9:20 – 9:50 am

JOURNAL CLUB:
Best Article I Read This Year

Moderator:

W. Bret Smith DO, MSc
(Lexington, South Carolina)

JOURNAL CLUB: 9:20 am

Mark E. Easley, MD
(Durham, North Carolina)

Selected Article:

Classification and Treatment of Supramalleolar Deformities
Markus Knupp, MD; Sjoerd A.S. Stufkens, MD; Lilianna Bolliger, MSc; Alexej Barg, MD; Beat Hintermann, MD,
Foot & Ankle International, Vol. 32, No. 11, November 2011

Relevance:

1. Contributes new information to the current body of orthopaedic literature on this topic.

In reviewing available literature on supramalleolar osteotomies, the limited number of patients in small case series afforded limited practical information for when to employ and how to best perform supramalleolar osteotomies.[1-12] The authors’ recommendations are based on considerable experience with supramalleolar osteotomies. This series of 92 patients (94 ankles) is, to my knowledge, the largest series of supramalleolar osteotomies.

2. Provides a useful classification system.

These authors furthered my understanding that all supramalleolar deformities are not alike and should thus not be treated alike. In my opinion, while the Takakura classification system serves as the foundation for varus supramalleolar deformity,[10-12] it did not influence the type of osteotomy or adjunctive procedures that were recommended. To my knowledge, it is not until Knupp et al.’s article that the various types of varus or valgus deformity are comprehensively described and used as a foundation for treatment recommendations. Moreover, these authors further supported that supramalleolar deformity is not always isolated to the coronal plane; their classification includes sagittal plane deformity, described previously,[10-12] but defined in greater detail in this investigation.

3. Introduces a practical treatment algorithm.

To my knowledge, this study provides the first comprehensive treatment algorithm for supramalleolar deformity, complete with recommendations for adjunctive soft-tissue and osteotomies of the foot. Moreover, controversy exists when a fibular osteotomy should be considered.[4, 8, 10-13] Knupp et al.
add their insights, suggesting that fibular osteotomy is not routine in all cases of supramalleolar deformity correction but are consistently employed for congruent valgus joint (type I) and incongruent valgus joint centered on the lateral view (type IIC).


The authors coherently present their patient population and results of treatment. The discussion provides practical interpretation of their results, including an explanation when supramalleolar osteotomy may not be an effective treatment option.

5. The authors’ conclusions support the purpose/hypotheses.

In my opinion, the authors clearly defined their 3-part purpose:

“(1) determine the clinical and radiological outcome after supramalleolar osteotomy; (2) evaluate the usefulness of this novel classification method; and (3) determine risk factors for failure of supramalleolar osteotomies.”

and their conclusions are not overstated with an acknowledgment that more information is needed.

“In conclusion, the mid-term results following supramalleolar osteotomies in patients with midstage arthritis of the ankle are encouraging. Postoperatively, significant pain relief and improvement of the AOFAS hindfoot score were observed. However, to achieve a well balanced ankle joint, an isolated supramalleolar osteotomy may not be sufficient in all cases. The suggested classification system helps to distinguish different types of ankle joint arthritis and eased preoperative decision making for us. Its prognostic value will still have to be assessed in larger series.”

6. The article changes/broadens my orthopaedic practice.

I now have a better guide to my approach to supramalleolar osteotomies and associated procedures.

7. The authors make effective use of tables and figures.

The figures and tables complement the text effectively, with independent comprehensive and relatively easy-to-follow classification and treatment flow charts for varus and valgus deformity. The tables provide relevant detail of additional procedures the investigators performed in conjunction with supramalleolar osteotomy for each type of supramalleolar deformity; in my opinion, particularly practical information for the reader wanting to learn more about the surgical approaches to these deformities. The tables provide an effective overview of clinical results (based on commonly used outcome measures), radiographic results (using commonly measured radiographic parameters), and progression of arthritis (using a pre-existing arthritis scoring system).

8. The authors support their results with appropriate statistical analysis.

“All experimental data were summarized using descriptive statistics, including the mean, standard deviation, 95% confidence interval, and range. Pre- and postoperative data were compared by Wilcoxon rank-sum test. Assessments of differences
in the outcomes between patient groups (e.g., age, gender, arthritis stage, deformity type) were performed using Kruskal-Wallis analysis or Mann-Whitney rank-sum testing where appropriate. A p < 0.05 was considered significant.”

While to my knowledge not directly stated in this article, I am led to believe that the data was analyzed by an investigator with dedicated training in statistical analysis.

9. The article includes a detailed analysis of the failures.

From personal experience I have learned that not all supramalleolar deformities can be successfully treated with supramalleolar osteotomy with or without supplemental soft-tissue balancing or foot osteotomies. I greatly appreciate the authors providing a detailed description of their failures, in particular the asymmetric varus types II and III. Anecdotally, I concur with these findings.

“In accordance with earlier observations,[12] the highest failure rate was in patients presenting with type III varus deformities. We therefore believe that the main risk factors for failure in supramalleolar osteotomy are osseous imbalance (e.g., noncorrected fibula), ligamentous insufficiency and ankles withintraarticular varus arthritis (type III).”

(Figure from “Classification and Treatment of Supramalleolar Deformities” Markus Knupp, MD1; Sjoerd A.S. Stufkens, MD2; Lilianna Bolliger, MSc1; Alexej Barg, MD1; Beat Hintermann, MD1 Foot & Ankle International/Vol. 32, No. 11/November 2011, printed with permission.)

Why I chose this article?

I have been performing supramalleolar osteotomies based on anecdotal experience and retrospective case reports (Level IV and V evidence).[1, 4, 6-8, 10-13] I have had some success with supramalleolar osteotomies in treating tibiotalar arthritis but have also observed cases in which attempted realignment did not correct deformity, failed to relieve symptoms, or both. While this article is not a Level I prospective randomized trial, it offers a rational approach to when supramalleolar osteotomies should be utilized. In my opinion, the useful information in this article, presented in a logical and practical manner, has been long overdue.

References