

Treatment of ganglions; a five year experience

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Abstract

Objective: To evaluate and determine the effectiveness of surgical excision, aspiration and injection in the treatment of symptomatic ganglions.

Methods: The prospective randomized control trial based on non-probability convenience sampling was conducted at the Department of Surgery, Combined Military Hospital, Sialkot, from June 2007 to August 2010, and at the Department of Surgery, Islam Teaching Hospital, Sialkot, from September 2010 to December 2012. The last patient was included in June 2012. Adult patients referred by general practitioners with ganglia of wrist, ankle and knee were included. All the patients were offered treatment options of intralesional steroid injection or excision of ganglion. The study population was distributed in two groups: Group I opted for aspiration and injection treatment, while Group II went for surgical treatment. A minimum follow-up of six months was mandatory for inclusion in the study. Data was compared and analyzed using SPSS version 22.

Results: The study had 173 patients with 187 ganglia. Group I had 143(76.4%) patients, while Group II had 44(23.3%). In the short term, 82(57.3%) of the patients achieved complete resolution after one episode of aspiration and injection, and success rate after second injection repeated after 3 weeks was 116(81%). Overall success rate of aspiration and injection of Triamcinolone acetonide six months after the treatment was 116(81%). On the surgical side the success rate was 41(93%). Complications like pain, joint stiffness and ugly scar were few and not significant. Comparison of failure rates of the two groups (19% vs 7%) showed significant difference ($p < 0.028$).

Conclusion: In symptomatic ganglia, surgical excision was a better treatment option as the failure rate was less compared to injection-aspiration. The injection treatment should be offered to those who are not willing for surgery, but they should be properly counselled about the chances of failure.

Keywords: Aspiration, Injection, Wrist ganglia, Baker's cyst. (JPMA 64: 1278; 2014)

Introduction

Ganglion is a sac-like swelling or cyst formed of synovium that normally produces a lubricating fluid in joints or tendons. It is filled with a thick jelly-like fluid. Ganglia can follow local trauma to the tendon or joint, but usually has unknown reasons.¹ Ganglia can form around any joint, but are most frequently found in wrists and ankles. Ganglion cysts most commonly occur on the back of the hand (60%-70%), at the wrist joint, and can also develop on the palmar side of the wrist.² Ganglions most frequently arise adjacent to joints and tendons, but may also be intra-tendinous or intra-osseous.³ They are usually painless and often barely visible as localised swellings. The largest ganglions form behind the back of the knee, causing a sense of fullness or tightness. A ganglion named Baker's cyst or a popliteal cyst is swelling caused by knee joint fluid protruding to the back of the knee.⁴

Despite its benign nature, a ganglion can be problematic.

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A significant number of patients with ganglia consult their general practitioners and the surgeon, complaining of pain. A great number of patients are concerned about the cosmetic appearance, and an equally significant number genuinely believe that the ganglion is a cancer.⁵ Occasionally, these are early signs of arthritis that becomes obvious in the future. There are several management options resulting in varying degrees of success. These include observation only, surgical excision, aspiration only, aspiration with injection of steroids like triamcinolone acetonide, sodium tetradecyl, methylprednisolone, and aspiration with injection of methylprednisolone and hyaluronidase.⁶ Similarly, OK-432 injection is a safe, convenient, and effective treatment for either symptomatic or recurrent ganglia.⁷ Seton insertion with or without aspiration is practised by some surgeons.⁸ Ultrasound-guided ganglion cyst aspiration and arthroscopic treatments of ganglions are also being done by some. Indications for more aggressive treatment include pain, interference with activity, nerve compression and imminent ulceration.⁹

A ganglion can spontaneously rupture and heal. Less often, the ganglion is surgically excised. Patients with a persisting or recurring ganglion should be evaluated for signs of

systemic forms of arthritis, such as rheumatoid arthritis.¹⁰

The recurrence rate after puncture and aspiration is greater than 50% for cysts in most locations, but is less than 30% for cysts in the flexor tendon sheath. Surgical excision is effective, with a recurrence rate of only 5% if care is taken to completely excise the stalk along with a small portion of joint capsule. After surgical excision; further confirmation of a diagnosis of a ganglion with histopathologic examination seems to be unnecessary.¹¹

Ganglion is a common condition seen in surgical outpatient department (OPD) of any hospital. These present with varied complaints and seek treatment of this pathology. The aim of the current study was to compare the results of treatment between aspiration combined with triamcinolone acetonide injection and surgical excision of ganglion at any site.

Patients and Methods

The prospective randomized control trial based on non-probability convenience sampling was conducted at the Department of Surgery, Combined Military Hospital, Sialkot, from June 2007 to August 2010, and at the Department of Surgery, Islam Teaching Hospital, Sialkot, from September 2010 to December 2012. The last patient was included in June 2012. Adult patients referred by general practitioners with ganglia of wrist, ankle and knee were included after obtaining permission from the institutional review committee.

All the patients were offered treatment options of intralesional steroid injection or excision of ganglion. The study population was distributed in two groups: Group I opted for aspiration and injection treatment, while Group II went for surgical treatment. A minimum follow-up of six months was mandatory for inclusion in the study. The target outcome measure was 'no residual swelling'.

Only cases not having been intervened earlier were included in the study. Patients having recurrent ganglia, definite history of injury to the nearby joint, pregnancy and bleeding disorders were excluded. Moreover; compound palmar ganglion, ganglion in the vicinity of arteries, ganglion less than 5mm in size, infected ganglion, previous treatment taken in any form and ganglion associated with arthritic disorders were also excluded. Patients unwilling to proceed with the mandatory 6-month follow-up were also left out.

The injection treatment was carried out in clinic using aseptic technique. The ganglion was prepared with chlorhexidine. With 25 gauge needle, the skin was infiltrated with 1ml of 1% plain lignocaine. While stretching

the ganglion between the middle and index fingers of one hand, a 19-gauge needle attached to a 10ml syringe was introduced into the ganglion. Suction was applied by retracting the plunger of the syringe; the needle was moved around within the sac while stabilising fingers were used to express the content of the sac at the same time. Once the swelling had shrunk, the plunger was released and the syringe removed, while the needle was left in place. Proportionate amount, 0.25ml to 1ml of triamcinolone acetonide (Kenacort) was injected into the ganglion. The needle was withdrawn and the site dressed with gauze, and crepe bandages that were left in place for 3 days.

The patients were reviewed after six weeks and three months, and aspiration was repeated if indicated. Those with successful aspiration and injection were labelled as successful after a follow-up of six months; and were counselled along with their families to report back if the ganglion recurred.

In Group II, surgical excision was carried after gaining consent of the patient. The procedure was carried in operation theatre under strict aseptic conditions. Local anaesthesia was used for all patients and the ganglion was excised completely reaching up to the capsule of the joint or tendon sheath. Skin was repaired with prolene 3/0 non-absorbable sutures and wound was dressed with crepe bandage. Stitches were removed after 7 days. Follow-up of 6 months was mandatory to declare the success or otherwise and patients were instructed to report back if the swelling recurred.

Data collected was analysed using SPSS version 22.

Results

Initially 200 patients were approached but 27(13.5%) had to be excluded; 14(7%) did not fulfil the inclusion criteria — 11(5.5%) already had treatment of injections of steroids elsewhere and 3(1.5%) had recurrence after previous surgery — 2(1%) had ganglia of elbow and 2(1%) had ganglia of the shoulder joint, while 9(4.5%) patients did not attend the 6-month follow-up. The final study sample comprised 173(86.5%) patients with 187 ganglia. Of them, Group I had 143(76.4%) patients, while Group II had 44(23.3%) (Table-1).

Swelling was a common presentation in all the subjects, while allied complaints synchronous with the swelling were pain and discomfort 62(33%), cosmetic 96(51%) and apprehension of tumour 29(15%).

In Group I, out of 143 ganglions, 106(74%) were wrist ganglions — 83(58%) on the dorsal aspect and 23(16%) on the flexor aspect — and 21(14.6%) patients had ankle ganglia. All cases of knee ganglion 16(11%) were also

Table-1: General demographic data all cases. n=187.

GROUP I - Aspiration and injection	143 (76.4%)
GROUP II - Surgical excision	44 (23.5%)
Age in years	16 - 47 (mean 26 ± 7.93 years)
Total patients	173
Total ganglions in the study	187
Patients having two ganglia	14 (8%)
Ganglions of wrist	143 (76%)
Ganglions of ankle	28 (15%)
Ganglions of knee (Baker's cyst)	16 (8.5%)
Gender distribution (M:F)	29:158 (15.5%:84.5%)

Table-2: Comparison.

	Data of Group I- Aspiration and injection (n= 143)	Data of Group II - (n= 44) Surgical excision
Gender (M:F)	18:125 (13%:87%)	11:33 (25%:75%)
Success at 3rd week of first injection	82 (57%)	41 (93%)
Success at 6 months after second injection	116 (81%)	
Failure rate	27 (19%)	3 (7%)

included in this group.

In Group II, out of the 44 ganglions, 37 (84%) were wrist ganglions — 28 (63.63%) on the dorsal aspect and 9 (20/45%) on the volar aspect — and 7 (16%) patients had ankle ganglia. The outcome of the two groups were noted and compared (Table-2).

All the 5 (3%) recurrences were in patients with Baker's cyst owing to bigger sizes, requiring multiple aspirations and injections. Failure in 22 (15%) cases was related to cysts that were multiple in numbers at the same site; because of inadequate dose of triamcinolone acetonide; and may be wrong-sited injections.

In the short term, 82 (57.3%) of the patients achieved complete resolution after one episode of aspiration and injection, and the success rate after the second injection

repeated after 3 weeks was 116 (81%). So overall success rate of aspiration and injection of triamcinolone acetonide as decided after six months of treatment was 116 (81%). On the surgical side, the success rate was 41 (93%). Complications like pain in 2 (4.5%) cases — joint stiffness in 1 (2.27%) and ugly scar in 1 (2.27%) — were few and not significant. Comparison of failure rates of the two groups (19% vs 7%) showed significant difference ($p < 0.028$).

Discussion

Ganglia are cosmetically unacceptable to a significant number of patients, and may cause pain and discomfort. There are several management options resulting in varying degrees of success. Treatment is usually offered to patients with symptomatic ganglia.

Intralesional steroids have been commonly used for treating ganglionic cysts. A variety of steroids and preparations with definite effectiveness are being used for the purpose; like OKT432, aspiration with injection of triamcinolone acetonide, sodium tetradecyl, methylprednisolone, and aspiration with injection of methylprednisolone and hyaluronidase. We used triamcinolone acetonide injection (kenacort) as it was easily available, is inexpensive, was in our routine use and, above all, is effective.

In a study¹² the success rate of surgery was 94.4% and that of aspiration with triamcinolone acetonide injection plus wrist immobilisation was 61.1%, showing that surgery was the most successful form of treatment when considering the cure rate of dorsal wrist ganglion. These results are comparable to our study which dealt with ganglions at multiple sites.

According to the current study, ganglion was more common in females (84.5%) at an average age of 26 years. Pain was presenting symptom in 33% while cosmetic concern was expressed by 51%. The success by excision was 93% and by aspiration combined with triamcinolone acetonide injection plus was 81%. Surgical excision had

Table-3: Comparison of findings in different studies.

	Aspiration alone	Success rate of aspiration and injection	Success rate of surgical excision	Recurrence
Present study		81%	93%	
Holm and Pandey ¹⁶ (methyl prednisolone injection)	60%	79%		
Paul and Sochart ²⁰		89%		
Bittner et al ²¹		66%	97%	3%
Matthews ²²			100%	nil
Westbrook ²³			97%	
Clay ²⁴			97%	

better success rate in the treatment of ganglions irrespective of the site. A study¹³ showed comparable data with females 83% and an average age of 30 years. Pain was the most common complaint, success of surgical excision was 82% and with injection of methylprednisolone acetate 38%.

Our success rates of 81% and 93% are comparable to a study¹⁴ showing corresponding rates of 44% in injection treatment and 98% in surgical cases. The difference in injection treatment may be attributed to using methylprednisolone while in our study triamcinolone acetonide was used for intralesional injection.

Studies for treatment of ganglia with aspiration only¹⁵⁻¹⁷ showed success rates of 33%, 60% and 27%, while in our study the success rates were much higher owing to the injection of triamcinolone acetonide in addition to aspiration. One study¹⁸ showed a rate of 86% with aspiration and immobilisation, while another¹⁹ showed success rate of 49%, indicating no effect of immobilisation on the outcome. Our study didn't go for immobilisation. The results are comparable with several other studies as well (Table-3).^{16,20-25}

The procedure needs to be carried out only by consultants and senior surgical trainees for good results and lesser morbidity.

Conclusion

In symptomatic ganglia, surgical excision is a better treatment option as the failure rate is less compared to triamcinolone acetonide injection after aspiration. The injection treatment should be offered to patients not willing for surgery but they should be properly counselled about the chances of failure.

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