

Surgical treatment of transthalamic fractures of the calcaneum

E CAMARA, G COPIN

Citation

E CAMARA, G COPIN. *Surgical treatment of transthalamic fractures of the calcaneum*. The Internet Journal of Orthopedic Surgery. 2009 Volume 15 Number 2.

Abstract

Stulz recommends a reconstruction – arthrodesis from the age 65 years, but with the time, there is a tendency to the occurrence of a primitive deformation. He recommends an astragalo-calcaneal arthrodesis sacrificing the sub astragal articulation, subsequently stiffness occurs in 45% of cases, also there might be difficulty of the walk and arthrosis. After describing the technique, the authors propose raising the calcaneum and a sub astragal arthrodesis in severe and multi fragment thalamic fractures with erosion of the cartilage. In all cases, an osteosynthesis of the calcaneum was performed using a multiperforated plaque type GECCO.

INTRODUCTION

Stulz (7) recommends in the primitive reconstitution arthrodesis since 1935. In 1956 when he went through the results from 30 screwings, however, he could note obvious tendencies to the reproduction of initial displacements and a impairment of the sub-astragalian articular flexibility in spite of a perfect restoration of this articulation”. This prompted him to perform a sub-astragalian articulation/joint arthrodesis.

More than 2 years after, it concluded that using clot astragalian arthrodesis to reduce bloody calcaneum by clot forming appears to be the best formula. From that time indications of this method have extended to all thalamic fractures.

With persistent tendency to initial displacement of thalamus, Copin () proposes, after reduction, the fixation of a multi-welled that fits to cortical external thalamus, in order to maintain the reduction and avoid secondary displacements.

THE SERIES

A total of 821 files of transthalamic fractures of the calcaneum were collected in 2002 in the department of foot surgery of Strasbourg’s Orthopedic and Traumatologic Center. They include 342 fractures on the right (41.6%), 423 on the left (51.5%) and, 56 bilateral fractures (6.9%). Male patients predominated with 508 cases (61.8%). The average patient age was 52 year. Extremes ages were 24 and 78 years, for the minimal and maximal, respectively. Most

cases were due to road accident (78%). These were followed by cases associated with to falls of all categories (11%), and sport accidents (1%).

TECHNIQUE

This aims to preserve sub-astragalian articulation using an electrical treatment.

This choice is made based on todensitometric study (4). The destruction/damage of the joint leads to a arthrodesis. Either screwing or setting of a standard multi-perforated plate study Group of orthopedic surgery (GECCO) depends on the state of the external cortical.

METHODS

The patient is installed in decubitus side. The Access is under external malleolaire with respect to the junction of the plantar skin and the dorsal skin, lifting a cutaneous sub-aponevrotic scrap without any sub-cutaneous dissection in other to preserve necessary vascularization for the scaring process. Lateral peroneal tendons are pushed/forced upwards.

The inserted thalamic fragment is not visible until external cortical is puffed outwards by the depression of thalamus.

The varus rocked movement of the heel on the edge of the wooden cassette over the operation standing permits to appreciate how serious the articular lesions are.

Either a case of cartilagineous abrasion or that of a multi

fragment fracture can justify the primitive sub-astragalian arthrodesis with withdrawal of the free cartilaginous fragments, often viewed under a scanner examination.

The first gesture consists in removing the articular cartilage using a chisel gouges. Then, revivement of the sub-chondral bone by perforation using a wick follows. It is then necessary to reproduce/rebuild the shape of the calcaneum by lowering the large tuberosity and by lifting the cortico-thalamic fragments which are fixed by a transverse screw at the sustentaculum tali. During this time, the arthrodesis is maintained either by multi-spindles or by calcaneo talian screw.

A X-ray inspection of the height of the astragalo calcanean block on the profile and of the axis of the heel/back of foot on the incidence retro tibiale is necessary.

In case of a sub-astragalian arthrodesis, the vacuum left in the calcaneum is not grafted. The wound is closed again under Redon and a boot of Graffin, with room heel formed post operationally with standing allowed on the 15th day.

Conventional osteosynthesis by pinning with frame, or screw is reliable only for the large thalamic fragments with intact cortical side serving as the support to the head of the screw.

When the extreme lateral cortical was multi-fragmented/has multiple fragments, an osteosynthesis using special multi holes, GECO (6) was performed in 43,5% of the cases.

The plate is fixed, according to the same procedure of SARAGAGLIA, in the osseous spans, in three points that cannot undergo any deformities in the presence of the plate.

RESULTS

In the 78 cases re-examined with upwards movement within 2 years, sub-stragalian osseous was obtained in all the cases. The per operatory reduction is obtained in 64%, and walking is satisfactory in 75% of cases. The mobility of the tibio-tarsian and the medio-tarsian is also preserved in 55% of the cases.

Walking difficulties persist on unlevelled ground in one out of four cases.

Sub-talian arthrodesis is not common. In fact, controls above ten (10) years of 41 arthrodesis reconstitution has shown/raised the compensation overload of the medio-tarsian articulation arthrosic radio graphically 18 times (5) (does this mean the observation was graphically reported 18 times? It will help translation).

INDICATIONS

Based on the above results the primitive arthrodesis reconstitution should be recommended only in serious cases of joint fractures; that is in about 9% of cases (5)

CONCLUSION

The level of articular damage of the thalamus is the motive for performing Stulz primitive arthrodesis reconstitution in 9.5% of cases in the trauma center of strasbourg. Electrical therapy/treatment is provided in other cases. This is dependent upon the damage caused to the external cortical, and can explain the use multi-perforated plates (GECO) for reinforcement in 43.5% of cases.

References

1. BABIN SR, COPING, DOSSA J. Fractures thalamiques du calcaneum de l'adulte en pratique civile. Symposium Réunion SOFCOT 1988. Rev. Chir. Orthop. 1989, suppl. 1, 61-116.
2. COPIN G, Osthéosynthèse des fractures thalamiques par plaque multi trous GECO. Rev. Chir. Orthop. 1989 suppl 1, 92
3. COPIN G. fracture thalamique du calcaneum. Reconstruction arthrodesèe immédiate selon STULZ. Rev. Chir. Orthop, 1989, suppl. 1, 94
4. 3- COPIN G DUPUIS M., LEMERLE L Fracture thalamie du calcaneum. Interet de la tomodesnsitométrie. Rev Chir. Orthop, 1989, suppl. 1, 70-73
5. 2 -COPIN G., KEMPF J.F, SIMON P., NANIN S.R. La place actuelle de la reconstruction arthrodesèe de Stulz dans le traitement des fractures thalamiques du calcaneum. Med. Chir. Pied, 1987, 3, 1, 3-7 (avec bibliographie antérieure) à 1987)
6. 4 - COPIN G., TSOUKAS J. et LEHMANN H. Indications et résultats de la plaque GECO, dans le traitement des fractures thalamiques du calcaneum. Rev. Chir. Orthop., 1993, vol 79, N° spécial EFORT, N° 417.
7. COPIN G. Résultats plus de 10 ans, des fractures du calcaneum traitées par reconstruction arthrodesèe selon STULZ. Cinésiologie, 1982, 83 bis, 17-19
8. KEMPF, COPIN G. HOMAWOO E.K résultats plus de 10 ans, après traitement de fracture du calcaneum. Communication aux Journées d'Hiver de la SOFCOT, PARIS PARIS - 29 Janvier 1975
9. TSOUKAS J.S. Le traitement des fractures thalamiques du calcaneum à l'aide de la plaque multi trous GECO. Etude des résultats, à propos d'une série continue de 92 cas. Thèse STRASBOURG, N° 83

Author Information

El Hadj Souleymane CAMARA

Orthopedic Surgeon, Orthopedic and Traumatology Department at the General Hospital of Grand Yoff

Gerard COPIN

Senior consultant, Orthopedic and Trauma (ology) Centre