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## ANKLE ARTHRODESIS: INDICATION AND RESULTS ABOUT 20 CASES IN THE ORTHOPAEDIC AND TRAUMA SURGERY DEPARTMENT OF THE DONKA NATIONAL HOSPITAL CHU OF CONAKRY GUINEA

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**Keywords:** Ankle, indication, result, arthrodesis.

### Abstract

The objective of our work is to assess the medium-term results of ankle arthrodesis through the study of a series of nine patients.

Patients and methods: This was a prospective study spanned between January 2015 and December 31, 2019, involving twenty cases of ankle arthrodesis performed in the trauma orthopedics department. The inclusion criteria were a traumatic etiology, osteoarthritis due to neglected trauma or sequelae, clinical and radiological evaluation. The indication for arthrodesis was made in the presence of pain associated or not with deformity, lameness and complete destruction of the tibiotalar joint.

Results: These were 14 men and 6 women with a sex ratio of 2.33. An average age of 43 years with extremes of 19 years and 67 years on the date of arthrodesis. The mean follow-up was  $24.80 \pm 20.57$  months with extremes of 5 and 67 months. Union was obtained within a mean time of  $19.75 \pm 7.21$  weeks with the extremes of 18 and 28 weeks. We evaluated 18 patients according to the AOFAS score (American Orthopedic Foot and Ankle Score). Our results were good in 85.71% of cases. One case of pseudarthrosis was observed.

Conclusion: The study of our series has enabled us to confirm the interest of arthrodesis in the treatment of post-traumatic ankle arthritis by ensuring both indolence and stability.

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### Introduction

The ankle arthrodesis blocks the talocrural joint, eliminating flexion-extension movements. Its goal is to obtain a painless, stable ankle and plantigrade support for the foot.

The first ankle arthrodesis was performed in 1879 by Albert, who first performed surgical ankylosis of the ankle to which he gave the name arthrodesis, and since about 40 open procedures have been described [4,7].

Numerous talocrural arthrodesis techniques have been described, the variations of which are mainly due to the route first used and the method of fixation. In our countries, the presence of sequelae, post-traumatic or post-infectious ankles, makes this type of intervention a gesture that is still relevant today. Elsewhere, talocrural arthrodesis is most often an indication for revision surgery for failure of total ankle prosthesis.

The objective of our work is to assess the medium-term results of ankle arthrodesis through the study of a series of nine patients.

Patients and methods: This was a prospective study over 5 years and 11 months from January 2014 to December 2019, relating to twenty cases of ankle arthrodesis performed in the orthopaedic traumatology department of the Donka National Hospital. Included in the study were patients admitted for a traumatic and arthritic aetiology secondary to neglected trauma, treated by arthrodesis, followed during the study period. We excluded any arthrosis of another origin, or arthrodesis for another indication. Our patient complained of pain associated or not with deformity, lameness and complete destruction of the tibiotalar joint. Radiologically, we used two preoperative views: anterior and lateral. The analysis focused on the assessment of bone lesions and tibiotalar joint spaces. The indication for arthrodesis was made in the presence of pain associated or not with deformity, lameness and complete destruction of the tibiotalar joint.

### Surgical technique and post-intervention follow-up protocol

All patients underwent a preoperative assessment with ankle radiography, combining profile and frontal view. The first route was pure anterior in two cases; pure lateral in five cases; anteromedial in seven cases and anterolateral in six cases. We had performed a fibular osteotomy twice to improve deformity correction and a



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homologous corticospongious iliac graft seven times. It was still an isolated talocrural arthrodesis. Our arthrodesis technique consisted, after an approach to the ankle, in an edging of the articular surfaces, in fixation by cancellous bone screws crossed in X. The ankle was in a neutral position in the three planes. Postoperative immobilization is ensured by a splint and then a cast boot maintained for twelve weeks.

Full support was cleared by the tenth week.

Rehabilitation has begun with the removal of the plaster cast and targeted the joints of the forefoot.

The postoperative evaluation was based on the stability of the ankle on clinical examination, and the presence or absence of pain. Frontal and lateral radiological images made it possible to assess consolidation by the appearance of callus covering at least 50% of the tibiotal space, as well as the alignment of the ankle.

### Method of analysis

Each patient benefited from protocolized follow-up with a systematic consultation on D45 and D120, including a radiographic assessment (face and profile), a handwritten statement of all incidents and complications. We used the AOFAS (American Orthopedic Foot and Ankle Score) score to assess our patients [4]. Data were entered into Excel software.

### Results

We had operated on twenty patients. The mean age at the time of the intervention was  $43 \pm 15.73$  years (19-67). This patient group includes 14 men and 6 women.

The indications which led to arthrodesis were 7 times vicious callus sequelae of bimalleolar fractures, 6 times osteoarthritis of the ankle, 5 times enucleation fractures of the neglected talus, 2 times bimalleolar non-union.(Figure 1 et 2)



*Figure 1: Preoperative image showing osteoarthritis of the ankle following a post traumatic bimalleolar fracture*



*Figure 2: Post-operative control after arthrodesis*

The mean time to treatment (trauma-consultation) was  $26.30 \pm 25.85$  months with extremes of 3 and 108 months. Union was obtained within a mean time of  $19.75 \pm 7.21$  weeks with the extremes of 18 and 28 weeks. We noted two cases of postoperative infections, one screw break, one case of non-union.

The mean follow-up was  $24.80 \pm 20.57$  months with extremes of 5 and 67 months. Of the twenty patients, we evaluated 18 patients according to the AOFAS score. Our results were good in 94.44% of cases. The mean postoperative AOFAS score is  $73.89 \pm 25.70$  (74 - 89).

## Discussion

The ankle is a complex joint undergoing a three-dimensional force: vertical compression, anteroposterior tangential, lateral-medial shear and rotation [4].

Ankle arthrodesis can be offered in several pathologies; it seems to retain the supremacy of treatment for painful destruction of the ankle. Indeed, pain has been the main complaint of our patients, which agrees with the data in the literature [3,11]. Osteoarthritis of the ankle is in more than 80% of cases of post-traumatic origin and becomes symptomatic and embarrassing in everyday life for the patient as a rule many years after the initial trauma [4,8]. This osteoarthritis is mainly manifested by pain with a major functional impact [6]. The first ankle arthrodesis was performed in 1879 by Albert, who first performed surgical ankylosis of the ankle to which he gave the name arthrodesis, and since about 40 open procedures have been described [3,2]. These techniques can be grouped into two groups: internal stabilization (screwing, anterior plate, bone grafts) or external stabilization using a fixator as a means of compressing the joint. Méary's technique was described by himself and was then widely distributed [1,7]. It consists of an antero-external approach which gives an excellent light on the anterior face of the joint, the fixation uses two screws crossed in all planes and the reconstitution of a continuous aponeurotic plane isolating the osteoarticular plane from the skin plane. [12]. Our mean postoperative AOFAS score is 73.89. Mognon [9] used guy-wire fixation his mean AOFAS score was 71.1. In Mohammed El Idrissi et al [10] who published the results of a series of 10 cases this score was 69.6 and in Kein et al. [5] who used external fixation it was 69.3. In our series we noted a case of pseudarthrosis; this may be explained by the reduced number of patients included in this study. If the main complication linked to Méary's technique is skin necrosis, gentle manipulation and closure of the fascia have enabled us to avoid such a complication in our patients.



### Conclusion

The tibiotalar arthrodesis method by anterior approach using internal fixation by two cancellous bone screws crossed in X with a neutral position of the ankle in the three planes, gave us an overall good result with 94.44% success. But studies with a long follow-up and a large workforce will validate this result and integrate this technique in the treatment of post-traumatic osteoarthritis of the ankle in our department..

**Links of Interest:** The authors declare that they have no links of interest.

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