SECCION DE PEDIATRIA EXTRAHOSPITALARIA
SEVILLA

XXIX CURSO TEORICO-PRACTICO DE FORMACION PEDIATRICA CONTINUADA

Ortopedia de espalda y caderas. ¿Qué debemos saber?

Juan Andrés Conejero Casares
Unidad de Rehabilitación Infantil
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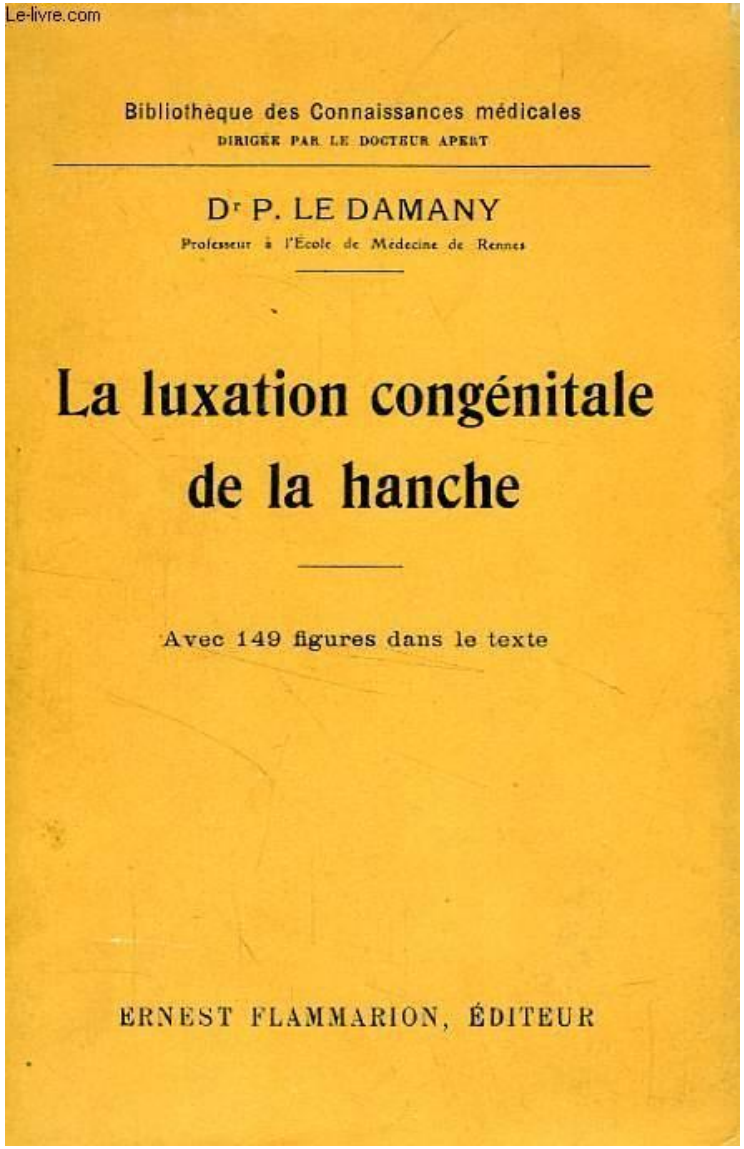
Sevilla

Cadera

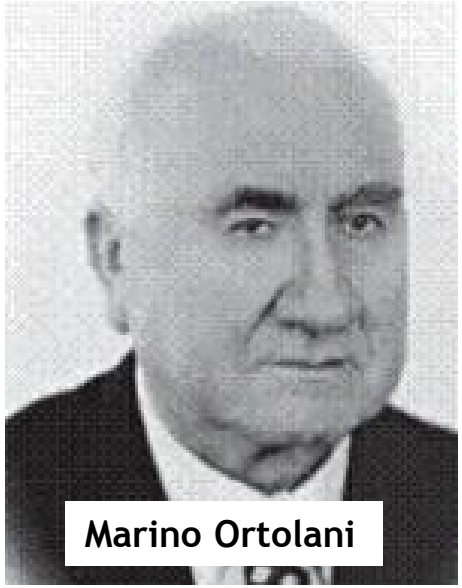
1. Situación actual de los programas de detección de la displasia del desarrollo de la cadera
2. Tratamiento conservador de la displasia del desarrollo de la cadera
3. Necrosis avascular de la cabeza femoral secundaria a la terapia de abducción
4. Oblicuidad pélvica congénita

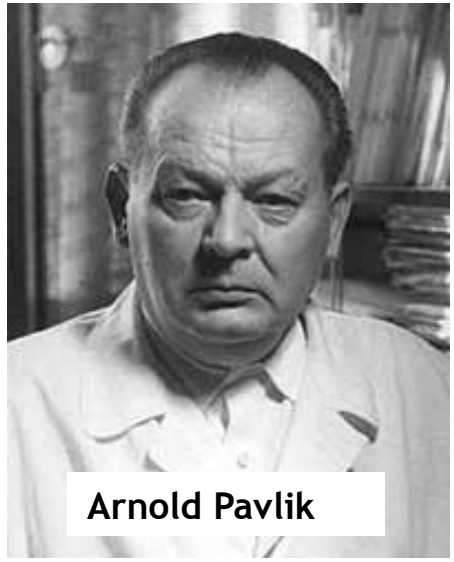
Displasia del desarrollo de la cadera



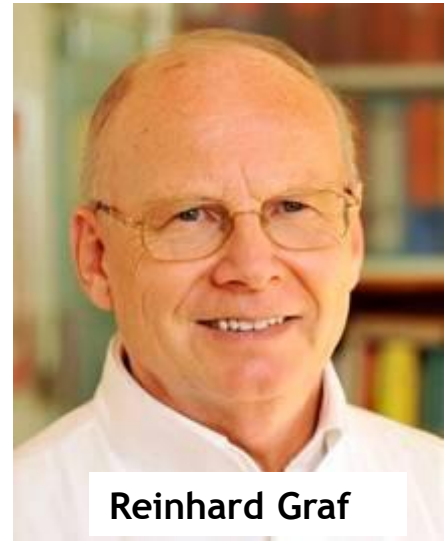
Pierre LeDamany 1870-1963

Displasia del desarrollo de la cadera


Marino Ortolani


Arnold Pavlik


Predrag Klisic


Reinhard Graf

Detección precoz

- Exploración física
  - Maniobras de Barlow y Ortolani
  - Limitación de la abducción
- Ecografía
  - Universal
  - Selectiva a los RN con factores de riesgo

Maniobras de Barlow y Ortolani

A Reappraisal of the Ortolani Examination in Children With Developmental Dysplasia of the Hip

Glenn E. Lipton, MD, James T. Guille, MD,*† Haluk Altiok, MD,*‡ J. Richard Bowen, MD,‡ and H. Theodore Harcke, MD,‡*

Abstract: The Ortolani maneuver is currently accepted as an accurate test to detect developmental dislocation of the hip. However, the clinical sign does not always correlate with the findings seen on ultrasound. The ultrasound-documented position of the femoral head was correlated with the result of the clinical Ortolani examination to better understand the value and validity of the Ortolani test. Two populations were compared: hips with a positive Ortolani sign and hips with a negative Ortolani sign but with an ultrasound-documented dislocated hip. In the Ortolani-positive group, there were 45 patients (53 affected hips), and in the Ortolani-negative group, there were 24 patients (25 dislocated hips). Position of the femoral head at rest, side of involvement, and sex showed no significant difference between the Ortolani-positive and -negative groups. Mean age of patients in the Ortolani-positive group was less (mean, 28 days) and was statistically different ($P < 0.05$) from those in the Ortolani-negative group (mean, 91 days). In conclusion, dislocated hips that show similar femoral head movement can produce an Ortolani-positive examination in a younger patient and an Ortolani-negative examination in an older patient. The classic clinical method described by Ortolani for detecting hip dislocation in which the thigh of the affected hip is abducted and the femoral head was thought to be reducing into the acetabulum can be erroneous. All Ortolani-positive hips were abnormal, as the sensation characteristic of a positive Ortolani examination may be felt without full reduction and, in some cases, with no reduction, as documented by ultrasound.

Key Words: Ortolani, developmental dysplasia of the hip, ultrasound

(*J Pediatr Orthop* 2007;27:27–31)

LeDamany,[1] in 1912, described a diagnostic maneuver in children with developmental hip dislocation. The maneuver involved abducting and adducting the involved hip and feeling the sensation of reduction and dislocation, which he termed "signe de ressaut." In 1937, Ortolani[2,3] had popularized this method for detecting hip dislocation and offered an anatomic explanation for its occurrence. Based on cadaveric studies, Ortolani showed that a ridge of hypertrophied acetabular cartilage along the acetabular edge (the so-called "neolimbus") was responsible. Ortolani termed this palpable sensation "segno dello scotto." The test that now bears his name is accepted as an accurate method for assessment of hip dislocation in the newborn and is the basis for clinical screening and diagnosis. Although Ortolani described his method as the most reliable clinical sign for the diagnosis of congenital dislocation of the hip at birth and in the first 2 months of life, he acknowledged the possibility that a false-negative examination will result when the femoral head is fixed in the so-called "neo-acetabulum" and cannot be reduced into the anatomic acetabulum. Fellander et al[4] have written on the problems with the term "hip click" in that other soft tissue structures of the hip can cause a "click" and that it is a palpable sensation and not an auditory cue.

The reliability and validity of the Ortolani examination have been questioned by some investigators. Hadlow,[5] in 1988, stated that the Ortolani examination may not be positive in a grossly dislocated hip with poor acetabular development and capsular laxity. MacKenzie and Wilson[6] stated that the movement of the femoral head into the acetabulum is not always demonstrable in the dislocated hip and may be seen only when the child is anesthetized.

Examination of the hip with ultrasound has been shown to be an effective method for detecting developmental dysplasia of the hip.[7–11] Studies[7,9,11–15] have confirmed reliability and have shown that ultrasound is more sensitive in detecting abnormal hip joints than a clinical examination. Tönnis et al[16] reported that ultrasound could show acetabular dysplasia in hips with no clinical signs of instability, and Holen et al[17] suggested that ultrasound is reliable in distinguishing between true-positive and false-positive Ortolani examinations.

The purposes of the present study were to determine what degree of reduction the femoral head undergoes with respect to the acetabulum when Ortolani examination is performed and to correlate these changes with the presence or absence of the clinical sign.

METHODS

This is a retrospective review of 400 infants who were referred to us during a 6-year period with the diagnosis of developmental dislocation of the hip. Patients who had received treatment before presenting to our institution were

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Investigation was performed at the Alfred I. duPont Hospital for Children, Wilmington, DE.

None of the authors received financial support for this study.

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1. Ortolani + y eco patológica: 28 días
2. Ortolani – y eco patológica: 91 días
3. Todos los lactantes con Ortolani + tenían caderas patológicas

Early Human Development 89S4 (2013) S102–S103

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Developmental dysplasia of the hip: to screen or not to screen with ultrasound

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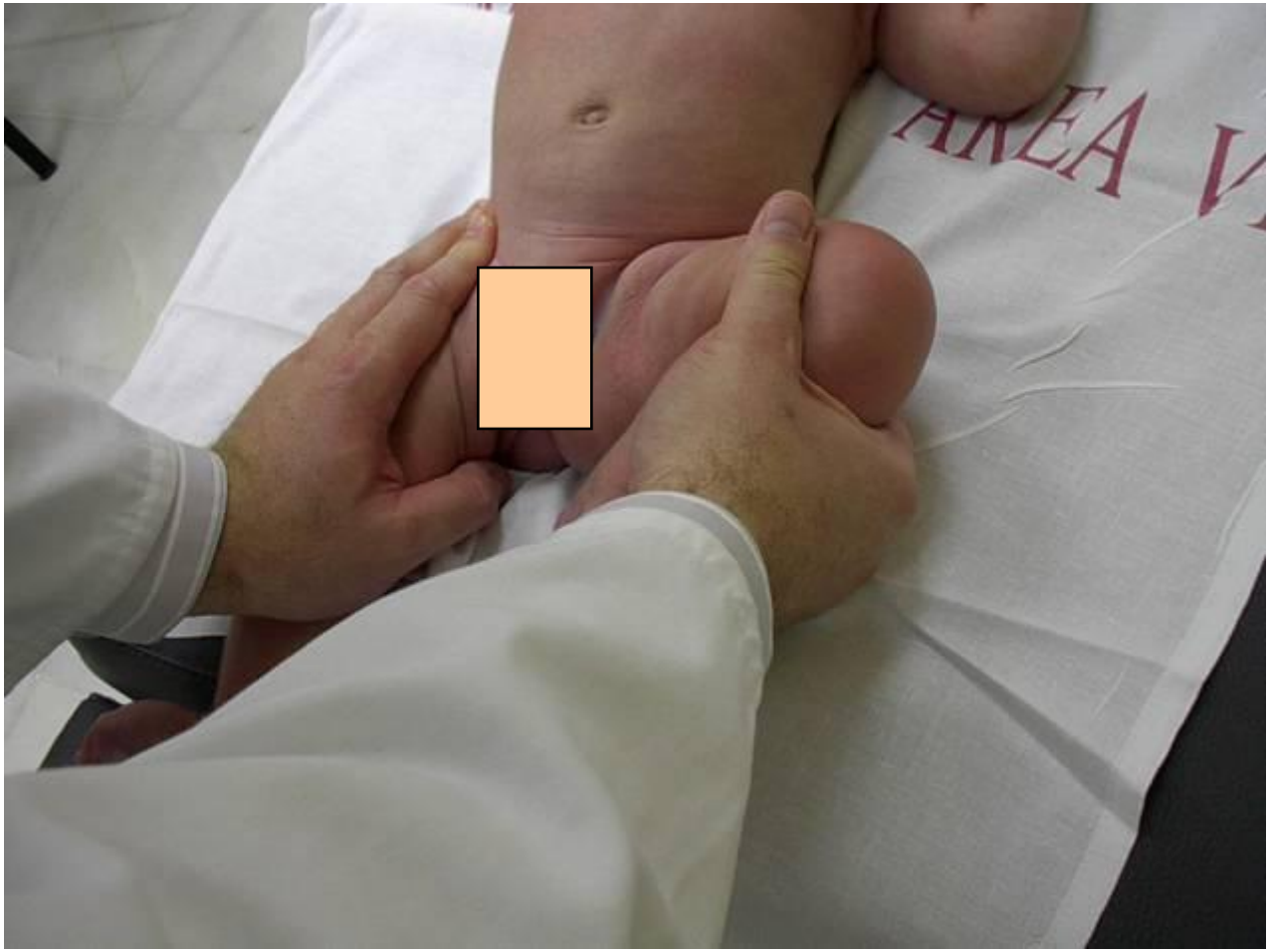
[b] Paediatric Orthopaedics Unit, Vita Salute University, IRCCS San Raffaele Hospital, Milan, Italy

Correlation between Ortolani's sign and DDH with age at clinical and ultrasound evaluation.

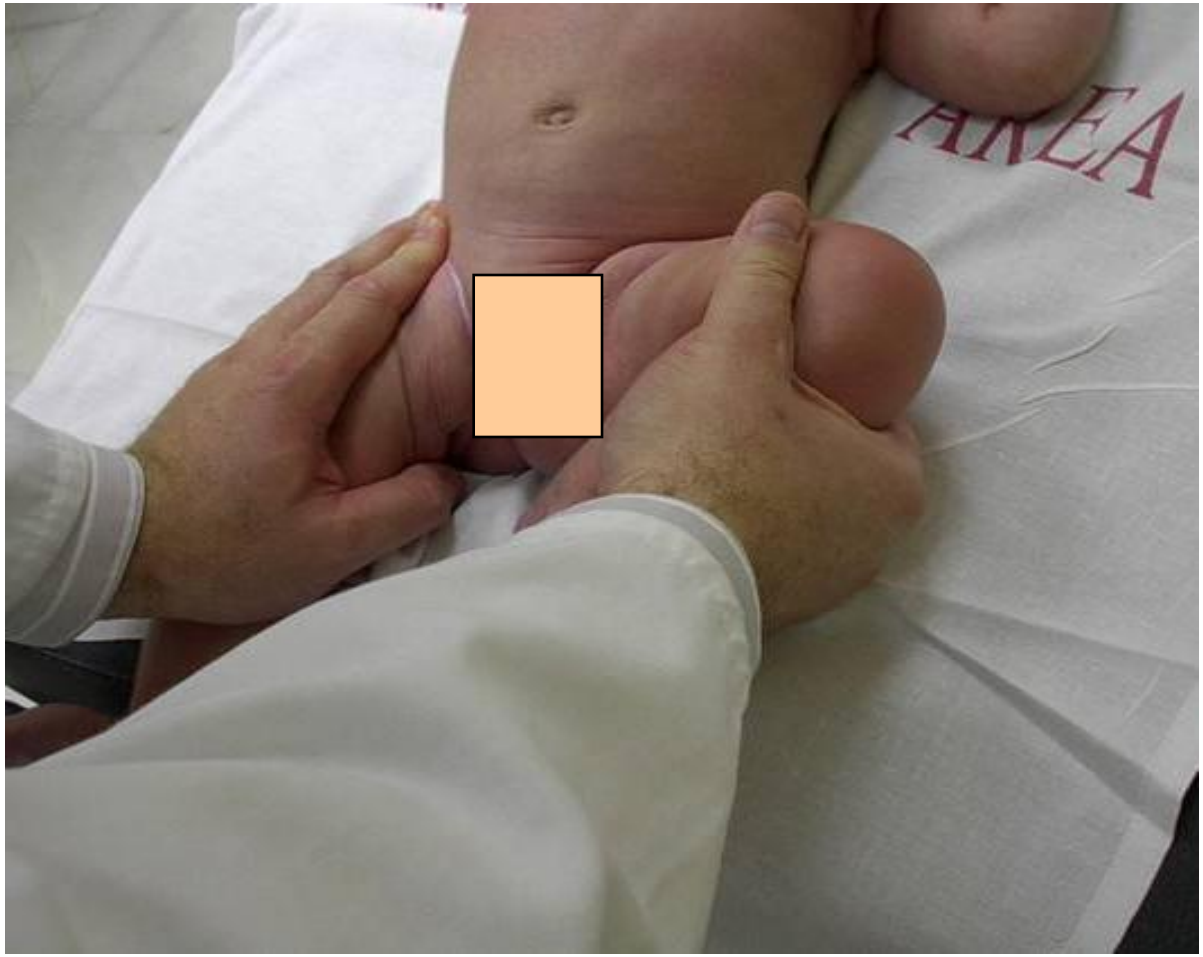
Hip types (according to Graf)	Number of hips	Number of hips with positive Ortolani's sign (%)	Mean age (days)
D	298	1 (0.34)	43.47
IIIa	252	48 (18.65)	35.39
IIIb	4	1 (25)	124.75
IV	20	11 (55)	36.15

Limitación de la abducción de la cadera



1. Completa sin resistencia
2. Completa con resistencia
3. Limitada

Limitación de la abducción de la cadera



DDC: 31% no presentan limitación de la abducción

Cadera normal: 46% presentan limitación de la abducción

Ecografía normal: Cadera normal a los 5 años de seguimiento

Castelein RM, Korte J. Limited hip abduction in the infant. J Pediatr Orthop 2001; 21: 668-670

Todos los neonatos deben estudiarse sistemáticamente mediante la exploración física

1. **Exploración anómala a las 2 semanas: remitir al ortopeda**
2. **Exploración normal: seguimiento hasta el año**

Lehmann HP , Hinton R , Morello P , Santoli J and the Commitee on Quality Improvement , and Subcommitee on Developmental Dysplasia of the Hip . Developmental Dysplasia of the Hip Practice Guideline : Technical Report. Pediatrics 2000 ; 105 : e57

1. La exploración ecográfica generalizada en el RN no se recomienda.
2. Se aconseja el examen clínico al nacer y a las 6 semanas mediante las maniobras de Barlow y Ortolani

1. **Mejorar los programas de detección**
2. **Determinar la tasa de cirugía**
3. **Estudio prospectivo multicéntrico de los casos con ecografía patológica**

Child health screening and surveillance: A critical review of the evidence
Centre for Community Child Health, Royal Children's Hospital Melbourne
for the National Health and Medical Research Council. 15.3.2002

1.La fisiopatología de la DDC es poco conocida
2.Estudios de baja calidad sobre la eficacia del tratamiento conservador y quirúrgico
3.No está clara la relación riesgo (necrosis avascular; 0-60%) beneficio

1. **Conocer la historia natural**
2. **Determinar la repercusión funcional a largo plazo**
3. **Desarrollar sistemas fiables para evaluar el resultado del tratamiento**

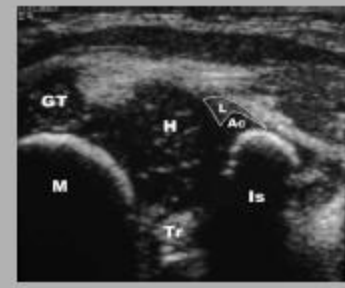
Screening for developmental dysplasia of the hip: recommendation statement.United States Preventive Services Task Force (USPSTF). Rockville (MD): Agency for Healthcare Research and Quality; 2006

Evitar artropatía de cadera a los 16 años

1. **Sin screening**
2. **Screening clínico y ecográfico universal**
3. **Screening clínico universal y ecográfico en casos seleccionados (recomendado)**

Mahan ST, Katz J, Kim YJo. To Screen or Not to Screen? A Decision Analysis of the Utility of Screening for Developmental Dysplasia of the Hip. J Bone Joint Surg Am 2009; 91:1705-1719

AIUM Practice Guideline for the Performance of an Ultrasound Examination for Detection and Assessment of Developmental Dysplasia of the Hip



1. Hallazgos patológicos en la exploración física
2. Monitorización de pacientes tratados con arnés de Pavlik
3. Historia familiar de DDC
4. Presentación de nalgas
5. Oligohidramnios o causas intrauterinas de moldeado postural
6. Enfermedades neuromusculares
7. A realizar a las 3-4 semanas

[Intervention Review]

Screening programmes for developmental dysplasia of the hip in newborn infants

Citation: Shorter D, Hong T, Osborn DA. Screening programmes for developmental dysplasia of the hip in newborn infants. *Cochrane Database of Systematic Reviews* 2011, Issue 9. Art. No.: CD004595. DOI: 10.1002/14651858.CD004595.pub2.

1. Insuficiente evidencia para establecer una recomendación clara
2. La realización de ecografía universal no produce mayores tasas de tratamiento
3. Ninguna estrategia ecográfica ha conseguido mejorar los resultados clínicos: casos de diagnóstico tardío y casos quirúrgicos

Screening Strategies for Hip Dysplasia: Long-term Outcome of a Randomized Controlled Trial

WHAT'S KNOWN ON THIS SUBJECT: Only 2 randomized controlled trials have addressed effects of ultrasound screening for developmental hip dysplasia. Both concluded that adding universal or selective ultrasound to routine clinical examination gave a nonsignificant reduction in rates of late presenting cases, but higher treatment rates.

WHAT THIS STUDY ADDS: This maturity review assesses long-term outcome of one of these trials. Rates of radiographic findings indicating acetabular dysplasia and degenerative change were similar across the 3 screening groups in young adulthood. Increased treatment rates were not associated with avascular necrosis.

abstract

OBJECTIVE: Screening for hip dysplasia is controversial. A previous randomized controlled trial revealed that adding universal or selective ultrasound to routine clinical examination gave a nonsignificant reduction in rates of late presenting cases, but with higher treatment rates. This study assesses differences in outcome at skeletal maturity for the 3 newborn screening strategies in terms of radiographic markers of acetabular dysplasia and early degenerative change and avascular necrosis (AVN) secondary to neonatal treatment.

METHODS: From the initial trial including 11 925 newborns, a population-based sample of 3935 adolescents was invited for follow-up at age 18 to 20 years. A standardized weight-bearing anteroposterior view was obtained. The outcomes evaluated were the radiographic findings of dysplasia (center-edge angle, femoral head extrusion index, acetabular depth-width ratio, Sharp's angle, subjective evaluation of dysplasia) and degenerative change (joint-space width). Signs of AVN were documented.

RESULTS: Of the 3935 subjects invited, 2038 (51.8%) attended the maturity review, of which 2011 (58.2% female patients) were included: 551, 665, and 795 subjects from the universal, selective, and clinical groups, respectively. Rates per group of positive radiographic findings associated with dysplasia or degenerative change varied depending on radiographic marker used. No statistically significant differences were detected between groups. No AVN was seen.

CONCLUSIONS: Although both selective and universal ultrasound screenings gave a nonsignificant reduction in rates of late cases when compared with expert clinical programs, we were unable to demonstrate any additional reduction in the rates of radiographic findings associated with acetabular dysplasia or degenerative change at maturity. Increased treatment rates were not associated with AVN. *Pediatrics* 2013;132:492–501

AUTHORS: Lene B. Laborie, MD,[a,b] Ingvild B. Engesæter, MD,[a,b,c] Trude G. Lehmann, MD, PhD,[c] Deborah M. Eastwood, FRCS,[d] Lars B. Engesæter, MD, PhD,[a,c] and Karen Rosendahl, MD, PhD[a,b]

[a]*Department of Clinical Medicine, University of Bergen, Norway;* [b]*Section for Pediatric Radiology, Departments of Radiology, and* [c]*Orthopedic Surgery, Pediatric Section, Haukeland University Hospital, Bergen, Norway; and* [d]*The Catterall Unit, The Royal National Orthopaedic Hospital, Brockley Hill, Stanmore, Middlesex, United Kingdom*

KEY WORDS
hip dysplasia, ultrasound, randomized controlled trial, follow-up studies, neonatal screening

ABBREVIATIONS
ADR—acetabular depth-width ratio
AVN—avascular necrosis
CE—centre-edge
DDH—developmental dysplasia of the hip
FHEI—femoral head extrusion index
RCT—randomized controlled trial

Dr Laborie collected the data material at follow-up, was responsible for the linkage of data from the initial trial and from the follow-up study, performed the radiographic digital measurements, drafted the initial manuscript and was responsible for the statistical analyses, and revised the manuscript; Dr Engesæter collected the data material at follow-up, performed the radiographic digital measurements, and critically reviewed and revised the manuscript; Dr Lehmann collected the data material at follow-up, performed the radiographic digital measurements, and critically reviewed and revised the manuscript; Ms Eastwood offered help and advice regarding study design and data collection, contributed to the preliminary statistical analyses, and critically reviewed and revised the manuscript; Dr Engesæter conceptualized and designed the follow-up study, coordinated and participated in collection of the data material at follow-up, and reviewed and revised the manuscript; Dr Rosendahl conceptualized and designed the initial randomized controlled trial and also the follow-up study, collected all data and performed all ultrasounds for the initial trial, interpreted all radiographs at skeletal maturity by gross vision, contributed to the statistical analyses, and reviewed and revised the manuscript; and all authors approved the final manuscript as submitted.

This trial has been registered at www.clinicaltrials.gov (identifier NCT01818984).

www.pediatrics.org/cgi/doi/10.1542/peds.2013-0911

doi:10.1542/peds.2013-0911

Accepted for publication Jun 20, 2013

(Continued on last page)

Luxación tardía
1. Ecografía universal: 0.3
2. Ecografía selectiva: 0.7
3. Sin ecografía: 2.6 / 1000

Luxación congénita de cadera. Políticas de prevención en el mundo. Revisión de la bibliografía y experiencia personal

A. Dimeglio, F. Canavese y M. Bertrand
Servicio de Cirugía Ortopédica Pediátrica. Hospital Lapeyronie. Montpellier. Francia.

País	Natalidad anual	Estrategia
Languedoc	25.000	Centro de Referencia
Bulgaria	70.000	Revisión en Ortopedia Infantil
Alemania	675.000	Ecografía generalizada
Suecia	80.000	Revisión en Ortopedia Infantil Ecografía selectiva
USA	4.000.000	Revisión en Ortopedia Infantil Ecografía selectiva
Canadá	350.000	Revisión en Ortopedia Infantil Ecografía selectiva
Nueva Zelanda	50.000	Revisión en Ortopedia Infantil Ecografía selectiva

Indicación selectiva de ecografía de cadera

Clínicas	Antecedentes	Asociaciones
1. Ortolani + 2. Limitación de la abducción	1. Familiar 2. Pretérmino con ingreso 3. Presentación pelviana 4. Moldeamiento postural	1. Tortícolis muscular 2. Parálisis braquial obstétrica 3. Metatarso aducto II y III 4. Pie zambo 5. Artrogriposis 6. Luxación congénita de rodilla 7. Patología neurológica

Protocolo de diagnóstico y tratamiento de la displasia del desarrollo de la cadera de la Unidad de Rehabilitación Infantil y de la Unidad de Ortopedia Infantil del H U Virgen Macarena de Sevilla

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Orthopaedics & Traumatology Surgery & Research

Special Vol. 100

Pathogeny and natural history of congenital dislocation of the hip☆

R. Seringe*, J.-C. Bonnet, E. Katti

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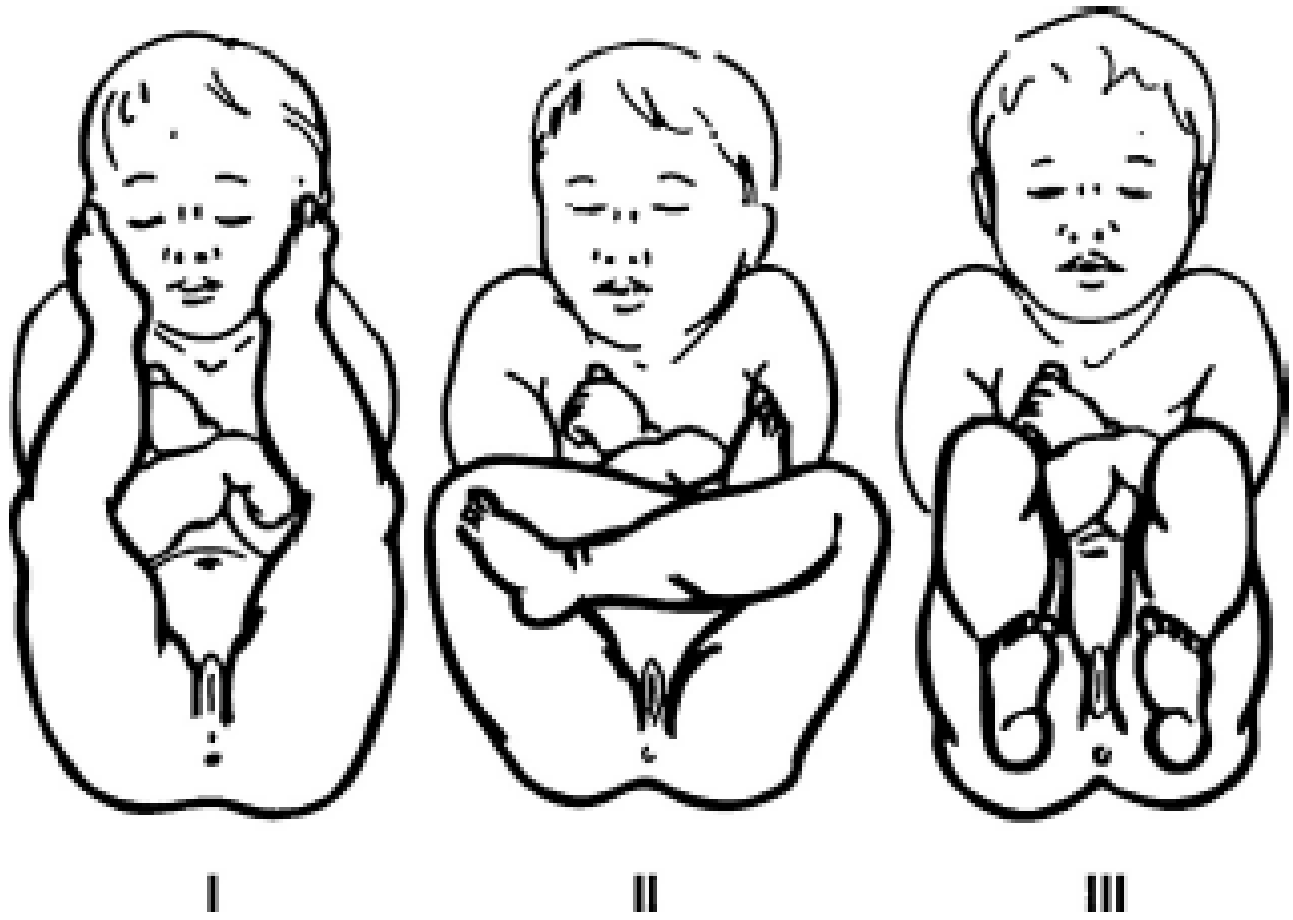
ARTICLE INFO

Keywords:
Hip
Congenital dislocation
Natural history
Pathogenesis

ABSTRACT

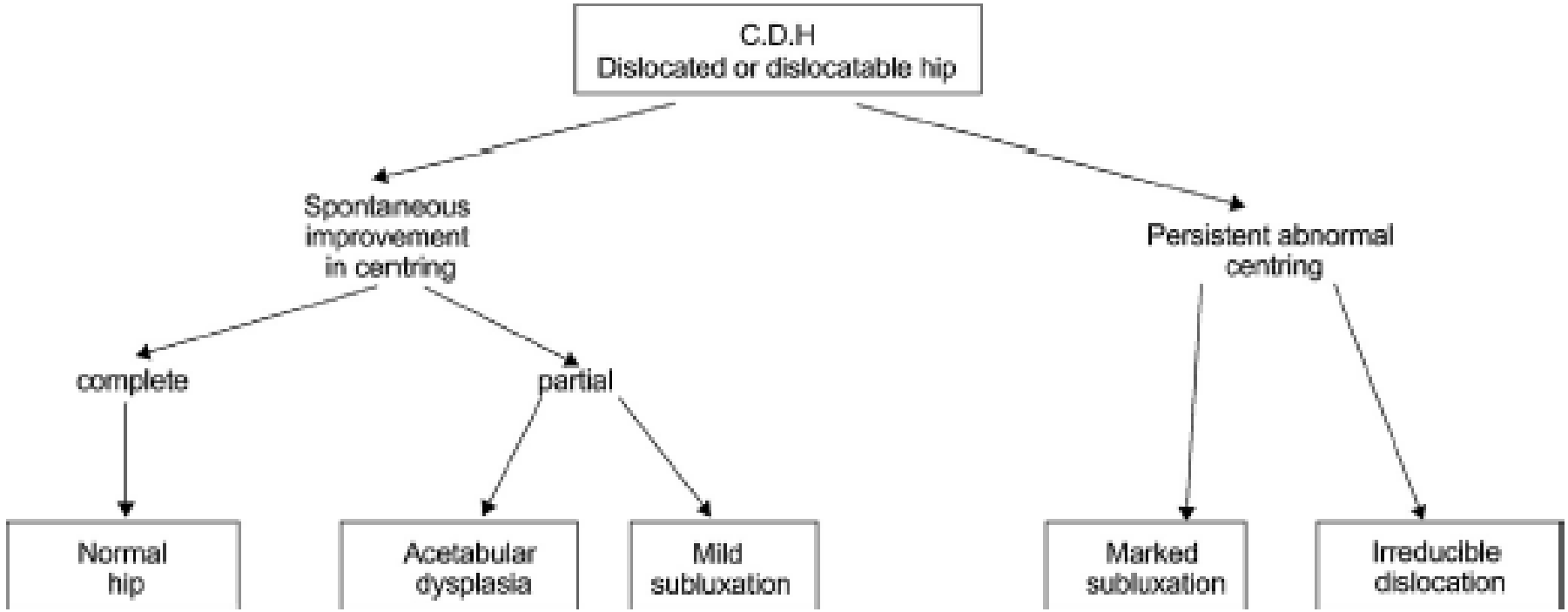
Based on a review of the literature, the authors have made a critical study of several etiological factors. Endogenous factors such as acetabular dysplasia, increased anteversion of the femoral neck, and capsular laxity support the genetic theory but are neither constant nor necessary and are only facilitating factors. The major factor seems to be a mechanical one linked to the position in the uterus: hyperflexion with adduction and external rotation *constituting the dislocating foetal posture combined with* abnormal pressure on the greater trochanter and leading to expulsion of the head upward and backward. This theory can explain the natural history of C D H which is first, at birth a hip instability followed by two possible evolutions: either persistent luxation becoming irreducible or spontaneous stabilisation leading sometimes to complete healing or to residual abnormalities (subluxation or dysplasia). This concept suggests practical conclusions: the importance of an early diagnosis, the selection of the signs of the hip at risk, the pattern of prevention, the role for non-clinical investigations, the principles of the treatment based on postures, the indications for the different types of treatment.

Displasia del desarrollo de la cadera
Patogenia y evolución inicial



Seringe R, Bonnet J-C, Katti E. Pathogeny and natural history of congenital dislocation of the hip. Orthop Traumatol Surg Res 2014, http://dx.doi.org/10.1016/j.otsr.2013.12.006

Displasia del desarrollo de la cadera
Patogenia y evolución inicial

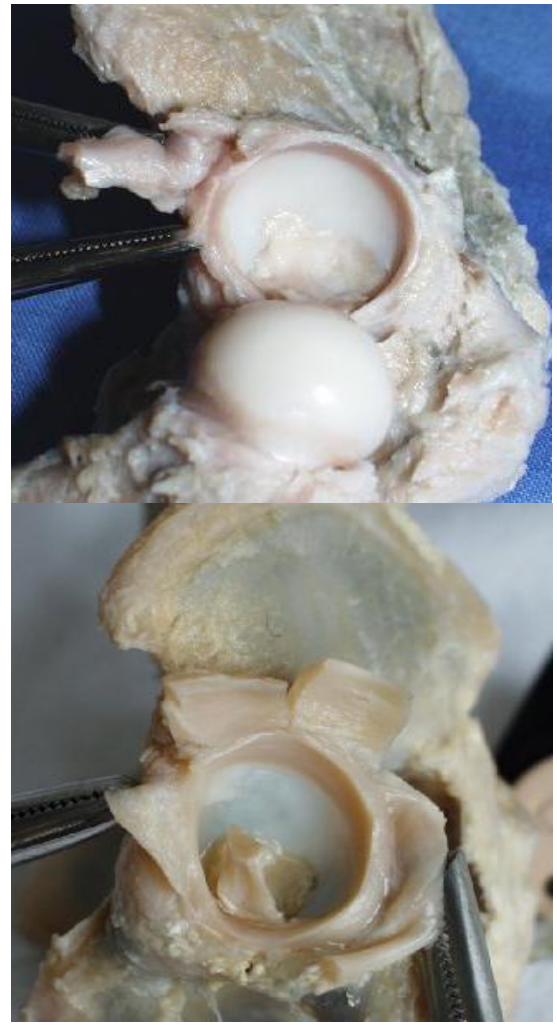


Seringe R, Bonnet J-C, Katti E. Pathogeny and natural history of congenital dislocation of the hip. Orthop Traumatol Surg Res 2014, http://dx.doi.org/10.1016/j.otsr.2013.12.006

Displasia del desarrollo de la cadera
Historia natural

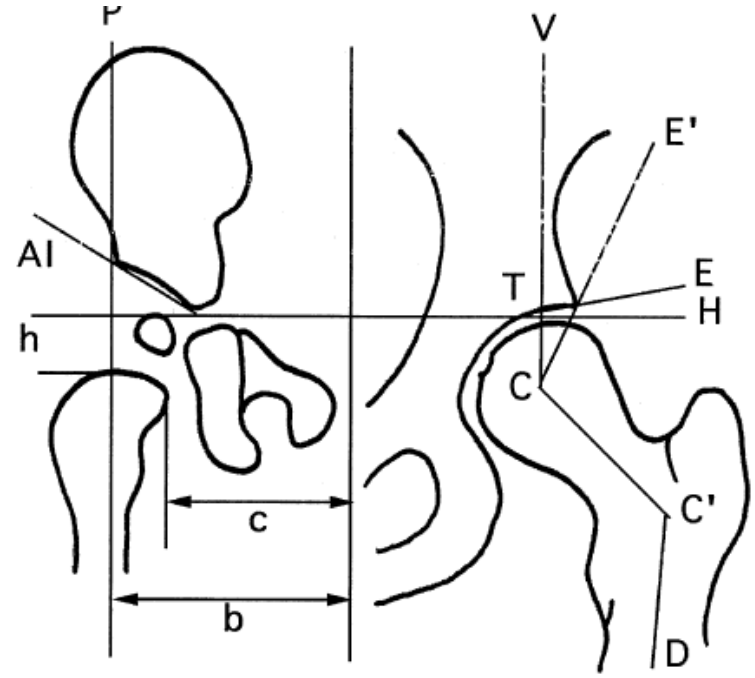
1. Displasia acetabular
2. Anesfericidad de la cabeza femoral
3. Luxación progresiva
4. Oblicuidad pélvica y acortamiento
5. Coxartrosis precoz

De Sanctis V, Atti G. Diagnosi e trattamento della Displasia Evolutiva dell'Anca:ruolo dell'esame clinico ed ecografico nella diagnosi precoce. Centro "Marino Ortolani" per la diagnosi precoce e la terapia della lussazione congenita dell'anca Azienda Ospedaliera – Universitaria di Ferrara, 2007



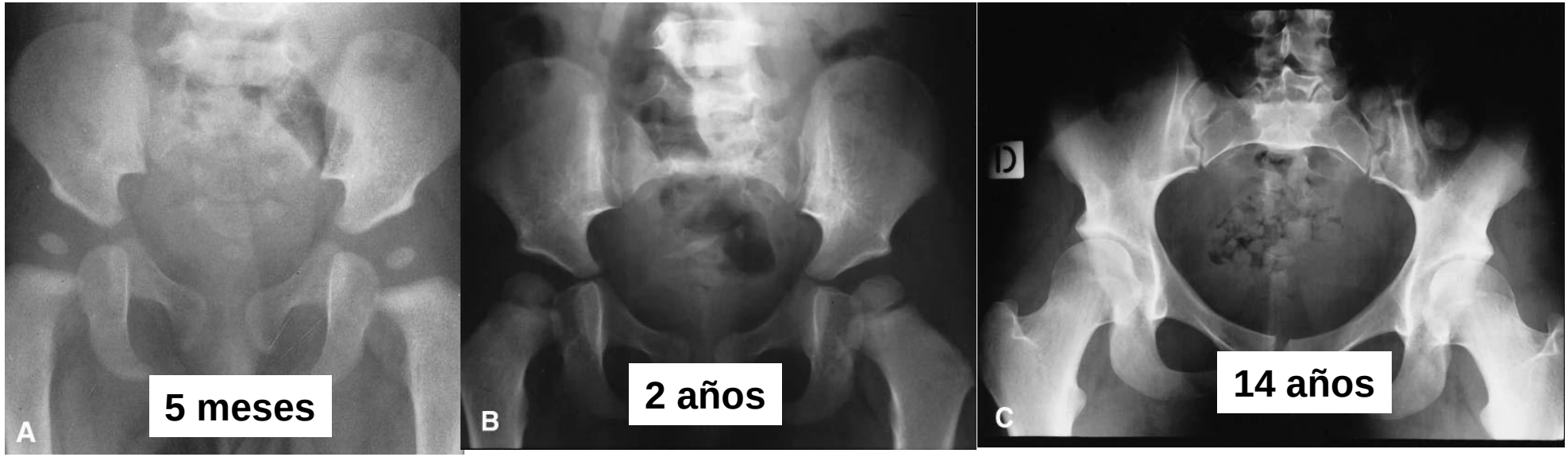
Displasia del desarrollo de la cadera
Displasia acetabular

1. Normalización rápida (antes de los 2 años): 37%
2. Normalización lenta (entre los 4 y 11 años): 28%
3. Displasia leve: 20%
4. Sin mejoría: 6%



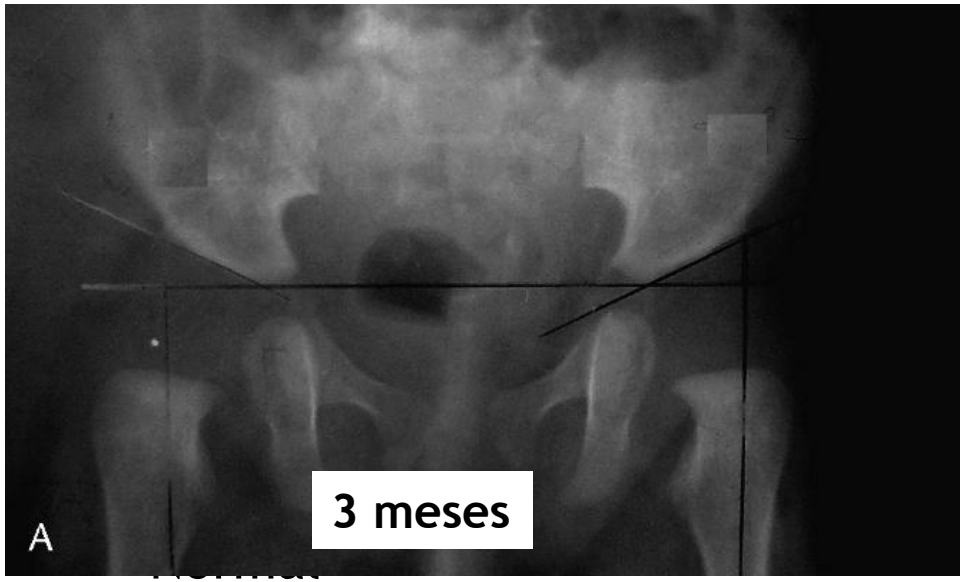
Mladenov K, Dora C, Wicart P, Seringe R. Natural History of Hips with Borderline acetabular Index and Acetabular Dysplasia in Infants. J Pediatr Orthop 2002; 22: 607-612.

Displasia del desarrollo de la cadera
Displasia acetabular. Evolución tipo 1



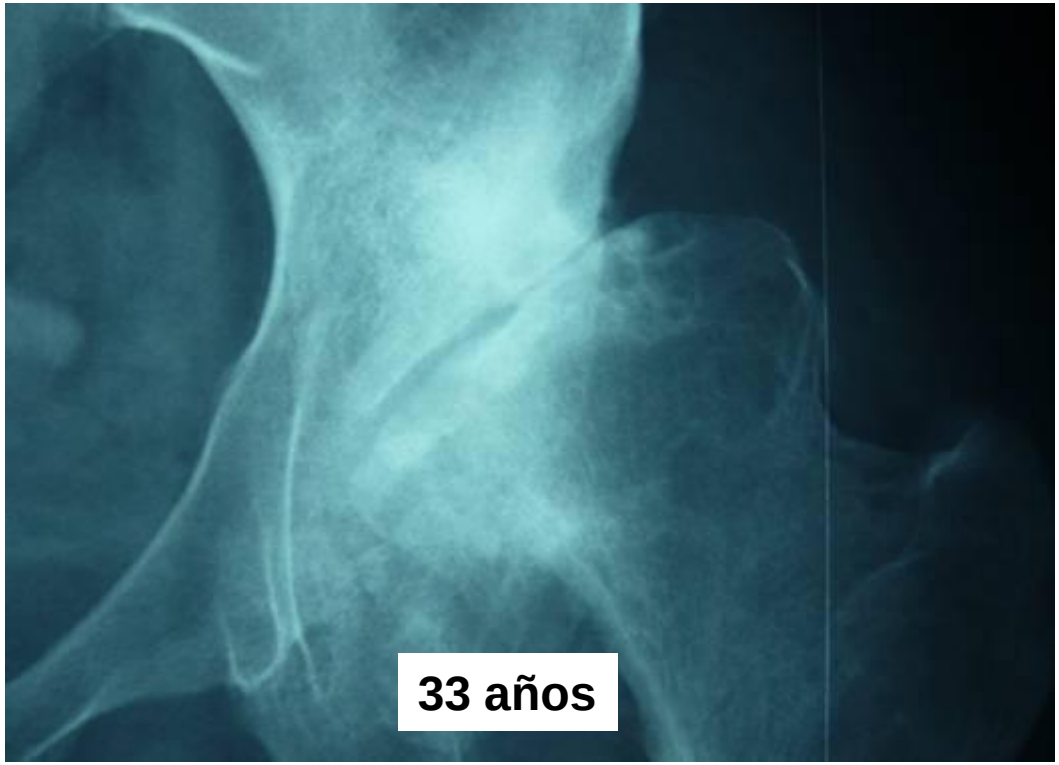
Mladenov K, Dora C, Wicart P, Seringe R. Natural History of Hips with Borderline acetabular Index and Acetabular Dysplasia in Infants. J Pediatr Orthop 2002; 22: 607-612.

Displasia del desarrollo de la cadera
Luxación progresiva



Raimann A, Baar A, Raimann R, Morcuende JA. Late Developmental Dislocation of the Hip after initial normal evaluation. A report of five cases. J Pediatr Orthop 2007, 27: 32-36

Displasia del desarrollo de la cadera
Coxartrosis precoz



De Sanctis V, Atti G. Diagnosi e trattamento della Displasia Evolutiva dell'Anca:ruolo dell'esame clinico ed ecografico nella diagnosi precoce. Centro "Marino Ortolani" per la diagnosi precoce e la terapia della lussazione congenita dell'anca Azienda Ospedaliera – Universitaria di Ferrara, 2007

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ORTHOPAEDICA
et
TRAUMATOLOGICA
TURCICA

ORIGINAL ARTICLE

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doi:10.3944/AOTT.2011.2644

Prevalence of untreated hip dislocation in Turkish children aged 6 months to 14 years

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[2]Department of Orthopedics and Traumatology, İzmir Kent Hospital, İzmir, Turkey;
[3]Department of Biostatistics, Faculty of Medicine, Hacettepe University, Ankara, Turkey;
[4]Department of Orthopedics and Traumatology, Şişli Etfal Training and Research Hospital, İstanbul, Turkey

Objective: In this study, our aim was to determine the prevalence of untreated hip dislocation and subluxation in Turkey.

Methods: Pelvic radiographs of 4,947 children, aged between 6 months and 14 years, taken for non-orthopedic purposes were requested from 23 provinces around the country. 3,723 radiographs met the study criteria and were evaluated. Dislocated and subluxated hips were identified according to the relationship of femoral head using Perkin's line and quadrants.

Results: Thirty-five hips in 22 children were found to be dislocated or subluxated. The prevalence rate was calculated as 5.9‰.

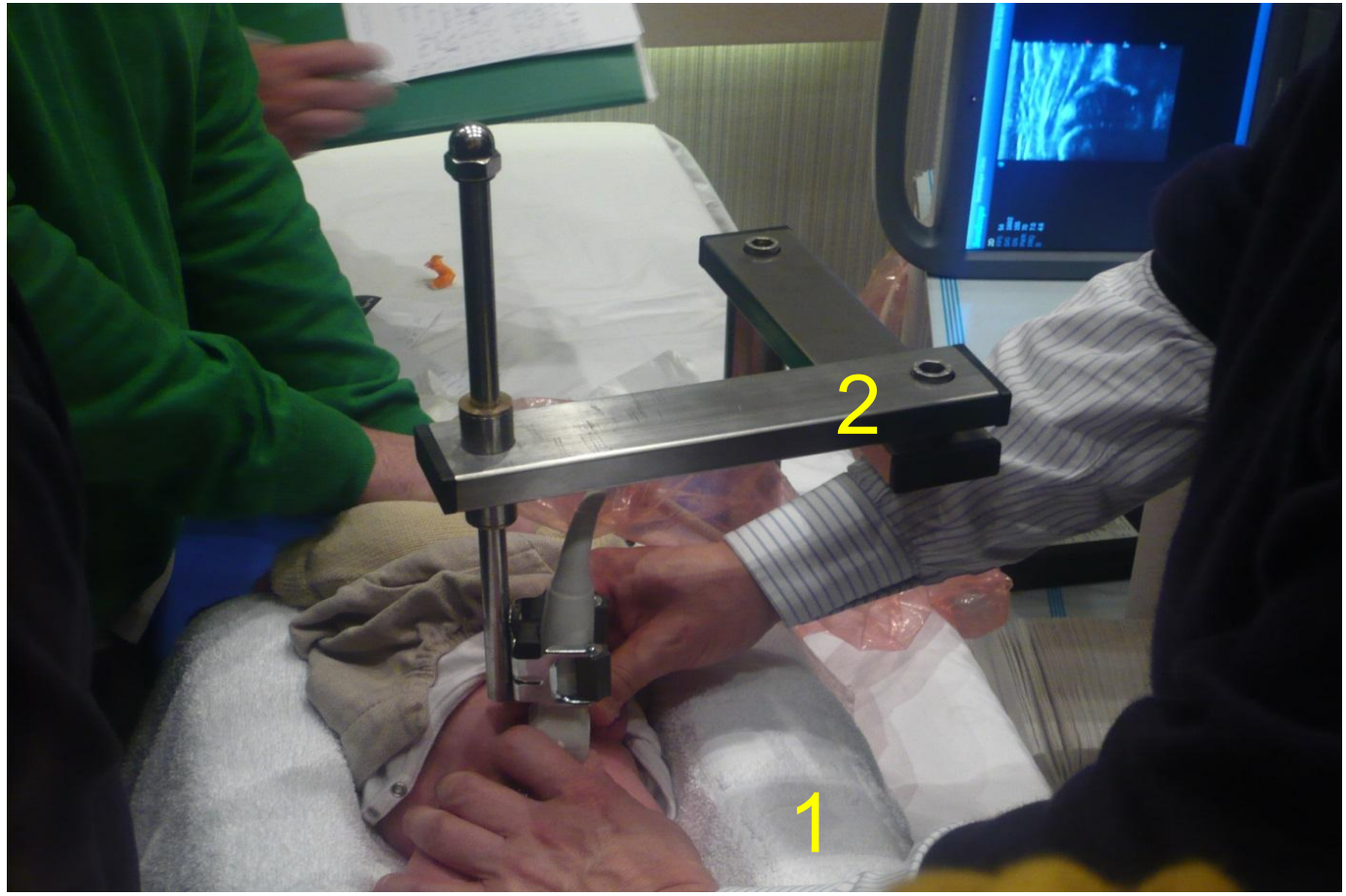
Conclusion: Despite appearing to have decreased when compared to limited regional prevalence studies, hip dislocation and subluxation prevalence is still unacceptably high. More extensile work should be done to avoid external factors in the etiology of developmental dysplasia of the hip and to organize screening programs in newborns.

Key words: Developmental hip dysplasia; epidemiology; prevalence.

Ecografía de la cadera: método de Graf

1. Técnica de realización correcta
2. Lista de comprobación 1: anatómica
3. Lista de comprobación 2: validación de la imagen ecográfica
4. Medida de los ángulos
5. Definir el tipo de cadera
5. Informe

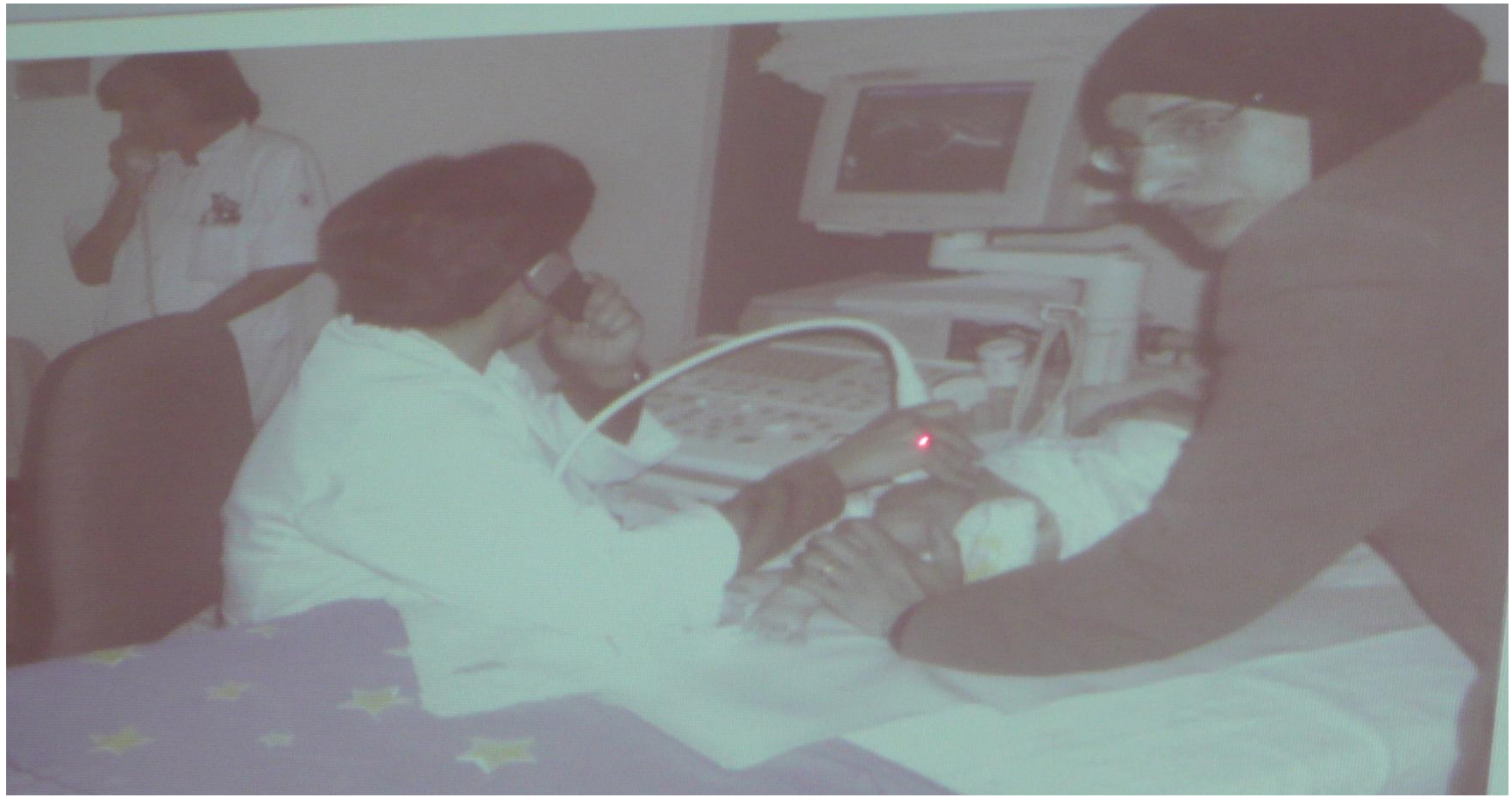
Técnica de realización correcta



Lecho de Graf

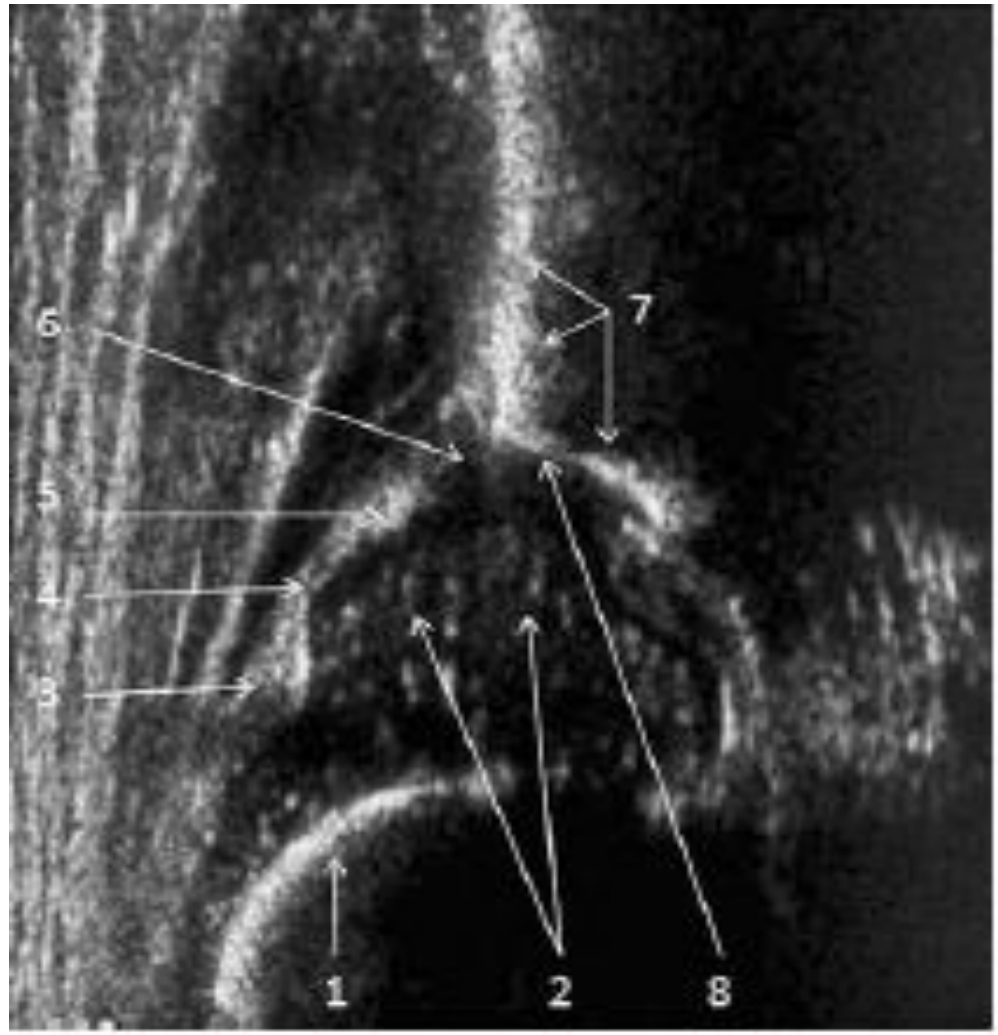
1. SonoFix
2. SonoGuide

Técnica de realización incorrecta



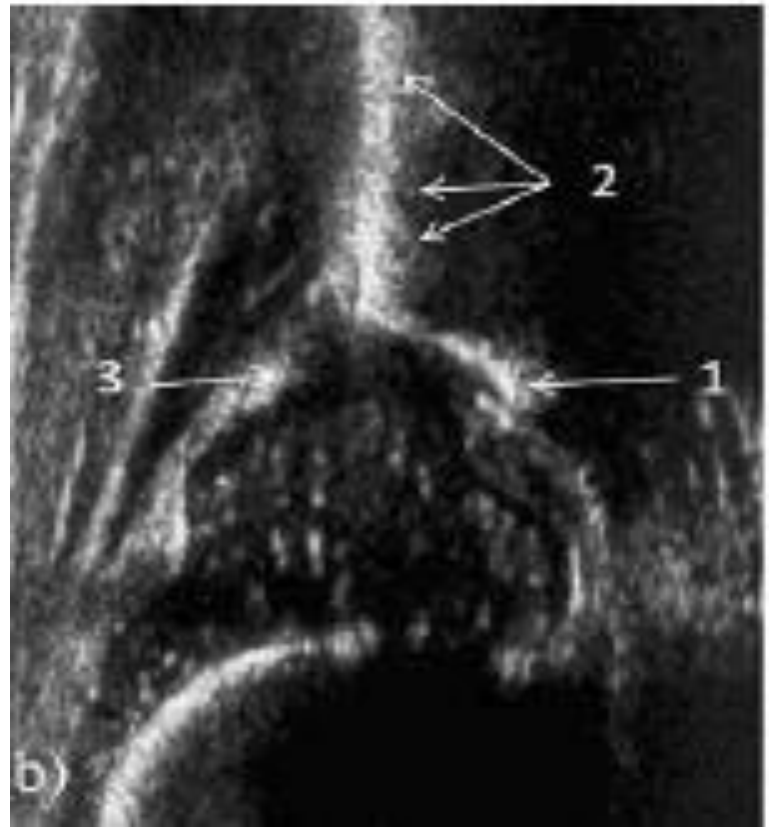
Lista de comprobación: 1 anatómica

1. Línea osteo-cartilaginosa
2. Cabeza femoral
3. Repliegue capsular
4. Cápsula
5. Labrum
6. Techo cartilaginoso
7. Techo óseo
8. Promontorio (concavidad-convexidad)



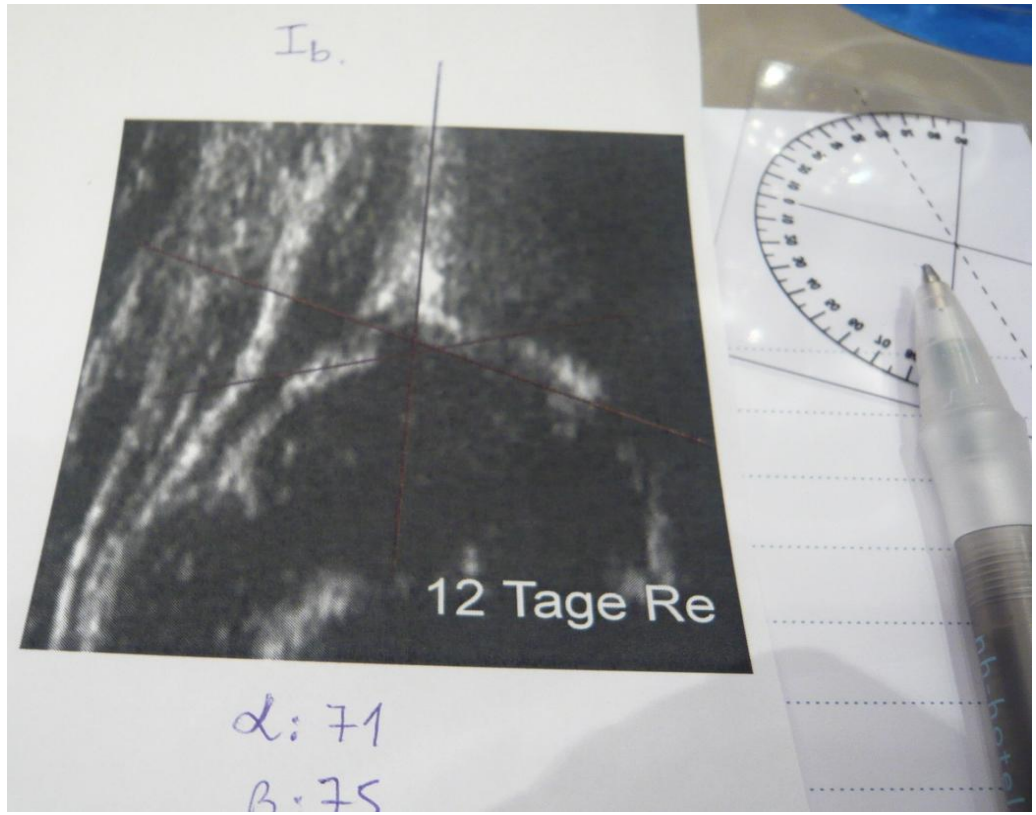
Lista de comprobación: 2 validación

1. Límite inferior del ilion
2. Ilion
3. Labrum



Medida de los ángulos

1. Línea del techo óseo
2. Línea del ilion
3. Línea del techo cartilaginoso
4. Ángulo alfa
5. Ángulo beta



Arch Orthop Trauma Surg (1984) 102 : 248–255

Archives of Orthopaedic and Traumatic Surgery

Classification of Hip Joint Dysplasia by Means of Sonography

R. Graf

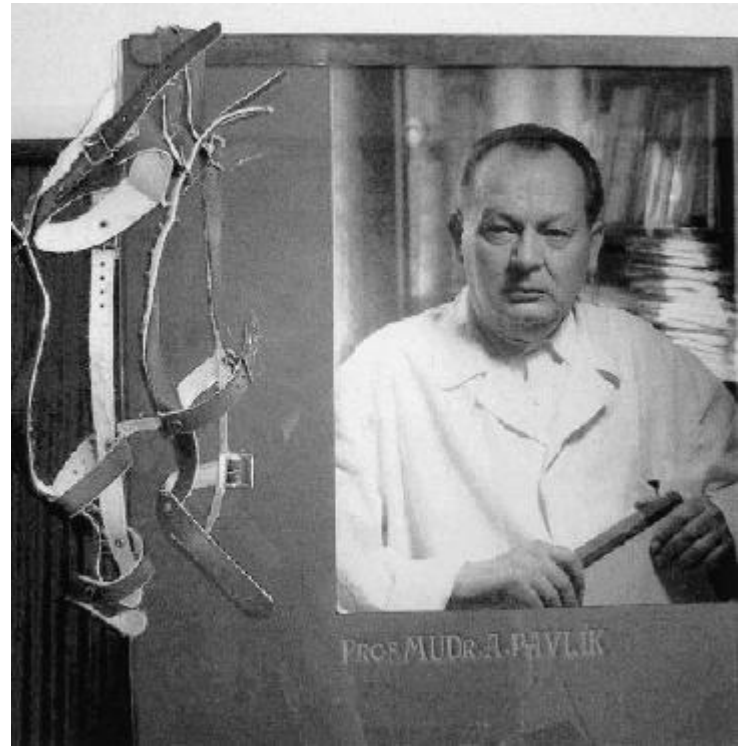
Graf Hip Type	Descriptive Term	α Angle (degrees)	β Angle (degrees)	Age (years)	Recommended Treatment	Equivalent Radiographic Description
I a	Normal	≥ 60	> 70	Any	No	Concentrically reduced
I b	Normal	≥ 60	< 70	Any	No	Concentrically reduced
II a*	Physiologically immature	50–59	na‡	0–12 weeks	Depends on age and α angle	Concentrically
II b	Immature	50–59	na‡	> 12 weeks	Yes	Concentrically reduced
II c	Dysplastic with risk for dislocation	43–49	< 77	Any	Yes	Centered on medial wall of acetabulum with sloping of roof
D	Decentered	43–49	> 77	Any	Yes	Subluxated
III a	Decentered	< 43	na†	Any	Yes	Dislocated
III b	Decentered	< 43	na†	Any	Yes	Dislocated
IV	Decentered	< 43	na†	Any	Yes	Dislocated

*After the age of 6 weeks Type II a is subclassified in II a plus (still considered physiologically immature and no treatment is mandated) and II a minus (immaturity is not considered to be physiologic anymore and treatment is mandated) according to the α angle; †Beta angles must not be measured in decentered hips; ‡Defined by α angle only; na = Not applicable

Displasia del desarrollo de la cadera

Tratamiento conservador : Arnés de Pavlik

- Por debajo de los 4 m
- No en artrogriposis o parálisis cerebral
- No si hay mucha inestabilidad
- Buenos resultados: 80%



Tibrewal S, Gulati V, Ramachandran M. The Pavlik method: a systematic review of current concepts. J Pediatr Orthop B 2013, 22: 516-520

Bialik GM, Eidelman M, Katzman A, Peled E. Treatment duration of development dysplasia of the hip: age and sonography. J Pediatr Orthop B 2009; 18: 308-313

Arnés de Pavlik
Normas de uso

- Se ajusta en 110º de flexión y 40º de abducción
- Se revisa cada 15 días
- Se aconseja estiramiento de las rodillas
- Se retira (de forma progresiva) cuando hay confirmación ecográfica y radiológica de curación
- Si se retira de una vez se obtienen los mismos resultados

Westacott DJ et al. Staged weaning versus inmediate cessation of Pavlik harness treatment for developmental dysplasia of the hip. J Pediatr Orthop 2014, 23: 103-106

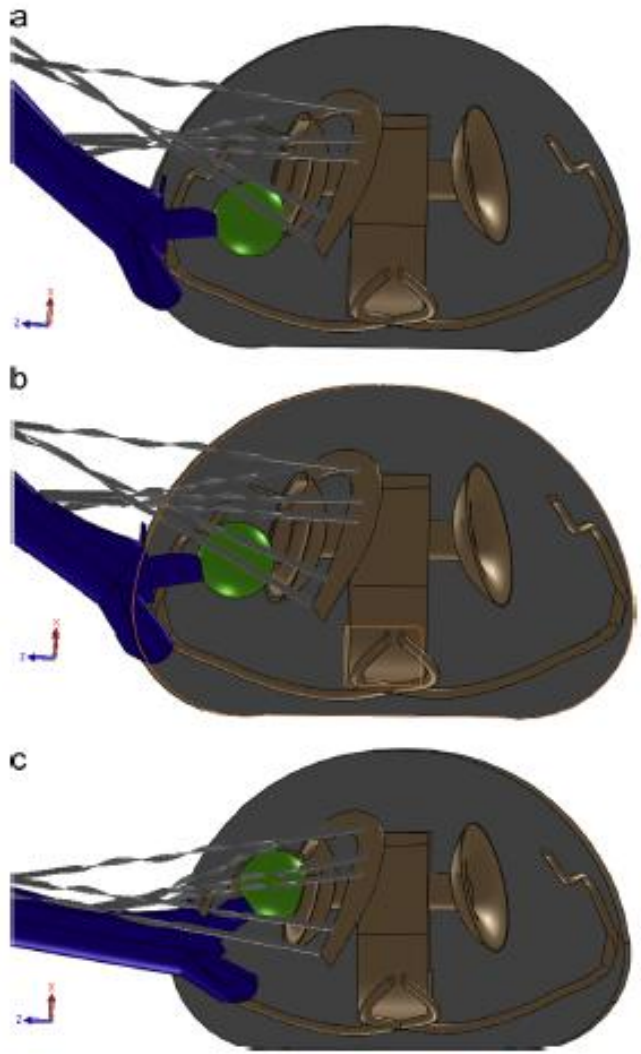
Arnés de Pavlik
Tiempo de uso

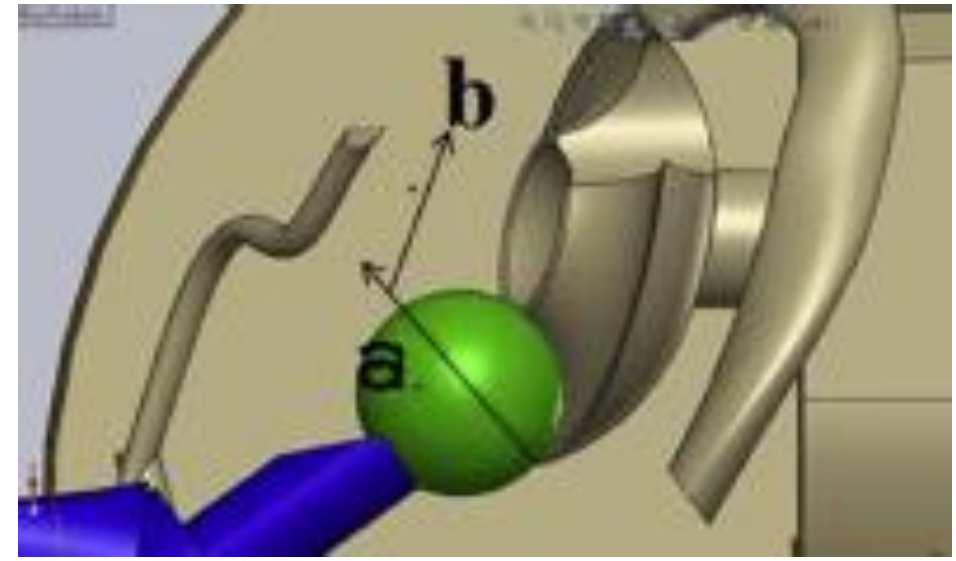
- USA
  - 3-4 semanas máximo
- Europa
  - Lactantes menores de 3 meses: 3 meses
  - Lactantes entre 3-6 meses: doble de su edad, los últimos 2 meses nocturno

Tibrewal S, Gulati V, Ramachandran M. The Pavlik method: a systematic review of current concepts. J Pediatr Orthop B 2013, 22: 516-520

Mechanics of hip dysplasia reductions in infants using the Pavlik harness: A physics-based computational model

Orlando J. Ardila[a], Eduardo A. Divo[a,b], Faissal A. Moslehy[a], George T. Rab[c], Alain J. Kassab[a,*], Charles T. Price[d,e]





Arnés de Pavlik

Ventajas	Inconvenientes
1. Mucha experiencia (64 años) 2. Buenos resultados en el 90% 3. Baja tasa de complicaciones 4. Menor incidencia de necrosis avascular	1. Alta supervisión 2. Riesgo de contracturas 3. Escasa tolerancia en lactantes de 5-6 meses 4. No es útil si hay mucha inestabilidad

Arnés de Pavlik

Predicción de fallo	Complicaciones
1. Casos bilaterales 2. Inestabilidad persistente después de 2 semanas 3. Control ecográfico a las 3 semanas patológico 4. Uso inapropiado / escasa supervisión	1. Necrosis avascular (0-28%) 2. Lesión del nervio femoral 3. Parálisis braquial 4. Contracturas 5. Compresión vertebral

J Orthop Sci (2013) 18:749–753
DOI 10.1007/s00776-013-0432-z

ORIGINAL ARTICLE

The Pavlik harness in the treatment of developmentally dislocated hips: results of Japanese multicenter studies in 1994 and 2008

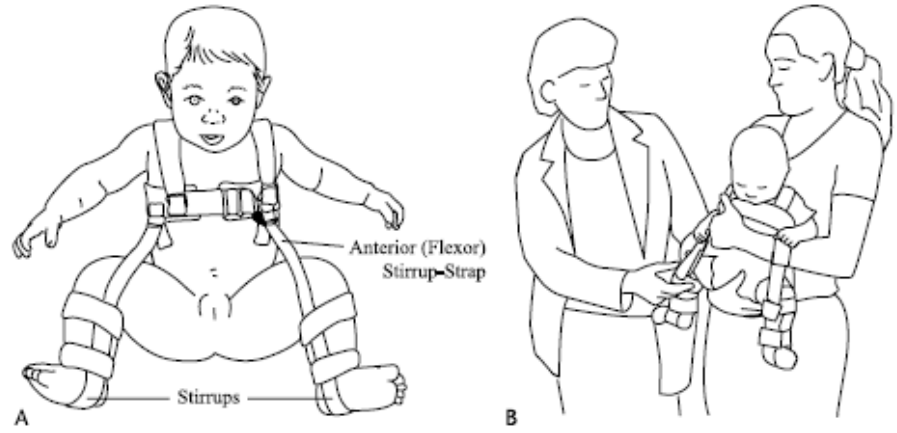
Ikuo Wada · Eisuke Sakuma · Takanobu Otsuka · Kenjiro Wakabayashi · Kinya Ito · Osamu Horiuchi · Yoshimi Asagai · Makoto Kamegaya · Eiji Goto · Shinichi Satsuma · Daisuke Kobayashi · Susumu Saito · Mayuki Taketa · Kazuharu Takikawa · Yasuharu Nakashima · Tadashi Hattori · Shigeru Mitani · Akifusa Wada

Received: 3 February 2013 / Accepted: 12 June 2013 / Published online: 29 June 2013

Abstract
Background It has already been more than 50 years since the Pavlik harness was introduced in Japan, and today the Pavlik harness is widely recognized as the standard initial treatment modality for developmental dysplasia of the hip. We performed a multicenter nationwide questionnaire study concerning the results of Pavlik harness treatment twice in 1994 and 2008.
Methods In 1994 and in 2008, we sent questionnaires to 12 institutes in Japan specializing mainly in pediatric orthopedics. We compare the results of these two studies and discuss differences in reduction rates, incidence of avascular necrosis in the femoral epiphysis and the percentage of joints with acceptable morphology (Severin grade I + II/total) at skeletal maturity. We statistically assessed these results to see whether there were changes in the treatment outcomes over this 14-year period.
Results Reduction of the dislocated hips was obtained by the Pavlik harness in 80.2 % (1990/2481 hips; 1994) and 81.9 % (1248/1523 hips; 2008). The incidences of avascular necrosis of the proximal femoral epiphysis in the dysplastic hips were 14.3 % (119/835 hips; 1994) and 11.5 % (76/663 hips; 2008). The type of avascular necrosis in hips from the 2008 study was determined according to the classification of Kalamchi and MacEwen: 24/69 hips (34.8 %) were classified as group I; 20/69 hips (29.0 %) as group II; 11/69 hips (15.9 %) as group III; 14/69 hips (20.3 %) as group IV. The percentages of hips with acceptable outcomes at skeletal maturity discerned from Severin X-ray changes (grade I + II/total) were 72.3 % (604/835 hips; 1994) and 77.7 % (488/628 hips; 2008).
Conclusion Reduction rates and the incidence of avascular necrosis in 2008 were statistically similar to the

Ortolani +

1



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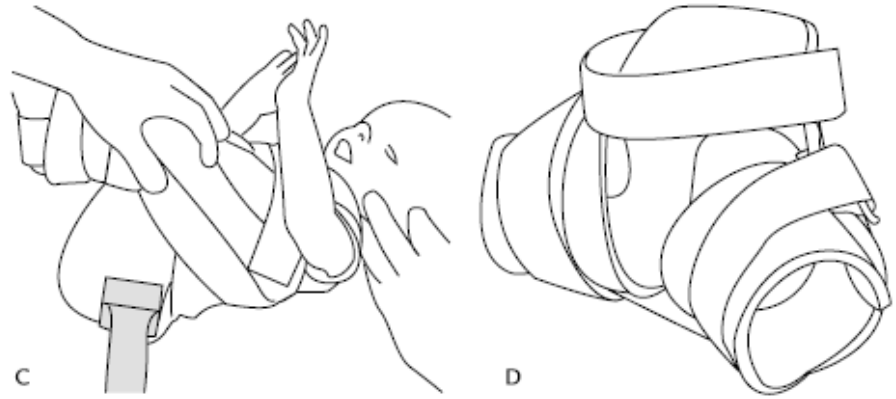


Swaroop VT, Mubarak SJ. Difficult-to-trate Ortolani + hips. Improvement success with a new treatment protocole. J Pediatr Orthop 2009; 29: 224-230

Ortolani +

Study	No. Ortolani-Positive Hips	Success Rate, %
White et al (Dallas, 2007)	115	63
Lerman et al (Boston, 2001)	39	64
Viere et al (Dallas, 1990)	48	71
Group 1, preultrasound pathway (current study, 1994)	52	85
Group 2, ultrasound pathway (current study, 2008)	44	93

Swaroop VT, Mubarak SJ. Difficult-to-trate Ortolani + hips. Improvement success with a new treatment protocole. J Pediatr Orthop 2009; 29: 224-230

IMPARTIDO POR Dr. GRAF

I CURSO TEÓRICO-PRÁCTICO:METODO GRAF

Ecografía de la cadera del lactante.

Sevilla 20-21-22 febrero 2014

PRIMER DÍA

MAÑANA

0.9-0.15 RECEPCION Y PRESENTACION

9.15-9.45

Charla 1

PATOLOGIAS DE LA CADERA DEL LACTANTE:

- Definición de las patologías
- Displasia de cadera
  - Definición, Etiología, Patologías asociadas
  - Exploración clínica, Pruebas diagnosticas

09.45-10.30

Charla 2

DESCRIPCION DEL TRATAMIENTO

- Tratamiento DDH
- Protocolos de actuación -guías clínicas.

Otras patologías del lactante : enfoque clínico y tratamiento: Limitación a la abducción, Oblicuidad pélvica

Charla 3

10.30 -11.30

LA ECOGRAFIA COMO METODO DIAGNOSTICO:

- Ecografía conceptos básicos y equipamiento

11.00-11.30

Cafe

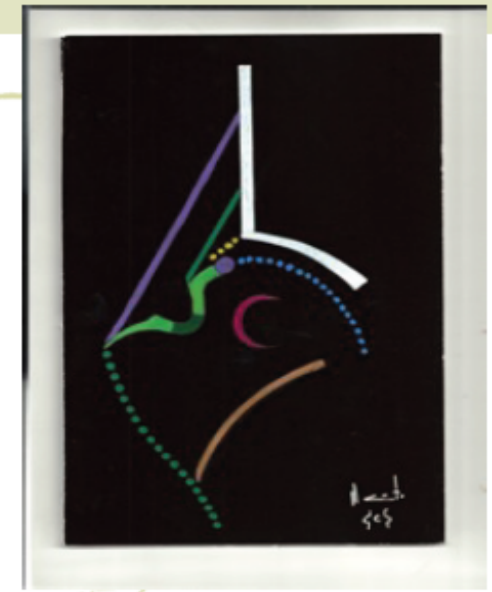
11.30-14.00

Charla 4

DESARROLLO, ANATOMIA, ANATOMIA PATOLOGICA Y ANATOMIA ECOGRAFICA

14.00-14.00

DUDAS, COLOQUIO

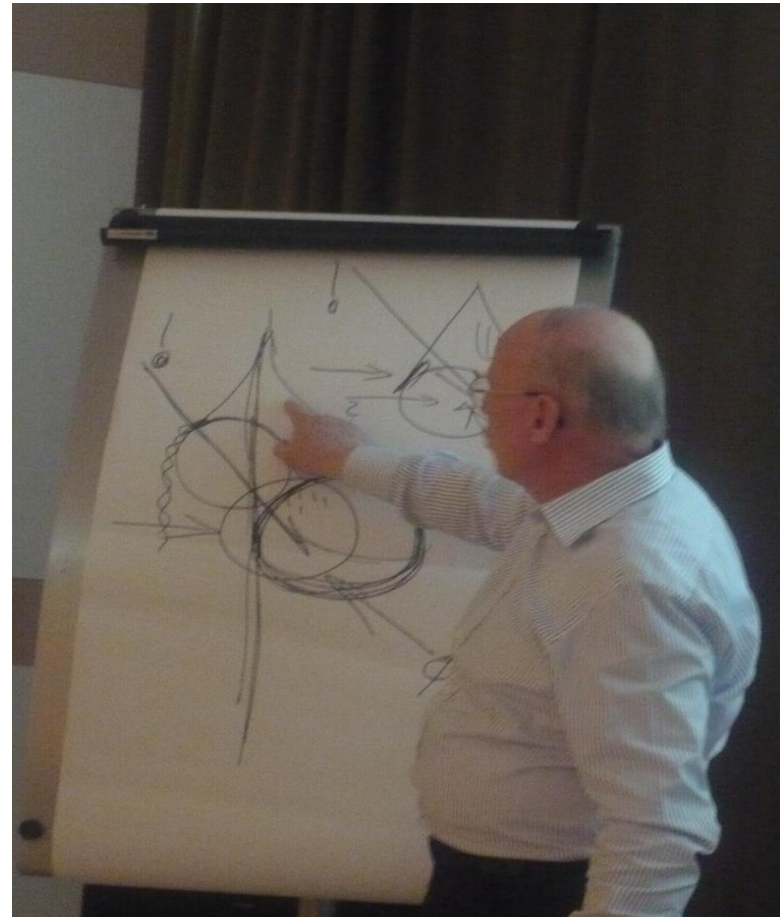


HOTEL NH PLAZA DE ARMAS. SEVILLA

Correo: cursografsevilla@gmail.com

Impartido por el Profesor Reinhard Graf

1. La cabeza femoral cartilaginosa no es redonda
2. El núcleo de osificación tampoco lo es y no siempre está en el centro
3. Es esencial localizar el límite inferior del ilion
4. El 48% de los errores se produce por una falta en la identificación anatómica
5. Una cadera normal puede “hacerse” displásica por una mala técnica pero no al revés
6. Los sistemas de abducción deben colocar la cadera en 110º de abducción y 40º de flexión: arnés de Pavlik, férula de Tübingen, yeso de Fettweis



1. Nunca se hubiera desarrollado la ecografía de cadera si la exploración física hubiera sido eficaz

2. Es inaceptable hoy en día que una cadera se opere

Necrosis avascular secundaria a la terapia de abducción
Salter, 1969

1. Ausencia del núcleo de osificación después de 1 año de la reducción.
2. Retraso del crecimiento de un núcleo de osificación ya presente.
3. Ensanchamiento del cuello femoral.
4. Incremento de la densidad ósea de la cabeza femoral seguida de fragmentación.
5. Deformidades residuales después de la reosificación completa : coxa plana, coxa vara, ..

Necrosis avascular secundaria a la terapia de abducción

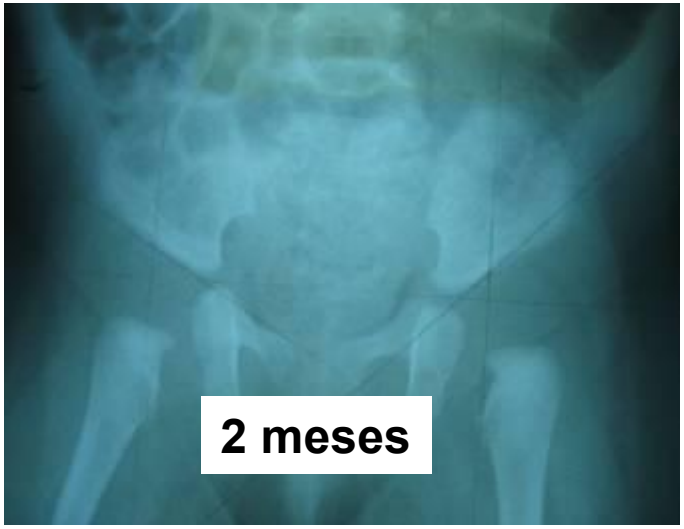
Pavlik: The Man and His Method

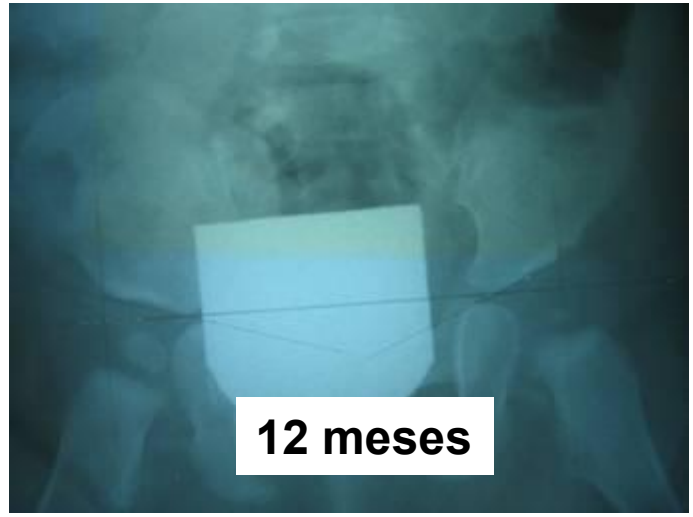
*Scott J. Mubarak, M.D., and †Viktor Bialik, M.D.

Author	No. of hips	AVN (%)
Pavlik	14	0.9
Reiter	26	2.6
Vizkeleti	88	3.0
Ueno	16	4.1
Ramsey	27	0
Kalamchi	13	0
Filipe	13	2.98
Iwasaki	24	7.2
Tonnis	0	7.0
Takahashi	21	6.2
Spolu	35	2.48

Necrosis avascular secundaria a la terapia de abducción

250 pacientes (200 niñas / 50 niños)
0.01 % niñas
12 % en niños *

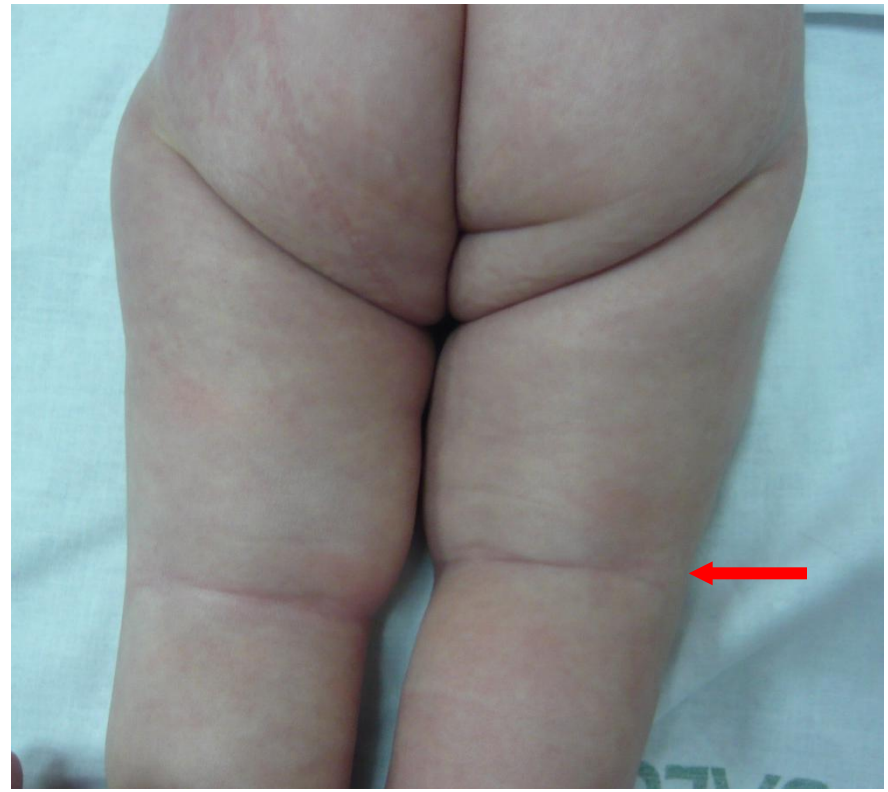




Williams PR , Jones DA , Bishay M . Avascular necrosis and the Aberdeen splint in developmental dysplasia of the hip . J Bone Joint Surg 1999 ; 81B : 1023-1028.
Nakamura J et al. Treatment of the developmental dysplasia of the hip using the Pavlik harness. J Bone Joint Surg (Br) 2009; 89: 230-235
Lérida Benítez L, Méndez Alonso MA, Conejero Casares JA. Necrosis avascular secundaria al tratamiento conservador de la displasia del desarrollo de la cadera. Datos no publicados *

Oblicuidad pélvica congénita

- Discrepancia entre la frecuencia y la bibliografía
- Más frecuente que la DDC (5:1)
- Evolución natural
    - Examen inicial normal
    - Limitación bilateral de caderas
    - Limitación de la abducción de la cadera alta
    - Limitación de la aducción de la cadera baja
- Aislada
    - Simple
    - Asociada a displasia de la cadera alta
- Asociada a síndrome del niño moldeado (moulded baby syndrome, infantile skeletal skew)

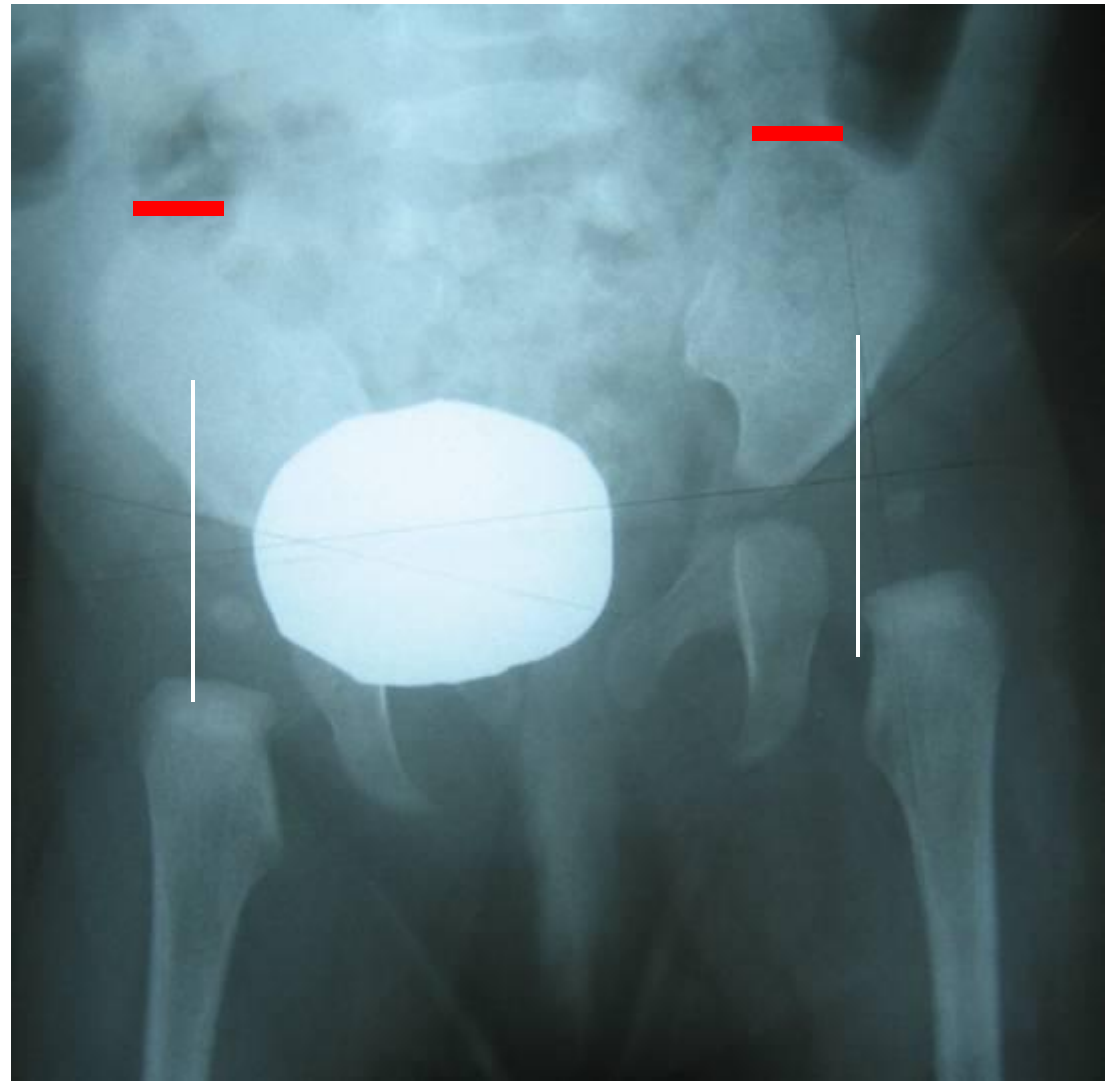


Oblicuidad pélvica congénita

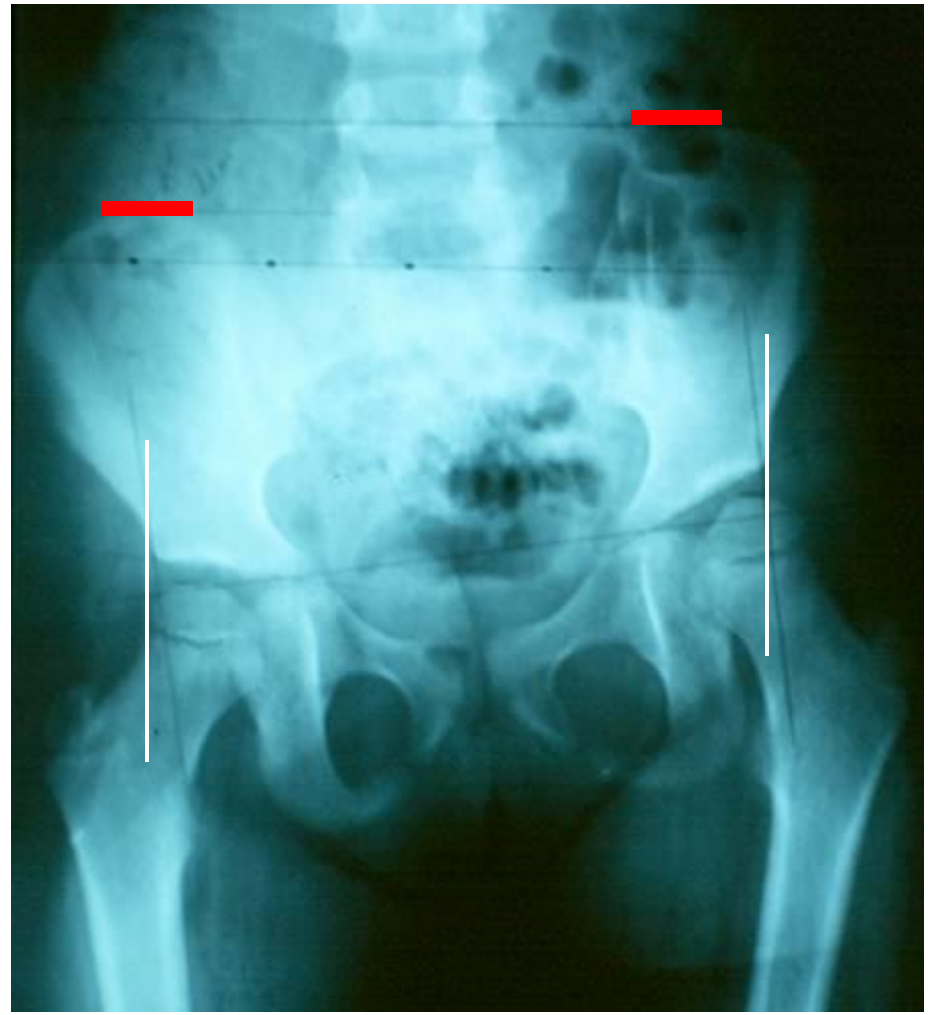
Autor / año	Tipo de estudio	Pacientes	Resultados
Finsterbush 1980	Serie de casos	192 DDC 44 OPC	Resolución en 33 p antes del año
Green 1982	Serie de casos	18 OPC & DDC	Resolución con ortesis y ejercicios
Seringe 1992	Serie de casos	93 OPC 27 OPC & DDC	Vigilancia Ortesis
Buxton 2004	Serie de casos	18 SNM	Evolución favorable
Van Vlimmeren 2004	Revisión sistemática	Asimetría en la infancia	Diagrama diagnóstico
Phillippi 2006	Serie de casos	45 SNM	29 OPC 9 DDC
Rubio 2009	Serie de casos	1001 RN	10.7 % SNM 2.5% OPC

Oblicuidad pélvica congénita simple
Lactante

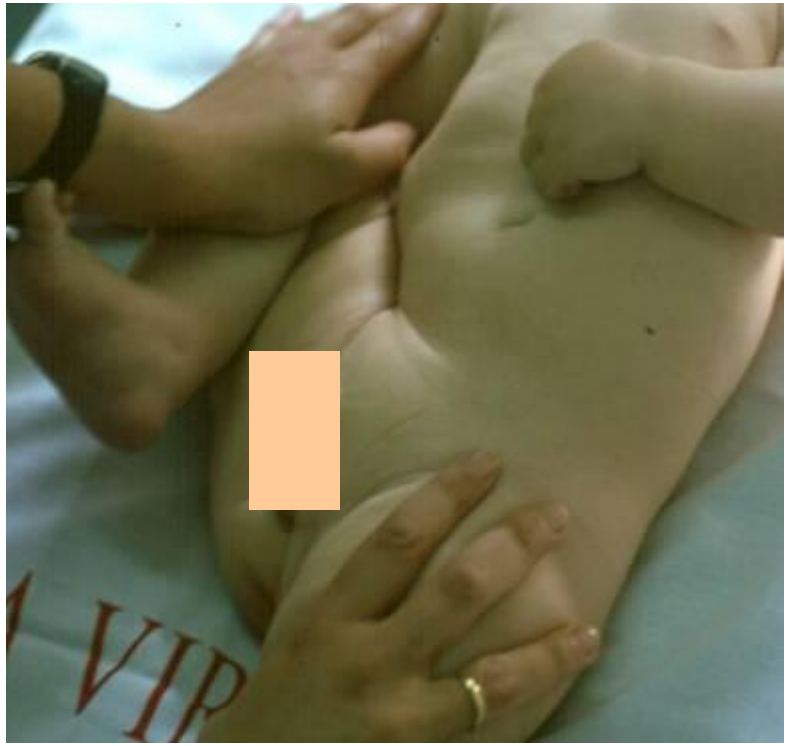
Oblicuidad pélvica congénita asociada a displasia



Oblicuidad pélvica congénita
Adolescente



Oblicuidad pélvica congénita
Ejercicios terapéuticos



Columna vertebral

1. Exploración física
2. Dolor vertebral. Signos de alarma
3. Escoliosis. Etiología
4. Escoliosis. Radiología
5. Escoliosis. Detección precoz
6. Escoliosis. Historia natural
7. Escoliosis. Tratamiento con corsés
8. Enfermedad de Scheuermann

Columna vertebral
Exploración física

- Actitud espontánea
  - Normal
  - Antiálgica
- Marcha
  - Talones / puntillas
  - Carrera / salto
  - Patrón neurológico / antiálgico
- Alteraciones cutáneas
  - Generalizadas : Neurofibromatosis , artritis idiopática
  - Localizadas : disrafia espinal
- Exploración neurológica
  - Motor , reflejos , pruebas cerebelosas

Columna vertebral
Exploración física

- Estudio de la estática vertebral
  - Frontal : test de Adams
  - Sagital : cifosis, lordosis
- Presencia de rigidez axial
  - Movilidad segmentaria
  - Ritmo lumbo-pélvico
  - Test de Schöber
- Presencia de rigidez periférica
  - Rigidez de isquiotibiales
- Examen de sacroilíacas
- Signos de compresión medular / radicular

Exploración
Movilidad vertebral: ritmo lumbo-pélvico

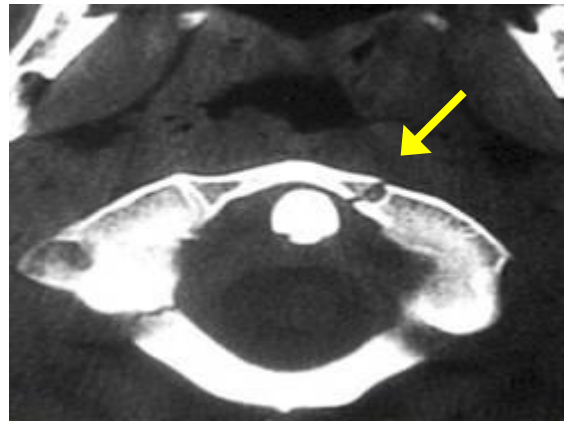
Normal

Exploración
Movilidad vertebral: ritmo lumbo-pélvico

Hernia discal

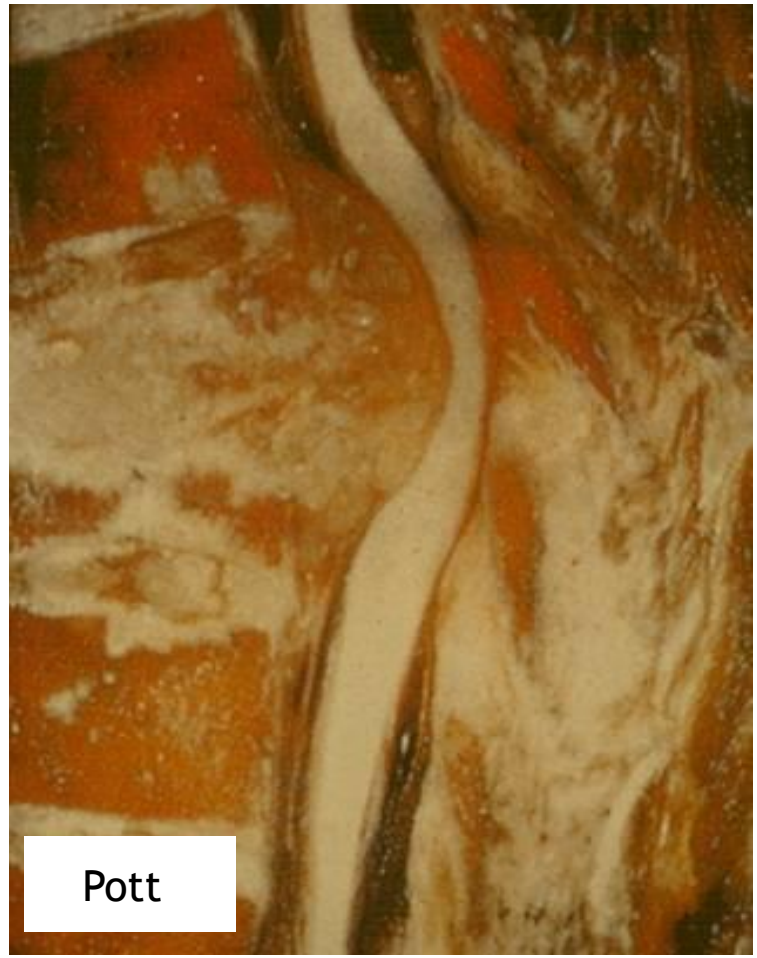
Dolor vertebral en el niño
Signos de alarma

- Edad < 4 años
- Antecedente traumático
- Sobrecarga mecánica
- Dolor continuo / persistente / nocturno / ciática
- Fiebre
- Alteración neurológica
- Repercusión funcional
- Rigidez
- Síndrome constitucional



Dolor vertebral en el niño
Discitis

- Infección del espacio discal (St aureus 50%)
- Edad media 2.8 años
- Sintomatología
  - Rechazo a caminar : 63%
  - Rigidez para la flexión : 50%
  - Pérdida de la lordosis : 40%
  - Dolor lumbar : 27%
  - Fiebre : 20%
- Diagnóstico.
  - Radiología : 75%
  - R.N.M. : Imprescindible
- Tratamiento
  - Antibióticos
  - Inmovilización



Fernández,00 ; Brown,01; Kaiser 2005

Escoliosis

- Deformidad tridimensional del raquis, en la que se asocia una curvatura o flexión lateral (en el plano frontal) con una rotación vertebral en el plano transversal, y a veces con desviaciones en el plano sagital (cifosis y lordosis)

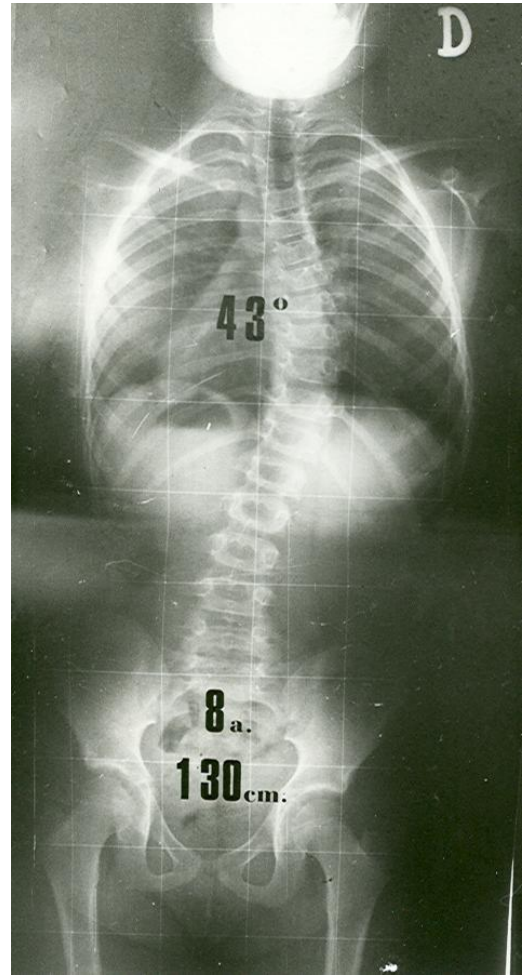
- La escoliosis está definida radiológicamente como una curvatura de la columna vertebral con un ángulo de Cobb de 10° o más, con rotación

Escoliosis
Clasificación

Etiología	Edad	Tipo de curva	Localización	Valor angular
Idiopática	Infantil 0-3 años	Simple	Cervical	Leves <20º
Congénita	Juvenil 3-10 años	Doble	Cérvicodorsal	Moderadas 20-40º
Neurológica	Adolescente > 10 años		Dorsal	Graves >40º
Sindrómica	Adulto		Dorsolumbar	
Otras			Lumbar	

Escoliosis idiopática

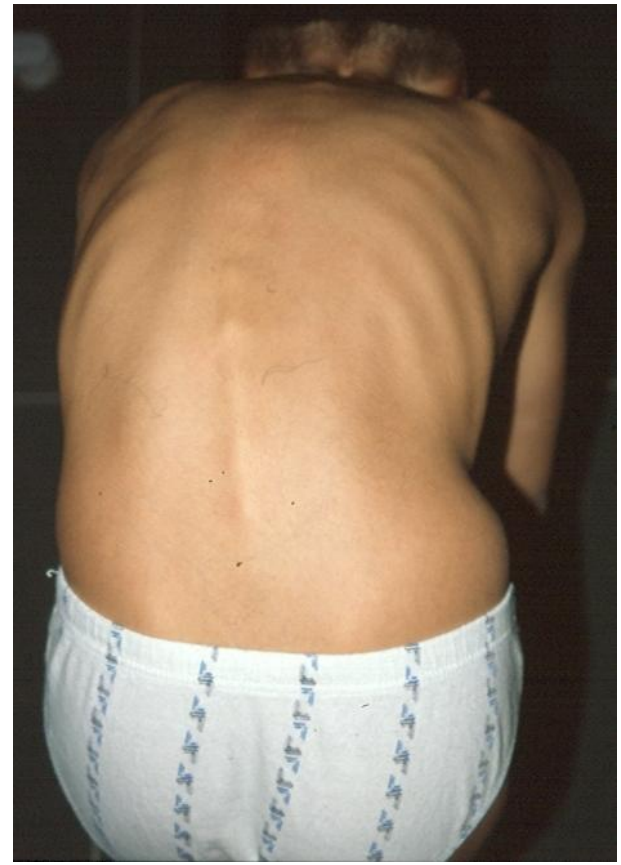
Enfermedad hereditaria, con base genética, ligada al sexo, con penetrancia incompleta y expresividad variable, con una forma de herencia multifactorial, en la que podría haber varias posibles causas o factores que actuarían alterando el frágil equilibrio que mantiene un raquis normal durante el crecimiento.



Escoliosis

Radiología: Telerradiografía PA y L de columna vertebral

1. Gibosidad > 5º medida con escoliómetro
2. Control evolutivo a los 6 meses
3. Progresión de la curva
4. Período prepuberal

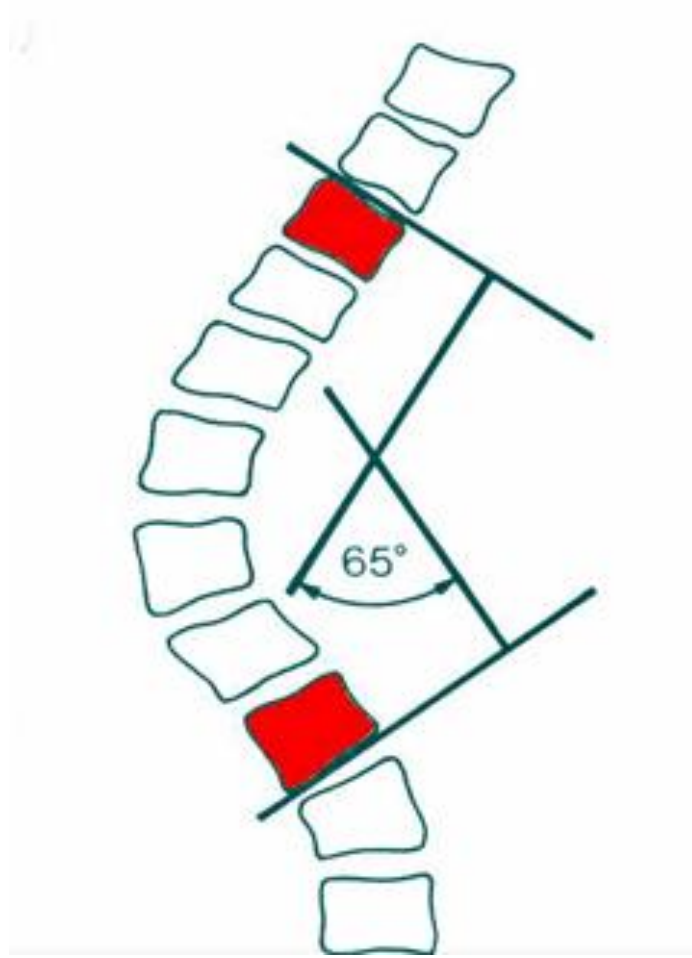


Escoliosis
Radiología: lista de comprobación

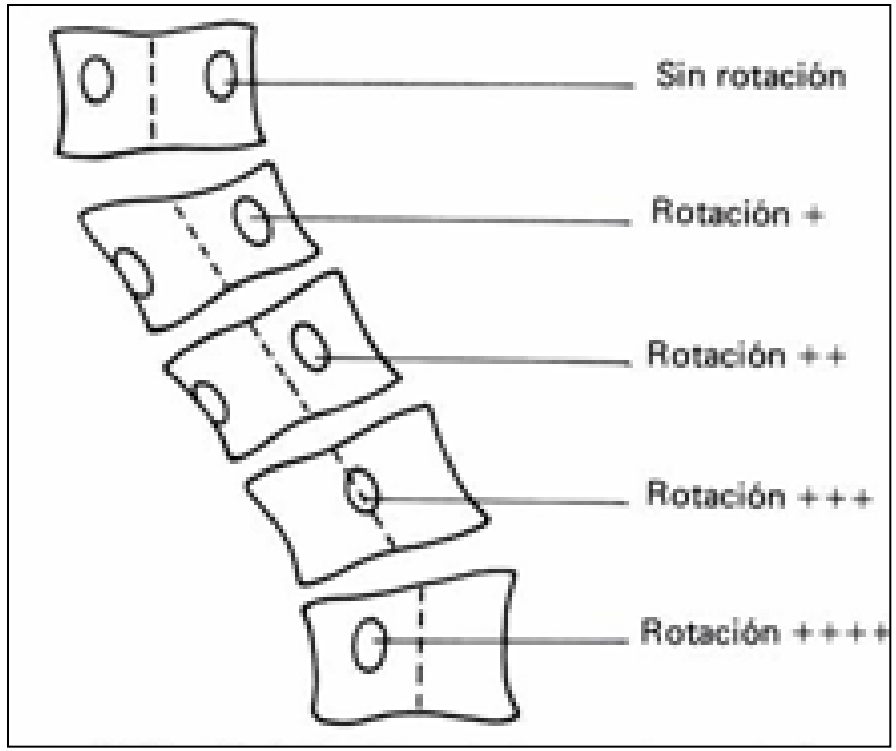
1. Aspecto de la curva
2. Morfología vertebral
3. Localización de la curva
4. Vértebras límite y vértice
5. Valor angular
6. Rotación vertebral
7. Test de Risser
8. Ángulo de Metha
9. Test de progresión de Lonstein

Escoliosis
Radiología: método de Cobb

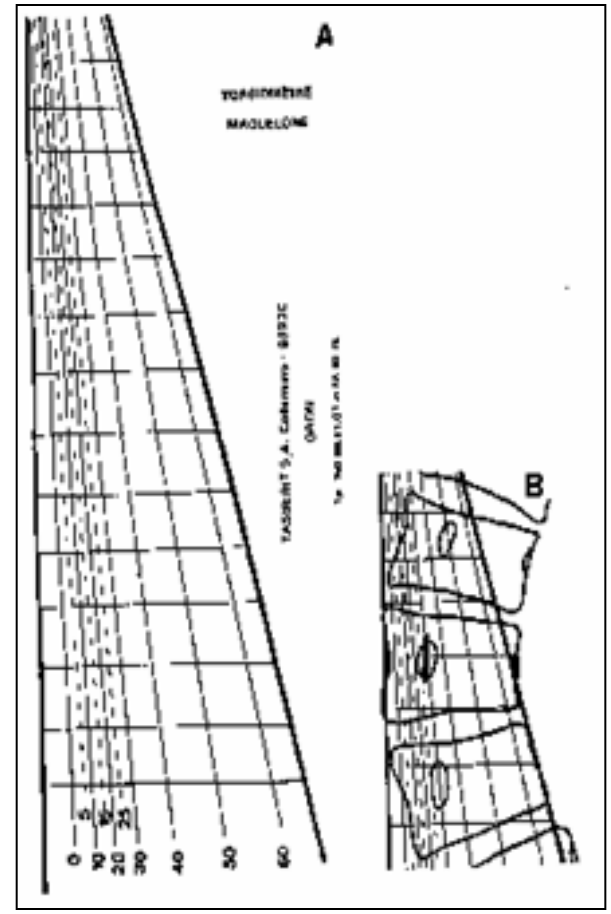
- Vértebras neutras o límites, las más inclinadas sobre la horizontal
- Vértebras vértice, la más acuñada y alejada de la línea media
- Valor angular: ángulo formado por dos líneas que pasan por los platillos superiores e inferiores de las vértebras límites.



Escoliosis
Rotación vertebral

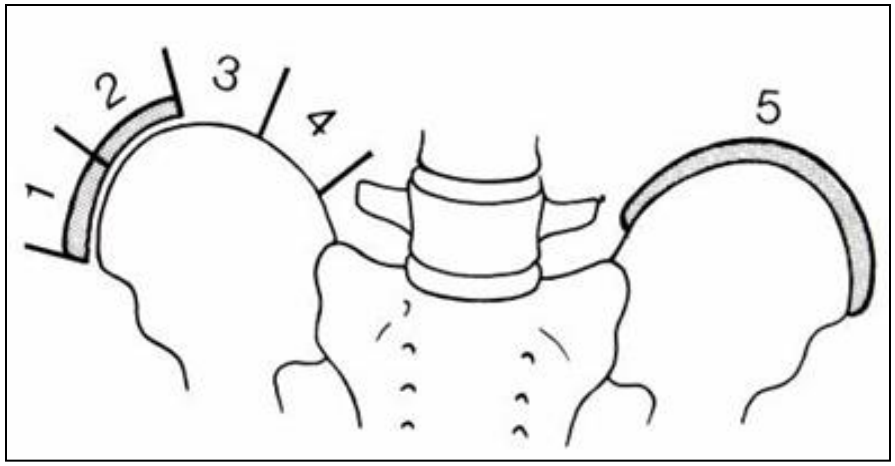


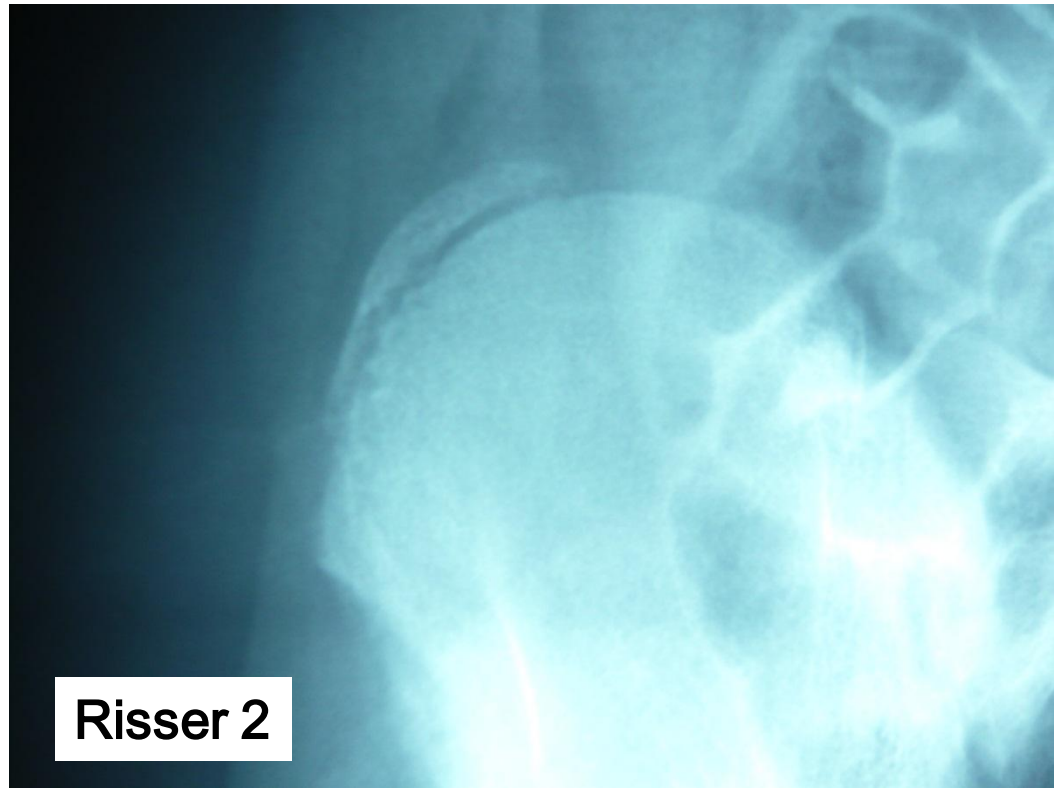
Método de Möe



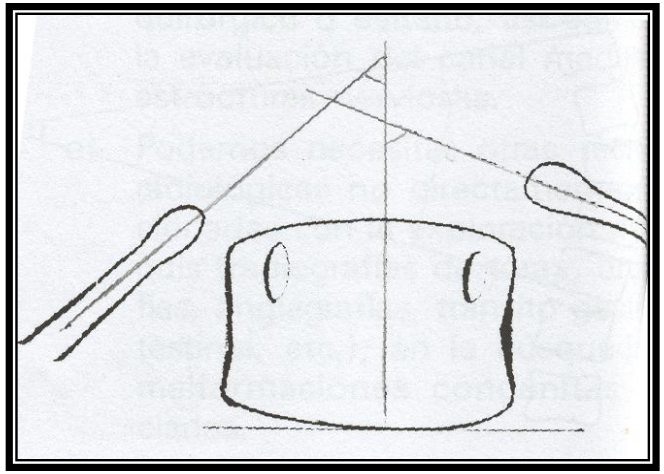
Torsiómetro de Perdriolle

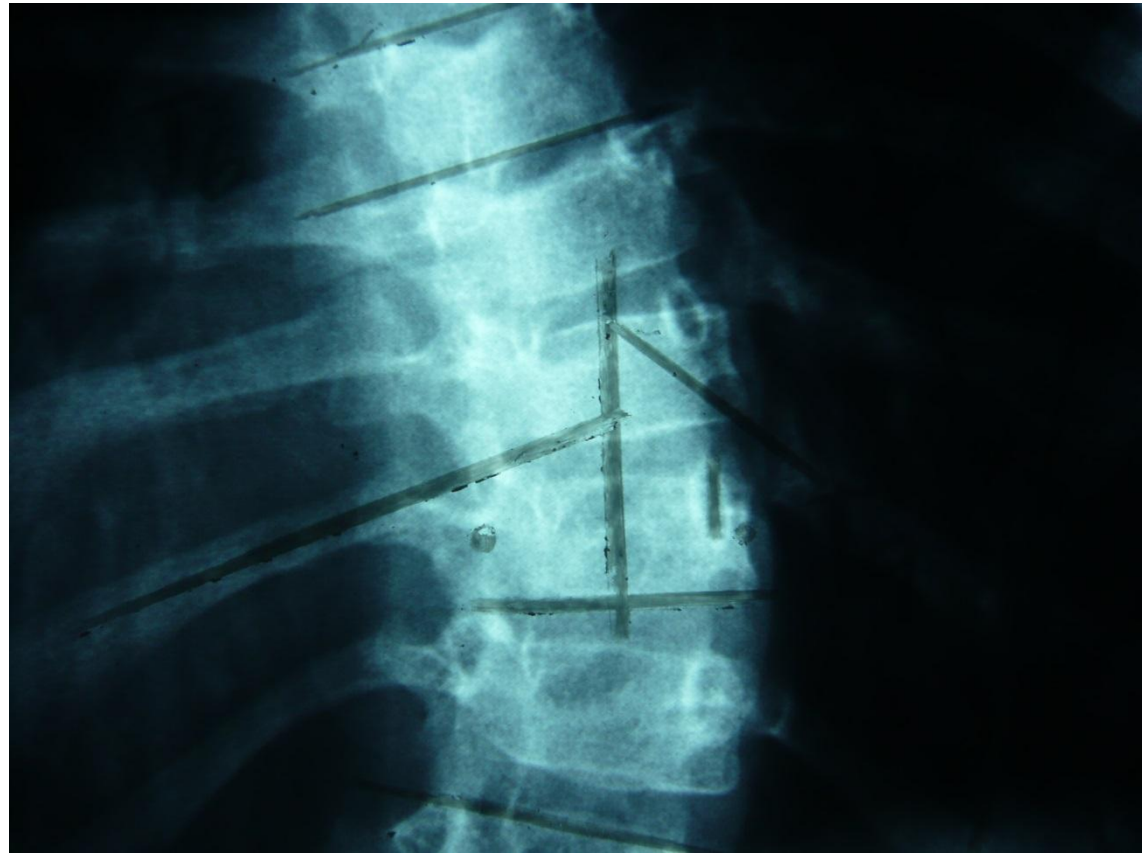
Escoliosis
Test de Risser





Escoliosis
Ángulo de Mehta

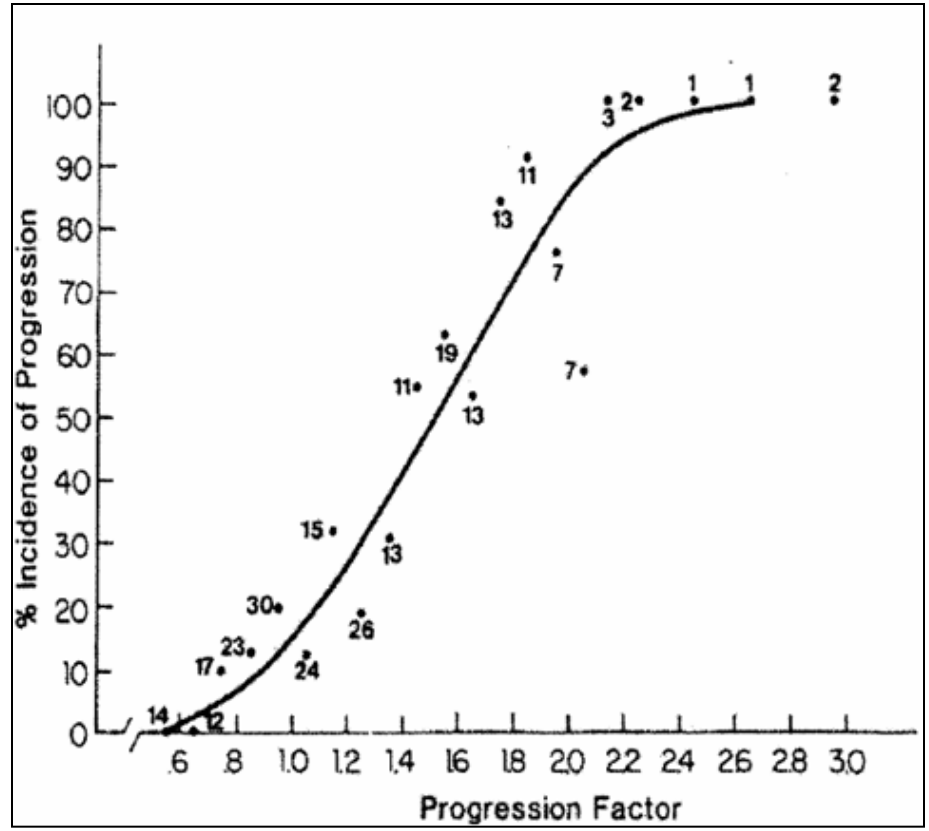




Escoliosis
Factor de progresión de Lonstein

Valor angular - 3 x Risser

Edad



Escoliosis
Pruebas complementarias

Resonancia nuclear magnética	Tomografía axial computarizada	Gammagrafía ósea
1. Examen neurológico anormal 2. Curva dorsal izquierda (2%) 3. VA > 40º 4. Progresión rápida 5. Escoliosis congénita	1. Planificación quirúrgica 2. Escoliosis congénita	1. Dolor 2. Radiología normal

Escoliosis
Screening escolar

Complete Summary

GUIDELINE TITLE

Screening for idiopathic scoliosis in adolescents: recommendation statement.

BIBLIOGRAPHIC SOURCE(S)

U.S. Preventive Services Task Force (USPSTF). Screening for idiopathic scoliosis in adolescents: recommendation statement. Rockville (MD): Agency for Healthcare Research and Quality (AHRQ); 2004 Jun. 4 p. [4 references]

GUIDELINE STATUS

This is the current release of the guideline.

This version updates a previously published guideline: U.S. Preventive Services Task Force. Guide to clinical preventive services. 2nd ed. Baltimore (MD): Williams & Wilkins; 1996. Chapter 47, Screening for adolescent idiopathic scoliosis. p. 517-29.

Noninvasive Measurement and Screening Techniques for Spinal Deformities

OBJECTIVE: Spinal deformities are caused by a heterogeneous collection of disease processes. The progression of the scoliotic curve can vary depending on the individual patient, as well as the curve etiology. Noninvasive measurement techniques have been developed to obtain a baseline in addition to record curve progression.

METHODS: We designed our study based on a comprehensive literature review and clinical experience. A systematic review of Medline for articles related to spinal deformities (scoliosis) and screening techniques was conducted up to and including those journal articles published in March 2007.

RESULTS: There are numerous noninvasive modalities available to assess curve progression.

CONCLUSION: The use of a detailed physical examination, serial examinations, and radiographic means serve well to document curve presence and monitor progression.

KEY WORDS: Measure, Noninvasive, Scoliometer, Scoliosis, Screening, Spinal deformity

Neurosurgery 63:A46–A53, 2008 DOI: 10.1227/01.NEU.0000325678.25152.A7 www.neurosurgery-online.com

THE
ORTHOPAEDIC
FORUM

Screening for Idiopathic Scoliosis in Adolescents

An Information Statement*

By B. Stephens Richards, MD, and Michael G. Vitale, MD

Executive Summary

Many states mandate school screening to identify children at risk for scoliosis, though recent studies have cast some controversy on the effectiveness of routine scoliosis screening. Previous studies have both supported and discouraged routine screening.

Prevention of severe scoliosis is a major commitment of physicians caring for children with spinal deformities. For this reason, the American Academy of Orthopaedic Surgeons (AAOS), the Scoliosis Research Society (SRS), the Pediatric Orthopaedic Society of North America (POSNA), and the American Academy of Pediatrics (AAP) convened a task force to examine issues related to scoliosis screening and to put forth the present information statement. The societies acknowledge the important role of a systematic review of the literature as well as the role of consensus expert opinion in the common situation where the available evidence does not yet exist to speak definitely for, or against, an evaluation or intervention.

Costs involved with scoliosis screening are relatively low on a societal level and may justify the possibility of preventing surgery in adolescents with scoliosis. Adolescents without significant spinal deformity who are referred to a specialist for evaluation often do not require radiographs. For those who do need radiographic evaluation, it is important to know that the radiation exposure using current-day radiographic techniques, including digital radiography, is significantly smaller than in the past.

Opponents to scoliosis screening have focused on concerns about a low predictive value of screening and the cost-effectiveness of referral. There have also been concerns about the possibility of unnecessary treatment, including brace use, and the effect of exposure to radiation when radiographs are obtained.

With regard to early treatment in those adolescents detected with moderate scoliosis, the available data neither definitively support nor refute the efficacy of bracing. To most effectively answer this, a well-organized level I study is needed. Such a study, a five-year multicenter randomized controlled trial of bracing sponsored by the National In-

Escoliosis
Screening escolar

A favor	En contra
1. AAOS (American Association of Orthopaedic Surgeons) 2. SRS (Scoliosis Research Society) 3. POSNA (Pediatric Orthopaedic Society of North America) 4. AAP (American Academy of Pediatrics)	1. USPSTF (United States Preventive Service Task Force)

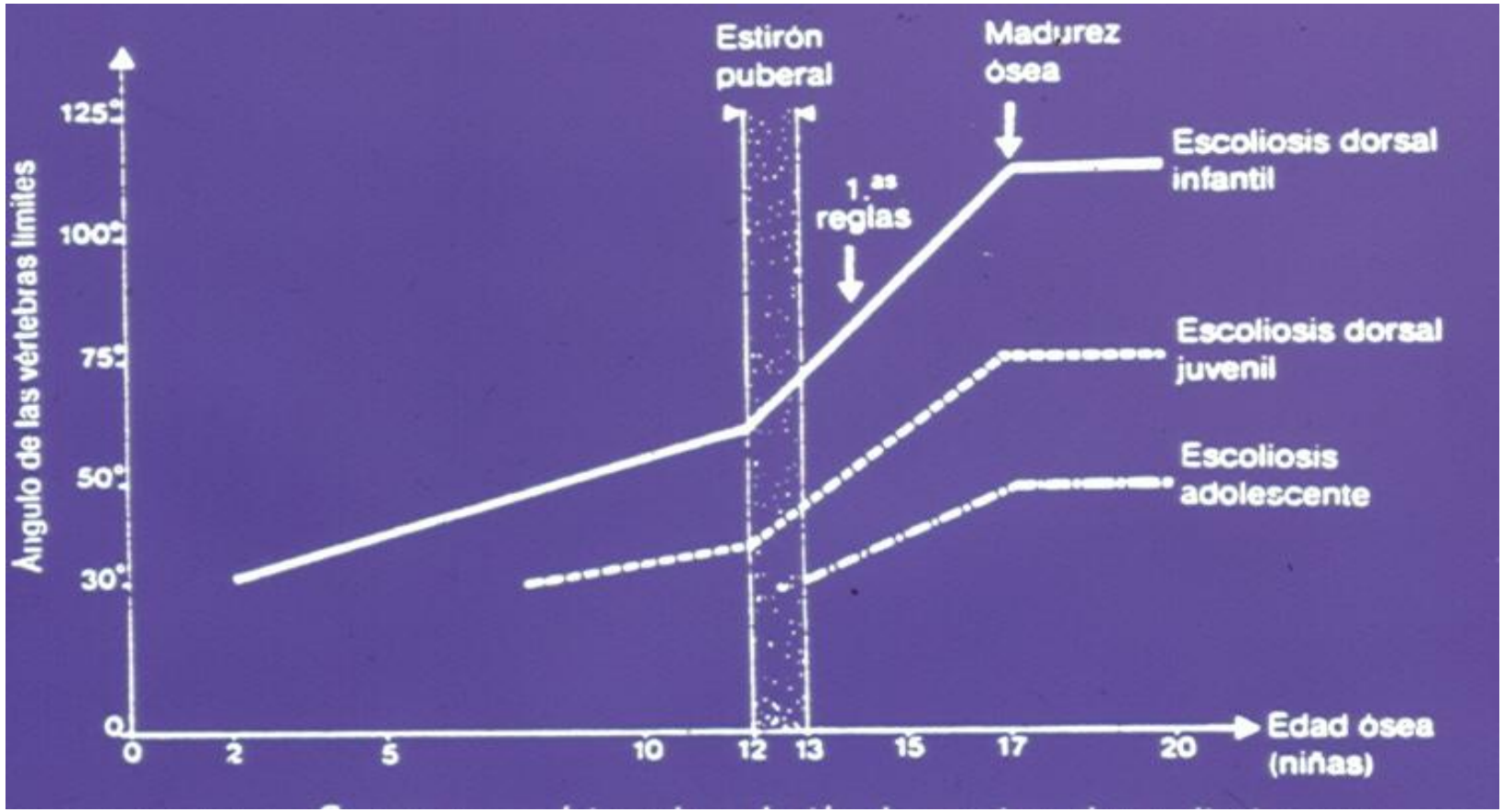
Escoliosis
Screening escolar

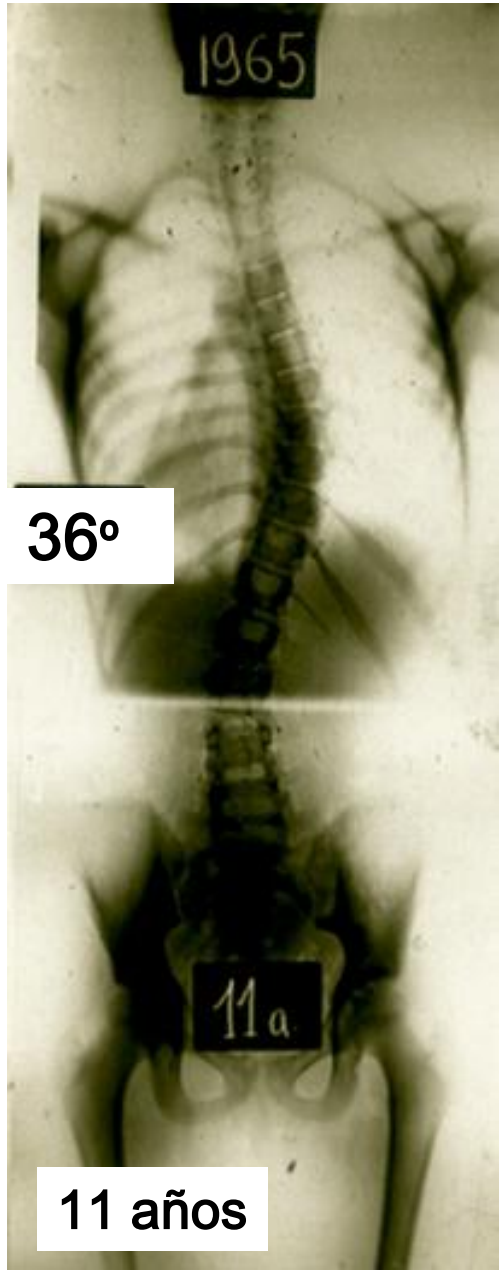
A favor	En contra
1. Disminuye las tasas de cirugía 2. Disminuye la gravedad de las curvas operadas 3. Mejora los resultados del tratamiento conservador 4. Permite conocer la historia natural	1. Exceso de falsos positivos 2. Tratamientos innecesarios 3. No hay beneficio con el tratamiento conservador 4. Coste-beneficio desfavorable

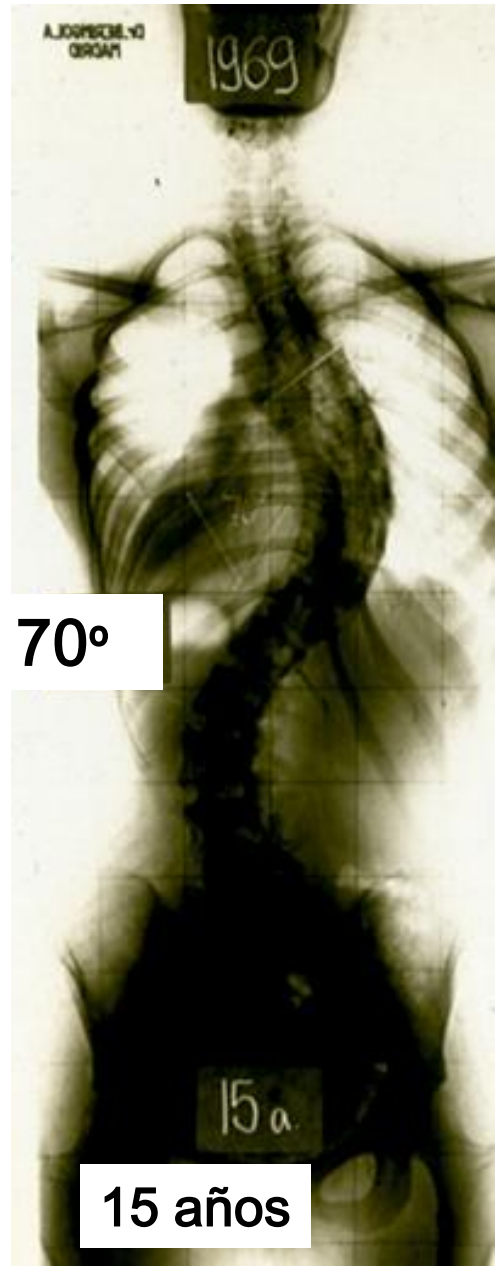
Escoliosis
Historia natural: progresión

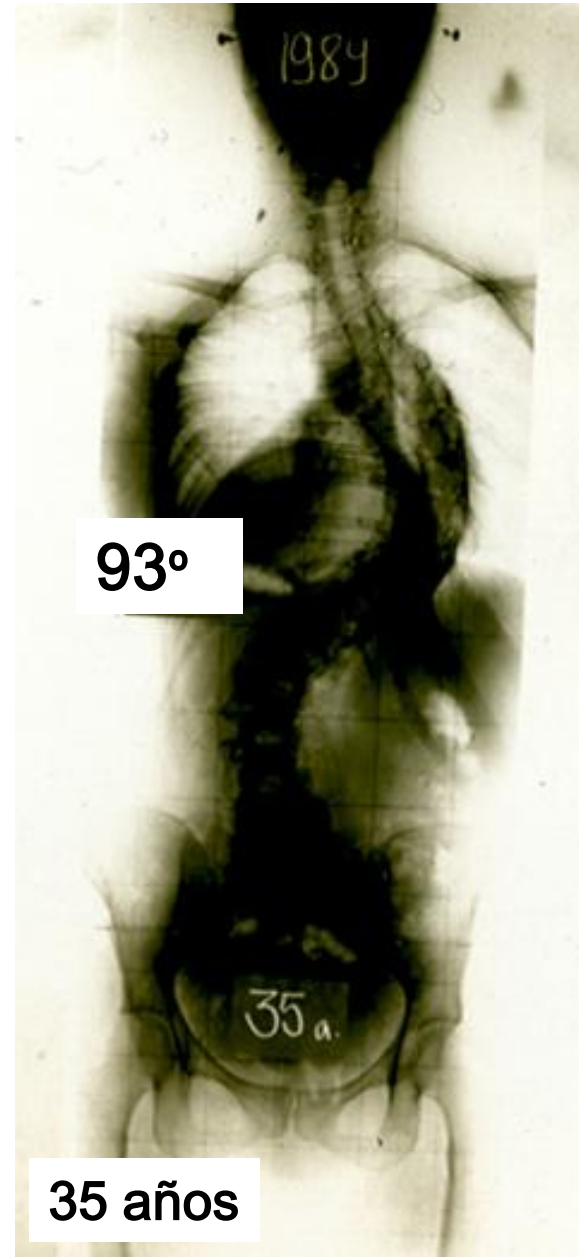
- Hasta los 3 años
- Desde los 3 hasta los 10 años
- Desde los 10 años hasta la menarquia
- Adolescencia
- Adulto

Escoliosis
Historia natural




1965
36º
11 a.
11 años


1969
70º
15 a.
15 años


1984
93º
35 a.
35 años

Escoliosis
Historia natural: repercusión en el adulto

- Dolor
- Restricción respiratoria
- Cor pulmonale crónico
- Disminución en la esperanza de vida
- Efecto sobre el embarazo
- Repercusión psicológica
- Aislamiento social

Escoliosis
Historia natural: repercusión en el adulto

Chapman 1939	Bergofsky 1959	Nilsone 1968	Nachemson 1968	Collis 1969	Fowles 1976
Insuficiencia cardíaca derecha	Insuficiencia cardíaca derecha	Muerte precoz 60% por insuficiencia cardíaca derecha 47% discapacidad	Tasa de mortalidad doble de lo normal en Suecia	No relaciona la muerte con insuficiencia cardíaca No dolor significativo	Dolor más intenso a partir de los 30 años Repercusión psicológica en 67% Menos matrimonios

Möe, 1982

Escoliosis
Factores de carácter pronóstico

Clínicos	Radiológicos
1. Sexo 2. Edad 3. Madurez sexual (Tanner) 4. Menarquia	1. Valor angular 2. Localización 3. Rotación 4. Test de Risser 5. Ángulo de Mehta 6. Factor de progresión de Lonstein

Escoliosis
Tratamiento

- Vigilancia
- Cinesiterapia
- Reducción ortopédica
- Ortesis (corsés)
- Cirugía

Escoliosis
Tratamiento

Actitud escoliótica	No precisa
Escoliosis < 20º	Observación
Escoliosis 20-40º	Tratamiento ortopédico
Escoliosis > 40º	Cirugía

Escoliosis
Tratamiento ortésico

- Detener la evolución de la curva
- Mejorar el aspecto estético
- Crear curvas secundarias
- Diferir el momento de la cirugía
- Inmovilización postquirúrgica

Scoliosis

BioMed Central

Research

Open Access

Guidelines on "Standards of management of idiopathic scoliosis with corrective braces in everyday clinics and in clinical research": SOSORT Consensus 2008

Stefano Negrini*[1], Theodoros B Grivas[2], Tomasz Kotwicki[3], Manuel Rigo[4], Fabio Zaina[1] and the international Society on Scoliosis Orthopaedic and Rehabilitation Treatment (SOSORT)

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Email: Stefano Negrini* - stefano.negrini@isico.it; Theodoros B Grivas - grivastb@vodafone.net.gr; Tomasz Kotwicki - kotwicki@ump.edu.pl; Manuel Rigo - lolo_rigo@hotmail.com; Fabio Zaina - fabio.zaina@isico.it; the international Society on Scoliosis Orthopaedic and Rehabilitation Treatment (SOSORT) - stefano.negrini@isico.it

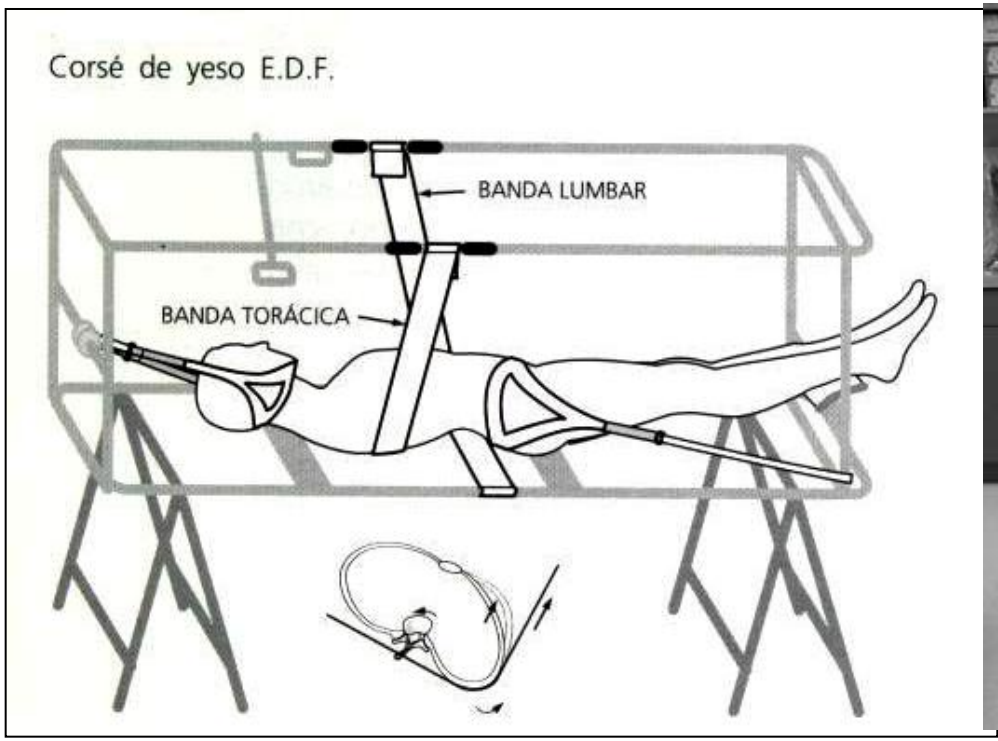
* Corresponding author

Published: 16 January 2009

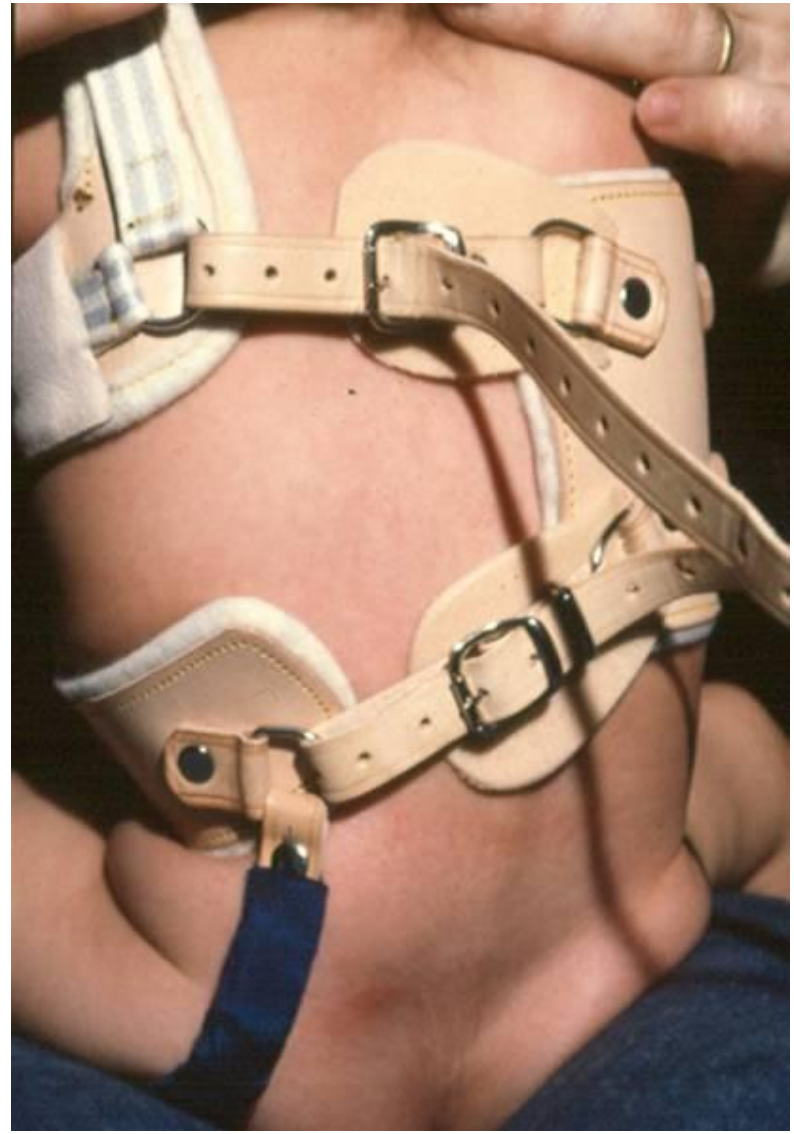
Scoliosis 2009, **4**:2 doi:10.1186/1748-7161-4-2

Received: 15 December 2008
Accepted: 16 January 2009

Reducción ortopédica

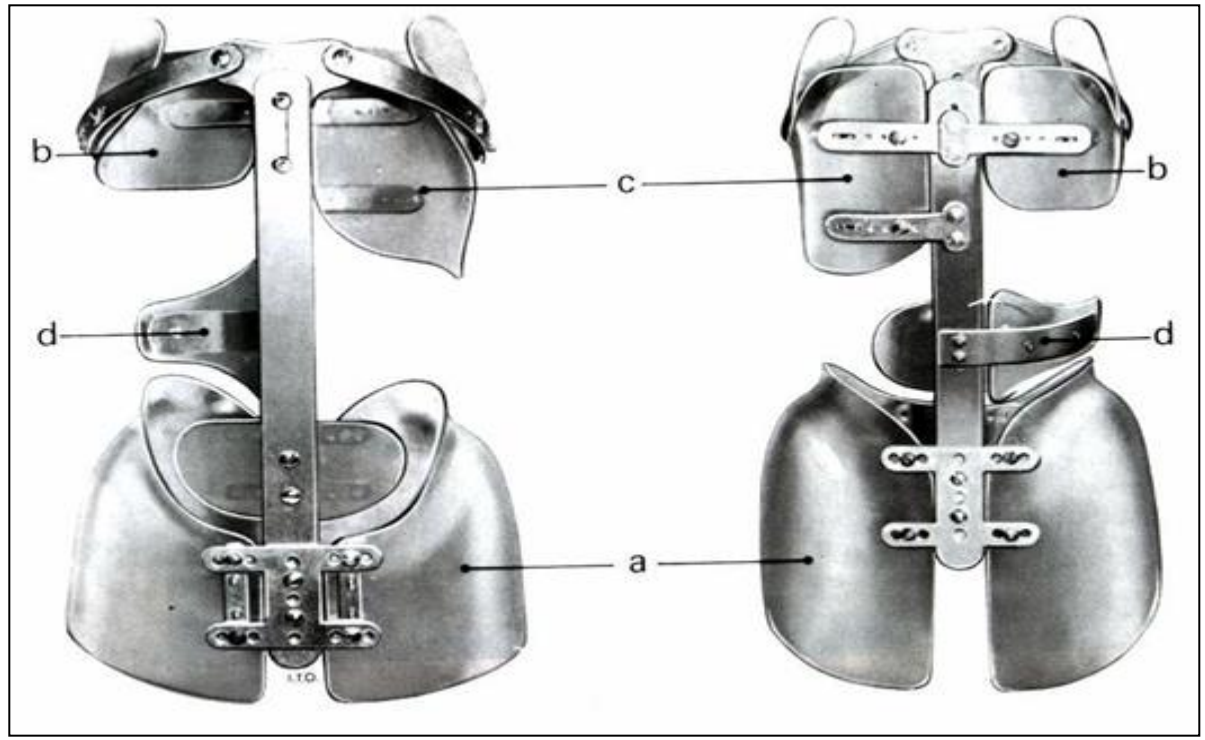


Reducción ortopédica enyesada en la mesa de Cotrel: EDF



Corsé de Kallabis

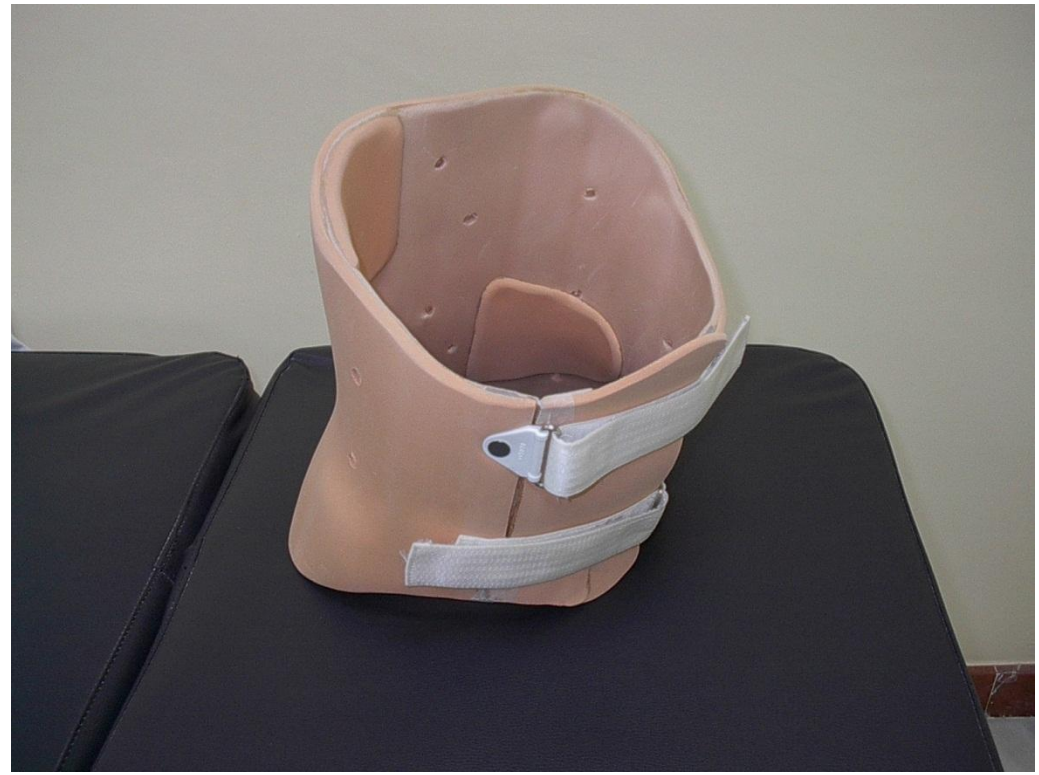
Corsé de Milwaukee



Corsé lionés

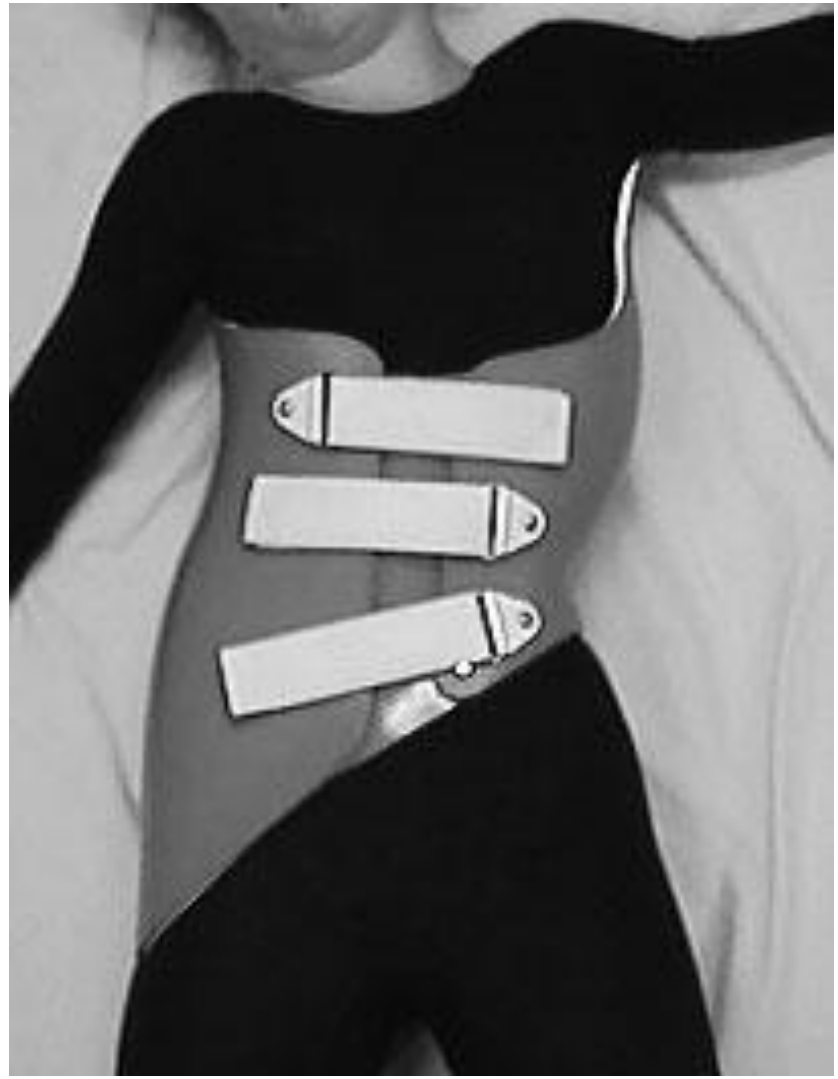
Corsé de Michel

Corsé de Málaga



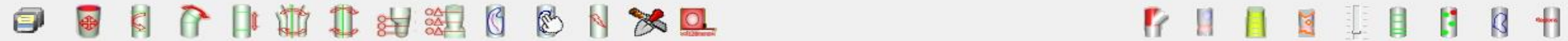
Corsé de Boston

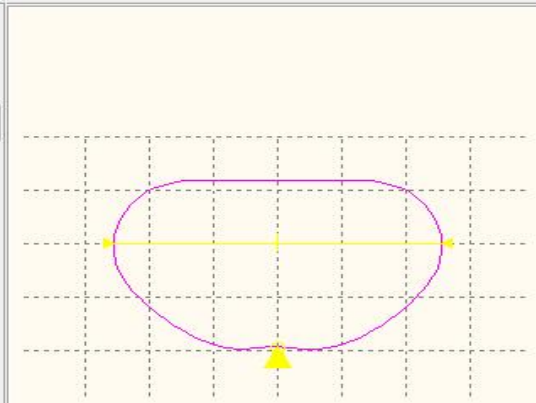
Corsé de Cheneau

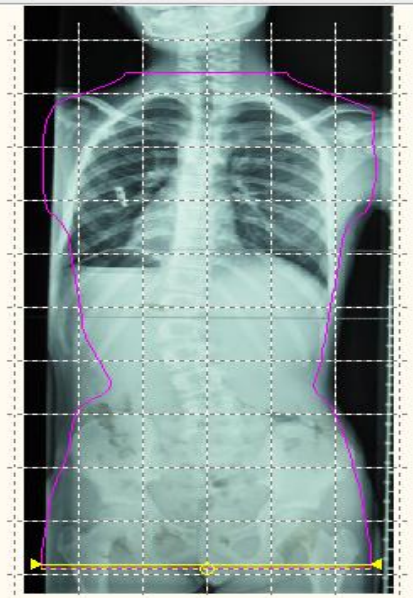


Corsé de Providence

Archivo Referencias Biblioteca Ver Herramientas Opciones Ayuda

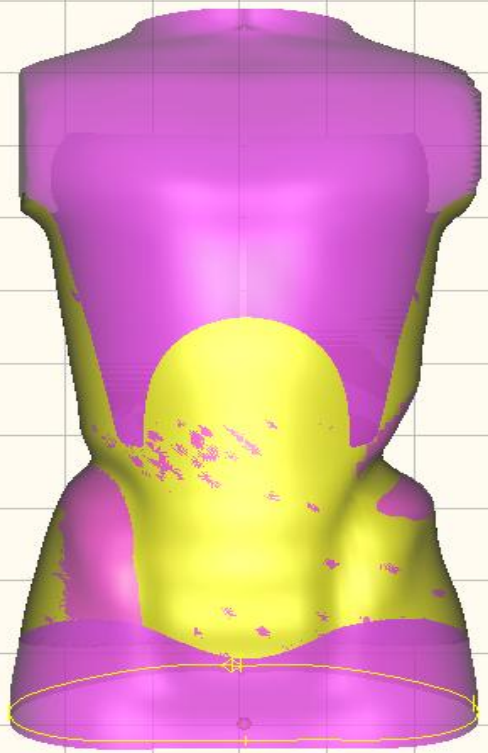






Anterior Posterior
Izquierda Derecha

Distal Izquierda Anterior Derecha Posterior Proximal



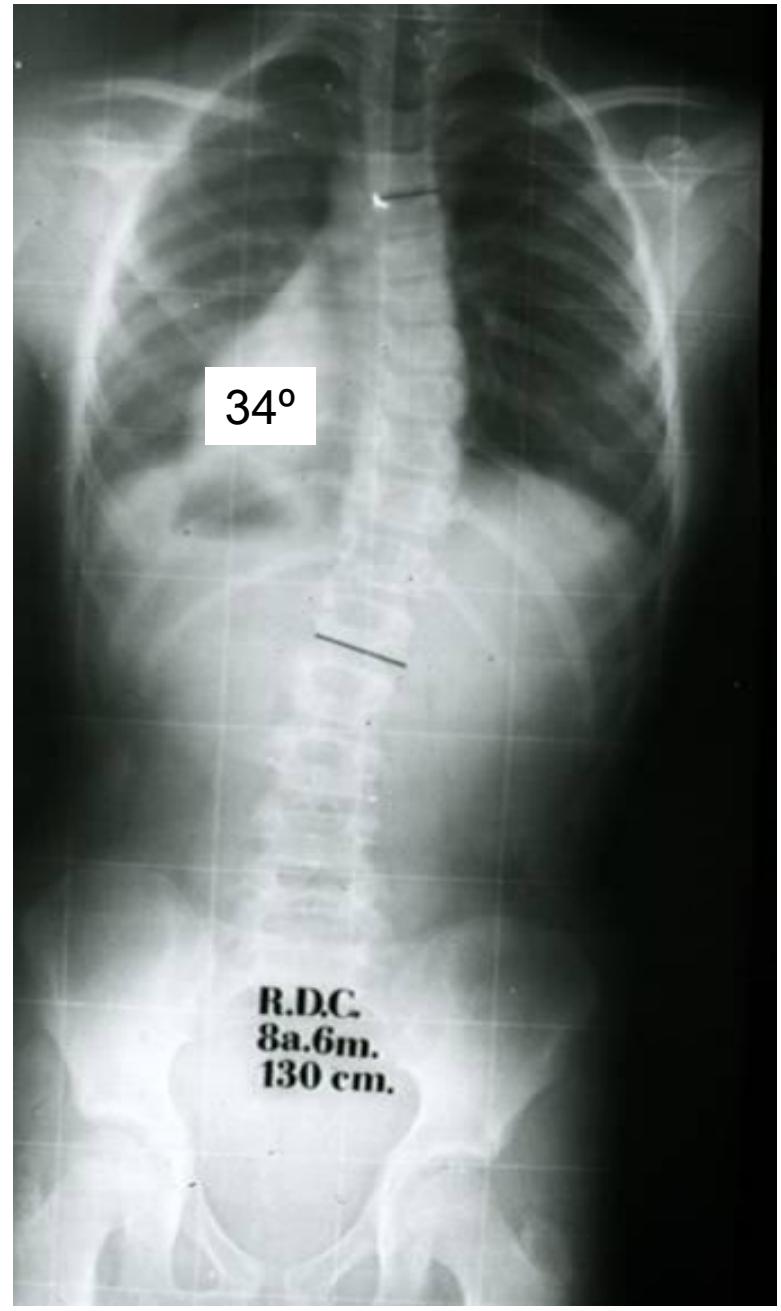
A : -15.2mm
AP : 159mm (59.3, 99.7) (0mm, 0%)
ML : 256.6mm (0mm, 0%)
Cir : 683.1mm (0mm, 0%)
Vol : 11.31dm³ (0dm³)

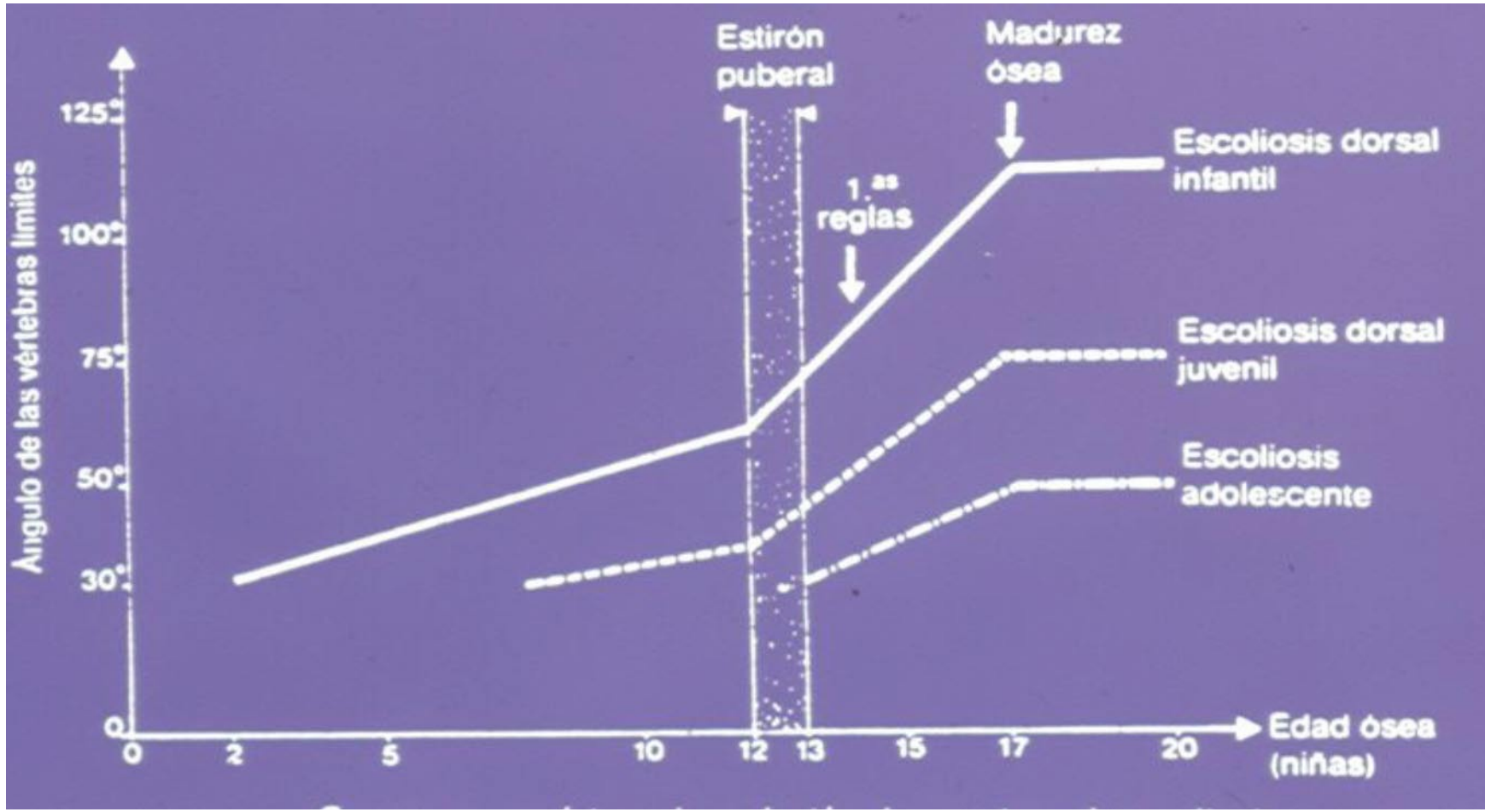
0

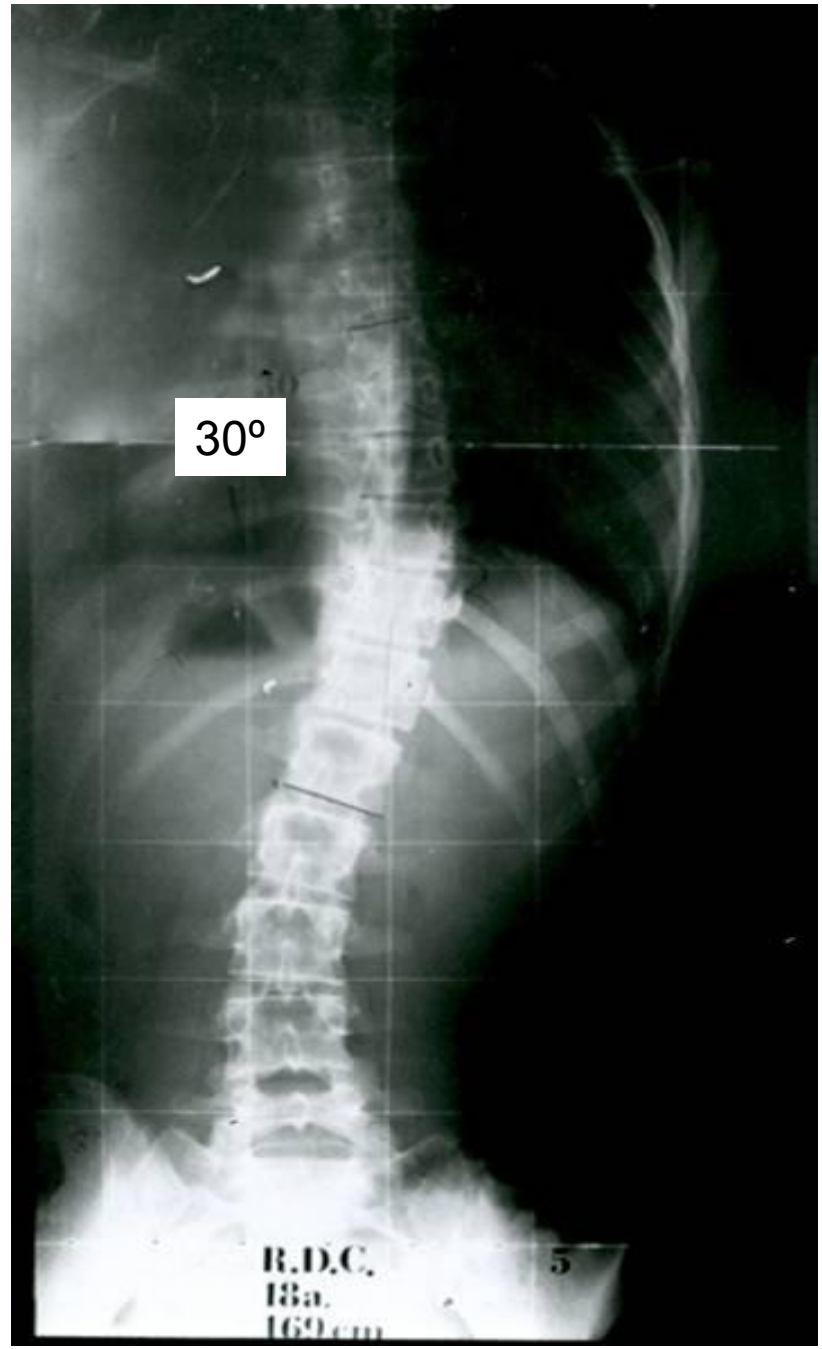
Herra... Insertar Medidas Cortes Forma...

Insertos
Cortes

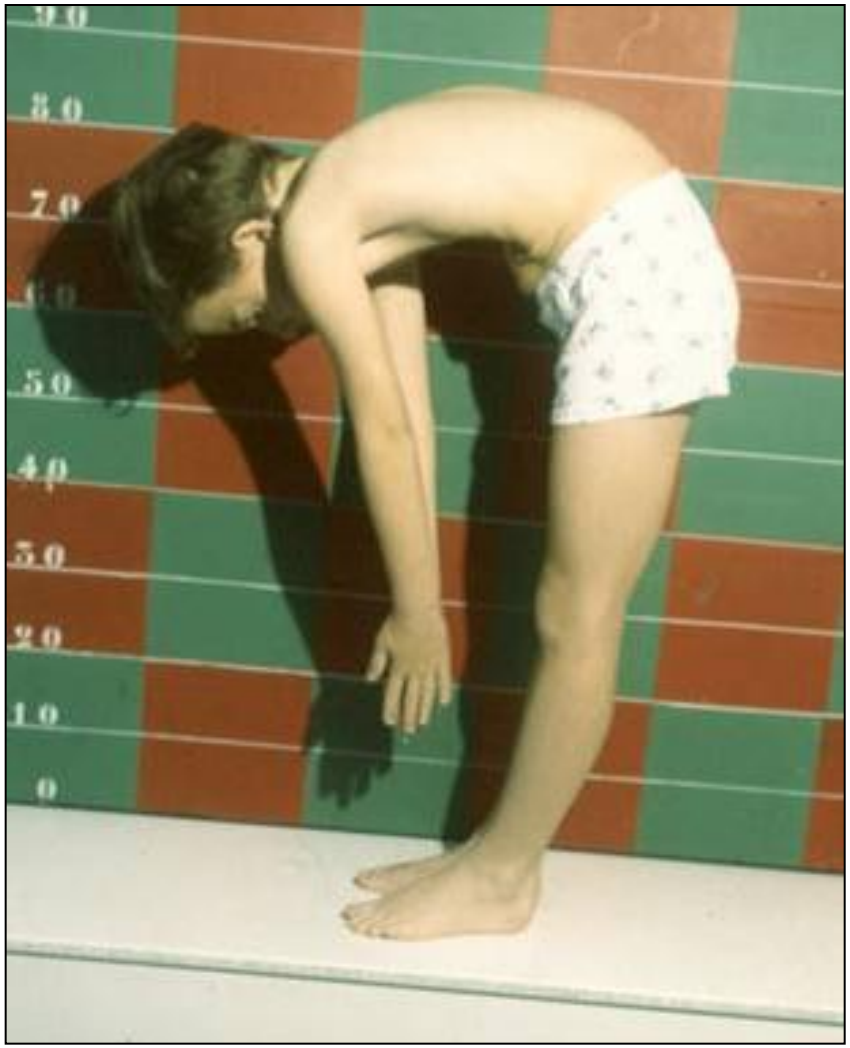
Utilizar para la Fusión

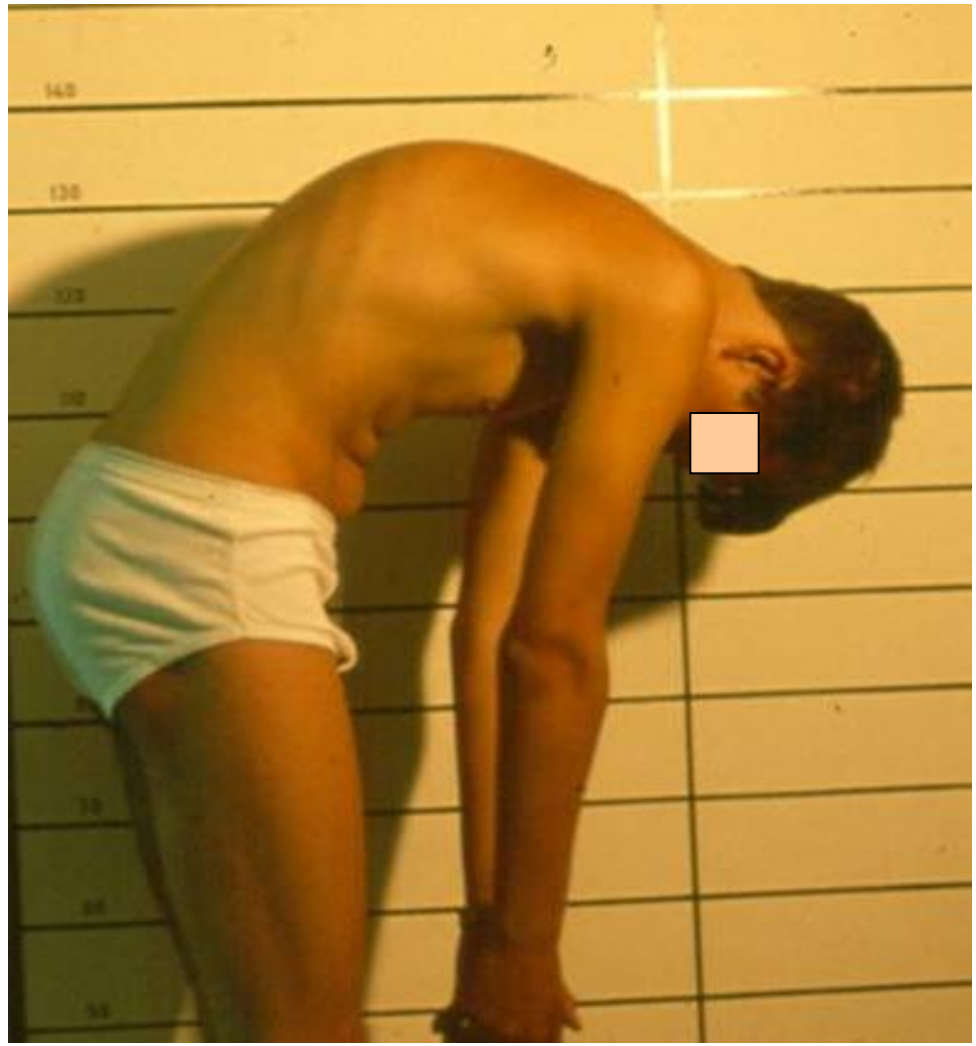

34º
R.D.C.
8a.6m.
130 cm.


Estirón puberal
Madurez ósea
1.as reglas
Escoliosis dorsal infantil
Escoliosis dorsal juvenil
Escoliosis adolescente
Ángulo de las vértebras límites
125°
100°
75°
50°
30°
0
0
2
5
10
12
13
15
17
20
Edad ósea (niñas)


30º
R.D.C.
18a.
5

Cifosis

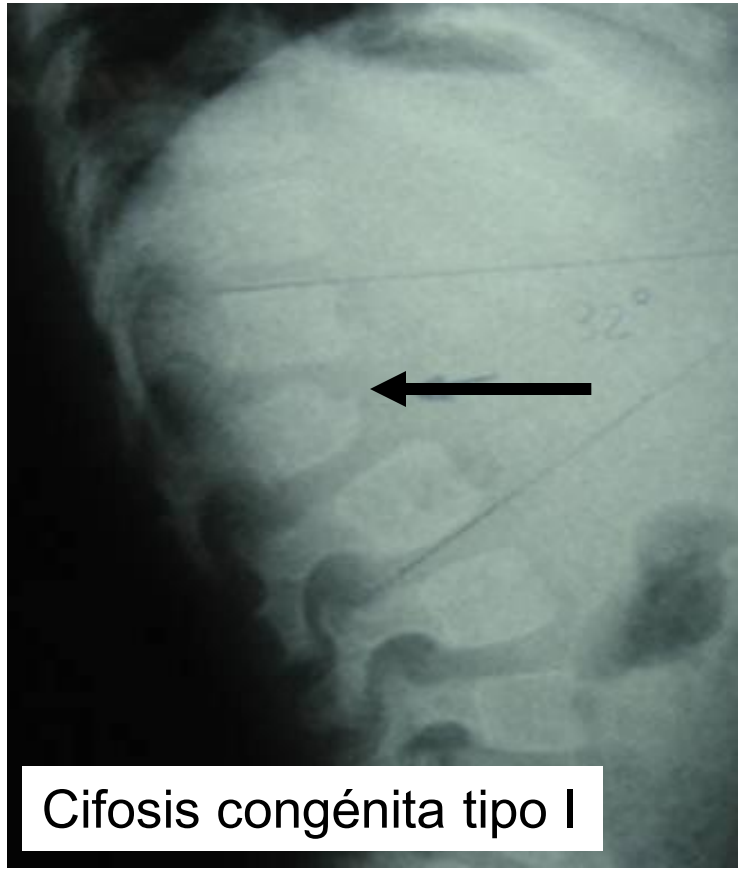


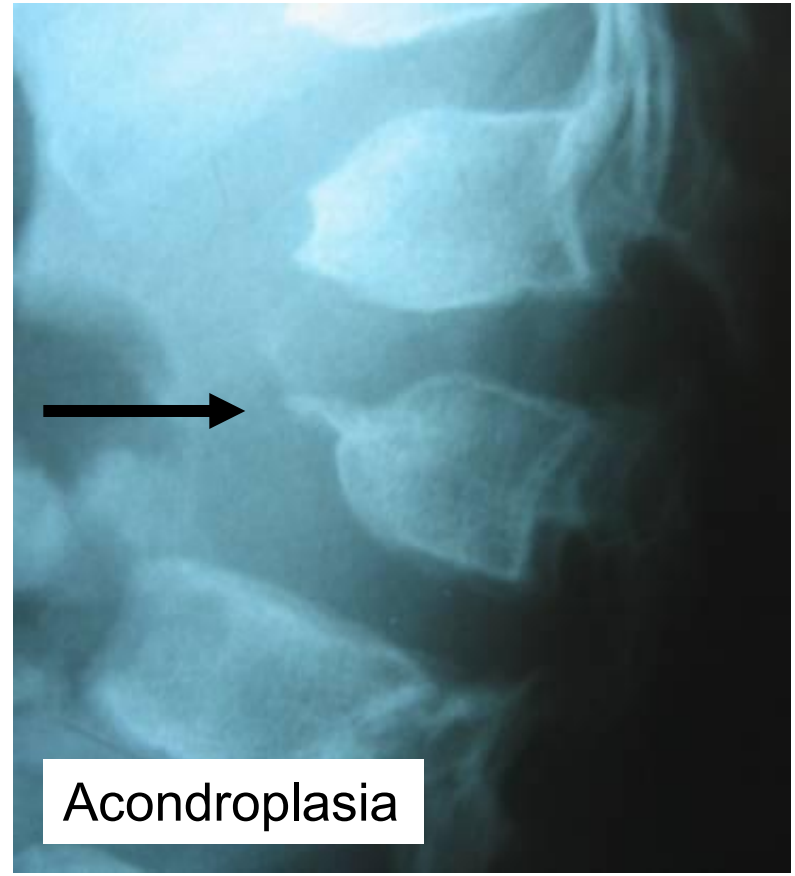


Cifosis
Clasificación

Angular	Regular
1. Cifosis congénita 2. Espondilodiscitis	1. Cifosis postural 2. Cifosis idiopática 3. Enfermedad de Scheuermann 4. Espondilitis anquilosante 5. Osteoporosis 6. Otras: Marfan, osteogénesis imperfecta, mucopolisacaridosis, oligofrenia, …

Cifosis congénita





Cifosis
Enfermedad de Scheuermann

- **Holger Werfel Scheuermann** (12.2.1877 - 3.3.1960) describió en 1920 una cifosis rígida frecuente en adolescentes, con radiología característica y que atribuyó a la presencia de necrosis avascular de la apófisis anular cartilaginosa del cuerpo vertebral con detención secundaria del crecimiento
- **Incidencia: 1-8 % de la población general; probablemente sea mayor ya que se considera infradiagnosticada**

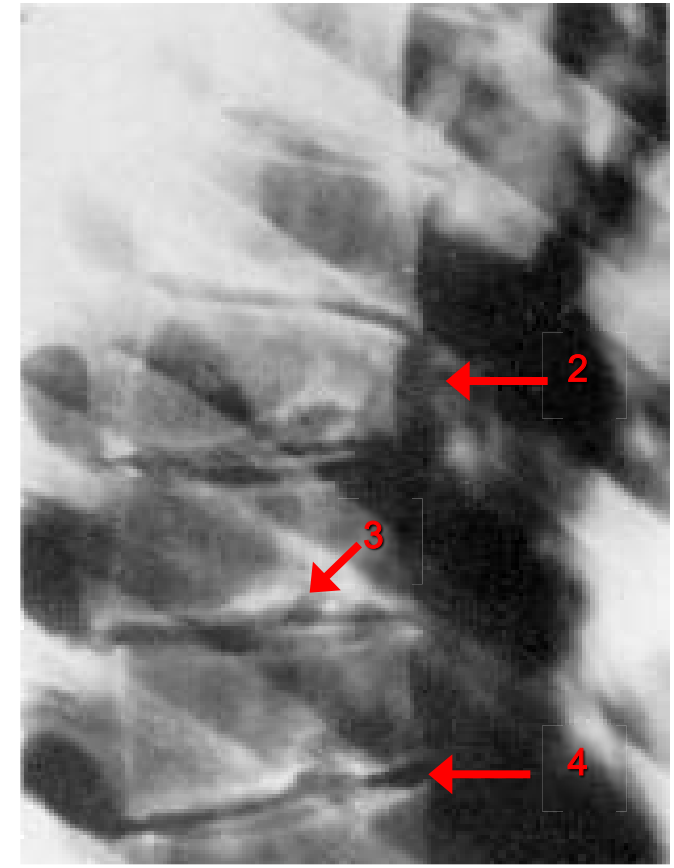
Enfermedad de Scheuermann
Diagnóstico

- Anamnesis
- Exploración física: cifosis rígida
- Radiología simple
- RNM: clínica neurológica

Enfermedad de Scheuermann

Criterios radiológicos

1. Cifosis > 45º
2. Acuñamiento > 5º al menos en 3 vértebras
3. Irregularidades en los platillos vertebrales
4. Disminución del espacio discal



Sörensen, 1964

Enfermedad de Scheuermann
Clínica

- Torácica
  - Cifosis rígida más común
  - Asociada a hiperlordosis flexible cervical y lumbar
- Toracolumbar
  - Menos frecuente
  - Se asocia a más dolor
  - Progresa más en el adulto

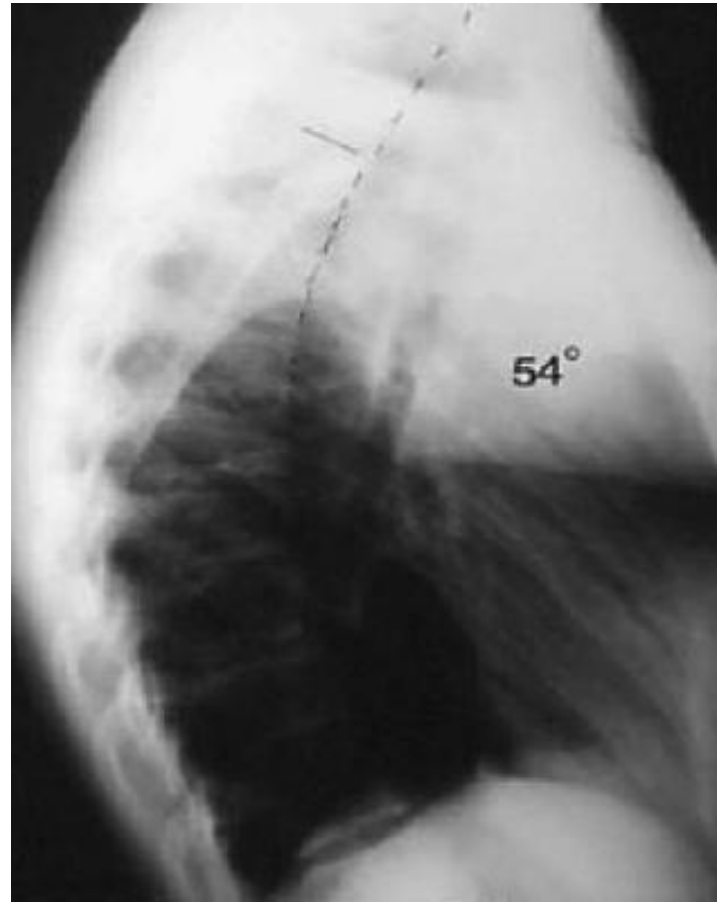
Enfermedad de Scheuermann
Clínica atípica: lesión medular por hernia discal

Kapetanos, 2006

Enfermedad de Scheuermann
Clínica atípica: radiculopatía por neurinoma

Enfermedad de Scheuermann
Criterios para tratar

- Clínicos
  - Edad
  - Forma típica o atípica
  - Dolor
  - Rigidez
- Radiológicos
  - Valor angular
  - Irregularidad vertebral
  - Acuñamiento



Iemolo, 2007

Enfermedad de Scheuermann
Tratamiento según valor angular

- Menor de 50º
  - Cinesiterapia
- Entre 50º y 70º
  - Reducción ortopédica
  - Corsés
- Mayor de 70º
  - Cirugía

Lowe, 2007

Corsé de Swann

Kyphologic brace

Weiss, 2009

SPINE Volume 32, Number 19S, pp S115–S119

Evidence Based Medicine

Analysis of Scheuermann Kyphosis

Thomas G. Lowe, MD, and Breton G. Line, BSME

Study Design. A review of the current literature using evidence-based medicine (EBM) regarding etiology, natural history, and treatment of Scheuermann kyphosis.

Objective. To provide current concepts for the rational evaluation and treatment of Scheuermann kyphosis supported by EBM.

Summary of Background Data. The literature concerning etiology, natural history, and treatment of Scheuermann disease has mixed views and recommendations, most of which are not strongly supported with levels of evidence.

Methods. A thorough database search was performed in order to obtain the best current information and levels of evidence on etiology, natural history, and treatment options for Scheuermann kyphosis based on EBM criteria.

Results and Conclusion. Scheuermann kyphosis is the most common cause of hyperkyphosis in adolescence. Its true etiology remains unknown, but there appears to be a strong genetic as well as an environmental contribution. The kyphotic deformity is frequently attributed to "poor posture" resulting in delayed diagnosis, and treatment indications remain debated because the natural history has not been clearly defined. When recognized early in adolescence with progressive kyphosis, bracing treatment will usually result in modest correction of the deformity. Symptomatic adolescents with severe deformity have demonstrated significant deformity correction following surgical intervention; however, clinical outcomes data are not yet available, and the studies available do not have strong levels of evidence.

Key words: kyphosis, ring apophysis, Scheuermann kyphosis, TLSO brace, vertebral body wedging. **Spine 2007; 32:S115–S119**

der "Scheuermann Disease," "Scheuermann kyphosis," "natural history of," "etiology of," "nonoperative treatment of," and "operative treatment of." Databases searched included: Cochrane Database, PubMed, and Medline. Twenty-five journal articles were found. Eight of the articles were based on case reports or opinions alone.

Scheuermann, in 1920, described a rigid kyphosis of the thoracic or thoracolumbar spine occurring in adolescents.[1] Two different curve patterns have been described in Scheuermann kyphosis. The thoracic pattern is the most common and is associated with a nonstructural hyperlordosis of the lumbar and cervical spine.[2] The thoracolumbar pattern is uncommon but is thought to be the most likely to progress in adulthood. However, this conclusion is based on expert opinion only.[3] Postural kyphosis is readily differentiated from Scheuermann kyphosis radiographically because of the presence of a uniformly rounded kyphosis that is nonstructural, and the absence of wedging of vertebral bodies and disc degeneration. The onset of Scheuermann kyphosis usually appears just before puberty, after ossification of the ring apophysis, as a structural kyphotic deformity of the thoracic or thoracolumbar spine.[4] The condition characterized by vertebral body wedging, vertebral endplate irregularity, diminished anterior vertebral growth, and premature disc degeneration is the most common cause of kyphosis in the pediatric population today. Its re-

Muchas gracias por su atención