

Recurrence of GCT Based on Adjuvant Use

Adrian Lin¹, Annika Myers², Brandon Gettleman³, Abigail Padilla², Michael Colello², Bruce Pawel², Tishya Wren², Vernon Tolo², Alexander B. Christ^{2,3}

¹David Geffen School of Medicine, Los Angeles, CA, ²Children’s Hospital Los Angeles, Los Angeles, CA,

³University of California, Los Angeles, Department of Orthopedic Surgery, Los Angeles, CA

Alexander.b.christ@gmail.com

Disclosures: Adrian Lin (N), Annika Myers (N), Brandon Gettleman (N), Abigail Padilla (N), Michael Colello (N), Bruce Pawel (N), Tishya Wren (N), Alexander B. Christ (Onkos Surgical Inc., Smith & Nephew, Inc., Zimmer Biomet Holdings, Inc., Stryker, Daiichi Sankyo, Globus Medical, Inc.)

INTRODUCTION: Giant cell tumor (GCT) of bone is a rare, benign tumor most commonly diagnosed between the ages of 20 and 40 years. They are locally aggressive and often require surgical intervention, typically with the use of adjuvants. Previous literature has shown the effectiveness of various surgical adjuvants used for GCT in adult patient populations. However, data on pediatric patients is limited. The aim of this study is to analyze whether GCT recurrence is influenced by the type of surgical intervention performed in pediatric patients.

METHODS: A retrospective review of patients from 2004-2024 treated surgically for a pathologically confirmed GCT at a tertiary pediatric hospital was conducted. Data on treatment techniques and recurrence rates were collected. Statistical analysis was performed using Fisher’s Exact tests.

RESULTS SECTION: The study involved 10 patients with an average age of 16±1.2 years and a mean follow-up of 1.8±1.3 years (Table 1). The cohort included seven females and three males. The most common locations for GCT were the tibia (40%) and femur (30%). Adjuvants were used in all 10 cases (Table 2). Recurrence occurred in four out of 10 patients (40%), all of whom received a high-speed burr and liquid nitrogen. None of the adjuvants, including high-speed burr, coagulation/argon, liquid nitrogen, and H2O2, were predictive of recurrence (p>0.05).

DISCUSSION: In this small pediatric cohort, the rate of local recurrence was higher than in previously published adult cohorts, despite the use of widely accepted surgical adjuvants. Our study shows that all patients who experienced recurrence were treated with a combination of high-speed burr and liquid nitrogen, indicating that adding argon coagulation and/or hydrogen peroxide might be beneficial in these cases.

SIGNIFICANCE/CLINICAL RELEVANCE: (1-2 sentences): These findings justify further studies on pediatric GCT treatment outcomes to help guide physicians in choosing the best surgical approach for these patients.

IMAGES AND TABLES:

Table 1. Patient Demographics	
	N=10
Age (years)	16 ± 1.2
Follow-up (months)	1.8±1.3
Sex	
Male	3 (30.0%)
Female	7 (70.0%)
Tumor Location	
Tibia	4 (40.0%)
Femur	3 (30.0%)
Fibula	2 (20.0%)
Humerus	1 (10.0%)

Table 2. Adjuvant Administration	
Individual Adjuvants	N=10
Liquid Nitrogen	9 (90.0%)
High-Speed Burr	8 (80.0%)
H2O2	2 (20.0%)
Coagulation Argon	1 (10.0%)
Adjuvant Combinations	
Liquid Nitrogen and High-Speed Burr	7 (70.0%)
Liquid Nitrogen and H2O2	1 (10.0%)
Liquid Nitrogen, H2O2, and Coagulation	1 (10.0%)