Interpositional arthrodesis of the first metatarsophalangeal joint using an iliac crest bone graft

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Background

► **Functional insufficiency** after resection arthroplasty or failed MTP I prosthesis can be treated with a MTP I interpositional arthrodesis.\(^{(1+2)}\)

► A MTP I interpositional arthrodesis can **restore the length of the first ray** after resection arthroplasty.\(^{(2)}\)

► MTP I interpositional arthrodesis leads to a **stable and resilient first ray**.\(^{(3)}\)

► Published **nonunion rate**:  
  - asymptomatic nonunion in 1/12 patients\(^{(4)}\)  
  - 5/24 nonunions with 60% being symptomatic and revised\(^{(5)}\)

► Published **clinical results**:  
  - postoperative AOFAS score of 70 points (maximum 90 points)\(^{(4)}\)  
  - no patient was absolutely pain free postoperatively\(^{(4)}\)  
  - postoperative AOFAS score of 79 points (maximum 95 points)\(^{(5)}\)  
  - postoperative FAAM-Score for ADL/sports 97.3/91.3% for MTP I arthrodesis\(^{(6)}\)

► **The present study was conducted to evaluate the clinical and functional outcome after interpositional arthrodesis of the first metatarsophalangeal joint using an iliac crest bone graft.**
Material and methods

► Retrospective study with a follow-up examination

► 22 patients were included, 21 female, 1 male, age 63 ± 9.4 years

► Inclusion criteria:
  ▪ patients who received a MTP I interpositional arthrodesis with an iliac crest bone graft
  ▪ period January 2007 to June 2013

► Analysis of charts and x-ray images

► Follow-up examination 34.6 ± 18.4 month postoperatively including clinical and pedobarographical examination

► Evaluation of AOFAS Score, FAAM Score and pain level (NRS)
Results

Indication for MTP I interpositional arthrodesis:
- resection arthroplasty (45.5%)
- failed MTP I arthrodesis (22.7%)
- failed MTP I prosthesis (9.1%)

Complications:
- 20/22 patients (90.9%) showed a clinical and radiological union, two patients had an asymptomatic nonunion.
- 1/22 patient (4.5%) developed a wound infection of the iliac crest with consecutively antibiotic therapy.
Results

- Mean **AOFAS score** was 74.1 ± 13.6 points of a maximum of 90

- **FAAM score** for daily activities was 77% ± 19.8

- **FAAM score** for physical activity was 66% ± 35.9

- Eight patients reported a normal function of the foot, seven an almost normal, six a slightly abnormal and three a severely abnormal foot function (due to restricted motion of the MTP I joint)
Results

**Pedobarographic results:**
- Peak pressure under MTP I: operated foot 50.5 N/cm² ± 18.4
  contralateral foot 51.3 N/cm² ± 23.0
- Peak pressure under MTP II: operated foot 52.7 N/cm² ± 17.9
  contralateral foot 55.3 N/cm² ± 22.8
- Differences were **not significant**
Conclusions

- **Low complication rate** compared to literature

- **But:** three patients (13.6%) described a **severely limited function of the food, despite bony healing**

- **Comparable AOFAS-Score** to the literature

- The **FAAM score was lower** compared to primary MTP I arthrodesis

- **Comparable load bearing** characteristics to the opposite foot
References:


Authors: