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Midfoot fusion in treatment of severe deformity and joint instability of the midfoot in Charcot neuroarthropathy

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The involvement of the midfoot in Charcot neuroarthropathy is often characterized by the rocker bottom deformity and severe midfoot instability which lead to the presence of peak of pressure and consequently the appearance of insensitive callus with high risk of recalcitrant ulceration. In case of severe rocker bottom deformity even the use of protective shoes with moulded insole can avoid the risk of reulceration with deep tissue infection. The surgical correction of the midfoot deformity (platigrade plantar surface) represents the only way to reduce the plantar peak of pressure. The plantar esostectomy represent the simplest surgical approach that is followed, as reported in the literature, by recurrence of the midfoot deformity caused by the improvement of midfoot joint instability related to plantar bone removal. In order to avoid this serious surgical implication we have treated diabetic patients affected by severe midfoot deformity, with or without plantar ulceration with bone exposition with corrective arthrodesis of the midfoot. In the period from June 2006 to January 2008 we have submitted to corrective midfoot arthrodesis 14 diabetic patients affected by severe rocker bottom deformity with midfoot joint instability. All the patients presented recalcitrant midfoot plantar ulceration even using correct protective shoes with moulded insole. In case presence of plantar ulceration a wide plantar ulcerectomy was performed with removal of the esostectomy. Through a medial surgical incision a subtraction tarsal wedge osteotomy was performed obtaining correction of valgus and varus midfoot deformity and of the inversion of plantar arc reaching a plantigrade plantar surface. The stabilisation of the midfoot was obtained, in case of presence of plantar ulceration, with external fixation in 3 patients and with Kwires in 1 patient. In 10 patients with severe rocker bottom deformity and midfoot joint instability, without plantar ulceration, the midfoot stabilisation was obtained in 9 patients using titanium plaque fixed with cortical screws and in 1 patients only with cortical screws. We didn't observe any intraoperative complication. After a period of follow up of 206 ± 104 days we observed no recurrence of midfoot deformity with good joint stability. 9 patients out of 14 were walking with protective shoes characterized by medial and lateral reinforced back counter, a hard rocker sole and a moulded insole with the aim of rebalancing the plantar pressure while 1 patient was wearing curative footwear for a plantar ulceration healing by second intention and two patients were still in the non-bearing post operative period. From our data we can conclude that surgical correction of midfoot deformity together with midfoot fusion should be considered the surgical treatment of choice due to the rare intraoperative complication and the dramatic reduction of the risk of secondary midfoot instability with high risk of recurrence of plantar ulceration.