

Outcomes Following Ankle Arthrodesis in Hemophilia: Analysis using the Universal Data Collection Surveillance Project

Heidi Lane, PT, DPT, PCS¹, Azfar-E-Alam Siddiqi, MD PhD², Robina Ingram-Rich, RN, MS, MPH³, Patricia Tobase, PT, DPT, OCS⁴, R. Scott Ward, PT, PhD⁵, the Universal Data Collection Joint Outcome Working Group, the U.S. Hemophilia Treatment Center Network Study Investigators, and the U.S. Centers for Disease Control and Prevention, National Center for Birth Defects and Developmental Disabilities, Division of Blood Disorders

¹Intermountain Hemophilia and Thrombosis Center, Primary Children's Medical Center, Salt Lake City, UT, ²Division of Blood Disorders, Centers for Disease Control and Prevention, Atlanta, GA ³Hemophilia Center, Oregon Health & Science University, Portland, OR, ⁴Hemophilia Treatment Center, University of California, San Francisco, San Francisco, CA, ⁵Department of Physical Therapy, University of Utah, Salt Lake City, UT



INTRODUCTION

- In persons with hemophilia (PWH), repeated ankle hemarthroses lead to pain, loss of joint range of motion (ROM), and limitations in activity and participation.
- PWH consider surgical ankle arthrodesis (AA) or fusion primarily to eliminate pain.
- In our experience, PWH are hesitant to proceed with AA due to concerns of gait anomalies, functional decline and complete loss of ROM.



Tibiotalar arthrodesis



Talocalcaneal arthrodesis

OBJECTIVES

- The purpose of this project is to report selected outcomes available in Centers for Disease Control and Prevention's Universal Data Collection surveillance project (UDC) for PWH who have undergone AA.
- Outcomes of interest, pre- compared to post-AA:
 - Measures in activity (UDC self reported activity scale & use of assistive device for ambulation)
 - Measures in participation (number of days missed from school/work)
 - Measures of body structure (ROM, in degrees via goniometry)

UDC Self-reported Activity Scale

34. Check the statement which best describes the patient's current overall activity level:
- Unrestricted school/work and recreational activities
 - Full school/work with limited recreational activity levels due to pain, loss of motion, weakness
 - Limited school/work and recreational activity levels due to pain, loss of motion, weakness
 - Limited school/work, recreational activity levels, and self-care activity levels due to pain, loss of motion, weakness
 - Requires assistance from another person for school/work/self-care, and unable to participate in recreation due to pain, loss of motion, weakness

METHODS

- Sixty-eight males with hemophilia enrolled in the UDC with first report of AA, 1998-2010, were identified.
- The UDC was a CDC-funded study conducted at ~130 hemophilia treatment centers across the U.S.
- Descriptive statistics were calculated using data collected from the annual study visit pre-AA and the 2nd annual study visit (2 years) post-AA:
 - For the self-reported activity scale, a dichotomous variable, representing high and low activity levels, was created by merging the top two "least" limited and the remaining three "more" limited options.
 - Use of an assistive device for ambulation was evaluated as never versus intermittent/always.
 - Absenteeism from school or work was evaluated as mean number of days missed before and after AA.

RESULTS

- Demographics and clinical characteristics of the 68 subjects:
 - mean age 36.9 (SD 12.9) years
 - 85.3% white, 11.8% black, 8.8% Hispanic
 - 58 (85.3%) hemophilia A, 10 (14.7%) hemophilia B
 - 49 (72.0%) severe, 14 (20.6%) moderate, mild 5 (7.3%)
 - 7 (10.3%) with inhibitor at least once during the study period
 - 38 left ankle, 30 right ankle

Self Reported Activity level	N (%)
Improved after fusion	8 (11.8)
Got worse after fusion	6 (8.8)
No change	54 (79.4)

Use of assistive device for ambulation	N (%)
Stopped using after fusion	13 (19.1)
Started using after fusion	13 (19.1)
No change	42 (61.8)

Absenteeism from School/Work (Mean days missed)	Mean (SD)
Before arthrodesis	2.7 (6.4)
After arthrodesis	1.5 (6.4)

*p=0.26 (sample size likely too small to detect statistical significance)

Average change in ankle ROM (in degrees)		
	Mean change in ROM (SD)	p-value
Complete arc	-17.02 (21.8)	<0.01
Dorsiflexion	-3.9 (10.12)	<0.01
Plantarflexion	-13.12 (19.49)	<0.01

Note: negative number reflects a loss in ROM

Comparison of Average ankle ROM pre- and post-arthrodesis (in degrees)		
Plane of motion	Before arthrodesis (n=51)	After arthrodesis (n=51)**
Complete arc	29.96 (20.89)	12.94 (15.5)
Dorsi flexion	2.27 (9.85)	-1.63 (7.17)
Plantarflexion	27.69 (17.6)	14.57 (15.01)

**Comparison restricted to patients with complete set of ROM measurements for both pre- and post-arthrodesis

CONCLUSIONS

- These data suggest most individuals experienced maintenance of physical activity, decreased work/school absenteeism, and no change in use of AD for ambulation.
- As expected, ankle ROM was significantly reduced, but within a functional range for ambulation.
- Patients considering AA should expect maintenance of activity and participation with some loss in ankle ROM.

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Limitations:

- small sample size, lack of assessment of changes in pain, lack of knowledge of specific joint(s) included in each AA.

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