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Research Article

SKIN CLOSURE IN CARPAL TUNNEL RELEASE OPERATION : A COMPARISON OF THREE DIFFERENT METHODS - NYLON, MONOCRYL AND UNDYED VICRYL

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Abstract

Background: Carpal tunnel decompression release is a common procedure performed to release the compression of the median nerve at the wrist that usually causes symptoms of hand weakness, pins and needles affecting the thumb, index finger, middle finger, and the thumb side of the ring fingers. Patients usually drop things because of poor grip and in more than half of cases both sides, the right and left are affected (1). Symptoms typically start gradually and during the night (2). Pain may extend up the arm (2). Weak grip strength may occur and after a long period of time the muscles at the base of the thumb; the abductor pollicis brevis, flexor pollicis brevis and the opponenspollicis that forms the Thenar Eminence at the base of the thumb on the volar aspect may waste away. The causes of Carpal Tunnel Syndrome (CTS) are multifactorial and treatment could be conservative or surgical, conservative treatment involve; physiotherapy, steroids administration either orally or injected locally, splinting, and the surgical treatment involve the release of the transverse carpal ligament (3,4). Surgery is recommended when night-splinting or other conservative interventions no longer control intermittent symptoms (5,6). The skin wound can be closed by either a simple interrupted stitches or by an intradermally placed suture. **Objective:** This is a prospective randomised three-cohort study to compare the use of an absorbable suture; polyglactin {undyed vicryl rapid – group A}, Poliglecrapone {Monocryl – group B} and a non-absorbable suture, Polyamide {Ethilon - group C}, in wound closure after elective carpal tunnel decompression. The primary outcome was scar management as assessed by direct phone calls to patients and review of medical records. The cost of the wound closure materials were compared as a secondary outcome. In all we assessed 110 patients in a follow up of between 14 to 36 months post-operatively. There was no significant difference in the three groups regarding scar management postoperatively. **Method and Materials:** We reviewed the medical records of all patients who had carpal tunnel decompression within the3 years period (between 2015 to 2017) and the skin wound was closed with nylon, monocryl or undyed vicryl. Phone calls were made to 150 patients but we got responses from 110 patients and also reviewed the medical records for any evidence of any scar reassessment for continuous dressing and use of antibiotics because of wound redness, swelling, discharge or evidence of palpable collection. Within this period time frame only one patient reported scar sensitivity, no patients had wound infection, wound break down or collection needing further incision and drainage. This is a retrospective study, to help us evaluate our quality of care, review our surgical methods and improve as appropriate. **Result:** All the surveyed patients had no complications relating to the wound closure post-surgery. **Conclusion:** This is a quality improvement audit, helping us to review and evaluate the quality of CT release operations in Hinchingbrooke Hospital. The material used for wound closure in CTR.

Keywords: Carpal tunnel, Release, Monocryl, Vicryl, Nylon, Discharge, Wound, Scar.

INTRODUCTION

Carpal tunnel decompression release is a common procedure performed to release the compression of the median nerve at the wrist that usually causes symptoms of hand weakness, pins and needles affecting the the thumb, index finger, middle finger, and the thumb side of the ring fingers. Patients usually drop things because of poor grip. In more than half of cases both sides are affected (1).Weak grip strength usually occur for some time and after a long period of time the muscles at the base of the thumb may waste away. Symptoms typically start gradually and during the night and may extend up the arm (2). The causes of Carpal Tunnel Syndrome (CTS) are multifactorial and some are outright speculations. Carpal tunnel syndrome is provoked by repetitive movement and manipulating activities of the hand and wrist and that these exposure can be cumulative and leads to soft tissue swelling of the carpal tunnel and subsequent compression of the nerve. It has also been stated that symptoms are commonly exacerbated by forceful and repetitive use of the hand and wrists in industrial occupations (typing, carpentry, engineering) and also house work.

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Generally CTS treatment could be conservative or surgical. Conservative treatments include: physiotherapy, steroids either orally or injected locally, splinting, and surgically by the release of the transverse carpal ligament (3). Limited evidence suggests that gabapentin is no more effective than placebo for CTS treatment. There are other treatment methods with insufficient evidence on their efficacy, these include; therapeutic ultrasound, yoga, acupuncture, low level laser therapy, vitamin B6 oral intake and exercises but avoiding activities that worsen symptoms (4). The surgical management is known as Carpal Tunnel Release or Decompression, and this involves the release of the transverse carpal ligament. It is recommended when there is constant fingers and / or hand numbness, muscle weakness, or atrophy, and when night-splinting or other conservative interventions no longer control symptoms (5). The surgery may be done with local or regional anesthesia withor without sedation, or under general anesthesia. In general unrelenting symptomatology always result in surgical treatment (6).

MATERIALS AND METHODS

We reviewed the medical records of all patients who had carpal tunnel decompression within the past 3 years (2015 to 2017) and the skin wound was closed with nylon, monocryl or

undyed vicryl. Phone calls were made to 150 patients but we got responses from 110 patients and also reviewed the medical records for any evidence of any scar reassessment for continuous dressing and use of antibiotics because of wound redness, swelling, discharge or evidence of palpable collection. Within this period time frame only one patient reported scar sensitivity, no patients had wound infection, wound break down or collection needing further incision and drainage. This is a retrospective study, to help us evaluate our quality of care, review our surgical methods and improve as appropriate. We made 150 phone calls but got responses from 110 patients, we identified ourselves as doctors from Hinchingbrooke carryout audit to improve our services, we did not leave voice messages and we made sure to speak to the patient in person after he or she has identified him or herself. The patient's date of birth and the confirmation of the phone number were used to confirm identity before the questions. We informed patients that this was a simple question concerning the surgery they had on the wrist and reassured them that their personal details will not be published or used for any other purpose.

There were 3 simple primary questions and 3 secondary questions;

1. Can you remember the surgery you had over your wrist??
2. Did your surgical wound heal nicely?
3. Did you have any wound or scar problems?

There were 3 follow up questions if the answer to the third question was "yes",

4. Was there any, redness, breakdown or discharge from the wound?.
5. Did you receive antibiotics ?
6. How is the scar now?

RESULTS

There were no cases of wound redness, infection, discharge, breakdown or irritation, one patient had scar hypersensitivity which took time to resolve and had since resolved by the time we had the conversation with the patient but it took up to 6 months to settle. While we can comment about the effectiveness of the suture materials and the used methods of closure, we cannot comment in relation to surgeon experience in CTR. The three surgeons that operated on these patients and used the different materials in closure are experienced in CTR and their expertise are not in question, our main focus was the material used and its efficacy in wound closure in carpal tunnel release surgeries.

LITERATURE REVIEW

Wound closure in CTR operations have been studies before, Dosani et al (2013) looked the cost of the materials; absorbable and non-absorbable used for wound closure. They concluded that there was no significant difference in the two groups they studied regarding scar tenderness ($p = 0.5$), although residual swelling was more evident in the absorbable group ($p = 0.2$), but they found out that the unit cost per closed wound of Monocryl was three times than of Ethilon ($p < 0.05$) (7). Most recently Wade et al (2018), carried out a systematic review of absorbable versus non-absorbable sutures for skin closure after carpal tunnel decompression surgery (8), and concluded that there was no statistical clinical difference but financially, in terms of the cost of the absorbable material compared to non-absorbable. MacFarlane et al (2014), in their study from Macclesfield District General Hospital concluded that, absorbable and non-absorbable materials were safe and effective products for wound closure in carpal tunnel surgery and recommended that surgeon preference and local resources and infrastructure should guide the decision in choosing one material over the other (9). It has been reported that absorbable sutures result in higher residual wound inflammation in comparison to nonabsorbable suture materials, (10, 11). Many surgeons therefore prefer to use absorbable suture materials but evidence favour both absorbable and non-absorbable as being safe and effective.

Conclusion

We can confidently conclude from our study that absorbable and non-absorbable sutures are safe for skin closure in CTD, irrespective of surgeon experience. Preference can only be based on surgeon decision and / or local guidelines based on cost.Ethilon is preferred in many centre because of its cost-effectiveness and it is the recommended material by the Macclesfield study because even with their large data there were no compromising cosmetic outcome in their carpal tunnel wounds(7,8).

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