

## The Use of SPECT-CT in the Diagnosis and Surgical Decision Making for the Treatment of Muller-Weiss Disease. A Prospective Study.

ShuYuan Li, MD, PhD, JianZhong Zhang, MD

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**Introduction/Purpose:** Muller Weiss disease (MWD) is an idiopathic avascular necrosis of the navicular, caused by abnormal forces on the immature navicular. The disease is characterized by hindfoot varus, a paradoxical flatfoot deformity, and middle foot pain associated with arthritis. According to Maceira the progress of the disease can be divided into five stages, with the increasing of deformity and fragmentation. However, the stage of disease does not correspond with an increase in symptoms. In addition, neither XR nor CT provides sufficient information to assist with clinical decision making. For early stage cases with minimal clinical and radiological changes, diagnosis is difficult, and for advanced cases, with extensive arthritis and deformity, it is difficult to distinguish which joints are involved in the disease process.

**Methods:** We present the use of SPECT-CT in the diagnosis and surgical decision making for the treatment of Muller-Weiss Disease. We propose that it will be helpful to make the diagnosis of early stage disease, and facilitate decision making with respect to the involved joints in advanced disease. The use of SPECT-CT is particularly helpful when the arthritis appears to include both the talonavicular (TN) and navicular-cuneiform (NC) joints, but may isolate one or more joints which require arthrodesis. 5 cases of MWD were prospectively studied with SPECT-CT. There were 4 females and 1 male with a mean age of 52 years, and each with a different stage of the disease process. The clinical outcomes of the treatment were evaluated. We present the unique findings of each patient and the use of SPECT-CT in planning treatment. One patient was successfully treated non operatively with orthotic support.

**Results:** One patient was treated with an isolated talonavicular arthrodesis despite radiographs demonstrating arthritis in the NC joint, but with a normal SPECT CT at that joint. One patient was treated with a triple arthrodesis when the SPECT CT did not support the radiographic findings of involvement of the NC joints. One patient who had a positive uptake of both TN and NC joints on SPECT CT underwent a TN-NC arthrodesis. One patient underwent a triple arthrodesis, but with continued pain, and the SPECT CT was able to clarify the source of pain not as a non union but as arthritis of the NC joint.

**Conclusion:** SPECT CT was found to be accurate and predict the course of treatment in these five cases. It is very useful in early diagnosis as well as decision making of advanced stage MWD, with a high sensitivity and ability to specify the clinically involved joints, which had not been possible with plain radiographs in any of these patients.

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