

# Silk Suture Technique: A Simple, Easy, Effective Treatment of Wrist Ganglion and Review of Literature

Dr U.D Babayo<sup>1</sup>, Dr U.S Bello<sup>2</sup>, Dr B S Mohammed<sup>3</sup>, Dr S Aliyu<sup>4</sup>

<sup>1</sup>Department of surgery, University of Maiduguri Teaching Hospital, P. M. B. 1414. Maiduguri, Borno state, Nigeria

<sup>2</sup>Department of surgery Abubakar Tafawa Balewa University Teaching Hospital, Bauchi, Bauchi state, Nigeria

<sup>3</sup>Department of surgery, University of Maiduguri Teaching Hospital, P. M. B. 1414. Maiduguri, Borno state, Nigeria

<sup>4</sup>Department of surgery, University of Maiduguri Teaching Hospital, P. M. B. 1414. Maiduguri, Borno state, Nigeria

**Correspondence:** Dr. Baba Shehu Mohammed.

Department of surgery, University of Maiduguri Teaching Hospital,  
P.M.B. 1414 Maiduguri, Borno state, Nigeria

**Abstract:** *A simple and easy technique for treating wrist ganglion is described. A silk suture on a cutting needle is used and pierced through the ganglion in both transverse as well as perpendicular direction. The content is expressed via the needle pricks. The procedure is simple, easy, and cheap. It can be done in the clinic, or theater using minimal items and instrument; and having an acceptable result. The technique was employed on 8 patients, all are blacks, 1 of whom is among the authors. Various methods for treating wrist ganglion have their merits and demerits.*

**Keywords:** Ganglion, Silk, Treatment, Technique Declaration: No conflict of interest declared.

## 1. Introduction

A ganglion is a cystic swelling which occurs along the tendon sheath and remains the commonest tumour of the hand and wrist accounting for 50-75% of all masses with incidence of 55% per 100,000 population per year [1]. It commonly affects the dorsum of the wrist in 70% while volar wrist ganglion accounts for 20% and is seen more in females than males [1 and 2].

Ganglion can be cosmetically unattractive especially when noticed to be increasing in size, and can present with persistent pain warranting treatment. Conservative therapy, aspiration alone, aspiration with sclerotherapy, Surgery, electrotherapy have being employed with widespread variation in reported results [2], and complications such as scars and recurrence or residual cyst. We report a brief silk suture technique which is simple, easy to perform, cheap and has minimal scar.

## 2. Material And Methods

For our silk suture technique, materials include a pair of sterile gloves, disinfectant, sterile gauze, 2mls syringe and needle, 2-3 mls of 1% xylocaine with adrenaline, Silk 0 or 1 on a curved cutting needle, crepe bandage and a sterile instrument pack. Eight patients had the silk suture technique between 2008 -2011. Retrospective data were retrieved from case notes. All procedures were done on an outpatient basis; 7 in the surgical consulting rooms and 1 in the office.

## 2.1 Technique

Consent was obtained with institutional ethical clearance received. The wrist and hand is cleaned with antiseptic (methylated spirit) (fig 1). The skin over the ganglion was infiltrated with about 2-3mls of 1% xylocaine with adrenaline using a 2mls needle and syringe (fig 2). 5- 10 minutes after undue pain was absent, a silk suture size 0 or 1 on a curved cutting needle is passed longitudinally from edge of the ganglion to another, and similarly the needle is passed transversely from edge to edge through the ganglion. Using thumb compression the content of the ganglion were expressed out through the needle holes (reason for our usage of a heavy needle). Opposing end of the silk suture is tied to each other over the skin to keep the suture in place (fig 3). Firm plaster dressing or crepe bandages were used. Inspections of the dressings were done on 5<sup>th</sup> -7<sup>th</sup> days and sutures were removed. Swellings were virtually disappeared.

## 3. Results

All had dorsal ganglion of the wrist, 5 on the right and 3 on the left. 6 were females. Age range was 20 – 42 years. Duration of symptoms was 3 to 7 years. None of the patients had any co-morbid conditions. Scars were negligible in all 8 patients and 1 male patient had a recurrence. Longest follow up was 4 years. All patients had full blood count, urinalysis, and X-Ray of the wrist which were normal. None of the patients had an USS (ultrasound scan) of the wrist. Analgesic 1g of paracetamol was given for 3 days and 5 patients had prophylactic antibiotic due to our initial concern about the risk of infection that can be attributable to silk.

#### 4. Discussion

A ganglion is a swelling, usually cystic but can be firm which may be attributable to thickness of the wall covering the cyst and sonographic findings include septations, lobulations and ill-defined walls [1, 3]. Sharlene et al [3] sonographic analyses of pathologically proven wrist ganglion found 34 out of the 60 cases were complex ganglia; 43% of the cases had thick wall and a visible neck was seen in 25% of the ganglia. It is the commonest benign swelling of the hand and wrist, commoner in women than men and commonly occurs in the dorsum in about 60% of cases with an age range between 20-40 years [1, 3 & 4].

Common presentation to hospital includes persistent or intermittent pain [2 & 4] (present in 5 of our patients), cosmetic reason particularly in females (present in 2 patients) and increasing in size of the swelling.

Differential diagnosis includes lipoma, bone exostosis, tumour (giant cell tumour of the tendon sheath), and rheumatoid tenosynovitis which can be differentiated by the "tuck sign" which involves puckering of the distal end of the cyst upon maximal extension of the digits [4].

Woke up investigation of patients with ganglion include baseline test; FBC, EUC and urinalysis. X ray was routinely done to exclude bony lesions. Our entire patient had an X ray done which appeared normal. USS is sensitive in differentiating cystic from solid lesion. It has also been precise in diagnosing occult ganglion (not visible on the wrist) but can present with pain [1, 2, 3, and 4]. None of our patient had USS and we made no much emphasis on it to them due to our concern of cost since people in the community consider it less important to warrant investigation, however its vital role in picking multiple cysts may contribute to residual or recurrence if ignored. Treatment modalities ranges from conservative approach, needle aspiration alone, aspiration with instillation of various sclerosant, electropuncture as well as surgical excision:

- a) A conservative therapy in which about 45-50% of ganglion resolves spontaneously within 6 years [4].
- b) Aspiration of cyst alone which has a high recurrence rate and may reach 67%.
- c) Aspiration and instillation of various sclerosant. Use of hypertonic saline was employed by Dogo et al [6] in which recurrence rate was 23% and severe pain was noticed in 20% which subsided on analgesic. Aspiration and instillation of steroids and hyalluridase has also been employed.
- d) Electropuncture was reported by Tekeoglu et al in 2006 [1] when it was used for a large wrist ganglion in a 53 year old woman with no recurrence after 1 year however the mechanism remains obscured.
- e) Surgery which is the most invasive has been the main modality in the past. It has the advantage of delivering the excised cyst for histological diagnosis and complex cyst can be better tackled. Recurrence is reported to be 41.8% in some series [2] and scar can ensue which may be more obvious in blacks with the risk of unsightly scar at 8.2% as reported by Sirgit et al [2].

- f) Anthroscopic dorsal ganglion removal is associated with recurrence rate of about 7% [2].
- g) Multifilament sutures used are[7]: Linen by Singhal et al, while Gang and Makhlof reported the use of Silk 2/0, similarly ours employed a bigger Silk on a heavy cutting needle for a homogeneous black sample. Buch and Dias [6] reported a prospective cohort studies in 155 patients to assess the long term outcome between reassurance, aspiration and surgical excision with spontaneous disappearance in 51% of untreated ganglion and 42% and 47% recurrence observed with aspiration and surgical excision respectively. For our small sample size though as an ongoing research, recurrence of 12.5% is quite encouraging and inclusion of USS may help in exclusion criteria of possible multiple cyst.

Our method is simple, can be done in the consulting room with little material. Inflammation could be more provoked with the use of silk, enhancing subsequent fibrosis. It is cheap. Our scar is rarely seen in most patients after a while. Limitation of our ongoing technique include, the lack of routine ultrasound Scanning, serial measurement of regression before and after the first change in dressing since we adhere to continuous pressure dressing in the first week, as well as none regular follow up by some patient due to distance and location.

#### 5. Conclusion

Different modalities of treating wrist ganglion are aimed at complete resolution, with no recurrence and negligible scar. Various methods have their merit and demerits. We propose the silk suture technique for its simplicity, cost and cosmetic outcome .Where ganglion can be ascertained using USS; better outcome can be enhanced as multiple cysts can be screened for surgical excision and may account for recurrence if other modalities are employed. We recommend routine USS for other technique for treating ganglion as well as ours. The future scope of improvement in this study is to have an USS machine with appropriate probe and if possible to have a grant that will cover this ongoing research.



Figure 1



Figure 2



Figure 3

## References

- [1] Tekeoglu I, Dogan Ali. Electropuncture in the treatment of wrist ganglion. *Acupuncture in medicine* 2006; 24(1):29-32.
- [2] Lidder S, Ranawat V, Ahrens P. Surgical excision of wrist ganglion ;literature review and nine-year retrospective study of recurrence and patient satisfaction. *Orthop. Rev.* 2009;june 30, 1(1):e5.
- [3] Teefey S A, Dahiya N, Middleton W D, Gelberman R H, Boyer M I. Ganglia of the hand and wrist: A sonographic Analysis. *AJR* 2008; 191:716-720
- [4] Burke F D, Melikyan E Y, Bradley M J, Dias J J. Primary care referral protocol for wrist ganglion. *Postgrad Med J* 2003; 79:329-331.
- [5] Dogo D, Hassas AW, Babayo U. Treatment of ganglion using hypertonic saline as sclerosant. *West Afr J of med*, 2003; jan – march, 22(1):13-4
- [6] Buch K, Dias J. Wrist Ganglion: does intervention improve outcome? A prospective study of the natural history and patient-reported treatment outcomes. *Hand Surg* 200328B:172-76
- [7] Singhal R, Angmo N, Gupta S, Kumar V, Mehtani A. Ganglion Cyst of the wrist: A prospective study of a simple outpatient management. *Acta Orthop.Belg.*,2005;71:528-534