



## **DORSAL WRIST GANGLION: SCLEROTHERAPY BY INTRALESIONAL TRIAMCINOLONE**

**Dr. Rajesh Narayan**

Assistant Professor, Department of Surgery, Vardhman Institute of  
Medical Sciences Pawapuri, Aryabhata Knowledge University, Patna, Bihar, India

### **Abstract:**

*Ganglion cysts are tense smooth, fluctuant cystic and trans illuminant swellings. They are commonly found on the dorsum of the wrist, at the scapholunate articulation and may involve volar wrist, tendon sheaths and even inter phalangeal joints. Randomized controlled study was carried out in the Surgical unit of Anupama Nursing Home, Patna, Bihar*

**Material Method:** *All adults patients with clinical diagnosis of dorsal wrist ganglion were included in counseled for the ante grade study from January 2010 to December 2011. Exclusion criteria were Diabetes. Malignancy, bleeding diathesis, HIV and complex palmar ganglion. Intralesional injection of triamcinolone acetone 40 mg was injected by single dart technique.*

**Result:** *Out of 68 patients, 76.47% were females while 23.53% were males the mean age was 23.88 years  $\pm$  7.69 Years. The duration of ganglion was 18.28  $\pm$  4.68 months. Intralesional triamcinolone injection sclerotherapy mild pain reported in 23.53% patients while recurrence over 60 months was seen in 7patients (10.29%).*

**Conclusion:** *Intralesional injection of triamcinolone by single dart technique, therefore, may be considered as a simple, safe, cost effective, convenient, less invasive alternative to surgical excision of wrist ganglion cysts.*

**Keywords:** Dorsal Wrist Ganglion & Triamcinolone

### **1. Introduction:**

Ganglions are tense, smooth, fluctuant, cystic trans illuminant swellings. They are the commonest variety of soft tissue tumors of hand [1]. They are most commonly found on the dorsum of the wrist overlying the scapholunate articulation, but may also involve the volar aspect of the wrist, tendon sheaths, and even inter phalangeal joints. Histopathologically they are characterized by myxomatous de-generation of the synovial sheath of the concerned joint/ tendon. Presence of numerous "micro-cysts" in the tortuous pedicle lumen creates one-way valve mechanism [2]. The origin of the cystic fluid have been postulated to arise i) from the joint ii) extra-articular degenerative process and iii) mesenchyme cells within the cell wall These cysts are non-neoplastic, filled with jelly-like material and may present with chronic pain, inflammation, reduced joint mobility, and even paraesthesia. Westbrook et al in 50 patients with ganglion cysts found the following reasons of treatment 36% about appearance 28% about malignancy 26% about pain and 8% for abnormal function.[3] These cysts do not have an epithelial lining and are therefore pseudo cysts. The main aim of treatment is to reduce the production of the gelatinous substance contained within it, rather than excision of the cyst. Various procedures have conventionally been used to treat a ganglion cyst, namely, aspiration of the cyst, injection of intralesional sclerosant into the cyst, threading of the cyst, and finally surgical extirpation of the cyst (including debridement of the joint capsule). Surgery requires meticulous excision of the whole ganglion complex to prevent recurrence, while protecting the adjacent tendon pulleys and neurovascular bundles. Unfortunately all of these procedures have high recurrence rates due to remnant tissue resulting from inadequate excision [4]. At present aspiration is the mainstay of non-operative management and most studies demonstrate

a success rate at 30-50%. To improve the result of treatment some advocated aspiration combined with steroid injection into the cyst wall.

## **2. Material and Methods:**

This prospective observational study was conducted on patients who presented to the General Surgery outpatient department at our institute with simple ganglion cysts of the wrist between January 2010 and December 2011 (24 months). A total of 68 patients were included in this study. Inclusion criterion was all patients with dorsal wrist ganglion. Exclusion criterion was patients with immune compromised status (T2DM, HIV, etc.), local Skin lesions (Eczema,) Malignancy Bleeding Diathesis and Complex palmar ganglion. There were 68 patients in and in the study and informed consent was taken. Ganglion cysts were diagnosed on clinical examination. Sclerotherapy was performed using the single dart (i.e., single puncture) method. The cyst wall was punctured with a sterile wide-bore (16-gauge) needle and 40 mg triamcinolone acetonide (diluted in 1cc Xylocaine was injected using the same cannula port) after taking standard aseptic precautions. Proper care was taken not to overstretch the ganglion. The needle was removed and the puncture site was sealed with a sterile swab. This procedure was repeated monthly for 3 months. This single dart technique used here is a modification of the double dart technique [5]. The patients were advised to use pressure bandage at the wrist for 15 days after each injection for splint age. All the patients were followed up for at least 6 months after the last injection, maximum follow-up period being 18 months. The data were analyzed through SPSS version 10 and various descriptive statistics were used to calculate frequencies, percentage, means standard deviation and complications observed were expressed as frequency and percentages.

## **3. Results:**

A total of 68 patients were included in the study. The cysts were present from 2 to 18 month (Mean 6.17 months SD± 3.5) before treatment. There were 52 (76.47%) female and 16 (23.53%) male. The mean age was 28.6 years (Range 15-53 Years, SD ±9.78). The cysts were found in 46 patients in the right and 22 other in the left wrists. In triamcinolone group, mild pain was reported by 23.53% (n=7) patients which resolved with oral analgesics. Recurrence over 24 month was seen in seven patients (10.29%).

**Table: 1 Distribution of Sex and Laterality in the Dorsal Wrist Ganglion**

<b>Group</b>	<b>Sex</b>	<b>Frequency</b>	<b>%</b>	<b>Laterality</b>	<b>Frequency</b>	<b>%</b>
Clinical Assessment	Female	52	76.47	Right	46	67.65
	Male	16	23.53	Left	22	32.35
	Total	68	100		68	100

**Table: 2 Recurrence rates in Patients after Triamcinolone Sclerotherapy**

<b>Group</b>	<b>Year</b>	<b>Recurrence</b>
Limphayan	2004	8.4%
Afridi	2006	13.6%
Colberg	2008	14%
Paramhans	2010	8.4%
Humail	2010	24%
Narayan(Current Study)	2012	10.29%



Fig:1 Dorsal wrist Ganglion in Female



Fig:2 Dorsal wrist Ganglion in Male

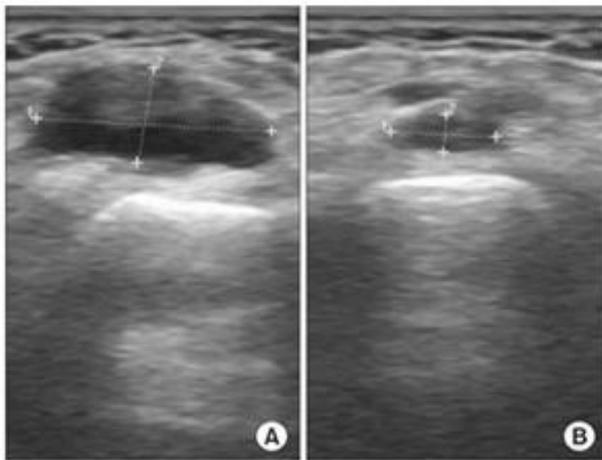


Fig:3 Sonographic Appearance of Ganglion

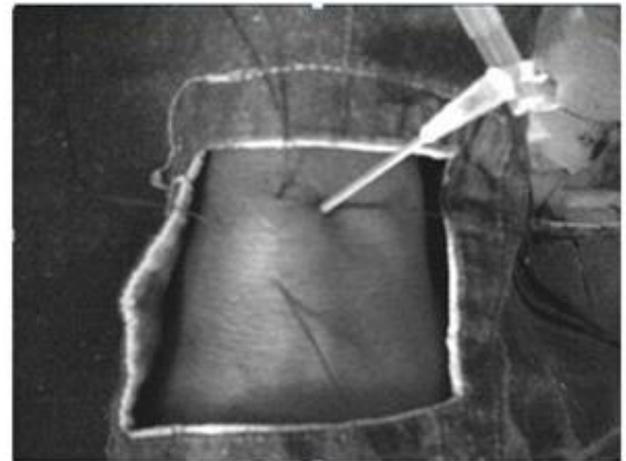


Fig: 4 Aspiration and Triamcinolone Injection by Single Dart Technique

#### 4. Discussion:

Ganglion cysts are most common benign soft tissue swellings around the wrist. They are commoner in the dorsal aspect of the wrist than the volar aspect and may present as a painful or painless swelling, sometimes leading to restriction of joint movement as well as hand paraesthesia [6]. Generally these cysts are filled with gelatinous fluid and found adjacent to a tendon sheath or capsule of a synovial joint. That is why they are believed to arise from chronic irritation of the adjacent tendons, ligaments or joints. Commonly these cysts communicate with the neighboring tendon sheath or synovial joint via pedicles [7]. Various procedures have been tried out for permanent cure of a ganglion cyst. Unfortunately, all have presented with considerable recurrence rates. In the past, topical plaster, local application of heat and even physically smashing the cyst with heavy books (-Bible therapy-, probably giving the name "Bible cyst" to a ganglion) were tried, but none of them is practiced now. Surgical removal of the cyst is advised if the cyst is painful, getting infected frequently, very large in size, interfering with function or joint mobility or causing sensory neurodeficit. However, Surgery is associated with a recurrence rate of 20 %. In comparison, simple aspiration of the cyst immediately relieves the pain but causes recurrence within 3 months in 65 % of patients [9]. Surgical treatment is often associated with grave

consequences such as wrist stiffness, pain, and swelling of the hand. There is also evidence of damage to the superficial branch of the radial nerve and palmar cutaneous branch of the median nerve while performing excision of a simple ganglion cyst. Injection sclerotherapy is a good alternative with compatible recurrence rates but with a few side effects, the recurrence rate varying between 10 and 35 %. Hyaluronidase probably acts by improving liquefaction of the gelatinous content of the cyst. Recurrence rate after hyaluronidasesclerotherapy is reported to be approximately 25 % [10]. Triamcinolone when injected in the cyst cavity lies in close contact with mucin-secreting mesenchyme cells of the cyst lining, arresting the secretion of gelatinous fluid into the cavity. Recurrence rate aftertriamcinolone sclerotherapy is reported to be approximately 10.29%. Sodium tetradecyl sulfate, on the other hand, causes obliteration of the cyst cavity, preventing further accumulation of fluid inside the cyst [II]. It is reported to have a recurrence rate of 35 % [12]. Sclerotherapy in treatment of ganglion has commonly been done before using the double-dart technique. In the single-dart method used in our study, the needle was not removed from the cyst cavity following aspiration. The injection of the sclerosant was therefore always ensured to be within the cyst cavity. This reduced the rate of complications, such as hypopigmentation, which were due to subcutaneous extravasation of the sclerosant. Recurrence is the most common complication of treatment of ganglions. Paramhans et al compared two methods of aspiration followed by triamcinolone injection and surgical excision for treatment of wrist ganglion with recurrence rate of 8.4% and 21.5% respectively and concluded that intrlesional injection into the cyst was a safe mode of treatment Humail SM et al reported that the recurrence rate was 43% in aspiration and steroid injection and 24% in surgical excision for treatment of dorsal wrist ganglions. On the other hand Limphayan et al in their study on 24 patients with wrist ganglion, reported that study on 24 patients with wrist ganglion, reported that the success rate by aspiration combined with methyl prednisolons acetate injection and wrist splint was 38.4% and by excision was 81.8%. In a report by Gerhard et al on 38 wrist ganglion the found that aspiration was better than hyaluronidase injection or surgery. Centeno at al found sclero therapy was effective in popliteal cysts. Ho P.C. conducted that sclerotherapy may be an alternative to surgery in the treatment of ganglions. Colberg et al reported 14% recurrence with injection of triamcindoneacetinide in pediatric population Afirdi S.P. et al reported 13.6% by employing combination of triamainolone injection andligature silk panel through the ganglion [12].

## **5. Conclusion:**

Triamcinolone is a novel sclerotherapeutic agent used for treatment of wrist ganglion by intralesional route. It has a very few side effects with low recurrence rate. Using a single-dart technique eliminates the risk of sclerosant injection outside the cyst cavity, thereby reducing complications. Intralesional injection of triamcinolone by the single-dart technique, therefore, may be considered a simple. safe, cost-effective, convenient, less-invasive alternative to surgical excision of wrist ganglion cysts.

Conflict of interest	:	None
Source of funding	:	None
Ethical Issue	:	None

## **Acknowledgement:**

The author acknowledges the immense help received from the scholars whose articles are cited and included in references of this manuscript. The author is also grateful to authors/ editors/ publishers of all those articles, journals and books from where the literature of this article has been reviewed and discussed. The author is

thankful to Padma Shri, Prof. Narendra Prasad, F.R.C.S Ex Head, Department of Surgery, Patna Medical College and Director, Anupama Nursing Home Patna for his blessing and guidance in the completion of this work. The author is indebted to Prof. P. S. Sinha Associate Professor Department of Surgery N.M.C.H Patna. The author is thankful to Anmol Narayan for analysis and graphic presentation.

**References:**

1. Nelson CL, Saw Miller S, Phalan GS. "Ganglion of the wrist and hand". J. Bone Joint Surg (Am) 54:1459;(1972)
2. Thornburg LE."Ganglions of the hand and wrist". J. AcadOrthoSurg7:231-238(1999).
3. Dharamdas P, Nayak D, Mathur RK. KushwahK."Double dart technique of installation of triamcinolone in ganglion over the wrist". J Cutan Aesthet Surg 3(1):29-31; (2010).
4. Plate AM. Lee Sj. Steiner G. Posner MA "Tumour like lesions and benign tumours of the hand and wrist". J.AcadOrthoSurg11:129-141; (2003).
5. Nishikawa S. Toh S. Miura K et al "Arthroscopic diagnosis and treatment of dorsal wrist ganglion". J Hand Surg 26:547-549; (2001).
6. Tanaka Y, Takakura Y. Kumai T, Sugimoto K. Taniguchi A. Hattori K. "Sclerotherapy for intractable ganglion cyst of the hallux". Foot Ankle Int 30(2):128-132; (2009).
7. Edwards SG. JoansenJA "Prospective outcomes and associations of wrist ganglion cysts resected arthroscopically". J. Hand Surg Am 34:395 400; (2009).
8. Jager M. AkkerhuisP. Van Del" Heijden M. Brink PRG, "Hyaluronidase versus surgical excision of ganglion: a prospective randomized clinical trial". J. Hand Surg 27:256-258; (2002).
9. Westbrook AP, Stephen AB. Oni J. Davis TR "Ganglia: the patient's perception". HandSurg (Br) 25(6):566-567; (2000).
10. Colberg RE, Sanchez CF. Lugo-Vicente H "Aspiration and triamcinolone acetone injection of wrist synovial cysts in children". J. Pediatr Surg 43:2087 2090; (2008)
11. Neidoff M. Davis TRC. Clay NR "Conservative management of wrist ganglion: aspiration versus steroid infiltration". J. Hand Surg 22:636-637; (1997)
12. Ashindoitiang J.A "Preliminary report of the effectiveness of tetracycline sclerotherapy in treatment of ganglion". PlastSurgInt (2012.)