Original Article

Comparative study between three methods of aspiration alone, aspiration plus steroid injection and aspiration plus ethanol injection for treatment of dorsal wrist ganglions

Seyed Abdolhossein Mehdi Nasab¹, Esmail Mashhadizadeh², Nasser Sarrafan³

ABSTRACT

Objective: To compare the effect of aspiration alone, aspiration plus methyl prednisolone injection and aspiration plus ethanol injection into the dorsal wrist ganglions.

Methodology: This prospective study was performed from March 2009 to May 2010 and 66 Patients with dorsal wrist ganglions were treated in three groups: A- aspiration alone in 24 patients, B- aspiration plus methylprednisolone injection into the cyst in 20 patients. C- Aspiration plus ethanol injection, then re aspiration of the ethanol from the cyst after 3-5 minutes, in 22 patients. Elastic compression bandage was applied in all patients and recommended for 3 weeks. Follow up was done at 1. 3. 6 and 12 months.

Results: The success rate in group A was seen in 9 patients (37.5%), in group B in 11(55.%) and in group C in 14 (63.5%) patients. The most frequent side effect was pain during ethanol injection which relived by cyst re aspiration.

Conclusion: Injection of ethanol into the dorsal wrist ganglion was associated with higher success rate compared to aspiration and methyl prednisolone injection. Further studies with larger sample size should be performed in particular to assess the effect of ethanol injection in this disease.

KEY WORDS: Wrist Ganglion, Aspiration, Methylprednisolone, Ethanol Injection.

How to cite this article:


INTRODUCTION

Ganglions 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. About 60% - 70% of ganglion cysts are found in dorsal aspect of the wrist. Ganglions are more prevalent in women, and generally seen between the second and fourth decades of life. Patients usually seek medical treatment because of the mass, pain, weakness, or fear of a malignancy.¹² Westbrook et al in 50 patients with ganglion cysts found the following reasons for treatment: 36% about appearance, 28% about malignancy, 26% for pain, and 8% for abnormal function.³

There is a variety at modalities for treatment at ganglion cysts such as observation, aspiration,
intralesional steroid injection, sclerotherapy, arthroscopic resection, or surgical excision, but no one of these has been the standard or best treatment. Aspiration may provide long term relief and has been reported to be effective in 20% - 30% of the patients. Sclerotherapy involves aspiration of the cyst followed by injection of a sclerosant solution into the cyst cavity. Surgical excision is best reserved for patients with persistent symptomatic ganglions.

At present aspiration is the mainstay of non operative management and most studies demonstrate a success rate at 30% - 50%. To improve the results of treatment some authors’ advocated aspiration combined with steroid injection into the cyst wall. Sclerotherapy as injection of a sclerosant agent into the popliteal cyst has been described but the success rate with this technique has been variable.

We tried to do this research and to compare the effectiveness of the two traditional methods with a newer modality treatment for dorsal wrist ganglion.

METHODOLOGY

This prospective descriptive study was carried out at orthopaedic clinics of Ahvaz Jundishapur University of Medical Sciences between Mar 2009 to May 2010. The study was approved by Ethics committee of our university and informed consent was taken from the patients. All patients were informed and explained about the lesion and their treatment plan.

Diagnosis of ganglion was based on history and clinical examination. In some patients radiography or sonography was done to rule out other lesions. Inclusion criteria were patients with dorsal wrist ganglions at least 1cm in size, age after 15 years, without history of trauma or previous treatment and participate in the follow-up. A total of 66 patients were divided according to their treatment option into three groups: A: in supine position with wrist flexed, aspiration of the cyst and evacuation of the gelatinous fluid with needle No: 14 or 16, multiple puncture of the cyst wall was performed. B: aspiration, then with the same needle in place, injection of 40 mg methyl prednisolone acetate into the cyst. C: Aspiration followed by injection of 1 cc 76 degrees alcohol (ethanol), then re aspiration and evacuation of the ethonol after 3-5 minutes. Elastic bandage was applied in all patients and recommended for 3 weeks. Follow-up visit was performed at one, three, six and 12 months after treatment.

Success was defined as disappearance of the cyst at final visit. In case of recurrence treatment was defined as failure. Statistical data was analyzed using SPSS version 13 software.

RESULTS

A total of 66 patients were included in the study. The cysts were present from 2 to 18 months (mean 6.17 months SD ± 3.5) before treatment. There were 51 (77.3%) female and 15 (22.7%) male. The mean age was 29.2 years (Range-15-53y, SD ± 9.89). The cysts were found in 42 patients in the right and 24 other in the left wrists. Table-I shows the frequency of the sex, and side of involvement in three groups of treatment. Out of 66 patients, 24(3.4%) were treated in group A, 20 (30.3%) in group B, and 22 in group C (33.3%). With respect of age, sex and side of the lesion no significant difference was seen between three groups.

<table>
<thead>
<tr>
<th>Group</th>
<th>Sex</th>
<th>Frequency</th>
<th>%</th>
<th>Side</th>
<th>Frequency</th>
<th>%</th>
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<tbody>
<tr>
<td>Aspiration</td>
<td>Female</td>
<td>20</td>
<td>83.3</td>
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<td></td>
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<td></td>
<td>Total</td>
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<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Aspiration+ Steroid</td>
<td>Female</td>
<td>15</td>
<td>75</td>
<td>Rt</td>
<td>12</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>5</td>
<td>25</td>
<td>Lt</td>
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<td>40</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>20</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Aspiration+ ethanol</td>
<td>Female</td>
<td>16</td>
<td>72.7</td>
<td>Rt</td>
<td>15</td>
<td>68.2</td>
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<tr>
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<td></td>
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<td></td>
<td>Total</td>
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<td></td>
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</table>
Results of success and recurrence rate are shown in Table-II. No local infection or wrist stiffness was observed.

DISCUSSION

Ganglions have been treated by a variety of nonoperative or operative methods. Because of benign course and spontaneous resolution in up to 50% of these patients, nonsurgical modes of treatment including simple observation, finger pressure, aspiration, injection of steroid, hyaluronidase, or sclerosing solution are usually advised initially for this lesion. Among nonoperative techniques, aspiration with or without intraleisonal steroid injection have been widely used. 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 ganglions. They found a recurrence rate of 8.4% and 21.5% respectively and concluded that intracystic steroid 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 the success rate by aspiration combined with methyl prednisolone 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 they found that aspiration and a period of observation was a better choice than hyaluronidase injection or surgery.

Regarding the effect of aspiration or steroid injection for treatment of ganglion cysts there are numerous studies in the literature, and results of our study more or less was similar with those reported elsewhere. We found a number of studies for sclerotherapy in treatment of lesions such as hernias, varicose or cysts. In most of the these studies, percutaneous ethanol injection has been used for treatment of thyroid, renal, or hepatic cysts and concluded that it was a safe, effective and minimally invasive procedure and alternative method for surgery but none described the effect of ethanol in wrist ganglions. In a few reports sclerosant solutions including phenol, sodium hypertonic, iodine, morrhuate sodium 5%, and OK-432 have been used for ganglions but with variable results.

Contento et al found sclerotherapy was effective in popliteal cysts. Ho PC concluded that sclerotherapy may be an alternative to surgery in the treatment of ganglions. Felix L described that potentially sclerotherapy may be applicable to treat many symptomatic cystic of the musculoskeletal. Some authors postulated that the injected sclerosant solutions may pass into the joint and result in joint inflammatory damage. With our method we applied ethanol within a short time into the cyst and then evacuated it after 3-5 minutes. We thought our procedure was effective to resolve the side effects of sclerotherapy, as reported previously, so we did not find any sign of joint irritation and stiffness or limitation in motion of the wrist did not occur with this technique.

A sensation of temporary burning pain was experienced by the patients during injection which resolved after re aspiration of ethanol from the cyst. The sclerosing action of the alcohol may be due to the fact that when ethanol remains and contact for a few minutes with inner wall of the ganglion, the epithelial cells become fixed and non viable. This would help to make fibrosis of the cyst capsule and disappearance of ganglion. To the best of our knowledge, it is the first study to assess the effect of ethanol injection into the ganglions of the wrist.

Although aspiration followed by ethanol injection was associated with more success rate compared to aspiration alone or aspiration plus methylprednisolone, however more studies with larger sample size analysis should be conducted to assess the effect of ethanol sclerotherapy in the treatment of dorsal wrist ganglions.

ACKNOWLEDGMENT

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Table-II: Success and recurrence rates in patients.

<table>
<thead>
<tr>
<th>Group</th>
<th>Success</th>
<th>Recurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aspiration</td>
<td>N= 9 (37.5%)</td>
<td>N=15 (62.5%)</td>
</tr>
<tr>
<td>Steroid Total = 24</td>
<td>N= 11 (55%)</td>
<td>N= 9 (45%)</td>
</tr>
<tr>
<td>Ethanol Total = 20 (100%)</td>
<td>N= 14 (63.6%)</td>
<td>N= 8 (36.4%)</td>
</tr>
</tbody>
</table>
REFERENCES

1. James H, Calandruccio, Mark T, Jobe, Tumors and timorous conditions of the hand in: S.Terry Canale James H, Beatty; Campbell’s operative orthopaedics. 11th ed Mosby 2008: 4330-4331.