surgery. In inexperience surgeon, this technique can not be applied safely.

Potential conflicts of interest

None.

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การผ่าตัดนิ้วหัวแม่มือล็อกโดยการใช้เข็มฉีดยาเบอร์ 18 เจาะผ่านผิวหนัง

ยิ่งยง ต่ออุดม

วัตถุประสงค์*: รายงานผลการรักษา trigger thumb ด้วยการผ่าตัดแบบเจาะด้วยเข็มเบอร์ 18*

วัตถุและวิธีการ*: ศึกษาข้อมูลผู้ป่วย trigger thumb ที่ได้รับการรักษาด้วยวิธีการใช้เข็มเบอร์ 18 เจาะผ่านผิวหนัง ในศูนย์การแพทย์สมเด็จพระเทพรัตนราชสุดาฯ สยามบรมราชกุมารี ตั้งแต่ กรกฎาคม พ.ศ. 2549 ถึง มิถุนายน พ.ศ. 2553 รวมระยะเวลาแล้ว 4 ปี เก็บข้อมูล อาการปวด เปรียบเทียบกับก่อนผ่าตัด*

ผลการศึกษา*: ผู้ป่วยทั้งหมด 43 ราย 45 หัวแม่มือ 43 นิ้ว หายอาการล็อกและอาการปวด มีนิ้ว 2 นิ้ว ที่การเจาะผ่านผิวหนังไม่สามารถทำให้อาการหาย จำเป็นต้องผ่าตัดแบบปกติ ขณะผ่าตัดแบบวิธีปกติพบการฉีกขาดบางส่วนของเส้นเอ็น flexor pollicis longus ในการศึกษาครั้งนี้ไม่พบภาวะแทรกซ้อนอื่น เช่น การบาดเจ็บของหลอดเลือดหรือเส้นประสาท และการติดเชื้อ*

สรุป*: การผ่าตัด trigger thumb ด้วยวิธีเจาะผ่านผิวหนัง ได้ผลการรักษาอยู่ในเกณฑ์ดี (95%) โดยไม่มีภาวะแทรกซ้อน*