

POUL GILDAL & T. SODEMANN:

RESULTS OF 256 TRIARTICULAR ARTHRODESES OF
THE FOOT IN SEQUELÆ OF INFANTILE PARALYSIS
(published in extenso in this issue, page 199).

DISKUSSION:

Bülow-Hansen, Oslo:

I have been very much interested in the thorough-going account of the results of the foot arthrodeses performed in the Clinic for Cripples.

I wish merely to mention that in paralytic pes equino-varus I have always performed arthrodesis of the talo-crural joint with wedge-shaped tarsectomy through *Kocher's* incision; and I have always been satisfied with the result. Braces or special orthopedic footwear have not been required in these cases.

Camitz, Göteborg:

The treatment of the paralyzed foot should be based on the function in the upper and lower tarsal joints, i. e., dorsal and plantar flexion, pronation, and supination. The old view of the value of the tendon and muscle transplantations is still holding good with modification. When a muscle is paralyzed, return to normal condition is impossible; something has to be sacrificed. Among the motions in the joints of the foot, dorsal and plantar flexions are the most important, and, consequently, they should be saved, if possible, even at the expense of pronation and supination. This is accomplished through arthrodesis of the lower tarsal joints. In this way it is still possible for the patient in walking to move his foot in a natural way. In cases where the tibialis anterior is paralyzed while the peroneal group is normal the arthrodesis of the lower tarsal joint should be

followed by transplantation of both peronei to the basis of the 3. metatarsal bone. In equino-varus deformity with normal tibialis anterior function, the arthrodesis of the lower tarsal joints is followed by transplantation of this muscle to the middle of the dorsum of the foot.

In all cases of pes calcaneus the muscle function is insufficient, and the arthrodesis should be more extensive; here I find the *Whitman* astragalectomy to be the operation of choice. The same applies to cases with total paralysis of the foot. In the subtalus arthrodesis as well as in the astragalectomy any deformity of the foot may readily be completely corrected.

A comprehensive description of the technique and complete casuistics are given in the *Haglund* commemorative volume of *Acta chirurgica scand.* 1930.

Langenskiöld, Helsingfors:

I have also seen some good results from arthrodesis of the tarsal joints. In cases with some muscular function, I prefer the *Whitman* astragalectomy.

Nilsonne, Stockholm:

I wish most emphatically to join Dr. *Camitz* in most of his statements. In the Stockholm clinic we are more and more employing the subtalus arthrodesis after *Hoke's* method as an operation for stabilisation of the foot; and the results have always been such that we have found no necessity of extending the operation to include the talo-crural arthrodesis.

We no longer perform the *Whitman* astragalectomy except in children less than 10 years of age. In older individuals we stabilise the foot after *Hoke's* method. As you know, the pronation and supination deformities of the foot do not originate in the ankle joint, but in the joints distal to the talus; and these deformities are done away with or prevented by the subtalus arthrodesis. Moreover, through this operation it is possible to obtain a better balance adjustment of the paralytic foot to the leg, as one may shift the foot as far back as desirable to lengthen the posterior lever of the foot. In this way one obtains a tarsus

that is stabilised against deformities, as to some extent it is passively balanced in relation to the leg.

Haglund, Stockholm:

Like *Nilssonne*, I can subscribe to the comments made by *Camitz*, most of them, at any rate. Yet I would like to make a few additional remarks.

In 1916, I published a book on the sequelæ of poliomyelitis, and in this I said about as follows: I congratulate every fellow-physician who by mouth and pen is treating of methode remedial in pes varo-equinus paralyticus. In my experience, this condition has an almost incredible tendency to relapse, and personally I can only regret that with the methods I have tried out I have succeeded in overcoming the terrible relapse tendency only in some suitable cases. This was in 1916. If to-day I am a little less pessimistic in this respect, this is due to the fact that in this field, as in all others, we have gradually learned more and more to combine dissimilar methods — as, in this instance, arthrodesis with function-regulating operations of various kinds. But the varo-equinus deformity, at any rate, does still keep on relapsing. If any eccentric muscle power is present, there is no arthrodesis in the world that may prevent a relapse in the forefoot, and I would not transplant the anterior tibial muscle to the middle of the dorsum of the foot — as *Camitz* recommends — but laterally. It seems peculiar to me when, as often happens, one will mix together such a large number of extremely different situations and employ the same operation effect in all of them. Paralytic pes varo-equinus without any muscle function whatever — that is, without any other deformity than a minor degree of varo-equinus, gradually established — is one thing; actual contracture in a partially paralyzed foot is quite another thing. Certainly, the same treatment can not give improvement in all of these dissimilar conditions. Here the multiplicity of conditions requires combination of different methods in endless variety.

In conclusion, I wish to emphasize as strongly as possible that nowadays, when arthrodesis is performed earlier and earlier

in life, it is, I think, a particular shortcoming if the arthrodesis operation is not combined with muscle-regulating operations as far as practicable. In children the arthrodetic foot is subject to secondary deformity from poorly balanced muscle activity almost to the same degree as the foot not operated upon. As to the development of secondary deformities in children, the growing mass of osseous tissue in arthrodesis is like a plastic mass.

With regard to the tables of results, I would like to comment a little upon table 3. The freedom from bandage or the nature of the bandage does not give very much information as to the result of the operation unless the observation period is quite long. When a patient has gone through a period of treatment, he will begin gradually to prescribe his own footwear or bandage treatment. But, table 3 shows merely that the doctor finds an orthopedic boot advisable. Often the patient will later replace such a boot with a real bandage. He gets tired of one support and wants an other; besides, recovery is a very relative matter, and prescription of orthopedic footwear is always disagreeable to the patient. The freedom from bandage does not tell us much of the actual effect of the treatment; and the usual demand »away with the bandage!« will undoubtedly, I am sorry to say, remain a platonic wish as long as there are paralytic deformities. As in the past, I think, the therapy in the future will also have to include every measure of function-regulatory operation, tenodesis and arthrodesis, that may improve the condition of the patient, and combine these measures with bandaging treatment. For my part, I do not believe at all that there is any operation or other treatment that may be recommended as suitable for all of these widely different conditions.