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COMPARATIVE STUDY BETWEEN SURGICAL EXCISION AND STEROID INJECTION FOR TREATMENT OF GANGLION CYST: A CROSS SECTIONAL STUDY CONDUCTED IN MOSUL CITY-IRAQ

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ABSTRACT

Background: Ganglions are frequent tumor-like conditions that affect the hand and wrist. Ganglions usually start in the joint capsule or tendon sheath and are they are made of mucinous material and compressed stroma. Although it can grow in any joint, the wrist is where it is most frequently noticed. Under local anesthetic, surgical excision removes the entire cyst, offering an effective solution but with significant hazards. Conversely, steroid injections are a less invasive and risk-free choice because its lower inflammation and alleviate symptoms. **Objectives:** Is to compared the outcomes of the surgical excision to steroid injection in the treatment of ganglion cysts. **Methods:** The study is a prospective interventional study conducted at Al Salam Teaching Hospital in Mosul-Iraq between March 2022 and November 2024. The study questionnaire was divided into three parts. The first section provides demographic of the study participants. The second part covers patients' main complaints. The third part covers treatment outcomes of the study's patients. **Results**: The study included 50 patients with confirmed clinical diagnosis of ganglion, of them 21 (42%) were males and 29 (58%) were females. With male to female ratio 1:1.38. The mean age ± standard deviation of the study participants is 27.12 ± 16.61 years. It's evident that the majority of patients enrolled in the study are belonged to the age category of 20-25 years and 30-35 years. All of the study's patients (100%) are suffering from swelling, while pain and discomfort are the complaint for 42 (84%) patients, half (50%) of the study' patient had cosmetic problem, 21 (42%) patients had apprehension from tumor and 7 (14%) patients had limitation of movement. Statistically significant difference was found between patient whose received surgery and those treated by steroid injection regarding cosmetic value (P value <0.001), while no statistically significant difference found between the study groups regarding pain relief, success of removal, recurrent rate (P value >0.05) for all. **Conclusion:** The main factor influencing the decision to have surgery for a wrist ganglion was its cosmetic aspect. Comparing aspiration and steroid injection to surgical therapy, the pain relief, recurrence rate, was not statistically significant.

KEYWORDS: Hand surgery, Benign cyst, Cosmetic, Hand swelling.

INTRODUCTION

Ganglions are frequent tumor-like conditions that affect the hand and wrist. They usually start in the joint capsule or tendon sheath.[1-2] Ganglions usually start in the joint capsule or tendon sheath and are they are made of mucinous material and compressed stroma. Although it can grow in any joint, the wrist is where it is most frequently noticed.[3] Around 70% to 80% of wrist ganglion cysts are located on the dorsum of the hands, and these cysts are connected to the joint by a pedicle.[4] Furthermore, the pedicle usually starts at the scapholunate ligament, but sometimes it arises from different locations along the wrist capsule's dorsal portion.[5] 13–20% of the ganglia are found on the volar side of the wrist originating from a pedicle of the radio scaphoid/scapholunate interval, scaphotrapezial joint, or meta-carpo-trapezial joint. Roughly 10% of ganglion cysts start from the hand's flexor tendon sheath. The intra-tendinous and intraosseous spaces are less prevalent locations of ganglion cyst.[4-7]

Females aged 20 to 40 years are more likely to have ganglion cyst. Patients typically worry about wrist pain and mass.[8] Despite of being harmless, ganglions sometime being painful and can cause functional limitation.[9] Moreover; many patients seek consultation from their physician or surgeon due to the ugly appearance of ganglion.[10]

Ganglion cyst are lacked the epithelial coating, as a result it considered as a pseudocyst.[11] Instead of removing it, the primary goal of treatment is to decrease the creation of the gelatinous material found inside it.[12-13]

A ganglion cyst has traditionally been treated with a number of techniques, including aspiration, intralesional sclerosant injection, cautious waiting, and surgical excision of the cyst with joint capsule debridement.[14] To avoid recurrence and preserve the nearby tendon pulleys and neurovascular bundles, surgery necessitates the careful removal of the entire ganglion complex.[15] However, residual tissue from insufficient excision causes substantial recurrence of ganglion.[16] Under local anesthetic, surgical excision removes the entire cyst, offering an effective solution but with significant hazards. Conversely, steroid injections are a less invasive and risk-free choice because its lower inflammation and alleviate symptoms.[17] However, the efficacy of these treatments is questionable. This study compared the surgical excision to the steroid injection of the ganglion cysts.

2-PATIENT AND METHODS

Between March 2022 and November 2024, a prospective interventional study was carried out at the Al Salam Teaching Hospital in Mosul, Iraq. The study did not include patients with coexisting conditions that could harm their tendons or joints. A comprehensive medical history was gathered by asking about pain (visual analog score), functional problems loss of dexterity, and physical examination in order to detect ganglion cysts. Investigations, such as ultrasonography and radiography, confirmed the diagnosis and ruled out other causes for the lesion.

Patients selected their treatment plans and were allocated to the appropriate group. Patients in group A underwent surgical excision, while those in group B underwent aspiration and an intralesional steroid injection (triamcinolone acetate). The procedures were carried out in both groups under conventional aseptic circumstances and with iodine-based solutions. Among patients in Group A. Initially, 10 milliliters of 2% lignocaine were administered locally. The surgical method entailed removing both the pedicle and the cyst complex. The surgical site was approximated with a $3-0$ ethilon. Following surgery, the patient was immobilized with a plaster of Paris (POP) slab. Antibiotics like cefixime were given to patients to prevent postoperative infections and sutures. The POP slab was removed after one week. Similar to group A, group B began by locally infiltrating the area with 10 ml of 2% lignocaine. Next, the cyst was aspirated using an 18 G syringe, and last, the steroid was injected into the lesion using a similar 18 G pre-filled syringe that contained 40 mg of triamcinolone acetate. The patient was bound to be immobile for the full day with a robust bandage. Follow-up sessions were arranged at 1 week, 1 month, 3 months, and 6 months post-intervention to assess for recurrence and postoperative complications. If the cyst disappeared and there were no recurrences after the final consultation, the treatment was regarded as successful. Any recurrence was considered a failure of the treatment, and the Fischer exact test was used to evaluate the effectiveness of the two treatment procedures. Statistical analysis was conducted using the SPSS program, and a p value < 0.05 was considered statistically significant.

3-RESULTS

The study included 50 patients with confirmed clinical diagnosis of ganglion, of them 21 (42%) were males and 29 (58%) were females. With male to female ratio 1:1.38. The mean age ± standard deviation of the study participants is 27.12 ± 16.61 years. It's evident that the majority of patients enrolled in the study are belonged to the age category of 20-25 years and 30-35 years, with no statistically significant differences between males and females regarding ages (P value more than 0.05) for all of the age categories. As shown in table 3.1.

Table 3.1: Distribution of the study patients according to their ages.

Ages	Males= 21, number (%)	Females= 29, number (%)	P-Value
Less than 15	3 (14.2%)	3 (10.35%)	0.373
15-20	5 (23.8%)	6 (20.69%)	0.749
20-25	6 (28.57%)	6 (20.69%)	0.239
30-35	4 (19.04%)	6 (20.69%)	0.928
30-40	2 (9.53%)	6 (20.69%)	0.130
More than 40	1 (4.76%)	2 (6.89%)	0.829

Table 3.2 shows the study patients' complaints. All of the study's patients (100%) are suffering from swelling, while pain and discomfort are the complaint for 42 (84%) patients, half (50%) of the study' patient had cosmetic problem, 21 (42%) patients had apprehension from tumor and 7 (14%) patients had limitation of movement.

Table 3.2: Patients' complaints.

Patient compliant	Number = 50 patients	Percent
Swelling	50	100 %
Pain and discomfort	41	82 %
Cosmetic	25	50 %
Apprehension of tumor	21	42 %
Limitation of movement	7	14 %

Figure 3.1 shows distribution of the study patients according to their received intervention.

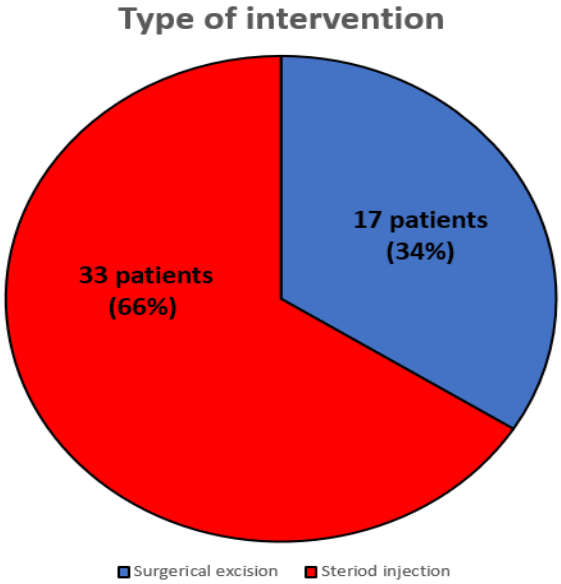

Figure 3.1: Distribution of the study participants according to the received treatment.

Figure 3.2 illustrates distribution of the study patients according to their site of ganglion.

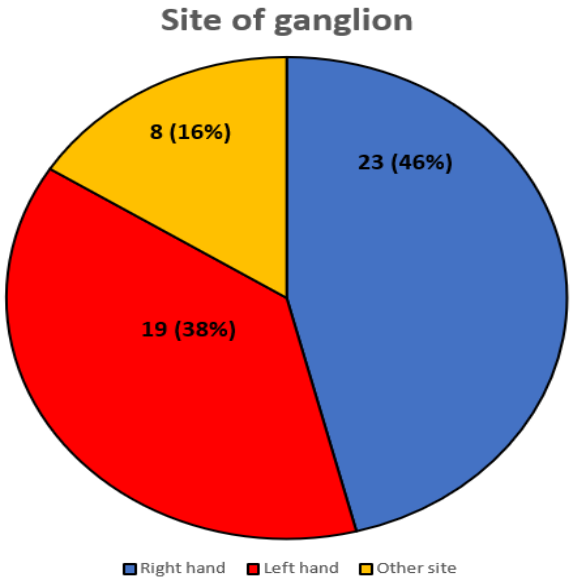

Figure 3.2: Site of ganglion.

Table 3.3 explores comparison between the study patients regarding their response to the received treatment. Statistically significant difference was found between patient whose received surgery and those treated by steroid injection regarding cosmetic value (P value <0.001), while no statistically significant difference found between the study groups regarding pain relief, success of removal, recurrent rate (P value >0.05) for all.

Table 3.3: Comparison between the study patients regarding their response to the received treatment.

Variable	Surgical excision, number = 17 (%)	Steroid injection, number = 33 (%)	P-Value
Pain relief	14 (82.35%)	27 (81.81%)	0.912
Cosmetic value	11 (64.71%)	0 (0%)	**<0.001**
Success of removal	13 (76.47%)	24 (72.72%)	0.189
Recurrence rate	3 (17.64%)	7 (21.21%)	0.379

4- DISCUSSION

The study found that the mean age of the study patients is around 30 years, with female gender predominance, which is goes with Karpaka Vinayakam Gopalakrishnan et al study findings.[4] Ganglion cyst presented with different complaints, almost all of the cases complained from swelling, while pain and discomfort occurred less frequently, moreover; half of the patients suffered from cosmetic issues and little less had apprehension of tumor and only 14 % percent had limitation of movement. Comparable findings obtained from Uddin MN et al[18] and Karpaka Vinayakam Gopalakrishnan et al.[4]

About two thirds of the study patients were treated by steroid injection and one third treated by surgery. As some of the patients had deep seeded ganglion which difficult to removed surgically or the patients refuse doing surgery. In the same way Ajaz Ahmad Shah et al had comparable findings.[19]

The study found that ganglion was slightly more predominant at the right side of the hand, which is parallels to Numan Duman et al study findings[20] but in contrast to Karpaka Vinayakam Gopalakrishnan et al who found slight predominance of the left hand.[4]

The two treatment methods used in the current study found to be comparable regarding pain relief, success for removal and recurrence rate, which is consistent with Mudassar Nazar et al study findings.[21] But the cosmetic value found to be problematic with regard to surgical method of treatment, Uddin MN et al had comparable results.[18]

The study's findings are limited by many factors. First; the outcomes of this study can't be applied to other demographics or environments because it was only carried out at one tertiary care facility. The second problem is small sample size, however; larger study sample can give more informative comparison between surgical option and steroid injection for treatment of hand ganglion.

5- CONCLUSION AND RECOMMENDATION

The main factor influencing the decision to have surgery for a wrist ganglion was its cosmetic aspect. Comparing aspiration and steroid injection to surgical therapy, the pain relief, recurrence rate, was not statistically significant.

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Conflict of intertest

About this study, the authors disclose no conflicts of interest.

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