Surgical Excision Versus Ultrasound-Guided Treatment of Symptomatic Wrist Ganglia in Pediatric Patients

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INTRODUCTION: Multiple treatments exist for pediatric patients presenting for evaluation of wrist ganglia, most commonly surgical excision or percutaneous treatment. Treatment modality is often dictated by patient preference and recurrence rate. Compared with adult literature, treatment outcomes of wrist ganglia in children are less examined. This study examines recurrence rates of wrist ganglia after surgical excision and ultrasound-guided treatment (USGT) in a pediatric population.

METHODS:

Retrospective review of patients treated for ganglia from January 2015 to February 2020 at a free-standing, tertiary referral, academic children's hospital. Patients aged 0–18 years were included who had surgical excision and/or PUG aspiration performed for ganglia of the wrist with a minimum 1-year follow-up. Excisions were performed by pediatric hand surgeons. A small number had initial blind aspiration in office by a pediatric orthopedic surgeon. The rest were performed with ultrasound guidance by a pediatric musculoskeletal radiologist and were treated separately in analyses. Aspirations performed by radiologists included fenestration and steroid/local anesthetic instillation under ultrasound guidance followed by compression and brace wear. Clinic notes and/or post-procedural calls were utilized to verify recurrence. Procedures with less than 1 year follow-up were excluded except when recurrence was definitively noted.

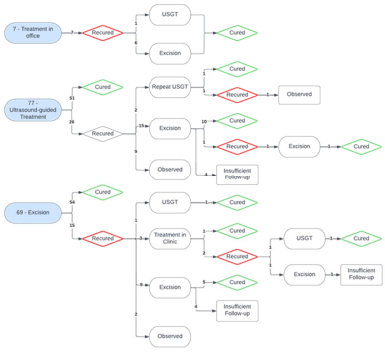
RESULTS:

153 patients underwent surgical excision or aspiration for a wrist ganglion. Mean age was 12.4 years old (range 1 - 18 years). Female to male ratio was 2.4:1. 7 patients underwent in-clinic aspiration by a pediatric orthopedic surgeon without ultrasound; all 7 experienced recurrence. Six of these later underwent surgical excision and one elected PUG with no recurrence in any of the patients.

70 patients underwent surgical excision, 16 experienced recurrence (23%). 79 patients underwent PUG treatment by a radiologist, 27 experienced recurrence (34%). The difference between the two groups was statistically insignificant (p=0.14). There was no significant difference in age (p=0.43), gender (p=0.68), or location of the ganglion(p=0.86) between those who experienced recurrence versus not. Treatment choices for recurrent ganglia following surgery or image-guided intervention (N = 41) varied: 11 elected observation, 24 elected surgical excision, 3 elected aspiration by radiology, and 3 elected aspiration in office. Of those undergoing a 2nd procedure for treatment of their ganglion cyst, 18 experienced no recurrence (60%), 4 experienced recurrence (13%), and 8 had insufficient follow-up since the second procedure to determine recurrence (26%). There was no statistically significant difference between aspiration or excision in recurrence in patients that had received prior treatment (p=0.29).

DISCUSSION AND CONCLUSION:

USGT of wrist ganglia is a reasonable treatment choice for pediatric patients and has a non-inferior recurrence rate to surgical excision, with recurrence rates of 34% and 23%, respectively. For patients that require subsequent treatment, recurrence rates are similar between USGT and surgical excision. Parents of children with wrist ganglia should be educated about treatment options and recurrence rates with USGT of ganglia offering several advantages in a pediatric population including avoidance of general anesthesia, decreased recovery time, and non-inferior recurrence rates. Patients should have age-appropriate involvement in management decisions regarding treatment of wrist ganglia.



	Initial procedure		
	Excision	USGT	p-value
Total patients	69	77	
Age (mean ± SD)	10.9 ± 4.2	13.5 ± 3.2	<0.001*
Female	48	54	
Male	21	23	1
Female:Male	2.3	2.3	
Dorsal	43	57	
Volar	26	20	0.154
Dorsal:Volar	1.7	2.9	
Recurrence	15	26	
No Recurrence	54	51	0.14
Recurrence rate	22%	34%	

	Recurrence		
	Yes	No	OR (95% CI)
Total patients	41	105	
Age (mean ± SD)	12.3 ± 4.0	12.2 ± 3.5	1.048 (0.945 - 1.162)
Male	13	31	0.873 (0.396 - 1.979)
Female	28	74	
Female:Male	2.2	2.4	
Dorsal	17	49	0.895 (0.385 - 2.001)
Volar	12	34	
Dorsal:Volar	1.4	1.4	
Excision	15	54	2.064 (0.939 - 4.715)
USGT	26	51	