

## A NEW METHOD OF TREATMENT OF CONGENITAL PSEUDOARTHROSIS OF TIBIA

*Chen Chung-wei,*

The treatment of congenital pseudoarthrosis of tibia has been an unsolved problem in the field of orthopedic surgery. The disease is not rare among children. The leg of the affected child is deformed and loses its function.

It has been more than 200 years since Halzoecher described the disease in 1709. During this period many methods of treatment have been tried. However, no report with an ideal result has appeared. Most of the bone grafts inserted do not unite with the tibia. Often the leg has had to be amputated in cases of severe deformity resulting from repeated operations.

The rapid advances in microsurgery in recent years have made possible distant autogenous composite tissue graft by microvascular anastomosis. Free skin flap grafts, free muscle grafts, free toe grafts including bone grafts have been done. Successful grafts of this kind provide a new and effective method of treatment for congenital pseudoarthrosis of the tibia.

In September 1977, Chang Gee, a boy of eight, was admitted to the orthopedic department of the Sixth People's Hospital with congenital pseudoarthrosis of the left leg. He was unable to walk. Two years ago he had an ordinary bone graft in his local hospital. He wore a long cast and was immobilized for eight months after the operation. The pseudoarthrosis reappeared soon after the removal

of the plaster cast. His parents sent him for further treatment, hoping that he would be fit enough to attend school. We decided not to proceed with the usual treatment but remembered the successful result obtained with free fibula graft using microvascular anastomosis in a case of a bone defect following osteomyelitis. Could the patient be treated by the same procedure? We held discussions and reviewed the relevant literature in detail. Although no example of such treatment for congenital pseudoarthrosis of tibia has been reported, we realized that the key to the success of the treatment was through excision of the diseased tissues and transplantation of a long segment of living bone using microvascular anastomosis.

An operation was planned in meticulous detail. The surgeons were divided into two teams. One was responsible for the excision of all the cicatricial tissues and the sclerotic bone, and the other was responsible for the dissection of a segment of fibula 7cm in length from the normal leg. Both the artery and the vein to the fibula were included in the graft which was then transplanted between the excised ends of the diseased tibia with the distal end inserted into the medullary cavity of the distal tibia and the proximal tibia fastened by a screw after step cutting. The artery and the vein were reanastomosed with the corresponding blood vessels at the recipient site. New circulation could be observed on the surface of the graft when the

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\*Chief of the Orthopedic Department of the Sixth People's Hospital, Shanghai

blood circulation was re-established, bleeding from the unligated blood vessels of the surrounding muscles of the graft. Gamma photography showed the blood circulation in the graft to be good. Three months after the operation the grafted bone was well healed according to repeated roentgenography.

The child was able to walk after the removal of the plaster cast. He could run, jump and play table tennis after two weeks' special training.

Since then we have treated eight cases of congenital pseudoarthrosis of tibia with ideal result.



1. Dr. Chen Zhongwei (left) examines Zhang Jian in his left leg's function. Four months after the operation the boy stands well on his once deformed leg.



2. Zhang Jian in a squatting posture. The function of the joint of his left leg is restored.