FROM THE EUGENIA HOME CLINIC, STOCKHOLM.

A SERIES OF CEREBRAL PALSY OPERATIONS

By

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In 1954 and 1955 accounts were published (Swedish Medical Journal and Scandinavian Medicine) of orthopaedic surgical measures for cerebral palsy, adopted at the Eugenia Home Clinic.

These are supplemented here by a few viewpoints formulated through the experience gained in 770 c.p. operations.

During the earlier period when c.p. cases were chiefly treated by orthopaedic surgeons, no full understanding yet prevailed of the importance of early physiotherapy and this sometimes led to too rapid operation. Nor was the differential diagnosis sufficiently developed. Sometimes no distinction was made between true spasticity, athetosis and conditions of varying tonus.

When pediatricians and neurologists began to be interested in this field, greater understanding of these brain injuries was achieved and by means of fruitful teamwork the diagnosis and indications were defined more satisfactorily than before.

The literature of the last decade gives evidence of a lively interest in active orthopaedics, but shows a more critical attitude towards the indications than before.

The principles which seem to be accepted in c.p. surgery have probably been formulated best by *Barnett* (collaborator of the pediatrician *Perlstein* in Chicago): "(1) careful evaluation of the total problem must precede any surgical therapy, (2) surgery is merely an adjuvant measure and not a substitution for muscle re-education, (3) surgery will fail without adequate post-operative therapy, (4) conservative therapy in growing children such as achieved by physical therapy and bracing should always be given an adequate trial before surgery, (5) deformities in growing children, which are operated on, always require post-operative bracing in order to prevent recurrence of the deformity, (6) surgery must be directed against the primary deforming factors

and is contraindicated, if it retards or impairs functional ability, and (7) contractures due to postural defects should not be corrected surgically unless the patient will be able to use the extremities in the corrected position."

One more point should be added to the above: operation ought not to be undertaken during the first years of life.

Development takees place very slowly in c.p. cases, and sufficient information about the motor mechanism is not obtained before the child is 3–4 years old, sometimes still later.

Barnett's principles seem to be the same as those which we have followed at the Eugenia Home for decades. We were especially cautious before operation and before this was performed we obtained definite information about the patient's motor system and mental condition and thus we determined the prospects for a postoperative course. When an operation is completed, it is therefore the result of team-work comprising nurses, physiotherapists and play therapists, while there is the natural collaboration between the orthopaedic surgeon, the pediatrician and the child psychiatrist in the clinic.

Table of c.p. operations performed at the Eugenia Home:
(smaller, simpler operations are not included).

Operation	Number
Achillotomy (aperta)	332
Calcaneus plastics	6
Transposition of ant. tib. muscle	5
Cuneiform osteotomy of tarsus	17
Cuneiform osteotomy of tarsus + Stoffel poples	3
Subtalar arthrodesis	12
Osteotomy of torsiones tibiae	3
Transposition of m. gastrocnemius	46
Myotomy poples	47
Myotomy poples + Stoffel poples	38
Stoffel poples	45
Transposition of m. semitend.	2
Transposition of m. rect. fem.	9
Myyotomy of m. adduct. cox.	64
Myotomy of m. adduct. cox. + resection of obturator nerve	38
Resection of obturator nerve	54
Osteotomy of troch. maj.	4
Stoffel forearms	17
Resection of pron.teres	20
Resection of pron.tères + quadrat.	2
Resection of pron.teres + Stoffel forearms	5
Transposition of flex. carpi radial.	2

To this the following commentary may be added: various methods have been discussed in the treatment of pes equinus. Achillotomy has come into discredit in certain respects. This is probably due to the fact that an overdosed achillotomy brings about a pes calcaneus, which is more severe deformity than pes equinus. Our 6 cases of calcaneus plastics were thus performed on overdosed achillottomies which came to our clinic. The gastrocnemius transposition is theoretically well founded but we have found no difference in effect between these two operations. And then the achillotomy is a much simpler operation. There must be the requirement however that it is a surgeon experienced in c.p. who undertakes the achillotomy, since the adjustment at the operation demands experience.

Stoffel has a limited field but is yet an operation of a certain value.

Obturator resection is never performed by us intrapelvically. Two cases were observed where such a resection was previously carried out, after which total adductor paresis with defective hip control arose.

Surgery of the arm requires great experience. Resection of the m. pronator teres generally gives immediate freedom from contracture, which is functionally of great value. Transposition of the flexor muscles will probably produce better results than those we have hitherto achieved.

Inward rotation contractures in the lower extremities of spastics form a difficult problem. Torsion osteotomies on the lower leg do not seem to invite further imitation. Transposition of the greater trochanter is a theoretically justified intervention. However, the results have been relatively moderate.

If one therefore arrives at the conclusion that physiotherapy, commenced early, is the main factor in the treatment of c.p., then, however, the nerve, skeletal and strenght-regulating operations have a considerable value.

The future points however to brain surgery as the next source of progress.

SUMMARY

The author gives an account of cerebral palsy series consisting of 770 operations. It is pointed out that the indications must be strict and that a detailed analysis by a c.p. team should precede the intervention. Operations should not be performed during the first years of life. The author refers to *Barnett's* principles which are exemplary.

RESUME

L'auteur rend compte d'une série d'observations comportant 770 opérations de paralysies cérébrales. Il est souligné que les indications doivent être rigoureuses et qu'une analyse approfondie par une équipe compétente doit être faite préalablement à l'intervention. Il ne convient pas d'opérer dans les premiéres années de la vie. L'auteur renvoie aux principes de *Barnett* qui sont condamnables.

ZUSAMMENFASSUNG

Der Verfasser gibt Rechenschaft über ein Material von 770 Operationen bei cerebraler Lähmung. Man hebt hervor, dass die Indikationsstellung streng sein soll und dass eine eingehende Analyse vor dem Eingriffe von einem cerebral Parese "Team" vorgenommen werden soll. Während der ersten Lebensjahren sollte nicht operiert werden. Der Verfasser weist auf *Barnetts* Principien hin, die zu verurteilen sind.

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