

Surgical Excision Versus Aspiration Combined with Intralesional Triamcinolone Acetonide Injection Plus Wrist Immobilization Therapy in the Treatment of Dorsal Wrist Ganglion; A Randomized Controlled Trial

Parwez Sajad Khan · Humera Hayat

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Abstract Ganglion is the most common benign soft tissue tumour of hand and represents about 60–70% of all such soft tissue tumours. Treatment options include observation, aspiration, intralesional steroids and surgical and arthroscopic excision. Aspiration with intralesional steroid, with its many advantages, may be an alternative choice for its treatment but the operative treatment is the best method when considering the recurrence rate. Objective: To compare the result of surgical excision versus aspiration combined with intralesional triamcinolone acetonide injection plus wrist immobilization therapy in the treatment of dorsal wrist ganglion. Study period: November 2007 to October 2009. Participants: 36 patients above 15 years of age, having the disease for first time, having no history of wrist injury and with no history of use of steroid or any allergy to it, were selected for the study. Setting: The study was undertaken at SKIMS Medical College Hospital, Bemina Srinagar Kashmir. Patients were randomly allocated to undergo either surgical excision (group A, $n=18$) or aspiration combined with intralesional triamcinolone acetonide injection plus wrist immobilization (group B, $n=18$) using table of random numbers. All the patients were operated under local anaesthesia. Fisher-exact-test, Chi-square test were used for statistics. The success rate of

surgery was 94.4% and that of aspiration with triamcinolone acetonide injection plus wrist immobilization was 61.1%. The difference in success rate was statistically significant ($p=0.041$). Surgery is the most successful form of treatment when considering the cure rate of dorsal wrist ganglion.

Keywords Dorsal wrist ganglion · Surgical excision · Aspiration

Introduction

Ganglion is the most common benign soft tissue tumour of hand and represents about 60–70% of all such soft tissue tumours [1]. Dorsal wrist ganglion cysts originate from scapho-lunate interval and its etiology is still unclear. The patients usually seek medical advice for pain, fear and for cosmetic reasons. The diagnosis can be made clearly by history and physical examination. Treatment options include observation, aspiration alone or with intralesional steroids and surgical and arthroscopic excision. Surgery offers higher success rates in most series [2]. Surgical excision is effective, with a recurrence rate of around 5% if care is taken to completely excise the stalk of the cyst along with a small portion of joint capsule—The recurrence rate may vary from 1% (Angilides et.al) to 49% (Zachariae et.al) [2] Aspiration with intralesional steroid, with its many advantages, may be an alternative choice for the patient if the success is comparable to surgical excision [3, 4].

The objective of the present study is to compare the results of surgical excision versus aspiration combined with intralesional triamcinolone acetonide injection plus wrist immobilization therapy in the treatment of dorsal wrist ganglion.

P. S. Khan (✉)

Department of Surgery, Sher-i-Kashmir Institute Of Medical Sciences, Medical College Hospital, Bemina Srinagar, Kashmir, India
e-mail: parwezsajad@yahoo.co.in

H. Hayat

Department of Community Medicine, Sher-i-Kashmir Institute of Medical Sciences Soura, Srinagar, Kashmir, India
e-mail: kxanhumeera@yahoo.co.in

Table 1 Presenting symptoms

		Surgical excision Group A(n=18)	Aspiration Group B(n=18)	p-value
Symptoms	Pain	12	13	0.765
	Cosmetic	3	2	
	Apprehension of malignancy	2	2	
	Weakness	1	1	
Side	Right	10	9	0.747
	Left	8	9	
Size	0–1 cm	1	2	0.799
	1–3 cm	15	14	
	>3 cm	2	2	

Material and Methods

A randomized controlled trial was conducted at the outpatient department of surgery, including 36 patients with dorsal wrist ganglion (Fig. 1). The power analysis was done and the sample size required was obtained by taking the expected success rates of aspiration group of around 50% and that of surgery group of around 90% as per the literature. The calculated sample size was around 17 in each group. The patients who were above 15 years of age, having the disease for first time, having no history of wrist injury and with no history of use of steroid or any allergy to it, were selected for the study. After obtaining written informed consent, patients were randomly allocated to undergo either surgical excision (group A, $n=18$) or aspiration combined with intralesional triamcinolone acetone injection plus wrist immobilization (group B, $n=18$) using table of random numbers. All the patients were operated under local anaesthesia.

In group A patients, surgical excision was performed in our minor operating room on day care basis. Under all aseptic precautions and after infiltrating about 5 ml of 1% Xylocaine around the swelling the ganglion was excised under direct vision (Fig. 2 and 3). After achieving haemostasis, the skin was closed with prolene sutures and compressive dressing applied.

In group B patients, under sterile technique, 10 ml syringe with 18 gauge needle was inserted in the centre of

**Fig. 1** A case of dorsal wrist ganglion

the ganglion and the gelatinous content was aspirated. Syringe was detached leaving the needle in place. 1 ml local anesthetic injection Xylocaine and 10 mg of triamcinolone acetone was injected. A gauze compressive dressing was applied to the aspirated area and the wrist was immobilized by short arm volar slab in slight dorsiflexion position for two weeks.

Patients were asked to follow the OPD at 1 week, 2 weeks, 6 weeks, 6 months and finally at 1 year and the findings were documented and results were analyzed. At 1 year, the success of treatment was determined by palpation at the dorsum of the wrist in flexed position. The procedure would be considered as successful if no swelling could be detected. The success of the treatment in each group was compared by fisher-exact test. Gender proportion, presenting symptom, side and size were compared by chi-square or Fisher-exact-test. $P<0.05$ was considered as statistically significant.

Results

Between November 2007 to October 2009, 36 patients were selected to be included in the study. At the 1 year follow-up period, all the patients were available for the final examination, 18 in the group A and 18 in group B. Twenty nine patients were females (15 in group A and 14 in group B) and seven were male (3 in group A and 4 in group B). The age of the patients in both the groups was between 17–45 years with a mean age of 31 years. All ganglia were located on the dorsum of the wrist over the scapho-lunate joint. The

Table 2 Results of treatment

	Success	Recurrence	Total
Surgery	17	1	18
Aspiration	11	7	18
Total	28	8	36

2-by-2 table of the results of both treatment groups

$P=0.041$ (Fisher exact test)

**Fig. 2** Dissection being carried out to excise the dorsal wrist ganglion



Fig. 3 Post operative picture after complete surgical excision of dorsal wrist ganglion

presenting symptoms were not significantly different in these two study groups (Table 1).

The success rate of surgery was 94.4% and that of aspiration with triamcinolone acetonide injection plus wrist immobilization was 61.1%. (Table 2) The difference in the success rate was statistically significant ($p=0.041$). There was none of the complications in any of the study groups during the study period. The patients who had recurrence of disease in either group were taken care of by the investigator until satisfied.

Discussion

Different treatment methods for wrist ganglion are reassurance, rupture, and aspiration with or without different agents, surgical excision and arthroscopic resection. Explanation of benign nature of ganglion and natural history that it may fluctuate in size over time can relieve the fear of malignancy.

Results of different treatment methods reported in literature are variable. In the present study, at 1 year follow up the success rate was 94.4% by surgical excision and 61.1% by aspiration, triamcinolone acetonide injection plus wrist immobilization. Thus results of surgical excision were comparable with studies by Clay [5] and Varley [6], who reported success rate of 97% and 73–99%, respectively in their report. For aspiration, our success rate of 61.1%, was comparable to Study by Humail SM et al. [7] with reported success rate of 57%.

In present study, we included only the patients having ganglion at the dorsum of the wrist because it was the most

common form of ganglion encountered in our outpatient department and we wanted to minimize the error that might occur in treatment between different sites.

The follow-up time was 1 year. Janson reported that most of the ganglia recurred in 6 months period [8].

Aspiration doesn't usually work. Recurrence would probably be even greater if we followed the patients longer. Steroids add nothing but risk and expense and probably aren't useful. Until there is data proving that steroids add anything to aspiration alone, the later should be standard. Consistent with prior studies surgery had a recurrence rate of around 5–10%.

Conclusion

Although the aspiration, triamcinolone acetonide injection plus wrist immobilization is one of the alternative methods, surgery was the most successful form of treatment when considering the cure rate of dorsal wrist ganglion, though we analysed only a small group; our results can only be an indicator.

Conflict of Interests None to declare.

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