



5-YEAR RETROSPECTIVE ANALYSIS OF GANGLION CYSTS IN CHILDREN AT THE UNIVERSITY OF PORT HARCOURT TEACHING HOSPITAL

¹Isesioma Gbobo, ²Tamunokuro E. Diamond

¹Paediatric Surgery Division, Department of Surgery, University of Port Harcourt Teaching Hospital, Port Harcourt, Rivers State, Nigeria.

²Department of Orthopaedics, University of Port Harcourt Teaching Hospital, PMB 6173, Port Harcourt, Rivers State, Nigeria.

***Corresponding author:** Tamunokuro E. Diamond

Email: teddymond@gmail.com

ABSTRACT

Background: Ganglion cysts are swellings with mucinous contents that usually arise from underlying joint capsules or tendon sheaths. They are the most common soft tissue masses of the hand. In the paediatric population, recurrence rate tend to be higher when compared to adults following surgical excision. This study is to determine clinical presentation, treatment methods and treatment outcomes of ganglion cysts among children attending the paediatric surgical clinic at the University of Port Harcourt Teaching Hospital.

Method: All children aged 0 to 18 years with ganglion cysts who presented to the paediatric surgical clinic from January 2014 to December 2018 were retrospectively studied. Associations between the demographic characteristics and treatment outcomes were also analyzed with Chi-square and Fisher's exact test as appropriate. $P < 0.05$ was termed statistically significant.

Result: Twenty-six Paediatric ganglia were analyzed. A total of 532 paediatric consultations were made within the same period giving a prevalence rate of 4.8%. Upper limb ganglion constitute 77% of all ganglion seen within the study period with the dorsal wrist (38.5%, $n=10$) being the most common site of occurrence. The most common presenting symptom and the most common treatment modality were painless swelling (69.2% $n=18$) and surgical excisions (84.6%, $n=22$) respectively. Recurrence rate was low (3.8%, $n/N=1/26$).





Conclusion: Paediatric ganglion cysts can be safely treated with surgical excision. Complication rates are low after 12 months of follow-up. Data from this study can be useful in developing treatment guidelines.

Key words: Ganglion, paediatric ganglion, mucinous cysts, wrists swelling, painless cysts.

INTRODUCTION

Ganglion cysts are swellings with mucinous contents that usually arise from underlying joint capsules or tendon sheaths. They are the most common soft tissue masses of the hand¹. Though the exact etiology and pathogenesis still remain unknown, they are generally regarded as benign lesions in adults where hand and wrist occurrences are common locations.

The size, location and content of the extracapsular aspect of the swelling is clear in clinical presentation but little is known about the intra-capsular aspect. The exact incidence of ganglion cysts in adults and children is unclear, there are however center-based studies that have shown varying age and sex variations^{2,3,4}.

In the paediatric population, it is generally believed that reported incidences may have been lower than the true incidence since most children will not report the occurrence of small-sized painless swellings.

Surgical excision remain the most common treatment modality in children, although recurrence rate tend to be higher when compared to adults. Satku and Ganesh² reported 35% recurrence rate with surgical excision. Spontaneous resolution have also been reported in some studies^{3,4} and tend to be higher in older children⁴.

The aim of this study is to determine the epidemiology, clinical presentation, treatment methods and treatment outcomes of ganglion cysts among children attending the paediatric surgical clinic and orthopaedic clinic at the University of Port Harcourt Teaching Hospital.



METHODOLOGY

All children aged 1 to 18 years with ganglions cyst who presented to the paediatric surgical clinic and the orthopedic clinic from January 2014 to December 2018 were retrospectively studied. Structured questionnaire was used as a tool to obtain data with regards to demographics, symptom pattern, treatment variables as well as outcome of treatment.

Data obtained were entered into IBM SPSS Software (Armonk, NY, USA; 2015; version 23).

Descriptive analysis on the statistics with respect to socio-demographics, presentation pattern and treatment pattern was done. Associations between the demographic characteristics and treatment outcomes were also analyzed with Chi-square and Fisher's exact test as appropriate. $P < 0.05$ was termed statistically significant. Follow up for all patients was done for a minimum period of one year via analysis of follow-up reviews and through direct phone contacts.

RESULTS

Thirty-four cases of ganglion cyst were reported in the study center within the study period. The clinical records of only 29 were found and recruited, however only 26 patients were followed up till 12 months and were subsequently analyzed. A total of 532 paediatric consultations were made within the same period giving a prevalence rate of 4.8%. Thirteen were male, eight were females giving a male female ratio of 1.4:1

Age Distribution

The age distribution of the patients is as shown in Figure 1.

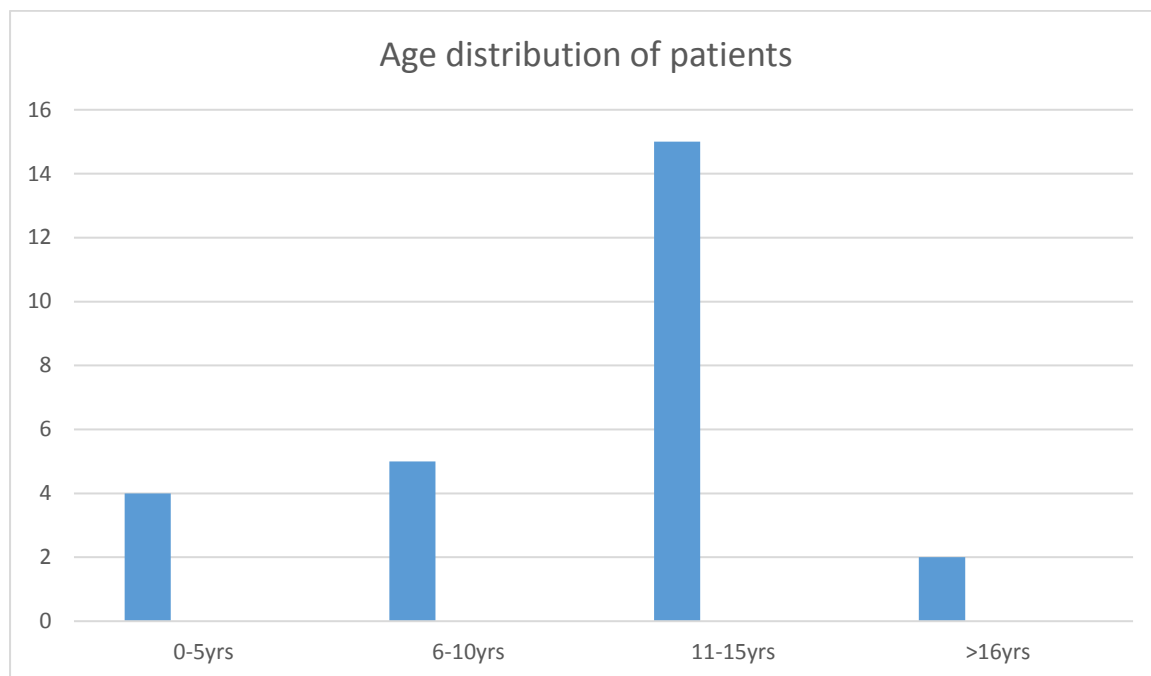


Figure 1: Age distribution of patients

Site Distribution

As shown in Table 1, upper limb ganglion constitute 77% of all ganglion seen within the study period with the dorsal wrist being the most common site of occurrence.

REGION	SITE	NO (n)	Percentage (%)	Cumulative percentage
Upper limb				
	Dorsum of the wrist	10	38.5	38.5
	Volar aspect of the wrist	6	23.1	61.6
	Fingers	4	15.4	77.0
Lower limb				
	Foot	2	7.7	84.7
	Ankle	2	7.7	92.4



	Toes	1	3.8	96.2
Other site				
	Sterno-clavicular joint	1	3.8	100%
Total		26	100	100

Presentation Pattern: The pattern of presentation of symptoms are as shown in Figure 2.

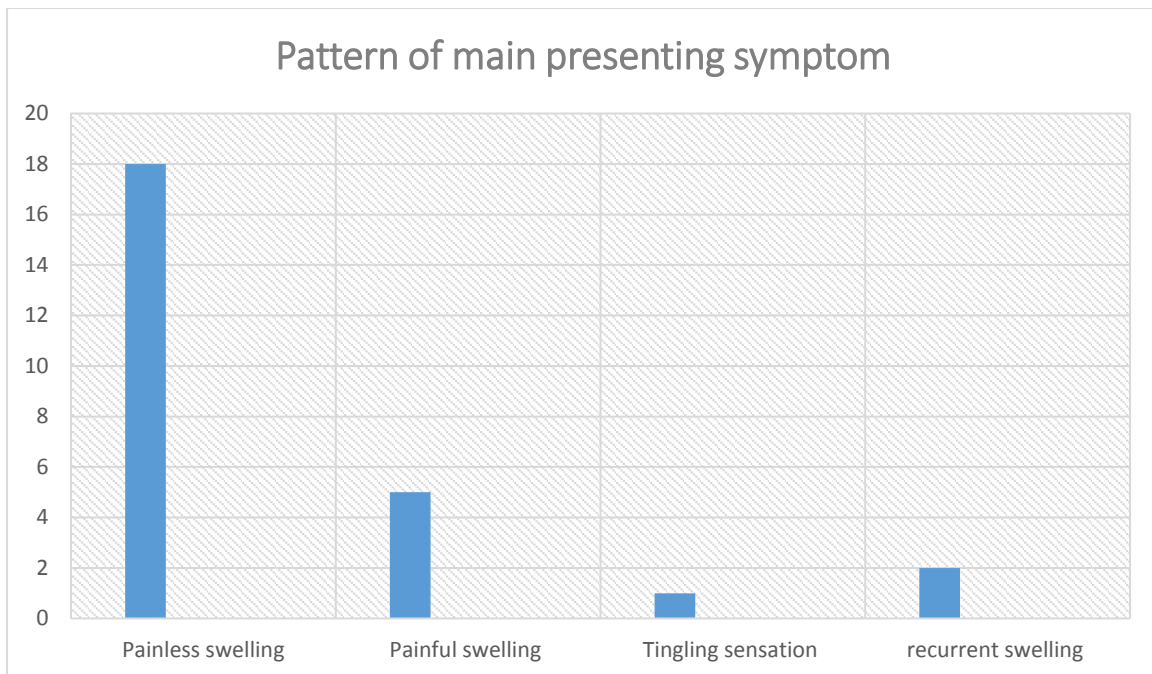


Figure 2: The pattern of presentation of symptoms

Distribution of Symptom Duration: The duration of symptoms are as shown in Figure 3:

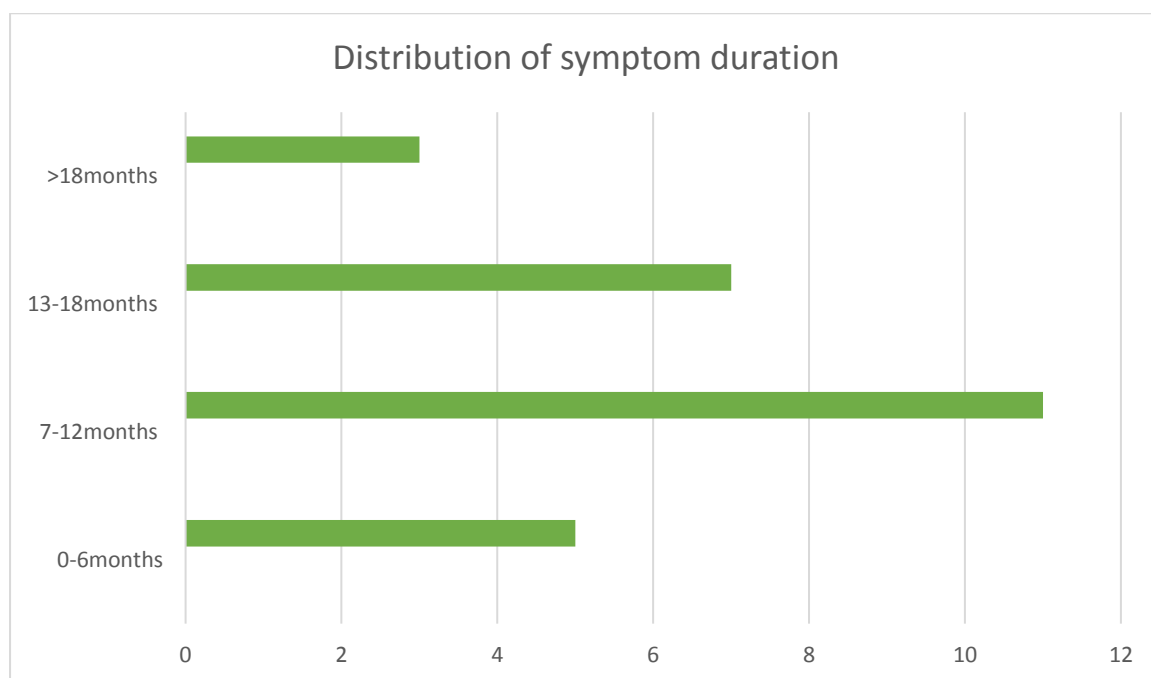


Figure 3: The duration of symptoms

Distribution of Treatment Methods

Table 2 showed that surgical excision was the most common treatment method.

Treatment method	No (n)	Percentage (%)	Cumulative percentage (%)
Observation	2	7.7	7.7
Splinting	2	7.7	15.5
Use of Sclerosants	0	0	15.5
Aspiration	0	0	15.5

Surgical excision	22	84.6	100
Total	26	100	100

Distribution of Possible Etiologic Factors

Figure 4 shows the possible etiologic factors implicated.

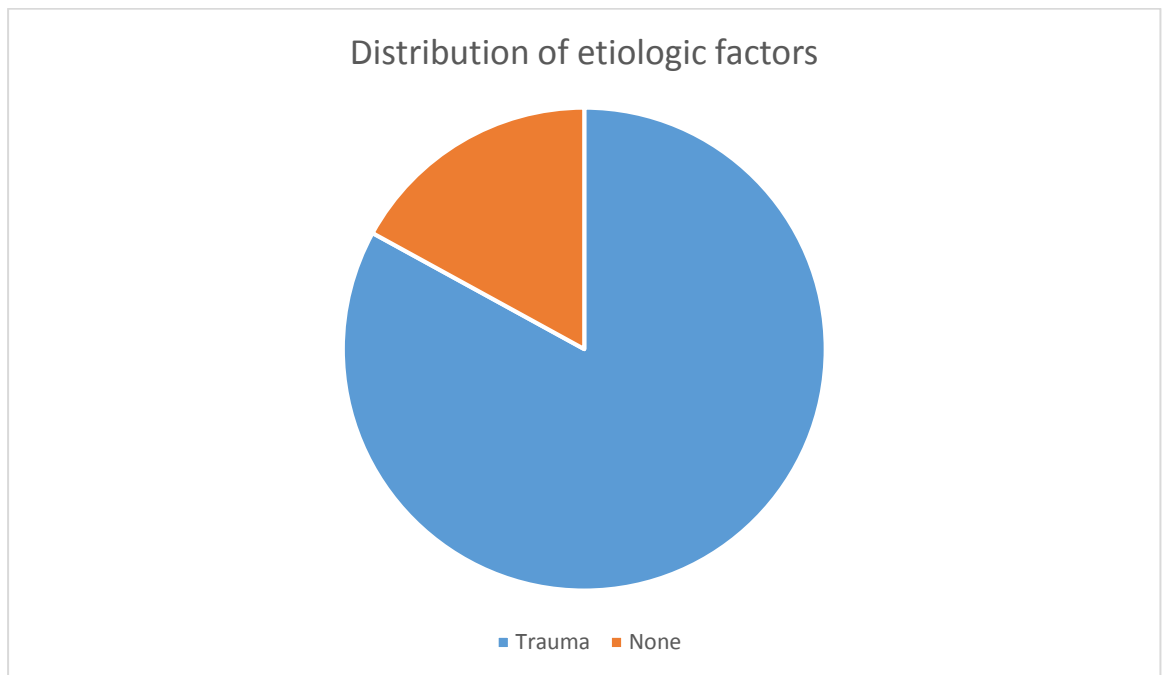


Figure 4: Distribution of etiologic factors

Distribution of Post-Operative Complications

Table 3 showed the distribution of complications after surgery.



Table 3: The distribution of complications after surgery

Post-operative complications	No (n)	Percentage (%)	Cumulative percentage (%)
Hypertrophic scar	2	66.6	66.6
Keloid	0	0	66.6
Recurrence	1	33.3	100
Tendon injury	0	0	100
Joint capsular injury	0	0	100
Wound infection	0	0	100
Total	3	100	100

DISCUSSION

This study reported a 4.8% (n/N =32/532) prevalence of ganglion cysts in children within a 5-year period. Coffey et al.⁵ have also reported ganglion cysts among 48 children in their epidemiologic study over a decade ago. Simon et al.⁶ had earlier stated that determining the true prevalence of ganglion cysts in children is quite challenging since most cases are painless and grossly underreported. They also stated that initial presentation in most cases were to the general practitioners who either dismiss the patient or may opt to observe the swelling.

Close to half of all ganglion cysts seen in this study occurred among the 11-15 years age group. It's unclear if this was a result of increasing self-awareness with increasing age in children or only a random finding. Nelson et al.¹ however showed a similar pattern in their study on wrist and ganglion. Of 54 ganglia in patients aged 20years and below only 2% were below 10years.



This study also showed a slight male preponderance (F:M=1:1.4) this contrast findings from both Mackinnon & Azmy¹⁰ and Wang & Hutchinson¹¹.

Upper limb ganglia were more common than lower limb ganglia with the dorsum of the wrist being the commonest site (n=10, 38.2%) This collaborates findings from several other workers^{7,8,9}. Both Satku & Ganesh² and Coffey⁵ however reported high incidence of volar ganglion in children less than 10years.

Surgical excision was preferred (84.6%, n=22) to conservative methods or aspiration from this study. It was effective, safe and with minimal complication rates. Simon et al.⁶ in their study on ganglion cysts in Children; reviewing treatment and recurrence rates reported that 94.2% of patients with symptomatic lesions had surgical excision. Angelides and Wallace¹² had also reported 99% success rate with surgical excision over 45 years ago.

There was only one recurrence 3.8% in this series. This was much lower than reports from Barnes et al. (40%) and Zachariah & Vibe-Harsen (34%). The study populations in both studies were however much higher than that for this study.

These findings may provide relevant data for developing treatment guidelines for ganglion cyst in children and become a nucleus for further studies with longer follow-up periods.

LIMITATIONS

The periods of service interruptions in 2014 and 2015 due to industrial actions by resident doctors and other health workers may have influenced the number of patients recruited

Conflict of Interest: Nil



Financial Aid: Nil

REFERENCES

1. Nelson CL, Sawmiller S, Phalen GS. Ganglions of the wrist and hand. *J Bone Joint Surg Am.* 1972; 54: 1459-64.
2. Satku K, Ganesh B. Ganglia in children. *J Pediatr Orthop*
3. MacCollum MS. Dorsal wrist ganglions in children: Clinical notes. *J Hand Surg.* 1977;2:325
4. Rosson JW, Walker G. The natural history of ganglia in children. *J Bone Joint Surg.* 1989;71B:707-8.
5. Coffey MJ, Rahman MF, Thirkannad SM. Paediatric ganglion cysts of the hand and wrist: An epidemiologic analysis. *Hand.* 2008:359-62
6. Simon Cypel TK, Mrad A, Somers G, Zuker RM. Ganglion cyst in children: Reviewing treatment and recurrence rates. *Can J Plast Surg.* 2011;19(2):53-55.
7. Colon F, Upton J. Paediatric hand tumors. A review of 349 cases *Hand Clin.* 1995 May; 11(2):223-43.
8. Thornburg LEJ. Ganglions of the hand and wrist. *Am Acad Orthop Surg.* 1999 Jul-Aug; 7(4):231-8.
9. Richman JA, Gelberman RH, Engber WD, et al. Ganglions of the wrist and digits: Results of treatment by aspiration and cyst wall puncture. *J Hand Surg.* 1987;12A: 1041-3.
10. MacKinnon AE, Azmy A. Active treatment of ganglia in children. *Postgrad Med J.* 1977 Jul; 53(621):378-81.
11. Wang AA, Hutchinson DTJ. Longitudinal observation of paediatric hand and wrist ganglia. *Hand Surg Am.* 2001 Jul; 26(4):599-602.
12. Angelides AC, Wallace PF. The dorsal ganglion of the wrist: its pathogenesis, gross and microscopic anatomy, and surgical treatment. *J Hand Surg Am.* 1976 Nov; 1(3):228-35.



Retrospective Analysis of Ganglion Cysts in Children, I. Gbobo & TE Diamond

ISSN1597-4292

13. Barnes WE, Larsen RD, Posch JL. Review of ganglia of the hand and wrist with analysis of surgical treatment. *Plast Reconstr Surg.* 1964 Dec; 34 :570-8.
14. Zachariae L, Vibe-Hansen H Ganglia. Recurrence rate elucidated by a follow-up of 347 operated cases. *Acta Chir Scand.* 1973; 139(7):625-8.

The Nigerian Health Journal, Volume 22 No 1, January to March 2022

www.tnhjph.com

A Publication of Nigerian Medical Association, Rivers State, Nigeria