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**Orthopaedic Department**  
**Pavilhão “Fernandinho Simonsen”**  
**São Paulo - Brazil**

## **NEUROMUSCULAR CLINIC**

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**Pavilhão  
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**F.C.M.S.C.S.P.**





5<sup>th</sup> INTERNATIONAL PEDIATRIC ORTHOPAEDIC COURSE  
SLAOTI – SBOP – POSNA – EPOS  
SÃO PAULO - BRAZIL  
2017



**HIP IN MYELOMENINGOCELE  
TO TREAT OR NOT TREAT ?**



SOCIEDADE BRASILEIRA DE  
ORTOPEDIA E TRAUMATOLOGIA



SANTA CASA MEDICAL SCHOOL  
simonsen



NO DISCLOSURES



# ORTHOPAEDIC TREATMENT

## GOAL

Obtain a stable posture

- level the pelvis
- preserve the motion

MENELAUS 1964  
MENELAUS 1976  
FEIWELL et al, 1978

## PRINCIPLES

- Selection of the procedures
- Minimum of procedures
- Condense the procedures



**IS A STABLE HIP IN FACT BENEFICIAL FOR A CHILD WHO HAS MYELOMENINGOCELE ?**

**WALKING WITH STABLE HIP IS LESS ENERGY CONSUMPTION ?**

BEEKER & SCHEER, Neuro-Orthopedics 1986

**DOES HIP SURGERY IMPROVE FUNCTIONAL RESULTS ?**

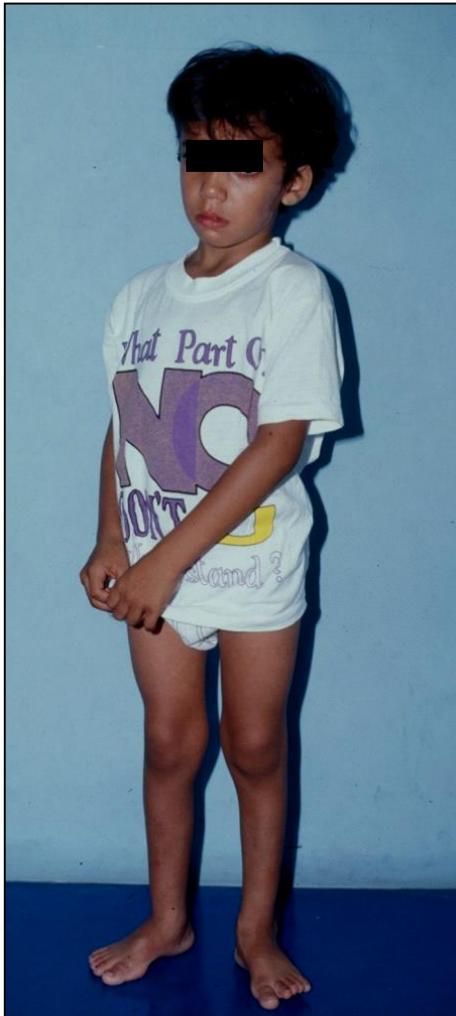
SWAROOP & DIAS, Hip Intern 2009

Important factors:

- Neurological level
- Alignment of the lower limbs
- Scoliosis
- Pelvic obliquity

SHERK & AMES, 1978





## WHICH FACTORS INFLUENCE THE WALKING ABILITY ?

- neurological level = present muscles

SHARRARD, 1964

McDONALD et al, 1991

- severity of the deformities
- scoliosis
- obesity and age
- presence of spasticity



# HIP SUBLUXATION AND DISLOCATION



## HIP - SHARRARD

G I : T12  
G II : L1-L2  
G III : L3 - L4  
G IV : S  
G V : S1  
G VI : normal

subluxation  
dislocation





## OLD CONCEPTS

- All patients with myelomeningocele should walk to improve their clinical conditions;
- For better chances of walking they should not have deformity or dislocation of the hip;
- The muscle imbalance around the hip would lead to deformity or dislocation and could be prevented with early prophylactic surgery.

**CARROLL & SHARRARD, 1972**

- the muscle imbalance would lead to hip subluxation or dislocation
- children in the mid-lumbar level
- indication for surgical treatment



## CURRENT CONCEPTS

- Not desirable that all patients walk in the long-term, mobility with the wheelchair may be more useful  
Usually after 10 years of age it becomes easier the use of a wheelchair

Do not face as treatment failure!

- Efforts should be focussed in other areas treatment (education / social)
- The hip dislocation has little effect on gait problems related to gait are due to fixed flexion deformity and excessive lumbar lordosis
- Hip operations may have little functional influences for the patient and could progress with serious complications



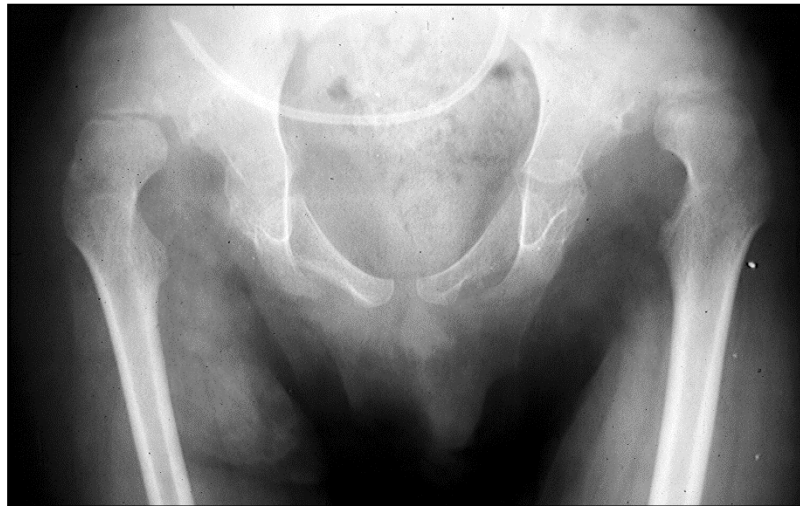


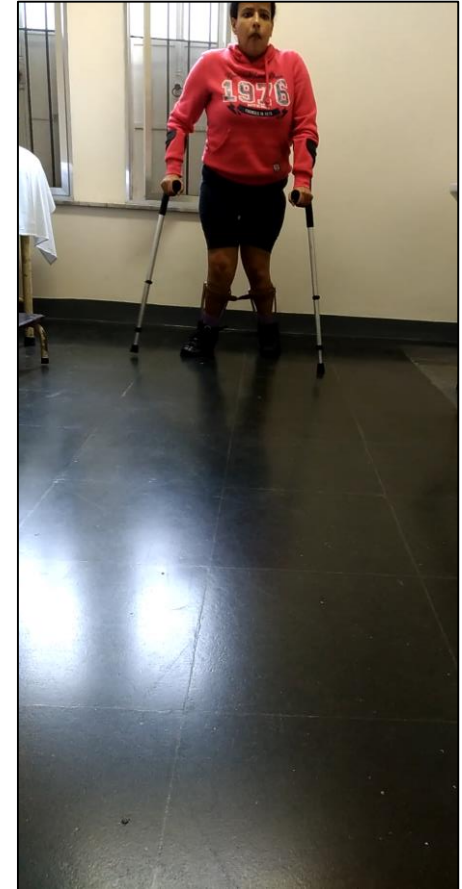
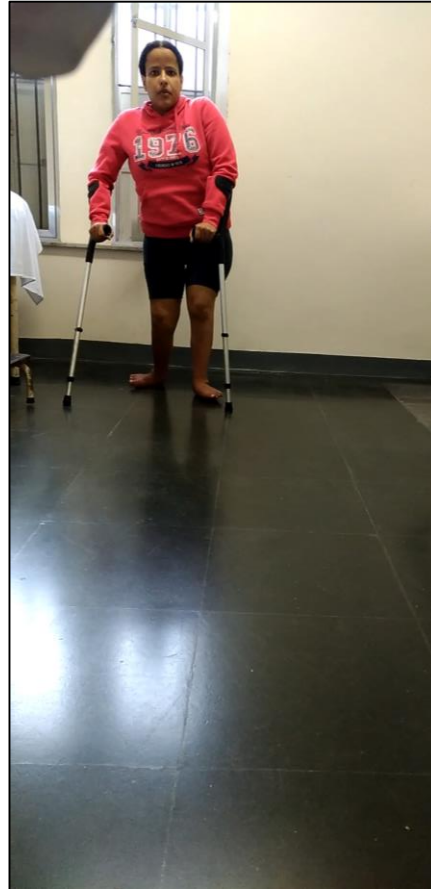
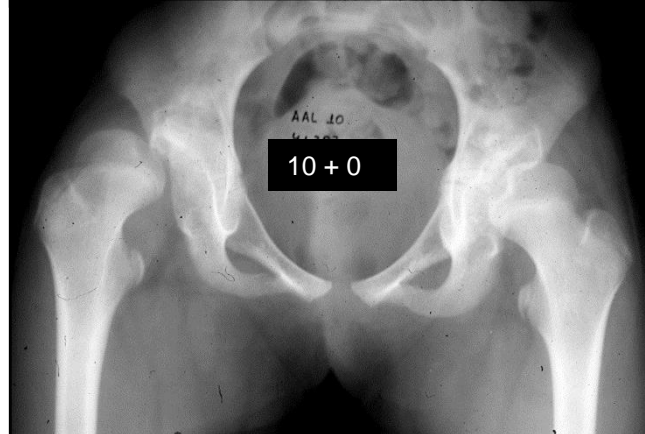
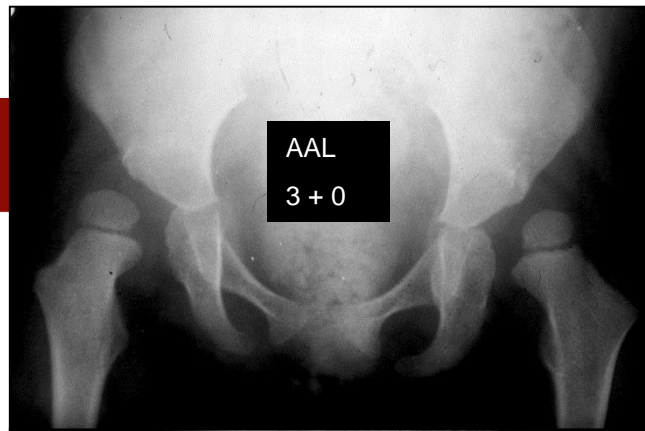
# HIP SUBLUXATION AND DISLOCATION

## BILATERAL

- Treatment of the dislocation does not bring functional improvement
- Do not treat the dislocations, treat the contractures restore muscle balance

**MENELAUS** Dev Med Child Neurol 1976





37 + 10  
08/2017



# HIP SUBLUXATION AND DISLOCATION

## UNILATERAL

The asymmetry that generates questions:

- leg length discrepancy
- pelvic obliquity
- ischium ulcers

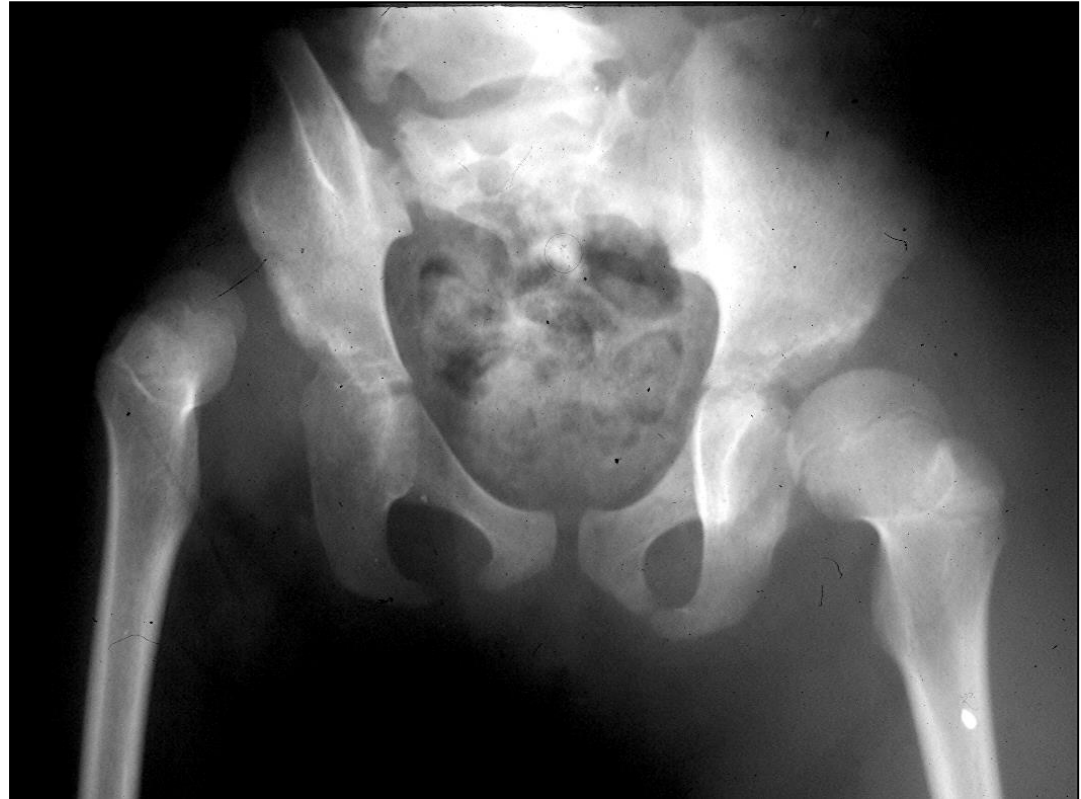




# HIP SUBLUXATION AND DISLOCATION

## POSSIBLE TO TREAT

- L 3 - L 4
- healthy
- normal or near IQ
- functional quadriceps
- walkers
- unilateral deformity



**THE TREATMENT SHOULD PERSONALIZED !!!!**



## 1. Psoas release or transfer :

Sharrard, 1964  
Carroll & Sharrad, 1972  
London & Nicholas, 1975  
Parker & Walker, 1975  
Sherk & Ames, 1978  
Jackson et al, 1979  
Drummond et al, 1980  
Breed & Healy, 1982  
Yngve & Lindseth, 1982  
Bunch & Hakald, 1984  
Lee & Carroll, 1985  
Root et al, 1992  
Moltó & Garrido, 2005

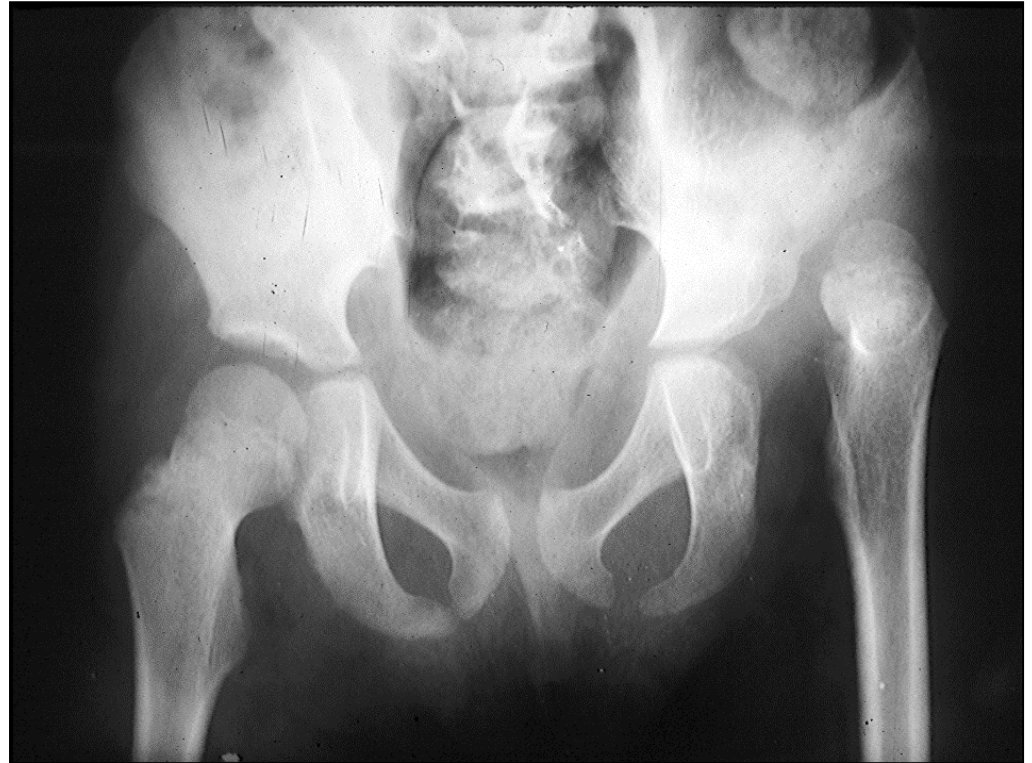
## 2. Femoral varus osteotomy:

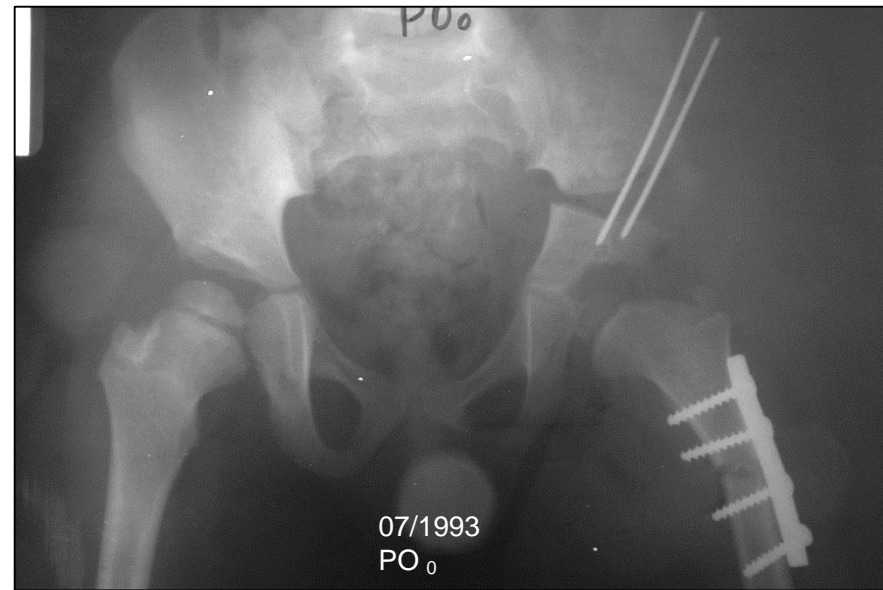
Guggenheim et al, 1978  
Menelaus, 1980  
Dias & Hil, 1980

## 3. Transfer of adductors:

Benton et al, 1975  
London & Nicholas, 1975  
Gugenheim et al, 1978  
Phillips & Lindseth, 1992

## 4. Acetabular dysplasia





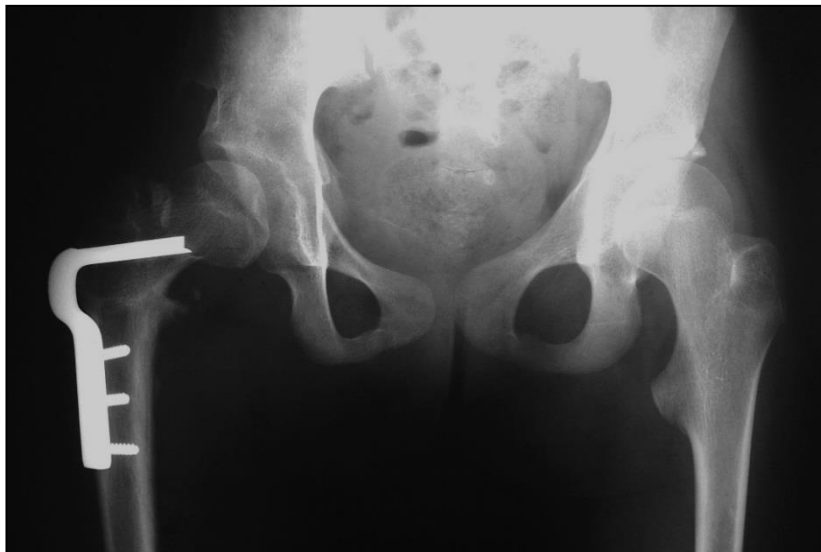




3/04



4/04



Pavilhão  
Fernandinho  
Simonsen

10/04



11/10





ROS  
ini  
11 + 6  
Apr 00



June 04  
PO 4 + 2



D

Oct 11  
PO 11 + 6





OBSS  
7+9

## COMPLICATIONS

- re-dislocation
- stiffness
- heterotopic ossification
- pressure sores



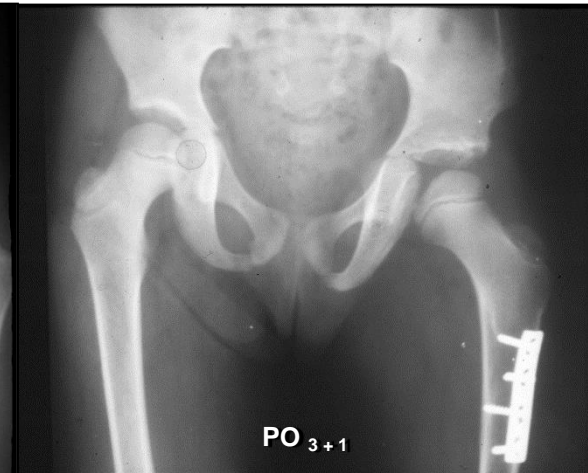
OBSS  
PO<sub>0</sub>

OBSS  
PO<sub>1+4</sub>



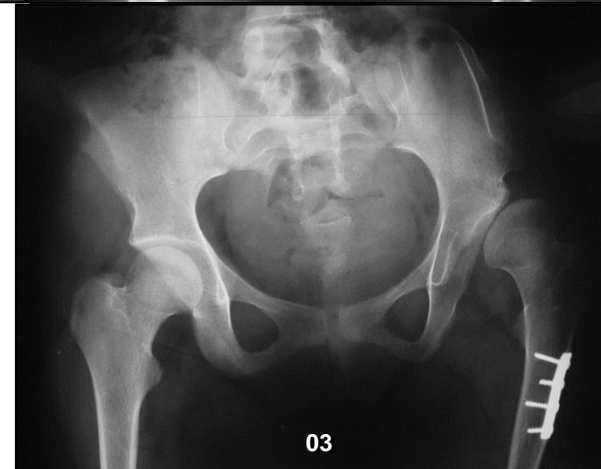


DSVS  
ini  
1 + 11



## COMPLICATIONS

- re-dislocation
- stiffness
- heterotopic ossification
- pressure sores



# FRACTURES

20%

Femur and tibia  
osteoporosis  
fixed deformities  
prolonged immobilization

**NO PAIN**

**AFTER CAST REMOVAL**



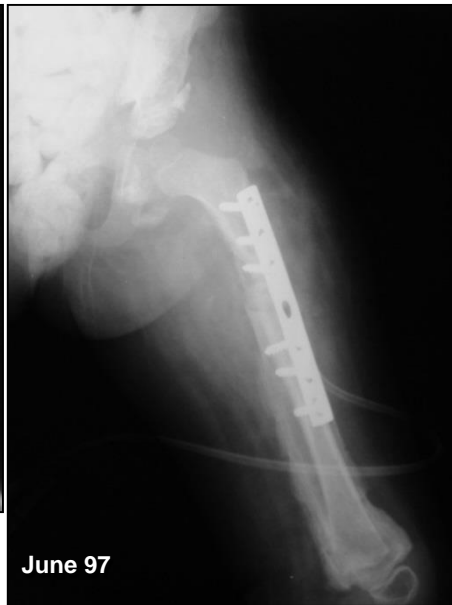


Feb 97  
PO 0

NNMI  
Feb 97  
3 + 6



May 97  
PO 0+3



June 97



March 08





# IMPORTANT

To produce an upright position in stance with hip extension **DO NOT BE** distracted and produce beautiful radiographs.

MENELAUS, 1976



## GAIT ABILITY HIP DISLOCATION

Barden et al , 1975  
De Souza & Carroll, 1976  
Feiwell et al, 1978  
Feiwell, 1980  
Bazih & Gross, 1981  
Asher & Olson, 1983  
Stillwell & Menelaus, 1984  
Lee & Carroll, 1985  
Keggi et al, 1992

Mid-lumbar level



## STABLE HIP IS NOT PRE - REQUIREMENT FOR GAIT :

Sharrard, 1964  
Hoffer et al, 1973  
Rueda & Carroll, 1972  
Barden et al, 1975  
De Souza & Carroll, 1976  
Feiwell et al, 1978  
Huff & Ramsey, 1978  
Drummond et al, 1980  
Feiwell, 1980  
Bazih & Gross, 1981  
Asher & Oslan, 1983  
Stillwell & Menelaus, 1983  
Crandall et al, 1989  
Sherk et al, 1991  
Fraser et al, 1992  
Tosi et al, 1996



**HIP IN MYELOMENINGOCELE**

**TO TREAT OR NOT TREAT ?**

**ANSWER : TREAT THE PATIENT NOT THE HIP**







# CBOT50

INOVAÇÃO EM MOVIMENTO

# 2018RJ

15 A 17 DE NOV | RIO DE JANEIRO

