

# The Diple Arthrodesis

Markus Knupp



# Introduction

## History

**Correction of sequels of paralytic disease**

**Aim: plantigrade and stable foot**

**Technique: Subtalar, TN, CC Joint fusion**



# Introduction

## History

Correction of sequels of paralytic disease

Aim: plantigrade and stable foot

Technique: Subtalar, TN, CC Joint fusion

Later: extension of the indication to correct arthritic joints



Despite extension to fundamentally different problems only limited modifications to the technique were suggested



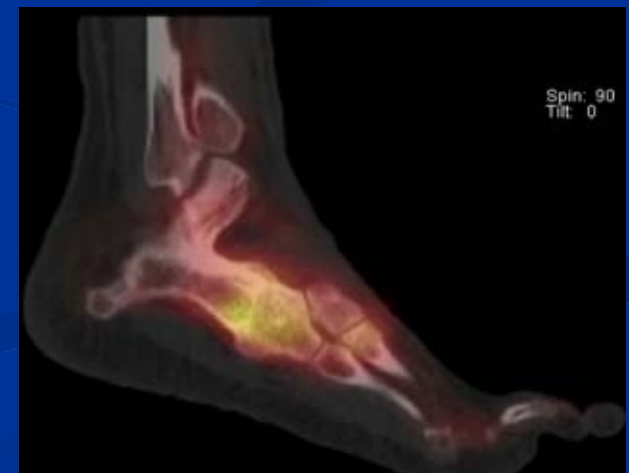
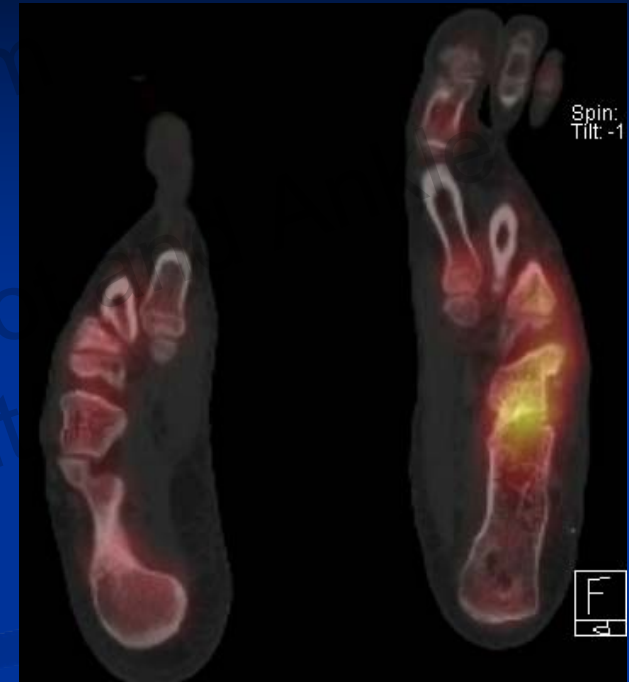
# Critical Aspects

## Calcaneo-cuboidal joint

Risk for nonunion

Shortening lateral column: difficult reduction

Risk for adjacent joint arthritis



# Critical Aspects

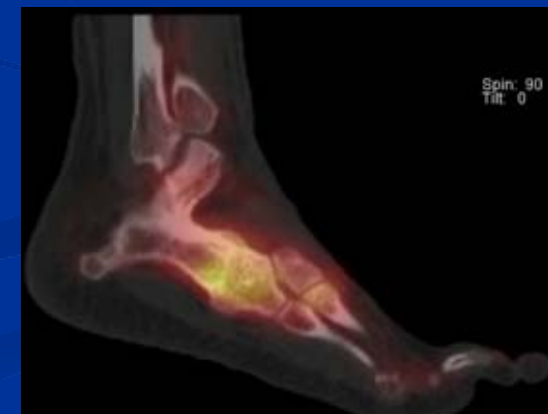
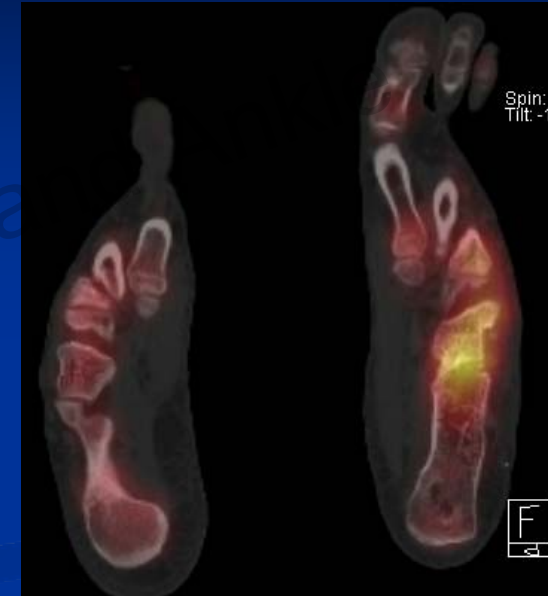
## Arthrodesis of the Subtalar and Talonavicular Joints for Correction of Symptomatic Hindfoot Malalignment

Vincent J. Sammarco, M.D.<sup>1</sup>; Edward G. Magur, M.D.<sup>2</sup>; G. James Sammarco, M.D.<sup>1</sup>; Mahesh R. Bagwe, M.D.<sup>3</sup>  
Cincinnati, OH

Sammarco VJ et al Foot Ankle Int. 2006

Sparing the CC-Joint: equal results (16 feet)

- Reduction of operative time
- Risk of nonunion



## Critical Aspects

Wound healing

→ Incision on tension side



## Critical Aspects

### Wound healing

### Single medial incision

### Feasibility

- Jeng et al, Foot Ankle Int, 2006
  - improved visualisation of the transverse tarsal joints
  - diminished risk during debridement for posteromedial structures

## Critical Aspects

### Wound healing

#### Single medial incision

##### Feasibility

- Jeng et al, Foot Ankle Int, 2006

##### Reduction of wound healing problems:

- Jeng et al, Foot Ankle Clin. 2005
- Brilhault, Foot Ankle Int. 2009



# The Diple Arthrodesis

**Isolated subtalar and talonavicular arthrodesis through a single medial approach.**

## Modified Triple

Subtalar and talonavicular arthrodesis

→ Sparing of the CC Joint

single medial approach

→ No wound on the tension side



# Goals

## Triplane Correction of

### Hindfoot valgus



# Goals

## Triplane Correction of

Hindfoot valgus

Flattening of arch



# Goals

## Triplane Correction of

Hindfoot valgus

Flattening of arch

Forefoot abduction



# Goals

## Triplane Correction of

Hindfoot valgus

Flattening of arch

Forefoot abduction

Forefoot supination



# Technique



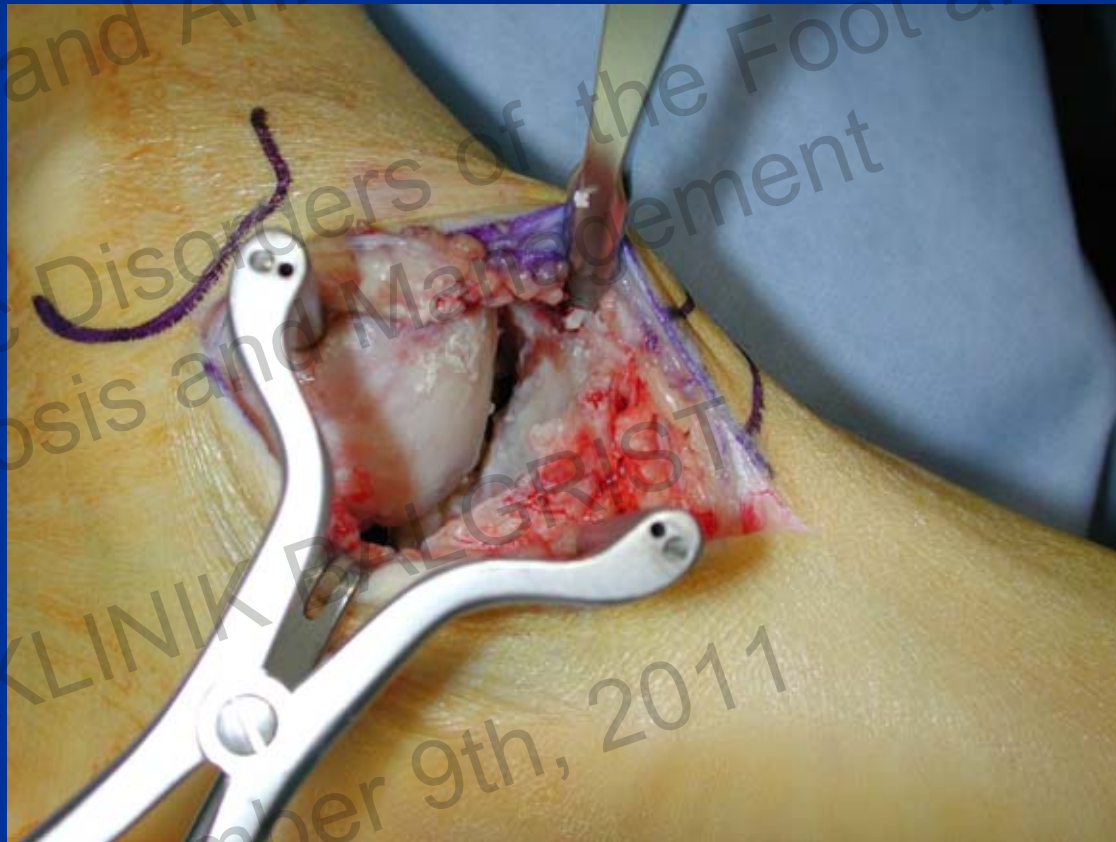


# Technique





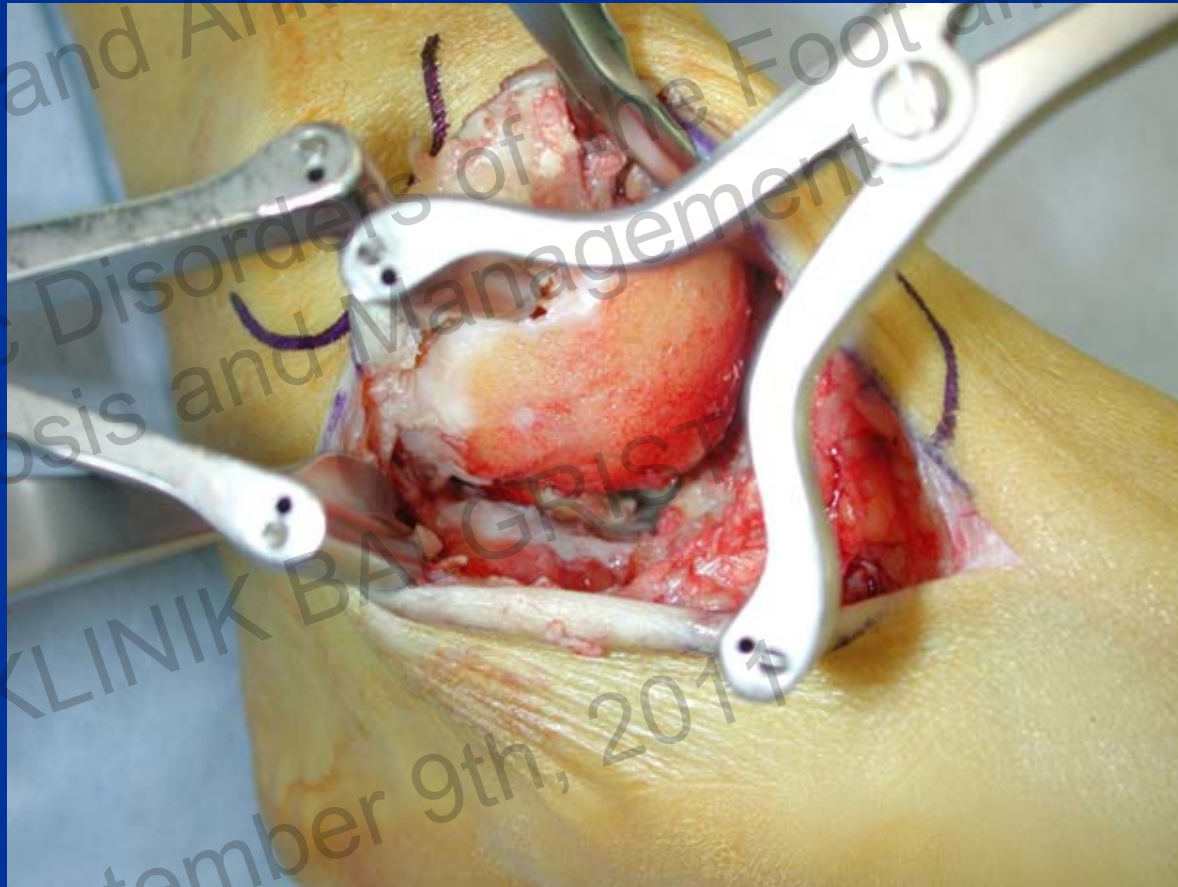
# Technique



# Technique

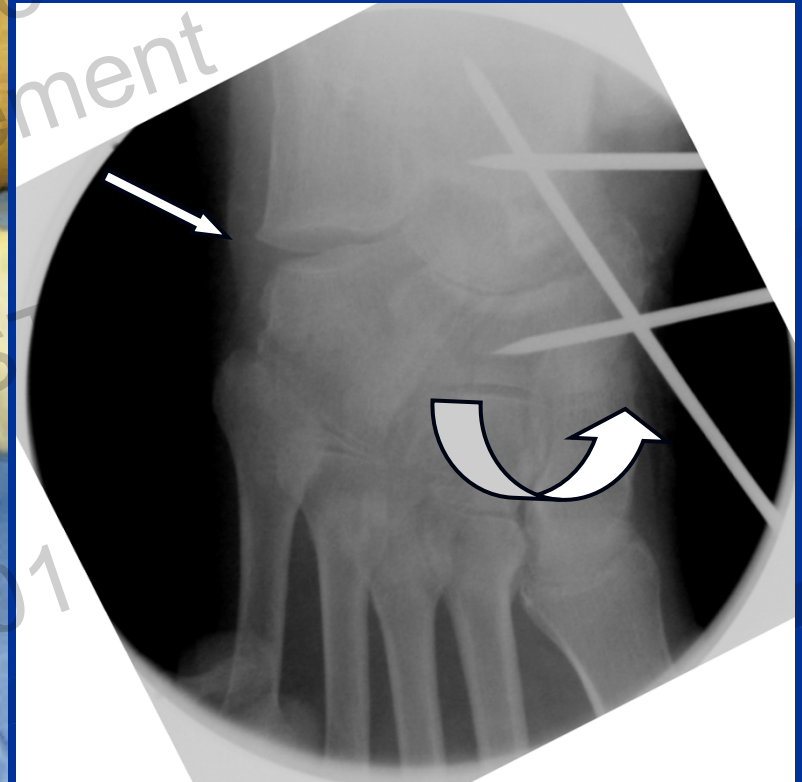


# Technique





# Technique



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3rd Foot and Ankle Symposium  
Arthritic Disorders of the Foot and Ankle  
Diagnosis and Management  
UNIKLINIK BALGRIST  
September 9th, 2011

# Technique







## Subtalar and talonavicular arthrodesis through a single medial approach for the correction of severe planovalgus deformity

2009

### Purpose

**Radiologically assessment to which extent deformity of the hindfoot can be corrected by isolated subtalar and talonavicular fusion**

**Early complications of a single medial incision**

## Results

### Patients:

**34 consecutive patients, 36 'Diple' arthrodesis (2005-2007)**

**Gender:**

**f: 22, m: 12**

**Follow-up:**

**21 months (13-37 months)**

**Age:**

**70 years (52-86 years)**

## Results

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### Wound healing

superficial wound healing problems

3

cast-related pressure ulcer

1 (diabetic patient)

deep infections

none

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### Radiological result

Fusion in all feet

Significant improvement of all radiological parameters ( $n < 0.01$ )

## Limitations

67 y, f, BMI 39



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67 y, f, BMI 39





**Limitations:** 67 y, f, BMI 39

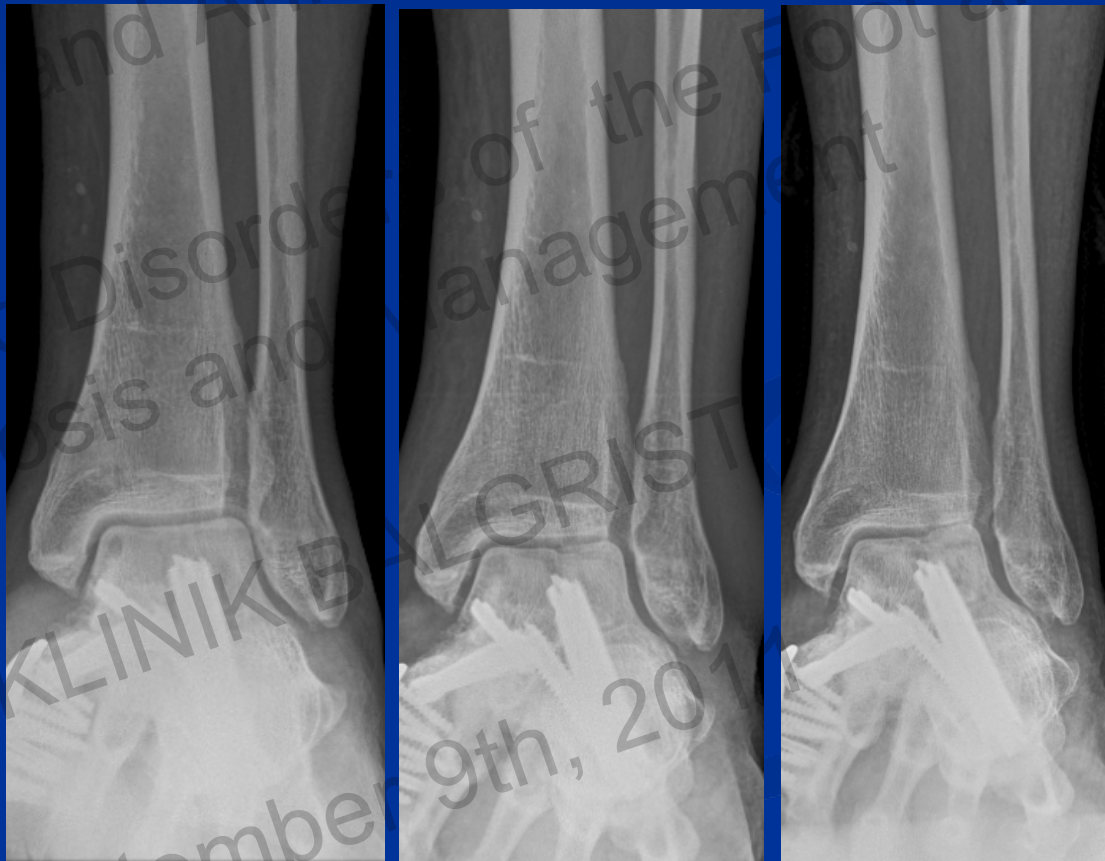




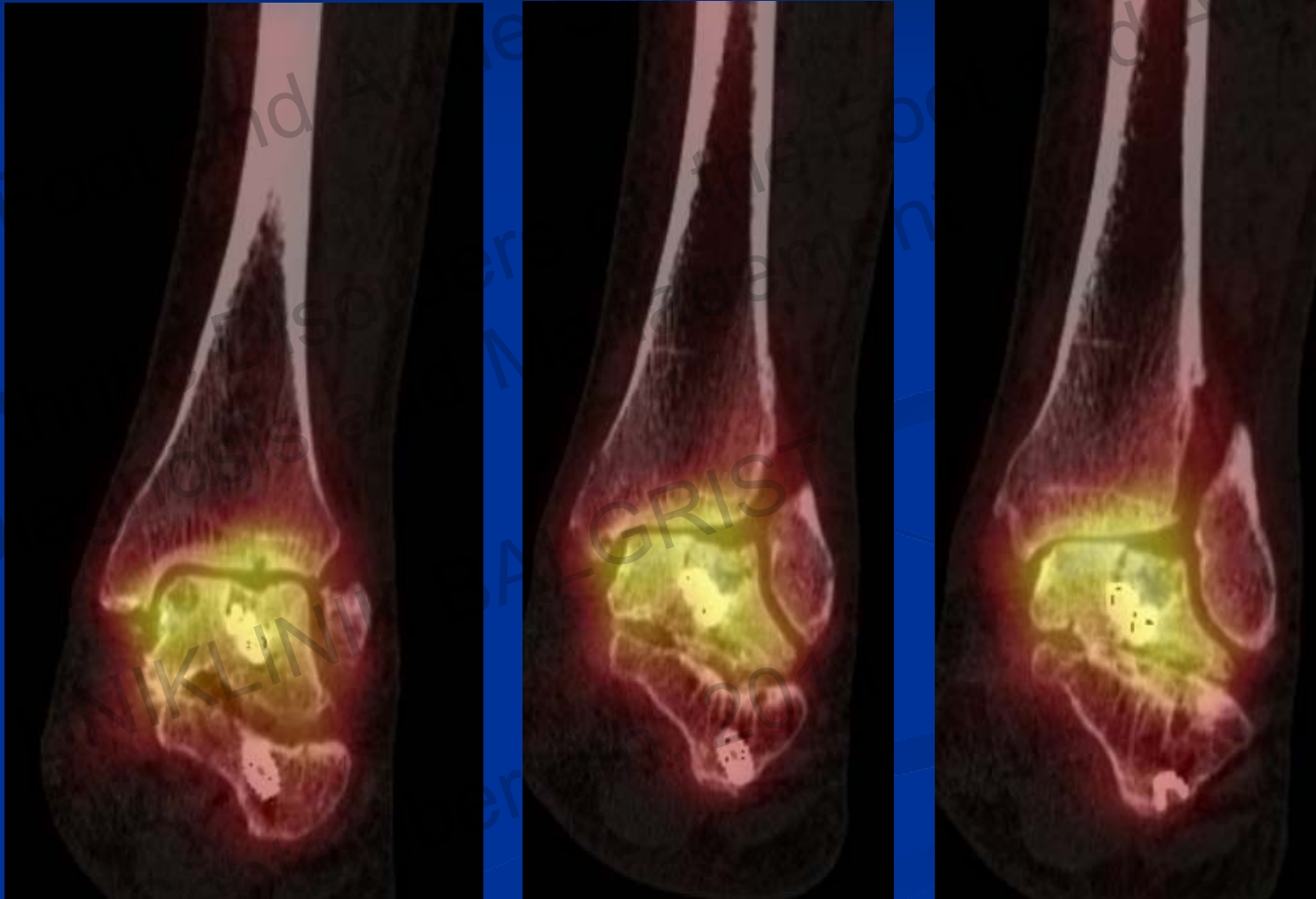
## Failures: 66 y, m, healthy



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**Failures: 66 y, m, healthy**

**No screws posterolaterally**





## Failures: 52, IDDM, M. Addison, Rupture TP Tendon



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6 months



12 months

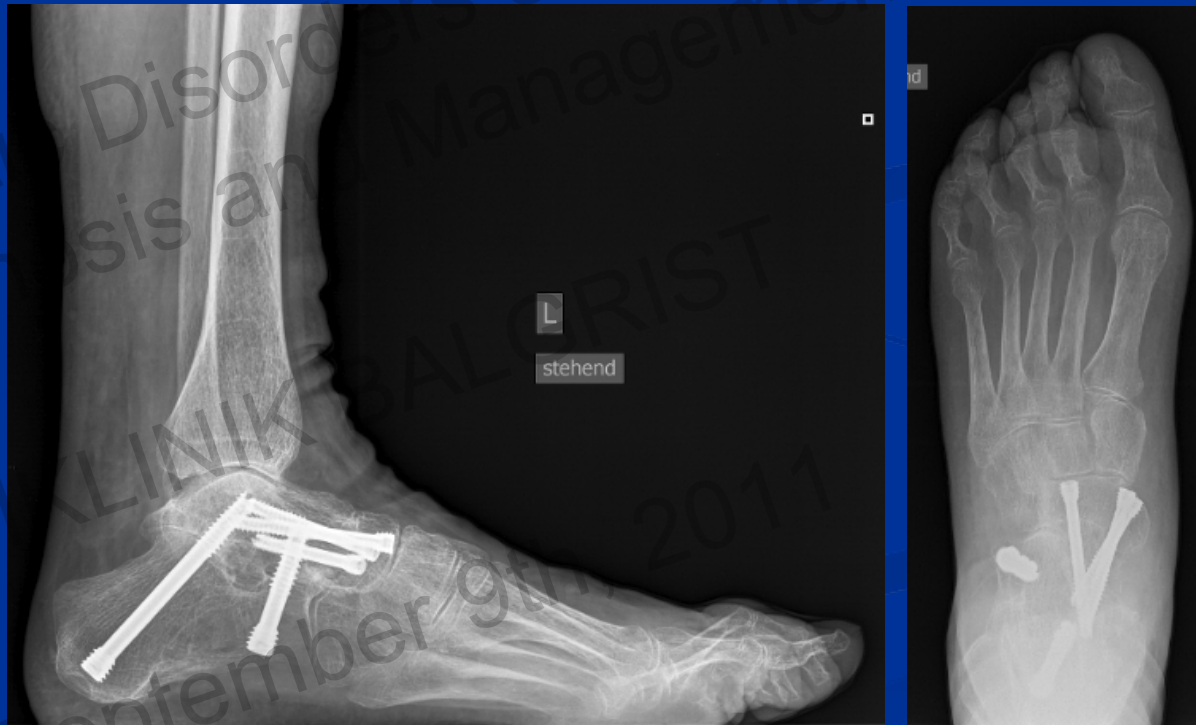


18 months



## Discussion

**Isolated TN and subtalar fusion through an isolated medial approach allows for good correction**

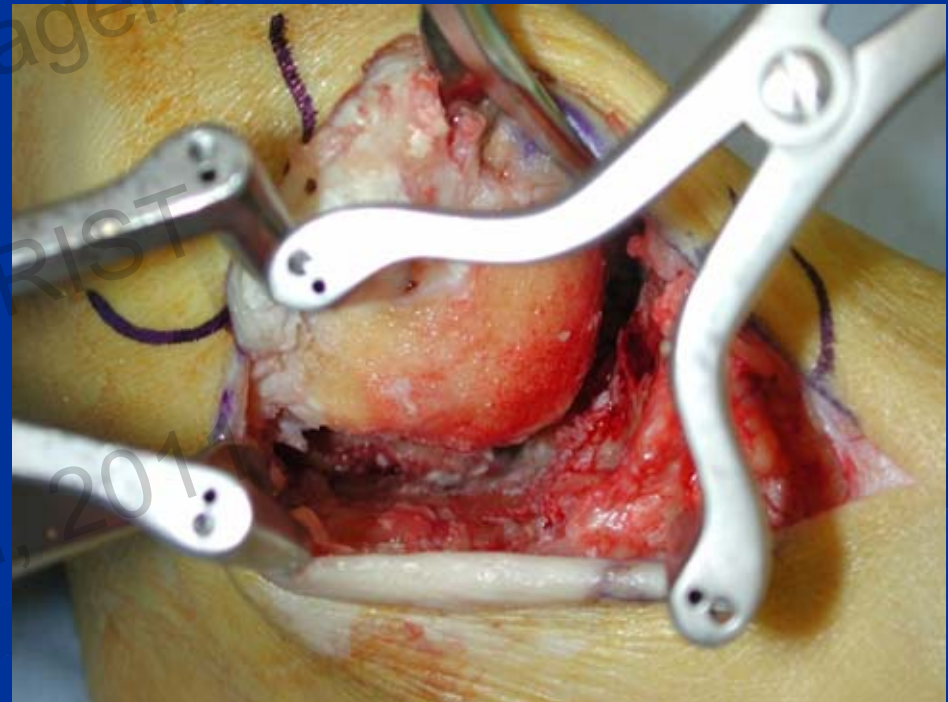




## Discussion

**Isolated TN and subtalar fusion through an isolated medial approach allows for good correction**

**Isolated medial approach leads to a good view of the joints**



## Discussion

Isolated TN and subtalar fusion through an isolated medial approach allows for good correction

Isolated medial approach leads to a good view of the joints

wound healing complications occur less frequently than with the lateral approach

