

OBSERVATIONS ON THE TREATMENT OF GANGLION WITH INTRALESIONAL INJECTION OF HYALURONIDASE.

Dr. Ila Saha, **Dr. P. C. Biswas, *Dr. S. Gupta, ****Dr. N. P. Polle,
*****Dr. A. C. Ganguly*

(Plastic Surgery Unit, Medical College Hospital, Calcutta.)

Introduction

Ganglion is defined as a cystic swelling containing myxomatous degenerative fluid in a portion of connective tissue of the capsule of a joint or tendon sheath.

Various types of treatment of ganglion have been practised from time to time which includes; compression and rupture (Deorsey et al, 1937); injection of sclerosant fluid (Jordan, 1893); only aspiration (Deorse et al, 1937); immobilisation for a month by a splint (Woodburn, 1947); cross fixation with a suture (Ruther Ford, 1938); subcutaneous sectioning with a tenotome (Soren, 1966); surgical excision (Carp & Stout, 1928, Deorsey et al, 1937 McEvedy, 1954); radio-therapy (Lyle 1941, Woodburn, 1947); intralesional inj. therapy by cortisone, hyaluronidase, triamcinolone, either alone or in combination have been used by different authors, (Sarmo 1940; McEvedy 1954; Nelson et al 1972).

The surgical excision though claimed as best form of treatment, is not free from risk of recurrence, as mentioned by many authors, Carp & Stour (1928) treated 35 cases with 31% recurrence, Deorsey et al (1937) showed 17% recurrence, McEvedy (1954) 40%, Cherry et al (1941) 38% recurrence. Besides

recurrence surgical excision has got other complications such as scar & keloid formation, stiff joint, nerve injury.

Material & Method

This work is based on the study of treatment of ganglion with intralesional injection of hyaluronidase to 110 cases attending plastic surgical out patient department of medical college hospital, Calcutta, within last two years period from 2.6.78 to 17.6.80. Before injection all the cases were carefully examined. Their duration, age, sex, distribution of site and size were recorded (Table 1 & 2).

It is evident from the above two tables that ganglion was most commonly seen on the dorsum of the wrist (87.3%) in female (72.8%) between 10-20 years of age. (47.3%). Further break-down shows that the Rt. wrist was more commonly affected (57.3%) than left (30.00%). In the majority of cases (80%) the size was up to 1.5cm. In cases studied swelling was the presenting feature in 80 cases, whereas swelling associated with pain was present in 30 cases. Duration of 90 cases were less than 6 months and in 20 cases the duration was 6 months to 1 year.

*Plastic Surgeon. **R. M. O.-cum-Clinical Tutor, S. S. K. M. Hospital, Calcutta. ***House Surgeon (W. B. H. S.). ****House Surgeon. *****Prof. & Head of the Department.

The paper was presented at 40th Annual Conference of the Association of Surgeons of India, December 1980, Calcutta.

Table I
Age & sex incidence of 110 cases.

Age incidence			Sex incidence		
Age in Years	No. of cases	Percentage	Sex	No. of cases	Percentage
10 — 20	52	47.3	Female	80	72.8
21 — 30	38	34.6			
31 — 40	12	10.9			
41 — 50	4	3.6			
51 & above	4	3.6	Male	30	27.2

Table II
Site & size distribution of cases

No. of case	Site				Total cases	Size		
	Dorsum of wrist		Volar aspect of wrist			Dorsum of foot	Upto 1.5 cm	More than 1.5 cm.
	Rt.	Lt.	Rt.	Lt.				
	63	34	6	4	2	1	88	22
Percentage	57.3	30	5.4	3.5	1.9	0.9	80%	20%

Treatment

With due aseptic precaution the content of the cyst was aspirated out with a sterile 10 c.c. syringe and 10 gauge aspirating needle. After aspiration the syringe was taken off leaving the needle in situ. Another syringe containing 1500 I. U. of Hyaluronidase dissolved in 1 ml. of distilled water, was injected inside the ganglion. The amount of injection varied from 1500 I. U. to 3000 I. U. according to the size of the swelling. After injection a pressure dressing was applied and the patient

was sent home. After 48 hrs. the dressing was removed and patient was advised to attend follow up clinic.

Follow up & Result

The cases were followed up for a maximum period of 1 year 9 months and a minimum of 3 months. Out of 110 cases only 74 cases attended the follow up clinic. The remaining 36 cases were lost to follow up. Therefore, those cases are excluded from the results of treatment. Thus the results of 74 cases are analysed here and shown in Table 3.

Table III
Results of 74 cases

No. of inj.	Subsidence			Recurrence		Time period of recurrence
	No. of cases treated	No. of cases subsided	Percentage	No. of cases recurred	Percentage	
Hyaluronidase.—once	74	42	56.8	32	43.2	10 to 16 weeks
Hyaluronidase—twice.	32	24	75.0	8	25.0	6 to 10 weeks
Hyaluronidase—thrice.	8	2	25.0	6	75.0	1 to 4 weeks

The result shows complete disappearance and recurrence in 42 cases (56.8%). Recurrence within 10 to 16 weeks of 1st injection were noticed in 32 cases (43.2%). These 32 cases were subjected to 2nd injection of Hyaluronidase, as they reappeared. In 24 cases (75%) out of those 32 cases the ganglion disappeared after 2nd injection. In 8 cases recurrence of swelling was noticed within 6 to 10 weeks of 2nd injection of Hyaluronidase. These 8 cases were subjected to 3rd injection of Hyaluronidase as soon as they recurred. Out of those 8 cases two responded to 3rd injection and 6 cases recurred. Amongst 110 cases two were recurrent ganglion following surgery. These two cases were subjected to injection therapy by Hyaluronidase. In both the cases swelling subsided and there is no recurrence during 1 year and 6 months follow up period.

Discussion

The treatment of ganglion by injection therapy has been in use. The injection therapy has got some advantages over the other types of treatment. It is a simple method of treatment which can be done as an out patient department procedure. There is no

risk of injury to the joint or neighbouring structure. It does not produce any scar, failure does not affect other forms of treatment and lastly recurrence rate is low.

The drug for injection therapy can be used in the following ways :—

1. Single drug by single injection.
2. Single drug by repeated injection.
3. Combination of drugs by single injection.
4. Combination of drugs by repeated injection.

In the present study single drug i. e., Hyaluronidase has been used by repeated injection method. The rationality of injection therapy after aspiration, is that, the ganglions are tense cystic swelling by aspiration the content of the cyst is taken out to make some space for injection of the drug. The drug Hyaluronidase acts by its depolymerising property ("spreading factor"). It makes the residual fluid thin which is easily washed away. After absorption of the fluid the wall of the cyst gets collapsed and ultimately fibrosed.

In the present study a cure rate of 56.8% has been observed following injection of Hyaluronidase only once (table III). Where as Nelson et al in 1972 has shown 57% cure rate by using Hyaluronidase alone with a follow up of 3—4 years. Derbyshire in 1966 has claimed 86% cure rate by injecting Hydrocortisone alone with a follow up of 3—4 years. The cure rate in the present study was 92% when Hyaluronidase was injected more than once. Similar observation was made by Nelson et al in 1972 by injecting Triamcinolone and Hyaluronidase together more than once and claimed 84% cure rate, and 60% cure rate by injecting them only once.

McEvedy in 1954 reported 18% recurrence rate by injecting sclerosant fluid (Sodium Morrhuate) in 43 cases. He has claimed repeated injections are usually necessary, because single injection does not produce cure in all cases. This is in agreement with the pre-

sent finding. The only difficulty of injection therapy is that the content of cyst in some cases are so thick and gelatinous that it can not be aspirated out through the needle and in some cases if the cyst is very small in size, then also it is difficult to aspirate it out.

Recurrence rate of ganglion after surgical excision is also not low as compared to injection therapy. The recurrence rate of surgical excision and injection therapy are shown in table IV.

It is obvious from the above table that apart from the other problem of surgery, the recurrence rate following injection therapy does not stand unfavourably as compared to surgical excision. In the present study the recurrence rate following injection of Hyaluronidase thrice is only 8%, which is much less than recurrence by surgical excision (17% 50%) vide table 4.

Table IV

Showing comparison of recurrence rate following surgical excision and injection therapy in ganglion.

Surgical excision		Injection therapy	
Name of authors & year	Percentage	Name of authors, years & drug used.	Percentage of recurrence
1. Carp & Stout (1928)	31%	1. McEvedy (1954) Sclerosant (5% sodium morrhuate)	18%
2. Deorsey et al (1937)	17%	2. Derbyshire (1966) Hydrocortisone	14%
3. Cherry et al (1941)	38%	3. Nelson et al (1972)	
		(i) Hyaluronidase alone	43%
		(ii) Triamsinolone alone	35%
		(iii) (a) Triamsinolone & Hyaluronidase, once.	60%
		(b) Triamsinolone & Hyaluronidase, twice.	16%
4. Hand & Patey (1952)		4. Present study.	8%
(a) out patient	50%		
(b) In patient	28%		

Summary

110 cases of simple ganglion were treated by aspiration and injection therapy by Hyaluronidase, out of which 74 cases could be followed up for 3 months to one and half year, rest 36 were lost to follow up. Out of the 74 cases 68 cases subsided during the period of

follow up and 6 cases had recurrence, & did not respond to the treatment.

Acknowledgement

We are thankful to Dr. J. B. Mukherjee, Principal, Medical College Hospital, Calcutta for allowing us to publish this paper.

References

1. Carp, L. and Stout, A. P. *Surg. Gynec. & Obstet.*, 37:460-468, 1928.
2. Cherry, J. H., & Ghormley, R. K. *Am. J. Surg.*, 52 : 319-330, 1941.
3. Derbyshire, R. C. *Am. J. Surg.* 112 : 635-636, 1966.
4. Deorsey, R. H., Mercray, P. M. Jun., & Ferguson, L. K. *Amer. J. Surg.*, 36 : 313, 1937.
5. Hand, B. H., & Patey, D. H. *Practitioner*, 169 : 195, 1952.
6. Jordon, H. N. *Lancet*, 2 : 224, 1893.
7. Lyle, F. B. J. *Bone & Joint Surg.*, 23 : 162, 1941.
8. McEvedy, B. V. *Lancet*, 1 : 135-136, 1954.
9. Nelson, C. L., Sawmiller, S. and Phalen, G. S. J. *Bone & Joint Surg.*, 54A 1429-1464, 1972.
10. Rutherford, R. *Brit. Med. J.*, 2 : 591. 1938.
11. Sarmo, P. *J. Surg. Clin. N. Amer.*, 20 : 135, 1940.
12. Soren, Aanold, *Clin. Orthop.*, 48 : 173-179, 1966.
13. Woodburn. A. R. *Arch. Derm. Chicago*, 56 : 407, 1947.