

Supplementary table S1. Clinical information in patients with multiple synostoses syndrome type 4. The radiographic findings were bilateral and symmetrical.

ID in pedigree	Age	Gender	GDF6 c.1197C>A	Clinical examination	Radiograph of the hands	Radiograph of the feet	Hearing loss
IV-3	10	Female	+	Bilateral pes planus, valgus deformity ankles	Fusion between the capitate and the trapezoid (with a small, adjacent scaphoid) and between the lunate and the triquetrum (lying adjacent to the hamate)	Fusion between the talus and navicular, which is partly fused to the intermediate and the lateral cuneiforms. Fused 3 rd and partially fused 2 nd and 4 th tarsometatarsal joints. Fused middle and distal phalanges of the 5 th toe. Cone epiphysis to the proximal phalanges of the 2 nd to 4 th toes and hypoplastic middle and distal phalanges.	No
IV-2	14	Male	+	Bilateral cutaneous syndactyly between 2 nd and 3 rd toe, pes planus	Fusion between the capitate, the scaphoid and the trapezoid and between the hamate, the lunate and the triquetrum.	Fusion of the talus, the navicular and the intermediate and lateral cuneiform bones. Fused 4 th tarsometatarsal joint. Fused middle- and distal phalanges of the 5 th toe. Cone epiphysis to the proximal phalanges of the 2 nd to 4 th toes and hypoplastic middle and distal phalanges.	No
III-3	49	Female	+	Bilateral broad forefeet, overlapping toes and pes planus	Fusion between the capitate, the scaphoid and the trapezoid and between the hamate, the lunate and the triquetrum.	Fusion of the talus, the navicular, the intermediate and lateral cuneiforms and the cuboid bones. Most likely also the calcaneus. Fused 2 nd , 3 rd and 4 th tarsometatarsal joints. Fused middle- and distal phalanges of the	No

						5 th toe. Hypoplastic mid- and distal phalanges, and short proximal phalanges of the 2 nd to 4 th toes.	
II-3	73	Male	+	Bilateral broad forefeet, overlapping toes and pes planus	Fusion between the capitate, the scaphoid and the trapezoid and between the hamate, the lunate and the triquetrum.	Fusion of the talus, the navicular, the calcaneus, the intermediate and lateral cuneiforms and cuboid bones. Fused middle- and distal phalanges of the 5 th toe. Hypoplastic mid- and distal phalanges, and shortish proximal phalanges of the 2 nd to 4 th toes.	Presbycusis
III-4	47	Male	+	Bilateral broad forefeet, overlapping toes. Brachydactyly	Fusion of trapezoid, capitate, and scaphoid bones, fused lunatum, triquetrum and hamatum bones.	Fusion of the talus, the navicular, the intermediate and lateral cuneiforms, the cuboid and the calcaneus. Fused 2 nd and 3 rd tarsometatarsal joint. Hypoplastic mid- and distal phalanges, and shortish proximal phalanges of the 2 nd to 4 th toes.	No
IV-4	14	Male	+	Bilateral broad forefeet, overlapping toes	Fusion of the trapezoid, capitate and scaphoid bones, and of the lunate and the triquetrum.	Fusion of the talus and the navicular bones, which are partly fused with the lateral cuneiform. Fusion of the medial and intermediate cuneiforms. Fused 2 nd and 3 rd tarsometatarsal joints. Hypoplastic mid- and distal phalanges of the 2 nd to 5 th toes.	No