



## Efficacy of Aspiration and Steroid Injection in treatment of dorsal Ganglion Cyst of Wrist

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### Abstract

**Introduction:** Ganglion cysts are soft tissue swellings occurring most commonly in the hand or wrist. Apart from swelling, most cysts are asymptomatic. Other symptoms include pain, weakness, or paraesthesia. The two main concerns patients have are the cosmetic appearance of the cysts and the fear of future malignant growth.

**Aim:** To determine the Efficacy of Aspiration and Steroid Injection in Treatment of dorsal wrist Ganglion Cyst.

**Methods:** This prospective study was conducted on 40 patients in the Department of Orthopaedics, Government Medical College Srinagar from June 2017 to December 2018. 40 patients having dorsal wrist ganglions were treated. The aspiration was carried out under sterile technique, area infiltrated with 1% lignocaine, followed by aspiration of ganglion content using 16 G needle and injection of Methylprednisolone Acetate BP 40 mg/ml. The patients were advised to carry out their normal activities and follow up was done at 6 weeks, 3 months and 6 month.

**Results:** Out of total 40 patients 24 (60%) were female and 16(40%) were male patients. The mean age of the patient was 27 with age range of 16-55. The patients were followed up for a period of 6 months, out of total 40 patients (26) 65% patients had no recurrence while (14) 35 % patients had recurrent ganglion cyst.

**Conclusion:** we concluded that aspiration with steroid injection can be a useful alternative in treating ganglion wrist.

**Keywords:** Ganglion cyst wrist, dorsal, aspiration, steroid (methyl prednisolone) injection.

### Introduction

Ganglion cyst is the most common benign soft tissue tumor, approximately including 50-70% of the tumors of the hand and wrist area<sup>1,2</sup>. It occurs most commonly on the dorsal side of the wrist (70%), followed by volar side (20%) of wrist and tendon sheath of fingers. Ganglions are generally

seen between the second and fourth decades of life and are more prevalent in women. They are the most common tumor like conditions in the hand and wrist which usually arise from a pedicle in tendon sheath or joint capsule and located over scapholunate ligament<sup>3</sup>.

Majority of patients with ganglion are asymptomatic, except for their presentation with a soft tissue lump, while some patients may present with pain, weakness, or paresthesia. Patients sought advice and treatment because of the cosmetic appearance or they were concerned that their ganglion was a malignant growth<sup>4</sup>. They may subside with rest, enlarge with activity, and rupture or disappear spontaneously<sup>5</sup>.

Different treatment options have been described in the literature for the management of ganglion. There are certain reports showing spontaneous resolution of ganglion in 40-58% of patients<sup>6,7</sup>. The mainstay of surgical treatment remains open surgical excision<sup>8,9</sup>. A technique of arthroscopic excision of dorsal wrist ganglia described by Osterman and Raphael in 1995. Arthroscopic resection has the potential advantages of minimizing the surgical scar and permits evaluation of any intra-articular pathologic condition<sup>10</sup>. Apart from surgical treatment many conservative treatments have been described in the literature. Sclerotherapy has been proposed to treat ganglion. Sclerosant was injected into ganglion sac to damage the intimal lining and cause fibrosis to reduce the recurrence rate. Initial study showed high successful rate ranging 78–100%, however, it was confirmed later on that ganglion had no intimal lining by histological studies and failure rate of as high as 94% was reported. Since there is communication between ganglion and synovial joint, sclerosant might pass from ganglion to the joint and tendon and cause damage to them<sup>11</sup>. Some advocated the use of hyaluronidase, which depolymerizes the hyaluronic acid present in ganglion content. Otu reported a 95% cure rate after a follow-up period of 6 months<sup>12</sup>. Recurrence rate of 77%, for treatment of ganglion with hyaluronidase is reported<sup>13</sup>.

Immobilization following aspiration had showed conflicting results. A study showed that 3-week immobilization after aspiration and multiple puncture had a significantly higher successful rate for dorsal carpal ganglion<sup>14</sup>. Thread technique is

another option for conservative management by which two sutures are passed through the ganglion at right angles to each other, and each is tied in a loop. The contents of ganglion are expelled by massage at interval. The reported recurrence rate is 4.8 %<sup>15</sup>.

As aspiration is still the mainstay of non operative management and most studies demonstrated an approximate success rate of 70%, to improve the results, treatment in aspiration is combined with steroid injection into the ganglion wall. Aspiration along with steroid injection is one of the simplest ways to treat ganglion. Aspiration is generally performed via single or double sharp pointed needle. Firstly, cyst fluid is aspirated and then steroid is injected into cyst cavity. The purpose of this study was to assess the effectiveness of cyst aspiration and methyl prednisolone acetate for dorsal wrist ganglions.

### Patients and Methods

This prospective study was conducted on 40 patients in the Department of Orthopaedics, Government Medical College Srinagar from June 2017 to December 2018. 16 males and 24 females were included in this study with an average age of 27 years (15 to 55 years).

The Inclusion Criteria were

- 1) Dorsal wrist ganglion of at least 1 cm in size.
- 2) Age older than 15 years.
- 3) Had willingness for follow-up.
- 4) No history of trauma or previous treatment.

Diagnosis of ganglion was based on history and clinical examination. In some patients, radiological investigations like X-ray and ultrasonography were done to rule out other lesions. All patients were informed and explained about the lesion and their treatment plan. Diagnosis was made on clinical examination, explained to patients about the condition and the patients were given different options of treatment. Those who opted for aspiration and steroid injection were included in the study.

The aspiration was carried out under sterile technique, area infiltrated with 1% lignocaine.

Patients treated in supine position with wrist flexed, aspiration of the cyst and evacuation of the gelatinous fluid with needle no. 14 or 16 and multiple puncture of the cyst wall, followed by injection of Methylprednisolone Acetate BP 40 mg/ml.

Elastic bandage was applied in all patients and recommended for 3 weeks. The patients were advised to carry out their normal activities and follow up was done at 6 weeks, 3 months and 6 month. Success was defined as disappearance of the cyst at final visit. In case of recurrence, treatment was defined as failure.

### Results

Out of total 40 patients 24 (60%) were female and 16 (40%) were male patients (Table 1). The mean duration of cysts before treatment was 7 months (2 to 18 months). The cysts were found in 24 patients on the right wrists and 16 on the left wrists. The mean age of the patient was 27 years with a range of 16-55 years.

**Table 1:** Distribution of patients by gender (n=40)

Gender	No.	percentage
Male	16	40%
Female	24	60%

Out of the total 40 patients 15 patients were in the age group of 16-30, 20 patients were in the age group 31-40, 3 patients were in age group of 41-50 and 2 patients in 51-55 (Table 2). The patients were followed up for a period of 6 months. Out of total 40 patients 26(65%) patients had no recurrence while 14(35%) patients had recurrence (Table 3).

No local infection or wrist stiffness was observed.

**Table 2:** Distribution of patients by age (n=40)

Age( in years)	No.	Percentage
16-30	15	37.5%
31-40	20	50%
41-50	3	7.5%
51-55	2	5%

**Table 3:** Recurrence rate

Recurrence	No.	Percentage
Yes	14	35%
No	26	65%

### Discussion

Carpal ganglion cyst is the most common benign soft tissue tumor, including approximately 50-70% of the tumors of the hand and wrist area<sup>1,3</sup>. Furthermore, the majority of this kind of lumps (6070%) were found on the dorsum of the wrist<sup>16,17</sup>.

The mean age of our patients at the time of presentation was 27years. This was comparable to Singhal et al<sup>18</sup>, who reported a mean age of 25.3 years. Study by Paul and Sochart<sup>19</sup> demonstrated a mean age of 40.25 years. Our study showed female preponderance, which corresponds to that mentioned in literature<sup>20,21</sup>.

Different modalities of treatment have been used for the treatment of ganglion cyst .that include both surgical and non surgical treatment. These treatment modalities include observation, aspiration, intralesional steroid injection, sclerotherapy and surgical excision, but none of these modalities has been the standard or best treatment. The mainstay of surgical treatment remains open ganglionectomy<sup>8,9</sup> with higher reported recurrence rates attributed to inadequate dissection in which the tortuous duct system located at the joint capsule is not fully excised. Some authors claim recurrence rates for dorsal wrist ganglia as low as 1–5%<sup>22</sup> and 7% for volar wrist ganglia<sup>16</sup>. Arthroscopic resection has the potential advantages of minimizing the surgical scar<sup>10</sup>. Aspiration is one of the mainstay of nonsurgical treatment. Studies have shown remarkably variable rates of success. Zubowicz reported 85% success with up to three aspirations. He does, note that failure was much more common with each subsequent aspiration, a fact confirmed by other studies, of which some report no benefit with repeat aspiration<sup>23,24</sup>. Another study showed that in 52% of patients treated via aspiration, the ganglion was still present at 6 weeks<sup>25</sup>. Our study showed recurrence rate of 35% which falls within the range mentioned in literature<sup>26-29</sup>. The success rate of treating ganglion cyst with aspiration and steroid injection was 65% in our study.

## Conclusion

In our study we concluded that aspiration with steroid injection is a useful alternative in treating ganglion wrist .As most of the patient in our study were young female and the purpose of treatment was mainly on cosmetic grounds so in comparison with surgical excision which gives a bigger scar to the patient, the aspiration and steroid injection can be offered as a useful alternative.

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