The Turner Scientific and Research Institute for Children's Orthopedics
Saint-Petersburg, Russia.

Fetal ultrasound diagnosis and early treatment of paralytic clubfoot in children with myelomeningocele

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70-85% of children with spina bifida have different orthopedic deformities of lower extremities

(*Mark A. Westcott* 1992 r).

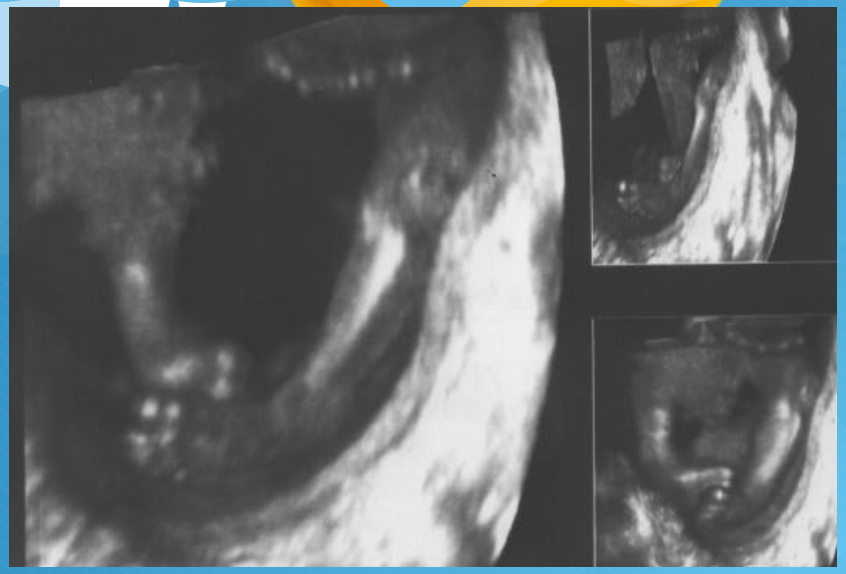
In 30-50% of children with spina bifida subluxation and dislocation of the hip joint develop during the first 2-3 years of life (Bulent Erol 2005).

Foot deformity are formed in children with spina bifida in 75% of cases.(Malcolm Menelaus 1998).

Headache for orthopedics surgeons

- severity of co-morbidities
- combination of orthopedic disorders
- Risk of fractures
- Poor results of conservative treatment
- Uncertainty of movement status

- 286 Children with myelomeningocele were examined during the period of 2006-2013 years
- Myelomeningocele was revealed with fetal ultrasound screening in 164 patients (57%)
- Orthopedic deformities of the lower limbs were observed prenatally in 42 patients



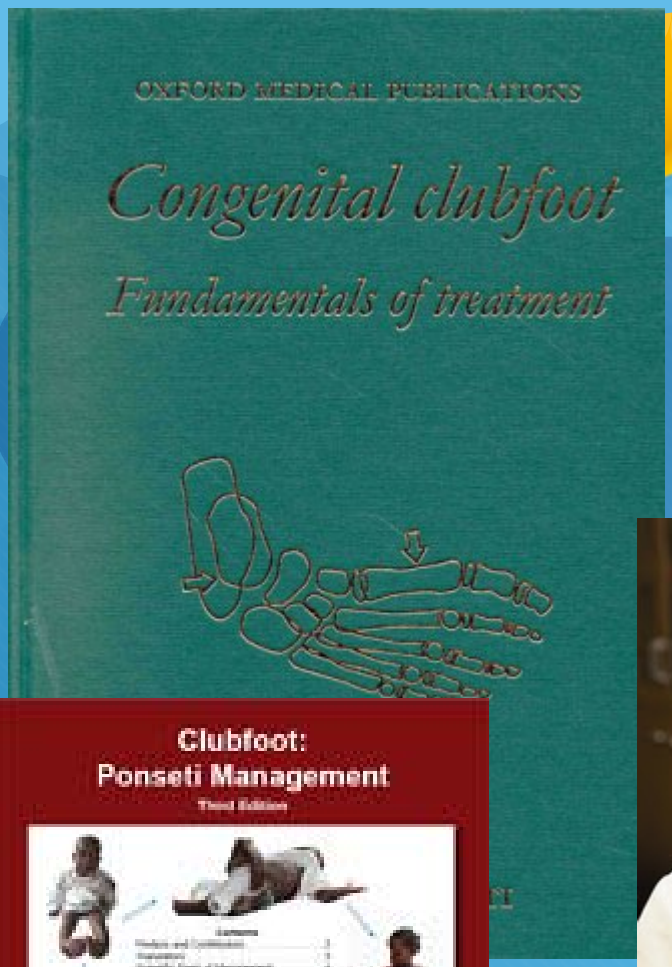
Study group:

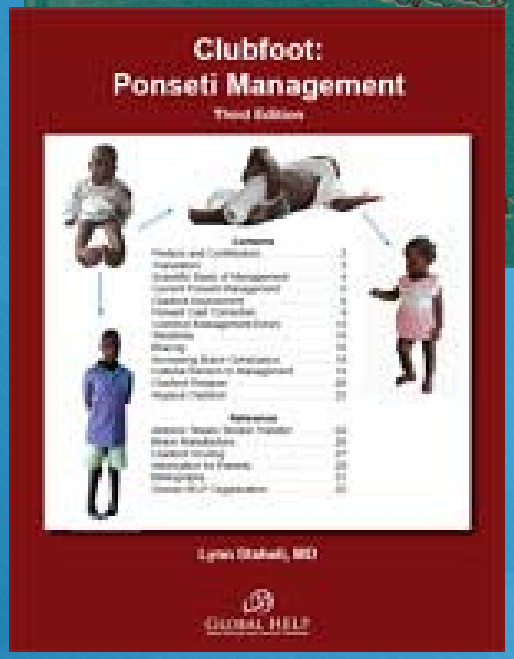
20 patients with paralytic clubfoot diagnosed before birth

Control group:

24 patients with paralytic clubfoot diagnosed after birth

Ignacio Ponseti





Congenital Club Foot: The Results of Treatment

BY IGNACIO V. PONSETI, M.D.*, AND EUGENE N. SMOLEY, M.D.†, IOWA CITY, IOWA

From the Department of Orthopedic Surgery, State University of Iowa, Iowa City

Since 1948, a uniform system of treatment has been applied to all cases of congenital club foot on the Orthopedic Service of the State University of Iowa. Our aim has been to obtain a supple, well corrected foot in the shortest possible time. An end-result study of severe club-foot deformities in otherwise normal children treated initially in this department from 1948 to 1956, with a follow-up period from five to twelve years, is here presented.

Three hundred and twenty-two patients with club-foot deformity were d during this period. The following were not included in this study: One ed and forty-nine patients had been originally treated in other clinics and referred to us for further correction. Ten patients had arthrogryposis; ad a complete or partial absence of the tibia; and eighteen had a myelo- gocele. The sacrum was absent in two and congenital constriction was t in the legs above the malleoli in two patients. In forty-six patients, the eformity was mild and was corrected by simple manipulations or the applica- one to three plaster casts. Of the remaining ninety-one otherwise normal n with severe untreated club-foot deformities, twenty-four were lost ow-up, usually at the end of the initial treatment.

e were able to evaluate the results of treatment in only sixty-seven pa- with a total of ninety-four club feet. All these deformities were severe, gh many variations in the degree of rigidity of the feet were present. The the patient at the onset of treatment ranged from one week to six months, e average age was one month. Of the sixty-seven patients studied, ten emale and fifty-seven were male. The deformity was, therefore, almost six s prevalent in male as in female children. Forty patients had only one foot ed (60 per cent) and twenty-seven patients had both feet deformed (40 t). In the patients with unilateral involvement, the right foot was deformed teen and the left foot in twenty-two cases. Anteroposterior and lateral nograms and photographs of the feet of all patients were made at the f treatment and again at the time of the final examination.

METHOD OF TREATMENT

e aimed at an early and full correction of all the components of the deform- gentle manipulation and well molded, thinly padded plaster casts which hanged every four to seven days. Anesthesia was never used. The plaster s applied in two sections, the first section extended from the toes to just he knee and the second covered the knee and thigh. The knee was immobil- a right angle while the leg was gently rotated outward to correct tibial

lear understanding of the club-foot deformity is possible after identifying ation the position of the bones in the foot and their relationship to one r and to the leg. The foot is displaced and rotated medially beneath

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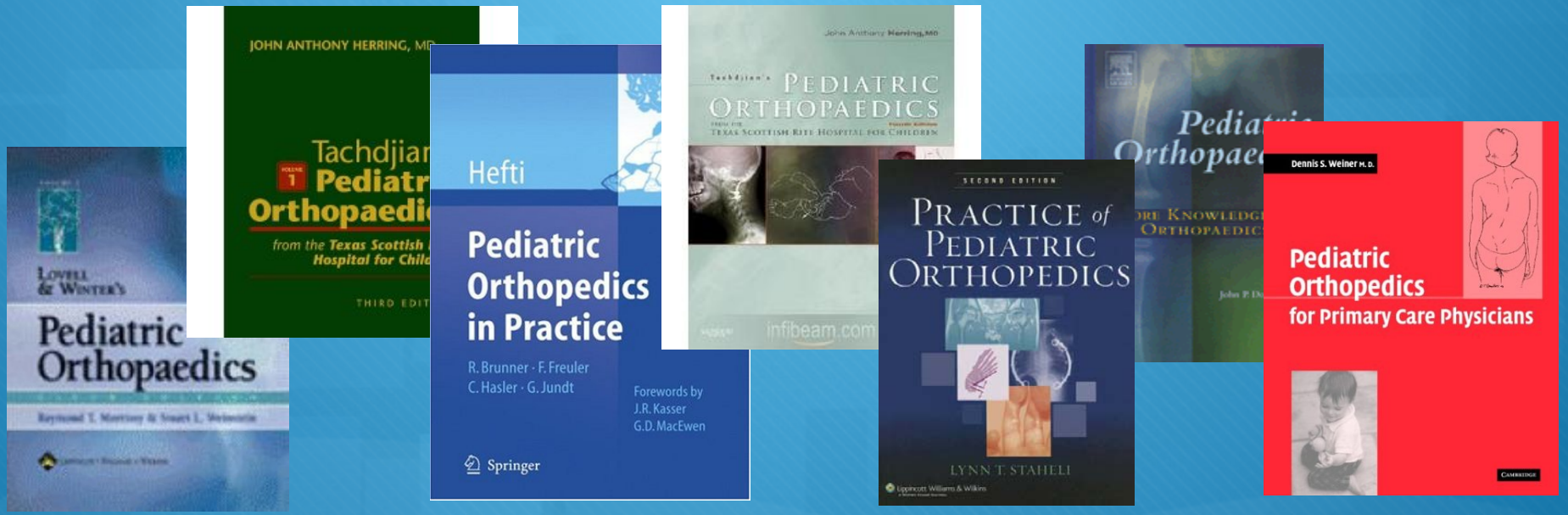
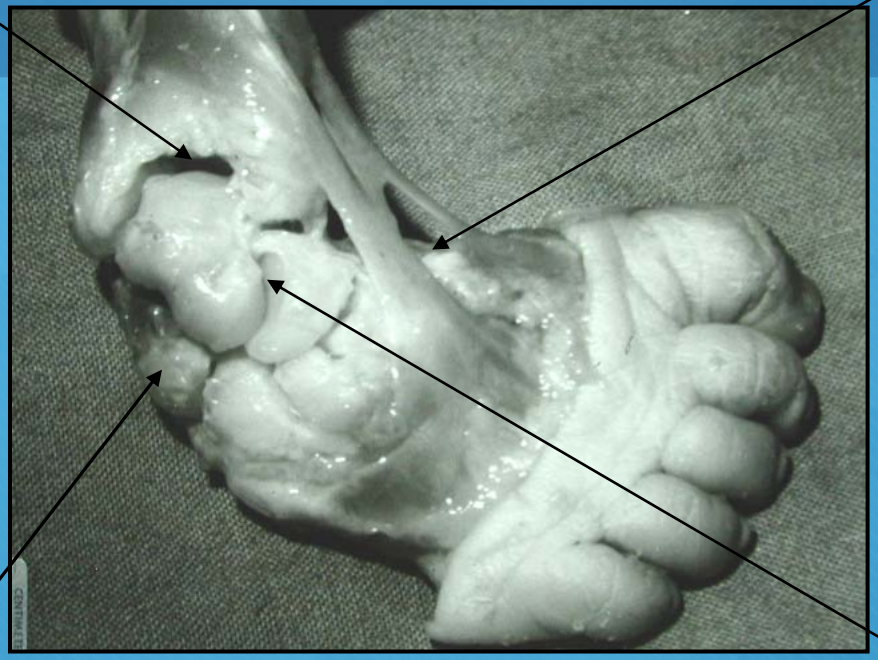
The Ponseti method has spread throughout the world and introduced in most pediatric orthopedics textbooks and manuals on as a "gold standard"



Anatomy of the foot in clubfoot

Equinus

Cavus



Varus

Adduction

Anatomy of the foot with clubfoot, manipulation steps

Correction in the casts

correction of the cavus

correction of varus and adduction

correction of equinus

Long-lasting results

Bracing!!!

Patient treated by Ponseti method

before

after

Patient treated by Ponseti method

before

after

Patient treated by Ponseti method

before

after

Patient treated by Ponseti method

before

after

Patient treated by Ponseti method

before

after

Results

Start of treatment:

study group - 7 ± 2,1 days control group - 24 ± 3,5 days

Number of casts:

study group - 5 ± 2,5 control group - 8 ± 1,7

Complications:

study group - 5 ± 1,6 control group - 6 ± 1,3

Discussion

- Severe clubfoot can easily be treated by the Ponseti method
- The results of treatment depend on the early diagnosis
- There are no published data on the results of paralytic clubfoot treatment using the Ponseti method and the dependence of the results from the early start of treatment

Discussion

- In the present study, analyzing the results of treatment in comparable groups, we demonstrated the importance of early diagnosis and the effectiveness of early treatment
- Prenatal diagnostics of orthopaedic complications of MMC leads to early information of the family and physicians, optimization of medical resources and finally to better results of treatment

Conclusion

Early diagnosis of paralytic clubfoot in children with myelomeningocele reduces duration of treatment and improves the outcomes

Thank you for your attention!