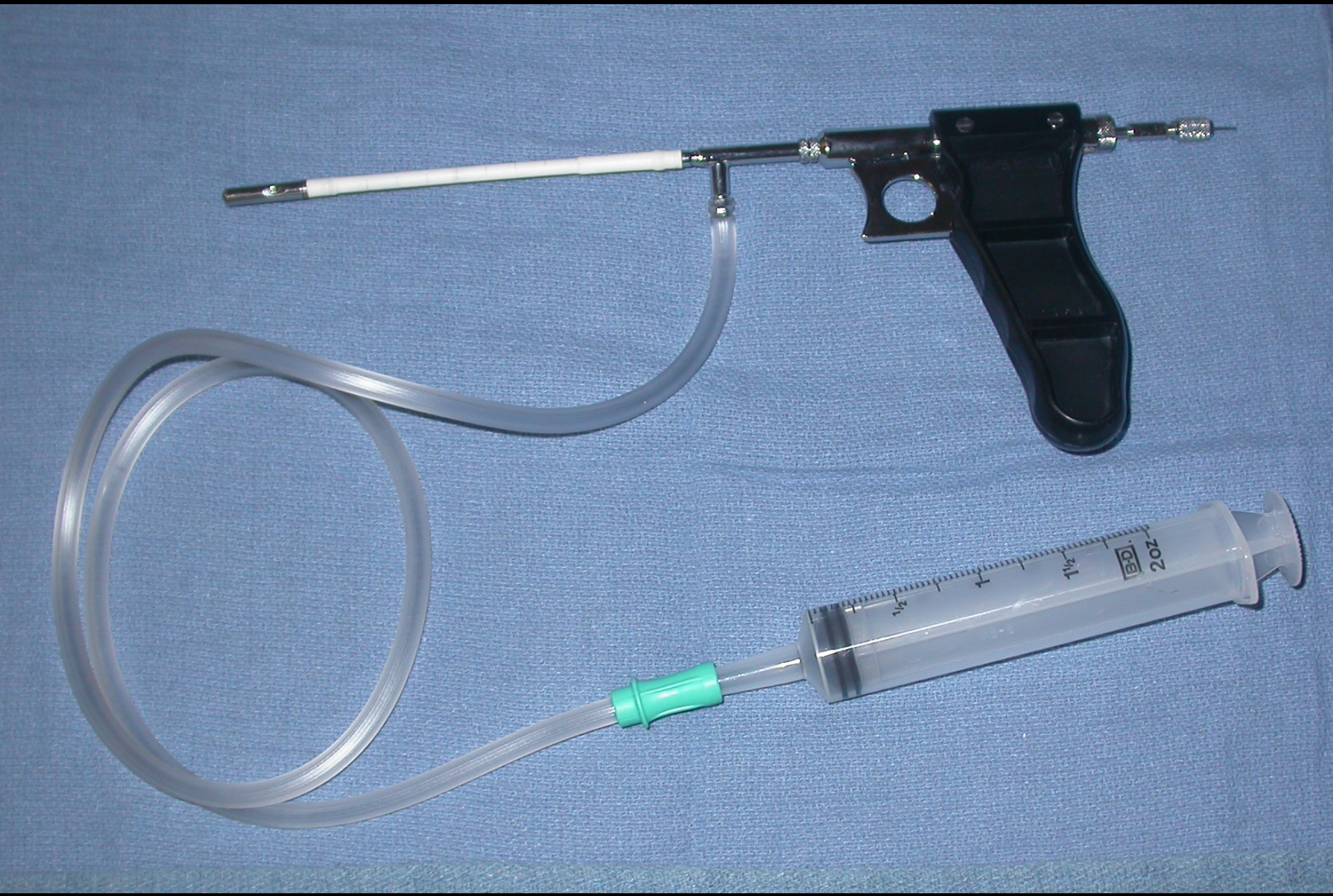
Meconium Happens!

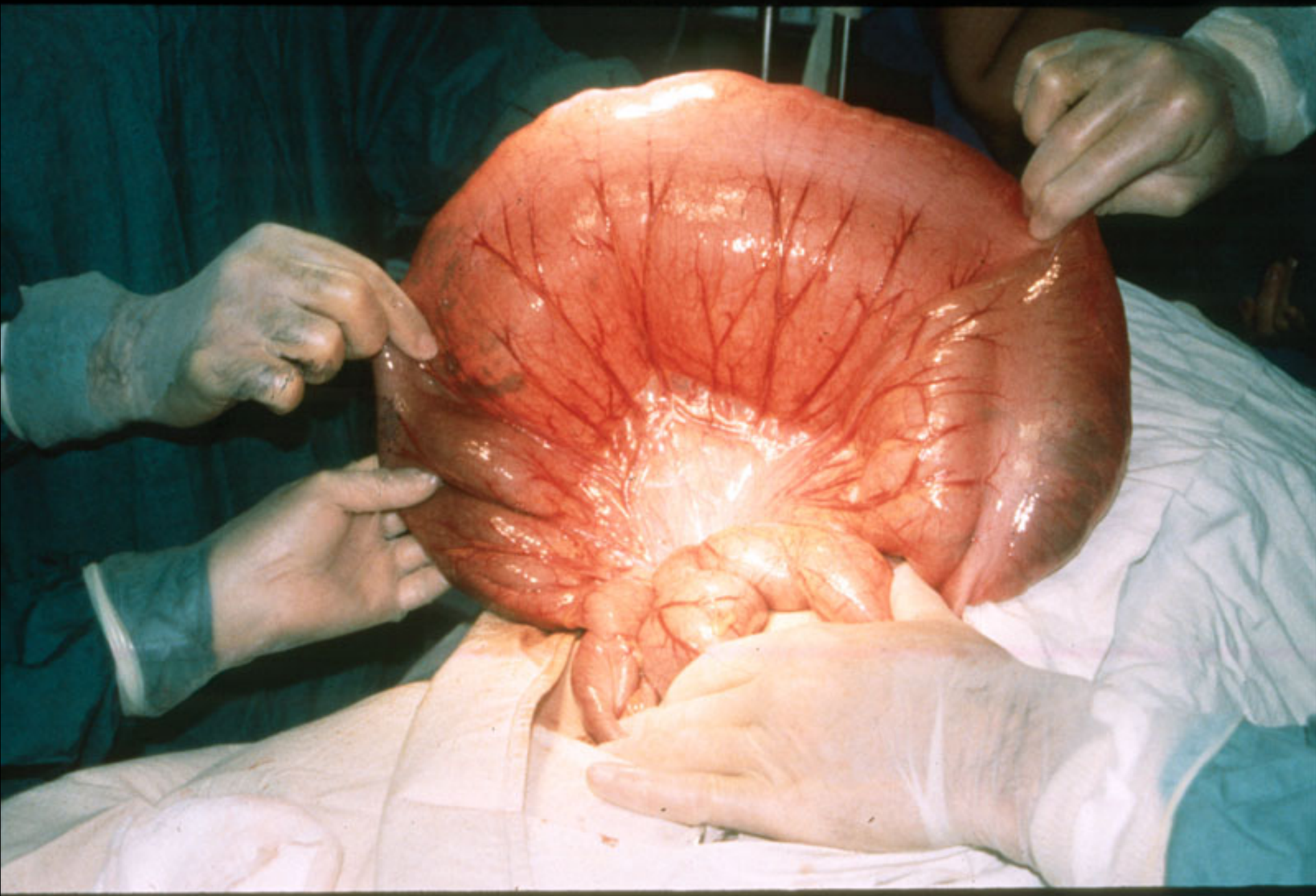
HIRSCHSPRUNG'S DISEASE

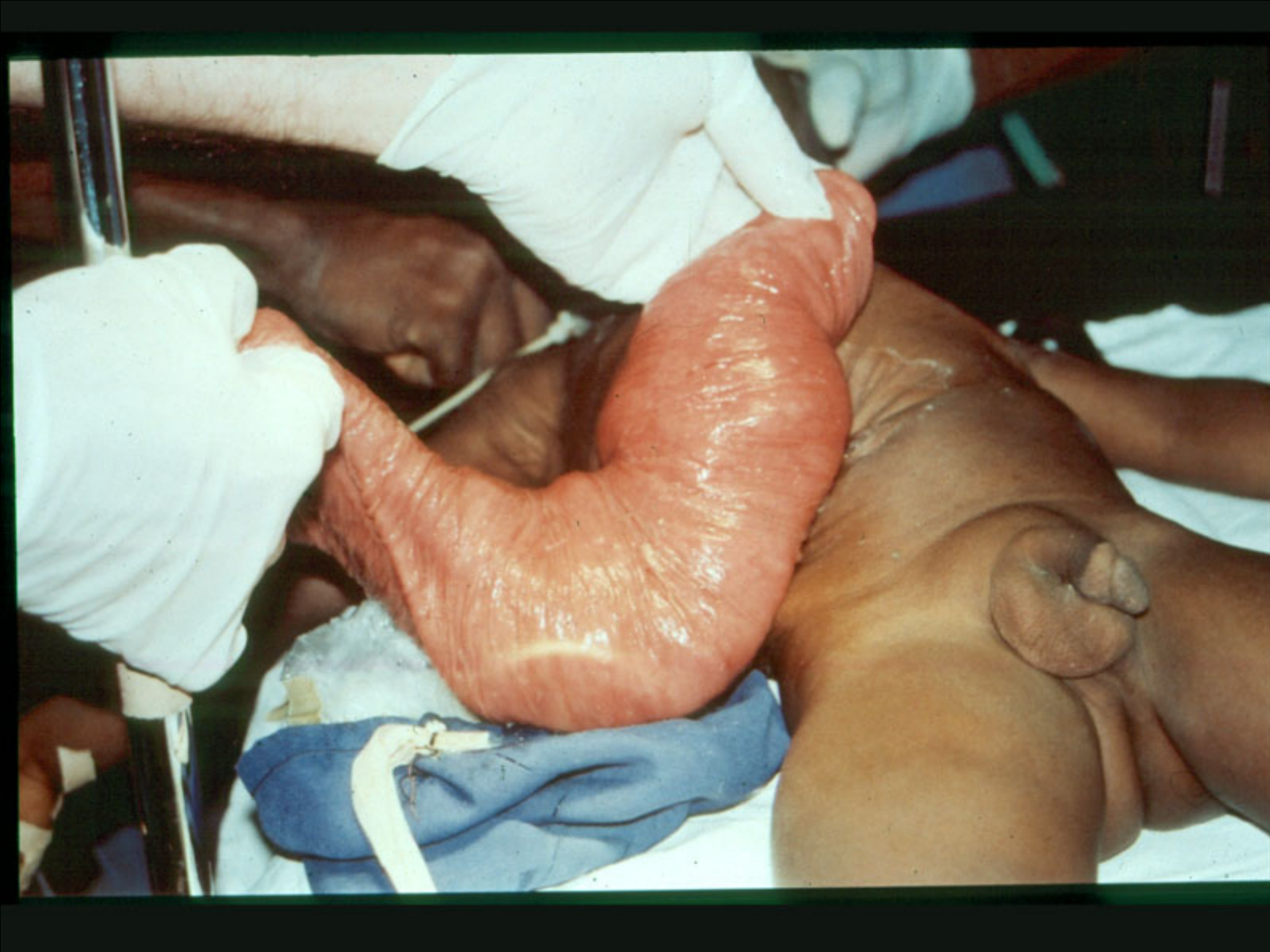
- Occurs in 1 in 5,000 live births
- Caused by a failure of caudal migration of neural crest cells resulting in absence of intestinal nerve plexuses and absent peristalsis
- Higher incidence in Down syndrome children
- Suspect in any newborn who does not pass meconium within 24 hours and in older children with chronic constipation since birth

NEONATAL DIAGNOSIS OF HD

- Water soluble contrast enema
- Suction Rectal Biopsy

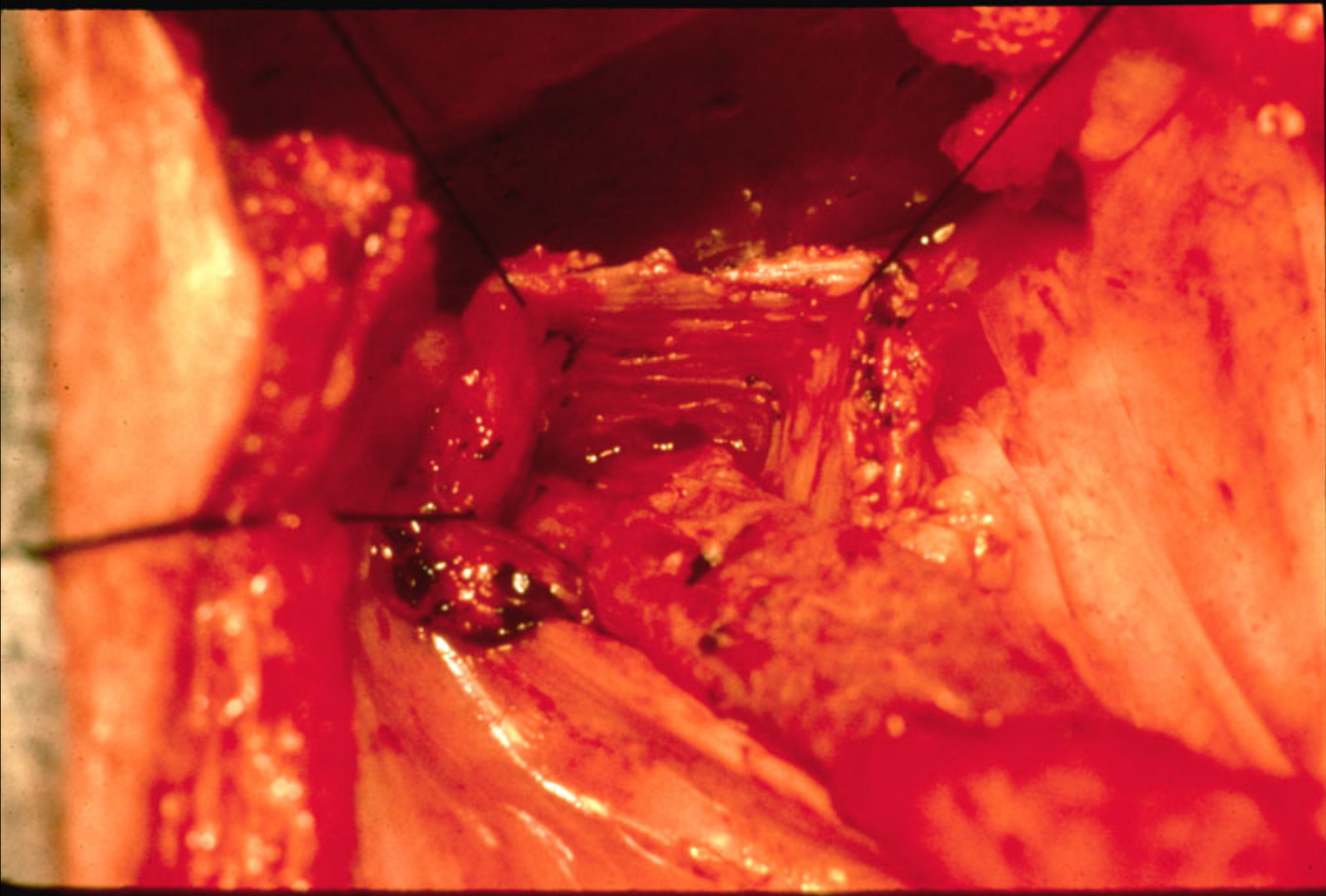

BD
20cc

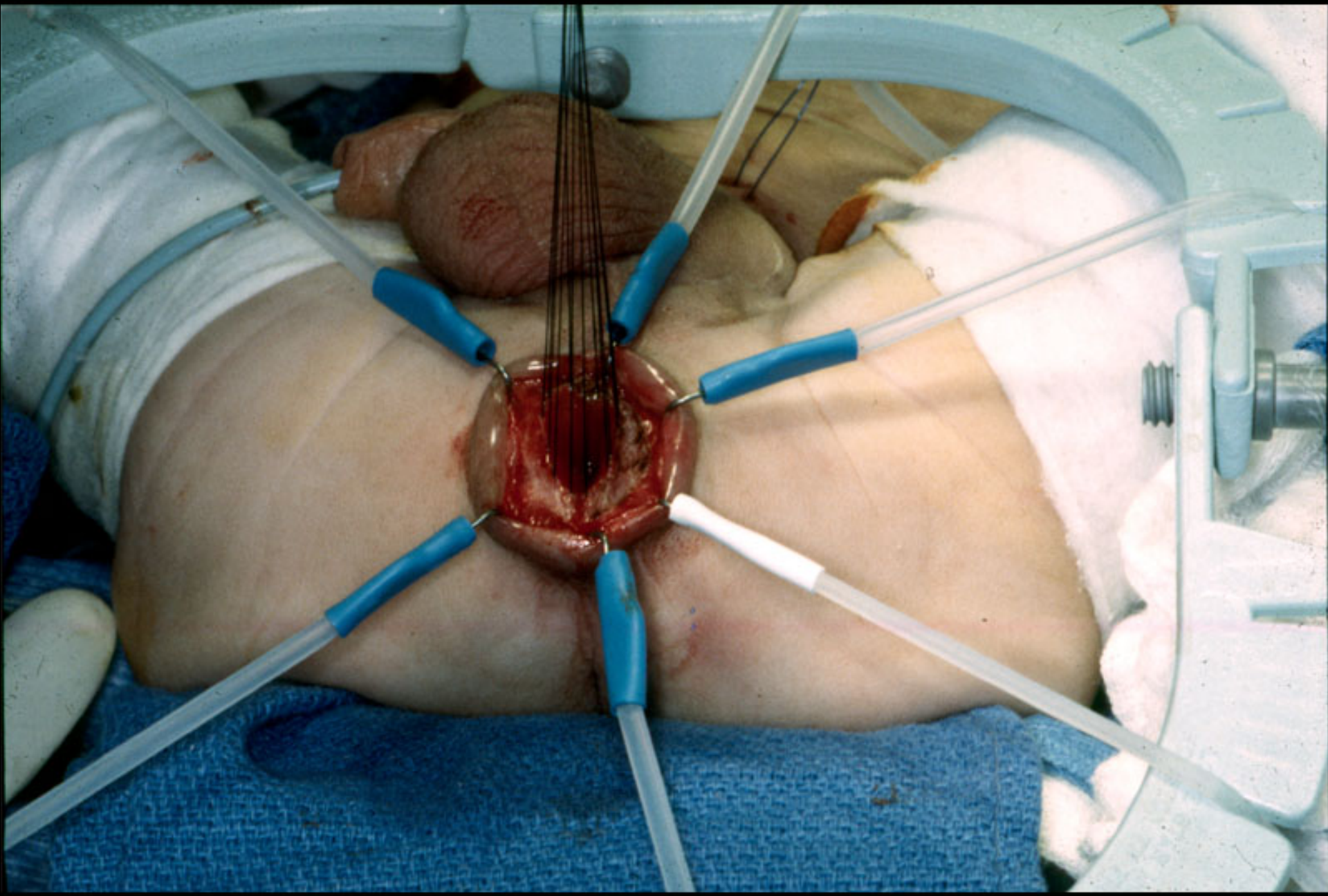


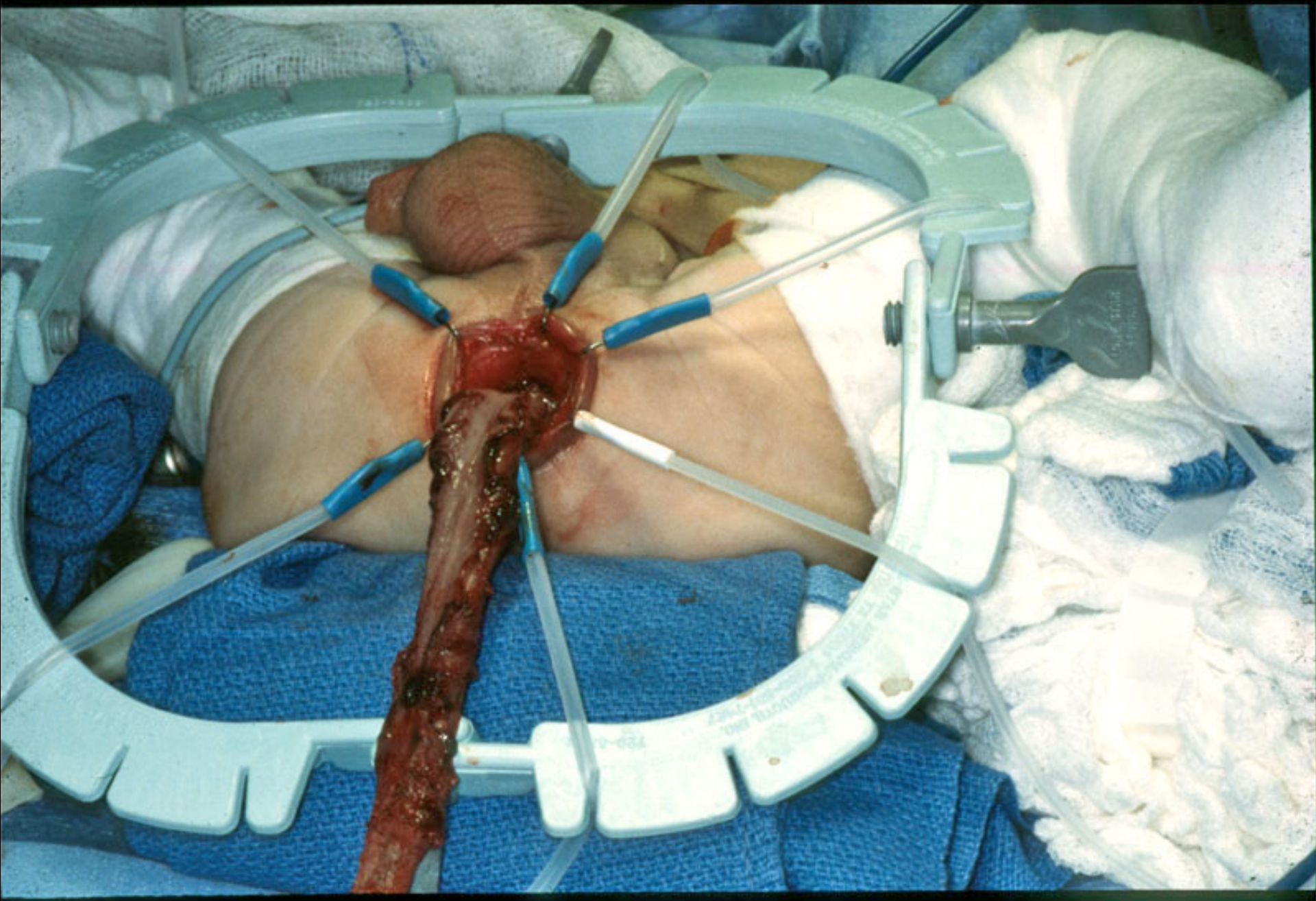


HD - Corrective Surgical Techniques

- Swenson
- Duhamel
- Soave

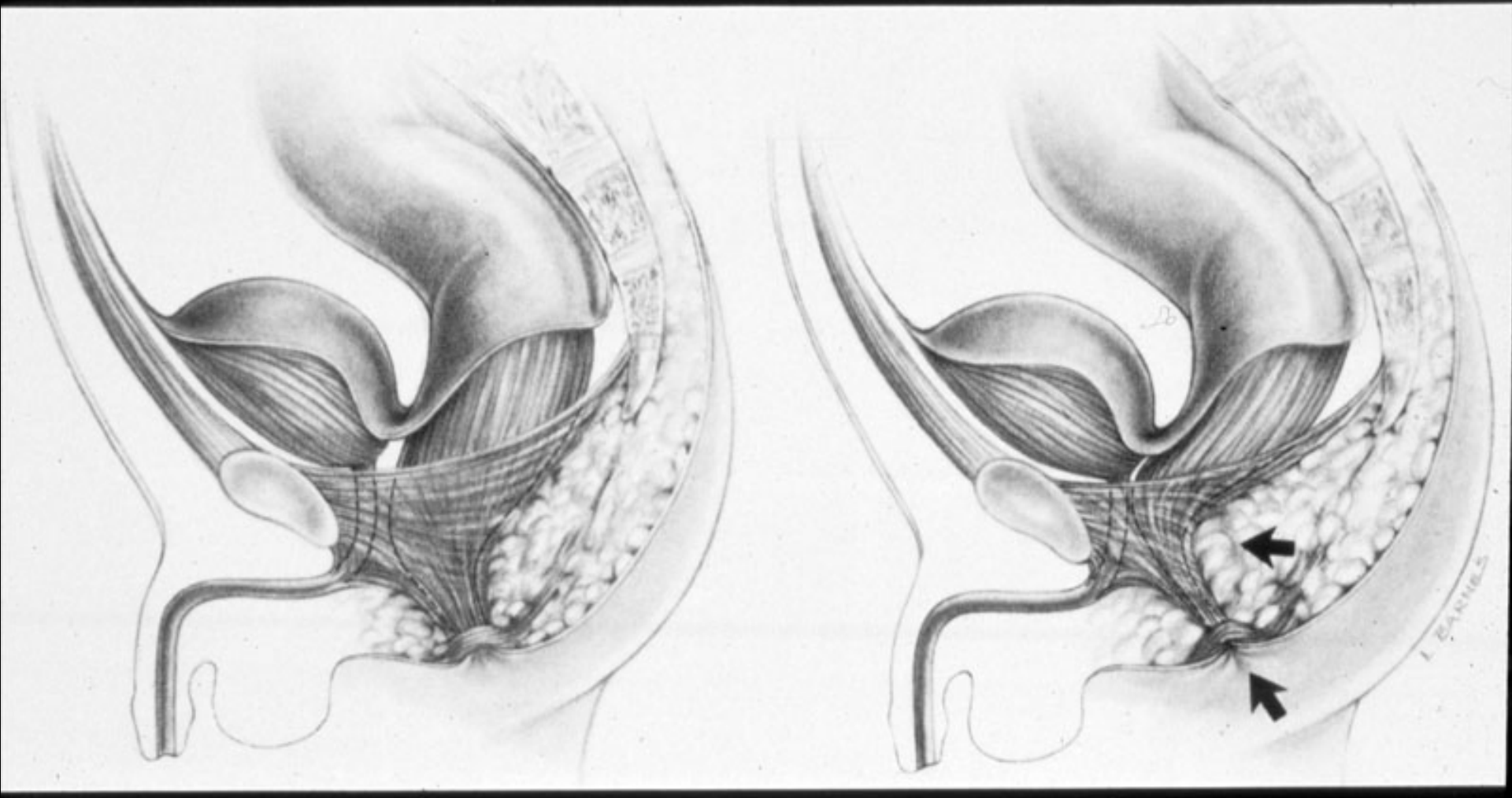


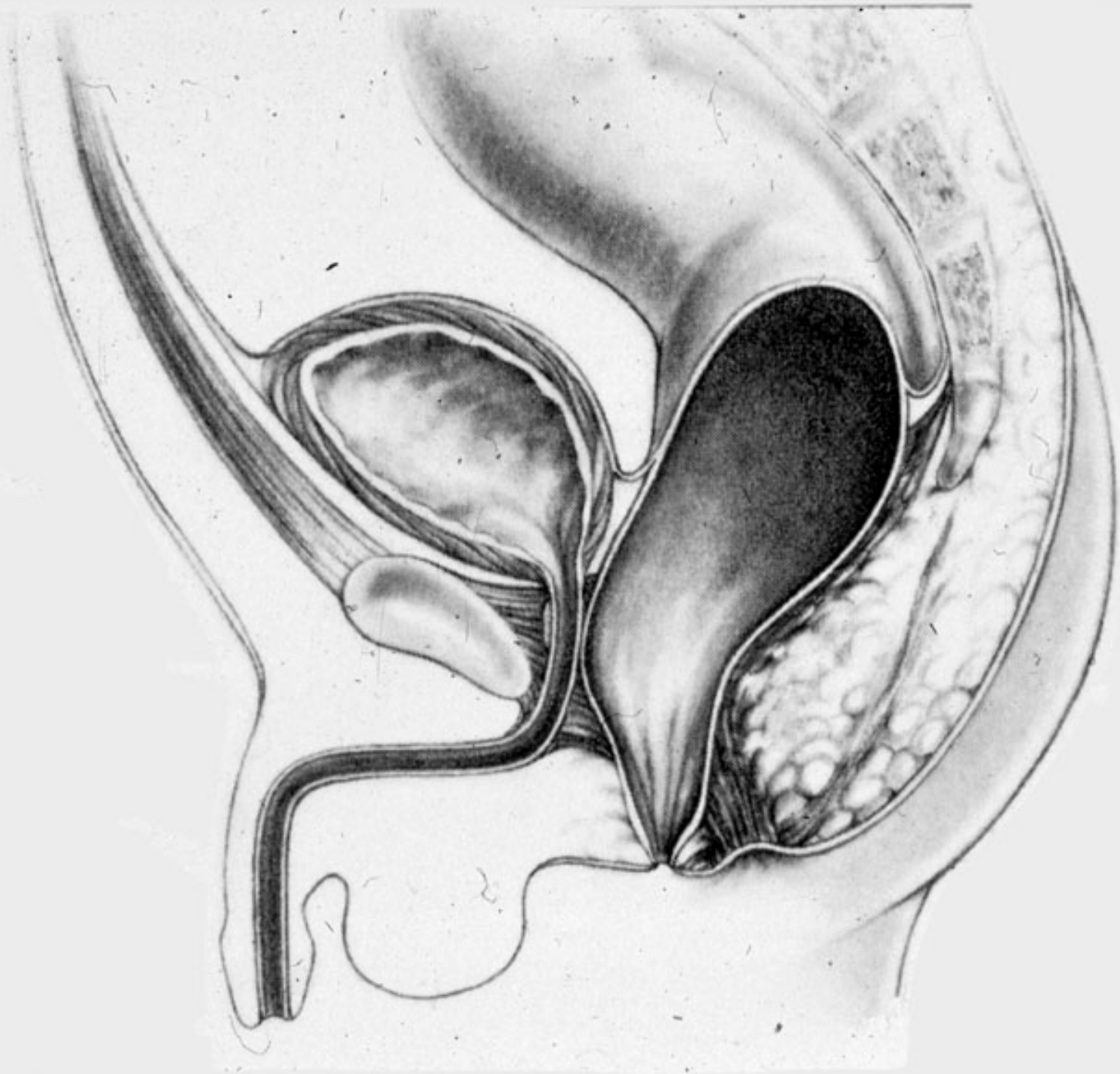




VACTERRL COMPLEX

- Vertebral and spinal cord anomalies
- Anorectal malformations
- Cardiac abnormalities
- Tracheo-
- Esophageal anomalies
- Renal and other urological anomalies
- Radial anomalies
- Limb anomalies other than radial

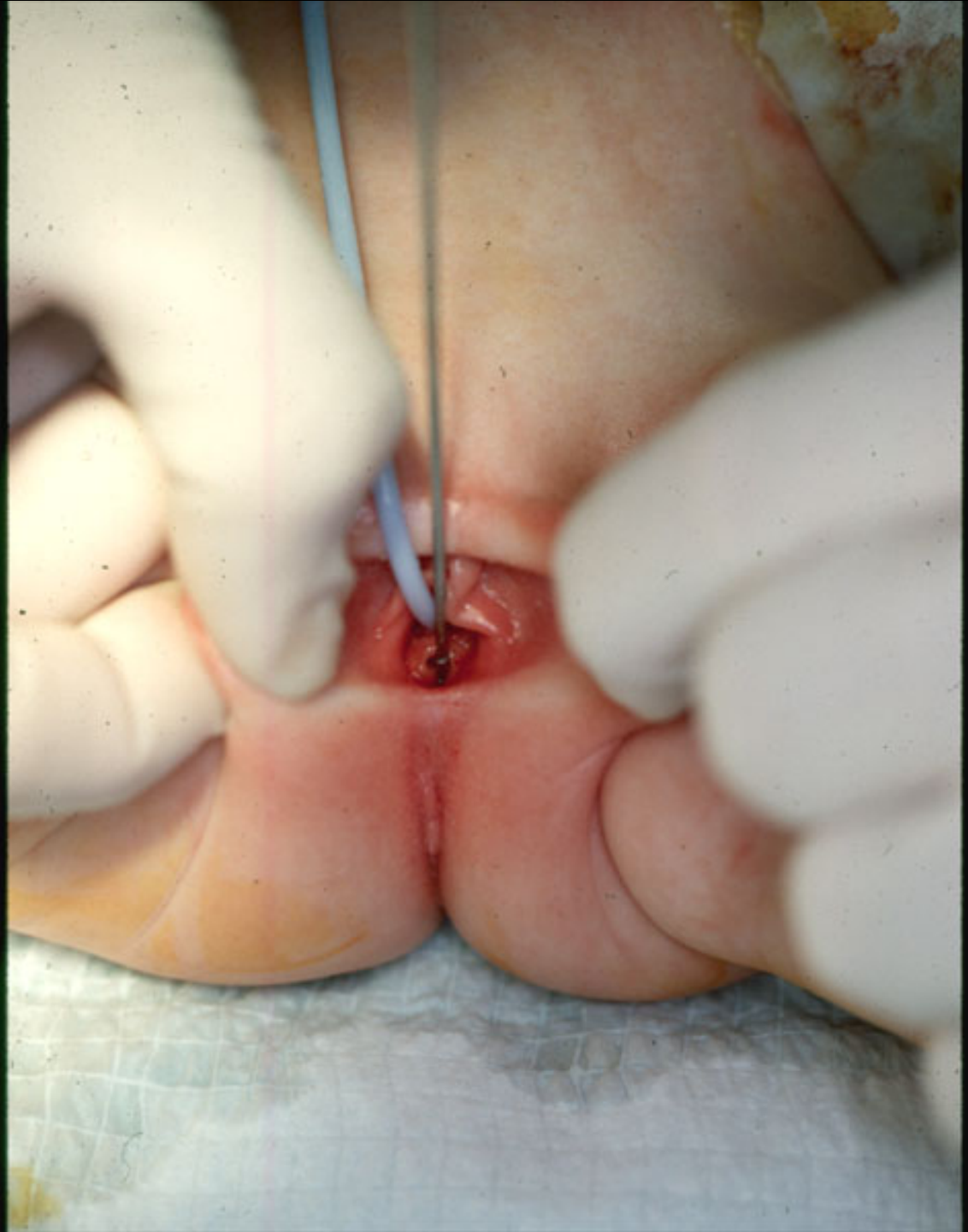


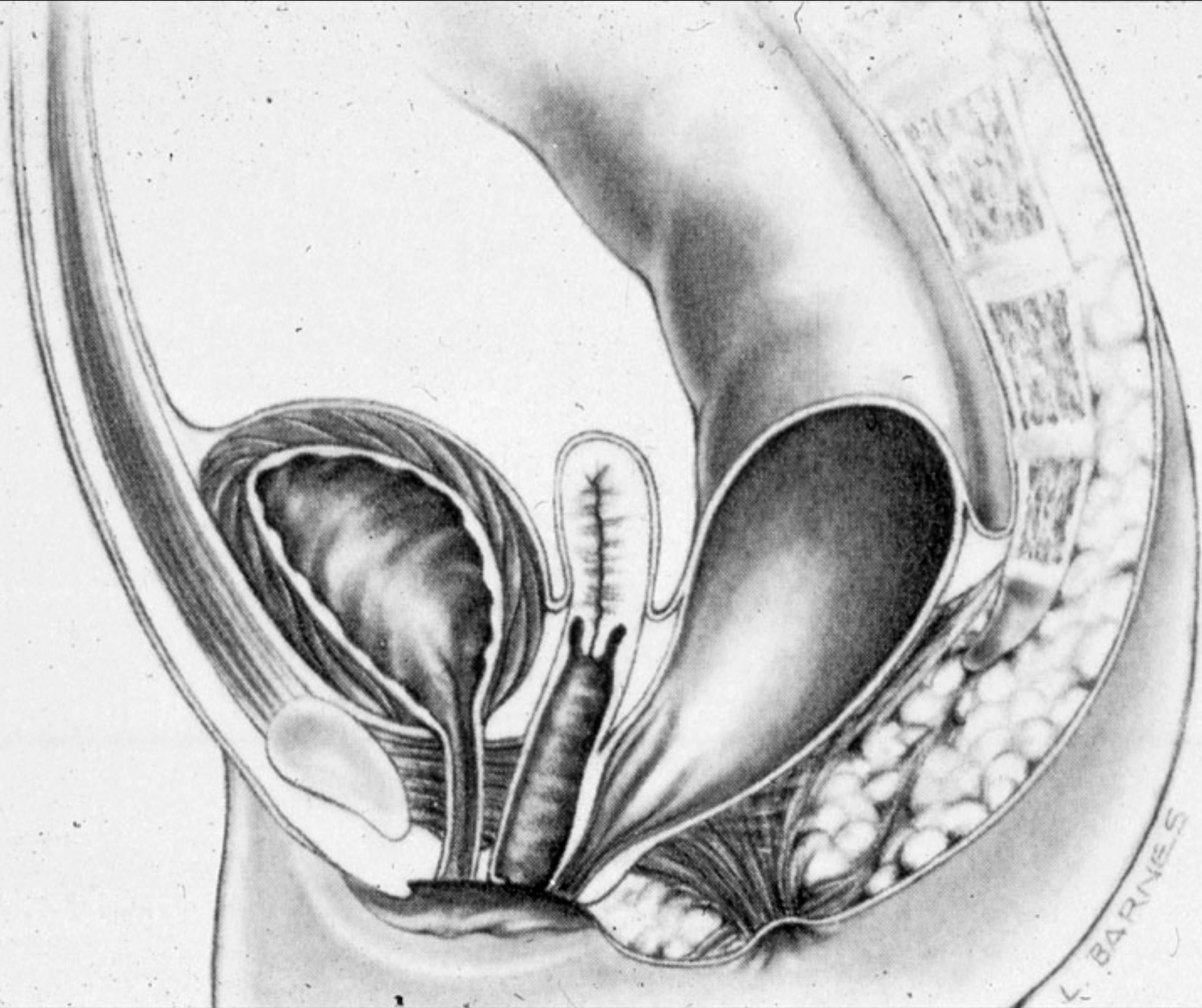


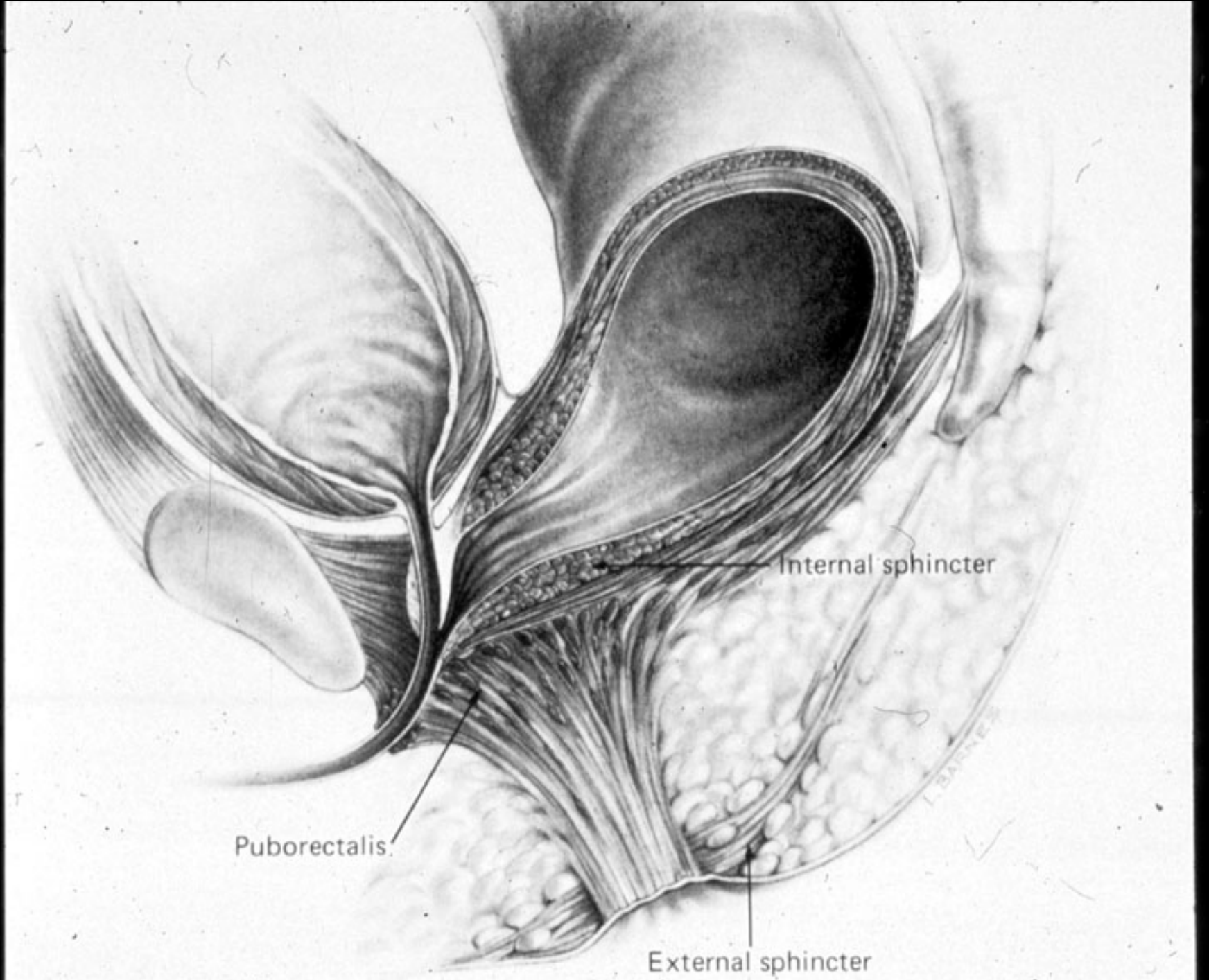
THESE LOW-LYING LESIONS CAN BE TREATED IN THE NEWBORN PERIOD WITH A PRIMARY ANOPLASTY AND

WITHOUT A COLOSTOMY

UNFORTUNATELY MOST ARMs ARE NOT LOW-LYING LESIONS




L. BARNES


Internal sphincter
Puborectalis
External sphincter

Alberto Peña

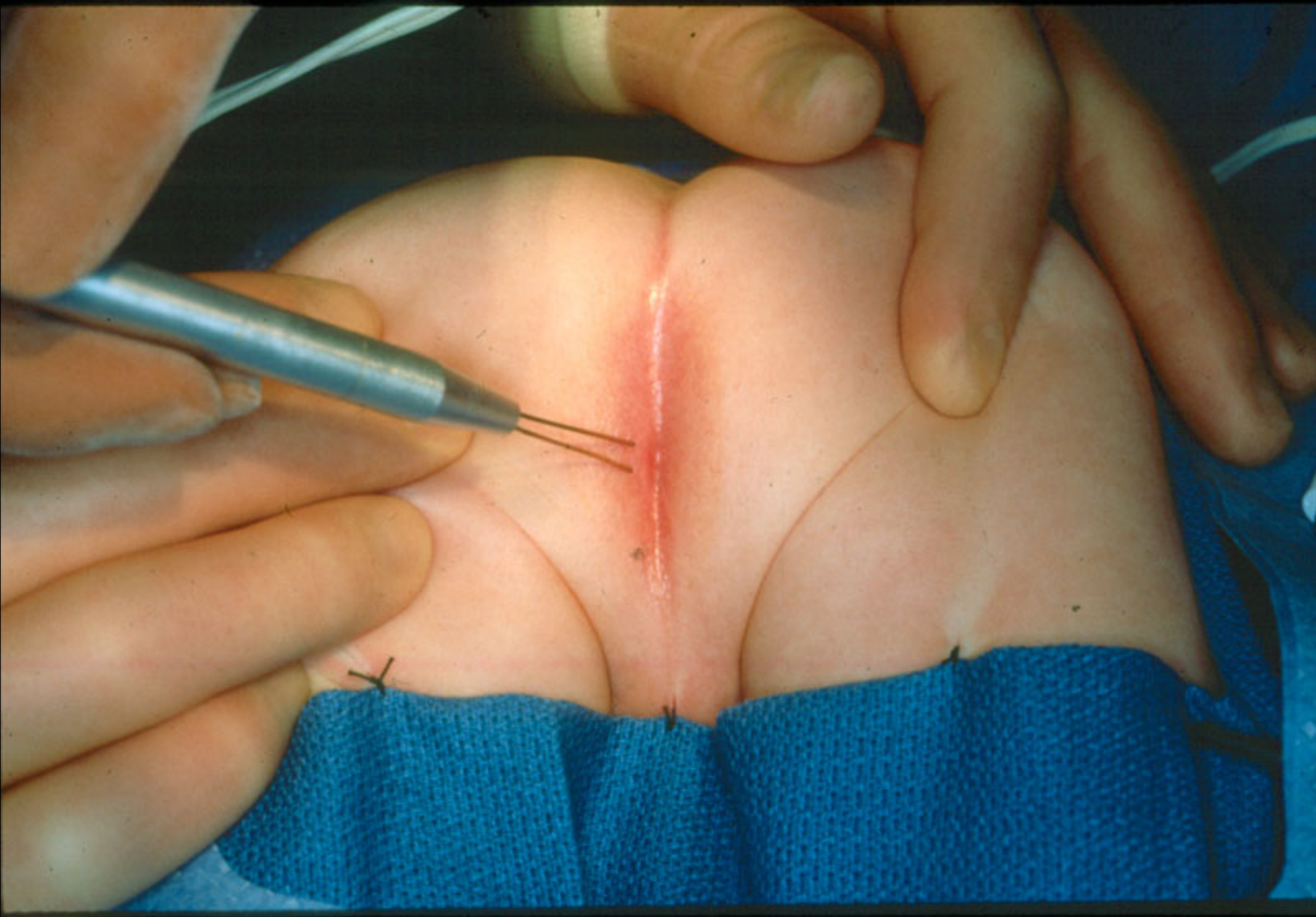
Atlas of Surgical Management of Anorectal Malformations

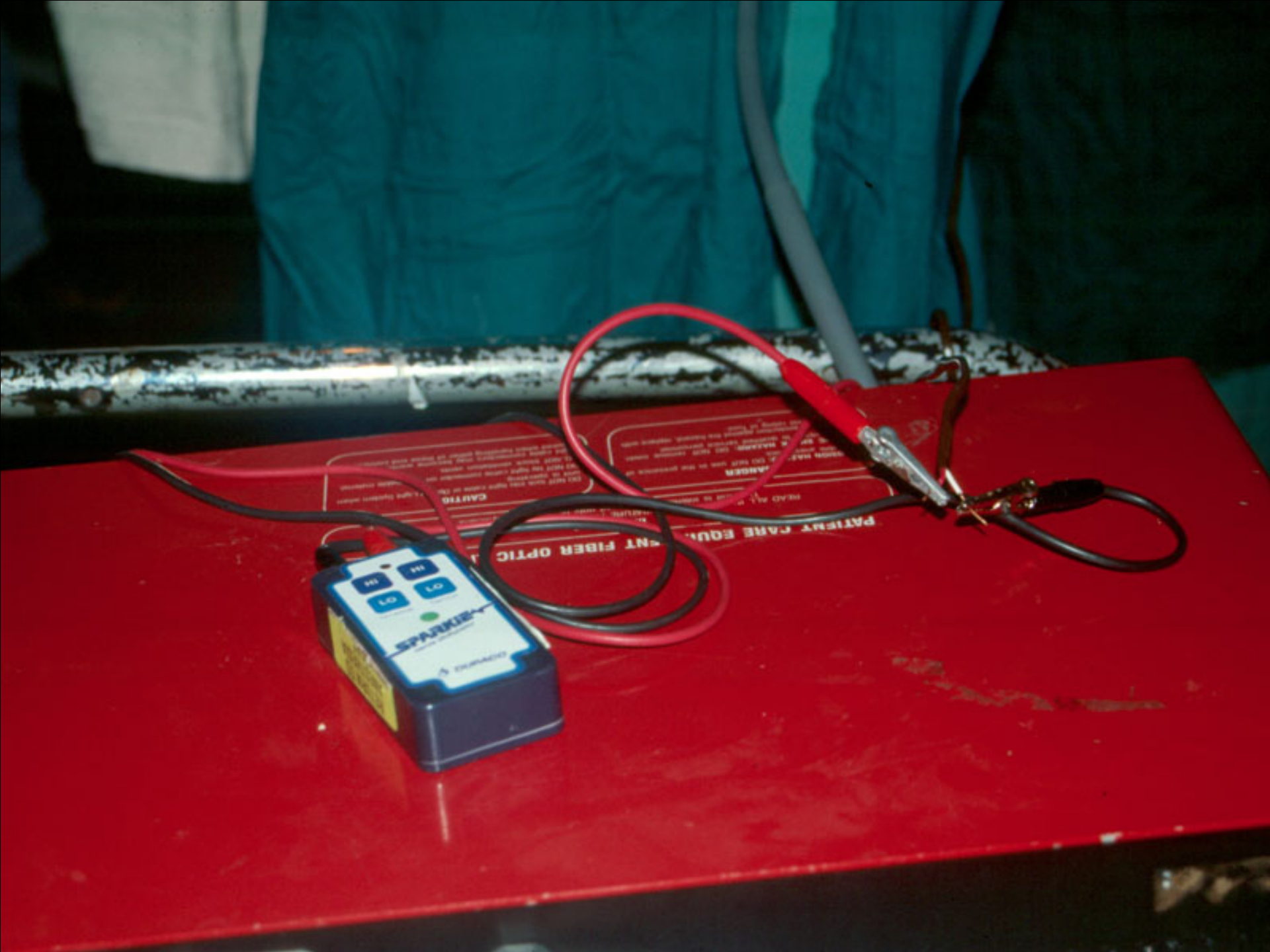
Illustrator
Lois Barnes

With 83 Illustrations in 143 Parts

Springer-Verlag New York Berlin Heidelberg
London Paris Tokyo Hong Kong


RADIONICS
PEÑA MUSCLE STIMULATOR
MODEL PS-1
OUTPUT CURRENT
(MILLIAMPERES)
20
40
60
80
100
120
140
200
250
ON (1)
OFF (0)
TEST
RADIONICS, INC.
P.O. BOX 438
76 CAMBRIDGE ST.
BURLINGTON, MA 01803, USA
OUTPUT

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LO
HI
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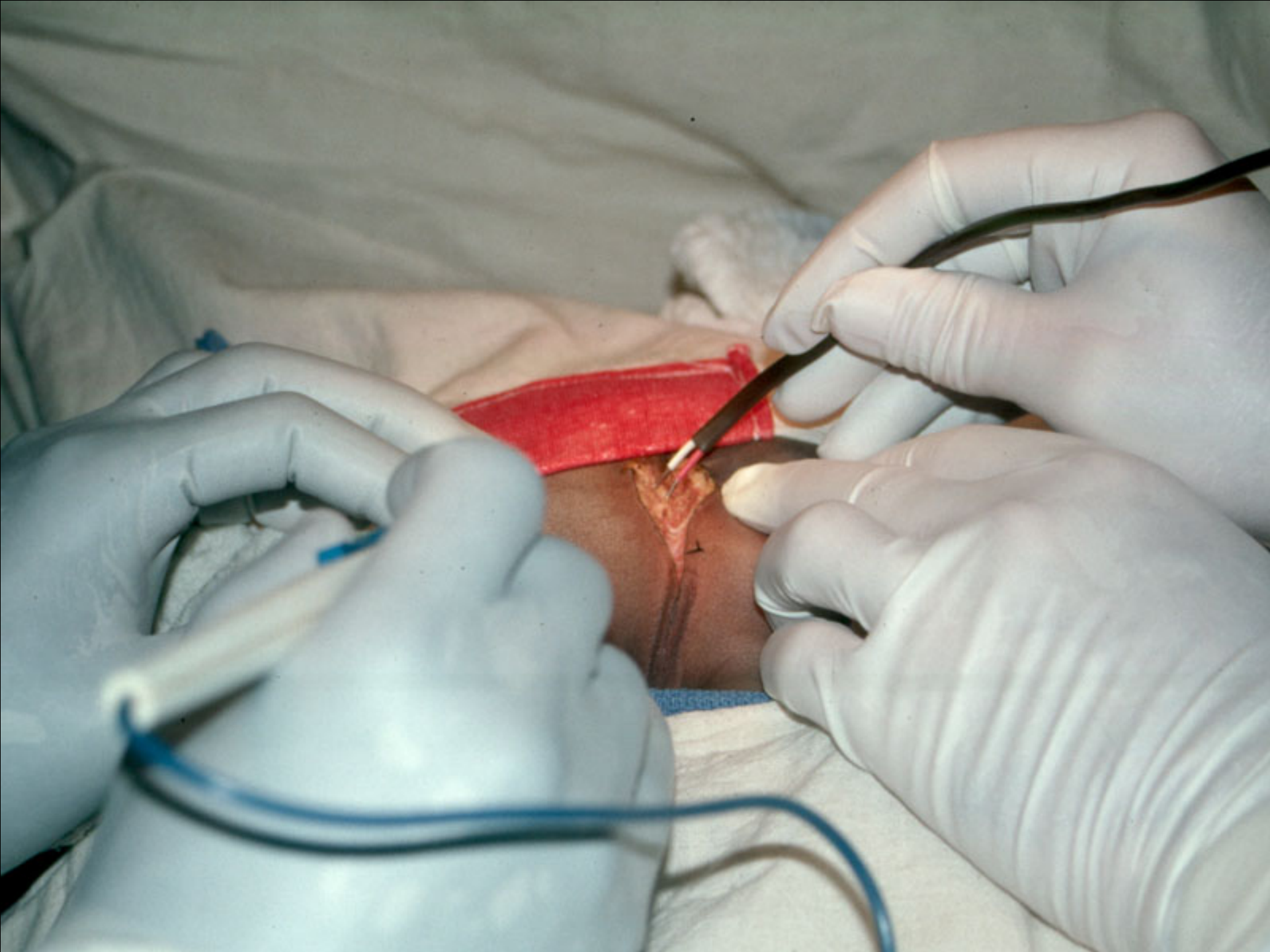
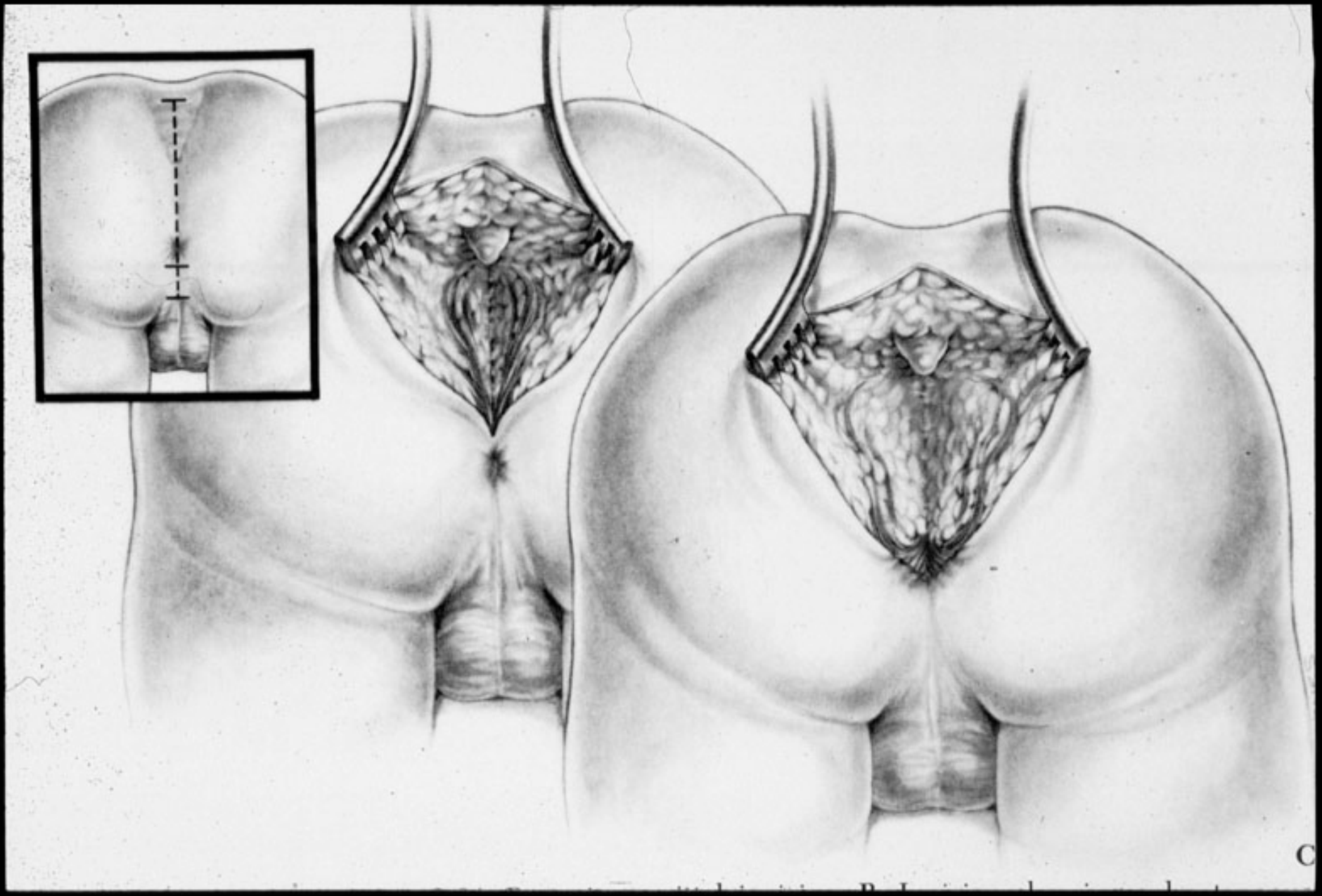
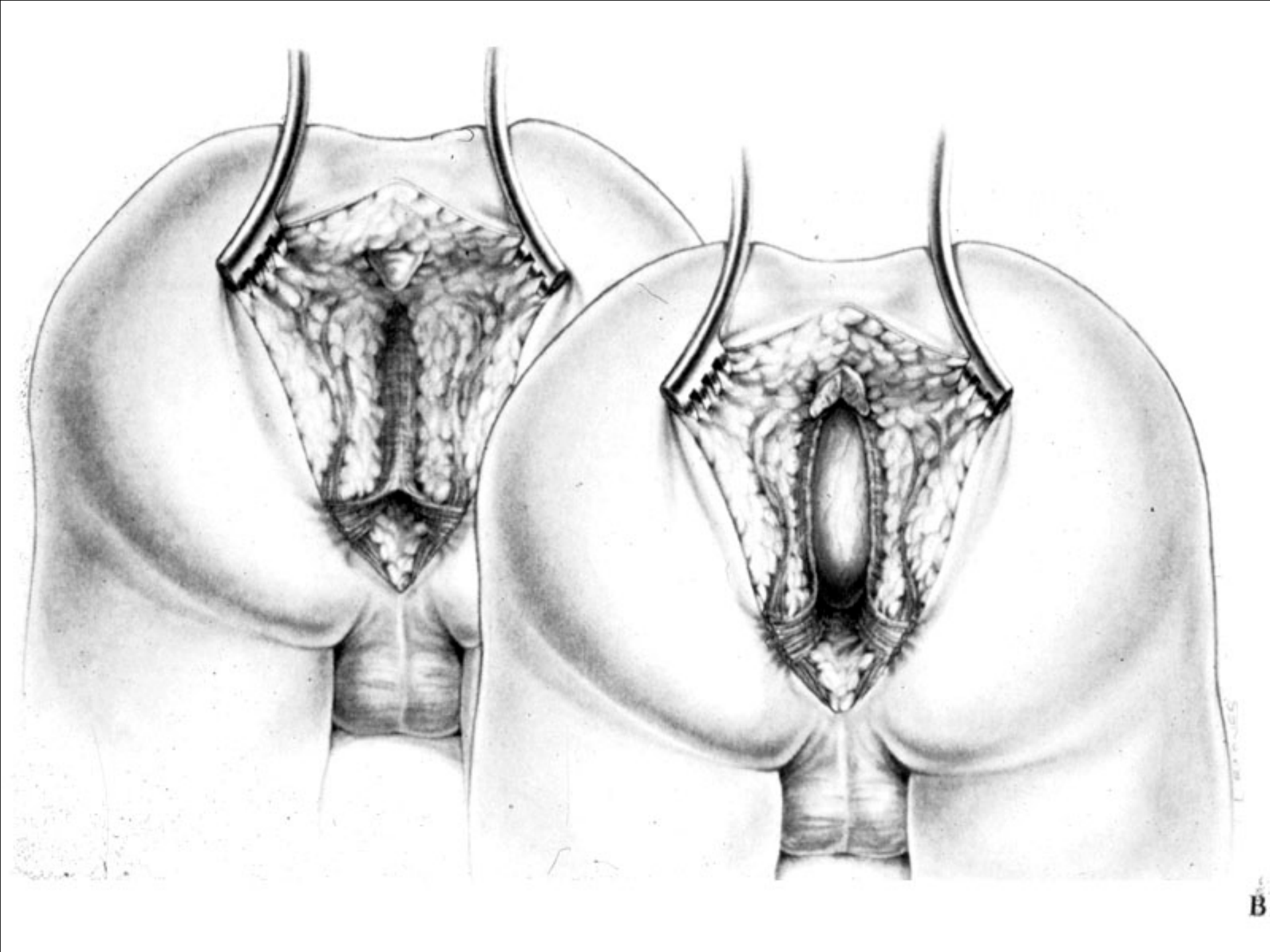
SPARKER







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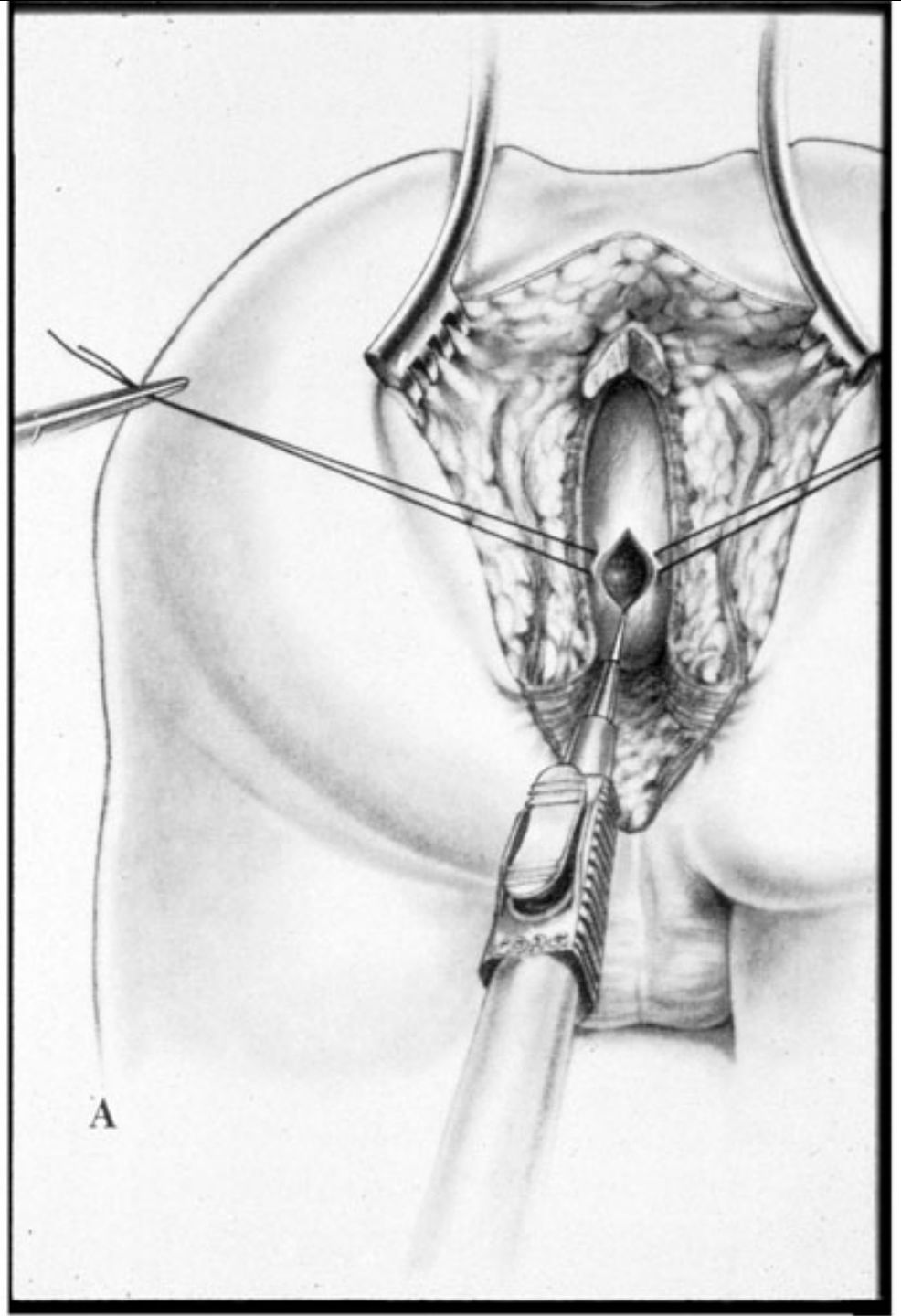
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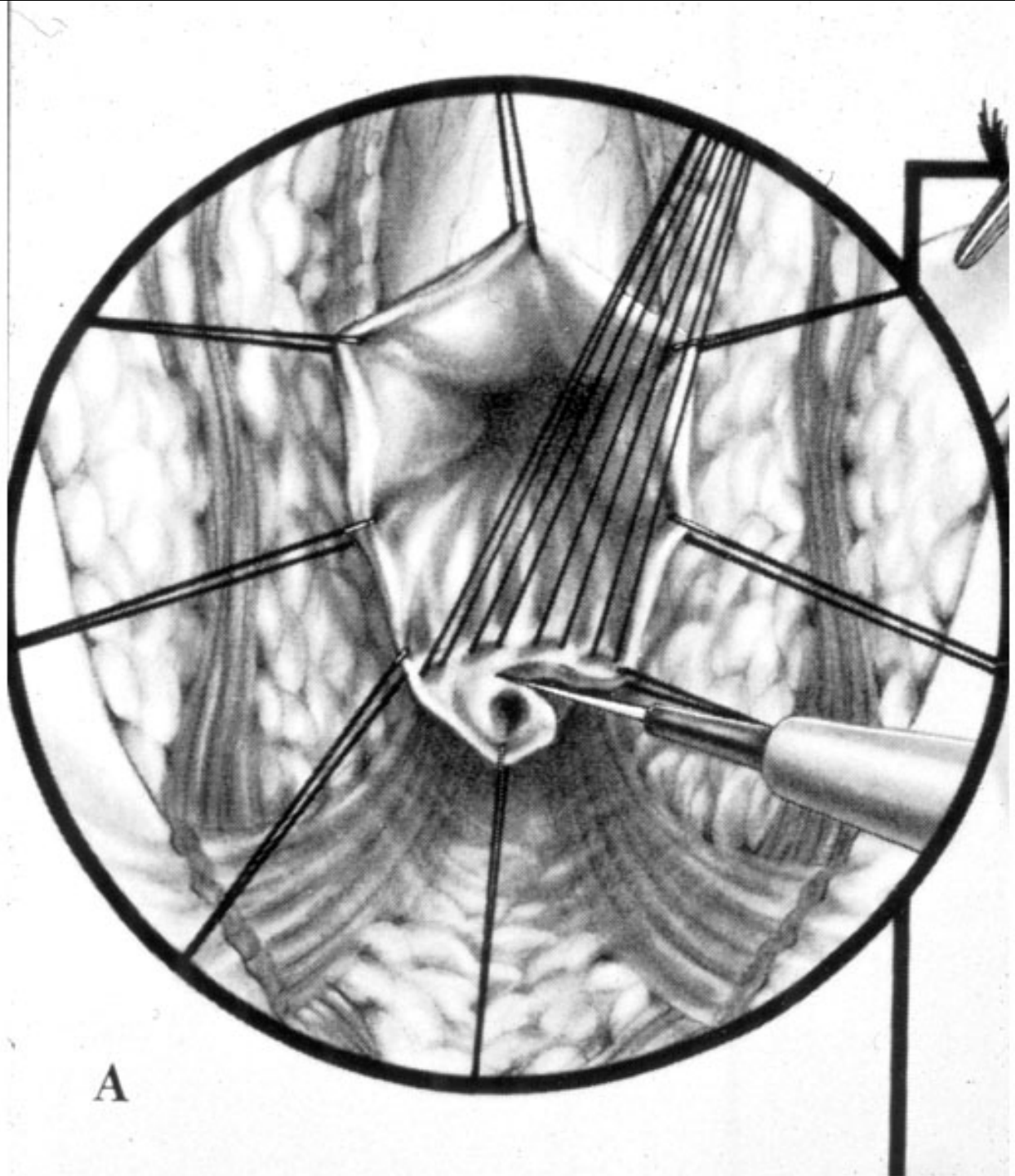

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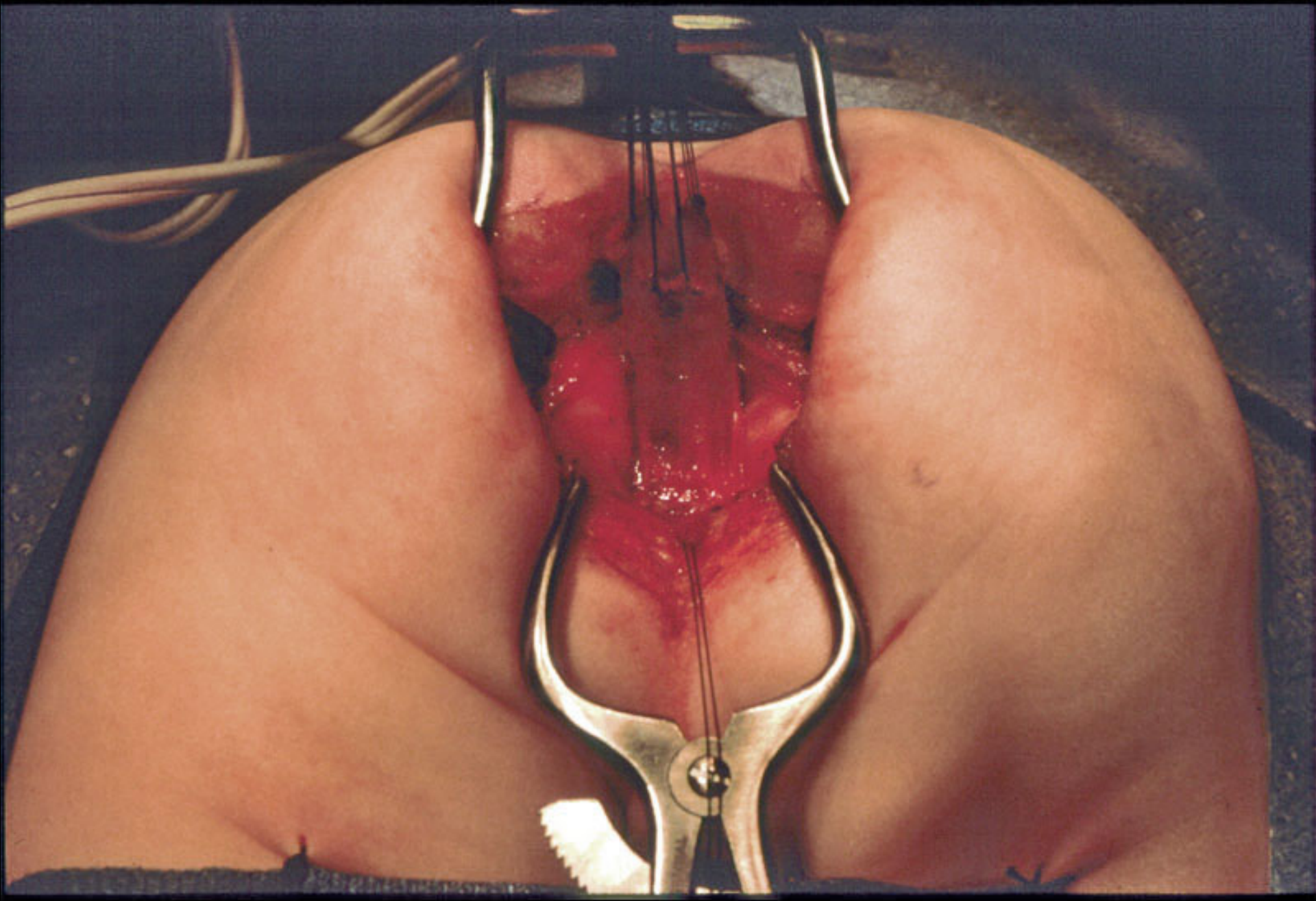

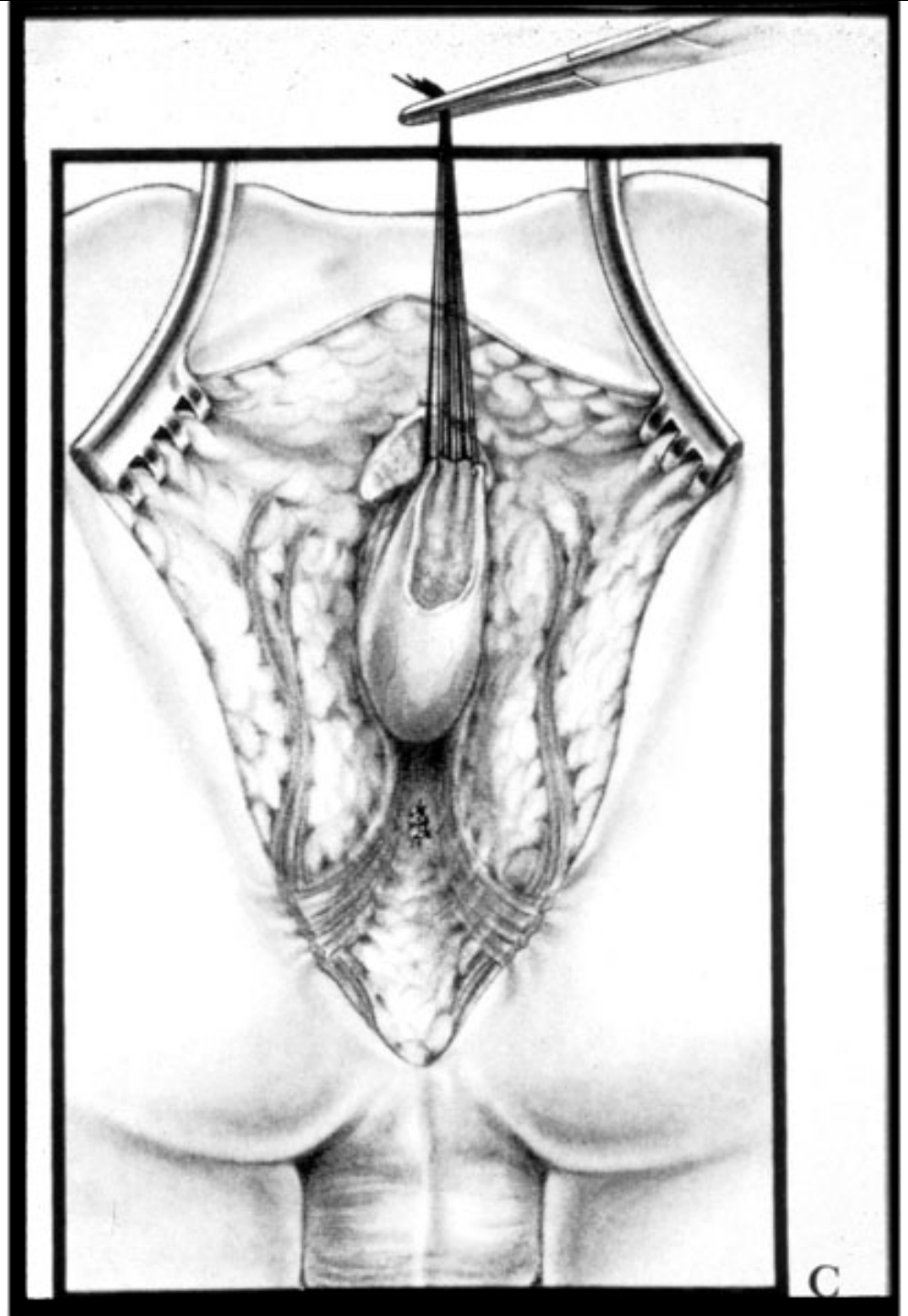
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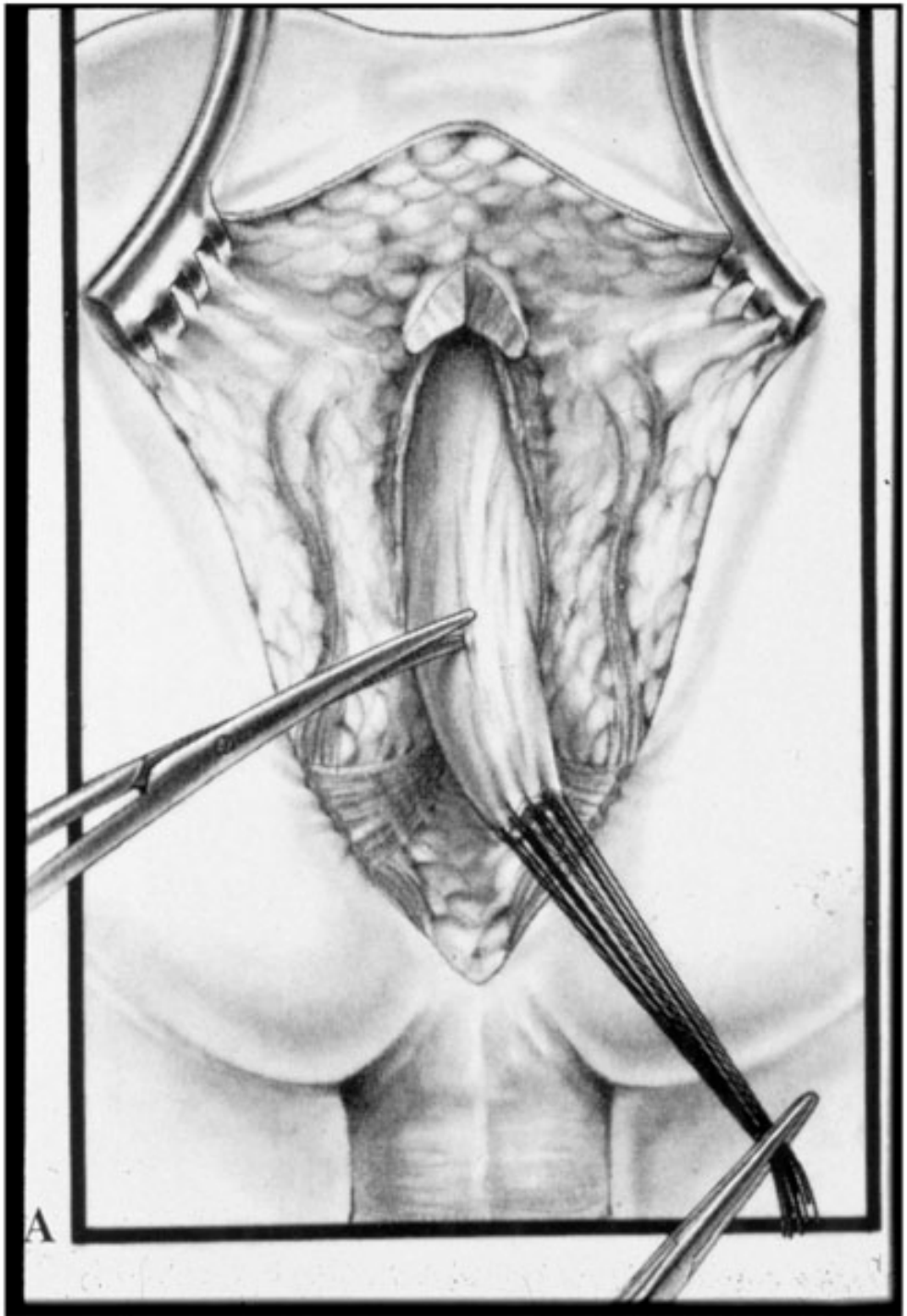
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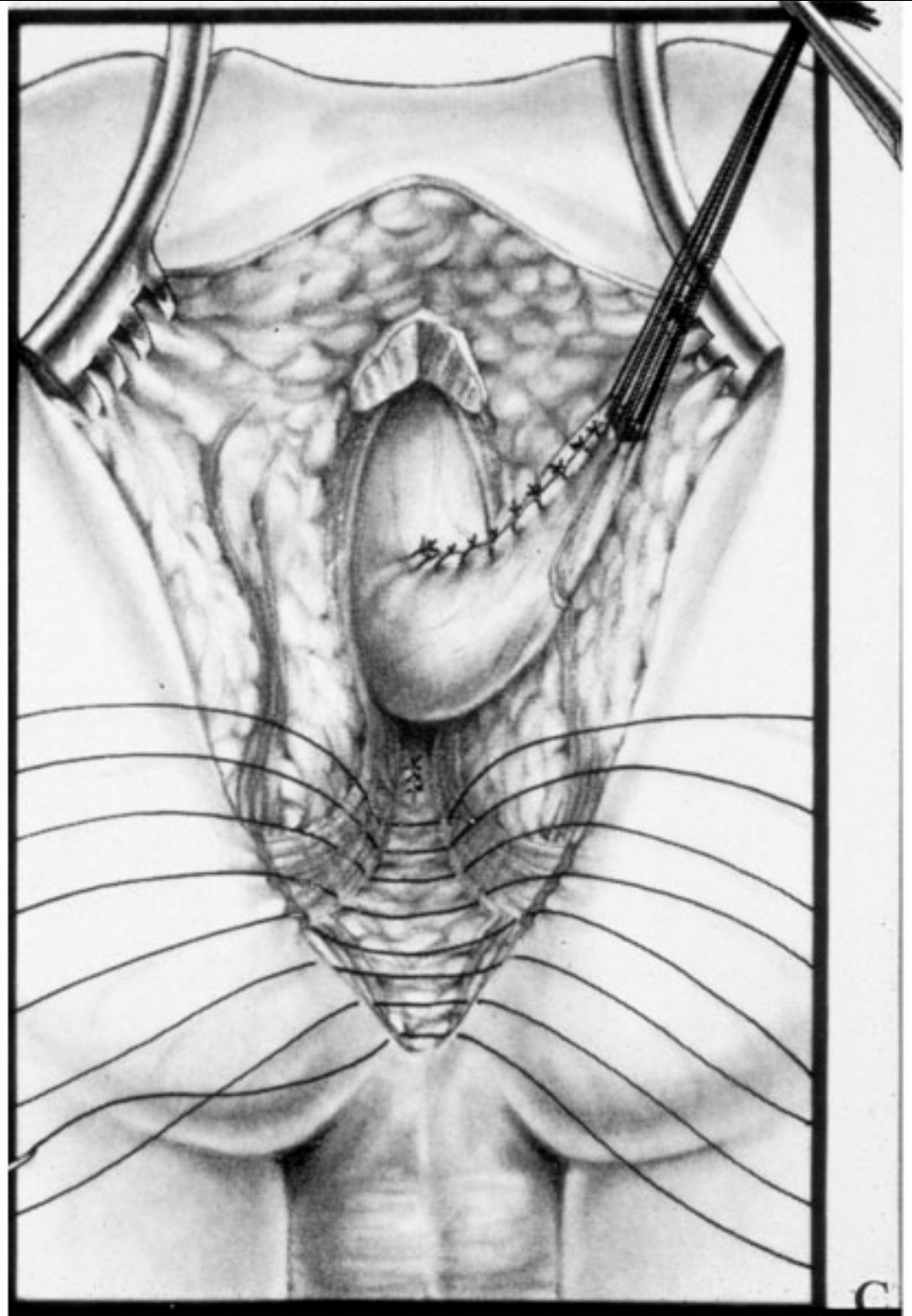
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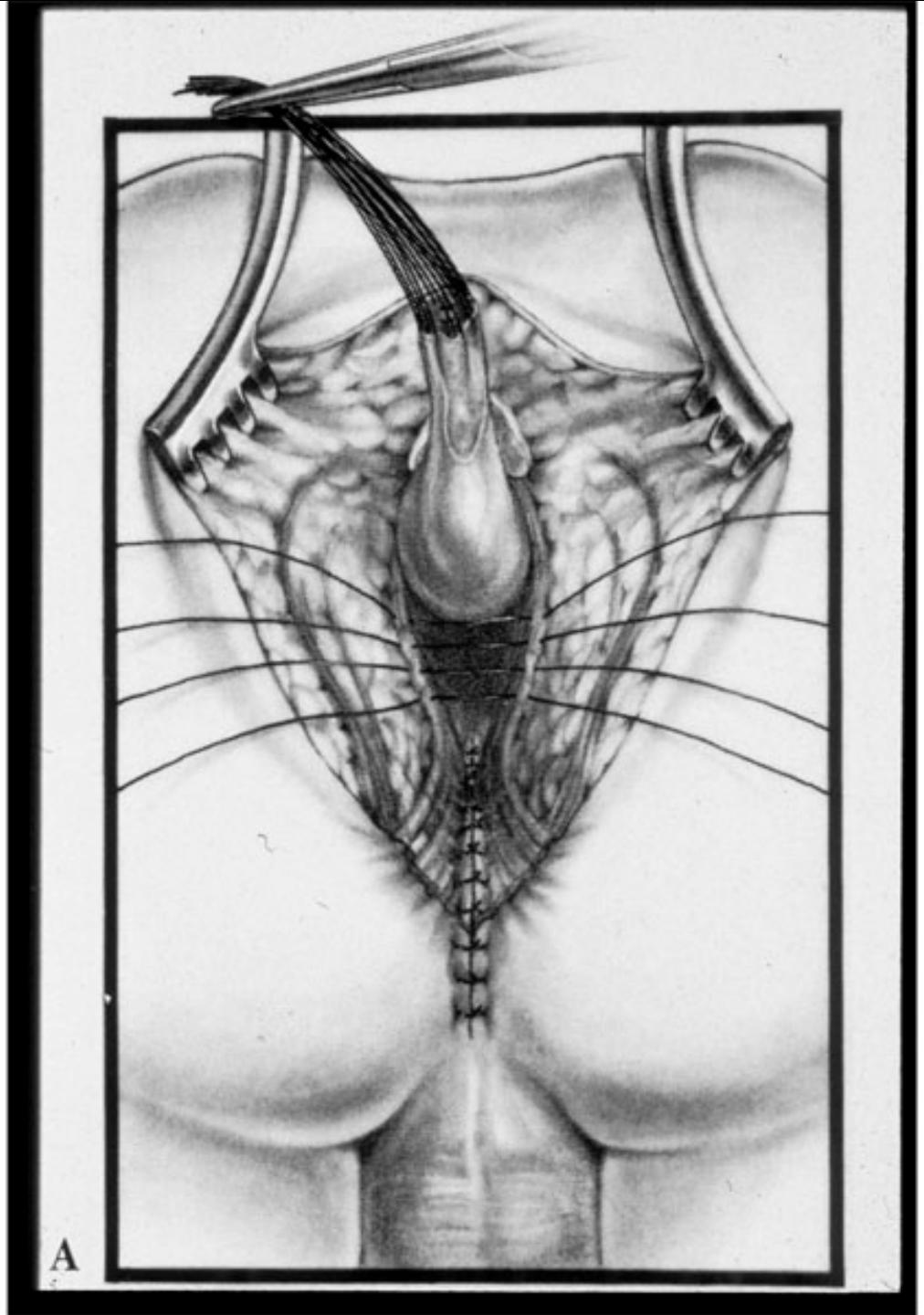
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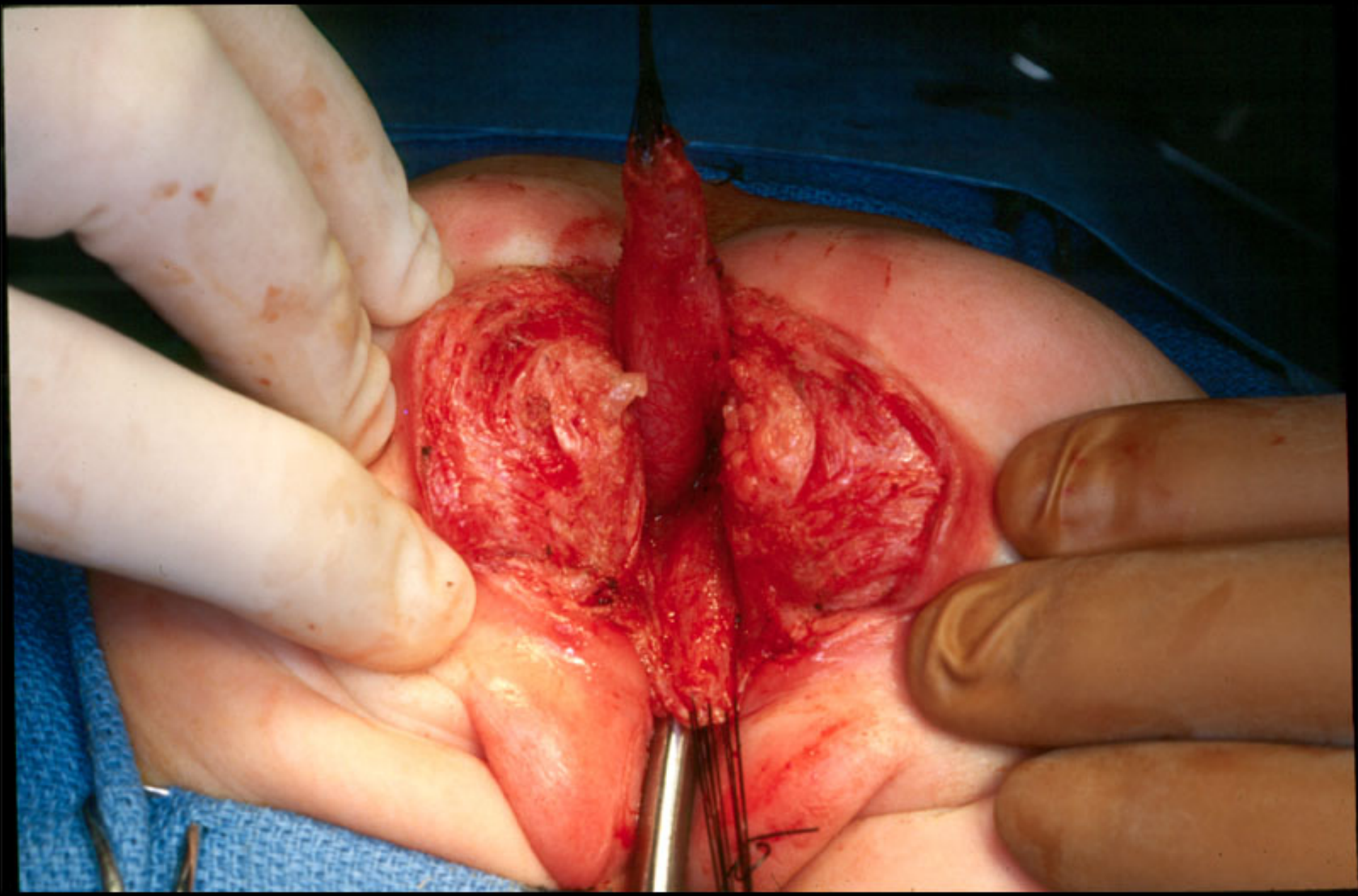

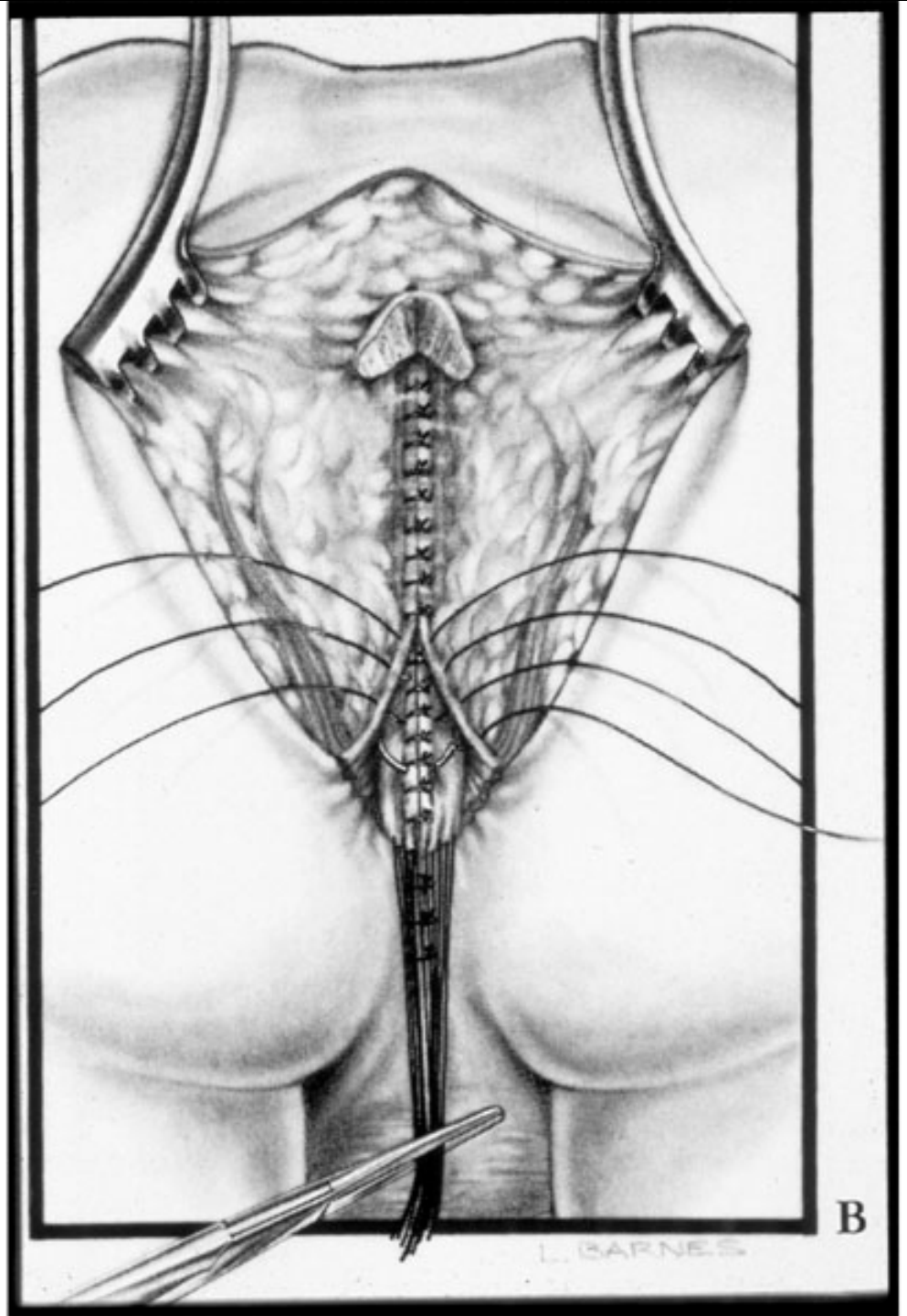
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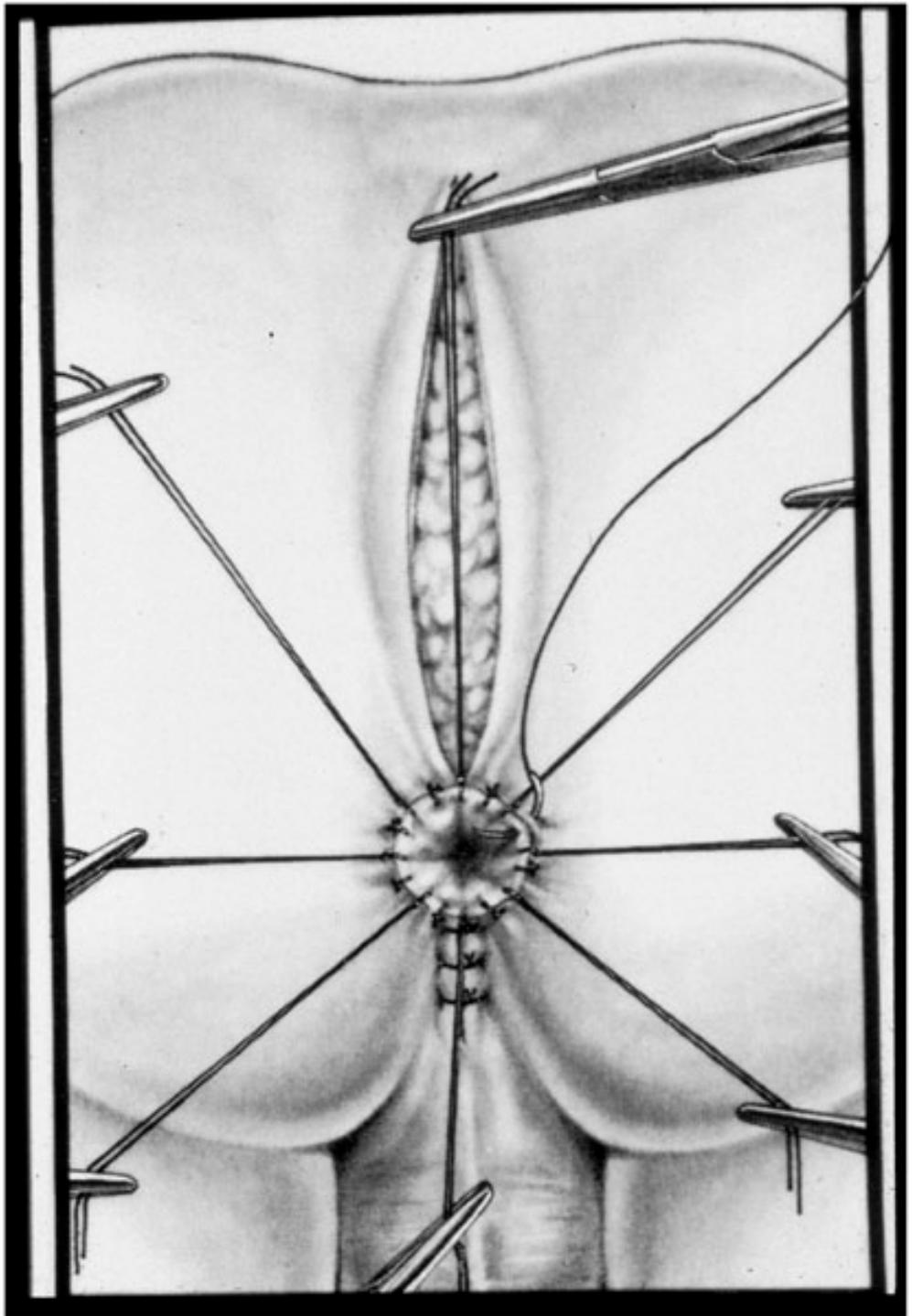


WHAT HAPPENS WHEN ALL THE KING'S HORSES AND ALL THE KING'S MEN CANNOT PUT HUMPTY BACK TOGETHER AGAIN?

CAN CHILDREN WITH FECAL INCONTINENCE BE MANAGED?

YES!

ARE THEY CONSISTENTLY AND EFFECTIVELY BEING MANAGED IN EL PASO CURRENTLY?

UNFORTUNATELY

NO

THE OVERALL GOAL OF A COMPREHENSIVE BOWEL MANAGEMENT PROGRAM IS FOR THE CHILD TO GO TO SCHOOL

CONFIDENTLY

IN NORMAL UNDERWEAR.

COMPONENTS OF A COMPREHENSIVE BOWEL MANAGEMENT PROGRAM:

- Assessment of cause of the incontinence. Is it from lack of neuromuscular control or encopresis from constipation and chronic fecal impaction?
- Comprehensive customized program—One size does not fit all.
- Use of dietary modification, pharmacologic agents, and enemas as needed.

IF THE CHILD CANNOT ACHIEVE CONTINENCE WITH DIETARY MODIFICATION AND PHARMACOLOGIC TREATMENT, THE NEXT STEP IN MANAGEMENT IS AN ENEMA REGIMEN.

THE PURPOSE OF THE ENEMA REGIMEN IS TO ALLOW THE CHILD TO BE INCONTINENT AT A SOCIALLY ACCEPTABLE TIME IN A SOCIALLY ACCEPTABLE PLACE.

IS THERE HOPE FOR THE FUTURE FOR CHILDREN IN EL PASO WITH BOWEL MANAGEMENT PROBLEMS?

YES!

STAY TUNED FOR MORE IN THE NEAR FUTURE FROM EL PASO CHILDREN'S HOSPITAL

Management of Motor Dysfunction in Cerebral Palsy: Emerging Role of Neuromodulation

Warren Marks, MD

Medical Director, Neurorehabilitation, Neuromuscluar and Movement Disorders Programs

Cook Children's Medical Center

Assistant Clinical Professor of Pediatrics

University of North Texas Health Sciences Center

No Financial Disclosures

Goals

- Define
- Review
- Update

Movement

"an elegant interplay of neuronal discharges, with changes in pattern, frequency, and synchronization, as well as feedback from other brain regions."

Abnormal movements result from an imbalance between positive and negative actions.

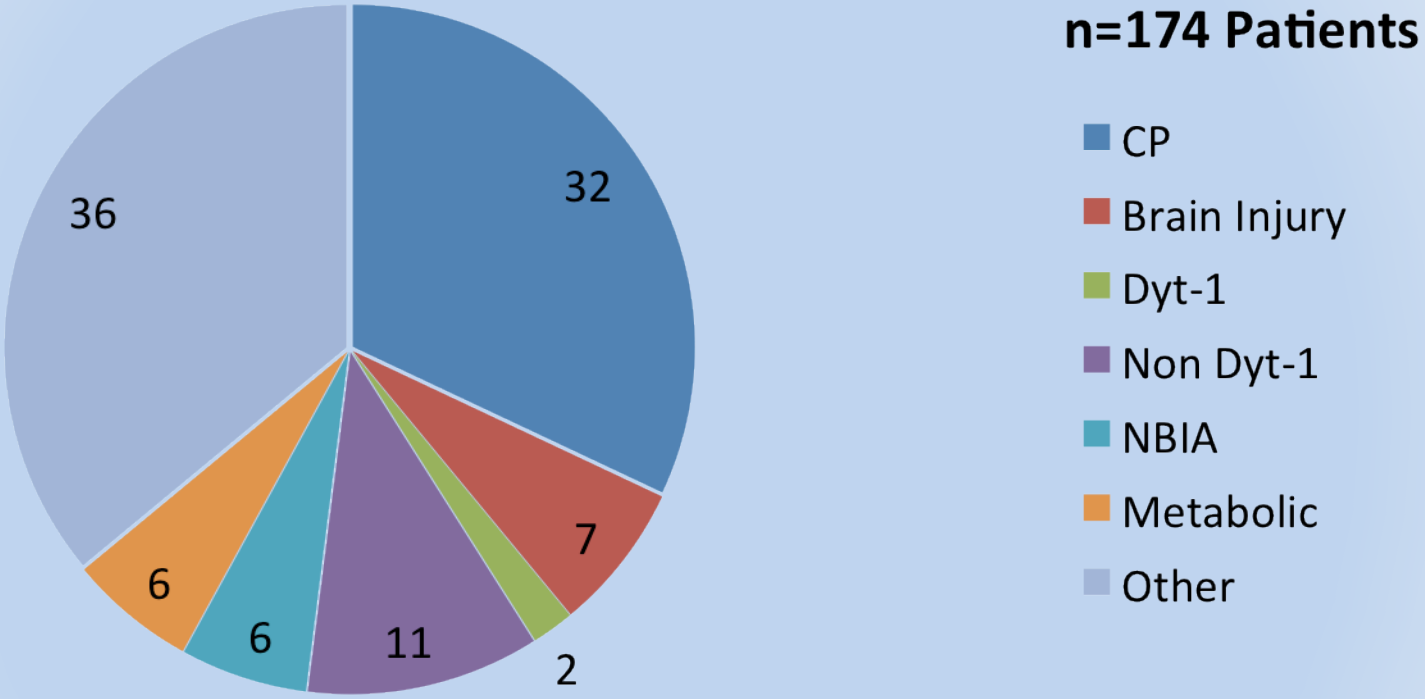
Comella & Shannon,
Continuum, June 2004

Scope of the Problem

- Incidence: 2 per 1000 live births.
- United States, approximately 10,000 infants and babies are diagnosed with CP annually
  - 1200–1500 are diagnosed at preschool age.
- Prevalence at age six years: 2.4 out of 1000 children

Hirtz D, Thurman DJ, Gwinn-Hardy K, Mohamed M, Chaudhuri AR, Zalutsky R (2007). "How common are the "common" neurologic disorders?". *Neurology* **68** (5): 326–337.

Pediatric Motor Disorders



Referrals for DBS/ITB to pediatric movement disorder center between 2007-2009 (Guys and St. Thomas, London)
Lin et al: Movement Disorders Society 2010

Prematurity

- 40-50% of cerebral palsy related to prematurity
- ~60,000 US infants annually < 1500 gms
  - 90% survival
- 10% with CP
- 25-50% cognitive/behavioral deficits

Economic Cost

- $1.47 billion (0.14% of GDP)
- 1.03 billion (69.9%) was productivity lost due to lower employment, absenteeism and premature death
- 141 million (9.6%) in welfare payments and taxation forgone;
- 131 million (9.0%) was other indirect costs such as direct program services, aides and home modifications and the bringing-forward of funeral costs;
- 129 million (8.8%) was the value of the informal care provided
- 40 million (2.8%) was direct health system expenditure.
- Additionally, the value of the lost well-being (disability and premature death) was a further $2.4 billion.

  - Access Economics (2008) The Economic Impact of Cerebral Palsy in Australia in 2007. Access Economics, Canberra, ACT

Social Impact

- 158 mothers of pts with CP (Australia)
  - Mean age 11y3m; range 6-17 yrs
- GMFCS I (37%); II (20%); III (13%); IV (12%); V (22%)
- 19% single parent households
- Maternal time: 6 hrs weekdays; 8.3 hrs weekends
  - Increased time for less mobile children
- Correlation between maternal psychological problems and caretaker time
  - Higher rates in unemployed mothers

Sawyer. DMCN 2011;53:338-343

Children with CP of every severity level by GMFCS often have both spasticity and dystonia

Gross Motor Function Classification System (ambulation)

I: Walk and climb stairs; running with decreased speed, balance, or coordination.

II: Limited walking on uneven surfaces.

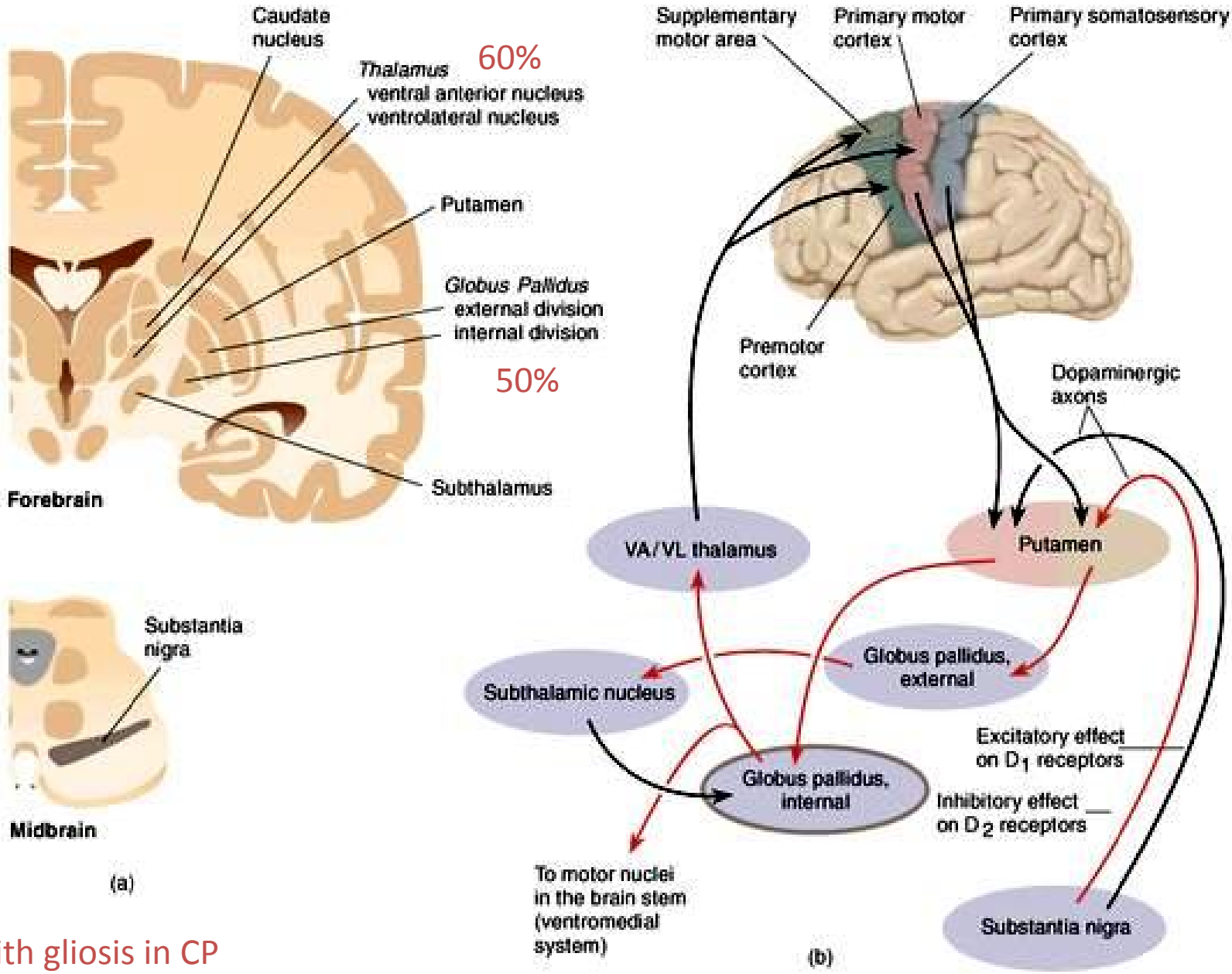
III: Walk with ambulation device; W/C for long distance.

IV: Power chair for long-distance.

V: Restricted voluntary motor control; limitations in all areas of motor function.

Jetwa, Mink et al DMCN 2010,52:e83-87

▶ The Basal Ganglia



% with gliosis in CP

Spasticity vs. Dystonia

- Hypertonia Assessment Tool (HAT)
- Distinguish between the types of hypertonia in children
  - Spasticity
  - Dystonia
  - Rigidity

Jetwa, Mink et al DMCN 2010,52:e83-87

Spasticity

- Hypertonia in which "resistance to externally movement increases with increasing speed of stretch and varies with the direction of joint movement and/or in which resistance to externally imposed movement rises rapidly above a threshold speed or joint angle."

- Modified Ashworth
- Tardieu

Sanger et al; Pediatrics 2003; 111:e89-97

Treatments for spasticity

- Therapy
- Oral pharmacocology
  - Baclofen, tizanidine, benzodiazepines
- Targeted therapies
  - Botulinum toxins
- Neurosurgical
  - Selective Dorsal Rhizotomy
  - IntraThecal Baclofen

Dystonia

- Sustained or repetitive muscle contractions
- Twisting or writhing movements
- Abnormal postures of the trunk, neck, face, arms, and/or legs

Sanger et al; Pediatrics 2003; 111:e89-97

Dystonia

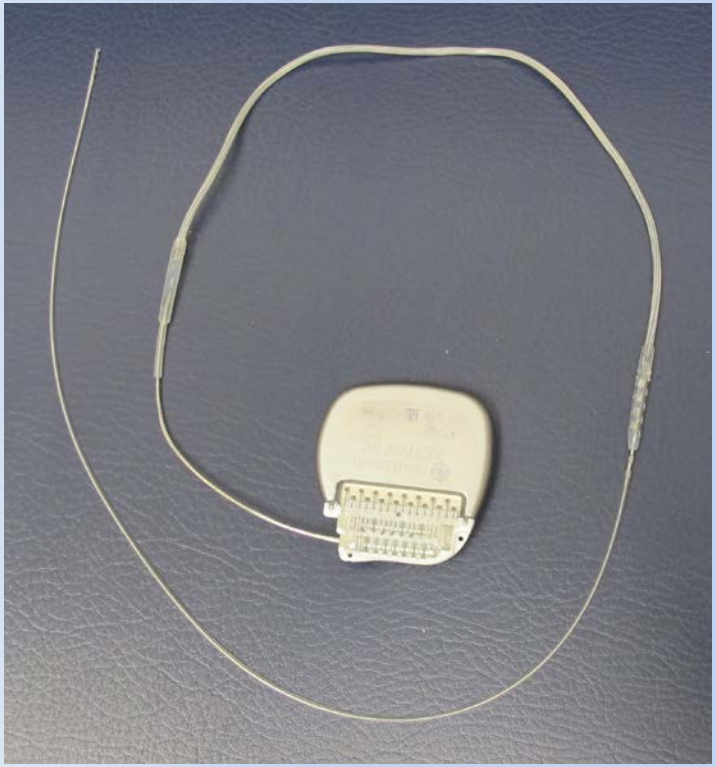
- Functionally may include co-contraction of agonist/antagonist muscle groups.

- Burke-Fahn Marsden
- Barry Albright
- UDRS

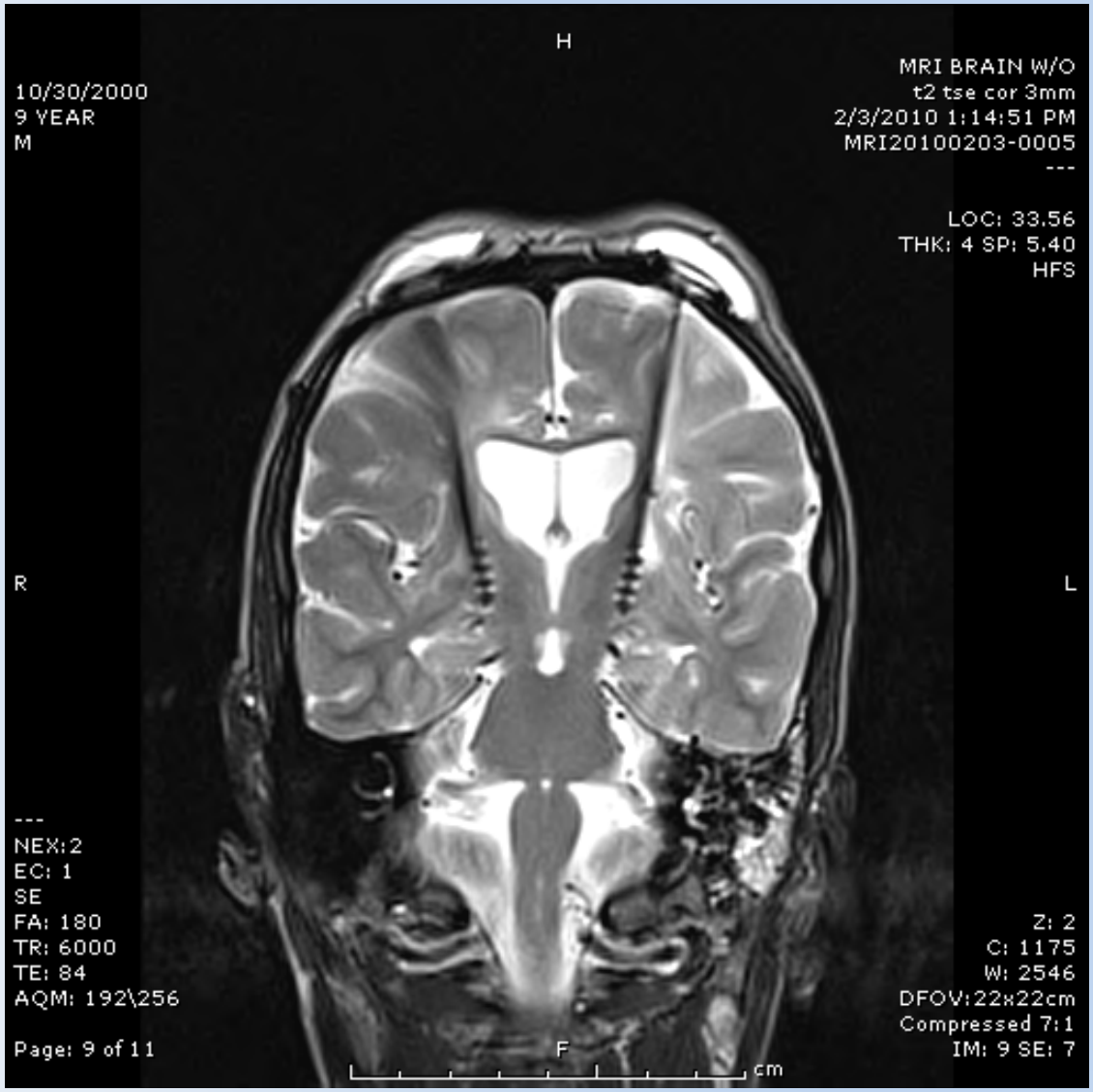
Pharmacologic options for dystonia

- Acetylcholine antagonist
- Dopamine supplementation
- Dopamine agonist
- Dopamine antagonist
- Dopamine depletion
- Gaba-B agonist
- Gaba-A agonist
- Chemodenervation
- Trihexyphenidel
- Levodopa/carbidopa
- Requip/Mirapex
- Rieperidone
- Tetrabenazine
- Baclofen
- Zolpidem
- Botulinum toxins A,B

Deep Brain Stimulation



9 y.o. with CP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9 YEAR
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t2 tse cor 3mm
2/3/2010 1:14:51 PM
MRI20100203-0005

LOC: 33.56
THK: 4 SP: 5.40
HFS
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NEX:2
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FA: 180
TR: 6000
TE: 84
AQM: 192\256
Page: 9 of 11
F
cm
Z: 2
C: 1175
W: 2546
DFOV:22x22cm
Compressed 7:1
IM: 9 SE: 7


A
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M
MRI BRAIN W/O
flair axial-MT
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MRI20100203-0005

LOC: 13.74
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HFS
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NEX:1
EC: 1
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TE: 89
AQM: 173\256
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P
cm
Z: 2
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9 YEAR
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flair axial-MT
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MRI20100203-0005

LOC: -6.26
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NEX:1
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Page: 16 of 33
P
cm
Z: 2
C: 825
W: 1666
DFOV:22x22cm
Compressed 7:1
IM: 16 SE: 6

Burke-Fahn Marsden - Motor

Region	Provoking Factor	Severity Factor	Weight Factor	Product
Eyes	0-4	0-4	0.5	0-8
Mouth	0-4	0-4	0.5	0-8
Speech/ Swallow	0-4	0-4	1.0	0-16
Neck	0-4	0-4	0.5	0-8
R. Arm	0-4	0-4	1.0	0-16
L. Arm	0-4	0-4	1.0	0-16
Trunk	0-4	0-4	1.0	0-16
R. Leg	0-4	0-4	1.0	0-16
L. Leg	0-4	0-4	1.0	0-16
Total				**N/120**

Barry-Albright Dystonia Score

REGION	SCORE
Eyes	0-4
Mouth	0-4
Neck	0-4
Trunk	0-4
Left Arm	0-4
Right Arm	0-4
Left Leg	0-4
Right Leg	0-4
TOTAL	**N/32**

BFM D Disability Rating Scale

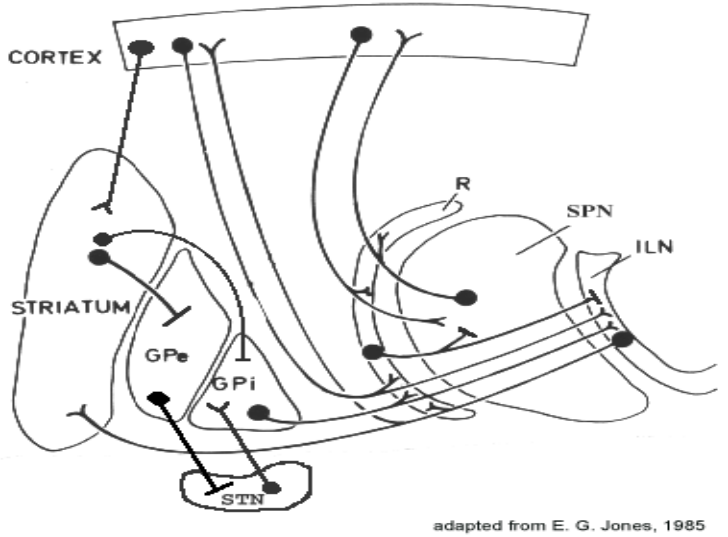
Region	Score
Writing	0-4
Speech	0-4
Feeding	0-4
Eating	0-4
Hygiene	0-4
Dressing	0-4
Walking	0-6
TOTAL	**N/30**

DBS - History

- 1960's – Heath: primate studies
- 1977 – Human stimulation
- **1987 – Benabides/Coubes**: Tremor patient
- 1995 – European approval ET
- 1997 – USFDA approval ET
- 1998, 2002 – European and US approval for PD
- 2003 – US FDA HDE approval for Dystonia
- 2009 – OCD approval in US
- >80,000 Adults; Most with Parkinson's
  - < 800 with dystonias
  - Most with primary DYT-1 Dystonia
- **< 1000 patients younger than 15 years of age**

Deep Brain Stimulation: Mechanism

- Delivery of electrical impulses to the brain in order to modify neuronal circuitry



Proposed mechanisms:

Inhibit local firing of Gpi and STN

Single pulse

Increases with train of pulses

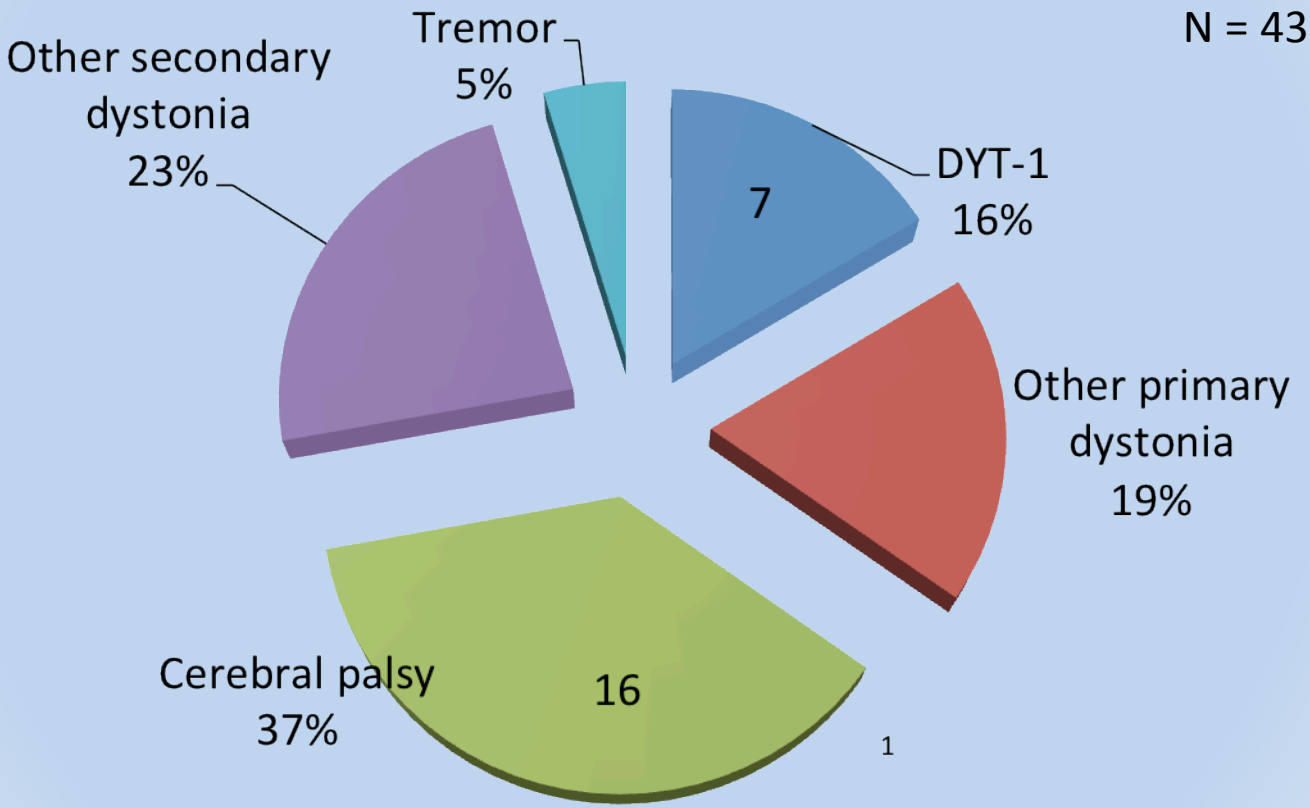
Inhibition duration increases with stimulation intensity

Background interference – local effect

Direct stimulation of circuits – downstream activation

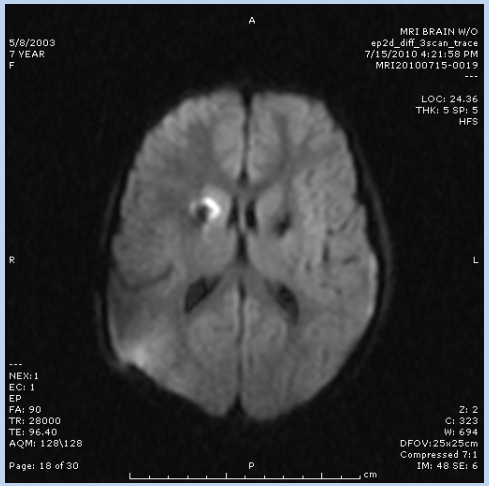
Lafrieniere-Roula. Exp Brain Research, 2010;205(2):251-261

Primary DBS implants: 9/2007 – 1/2011

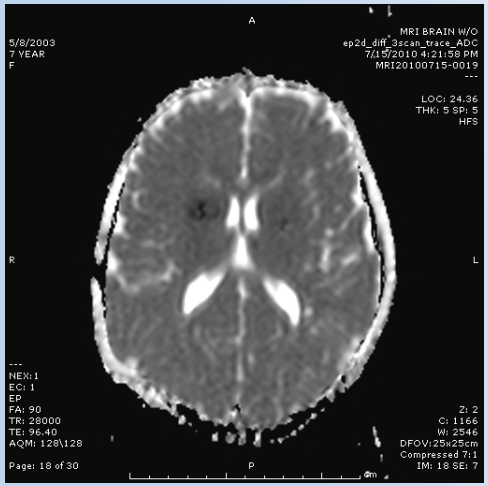


Complications

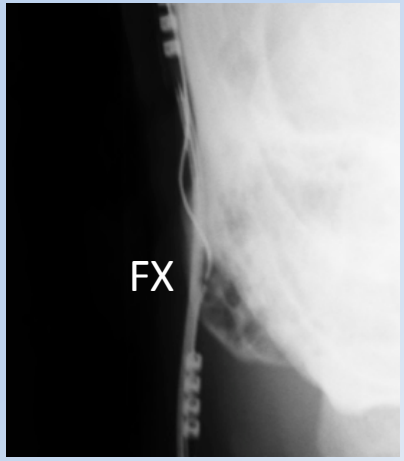
- Surgical
  - Hemorrhage – 0
  - Infection – 6
  - Stroke – 5
  - Frame assembly - 1
- Post-surgical
  - Lead fracture – 2
  - Lead kink (asymptomatic) – 1
  - Extension lead fracture – 1
  - Extension lead connection - 1
  - Generator issues



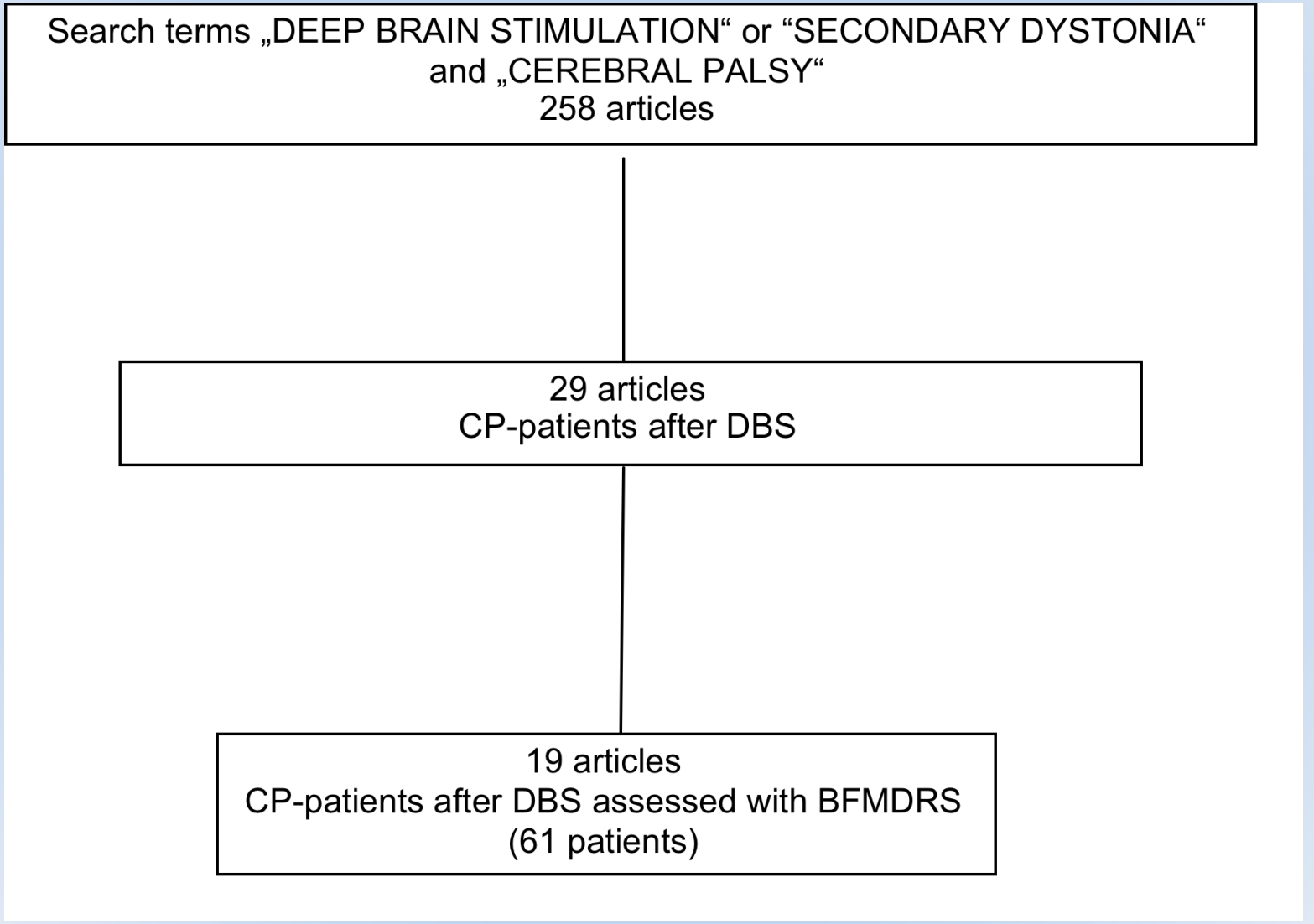
DWI

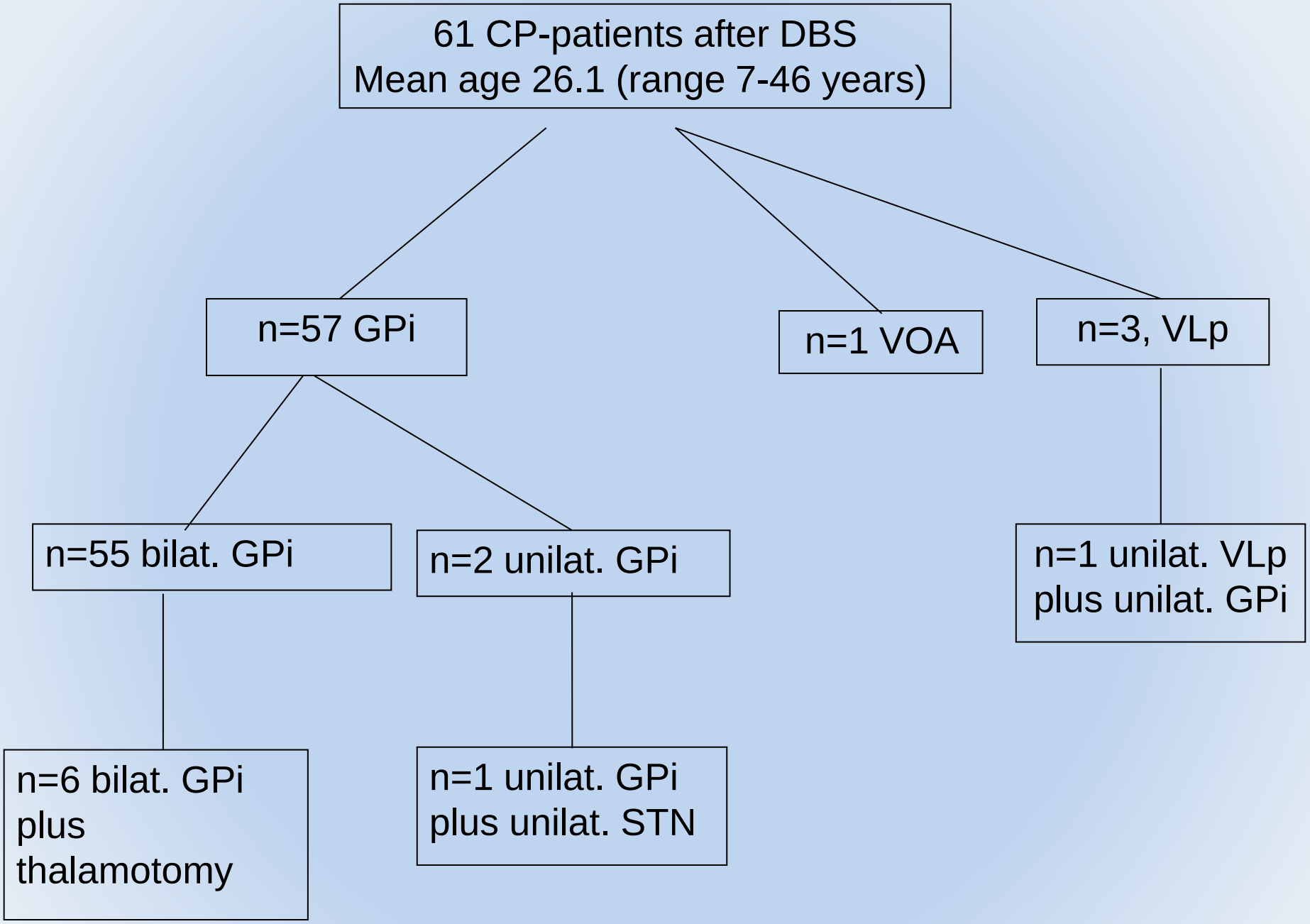


ADC



DBS in CP: Literature




61 CP-patients after DBS
Mean age 26.1 (range 7-46 years)
n=57 GPi
n=1 VOA
n=3, VLp
n=55 bilat. GPi
n=2 unilat. GPi
n=1 unilat. VLp
plus unilat. GPi
n=6 bilat. GPi
plus
thalamotomy
n=1 unilat. GPi
plus unilat. STN

Koe et al

MetaAanlysis: Outcome

Measure

- BMDRS-M; n=61
  - 6 months; n=39
  - 6-12 months; n=31
  - >12 months; n=11

- BFMDRS-D; n=53
  - 6 months; n=31
  - 6-12 months; n=30
  - >12 months; n=7

% improvement

- 24.9% overall
  - 24.1% (p=0.001)
  - 25.86% (p=0.001)
  - 17.1% (p=0.001)

- 10.01% (p<0.001)
  - 8.36% (p<0.001)
  - 8.04% (p=0.044)
  - 12.03% (p=0.073)

Koe et al

Bilateral pallidal DBS for the treatment of patients with dystonia-choreoathetosis cerebral palsy: a prospective pilot study

- 13 adults; choreoathetoid-dystonic CP
- Mean BFMDRS improvement 21.1% at 1 year
  - 34.7 (baseline) – 24.4 (1 year)
- Stimulation rate 130

- Functional disability, pain, mental health related QOL all improved

Vidhaillet: Lancet Neurology 2010

CP: Patient Characteristics

Table 1. Patient demographics and DBS lead information.

Pt	Age	Gest age	DBS Duration	MRI Findings			Lead Tip Coordinates		Active Contact	Voltage (V)	Pulse Width (μsec)	Freq (HZ)
#	yrs	weeks	months	BG	PVL	Atrophy	Left	Right	L/R	L/R	L/R	L/R
1	8	36	34	ABNL	NO	NO	-15.05; 6.06; -3.56	13.81; 6.04; -3.73	3/2	3.0/2.5	210/210	70/70
2	8	28	28	ABNL	YES	NO	-11.68; 5.96; -1.69	11.66; 5.95; 1.72	3/2	4.0/4.0	210/210	90/90
3	13	40	18	WNL	NO	NO	-11.37; 10.02; -6.85	10.87; 10.39; -7.11	2/3	3.0/3.0	210/210	90/90
4	8	42	16	WNL	NO	NO*	-12.5; 7.89; -5.44	11.15; 7.65; -2.27	3/3	6.0/2.5	240/210	30/30
5	9	35	13	ABNL	PVL	YES	-13.7; 0.81; -5.23	13.73; 1.8; -5.6	3/3	6.0/5.5	210/210	30/30
6	7	28	10	ABNL	PVL	YES	-18.34; 2.61; -2.22	16.49; 4.76; -2.36	3/3	3.0/3.5	210/210	60/60
7	13	40	9	WNL	WNL	NO	N/A	16.43; 1.16; -3.76	na/2	na/4.0	na/270	na/30
8	15	40	8	WNL	WNL	NO	-19; 5.75; -14.45	18.36; 5.74; -3.54	2/2	3.5/3.0	210/180	30/60
9	23	40	36	WNL	NO	NO	-15.77; 4.55; -5.46	15.77; 4.55; -5.46	3/3	6.5/6.5	270/270	185/185
10	18	?	33	WNL	NO	NO	-15.05; 6.06; -3.56	13.81; 6.04; -3.73	2/2	2.0/3.0	210/210	135/135
11	26	32	25	WNL	YES	YES	-13.09; 6.9; -2.26	13.09; 6.9; 2.26	1/2	2.0/6.5	210/210	135/160
12	17	26	24	ABNL	YES	YES	-10.77; 6.56; -2.18	12.22; 4.87; -4.67	3/3	5.2/4.8	180/180	80/80
13	18	30	16	WNL	YES	YES	-15.08; 6.03; -7.33	15.91; 4.25; -6.67	3/1	4.0/3.0	210/210	30/30
14	18	36	9	WNL	NO	NO	-20.13; 5.12; -6.08	16.12; 6.3; -1.29	3/3	4.3/3.8	210/210	70/70

Note. Monopolar stimulation with case positive and listed contact Negative. Lead tip coordinates are for the lead tip and are shown as Lateral; Anterior-Posterior; and Depth from the midpoint of the AC-PC line. * Cerebellar hypoplasia

Marks, et al; Movement Disorders 2011;

Cohort	Baseline Mean ± SD	6-Month Follow-up Mean ± SD	% Improvement Mean ± SD	Significance[2] *p<0.05*
		Burke-Fahn-Marsden-Motor		
Group 1	61.13 ± 27.21	35.00 ± 12.32	37.84% ± 22.56	**.012**
Group 2	91.5 ± 9.75	82.83 ± 12.63	8.96% ±14.48	.172
Total	74.14 ± 26.05	55.50 ± 27.32	25.46% ± 23.97	**.004**
		Burke-Fahn-Marsden-Disability		
Group 1	18.63 ± 7.74	16.00 ± 6.65	14.44% ± 11.07	**.020**
Group 2	24.83 ± 4.02	24.00 ± 1.55	1.63% ± 13.60	.453
Total	21.29 ± 6.98	19.43 ± 6.45	8.95% ± 13.42	**.027**
		Barry-Albright-Scores		
Group 1	21.13 ± 7.38	16.88 ± 6.33	19.48% ± 15.27	**.024**
Group 2	25.50 ± 3.73	24.83 ± 4.02	1.39% ± 20.40	.586
Total	23.00 ± 6.30	20.21 ± 6.41	11.73% ± 19.29	**.029**

[1]Group 1 - Less than 16 years of age (n=8); Group 2 - Greater than or equal to 16 years of age (n=6).
[2]Wilcoxon Sign Rank

Marks, et al; Movement Disorders 2011;

CP vs Dyt-1: 6 month

Cerebral Palsy (n=16)

- Mean: 14.9 years
- Range: 7-26
- Median 15
- 9 < 16 yrs
  - 8 followed > 6 months

Dyt-1 (n=7)

- Mean: 9.8 years
- Range: 7-13
- Median 8

CP vs Dyt-1

Scale	Group	*Baseline Mean (SD)*	*6 months Mean (SD)*	Change Mean	Percent Improvement	Sig.*
BFM-M	*CP*	75.67 (22.09)	51.28 (27.36)	24.39	32.23%	.029
	DYT-1	32.39 (22.27)	33.06 (16.51)	-0.67	-2.07%	
BFM-D	*CP*	22.11 (6.85)	19.78 (7.08)	2.33	10.54%	.063
	DYT-1	9.56 (6.46)	7.89 (4.08)	1.67	17.47%	
BAS	*CP*	24.44 (3.81)	21.22 (5.14)	3.22	13.18%	.665
	DYT-1	11.00 (7.28)	11.78 (5.76)	-0.78	-7.09%	

Marks 2012; submitted

ITB and DBS

- 6 with ITB
  - 2/8 pts < 16 years of age
  - 4/6 pts in older group
- Modest ITB dose reduction in 3 (up to 25%)

- 3 patients
  - No mention of dose
    - Woon K Br J Neurosurg 2007;21(4):355-8

Bonnet W, et al 2012 SPNS

Summary

- DBS is a technology in evolution
- Demonstrated effectiveness in primary dystonias
- Encouraging results in secondary dystonias, including cerebral palsy

Summary

- Effectiveness shown in improving motor rating scales
- Small gains in function can be important in improving quality of life
  - Reducing contracture load
  - Reducing caretaker burden
  - Hand and finger function
  - Pain
- Quality of life and neuropsychological impacts needs to be formally addressed

www.cookchildrens.org/neuro

Fetal Origins of Adult Diseases: Preconception and Pregnancy Nutrition

David A. Fields

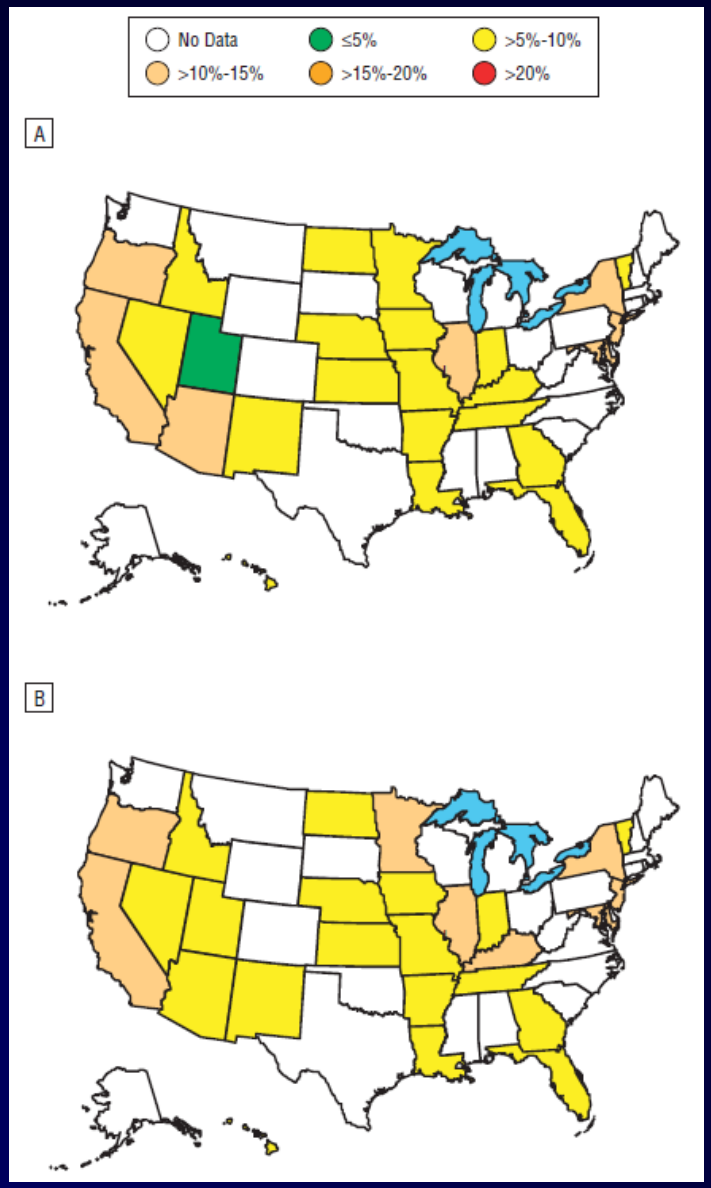
University of Oklahoma Health Sciences
Department of Pediatrics
Section of Endocrinology and Diabetes
OKC, OK

Harold Hamm Oklahoma Diabetes Center THE UNIVERSITY OF OKLAHOMA

children's hospital foundation

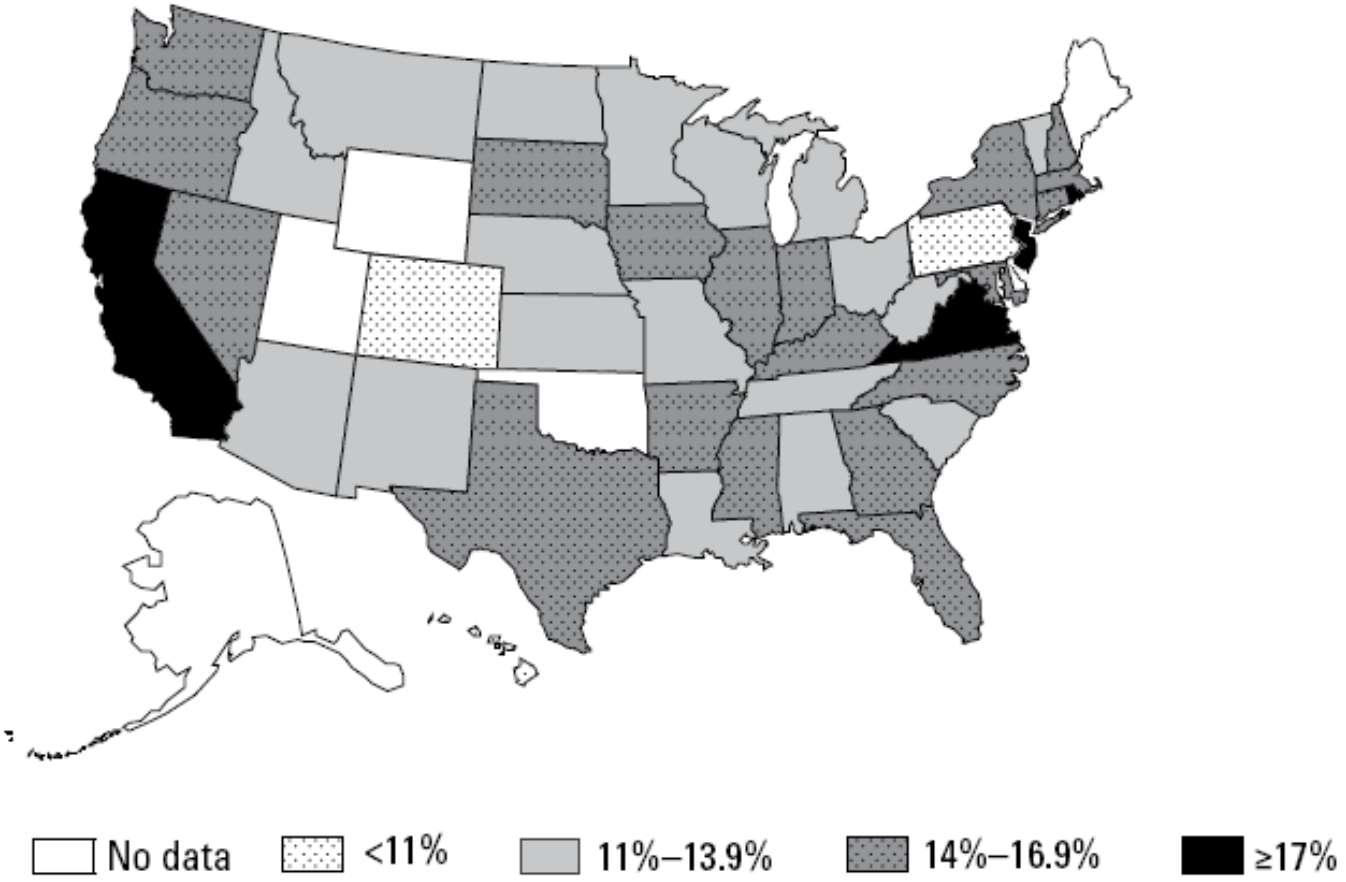
Trends

Prevalence of obesity among children aged 2 to <5 year (1994-2000)



Arch Ped Ad Med (2004) 158:1116

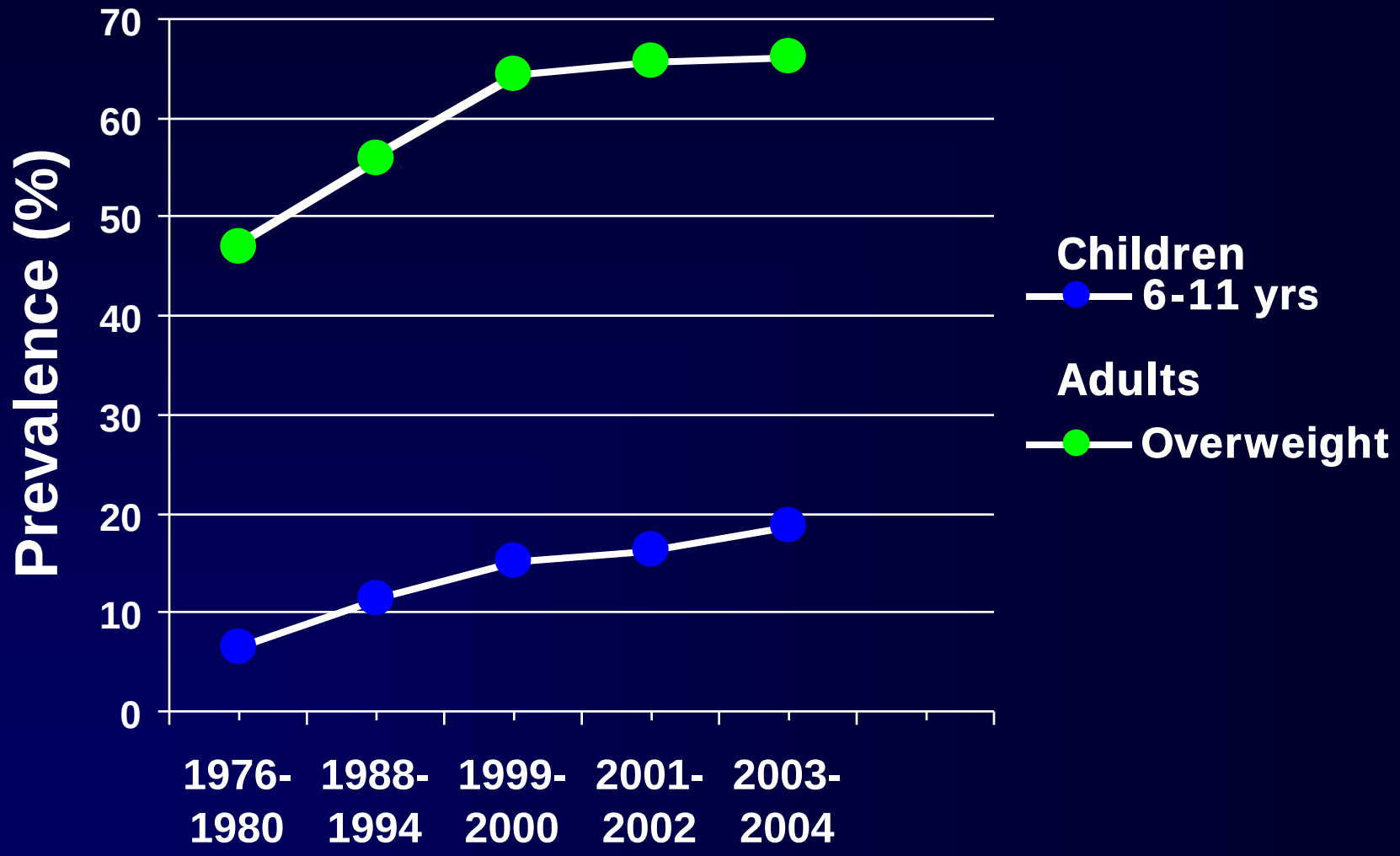
Prevalence of obesity among children aged 2 to <5 yr (2007)



* ≥95th percentile BMI-for-age, CDC growth charts, 2000. 5% of children are expected to fall above the 95th percentile.

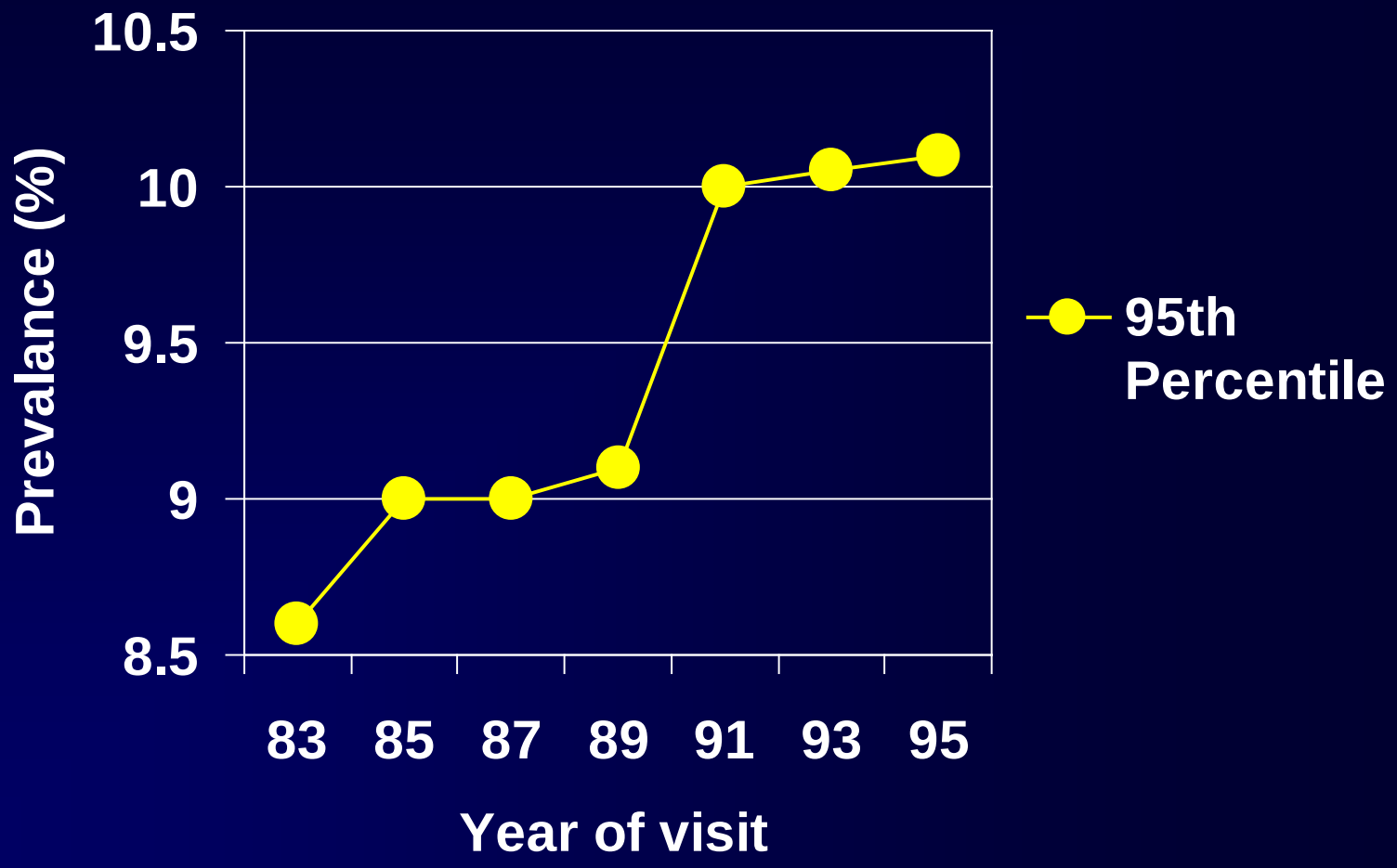
Source: 2007 National PedNSS Data Table 6D. Available at http://www.cdc.gov/pednss/pednss_tables/tables_numeric.htm.

Prevalence of Overweight in Children and Adults: 1976-1980 to 2003-2004



Flegal *et al*. (2002) *JAMA*
Ogden *et al*. (2006) *JAMA*

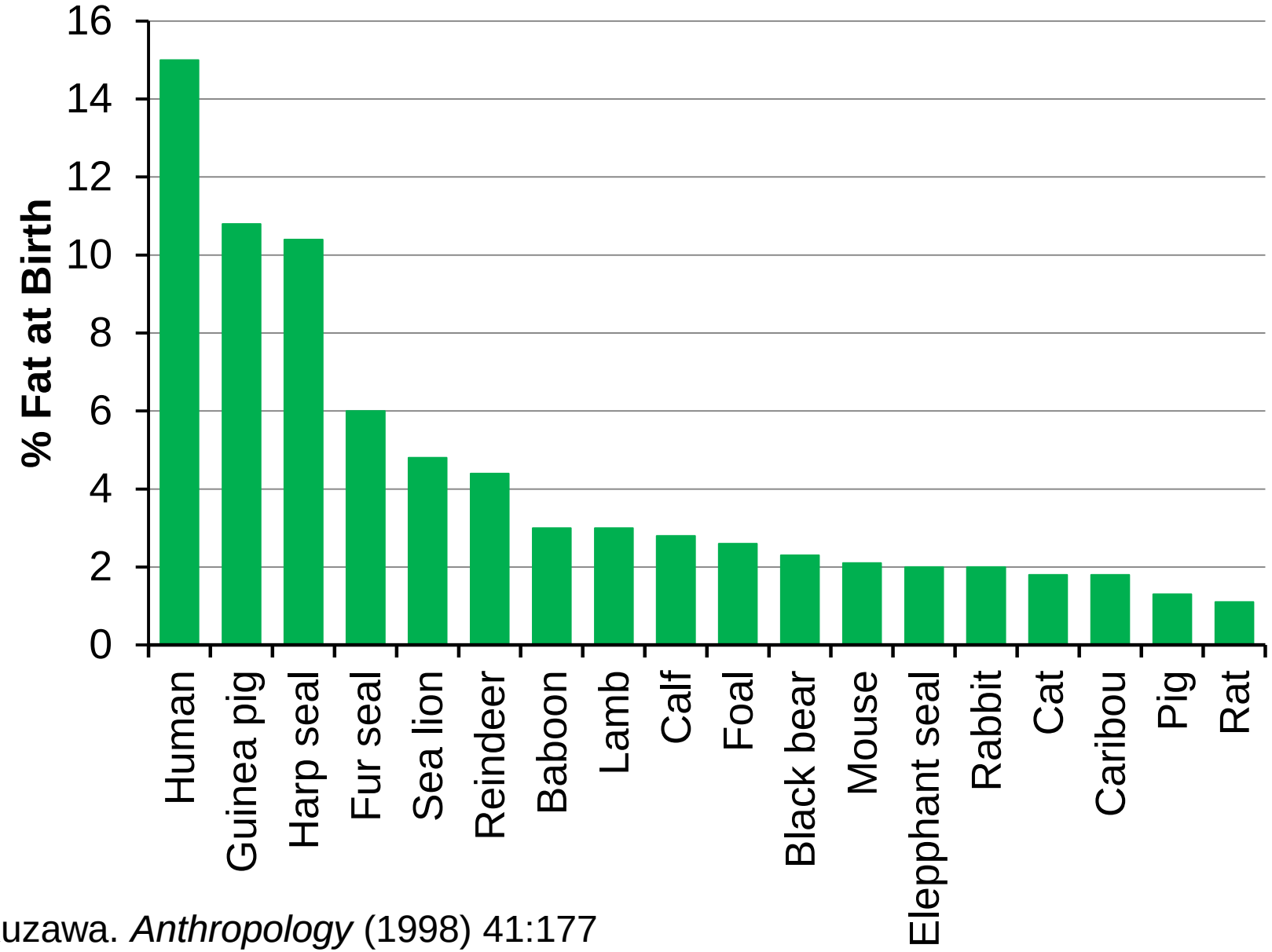
Prevalence of Overweight Among U.S. Children 0 to 59 Months of Age: CDC Pediatric Nutrition Surveillance, 1983-1995



Mei (2008) Pediatrics

Basics of Growth

%fat in Humans Relative to Other Species

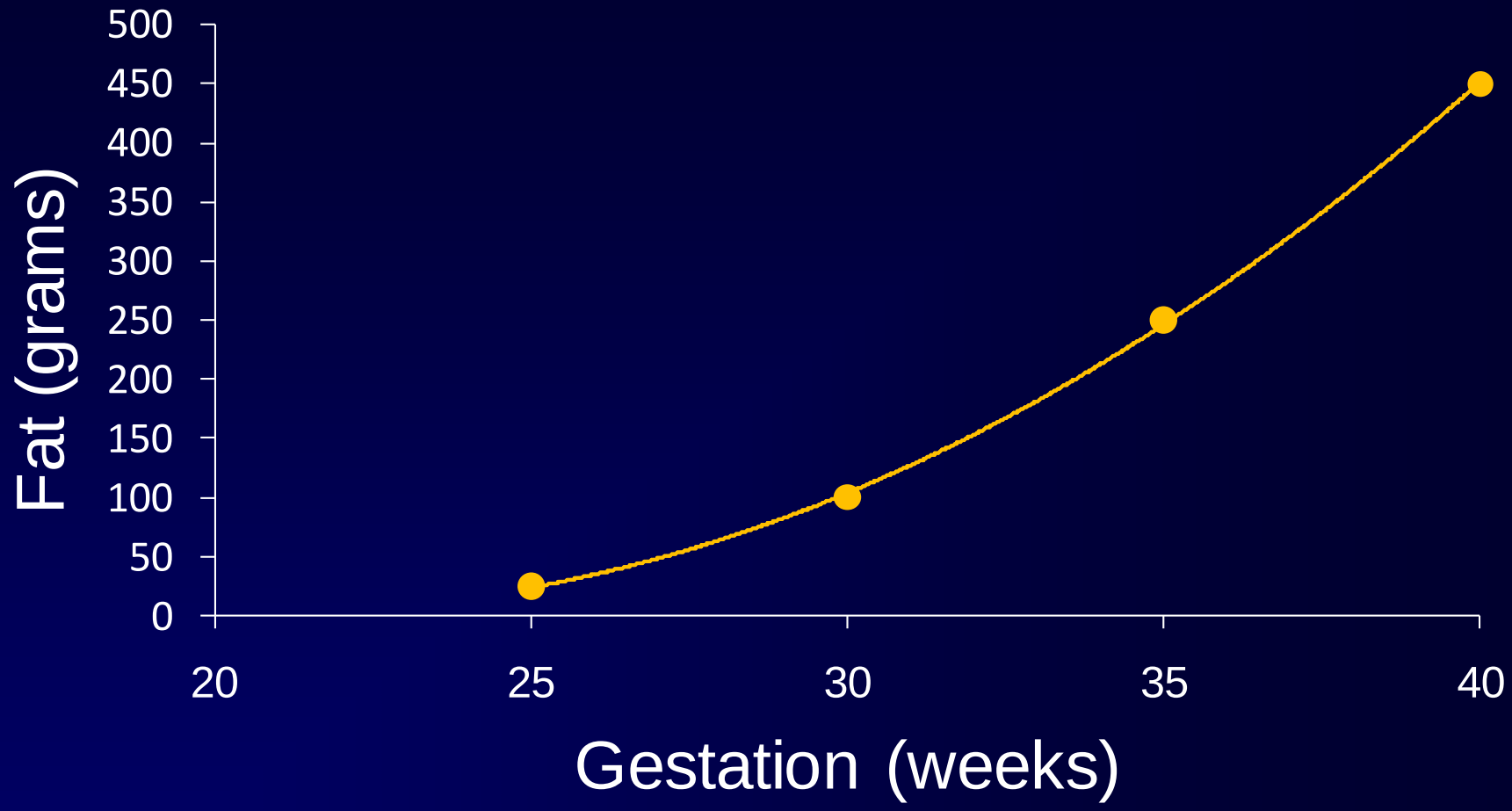


Kuzawa. *Anthropology* (1998) 41:177

Deposition of Fat

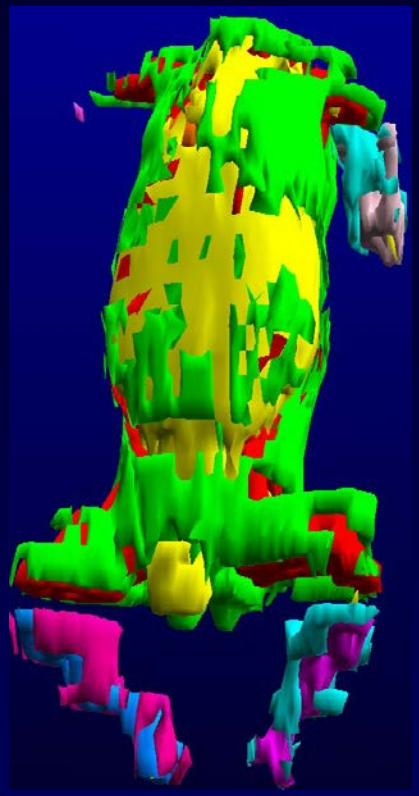
1. Increase in fat occurs later in gestation
2. Increased skinfold thickness as fetus grows
3. An appreciable amount of brown fat at birth
4. At birth girls have greater fat than boys

Fetal Fat Accretion



Stephen Cunnne, Survival of the Fattest

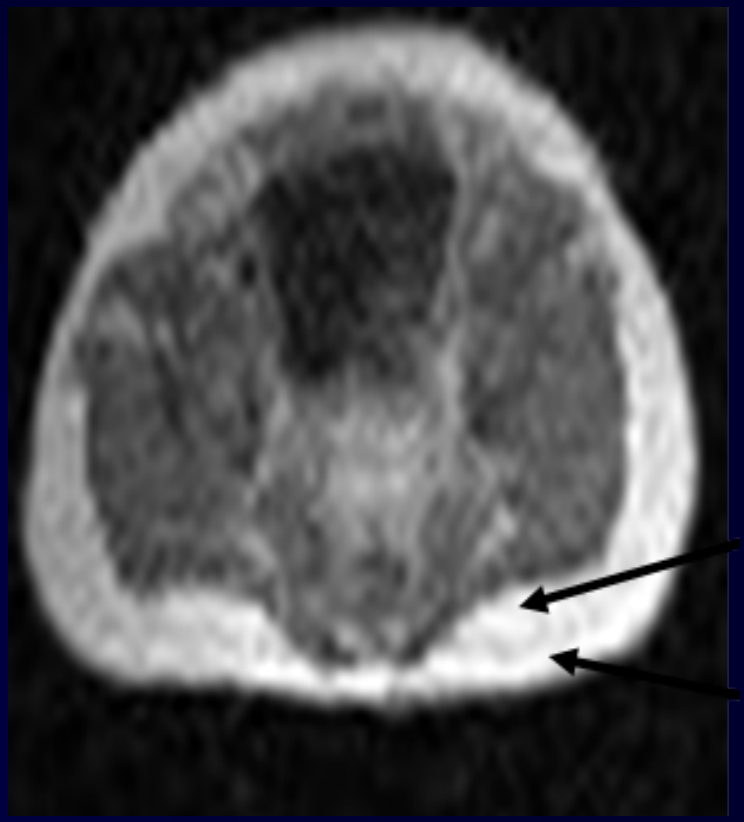
Greater Subcutaneous vs. Visceral Fat



Red = muscle

Green = subcutaneous fat

Yellow = residual

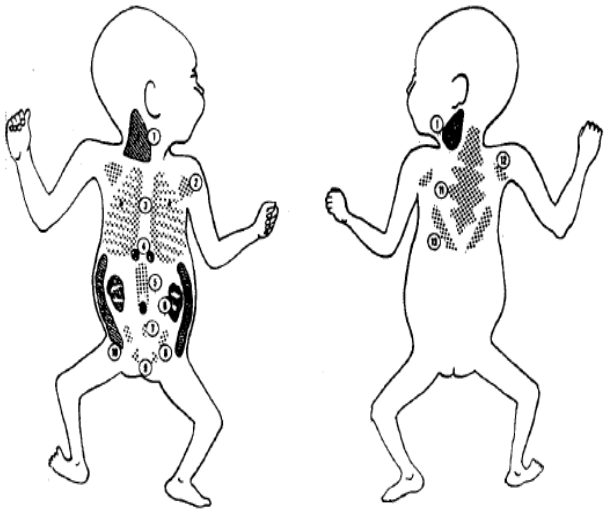


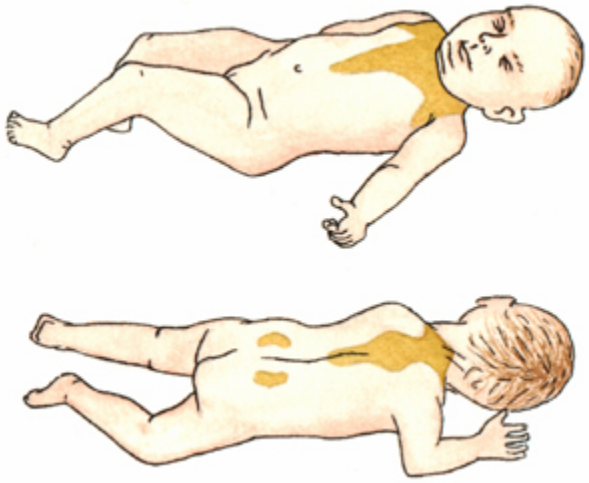
A 22 days old infant using whole body MRI

visceral fat (22 g) vs. subcutaneous fat (719 g)

Brown Fat Distribution

40 grams (10% of total body lipid)





1. Post-cervical
2. Axillary
3. Intercostal
4. Ant-abdominal
5. Peri-renal
6. Supra-iliac
7. Inter-scapular
8. Deltoid

Gesta et al (2007) 131:242; Merklin (1974)

Table II. Infant body composition at 1, 3, and 6 months (N = 117). Data are mean (SD).

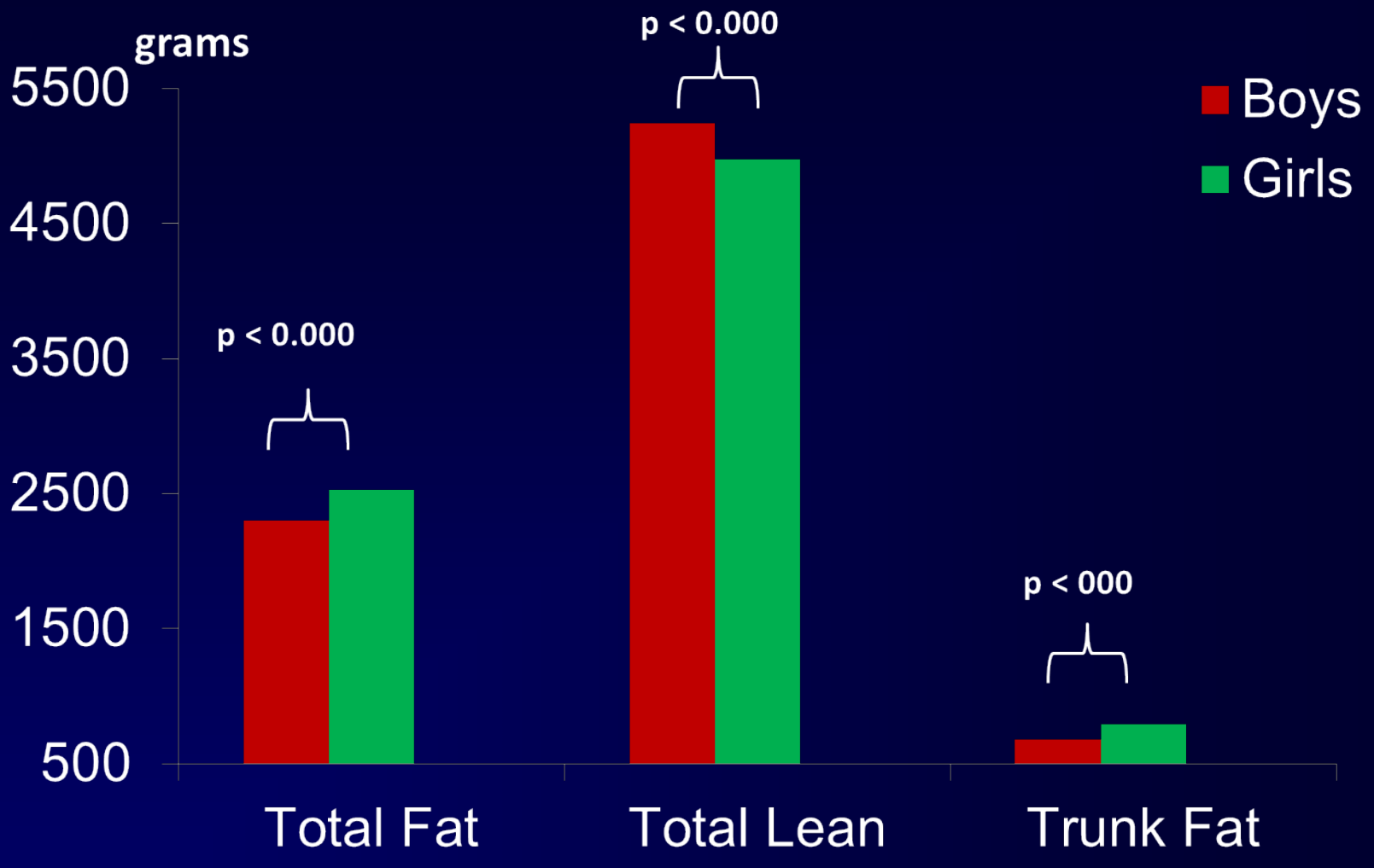
Characteristic	Girls (n = 64)	Boys (n = 53)
~1 Month		
Body fat, %	15.1 (5.9)*	12.7 (4.5)
Total fat mass, g	588 (288)	516 (227)
Total fat-free mass, g	3182 (303)†	3454 (361)
3 Months	(n = 8)	(n = 15)
Body fat, %	26.4 (3.5)	26.5 (4.6)
Total fat mass, g	1588 (321)	1758 (439)
Total fat-free mass, g	4379 (347)‡	4787 (310)
6 Months	(n = 8)	(n = 15)
Body fat, %	30.8 (3.5)	28.2 (3.9)
Total fat mass, g	2406 (391)	2236 (448)
Total fat-free mass, g	5371 (416)	5614 (510)

*$P < 0.05$ versus boys.
†$P < 0.001$ versus boys.
‡$P < 0.01$ versus boys.

Pea Pod used to measure body composition

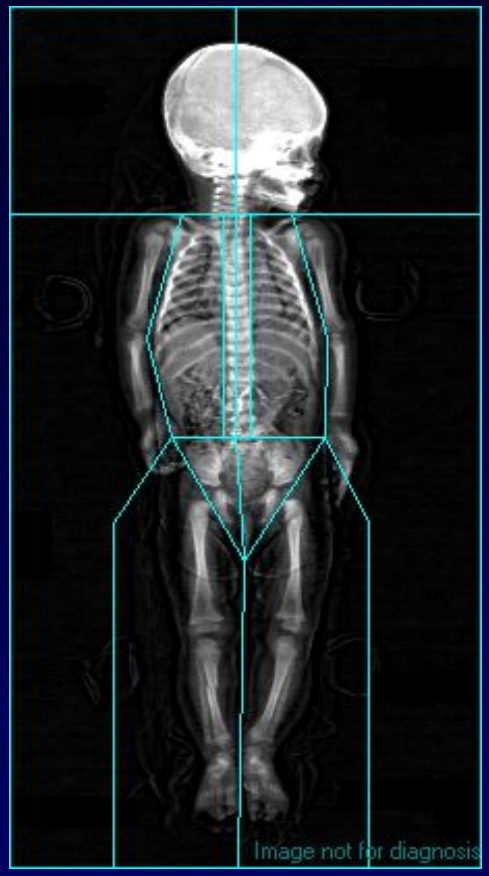
Gender Medicine (2009) 6:369-75

Body Composition at 6 months



1) DXA used to measure body composition
2) Sample size much larger: girls = 54 and boys = 63

DXA



University Of Oklahoma Health Sciences

Children's Metabolic Research Program
Oklahoma City, OK 73101

Patient:	[redacted]		**Facility ID:**		
Birth Date:			**Referring Physician:**		
Height / Weight:	25.5 in. 13.5 lbs.		**Measured:**	2/18/2011 9:32:59 AM	(13.31)
Sex / Ethnic:	Male White		**Analyzed:**	2/18/2011 9:49:24 AM	(13.31)

BODY COMPOSITION

Region	Tissue (%Fat)	Region (%Fat)	Tissue (g)	Fat (g)	Lean (g)	BMC (g)	Total Mass (kg)
Left Arm	49.5	48.7	205	101	104	3.5	0.21
Left Leg	43.4	43.0	804	349	455	6.0	0.81
Left Trunk	21.4	21.1	1,521	325	1,196	16.4	1.54
Left Total	28.4	27.9	3,373	959	2,414	60.1	3.43
Right Arm	49.9	49.1	291	146	146	5.0	0.30
Right Leg	44.9	44.5	774	347	427	7.1	0.78
Right Trunk	19.9	19.7	1,252	250	1,002	12.6	1.26
Right Total	30.0	29.6	2,864	861	2,003	45.3	2.91
Arms	49.7	48.9	496	247	249	8.5	0.50
Legs	44.1	43.7	1,578	696	882	13.1	1.59
Trunk	20.7	20.5	2,773	574	2,198	29.1	2.80
Total	29.2	28.7	6,237	1,819	4,417	105.5	6.34

Lunar iDXA (GE; v11-30.062) 2007 encore pediatric software

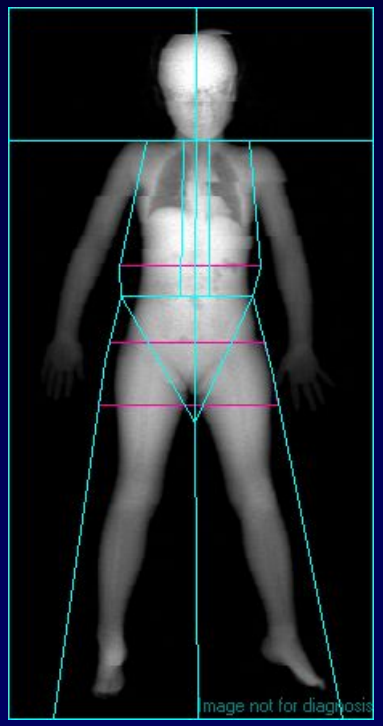
5 year old girls

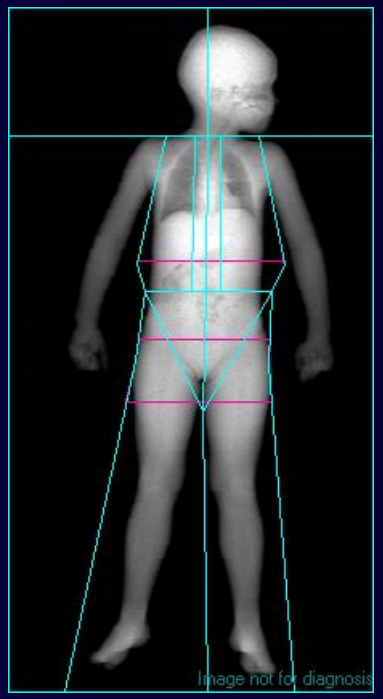
16.3 kg/m^2 = 73th percentile

29.1 %fat

24.5 %fat

3,634 g app fat





2,891 g app fat

26%

2,022 g trunk fat

1,495 g trunk fat

Early or Fetal Origins Hypothesis

Environmental perturbations during critical windows in development have a lasting impact on cellular structure and function, resulting in an increased risk of chronic disease in adulthood (diabetes, cardiovascular disease, obesity, and hypertension).

Barker DJ and Osmond C. (1986) Lancet

Birth weight

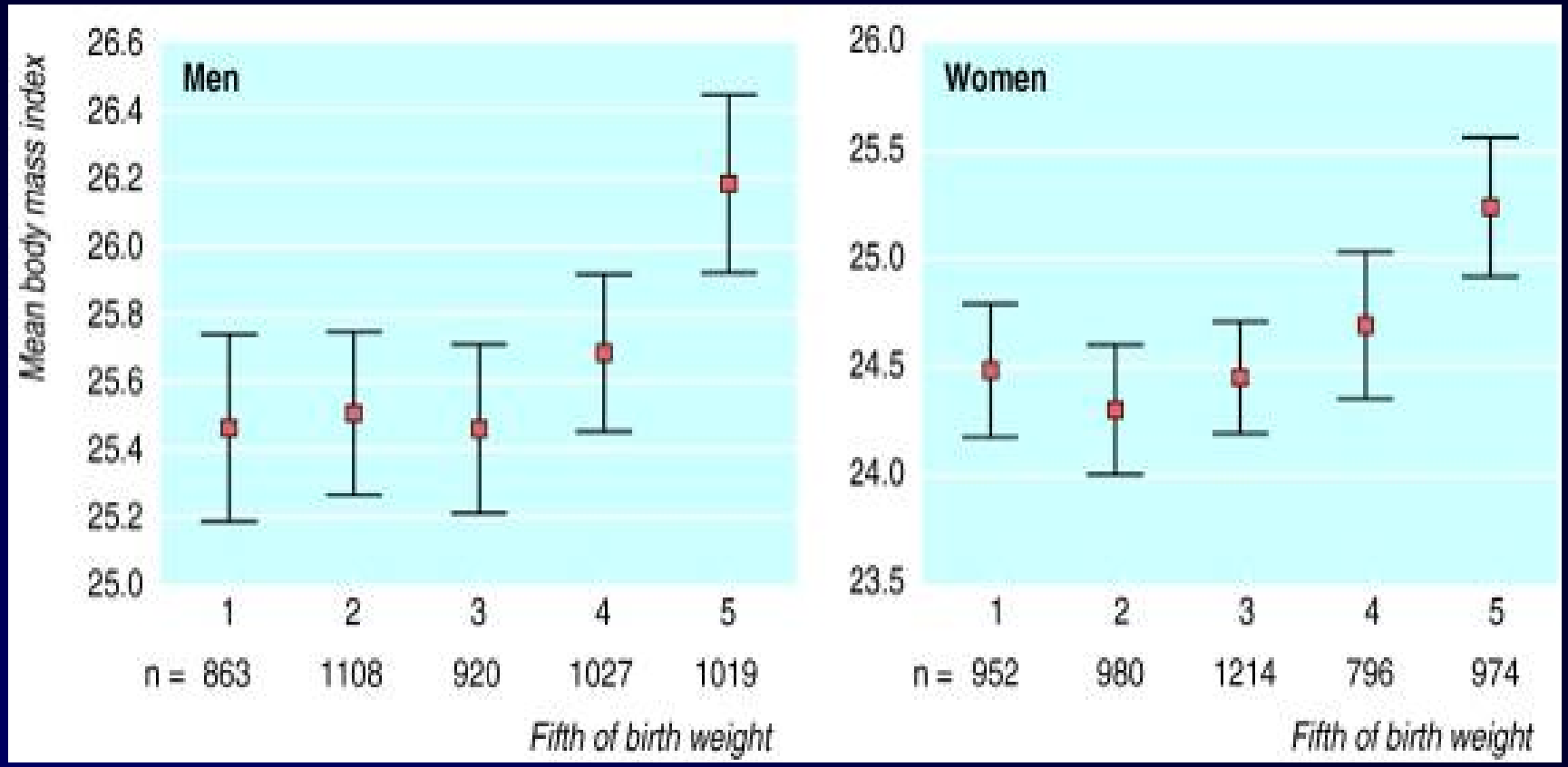
Birth weight related to future BMI (J shape)

AND

Birth weight J / U shape

- Type 2 diabetes
- Android fat patterning
- Metabolic syndrome
- Cardiovascular disease

Relation of birth weight and adult BMI

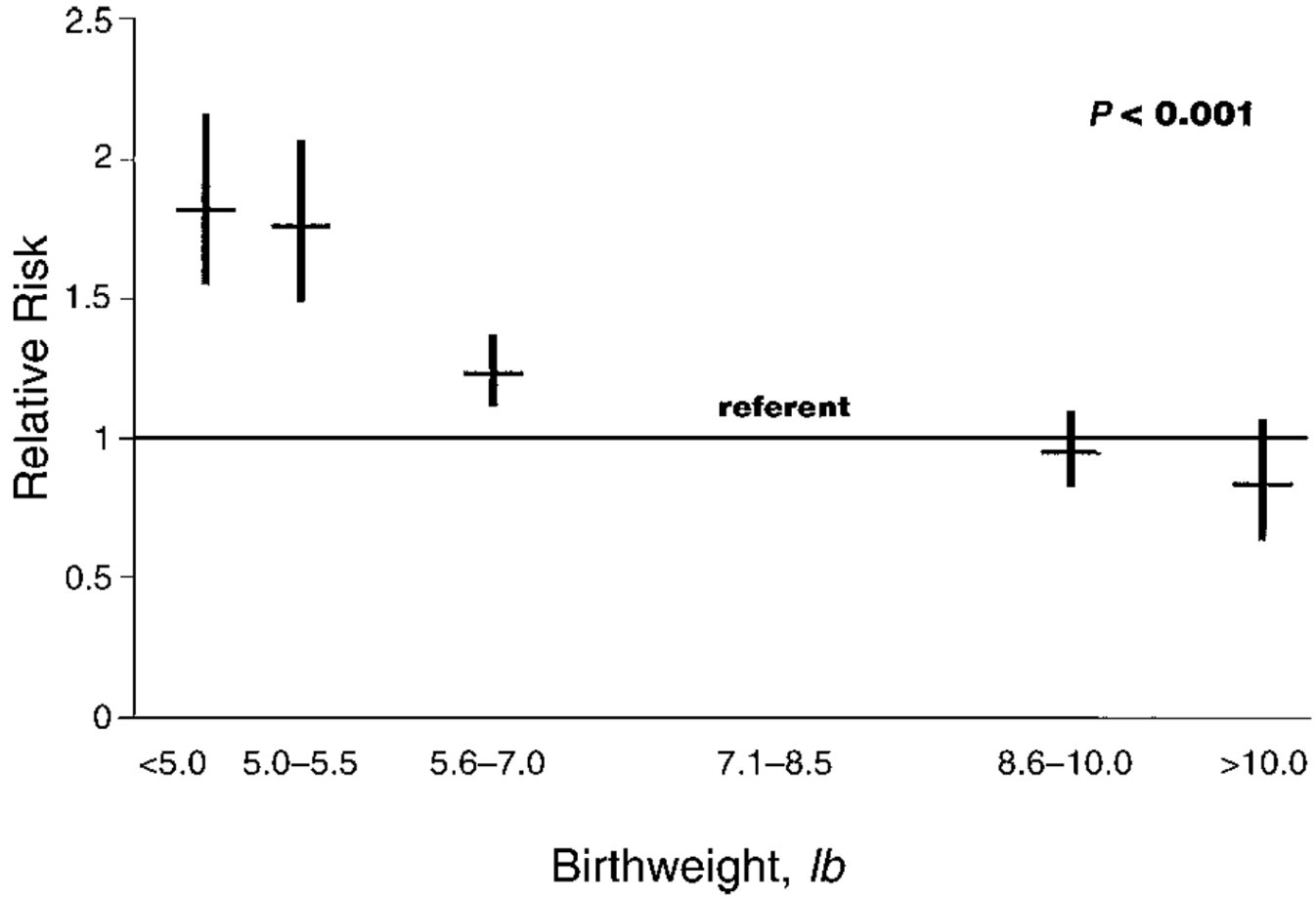


Parsons et al 2001

Birth Weight and Adult BMI

Reference	Age	Yr of Birth	N	Population	Finding
Fall et al., 1995	60-71 y	1923-1930	297	Females UK	J shape relationship
Curhan et al., 1996	30 - 55 y 25 - 42 y	1922-1946 1947-1964	164,040	Females (Nurse's Health Study)	J shape relationship OR of high vs. low BMI: 1.62 (1.38-1.9) if BW >10 lbs
Curhan et al., 1996	>40 y	1911-1946	22,846	Men in US (Health Professionals Study)	OR of high vs. low BMI: 2.08 (1.73-2.5) if BW >10 lbs
Sorensen et al., 1997	18-21 y	1973-1976	4,300	Danish Males	Positive association
Rasmussen & Johansson, 1998	18 y	1973-1976	165,109	Swedish males	OR for overweight 1.5 if BW 95th to 99th percentile
Parsons et al., 2001	18 - 33 y	1958	11,000	British birth cohort	Positive J shape with increasing age

Birth weight and type 2 diabetes



Rich-Edwards 1999

Birth Weight and type 2 diabetes

Table 1. Birth size and later risk of diabetes in adults

Reference	Subjects	Relationship of birth size with diabetes
Developing populations		
McCance et al. [18], 1994	Arizona, US (Pima Indians) 1,179 (men + women) 20–39 years	Birth weight, U-shaped with diabetes
Fall et al. [19], 1998	Mysore, India 506 (men + women) 47 years	Ponderal index, direct with diabetes Length, inverse with diabetes
Mi et al. [21], 2000	Beijing, China 627 (men + women) 45 years	Birth weight, inverse with glucose and insulin
Levitt et al. [25], 2000	Cape Town, South Africa 137 (men + women) 20 years	Birth weight, inverse with impaired glucose tolerance
Dyck et al. [24], 2001	Canada (Indians, non-Indians) 3,992 (men + women) 32 years	High birth weight, direct with diabetes
Wei et al. [22], 2003	Taiwan 978 (boys + girls) 6–18 years	Birth weight, U-shaped with diabetes
Bhargava et al. [20], 2004	Delhi, India 1,492 (men + women) 26–32 years	Birth weight, nil with impaired glucose tolerance and diabetes and inverse with glucose and insulin
Developed populations		
Hales et al. [8], 1991	East Hertfordshire, UK 370 (men) 64 years	Birth weight, inverse with diabetes

Yajnik 2005

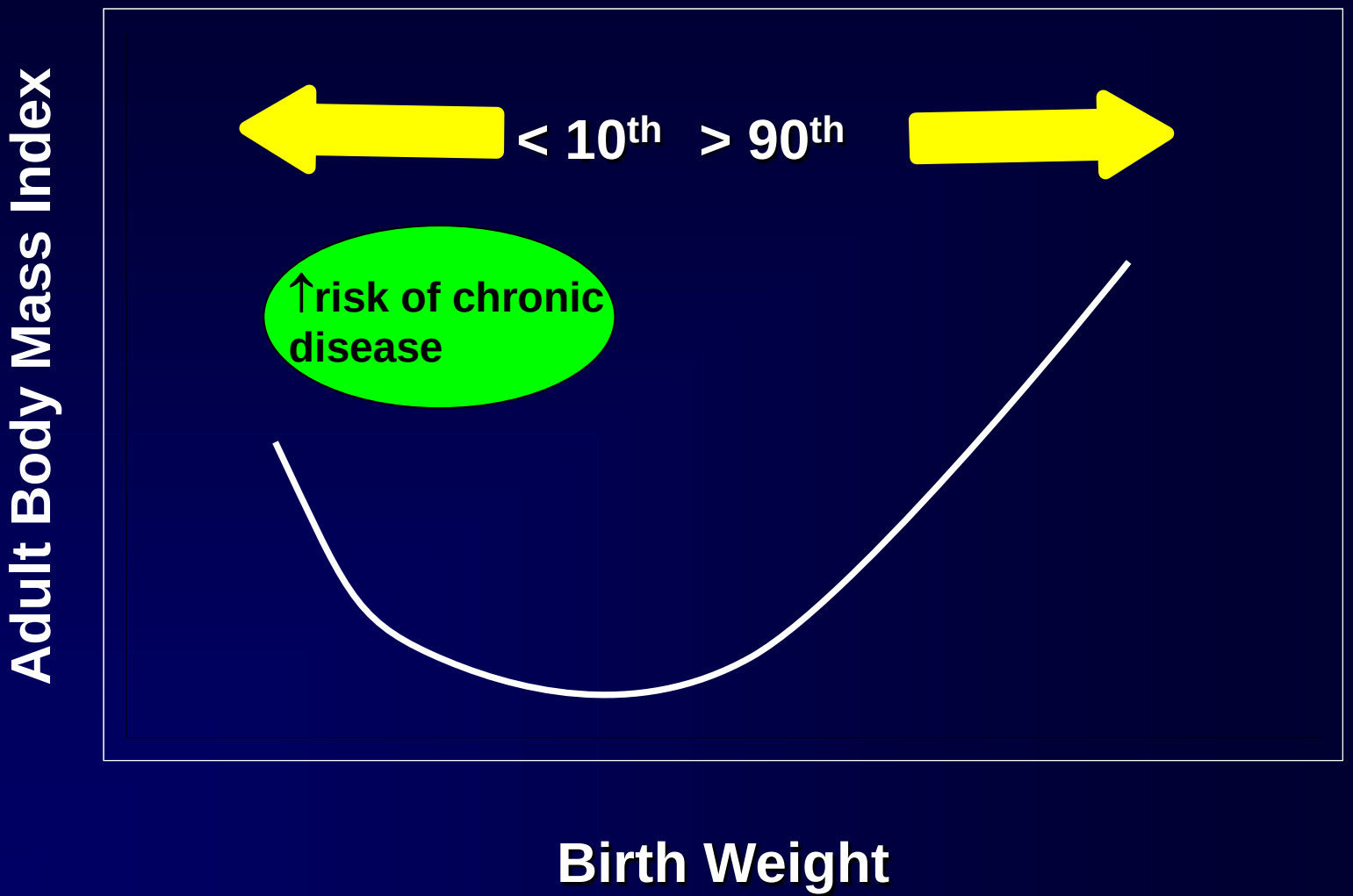
Cumulative incidence of hypertension according to birth weight among 8,760 men and women

Birth weight (kg)	% (95% CI)
≤ 3.0 kg	20.2 (18.3–22.1)
3.1 - 3.5 kg	16.7 (15.4–17.9)
3.51 - 4.0 kg	13.6 (12.4–14.9)
> 4.0 kg	12.3 (10.1–14.6)

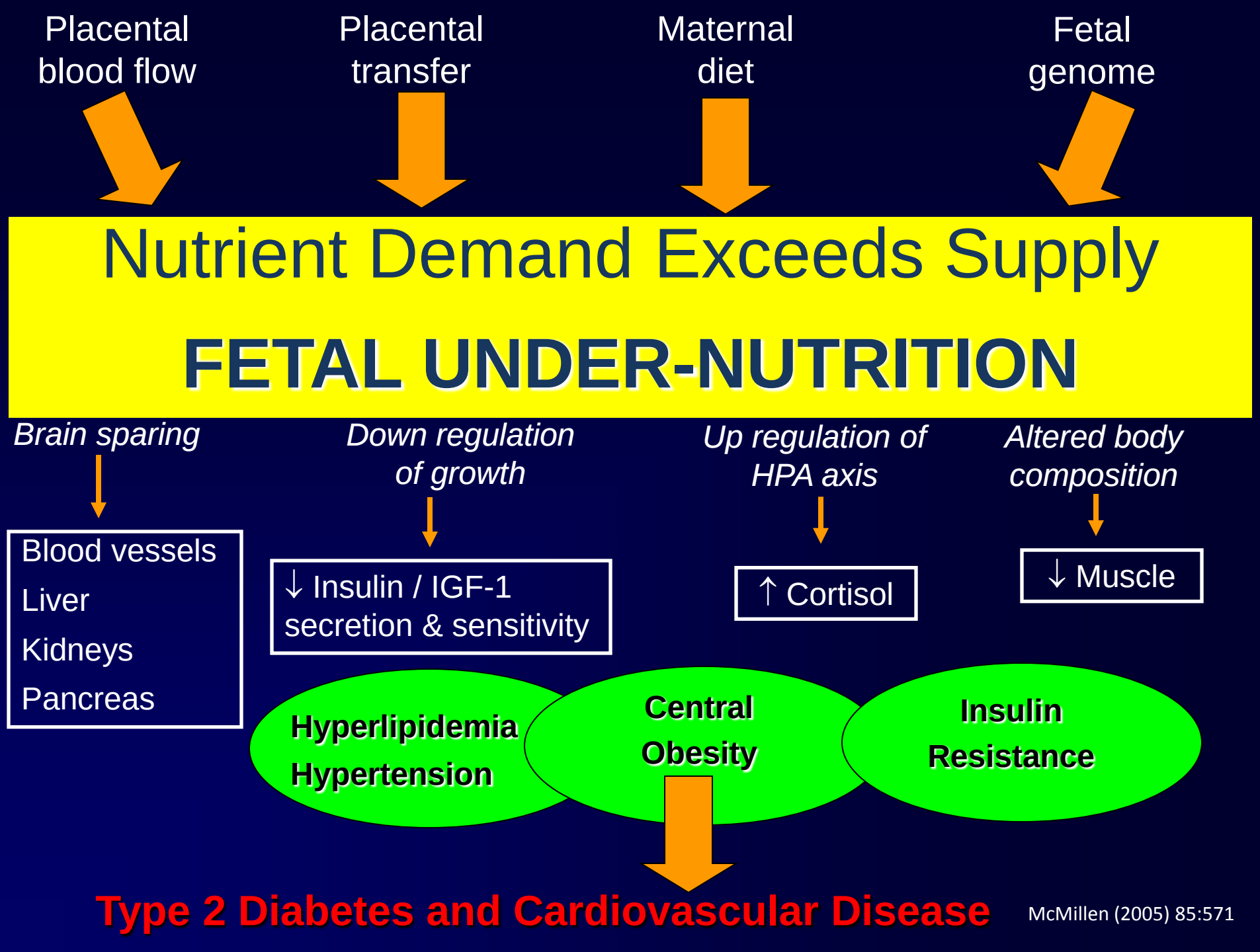
P <0.001

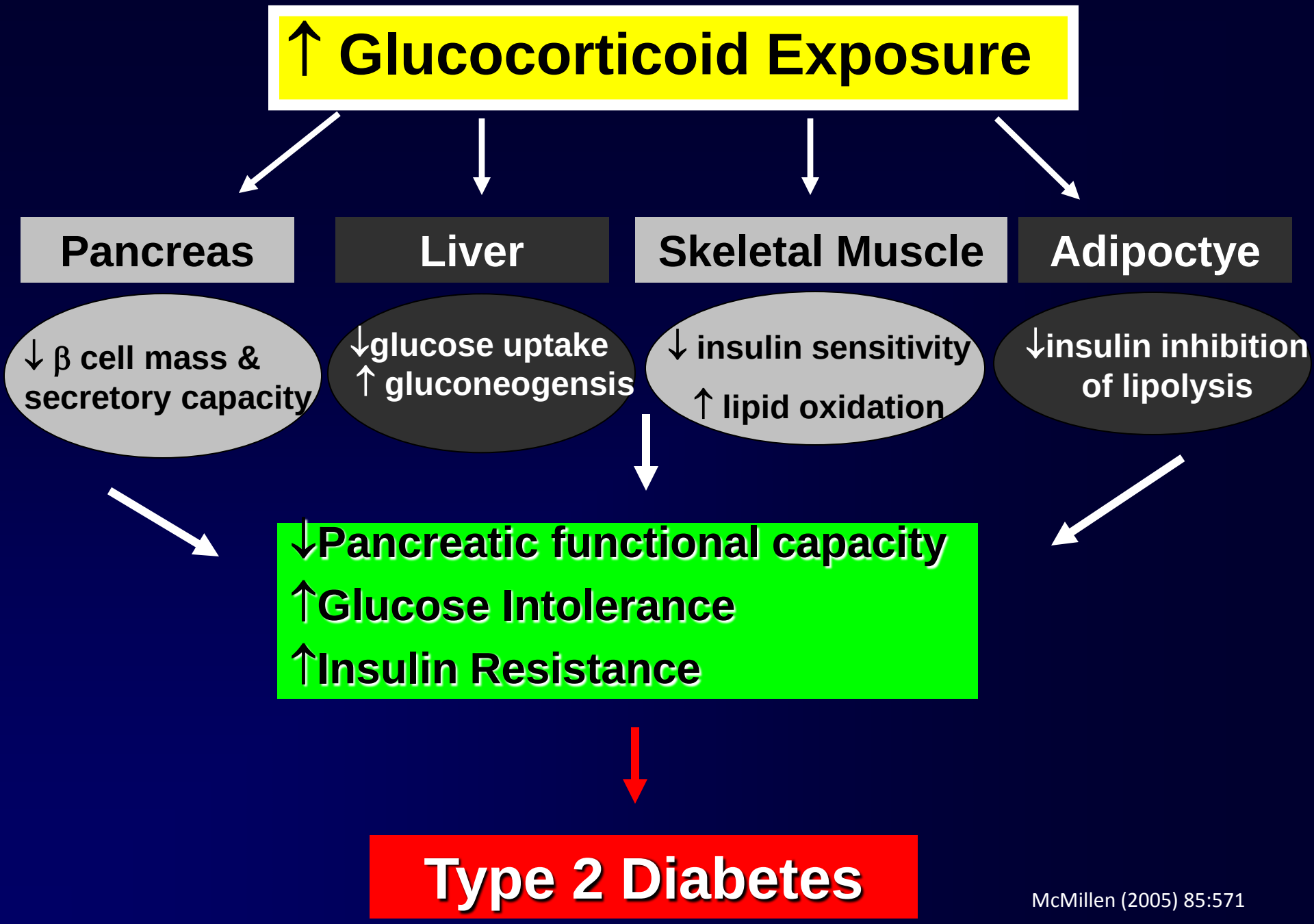
Barker (2006) Nature

Birth Weight Related to BMI in Adulthood

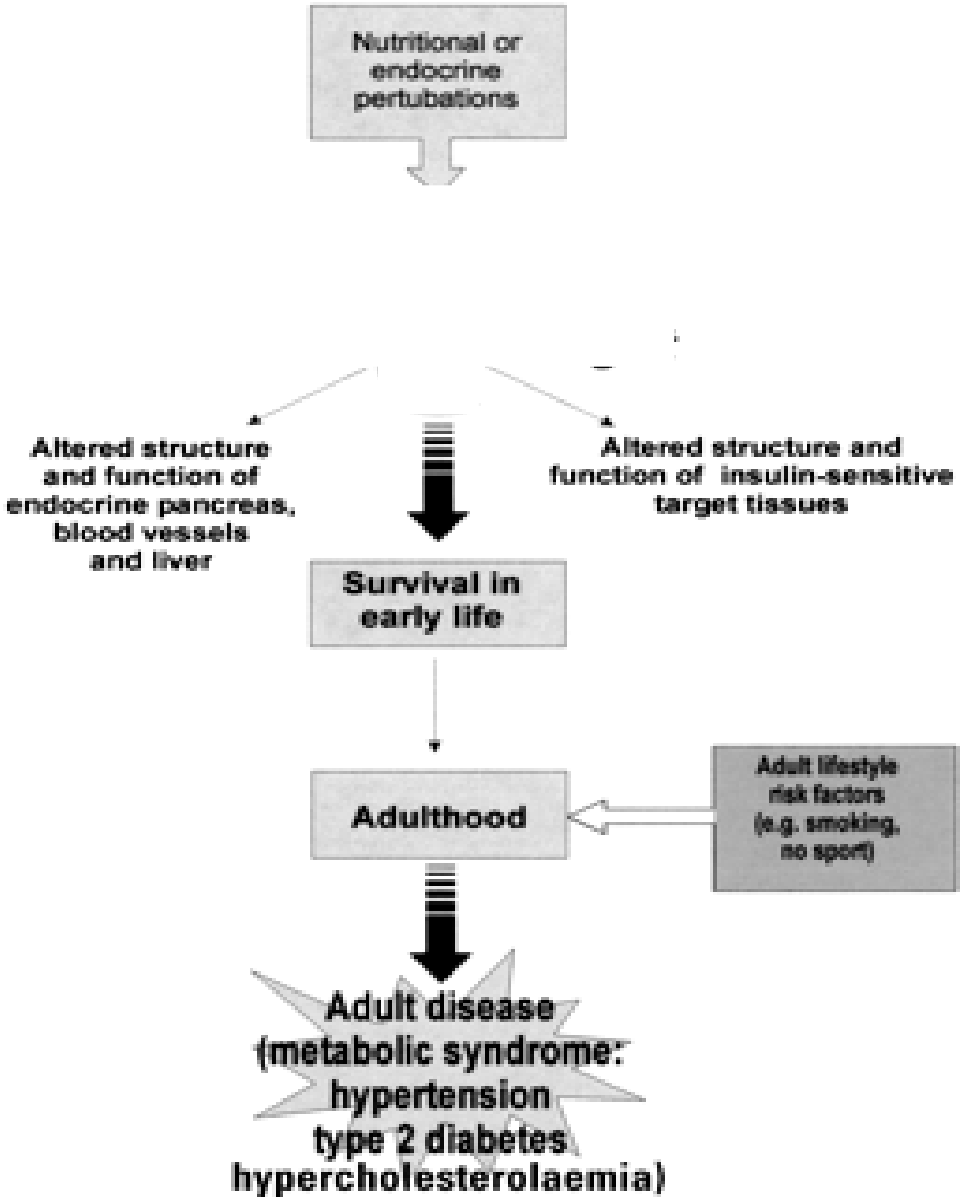


Cellular structure and function


Placental blood flow
Placental transfer
Maternal diet
Fetal genome
Nutrient Demand Exceeds Supply
FETAL UNDER-NUTRITION
Brain sparing
Down regulation of growth
Up regulation of HPA axis
Altered body composition
Blood vessels
Liver
Kidneys
Pancreas
↓ Insulin / IGF-1 secretion & sensitivity
↑ Cortisol
↓ Muscle
Hyperlipidemia
Hypertension
Central Obesity
Insulin Resistance
Type 2 Diabetes and Cardiovascular Disease
McMillen (2005) 85:571



McMillen (2005) 85:571

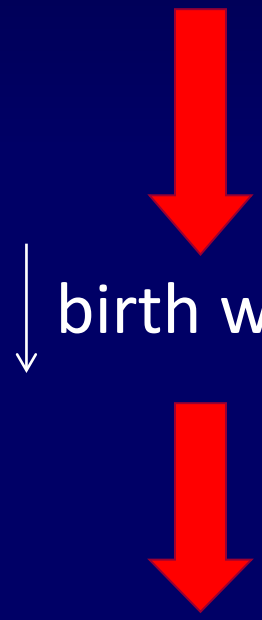


HOCHER, B. ET AL. NEPHROL. DIAL. TRANSPLANT. 2001 16:1298-1299

Animal Models

Maternal

Reduced Protein
Intake during gestation



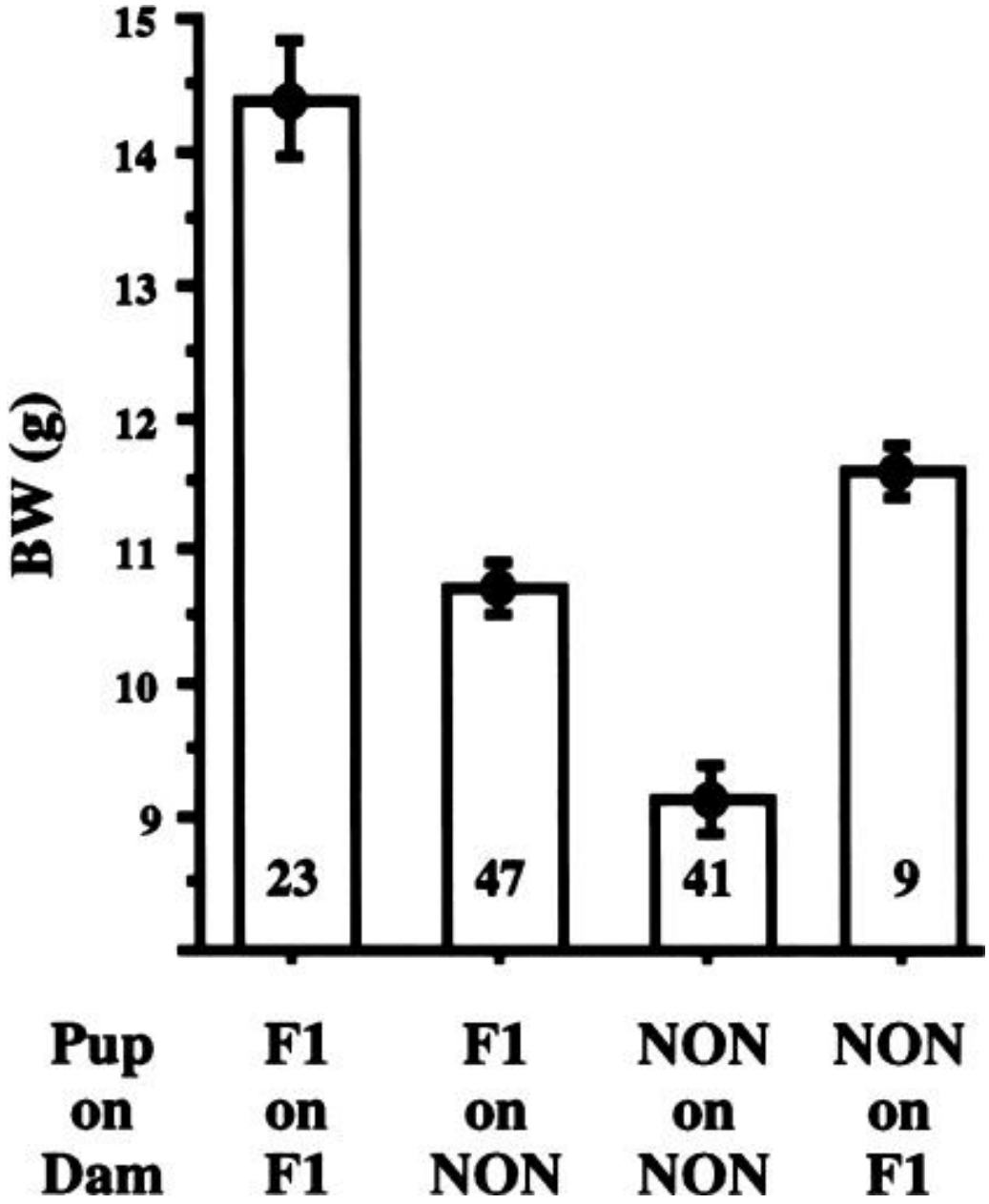
↓ birth weight

ADULTHOOD

↑ blood pressure

↑ glucose intolerance

Dahri S, et al. *Diabetes* 1991



Reifsnyder *Genome Research* (2000)

Epidemiological Support

Siege of Leningrad

8 September 1941 to 27 January 1944 (871 d)

1 million Russian soldiers killed

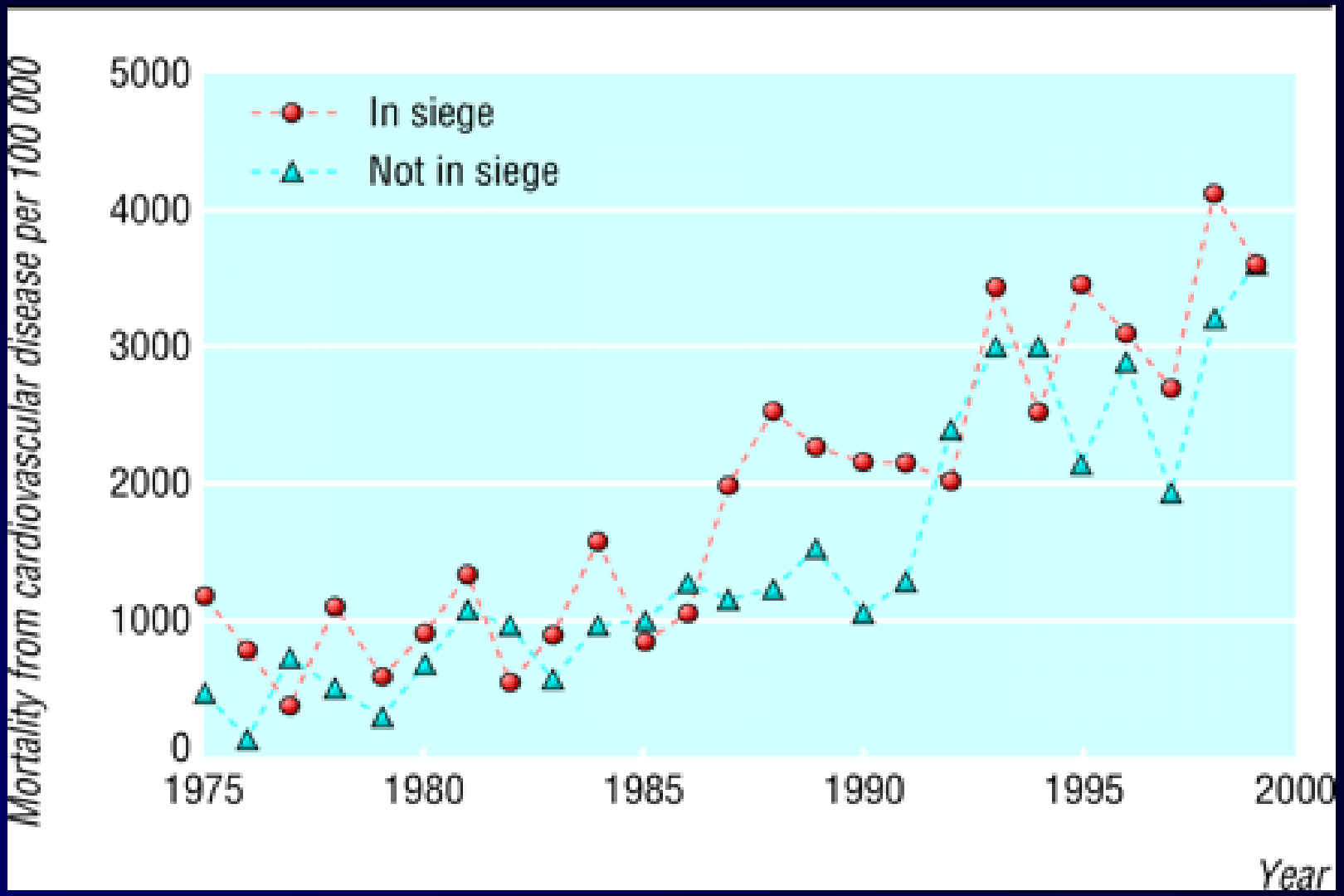
~ 1 million Russian civilians

500 – 600 g lower birth weight
½ of all babies born weighed less than 2500 g

Sparen, P. et al. BMJ 2004;328:11

SIEGE OF LENINGRAD

< 500 kcal day



Sparen, P. et al. BMJ 2004;328:11

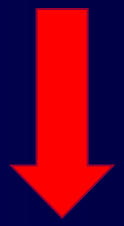
Study Points

- Starvation around puberty (ages 9-15) was strongly associated with high systolic pressure
- Starvation during the Leningrad siege irrespective of age resulted in elevated systolic and diastolic pressure
- Was evident even three decades after the event
- Follow up to 25 years, men who had experienced the siege had increased mortality from ischaemic heart disease and stroke

Sparen, P. et al. BMJ 2004;328:11

Dutch Famine 1944 - 1945

- Winter of 1944 – 1945 (lasted 5 months)
- Affected western Netherlands
- German embargo
- ~ 500 kcal a day



300 g lower birth weight

	Exposure			
	During gestation			During childhood
	Early	Mid	Late	
Impaired glucose tolerance		×	×	
Obesity	×			
Coronary heart disease	×			
Atherogenic lipid profile	×			
Increased fibrinogen/decreased factor VII	×			
Hypertension			×	
Microalbuminuria		×		
Obstructive airways disease		×		
Schizophrenia	×			
Schizophrenia spectrum disorders	×			
Congenital anomalies of the CNS	×			
Antisocial personality disorders	×			
Affective disorders		×	×	
Breast cancer				×
Early onset of menopause				×
Changes in reproductive function				×
Insulin-like growth factor-1				×

- Any exposure increased glucose intolerance
- Early – CHD, obesity, atherogenic lipid profile, fetal growth
- Mid – pulmonary problems
- Late – hypertension

Roseboom 2006

Kyle 2006 Curr Opin Clin Nutr Metab Care

Biafran Famine
(Nigerian civil war 1967 – 1970)

In utero exposure increased risk hypertension / T2D

Increased blood pressure

- 25% CVD death
- 32% stroke death

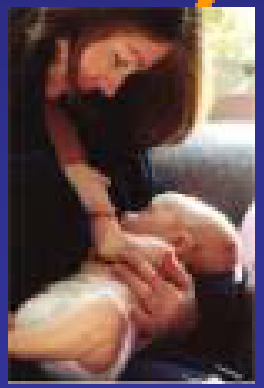
Roseboom 2011

Nutritional Factors

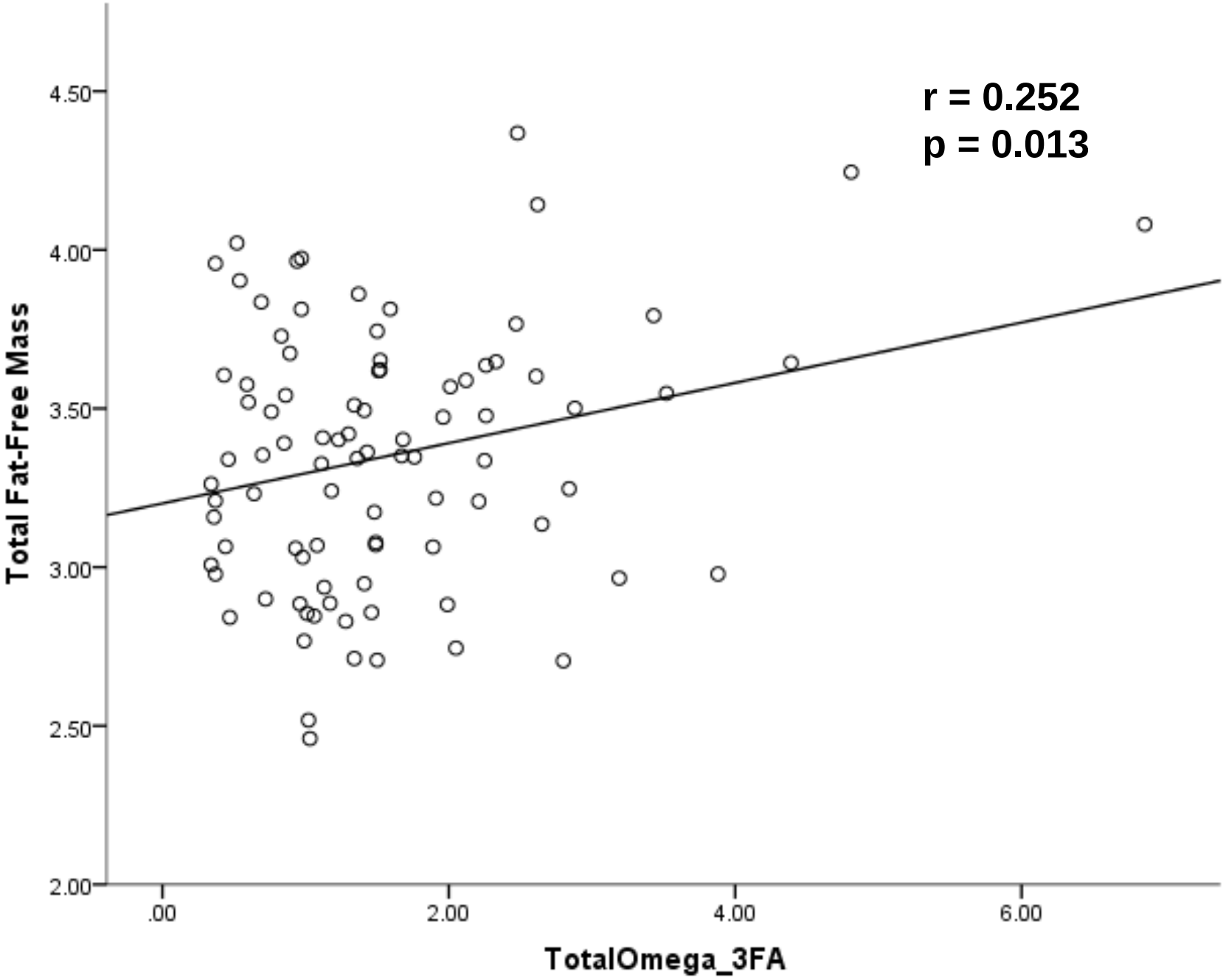
3rd trimester of pregnancy

Greater acceptance of carrot flavored cereal when introduced

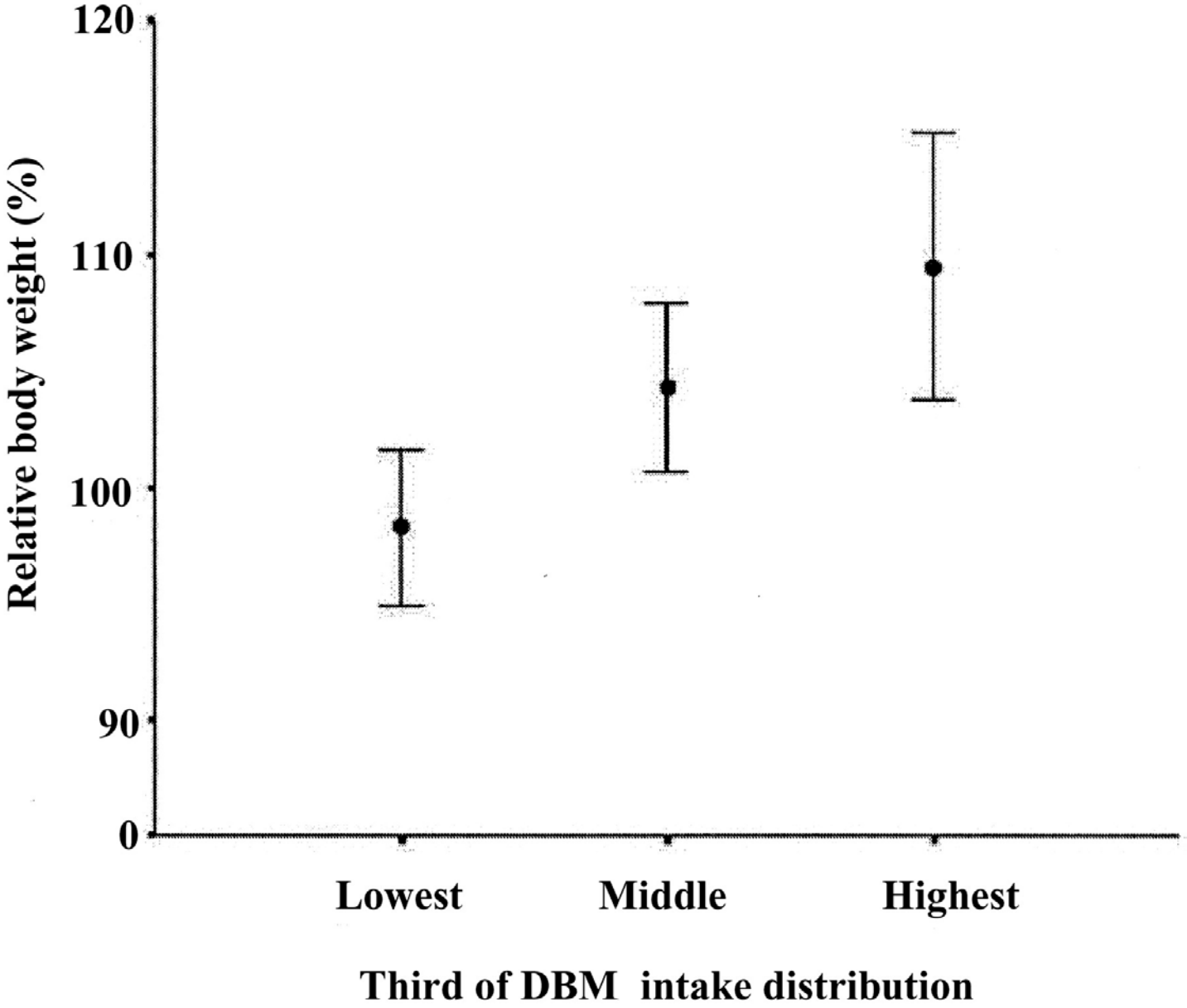
+



Mennella, Jagnow, Beauchamp, *Pediatrics*, 2001


r = 0.252
p = 0.013
Total Fat-Free Mass
4.50
4.00
3.50
3.00
2.50
2.00
.00
2.00
4.00
6.00
TotalOmega_3FA

Relative body weight at 2 years of age in thirds of intake of DBM (error bars = 95% CI).



Plagemann A et al. Dia Care 2002;25:16-22

Pre-conception - Pregnancy Maternal Weight

Maternal Obesity and Body Composition in Offspring

Table II Neonatal body composition and anthropometric measures of the lean/average and overweight/obese study groups

Variable	Pregravid BMI <25 kg/m^2 group	Pregravid BMI ≥ 25 kg/m^2 group	*P* value
Birthweight (g)	3284 ± 534	3436 ± 567	.051
Body composition (TOBEC)			
LBM (g)	2951 ± 406	3023 ± 410	.22
Fat mass (g)	331 ± 179	406 ± 221	.008
Body fat (%)	9.6 ± 4.3	11 ± 4.7	.006

Sewell et al. (2006) Am J Obstet Gynnecol

Neonatal Body Composition by Group

	Normal (N=38)	Overweight/ Obese (N=44)	*P* Value
Gestational age (weeks)†	39.5 ± 1.2	38.9 ± 1.0	0.03
Age at time of testing (days)	19.5 ± 8.5	19.8 ± 9.3	0.91
Birth length (cm)†	50.7 ± 2.6	49.6 ± 2.6	0.08
Birth weight (g)†	3433.0 ± 396.3	3368.0 ± 399.6	0.44
% body fat	12.5 ± 4.2	13.6 ± 4.3	0.00
Fat mass (g)	414.1 ± 264.2	448.3 ± 262.2	0.04
Fat-free mass (g)	3310.5 ± 344.6	3162.2 ± 343.4	0.03

Adjusted for Infant Age at Visit

Hull 2008

Neonatal Body Composition by Group

	Normal (N=38)	Overweight/ Obese (N=44)	GDM (N=9)
Gestational age (wks)†	39.5 ± 1.2	38.9 ± 1.0	38.4 ± 0.9
Age at time of testing (d)	19.5 ± 8.5	19.8 ± 9.3	18.5 ± 7.1
Birth length (cm)†	50.7 ± 2.6	49.6 ± 2.6	50.7 ± 2.4
Birth weight (g)†	3433 ± 396	3368 ± 400	3544 ± 576
% body fat	12.5 ± 4.2	13.6 ± 4.3	14.9 ± 5.8
Fat mass (g)	414 ± 264	448 ± 262	555 ± 333
Fat-free mass (g)	3310 ± 344	3162 ± 343	3317 ± 641

Adjusted for Infant Age at Visit

Potential Mechanisms

1. Genetics
2. Maternal environment
   - nutrition
   - mode of feeding
   - metabolic health (obesity and gestational diabetes)
3. Glucocorticoid stress

Evaluation of Growth

WHO Growth Charts CDC

Growth STANDARD	Growth REFERENCE
describe growth in healthy children in optimal conditions	describe <u>how</u> children grow
< 24 months	
~19,000 observations longitudinal breastfed	~4,700 observations cross-sectional mixed feeding
24 – 59 months	
~7,000 observations cross-sectional breastfed	~10,000 observations cross-sectional mixed feeding

CDC recommends that health care providers:

Use the WHO growth standards to monitor growth for infants and children ages 0 to 2 years of age in the U.S.

Use the CDC growth charts to monitor growth for children age 2 years and older in the U.S.

Future Considerations

Research is needed on health outcomes related to different growth patterns during infancy, particularly with regard to identifying percentiles that are indicative of health problems.

Research should be conducted on the use of BMI measurements based on length in infants and toddlers as predictive of future adverse health effects.

Growth Charts and Obesity in Early Life

- 9000 enrolled starting at 9 months
- Follow-up at 2 years and preschool

Early weight status can provide important information relevant for early entry point prevention and treatment of childhood obesity.

Moss *Am J Health Promotion* (2012) 26:72

Growth Charts and Obesity in Early Life

Similarity of the CDC and WHO Weight-for-Length Growth Charts in Predicting Risk of Obesity at Age 5 Years.

- 15,000 charts in Boston Area

Ever being overweight in the first 2 years of life is a strong predictor of obesity at 5 years irrespective of the growth chart used.

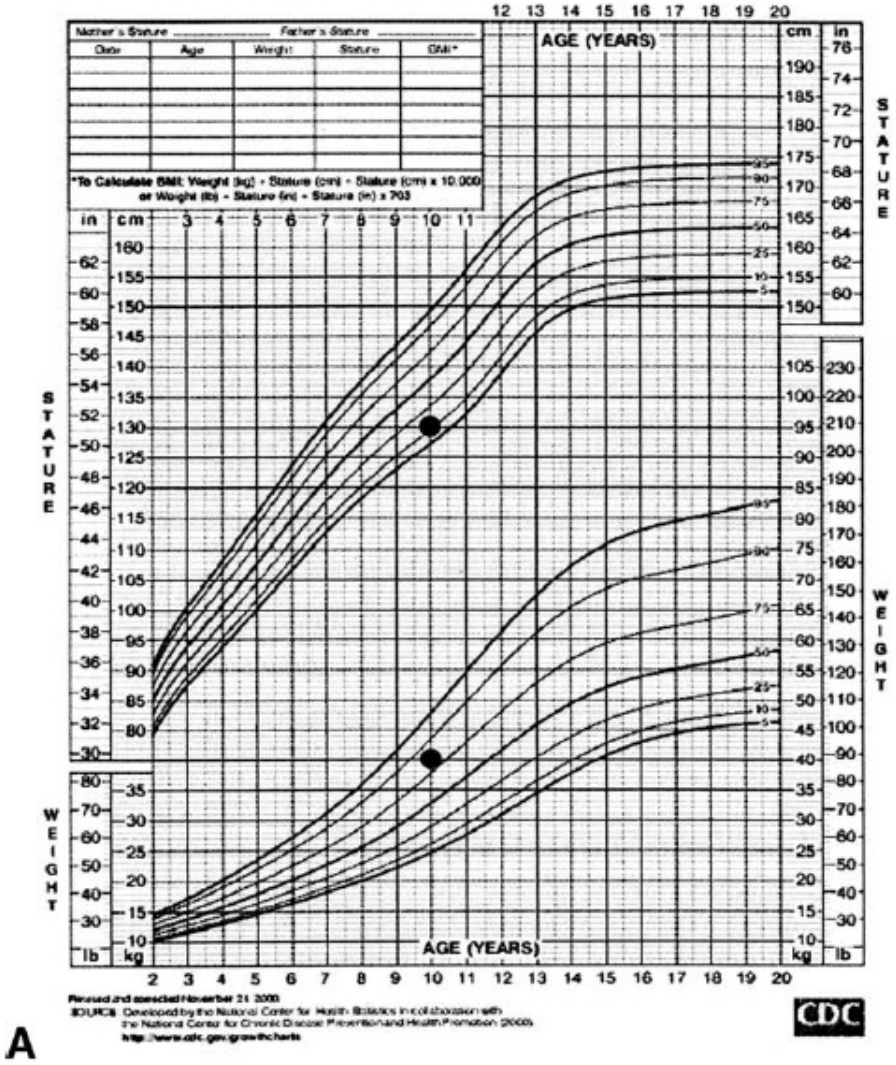
Rifas-Shiman *Obesity* (2011)

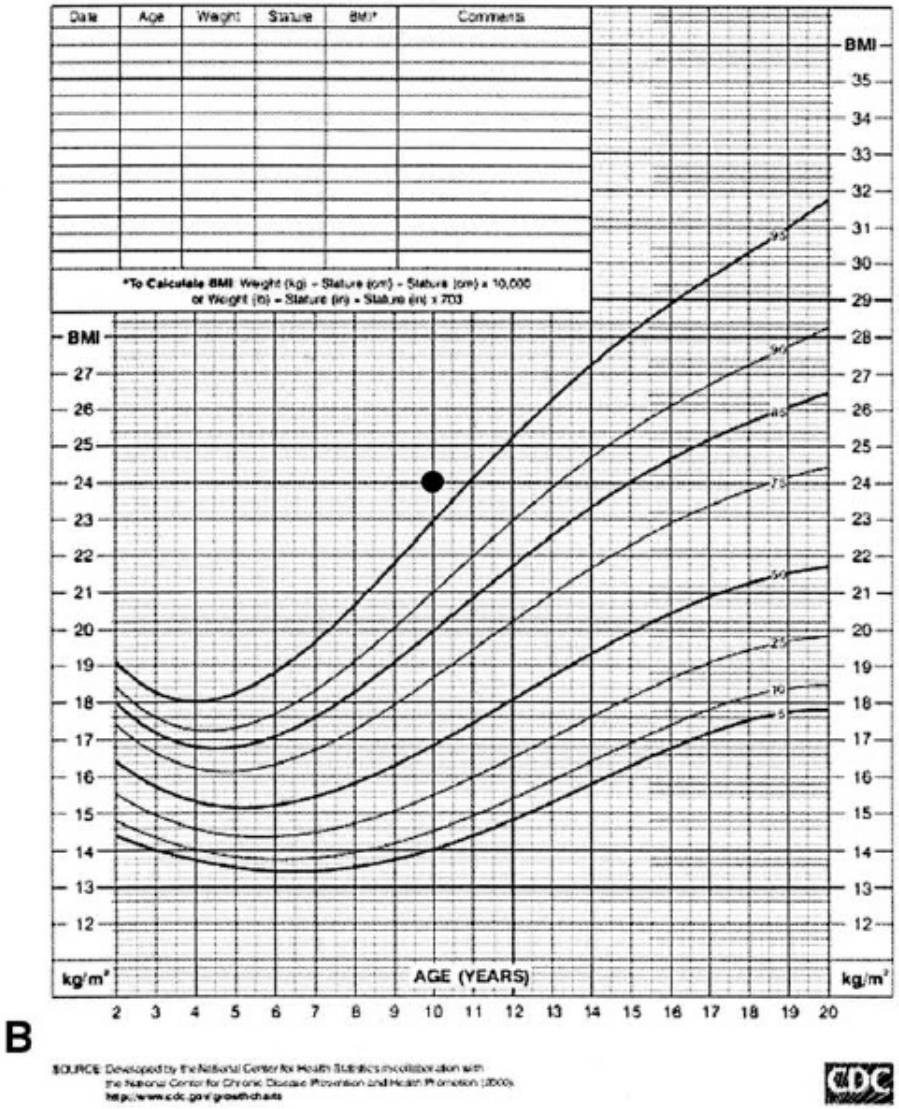
Don’t Forget the Simplest Method

Method type	Frequency of use*		
	Always	Sometimes†	Never
Height and weight charts (combined)	88	11	0
Visual impression	21	63	16
BMI	11	58	31
Weight charts (alone)	2	30	66

J Pediatr (2004) 144:455

10 year old African American Girl





J Pediatr (2004) 144:455

Acknowledgements

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Preventing Pelvic Floor Dysfunction

By
Kathleen A. Roth, P.T.

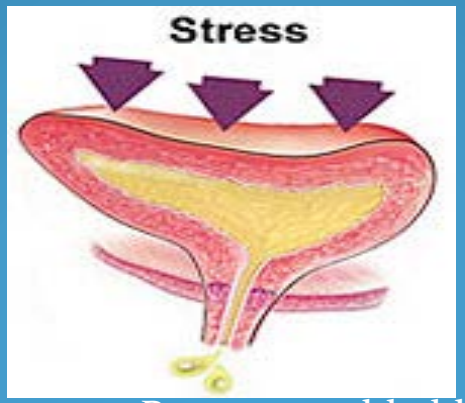
Objectives

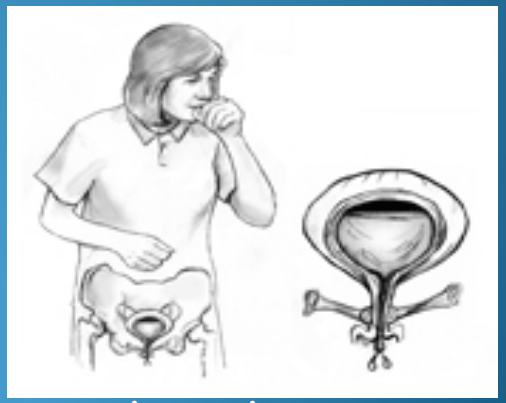
- Identify the different types of urinary incontinence.
- Understand the risk factors pregnancy-related urinary incontinence.
- Understand the pathogenesis of pregnancy-related urinary incontinence.
- Identify the pelvic floor muscles.
- Describe an appropriate pelvic floor muscle training program for antepartum and postpartum females.
- Understand the evidence-based prognosis of pregnancy-related urinary incontinence, with and without pelvic floor muscle training.

Types of Urinary Incontinence

as defined by the Mayo Clinic, 2011

Stress incontinence. Loss of urine with pressure — stress — on the bladder by activities such as coughing, sneezing, laughing, exercising, or lifting. Due to weakening of sphincter muscle of the bladder. In women, physical changes resulting from pregnancy, childbirth, and menopause can cause stress incontinence.[23]





Pressure on bladder causes incontinence

Urge incontinence. Also known as overactive bladder. Sudden, intense urge to urinate, followed by involuntary loss of urine. May result in frequent urination, including at night. Common causes include urinary tract infections, bladder irritants, bowel problems, Parkinson's disease, Alzheimer's disease, stroke, injury or nervous system damage associated with multiple sclerosis.[23]

Incontinence caused by oversensitive or overactive bladder

Overflow incontinence. Occurs with chronic overfilling of the bladder so that it frequently leaks urine. Weak bladder muscles, resulting in incomplete emptying of the bladder, or a blocked urethra can cause this type of incontinence.[23]

Bladder doesn't empty completely, leading to frequent urination or dribbling

Mixed incontinence. Symptoms that include stress incontinence and urge incontinence are termed mixed incontinence.

Pregnancy–related & Post Partum Urinary Incontinence

- Urinary incontinence is a common complaint with adult women and is defined as the involuntary loss of urine[1]

- Pregnancy increases the risk of urinary incontinence[2]

- Pregnancy-related urinary incontinence is associated with persistent urethral dysfunction after delivery[3]

Incidence of Pregnancy-related Urinary Incontinence

- Hay-Smith et al. (2008) report that nearly one-third of new mothers report urinary incontinence, but caution that this is underreported.(4)

- Hermansen, O'Connell, and Gaskin (2010) reported survey results of postnatal women revealed 59% had small amounts of urinary incontinence and 55% had greater leakage with coughing, sneezing, and increased physical activity.(5)


how is the pregnancy going dearie?
oh just fine...
if i could just ignore the backache constipation heartburn nausea vomitting acne aching feet incontinence exhaustion varicose veins stretch marks moodiness and the nosy strangers

Causes of Pregnancy-related Urinary Incontinence

- Vaginal delivery is associated with the risk of pelvic floor damage[9]

- Urethral sphincter neuromuscular dysfunction[3]

- Third degree perineal tears, bladder neck hypermobility, instrumental delivery, and the vaginal delivery of a large infant contribute to pregnancy-related urinary incontinence[10]

- Forceps-assisted delivery increases the prevalence of pregnancy-related urinary incontinence[10]

Pathogenesis

- Weakening/overstretching of pelvic floor muscles during pregnancy, labor, or delivery

- Weakening of the urinary sphincter muscles

- Loss of urethral support, especially the bladder neck, due to pelvic muscle weakness

- Damage during stressful vaginal delivery may cause damage to the levator ani muscle and pudendal nerve[12]

Risk Factors

- Obesity before pregnancy[11]
- Older maternal age at delivery[11]
- Family history of urinary incontinence[13]
- Forceps-assisted vaginal delivery[11]
- Vaginal delivery, especially of a large baby compared to cesarean section[14]
- History of urinary incontinence in childhood or before pregnancy[2]

Affect on Quality of Life

- Feel frustrated and embarrassed
- Reduced involvement in physical and recreational activities
- Always concerned about accessibility to restroom
- Narrow their choice of clothing
- Worry about odor
- Worry about “having an accident”
- Must rely on protective measures (pads)
- Feel less able to have sexual relations


I'm so glad I'm a woman.
I'm so glad I'm a man.
Streeter

Conservative Management Programs

- Based on recent systematic review, pelvic floor muscle training is recommended in first-line conservative management programs for women with stress, urge, or mixed urinary incontinence once cleared by their physician[8]

- There is moderately strong evidence that indicates pelvic floor muscle training (also known as Kegel exercises) is safe during pregnancy and reduces the incidence of urinary incontinence in primigravidas[4]

- Kegel exercises have been shown to improve pelvic floor muscle strength and is associated with reduced urinary incontinence during pregnancy and postpartum[4] [6] [7]

- Patients may initiate Kegel exercises during and after pregnancy[19]

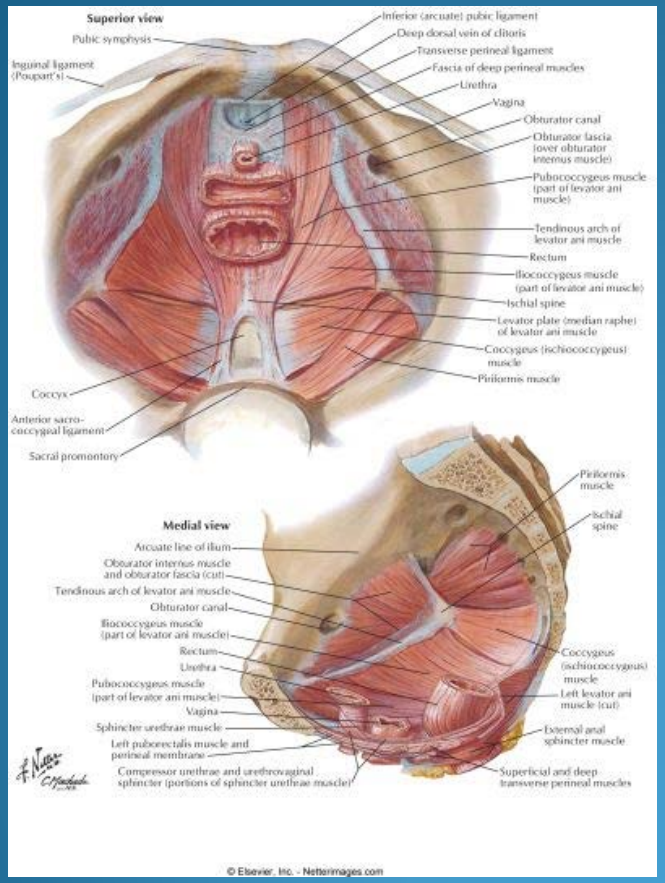
Overview of Physical Therapy Treatment

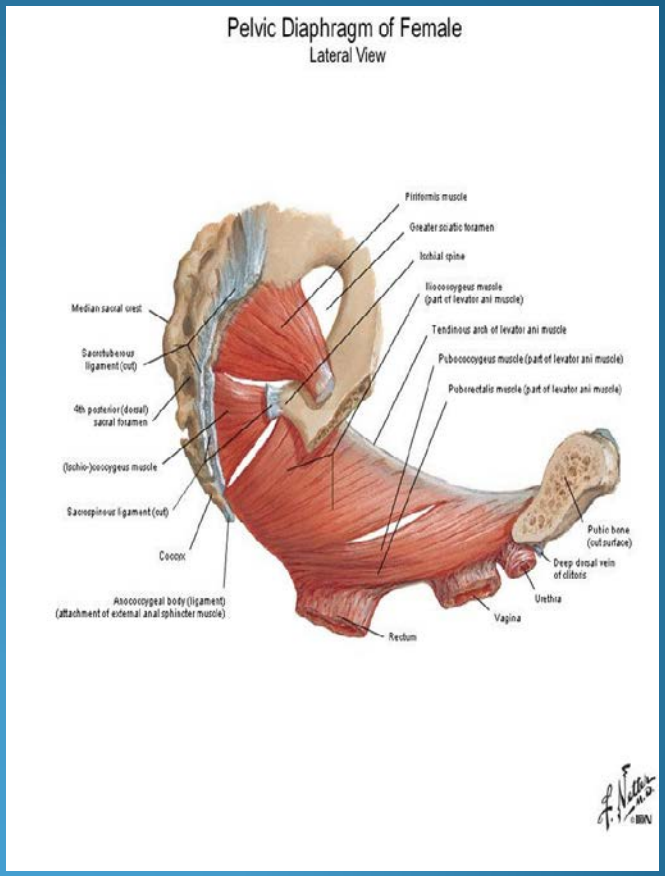
- Pelvic floor muscle training (PFMT) to reduce urinary incontinence in postpartum females is supported by numerous high-quality trials[4] [6] [7] [17] [18]

- PFMT during pregnancy (from 20 weeks until delivery) has shown to be effective in reducing postpartum stress urinary incontinence in at –risk primigravidas with bladder neck hypermobility[19]

- PFMT by a continence specialist is required to correctly isolate the pelvic floor muscles and to suppress unwanted accessory muscles[4] [18]

The Pelvic Floor Muscles





Pelvic Floor Muscle Training

- Contractions can be done in any position: sitting, standing, or lying.

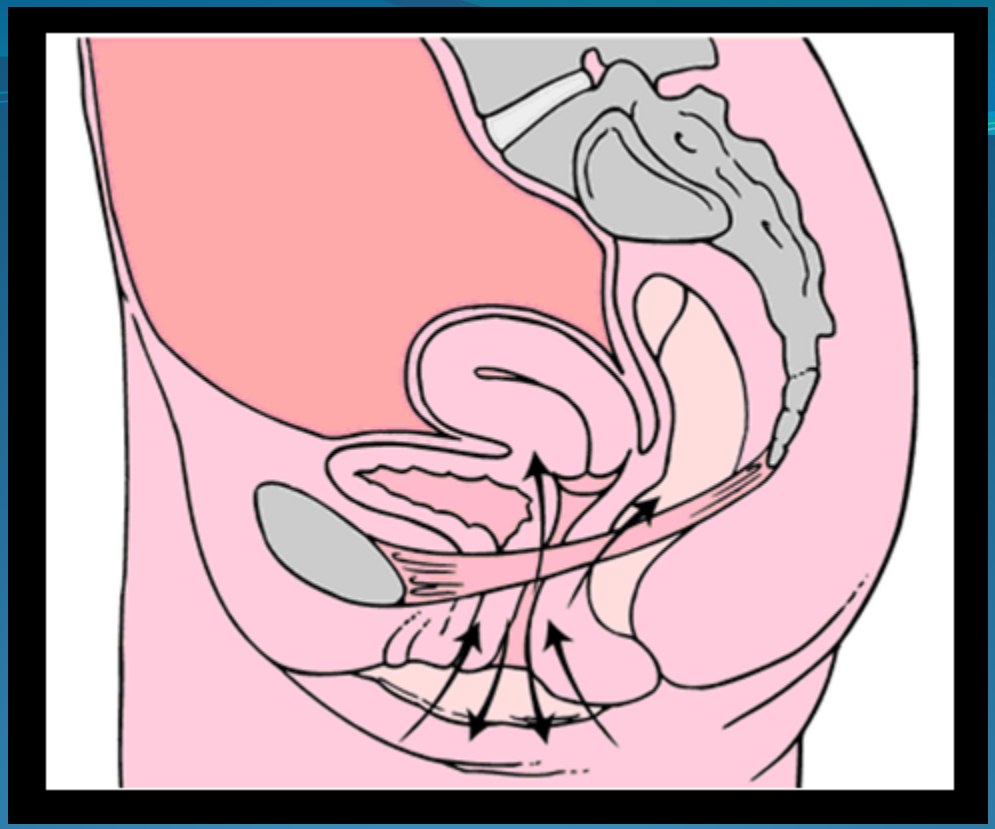
- Repetitions are important. Aim for 90 contractions per day to see results. Accomplish this by completing 3 sets of 10, 3 times per day.

- The core exercises include:

  Contract, hold, and release: Hold 5-10 seconds, then rest 5-10 seconds. Repeat 10 times.

  Quick flicks: Quickly contract and release 10 times.

  Elevators: Imagine a 3-floor elevator tightening a little more at each level until it reaches the top; then release a little at each level until it reaches the bottom. Repeat 10 times.



Contraction and release of the pubococcygeus muscle (Kegel exercises).
From Nichols and Zwelling, 1997.

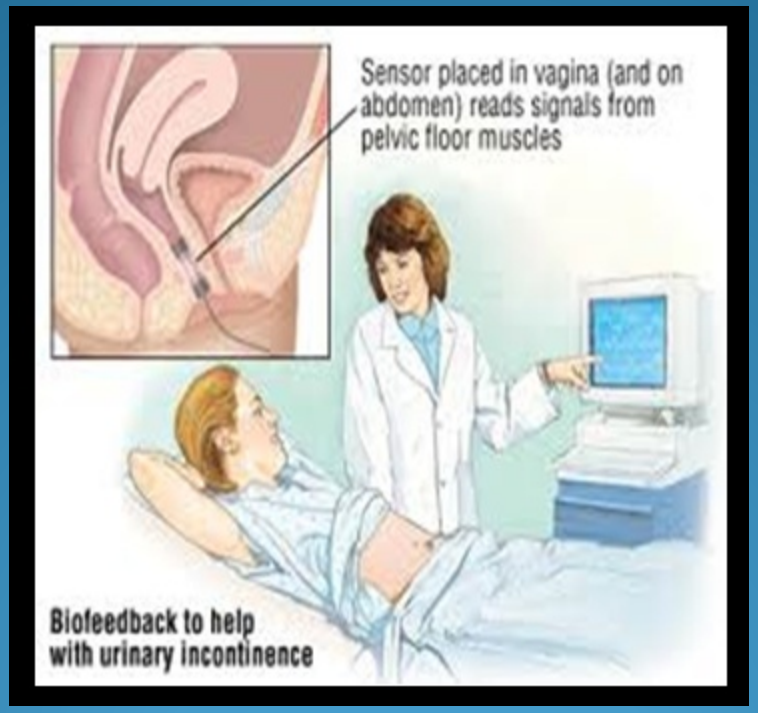
Exercise Technique

Contract the muscles as if trying to avoid passing gas or having a bowel movement.
Simultaneously, contract the muscles as if trying to stop urinating.
Do not substitute with the buttocks, abdominal, or thigh muscles.
Keep breathing.

Additional Training Options Postpartum

Vaginal weights and home biofeedback units are affordable adjunct therapy to Kegel exercises and have been shown to be effective in improving pelvic floor muscle strength and reducing stress urinary incontinence[21]

Biofeedback



Be Cautious!!

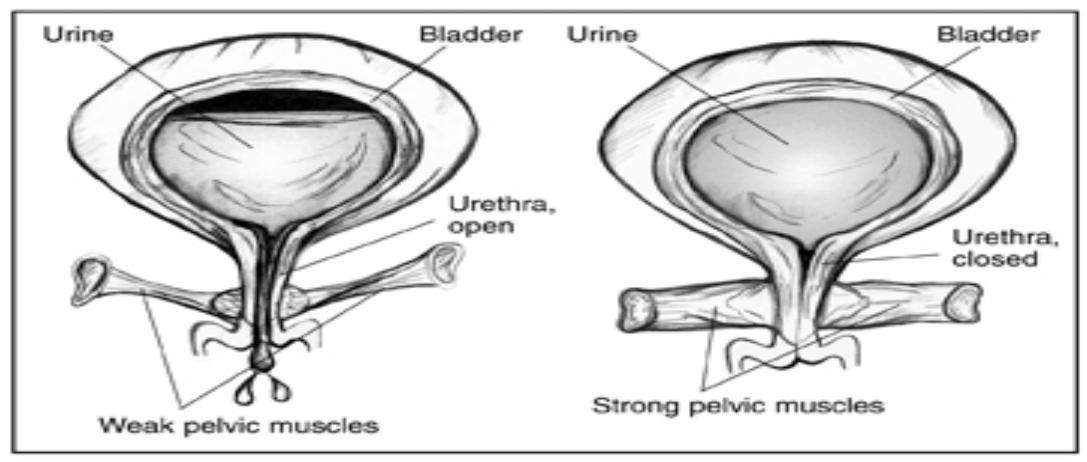
There are many products on the market that claim to cure "stress incontinence"

The data does not support a positive correlation between strengthening of the adductor muscles and improvement of urinary incontinence[22]

Intervention	Pros	Cons
Kegel Exercises (PFMT)	First-line conservative option Strengthens pelvic floor muscles and urinary sphincter Builds endurance Easy for patient to perform throughout the day Does not require special equipment Proven effective to reduce stress urinary incontinence	Requires women to be properly trained in recruiting the correct musculature Highly dependent on daily patient compliance
Vaginal cones, weights, home biofeedback units	Strengthens pelvic floor muscles Proven effective to reduce stress urinary incontinence Conservative option	Requires special device Requires women to be properly trained by a provider Highly dependent on patient compliance and use of special devices
Biofeedback	Retrains pelvic floor musculature Provides visual feedback of muscle use, proper muscle recruitment, and progress	Requires specialized equipment and provider Requires patient to be treated by provider more frequently More expensive intervention

Goals of PFMT

- Improved continence
- Improved pelvic floor muscle strength and support of the pelvic organs against gravity
- A significant reduction in leakage should be noted after several weeks
- Patients are to continue on a home maintenance program indefinitely



Prognosis

- Untreated urinary incontinence is more likely to worsen than improve[15]

- Conversely, women who completed 12 weeks of PFMT reported fewer incontinent episodes[16]

- The benefits of PFMT for postpartum stress incontinence continued at one year following an 8-week randomized control trial[17]

- Postnatal women with stage I or II pelvic organ prolapse were more likely to have improve prolapse staging after PFMT[20]

- Successful outcomes are dependent on patient compliance

Questions?

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Reference Key
SR =Published systematic review
RCT =Published research (randomized controlled trial)
R =Published research (non-randomized controlled trial)
RV =Published review of the literature

Child Maltreatment

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Child Maltreatment

- 1. Identify roles as mandated reporters of child abuse and neglect.
- 2.Recognize causes and clinical features of child abuse and neglect.
- 3. Recognize mimickers of child abuse and neglect.
- 4. Understand the management of suspected child abuse and neglect.

Child Maltreatment

- Child maltreatment is reaching an alarming level.
- In 2009, U.S. state and local child protective services (CPS) reported 10.6 cases per 1,000 of child maltreatment (DHHS, 2009).
- Incidence was highest amongst 0 to 1 year-olds (21.9 per 1,000).

Child Maltreatment

- Intentional harm or threat of harm to a child can occur by a caregiver on a permanent or temporary basis (Finkelhor et al, 2005).
- Acts include neglect, physical injury, sexual molestation, and emotional abuse.
- Neglect constituted 59% of all cases of child maltreatment as reported by CDC in 2010.

Child Maltreatment

- Most maltreatment occurs in children's homes.
- There are several risk factors that predispose to child maltreatment.
- Overall girls (52%) were at slightly higher risk than boys(48%) for all forms of child maltreatment.

Child Maltreatment

- In 2009, nearly 80% of the perpetrators of child maltreatment were parents.
- Female perpetrators, mostly mothers, are typically younger than male perpetrators, who are mostly fathers.
- More women (56%) than men (42%) are perpetrators of all forms of child maltreatment (DHHS, 2009).

Child Maltreatment

- Underreported (and often undetected).

Child Maltreatment

- Misdiagnosed victims were more likely to be:
  - younger
  - white
  - less severe symptoms
  - living with both parents

Child Maltreatment

- Practitioners : vigilant with atypical accidental injuries.

Mandatory reporting laws

- Accurate and prompt identification of children for evaluation, referral, investigation→ improved outcomes.

Mandatory reporting laws

- The mandatory reporting laws state that once a practitioner has reasonable cause to ***suspect*** that a child has been abused or neglected.
- The practitioner is obligated by state law to make a report to CPS.

Mandatory reporting laws

- The clinician need not be absolutely certain that a child has been maltreated to make a report to CPS.
- Not required to prove abuse before reporting.
- Waiting for diagnostic certainty can have severe consequences.

Mandatory reporting laws

- Failure to make a report can result in:
  - Criminal penalty
  - Action against a practitioner's professional license
  - Further injury to or death of a child

Child Maltreatment

- Patterns of early parent-child interaction, such as
  - few expressions of positive affection
  - less child-focused communication
  - more controlling and hostile interactions, are predictive of subsequent abuse (Strathearn et al. 2009).

Child Maltreatment

- Abuse perpetrated by the biological mother represents an abnormal family dynamic in the mother-child relationship.
- 29.4% of parents are married.
- Data have shown that the mother is an identified perpetrator in about 60% of substantiated cases (Strathearn et al. 2009) .

Child Maltreatment

- Human and animal research suggests that early physical contact between a mother and her child is essential in fostering bonding (Strathearn et al. 2009, Kennell, Trause and Klaus 1975).
- Bonding keeps stimulating and maintaining maternal behavior, which may help protect against maternally perpetrated abuse (Kennell, Trause and Klaus 1975).

Child Maltreatment

- Breastfeeding may enhance maternal responsiveness by stimulating oxytocin release (Levine et al. 2007).
- Oxytocin causes reduced anxiety and elevated mood, a blunted physiological stress response, and more-attuned patterns of maternal behavior (Mezzacappa and Katlin et al. 2002).

Child Maltreatment

- Oxytocin's central effects were characterized in both animal and human studies as the "calm and connection" responses.
- Parasympathetic nervous system, balancing the sympathetically driven "fight or flight" response (Heinrichs et al, 2001).

Child Maltreatment

- Oxytocin helps to prepare the central nervous system for the long-term endeavor of child rearing.
- During pregnancy and the peripartum period, oxytocin receptors are induced in many brain regions involved in maternal behavior (Uvna¨s- Moberg and Eriksson, 1996).

Child Maltreatment

- In randomized, placebo-controlled, human trials, oxytocin (administered intranasally to facilitate central absorption) resulted in:
  - Increased trust and increased accuracy in assessing facial affect .
  - But decreased anxiety and reduced fear-related brain responses during functional MRI assessments (Domes et al, 2004).

Child Maltreatment

- A mother's response to both child-related and non–child-related stressors may be an important determinant of child maltreatment (Heinrichs et al, 2001).

Child Maltreatment

- These findings suggest that breastfeeding may play a protective role in helping to prevent maternal neglect.

Child Maltreatment

- While there are many studies on the benefits of breastfeeding in non abused children there are not many in the area of abused children.
- The objective of a proposed study is to determine if there is an association between breast feeding and child maltreatment and also if there are differences between maternal age groups.

Risk Factors

- **Child/Parent-related risk factors** which interact at various levels with broader community and societal factors.

Risk Factors

- Children of all ages, genders, ethnicities, and socioeconomic groups.
- Male and female children experience similar rates of physical abuse.
- Fatal abuse and serious abusive injuries are more common among children and infants younger than 2 years.

Risk Factors

- Maternal smoking.
- The presence of more than 2 siblings.
- Low infant birth weight.
- Single and unmarried mother.
- Children with disabilities.
- Temperamental /difficult child.
- Low income family < $15 000/yr.

Risk Factors

- Non-biologic male in the home.
- Isolation and the nuclear family.
- Society that condones violence.
- Economic stress.
- Social isolation.
- Lack of employment.

Risk Factors

- Frequent moves and perceived lack of support system.
- Substance abuse.

History

- Any statements and a careful, complete, and detailed history should be obtained from the caregivers.

History

- Concerning history :
  - no explanation or vague explanation for a significant injury.
  - an important detail of the explanation changes dramatically.
  - an explanation that is inconsistent with the pattern.

History

Concerning history:

- age, or severity of the injury or injuries.
- an explanation that is inconsistent with the child's physical and/or developmental capabilities.
- different witnesses provide markedly different explanations for the injury or injuries.

History

- PMH (trauma, hospitalizations, congenital conditions, chronic illnesses).
- Family history (especially of bleeding, bone disorders, and metabolic or genetic disorders).
- Pregnancy history (wanted/unwanted, planned/unplanned).
- Prenatal care, postnatal complications.
- Postpartum depression, delivery in non-hospital settings.

History

- Family patterns of discipline.
- Child temperament (fussy child).
- History of past abuse to child, siblings, or parents.
- Developmental history of child (language, gross motor, fine motor, psychosocial milestones).
- Substance abuse by any caregivers or people living in the home.

History

- Social and financial stressors and resources.
- Violent interactions among other family members.

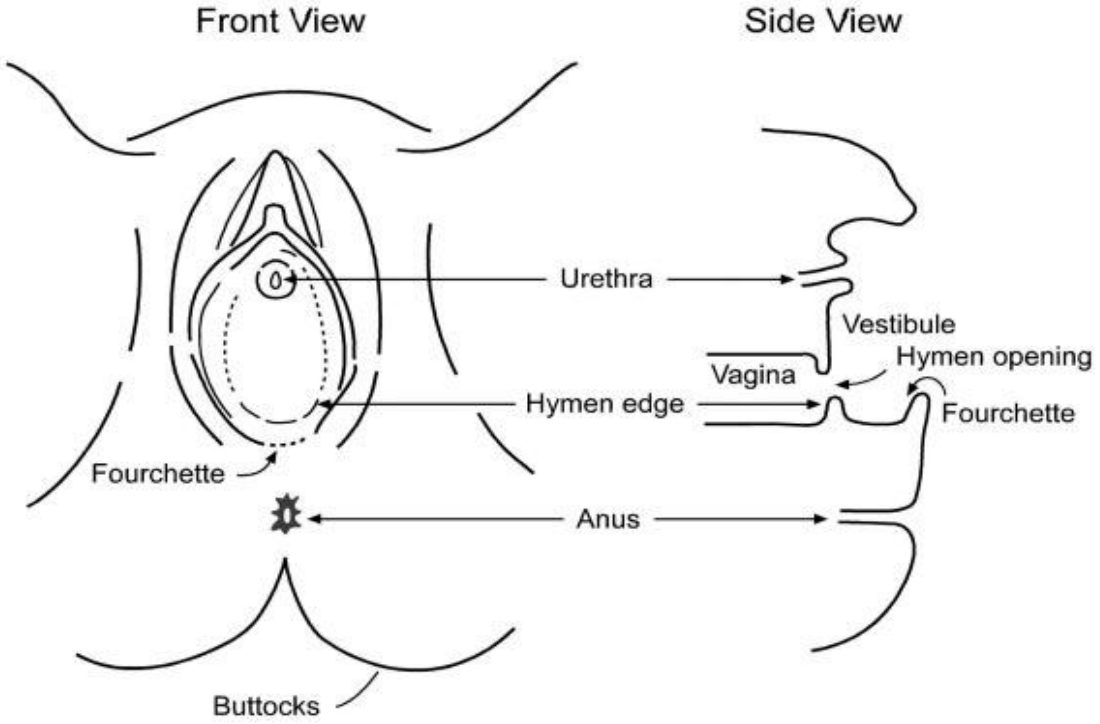
Physical Examination

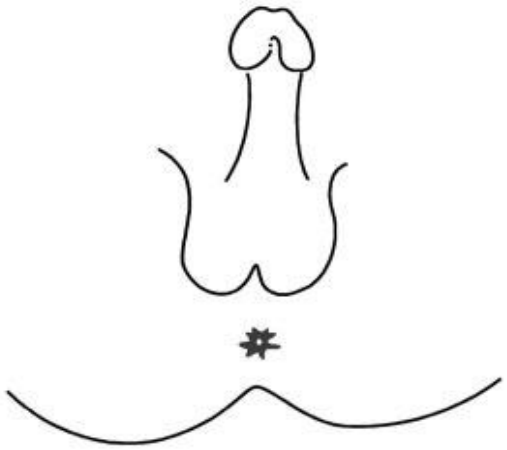
- When you suspect physical child abuse, hospitalize the child, contact CPS or law enforcement.
  - Appropriate tests and specialist consults.

Physical Examination

- When you suspect sexual abuse, contact CPS or law enforcement.
- Sexual abuse examination and the cultures for STDs should be done by a Forensic Sexual Abuse Examiner or SANE.
- The allegation and the examination by a trained professional will determine whether STD cultures are necessary.

Genital and anal anatomy





CIRCLE HYMEN OPENING SIZE

1 2 3 4 5 6 7 8 9 mm

SIZE: by ☐ Traction ☐ Separation

☐ Horizontal _____ mm ☐ Vertical _____ mm

Enlarged? ☐ Y ☐ N ☐ Uncertain _____

Hymen walls Rt ___ mm L ___ mm Base ___ mm*

SHAPE OF HYMEN

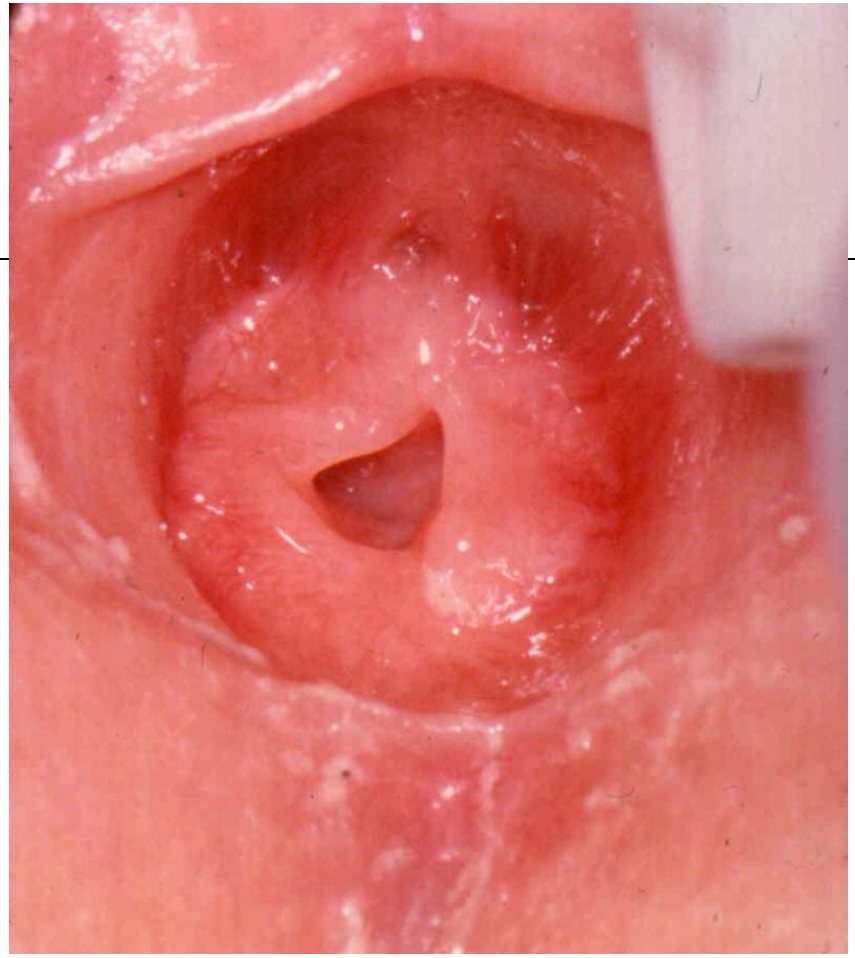
EXAMINATION POSITION

☐ knee chest ☐ frog leg

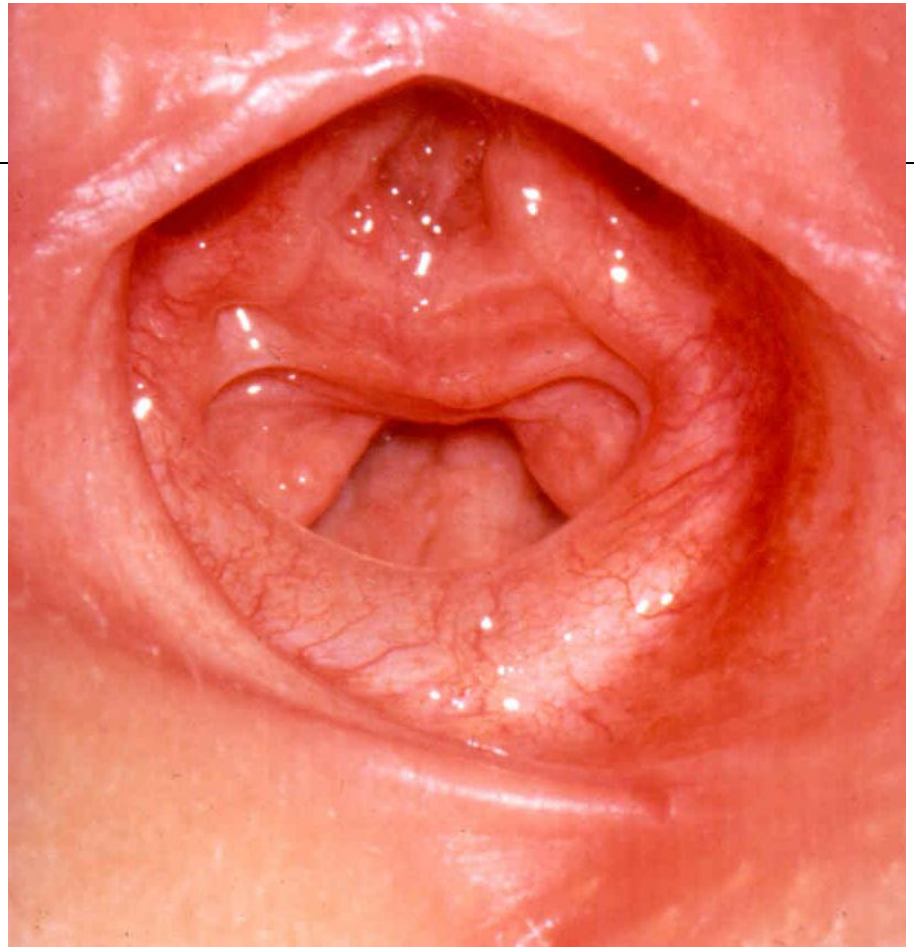
DOCUMENTATION:

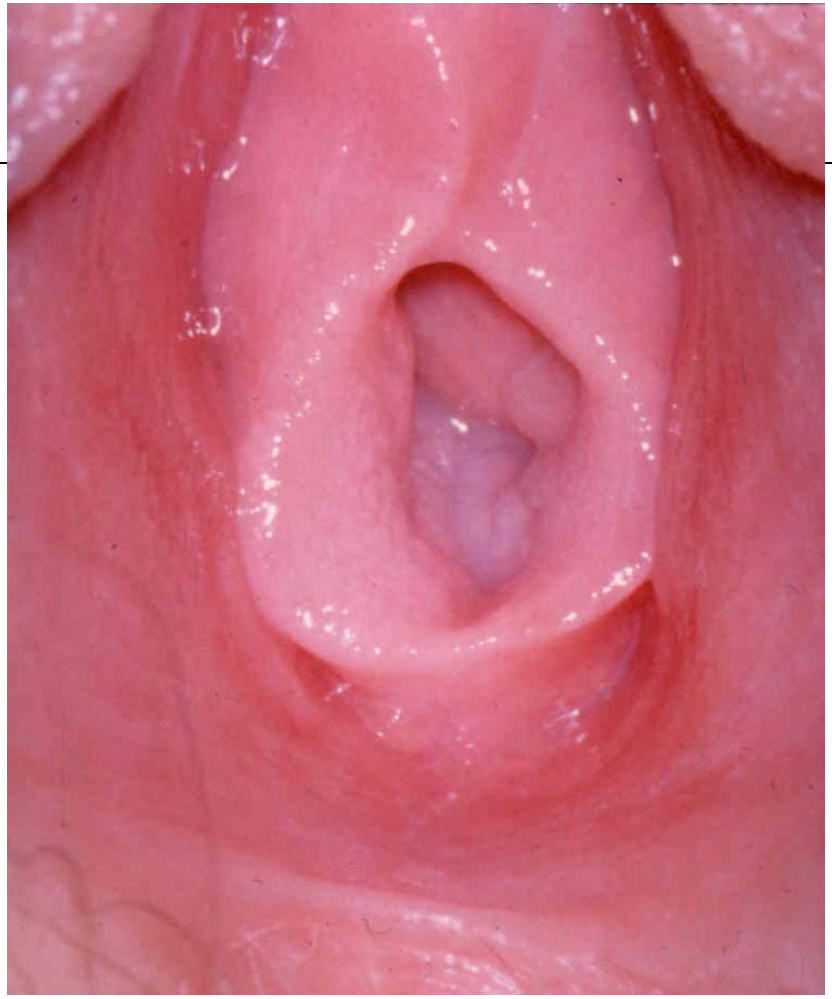
☐ Sound Recordings
☐ Videotape/DVD
☐ Colposcope photo
☐ 35mm photo
☐ Colposcope used

Infant hymen with estrogen effect

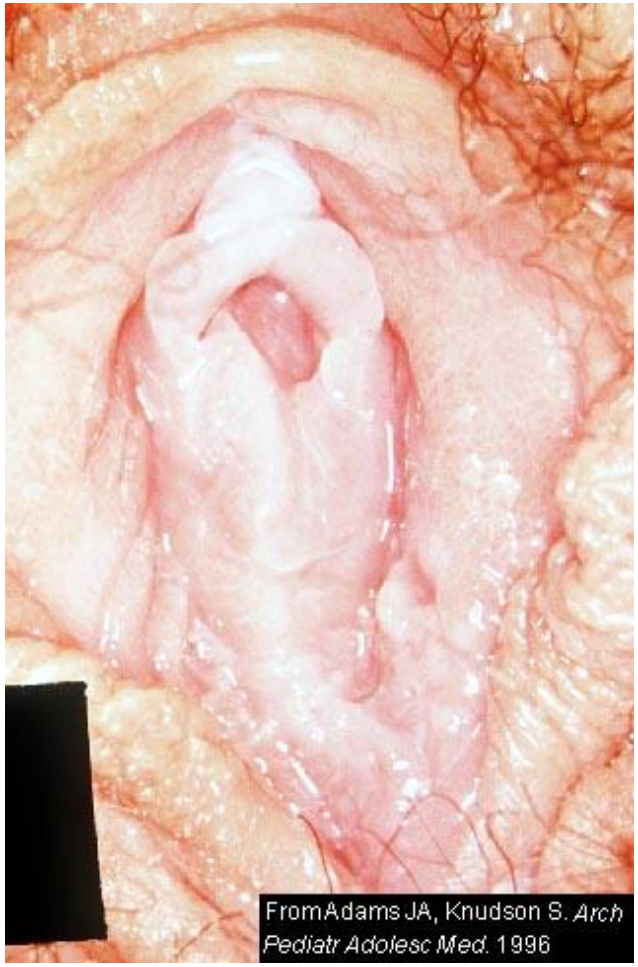


Prepubertal (un-estrogenized) hymen





Elastic, pale and redundant (Late adolescent)



Physical Examination

- Inflicted and accidental injuries may be seen simultaneously in a child.
- A severely injured child must be stabilized before further evaluation is undertaken.
- Detailed documentation, either by body diagrams and/or photographs, of any concerning cutaneous findings.
- Thorough search for other signs that may suggest a non-traumatic cause.
- If the child is verbal, it may be helpful to gather parental and patient histories separately.

Physical Examination

- When the child is stable, height, weight, and fronto-occipital circumference plotted on a growth chart.
- Previous measurements obtained from past medical visits should also be obtained to gauge whether growth velocity has been appropriate.
- Failure to thrive can be evaluated.

Physical Examination

- Detailed systemic examination, measurement and pictures.
- Skin Injuries: location, size, and shape of any bruises, lacerations, burns, bites, or other skin injuries should be documented and/or digital photographs.
- Bite marks can yield important forensic information.

Physical Examination

- The age of a bruise cannot be determined accurately.
- Burn injuries may be chemical, thermal (including exposure to scalding liquids or hot objects), or electrical.

Physical Examination

- Accidental scalds most commonly involve hot liquids pulled or splashed onto the child's upper extremities, torso, and or neck and head.
- Inflicted scalds or forced-immersion burns may be well demarcated in pattern, with few or no splash marks.

Physical Examination

- Infants with intracranial injuries frequently have no or nonspecific symptoms so the absence of neurologic symptoms should not exclude the need for imaging.
- Subdural ,subarachnoid hematomas, multiple subdural hematomas of differing ages, more extensive retinal hemorrhages, and associated cutaneous, skeletal, and visceral injuries.

Physical Examination

- Skull fractures can occur from accidents or inflicted injury.
- Studies have indicated that simple linear skull fractures can result from short falls of less than 3 ft and that such fractures are usually associated with scalp bruising or swelling.

Physical Examination

- History of minor head trauma such as a short fall in children with multiple, complex, diastatic, or occipital skull fractures(suspect).
- Ensure that there are no other injuries.

Physical Examination

- A fundoscopic examination for retinal hemorrhages.
- Retinal hemorrhages occur in approximately 85% of infants and children who are subjected to abusive, repetitive, acceleration-deceleration (shaking) forces with or without impact.

Multiple retinal hemorrhages

Physical Examination

- Inflicted injuries that involve the heart are rare and severe.
- Rib fractures in infants: forceful squeezing of the chest posterior or lateral rib fractures or multiple rib fractures.
- CPR whether performed by experienced or inexperienced individuals, is an unlikely cause of rib fractures or retinal hemorrhages.

Physical Examination

- Shallow breathing attributable to pain and splinting.
- In severe cases, a fractured rib may puncture the lung→ pneumothorax.
- Hemopericardium: cardiac contusions occurring as a result of abusive blows to the chest.
- Chylothorax : shearing of the thoracic duct resulting in chylothorax.

Physical Examination

- Auscultation, performed before palpation, may reveal decreased or no bowel sounds if the child has sustained intraabdominal injury.
- If the intestines, liver, or spleen have been ruptured, guarding or abdominal muscle rigidity may be noted on palpation.

Physical Examination

- Long-bone fractures :
  - metaphyseal fractures
  - and spiral/oblique fractures, especially in non-ambulatory infants .
- Both types of fractures have been associated with accidental mechanisms of injury as well (high impact avulsion/ jerking).

Physical Examination

- A complete neurologic assessment, including reflexes, cranial nerves, sensorium, gross motor, and fine motor abilities, should be conducted.

Normal Bruises

- Keys to diagnosis
  - Child's development
  - Location
  - Pattern
- "Those who don't cruise rarely bruise."

  Sugar NF, Taylor JA, Feldman KW. *Arch Pediatr Adolesc Med.* 1999;153:399–403.

Normal Bruises

- Normal bruises
  - Over a bony prominence: forehead, knees, elbows, shins.
  - Facial scratches on babies from their fingernails.
  - Bruises that appear in the same stage of healing (brown fading).

Bruises

- Strongly consider abuse when a child presents with multiple bruises, in different planes, and different stages of healing.
- Patterned bruises.

Slap

Inflicted Bruises

- Inflicted bruises
  - Buttocks and lower back
  - Cheek (slap marks)
  - Lips
  - Ears (pinch marks)
  - Neck (ligation bruises)
  - Genitals and inner thighs

Inflicted Bruises

- Human bite marks.
- Periorbital hematoma(raccoon eyes) when there is no broken nose or forehead bruise (subgaleal hematoma with blood tracking).
- Frenulum tear.

Inflicted Bruises

- Linear bruises
  - Belt marks, whips, straps.
  - Loops, hangers, light cords, fly swatter, sauce pan, fork, hair brush, spoon.
  - Multiple bruises in different locations and in different stages of healing.

Fractures

- 80% of abusive fractures are seen in children younger than 18 months.
- Any fracture can be the result of abuse.
- No fracture is pathognomonic of abuse.
- Some fractures are quite common in and specific for abuse.
  - Rib fractures and CMLs in infants

Fractures

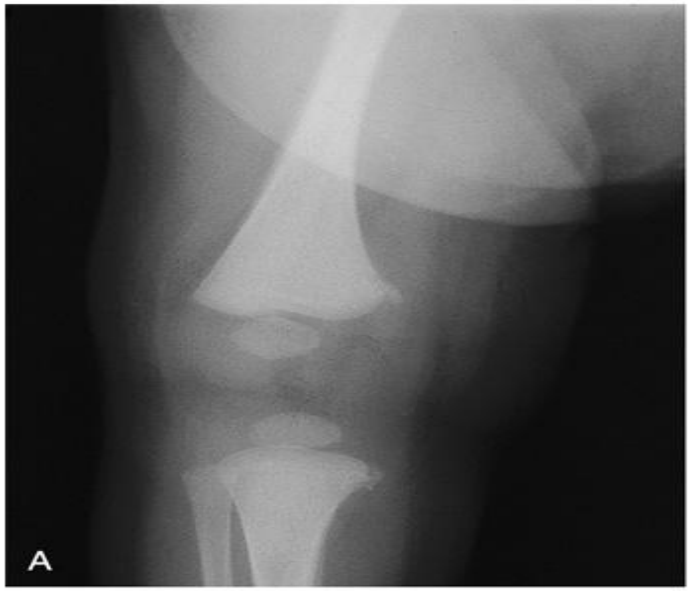
- Suspect abuse when child is pre-ambulatory and not compatible with stage of development.
- History does not match the injury.
- The explanation for the injury (history) should not change when it is challenged.

Fractures

- Rib fracture, multiple rib fractures or posterior location.
- Multiple fractures at different sites and different stages of healing.
- Spiral/oblique or metaphyseal fractures of the humerus
  - Spiral/oblique or metaphyseal fractures of the femur (especially in pre-ambulatory children)

Classic metaphyseal lesion

Classic metaphyseal lesion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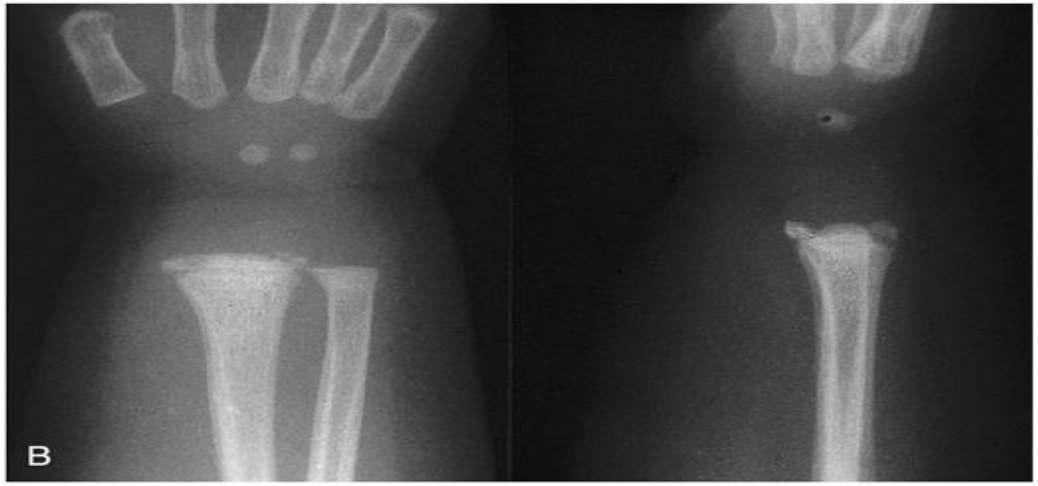
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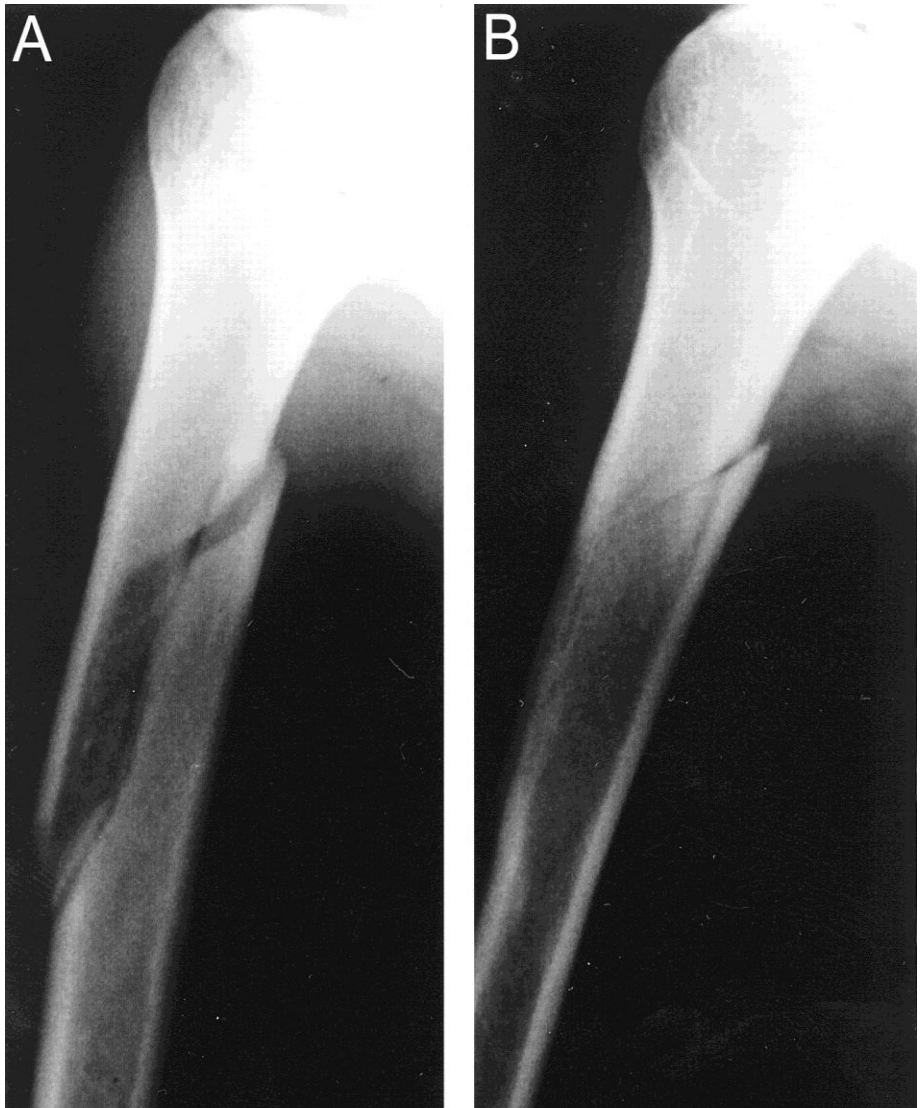
C

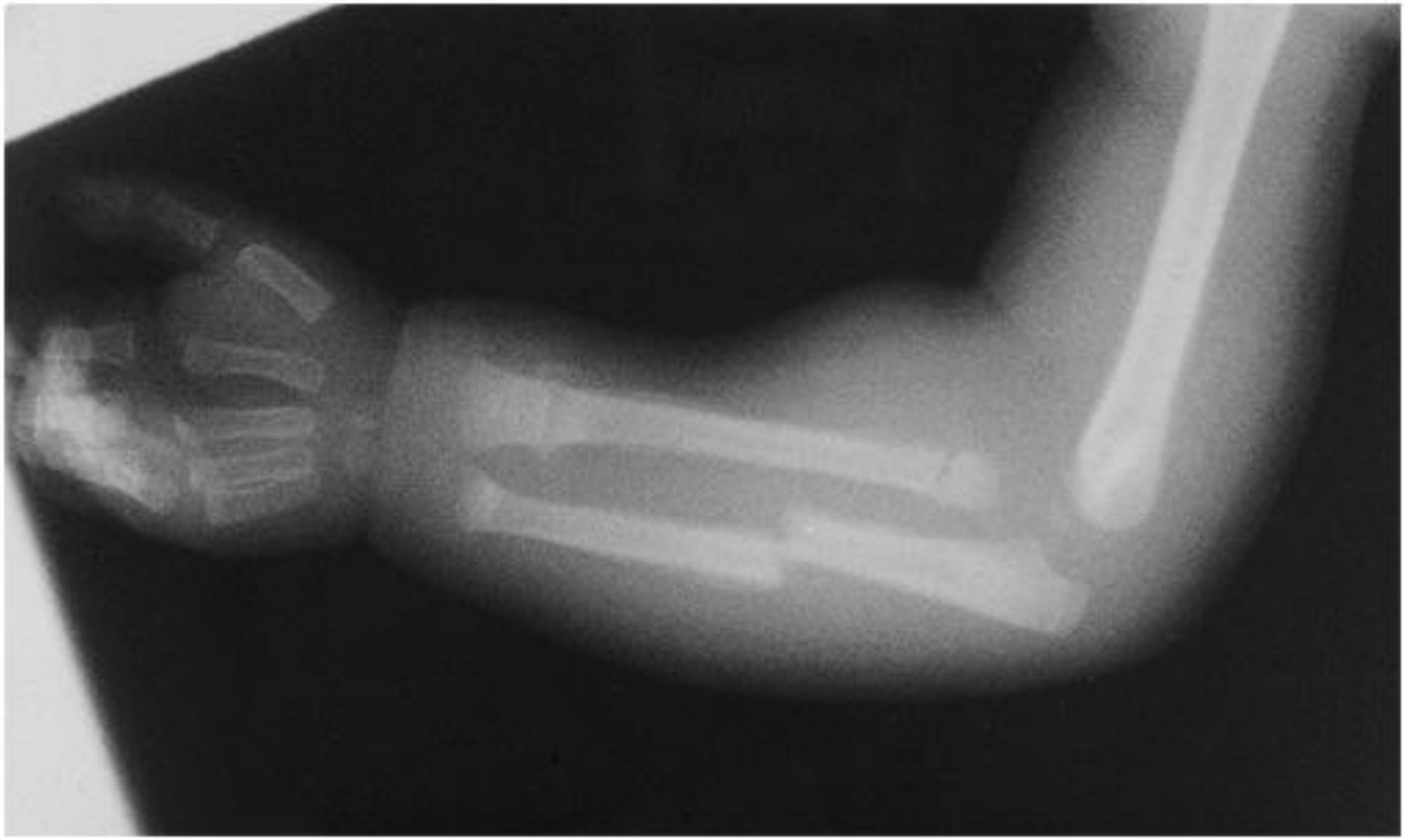

D

Spiral Fracture

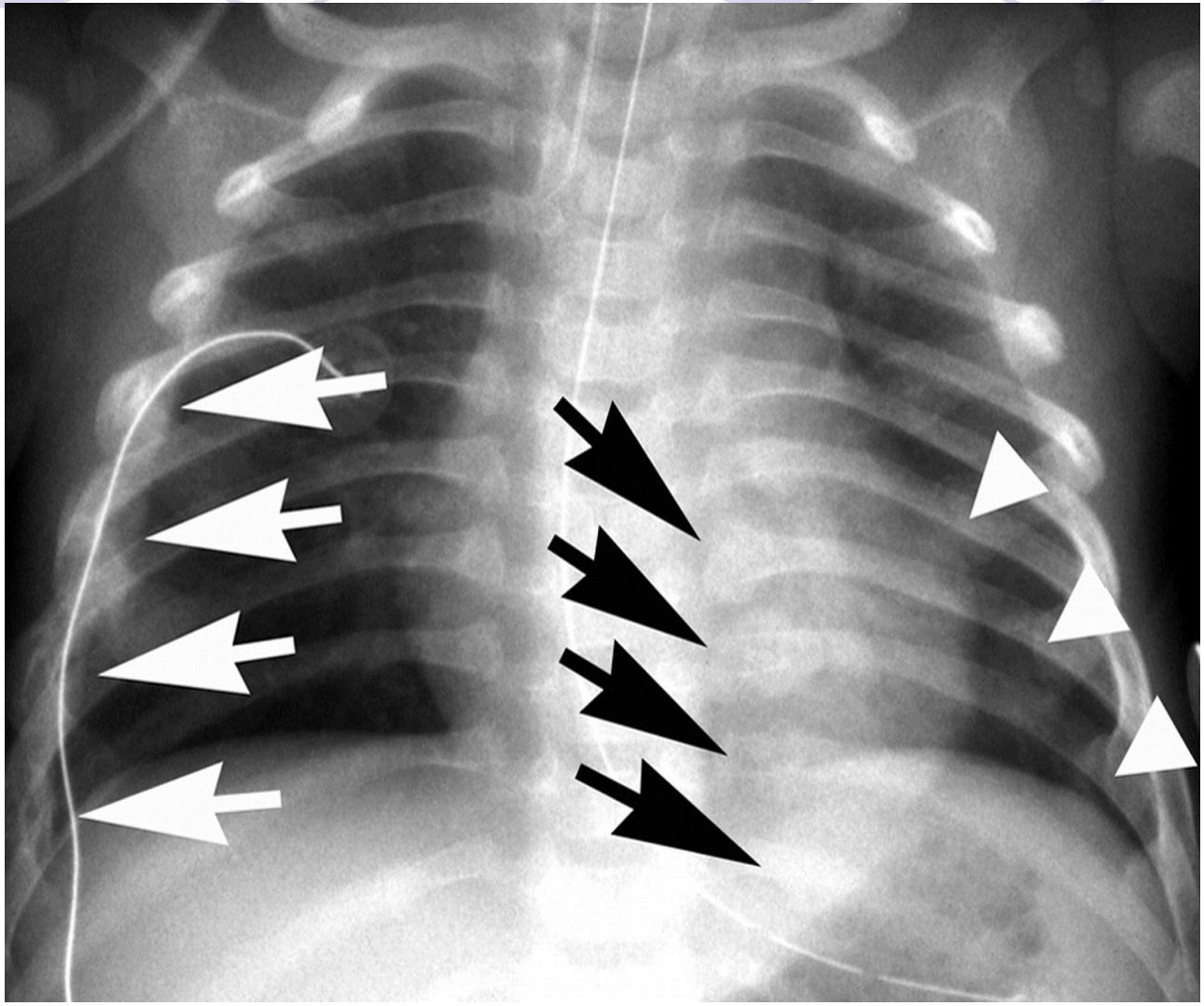
Spiral Fracture

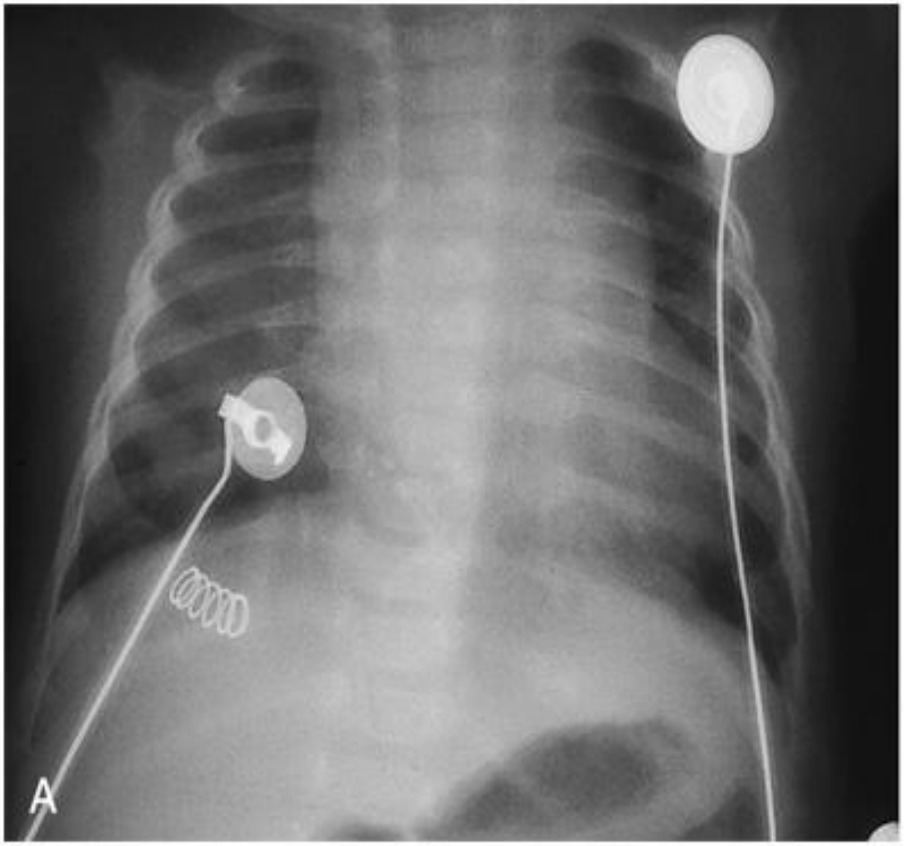


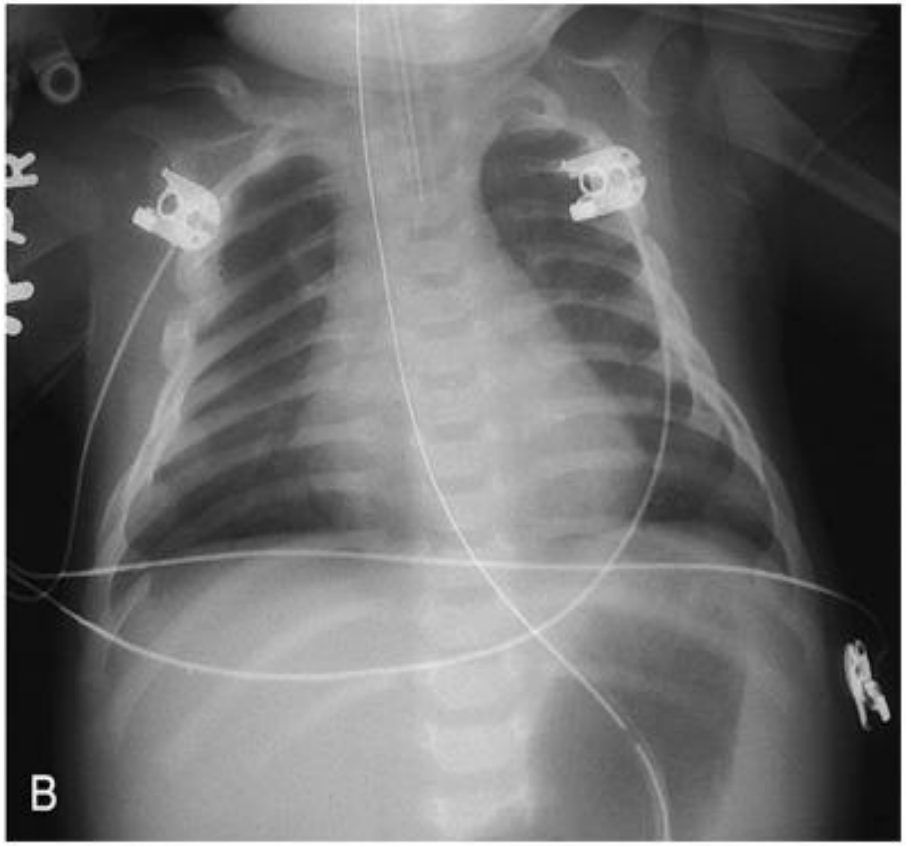
Transverse Fracture



Transverse fracture







Osteopetrosis

Burns

- Accidental burns : upper part of the body due to exploration and usually asymmetric.
- NAI: Lower extremities and symmetric.

Burns

- Thicker skinned areas of the body include the palms, soles, back, scalp, and the back of the neck.
- Thinner skinned areas are the front of the trunk, inner thighs, bottom of forearms, and the inner arm area.

Burns

- Hot-water temperature should be set at a maximum of 120˚ F to avoid scald burns (AAP).
- **Water Temperature Time**
  - **150ºF 2 seconds**
  - **140ºF 6 seconds**
  - **130ºF 30 seconds**
  - **120ºF 5 minutes**

Burns

- Spill/Splash Injuries:
  - The burn pattern is characterized by irregular margins and non-uniform depth.
- **Immersion Burns**
- Doughnut pattern in the buttocks.
- No splash or spill :no evidence that the child thrashed about during the immersion, indicating that the child was held in place.

Burns

- Contact burns : branding type and mirror the object used to cause the injury curling iron, steam iron, cigarette lighter, stun gun , fireplace or hibachi grill, and heated kitchen tool or other implement.

Burns

1.Stocking or glove pattern burns
2.Distinct line of demarcation: Waterlines

1.Sparing of the soles of the feet

- Differential Diagnoses

Periorbital Ecchymoses

Tracking of blood from forehead bruises and frontal subgaleal hemorrhages due to loose tissues around the eyes

Raccoon Eyes

Differential Diagnoses

Periorbital Ecchymoses (Raccoon Eyes)

- Differential
  - Direct trauma (accidental or inflicted)
  - Basilar skull fractures
  - Neuroblastoma

Differential Diagnoses

- Glutaric aciduria type 1 (macrocranium, subdural hematoma, sparse intra-retinal and preretinal hemorrhages frontotemporal atrophy) .
- Hemorrhagic disease of the newborn (including risk factors such as home birth, no vitamin K prophylaxis, or breastfeeding).

Differential Diagnoses

- Chemical burns of the buttocks with senna-containing laxatives
- Bullous impetigo
- Chronic diarrhea
- Epidermolysis bullosa

Differential Diagnoses

- Folk medicine: coining, cupping
- Rarities: leukemia, erythema multiforme, SJS
- HSP
- Bleeding disorder
  - Hemophilia
  - Idiopathic thrombocytopenic purpura

Differential Diagnoses

- Osteogenesis imperfecta
- Rickets
- Osteomyelitis
- Auto accident
- Copper deficiency
- Osteopetrosis

Differential Diagnoses

- Paint, ink
- Mongolian spots
- Capillary hemangioma
- Hypersensitivity vasculitis: phytophotodermatitis due to psoralens in plants (limes, figs)

Laxative-Induced Dermatitis

Leventhal, J. M. et al. Pediatrics 2001;107:178-179

PEDIATRICS®

Contact Dermatitis: Senna Laxative

Phytophotodermatitis

- Inflammatory eruption resulting from contact with light-sensitizing botanical substances and long-wave ultraviolet (UV-A 320-380 nm) radiation.
- The eruption usually begins approximately 24 hours after exposure and peaks at 48-72 hours.

Phytophotodermatitis

Phytophotodermatitis

Phytophotodermatitis

Mongolian spots

Cupping

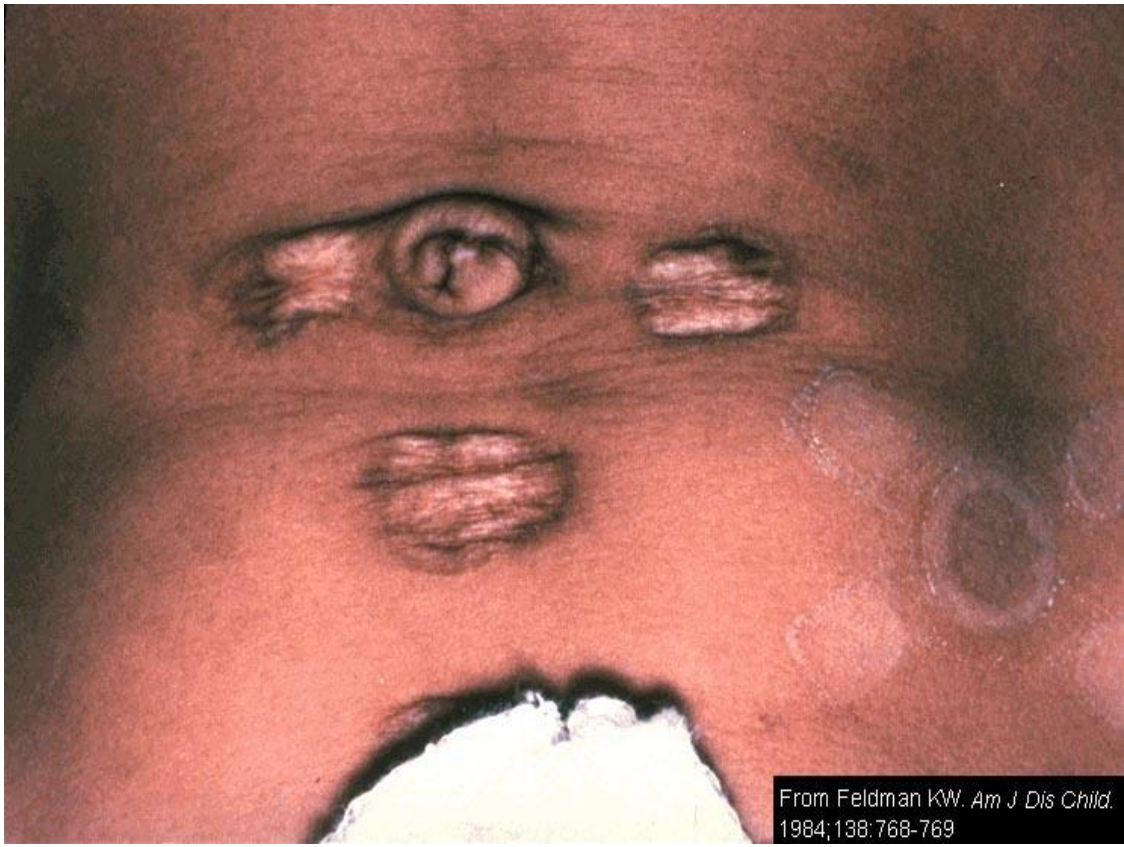
- Bamboo or glass cups
- Suction created in cup with vacuum or heat
- As air cools skin and muscle are pulled into cup
- Can be “moving” if oil applied first

Coining or Spooning

- Coins or porcelain spoons
- Warm or mentholated oil applied to chest
- Coin or spoon rubbed vigorously
- Back, shoulders, chest
- Linear lines of petechiae and ecchymoses
- Used for a variety of ailments—colds, flu, fever, myalgias

Moxibustion

- *Moxa* or mugwort
- Applied to acupuncture points
- Burned directly on skin OR indirectly with acupuncture needles



Ulcerated Hemangioma

Impetigo

Staphylococcal Scalded Skin Syndrome (SSSS)

Contact Dermatitis: Irritant

- Patterned irritant contact dermatitis
- Cleaning solution on toilet seat

Henoch-Schönlein Purpura

Mimics of Sexual Abuse

- **Lichen Sclerosus et Atrophicus**
- **Hematocolpos**
- **Urethral Prolapse**
- **Vaginal Foreign Body**
- **Rectal Foreign Body**

Mimics of Sexual Abuse

- **Pinworm Infestation**
- **Crohn's Disease**
- **Labial adhesion**
- **Sarcoma Botryoides**
- **Tuberous Sclerosis**

Pinworm Infestation

Foreign Body

Perianal Streptococcal Infection

Urethral Prolapse

Rectal Foreign Body (lip balm)

Straddle injuries

Lichen Sclerosus et Atrophicus

Perineal Streptococcal Infection

Crohn's Disease

Accidental Penetration(shower diverter in the bathtub)

Sarcoma Botryoides

Labial Adhesion

Tuberous Sclerosis

Diagnosis of Sexual Abuse

STD Confirmed	Sexual Abuse	Suggested Action
Gonorrhea*	Diagnostic	Report
Syphilis*	Diagnostic	Report
HIV*	Diagnostic	Report
Chlamydia*	Diagnostic	Report
Trich. Vaginalis	Highly suspicious	Report
Anogenital warts*#	Suspicious	Report
Genital herpes #	Suspicious	Report
Bacterial vaginosis	Inconclusive	Medical follow-up

* = unless perinatally acquired

= unless evidence of autoinoculation

Investigations: Fractures

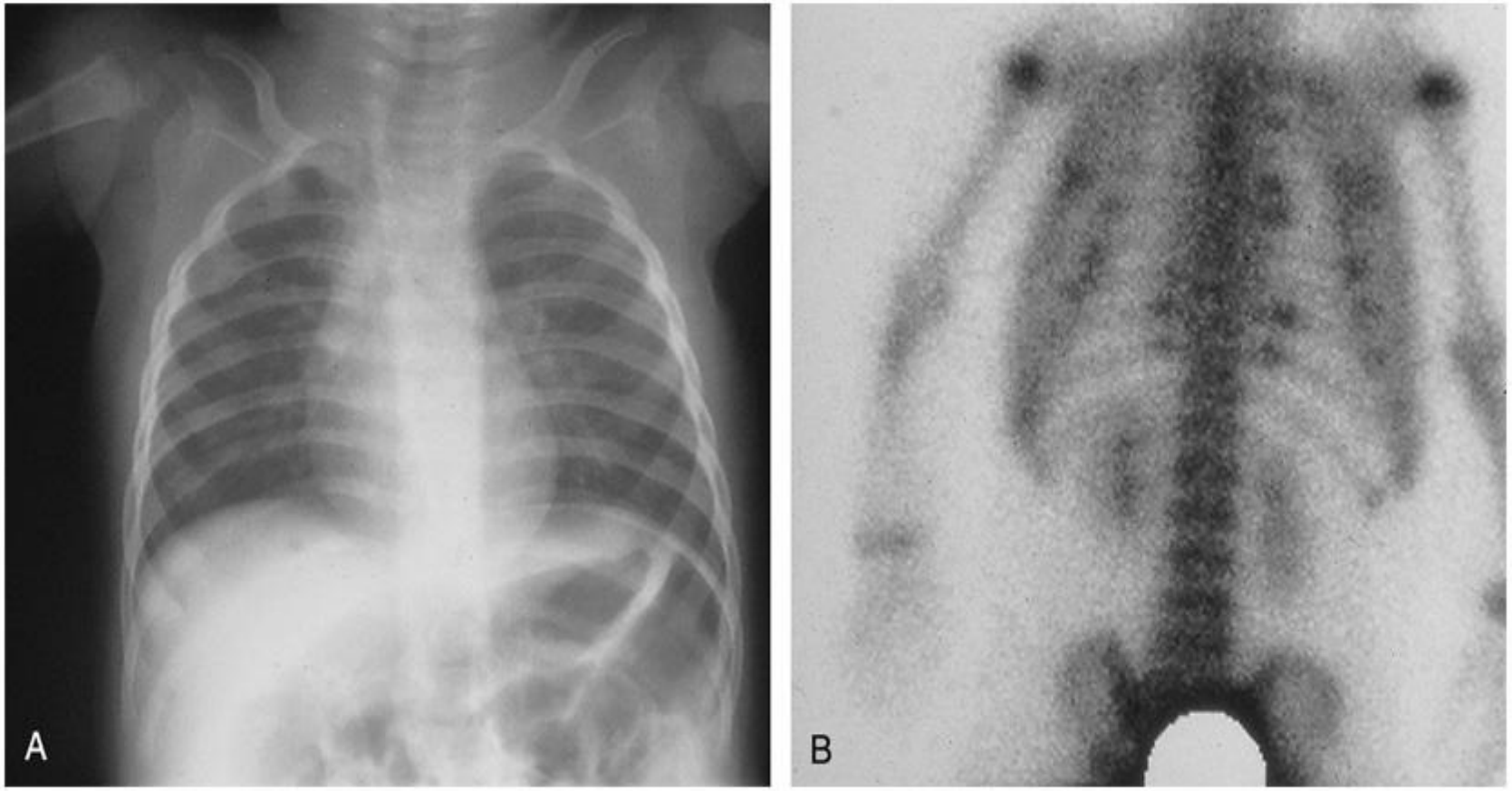
- Skeletal survey: humeri (AP/Lat) , forearms (AP/Lat), femurs (AP/Lat), lower legs (AP/Lat), hands (AP/Obl), feet (AP), skull (AP/Lat), cervical spine (C-S), ribs/chest (AP/Lat/Obl) and lumbar spine (AP/Lat), pelvis (AP) .
- (18-22 exposures)
  - Recommended for all children with fractures and children with any suspicious injuries under age 2
  - Repeat skeletal survey in ***2 wks*** for high-risk cases

Investigations:Fractures

- ***Single whole-body films/ babygrams are unacceptable***

Investigations:Fractures

- Skeletal Radionuclide bone scan
  - Better for acute rib fractures and subtle, non-displaced long-bone fractures.



Investigations:Fractures

- CBC and differential, peripheral smear prothrombin time, partial thromboplastin time, INR, bleeding time
- Platelet function tests
- Factor levels, if indicated after initial screening tests
  - A DIC screen should be performed for patients with intracranial injury, because intraparenchymal damage can alter coagulation
- VWF level

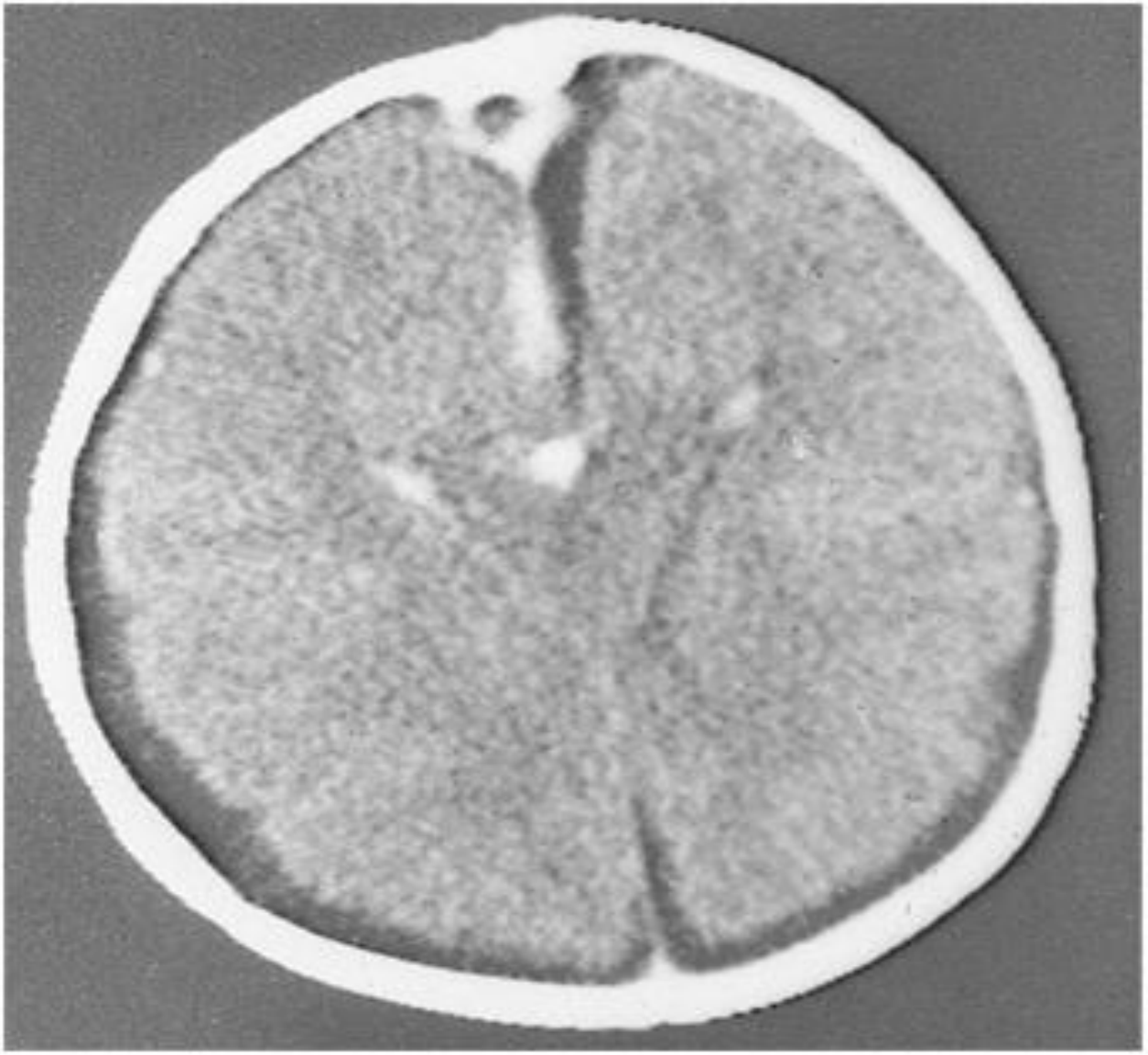
Investigations: Liver injury

- Liver enzyme tests: ALT and AST
  - May be helpful in diagnosing occult hepatic injury
- Pancreatic injury, pseudocyst
  - Pancreatic enzymes: amylase and lipase
- Urinary system/renal injury
  - Urinalysis

Investigations

- CT head
- MRI head/neck
  - subtle IC injuries in patients with normal CT and abnormal neurologic exams
  - cervical spine fractures/injury
- CT abdomen
- Cardiac injury
  - Cardiac enzymes: troponin and creatine kinase with muscle and brain subunits (CK-MB)

Subdural hematomas



Investigations

- Osteogenesis imperfecta
  - COL1A1 and COL1A2
- Bone-mineralization disorders:
  - Calcium, alkaline phosphatase, phosphorus, magnesium, vitamin D, and parathyroid hormone

Investigations

Urine: organic acids

- Screen for glutaric aciduria type 1

Management

- Medical assessment and stabilization.
- Treatment of the condition .
- Referral to investigative agencies→ safety plan.
- Necessary follow-up services.
- PCP should be notified.
- CPS should ensure that the family complies with the plan of care.
- Psychological support and referral.

Management

- Continuity of care through a medical home.
- Medical passport is maintained for these children.

Prognosis

- Significant long-term medical and mental health morbidity.
- Children with abusive head or abdominal injuries are more likely to die or become more severely incapacitated than are children with head or abdominal injuries caused by accidents.

Prognosis

- Traumatic brain injuries (TBA)→ long-term disabilities including learning deficits.
- Attention deficit/ hyperactivity disorder.
- Behavioral problems: aggressive behaviors, conduct disorders.
- Anxiety and depression, as well as social and relationship deficits.
- Poor academic performance.
- Decreased cognitive functioning.

Prognosis

- Seizures
- Spasticity
- Blindness
- Paralysis
- Mental retardation
- Head trauma and cranial injuries is the leading cause death

Summary

- Child maltreatment is a common health issue and significant cause of mortality.
- Approach to the abused patient is a classic history and physical examination, laboratories, and radiology.
- Like most medical diagnosis, history often holds the key.

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- Thank you !!!!!!!!!!

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Child Abuse
Recognizing the Signs and Responding Appropriately

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Texas Child Abuse Facts

In Texas in 2011:

- Total of 6,663,942 children
- 255,575 children screened for investigation
- 211,649 of those investigations were completed
- 70,196 confirmed victims of abuse and neglect

Neglect is an Act of Omission

- Abuse is an Act of Commission

EMOTIONAL ABUSE

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- Excessive, aggressive, or unreasonable parental behavior that places demand upon a child to perform beyond his or her capabilities.
- Examples might include constant and persistent teasing, belittling, or verbal attacks.
- Sometimes emotional abuse is not what a parent does, but what the parent doesn't do.
- Children who receive no love, no care, no support, and no guidance will carry those scars into adulthood.

National Committee for Prevention of Child Abuse

PHYSICAL INDICATORS OF EMOTIONAL ABUSE

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- Behind in normal growth and development
- Excessive anxiety
- Belittled or treated unequally in the family
- Child readily sets self up for failure or ridicule
- Difficulty verbalizing feelings

BEHAVIORAL INDICATORS

OF EMOTIONAL ABUSE

- Extremes in behavior from overly aggressive to shy or passive withdrawal
- Delinquent or destructive behavior
- Regressive behaviors like thumb-sucking or rocking

BEHAVIORAL INDICATORS

OF EMOTIONAL ABUSE

- Low self-image
- Talks about self negatively
- Tries to assume many adult roles
- Extreme willingness to please

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PHYSICAL ABUSE

- Physical injury that results in substantial harm to the child, or the genuine threat of substantial harm from physical injury
- Failure to make a reasonable effort to prevent an action by another person that results in physical injury or substantial harm to the child

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PHYSICAL ABUSE

- The current use by a person of a controlled substance that results in physical, mental, or emotional injury to a child
- Causing, expressly permitting or encouraging the child to use a controlled substance

SITUATIONAL FACTORS

- Age of child
- Type of Injury
- Degree of injury
- Location of injury
- Recency of injury
- History of abuse/neglect
- Parents' sense of remorse
- Likelihood of reoccurrence
- Presence of family violence
- Child's ability to protect self
- Circumstances surrounding incident
- Presence and type of substance abuse
- Child has mental, physical, or medical disability

Physical Abuse

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Almost Always

- Fractures - explanation inconsistent with injury
- Young child with old healed fractures
- Recent non-accidental burns
- Recent non-accidental, unexplained or inconsistent bruises or injuries
- Infant diagnosed with Fetal Alcohol Syndrome/effect
- Pre-school/young child given alcohol/drugs

Rarely Assigned

- Medical condition professionally diagnosed
- Parent/teen conflict not resulting in serious injury to child
- Cultural folk remedies with no serious injury
- Children over age 7 with minor injuries as a result of over-discipline

Physical Abuse

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Almost Always

- Hair pulling resulting in bald spots
- Parent or caretaker bites child, resulting in injury
- Bizarre punishment
- Confined/locked in area
- Scars not previously investigated and current risk factors are present
- Parent demonstrates a lack of control

Rarely Assigned

- Child aged 7 years or over who is afraid of going home with no substantial history of previous abuse or current injuries, bruises, or scars

SEXUAL ABUSE

- Sexual conduct harmful to a child's mental, emotional, or physical welfare
- Failure to make a reasonable effort to prevent sexual conduct harmful to a child

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SEXUAL ABUSE

Compelling or encouraging the child to engage in sexual conduct

Causing, permitting, encouraging, engaging in, or allowing the photographing, filming, or depicting of the child if the person knew or should have known that the resulting photograph, film, or depiction of the child is obscene

SEXUAL ABUSE

SITUATIONAL FACTORS

- Date of last incident
- Age of children
- Alleged perpetrator's access to child
- Child makes an outcry
- Alleged perpetrator with history of sexual abuse
- Presence of protecting factor
- Child has a mental, physical, or medical disability
- Reporter is a medical professional, law enforcement official or former victim

Sexual Abuse

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Almost Always Assigned

- Child, aged 11 or younger, with any sexually transmitted disease or is pregnant
- Child, aged 9 or younger, exhibiting inappropriate sexual acting out behavior including, but not limited to, attempts to engage others in sex acts, insertion of objects in vagina or rectum

Rarely

- Masturbation
- Child “smells like sex”
- Parent of child walking around house nude or bathing with child
- Child, aged 9 years or younger, made to keep the bathroom door open
- Young child, particularly female, complaining of pain during urination, has not been checked for urinary infection

Sexual Abuse

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Almost Always

- Failure of parent to make reasonable efforts to prevent a child aged 13 or younger from having sexual relationships (even if consensual

Rarely Assigned

- Sexual abuse referrals with only behavioral indicators (i.e., withdrawn, dropping grades, runs away, upset, etc.) and child is verbal,has made no outcry and child's sexual behavior is age appropriate
- a child 12 years or older is pregnant

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PHYSICAL NEGLECT

- Failure to provide the child with the food, clothing, or shelter necessary to sustain the life or health of the child
- Excludes failure caused primarily by financial inability **unless** relief services have been offered and refused

PHYSICAL NEGLECT

SITUATIONAL FACTORS

- Time of the year
- Weather
- Age of Child
- Effect on the child
- History with CPS
- Child's health
- Resources available to family
- Mental/emotional functioning of parents and or child
- Child has a mental, physical, or medical disability

PHYSICAL NEGLECT

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Almost Always Assigned

- Household with bug or rodent infestation to point that child age 6 or younger is impacted
- Significant weight loss indicating malnourishment
- Child is not receiving adequate food
- Home presents a health or safety hazard (feces, broken glass, exposed wires)
- Non-organic failure to thrive

Rarely Assigned

- Routine lice infestations
- Dirty/cluttered house but no apparent impact on child
- Limited or no operating utilities
- Educational neglect
- Disapproval of parenting practices but no noted impact on the child
- Children are poorly clothed, fed or cleaned
- Family living in cars, tents. etc.

Physical Neglect

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Almost Always Assigned

- Household with bug or rodent infestation to point that child age 6 or younger is impacted
- Significant weight loss indicating malnourishment
- Child is not receiving adequate food
- Home presents a health or safety hazard (feces, broken glass, exposed wires)
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TEXAS LEGISLATURE

Texas Department of Family & Protective Services

Child Protective Services

Local Courts/ Judge & District Attorney

GENERAL PUBLIC REPORTING REQUIREMENTS

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- The law requires that any person who believes that a child is being abused, neglected or exploited report the circumstances to the Texas Department of Protective and Regulatory Services Abuse Hotline.
- A person making a report is immune from civil or criminal liability, and the name of the person making the report is kept confidential.
- Any person suspecting abuse and not reporting it can be held liable for a Class B misdemeanor.

PROFESSIONAL REPORTING REQUIREMENTS

- If a **professional** has cause to believe that a child has been or may be abused or neglected, the professional shall make a report not later than the **48th hour** after the hour the professional first suspects that the child has been or may be abused or neglected.
- **You may not delegate** to or rely on another person to make the report.

WHAT CONSTITUTES A PROFESSIONAL?

- A "professional" means an individual who is licensed or certified by the state or who is an employee of a facility licensed, certified, or operated by the state and who, in the normal course of official duties or duties for which a license or certification is required, has direct contact with children.
- The term includes teachers, nurses, doctors, day-care employees, employees of a clinic or health care facility that provides reproductive services, juvenile probation officers, and juvenile detention or correctional officers.

APPROPRIATE RESPONSES

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- Make the report
- Reinforce
- Reassure
- Acknowledge feelings
- Keep questions to a minimum
- Document, Document, Document

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DOCUMENTATION

- Details of the outcry
- Your response to the outcry
- Who else knows
- Acknowledge feelings
- Your call to CPS

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OTHER RESPONSES

- Find local resources that can provide help to the family
- Get directly involved
- Follow through on your initial report
- Continue to support the child

PREVENTION OF ABUSE & NEGLECT

- April is Child Abuse Prevention and Awareness month
- Raise awareness in your community
- Volunteer