created two groups of patients based upon the performed treatment: (1) patients ($n = 10$) treated with a circular external fixator, mean age 42 years (min 17, max 72); (2) patients treated with a retrograde nail, mean age 61 years (min 47, max 74). The indication to the retrograde nail treatment as an alternative to the external fixation was given using the following criteria: (a) impossibility to put a prosthesis on the joint; (b) type of deformity; (c) previous arthrodesis surgery; (d) patient refusing E.F. treatment.

Results In both groups we achieved the deformity correction, the complete tibiotarsic joint fusion, and the recovery of the limb functionality (evaluated using a AOFAS chart). The residual ipometry was ranging between 1 and 2.5 cm. In all patients the tibial and talar articular surfaces were prepared (open surgery). In the group treated with an external fixator, the consolidating time was averaging 2.5 months (min 2 max 3.5). In the group of patients treated with a retrograde nail, the consolidating time was longer, 4 months (min 3 max 6), and it was related to the talus conditions, not to the deformity severity. In both groups, no patient underwent an iliac transplant.

Conclusions The external fixation allows the execution of the arthrodesis independently from the tibiotarsic bone stock. The treatment can be an immediate correction, a gradual one, or associated to a bone transport, if necessary. The external fixation is mostly indicated in complex deformities, with a severe lack of bone stock, and in reviews of previous arthrodesis. The retrograde nail allows an immediate correction of the deformity, but requires more residual bone stock of the talus. In case of an insufficient bone stock, the nail stability is precarious or risky. The arthrodesis and the deformity correction with a retrograde nail, may result into an ipometry of more than 3 cm, that will require further surgical techniques.

Suggested readings

1. Salem KH, Kinzl L, Schmelz A (2006) Ankle arthrodesis using Ilizarov ring fixators: a review of 22 cases. Foot Ankle Int 27:764–770
2. Niinimaki TT, Klemola TM, Leppilahti JI (2007) Tibiocalcaneal arthrodesis with a compressive retrograde intramedullary nail: a report of 34 consecutive patients. Foot Ankle Int 28:431–434

Peritalar release according to Simons for treatment of congenital clubfoot: medium-term clinical and X-ray results

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Introduction The objective of the present study is to evaluate medium-term results of the Simons procedure for the treatment of congenital clubfoot.

Material and methods Fifteen patients affected by III degree congenital talipes equinovarus (TEV) were treated surgically. TEV was bilateral in seven cases, thus the total number of operated feet were 22. The patients underwent peritalar release according to Simons, and were evaluated postoperatively with antero-posterior and lateral view X-rays. Clinical and radiological follow-up was at mean 6.7 years (range 2–13 years). Clinical and morpho-functional evaluations were performed in agreement with Manes and Laaveg/Ponseti. Also, all patients were evaluated at standard X-ray two-projection stress views, photopodogram and baropodometric exam.

Results Of the 15 operated patients, two were not available for follow-up. Therefore, a total of 20 feet were evaluated. Two patients underwent another surgical intervention for deformity recurrence. At follow-up no patient presented with pain at rest. According to Manes 13 cases had good results, five cases had satisfactory results, and two cases had bad results. Results at Laaeveg and Ponseti evaluation were excellent in 16 cases, good in two cases, and unsatisfactory in two cases. Anteroposterior radiographic exam revealed an alteration of the astragalo-calcanear divergence in seven feet and a reduction of Kite angle in three patients. At lateral view, X-rays revealed a reduction of the astragalo-calcanear angle, compared to normal values, in 12 cases. The scaphoid was dorsally subdislocated in eight cases. Photopodogram evaluation showed accentuation of the plantar vault in five cases, Static baropodometric examination showed a backward shift of the body baricenter, which determined an overload at the normal hindfoot.

Discussion In the present study, we perform a complete peritalar release as described by Simons, which seems to guarantee better chances of restoring correct astragalo-calcanear anatomy. In terms of deformity correction, the clinical and morphological results were satisfactory in 90% of cases. However, a data analysis of long-term follow-up studies reported in the literature over the last years demonstrates that less invasive treatment is better than the surgical approach. In fact, the latter is more likely to determine development of pain, functional limitation, and beginning and progression of foot osteoarthritis. Despite the good results obtained with the peritalar release technique in short-term and mid-term studies, the therapeutic choice for treating TEV is unanimously shifting from extensive releases to less aggressive treatments.

Fractures of the calcaneus: sinus tarsi access

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Introduction The calcaneus is the main tarsal bone, it is complex and represents the most important part for the supporting base of the foot. The most common treatment is open reduction and internal fixation (ORIF), but unsuccessful cases are not infrequent. We used a minimally invasive technique which also permits to treat complex fractures decreasing the complications. It is important to underline that the primary objectives to be gained are to restore the congruity of the posterior facet and of the subtalar joint, and the height of the calcaneus (Bohler's angle), to re-establish the integrity of calcaneo-cuboid joint, to decompress retro-peroneal space and to avoid varus or valgus deformity.

Material and methods From January 2002 to December 2006 we treated 39 calcaneus fractures in 29 patients, 22 males and 7 females, in ten cases bilateral in polytraumatized patients; the mean age was 44 years (range 24–64). The time from injury to surgery ranged between 5 and 13 days. The preoperative planning foresees common X-rays with lateral and axial projections and the CT scan. The fractures were subdivided according to Sanders classification and they resulted to be type II in 19 cases, type III in 13 and type IV in 7 cases; open fractures were excluded from our study.

Results The mean follow-up was 39 months (range 24–41). Bohler and Gissane angles were restored in 90–97% of Sanders type II and III fractures and in 15% of type IV; height and thickness were restored in 87–95% of Sanders type II and III fractures, and 19% of type IV. According to Maryland foot score the mean score was 87 in type II, 83 in type III and 60 in type IV fractures; 10 fractures resulted excellent, 19 good, 7 not satisfactory and 3 bad. The reduction of the