20 år med CPUP

Gunnar Hägglund
Follow-up programme for cerebral palsy

1994
WHY?
"Dislocation of the hip in cerebral palsy is preventable"

M.O. Tachdjian 1956
Rhizotomi

Botulinum toxin

Baklofen pump
Follow-up programme for cerebral palsy

1994
FU programme

CP register
Prevent Hip dislocation

Prevent contractures
Follow-up programme for cerebral palsy

1994-1999
Early experiences

- Better cooperation
- Detection of hip displacements
- Early detection of contractures
CPUP saves money

CPUP = Preventive treatment
Follow-up programme for cerebral palsy

1994-2004
Prevention of dislocation of the hip in children with cerebral palsy

THE FIRST TEN YEARS OF A POPULATION-BASED PREVENTION PROGRAMME

Prevention of severe contractures might replace multilevel surgery in cerebral palsy: results of a population-based health care programme and new techniques to reduce spasticity

Gunnar Hägglund\textsuperscript{a}, Sofia Andersson\textsuperscript{a}, Henrik Düppe\textsuperscript{b}, Henrik Lauge Pedersen\textsuperscript{a}, Eva Nordmark\textsuperscript{c} and Lena Westbom\textsuperscript{d}

\textit{J Pediatric Orthop B} 2005;14:269-273
The areas of the blue, red, and black wedges are each measured from the centre as the common vertex.

The blue wedges measured from the centre of the circle represent areas for the deaths from Preventable or Mitigable Dysentery; the red wedges measured from the centre the deaths from wounds; and the black wedges measured from the centre the deaths from all other causes.

In October 1854, & April 1855, the black area coincides with the red; in January & February 1856, the blue coincides with the black. The entire areas may be compared by following the blue, the red & the black lines enclosing them.
1994-2014

Cerebral Palsy Integrated Pathway Scotland

Sweden
Norway
Denmark
CPUP facilitates follow-up of children with CP
CPUP helps my child (children with CP) get the right treatment at the right time.
CPUP contributes to get children with CP receiving equal treatment regardless of where they live.
CPUP contributes positively to the cooperation between the family and other specialists.
Prevent Hip dislocation

Prevent contractures
Risk factors for hip displacement:

Age

Characteristics of children with hip displacement in cerebral palsy
Gunnar Hägglund*¹, Henrik Lauge-Pedersen¹ and Philippe Wagner²

BMC Musculoskeletal Disorders 2007, 8:101
Risk factors for hip displacement:

Gross Motor Function (GMFCS)

Characteristics of children with hip displacement in cerebral palsy
Gunnar Hägglund*1, Henrik Lauge-Pedersen1 and Philippe Wagner2

BMC Musculoskeletal Disorders 2007, 8:101
What about ROM?
Prevalence of hip dislocation among children with cerebral palsy in regions with and without a surveillance programme: a cross sectional study in Sweden and Norway

Areej I Elkamil, Guro L Andersen, Gunnar Hägglund, Torarin Lamvik, Jon Skranes and Torstein Vik


Norwegian region = before CPUP
Swedish region = with CPUP
<table>
<thead>
<tr>
<th></th>
<th>Before CPUP</th>
<th>CPUP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hip dislocation</td>
<td>15%</td>
<td>1%</td>
</tr>
<tr>
<td>Hip operation</td>
<td>46%</td>
<td>32%</td>
</tr>
</tbody>
</table>
Age at first hip operation

![Bar chart showing the number of children and the number of patients who had their first hip operation in different age categories in Sweden and Norway. The x-axis represents age categories in years, ranging from <2 to 12-<14, while the y-axis represents the number of children and patients. The chart includes two bars for each age category, one shaded blue and one yellow, indicating the number of patients and children respectively. The bars are color-coded as follows:

- Blue: Patients hip operated (Sweden)
- Yellow: Patients hip operated (Norway)
The natural history of hip development in cerebral palsy

TERJE TERJESEN

Department of Orthopaedic Surgery, Oslo University Hospital, Rikshospitalet and University of Oslo, Oslo, Norway.

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E-mail: terje.terjesen@rikshospitalet.no

This article is commented on by Rutz on page 878 of this issue.

**INTERPRETATION** There is a pronounced trend towards hip displacement in nonambulant children. Close surveillance from age 1 to 2 years is needed to find the appropriate time for preventive surgery. Since 12% of the nonambulant children developed dislocation, our routines for hip surveillance need improvement.
Terjesen T. The natural history of hip development in cerebral palsy. DMCN 2012;54:951-7

335 children (114 in GMFCS IV-V)

14 dislocations (12%)

Long waiting list
Adductor - psoas tenotomy
Varus osteotomy femur
Acetabular reconstruction
Prevent Hip dislocation  Prevent contractures
Prevention of severe contractures might replace multilevel surgery in cerebral palsy: results of a population-based health care programme and new techniques to reduce spasticity

Gunnar Hägglund\textsuperscript{a}, Sofia Andersson\textsuperscript{a}, Henrik Düppe\textsuperscript{b}, Henrik Lauge Pedersen\textsuperscript{a}, Eva Nordmark\textsuperscript{c} and Lena Westbom\textsuperscript{d}

J Pediatric Orthop B 2005;14:269-273
FOR HOW LONG MUST THE SOLEUS MUSCLE BE STRETCHED EACH DAY TO PREVENT CONTRACTURE?

C. Tardieu
A. Lespargot
C. Tabary
M. D. Bret

Dev Med Child Neurol 1988;30:3-10

6 (4.50 - 7.10)

2 (0.00 - 3.30)

Early postural management may reduce the number of hip problems

Standing in abduction 1 hour per day may reduce the MP after adductor-psoas tenotomy
"Birthday surgery"

Mercer Rang
1933 - 2003
”Birthday surgery”
"Birthday surgery"
"Birthday surgery"
Single Event Multilevel Surgery

Wait until 8-12 years of age
At a single event correct all deformities

- Psoas lengthening
- Hamstring lengthening
- Rectus transfer
- Gastrosoleus lengthening
- Rotation osteotomy femur
- Rotation osteotomy tibia
- Foot stabilisation
Cerebral palsy

Muscle surgery

Inactivity

Weakness
Adults
1994-2014

Cerebral Palsy Integrated Pathway Scotland

Sweden
Norway
Denmark
CP Norden
CP Norden:

"All people with CP in Scandinavia should have the possibility to join CPUP"
CP Norden:

"CPUP should include documentation of cognition and communication"
2014 – 2024?
Hip prevention

Improved prediction of hip displacement

Improved FU-schedule

Improved guidelines on treatment
Contractures

AFO

Korsett
Muscle tone

Botulinum toxine
Most Experienced in the World

Center Highlights

• Over 25 years experience performing selective dorsal rhizotomies with unequalled knowledge of post-surgical outcomes
• Performed over 2,700 surgeries, with no major complications, on children and adults from 46 states and 60 countries.
• Performed surgery on 105 International patients in 2013.

Learn about Dr. Park’s Distinguished Faculty Award.

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Any donations would be gratefully appreciated. Thank You
Scoliosis
Scoliosis in a Total Population of Children With Cerebral Palsy

Måns Persson-Bunke, MD,* Gunnar Hägglund, MD, PhD,* Henrik Lauge-Pedersen, MD, PhD,* Philippe Wagner, MA,† and Lena Westbom, MD, PhD‡
Deformity

Time
Growth Modulation by Means of Anterior Tethering Resulting in Progressive Correction of Juvenile Idiopathic Scoliosis

A Case Report

By Charles H. Crawford III, MD, and Lawrence G. Lenke, MD
Horizon 2020
PHC 6 "Evaluation of existing prevention programmes"
Horizon 2020

PHC 6 ”Evaluation of existing prevention programmes”

Health (contractures, hip dislocations, functional ability, pain/fatigue)

Quality of life and participation

Health economy

Program satisfaction and acceptance

Cost-effectiveness and the feasibility of introducing CPUP in additional European countries considering country-specific contextual factors