MANAGEMENT OF WRIST GANGLIA BY ASPIRATION COMBINED WITH INTRALESIONAL STEROID:A PROSPECTIVE STUDY

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Abstract

Background: Ganglion is the most common benign soft tissue tumour of wrist and it represents about 60-70% of all such soft tissue tumours. There are various types of treatment options such as observation, aspiration, aspiration combined with intralesional steroids and surgical and arthroscopic excision. Many studies showed that surgical excision has the highest success rate but it has lots of dangers. So this study aimed that Aspiration with intralesional steroid, with its many advantages and success rate, may be the best choice for its treatment.

Materials and methods: We conducted the prospective study among 367 patients over a period of January 2017 to December 2018 in Surgery Outpatient Department, Chittagong Medical College Hospital, Bangladesh. After the procedure, patients were followed up every month for six months and then every 3 month for 1 year. Maximum follow up period was up to one year.

Results: In our study it was found that there was female predominance with a male/female ratio of 1/1.41. Highest incidence was found in the age group between 21-30 years (37.1%). 68.4% patients presented with dorsal wrist ganglion and 31.6% with volar wrist ganglion. There was no steroid related local complication. Success rate of our study was 87.2% and recurrence rate was 12.8% within 6 months.

Conclusion: Aspiration combined by intralesional steroid injection is an effective mode of management for wrist ganglion considering its success rate and post procedure complication rate.

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Wrist ganglion; Aspiration; Intralesional steroid.

Introduction

Ganglion cyst is the most common soft tissue tumor of the hand and wrist. It includes approximately 50-70% of the tumors of the hand and wrist area and in some series; the percentage is even higher. Ganglions are generally seen between the second and fourth decades of life and are more prevalent in women[1].

Sixty to seventy percent of ganglion cysts related to the wrist are found in dorsal aspect of wrist and almost always have a communication with the joint via a pedicle. This pedicle basically

originates not only at the scapholunate ligament, but also may arise from a number of other sites over the dorsal aspect of wrist capsule. Thirteen to twenty percent of wrist ganglia are found on volar aspect of wrist, arising via a pedicle which may originate from, radio scaphoid- scapholunate interval, scaphotrapezial joint, or metacarpotrapezial joint, order of frequency, as per this[2]. Ganglia may also arise from a flexor tendon sheath in the hand which may account for approximately 10% of the total cases. They may also occur in other joints, as well as intraosseus or intratendinous ganglia but are less common[3].

Symptoms include pain in the wrist, which may radiate to the arm, and may be exacerbated by wrist movement, decreased range of motion, and reduced grip strength. Volar ganglia can also cause paresthesias from compression of the ulnar or median nerves or their branches[3]. They may subside with rest, enlarge with activity or rupture and disappear spontaneously. Most patients sought advice and treatment because of the cosmetic appearance or they were concerned that their ganglion was a malignant growth[4].

There are a number of treatment modalities for ganglion, such as observation, aspiration, aspiration combined with intralesional steroid injection, sclerotherapy and surgical measures. Surgical measures like transfixation, aspiration

with seton transfixation, surgical excision and more recently by arthroscopy have been undertaken but none of them has been the standard or best treatment[5,6]. 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 can be combined with steroid injection into the ganglion wall. We did this study to describe the outcomes of aspiration combined with intralesional steroid (Triamcinolone Acetate) injection.

Materials and methods

This prospective study was conducted on patients attending Surgery Outpatient Department of Chittagong Medical College Hospital for simple ganglion cysts on the wrist from January 2017 to December 2018. Total of 367 patients were included in this study. All the cases of wrist ganglia both on extensor as well as flexor aspect of wrist were included. More extensive ganglia like compound palmar ganglia were excluded. Moreover, patients with diabetes, rheumatoid arthritis, immunodeficient conditions, were excluded from the study. Cysts were confirmed by history and clinical examination. A fully informed consent was taken, explaining the procedure and its possible complications, namely infection and non resolution of symptoms. The procedure was done on the operation theatre of surgery outpatient department. Under standard aseptic precautions, a sterile wide bore needle of size 16 gauge was inserted into the ganglion cyst wall and then cyst content was evacuated by a 10 ml disposable syringe. Then injection of Triamcinolone Acetate (40 mg) was inserted applying the same needle port and pre-filled syringe containing the Triamcinolone. This needle was now withdrawn and the puncture site was sealed with spirit swab. Crepe bandage was used and the wrist was immobilized for 2 days. Patients were followed up every month for six months and then every 3 month for 1 year. Maximum follow up period was up to one year.

Verbal consent was taken from the respective authority.

Results

Out of 367 patients 215 (58.6%) were female and 152 (41.4%) were male with a male / female ratio of 1/1.41 (Fig 1). The age value (Mean ±SD) of the included patients was 30.7 ± 11with a range of 13-68. Highest incidence was found in the age group between 21-30 years (37.1%) (Table I).

251 (68.4%) patients presented with dorsal wrist ganglion and other 116 (31.6%) patients presented with volar wrist ganglion. 191 (52%) patients had ganglion on their left wrist, 164 (44.7%) patients had on their right side and the other 12 (3.3%) patients had ganglion on their both wrists. Out of 367 patients there was recurrence in 47 patients (12.8%) within 6 months. 320 patients (87.19%) had no recurrence at all. 35 patients (9.54%) presented with recurrence within 1 month, 8 patients (2.18%) presented within 3 months and 4 patients (1.09%) presented within 6 months after the procedure (Fig 2). Beside them, no other patient presented with recurrence after 6 months. There was no drop out.

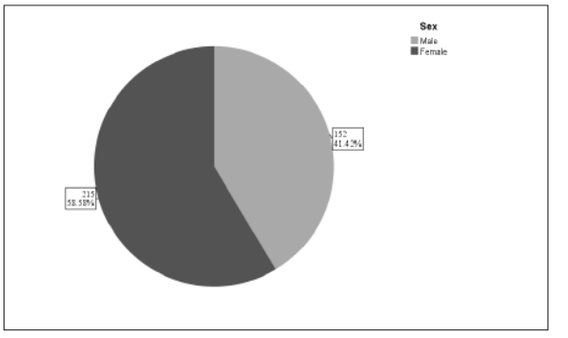

Fig 1 : Distribution of the respondents according to sex.

Table I : Distribution of the patients according to age.

Age	Frequency (%)
0-10	0
11-20	73 (19.9)
21-30	136 (37.1)
31-40	92 (25.1)
41-50	47 (12.8)
>50	19 (5.2)
Total	367 (100)

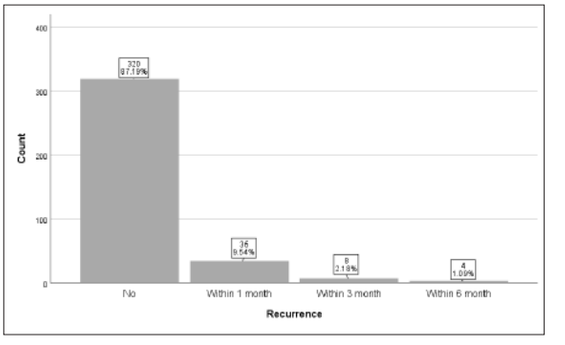

Fig 2 : Recurrence after aspiration and intralesional steroid injection.

Discussion

Ganglion is defined as a localized cystic swelling connected to the joint capsule or tendon sheaths and containing thick gel like material. They often communicate with and are always adjacent to a tendon sheath or the capsule of a joint. Their origin is uncertain, but they are probably caused by myxoid degeneration of fibrous tissue of capsule, ligaments and retinaculae. It consists of an outer fibrous coat and an inner synovial lining. Microscopically the main cyst, which may be single or multiloculated appears smooth, white and translucent. The wall is made up of compressed collagen fibres and is sparsely lined with flattened cells, without evidence of an epithelial or synovial lining. The capsular attachment of the main cyst reveals mucine filled "clefts" which have been shown by small sections to intercommunicate thereby forming a tortuous and continuous duct connecting the main cyst with the adjacent underlying joint. The contents of a cyst are characterised by a highly viscous, clear, sticky jelly mucine made up of glucosamine, albumin, globulin, and high concentrations of hyaluronic acid[7,8].

Clinically, ganglions may present as a slow growing localized swellings with occasional mild aches. They are smooth, spherical and semi fluctuant to firm in consistency, with positive transillumination. They become more prominent on flexing the wrist. The extent of cyst and direction of pedicle can be well made out on compressing the cyst[9].

There are a number of treatment modalities for ganglion such as observation, aspiration, intralesional steroid injection, sclerotherapy and surgical excision, but none of these modalities has been the standard or best treatment.

The recurrence rate of ganglions after surgical excision is quite high. Barnes et al stated that in most reviews, the recurrence rate was around 40%[10]. Zachariae et al reported a recurrence rate of 34% in a series of 347 patients who were operated upon in a well established hand clinic[11]. De Orsay et al and Posch reported recurrence rates of 15% to 20% in their series[12,13]. McEvedy reported a failure rate of 40% following 'simple' excision[14]. The high recurrence rate of ganglia following simple excision was improved in the following years by the introduction of radical excision, where the ganglia were excised with an underlying portion of the joint capsule. The ganglia were traced to their origin from the scapho-lunate joint during excision. Nahra and Bucchieri and Clay and Clement achieved recurrence rates of 1-5%[9,15]. This low recurrence rate was also contributed by the fact that these patients were operated upon by highly experienced hand surgeons, which is not always possible at other centres. However, this procedure had its own complications. Clay and Clement reported a loss of volar flexion from 0º to 10º in 6 patients[15]. Also men involved in heavy labour were out of work for 3 weeks. Patients employed in light clerical duties were able to return to work in one week[9]. Complications reported in other series include persistent pain which may be the result of damage to the terminal branches of the posterior interosseous nerve as they cross the scapholunate ligament or the development of reflex sympathetic dystrophy. Scapholunate dissociation, joint stiffness and decreased grip strength have all been reported and there are also the risks associated with the use of general anaesthesia and upper limb tourniquets[15-17].

Arthroscopic resection has gained focus in the last 10 years. Arthroscopic resection of dorsal wrist ganglia was first reported by Osterman and Raphael in 1995[18]. This technique used for the dorsal wrist ganglion has an average operation time of 46 minutes with a recurrence rate of 26%[19]. Other studies report a recurrence rate from 3 to 19%[20,21]. It is still not commonly employed for the palmar wrist ganglion. In addition, there was a high risk of laceration to the palmar cutaneous branch of the median nerve (28%) and unsatisfactory scar (28%)[22]. Furthermore, a residual swelling has been seen in 23.5% of the cases which require a repeat aspiration[20].

Simple technique of aspiration with a short beveled wide bore needle has been tried, with about 60% recurrence within 3 months and repeated aspirations gave 85% success rate[23]. Many patients gave up the procedure during follow ups. Intralesional infiltration of steroid in ganglion has shown satisfactory results in adults as well as in children[24]. Steroids probably arrest the secretions from mesenchymal cells at the cyst wall[8]. In our series evacuation of gelatinous fluid resulted in complete emptying of cyst cavity. Instilled triamcinolone, because of its close contact with mucin secreting epithelium, leads to cessation of secretion of gelatinous fluid.

Our study involved 367 patients with a male/female ratio of 1/1.41, which is comparable to the western studies with a ratio of 1/3.1[25]. This could possibly be explained by the fact that in the number of women seeking treatment for elective procedures is quite low due to poverty and ignorance in Bangladesh. Other studies from the British and African population groups report a ratio of 1/1.4 and 1/1.5 respectively[26,16]. The age value (Mean ±SD) of the included patients was 30.7 ± 11 with a range of 13-68. These findings are compared to 25.3 years and 40.25 years in the study conducted by Singhal et al and Paul and Sochart[7,17]. Highest incidence was found in the age group between 21-30 years (37.1%) in our study which is similar to the findings of the study conducted by Paramhans et al where they found highest incidence in the age group between 20 to 30 years (39.7%)[8].

In our study we treated the patients with aspiration and intralesional steroid with a success rate of 87.2% and recurrence rate of 12.8%. Our findings are similar to other studies. 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 was a safe mode of treatment for ganglion[8]. In another study conducted by Ajaz AS et al. found 13.23% recurrence with aspiration followed by steroid injection and 16.66% recurrence after surgical excision[1]. Khan PS et al conducted a study among 36 patients. They observed that 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). They concluded that surgery is the most successful form of treatment when considering the cure rate of dorsal wrist ganglion[6]. In another report by Paul AS et al. conducted on 38 wrist ganglions, it was found that aspiration has been a better choice than Hyaluronidase injection or surgery[17]. Neidoff M et al. reported that most of the ganglia recured in first 6 months period[24]. So aspiration followed by intralesional steroid (Triamcinolone Acetate) injection was shown to be an effective mode of management for wrist ganglion considering success rate and post procedure complication rate.

Limitations

This study was conducted was conducted to evaluate the outcome of aspiration combined with intralesional steroid injection in the management of wrist ganglion. Ganglions in other part of the body were not included. Other management procedures were not compared.

Coclusion

Ganglion is a very common cyst in the wrist. There are a lot of procedures available for its management. Aspiration followed by intralesional steroid is a safe, minimally invasive technique which gives reliable and acceptable results with no post procedure complications. It is a useful technique as a first intervention in patients with simple ganglia.

Recommendations

All available management procedures for the management of ganglion throughout the whole body should be compared in a multicentre study. Long term follow up should be included.

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Contribution of authors

MUM - Conception, design, acquisition of data, manuscript writing & final approval.
MNHB - Interpritation of data, critical revision & final approval.
MSH - Data analysis, critical revision & final approval.
SBS - Design, acquisation of data, manuscript writing & final approval.

Disclosure

The authors declared no competing interests.

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