



International Conference on Paradigm Changes  
in the Management of Early Pregnancy and Pregnancy Loss (PCMEP)

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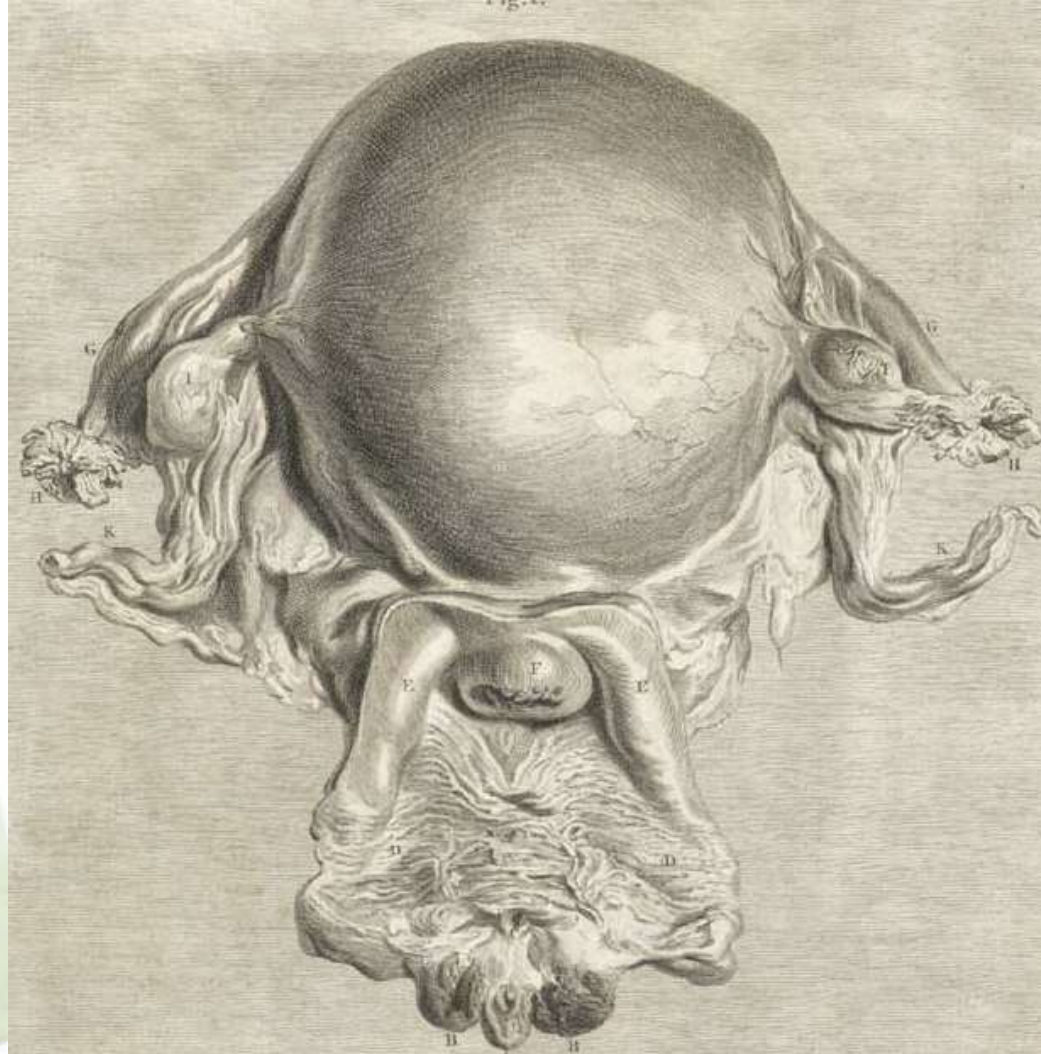


# Cervical Incompetence Current Concepts

Professor James Walker  
Obstetrics and Gynaecology



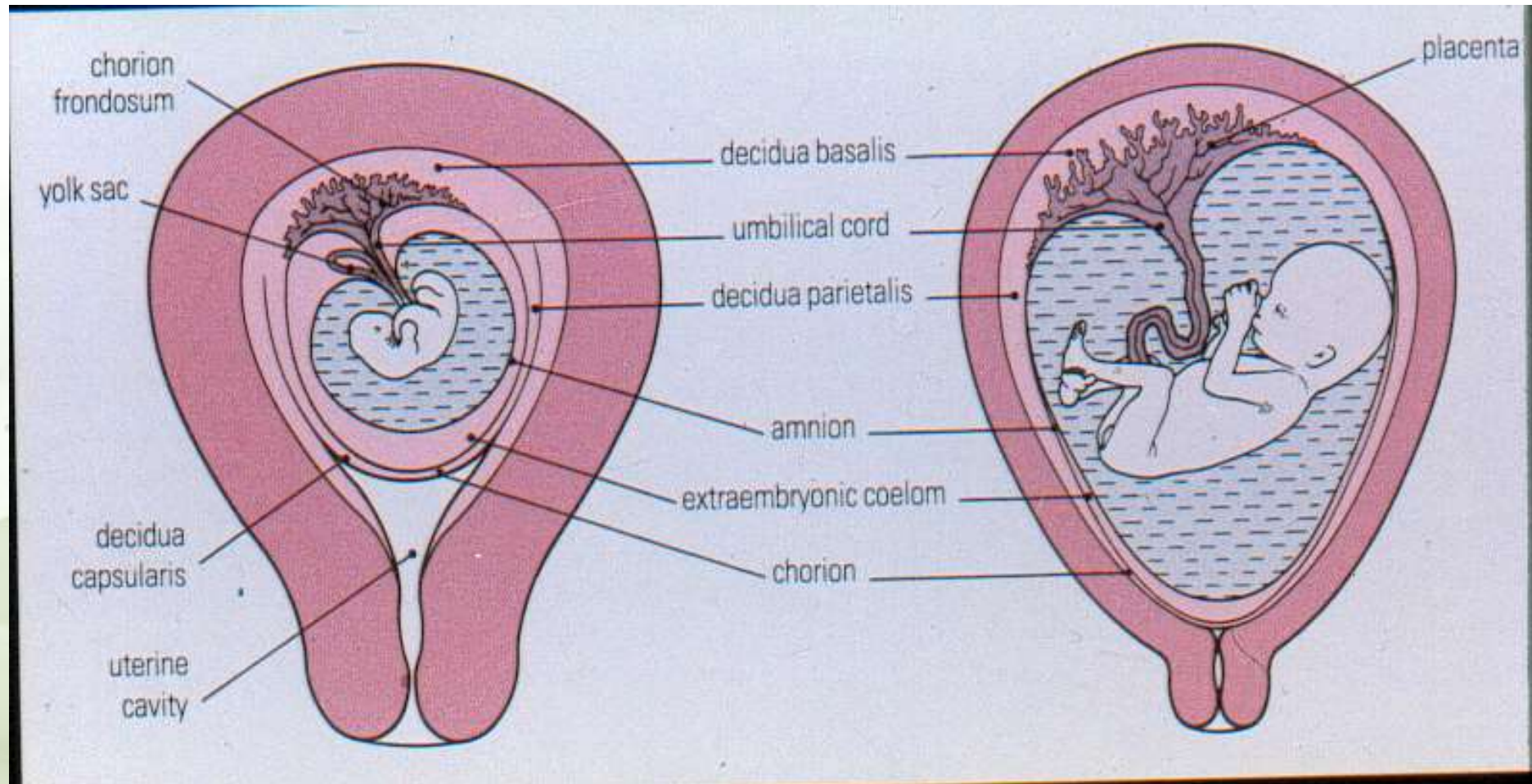
# Muscle and Gristle

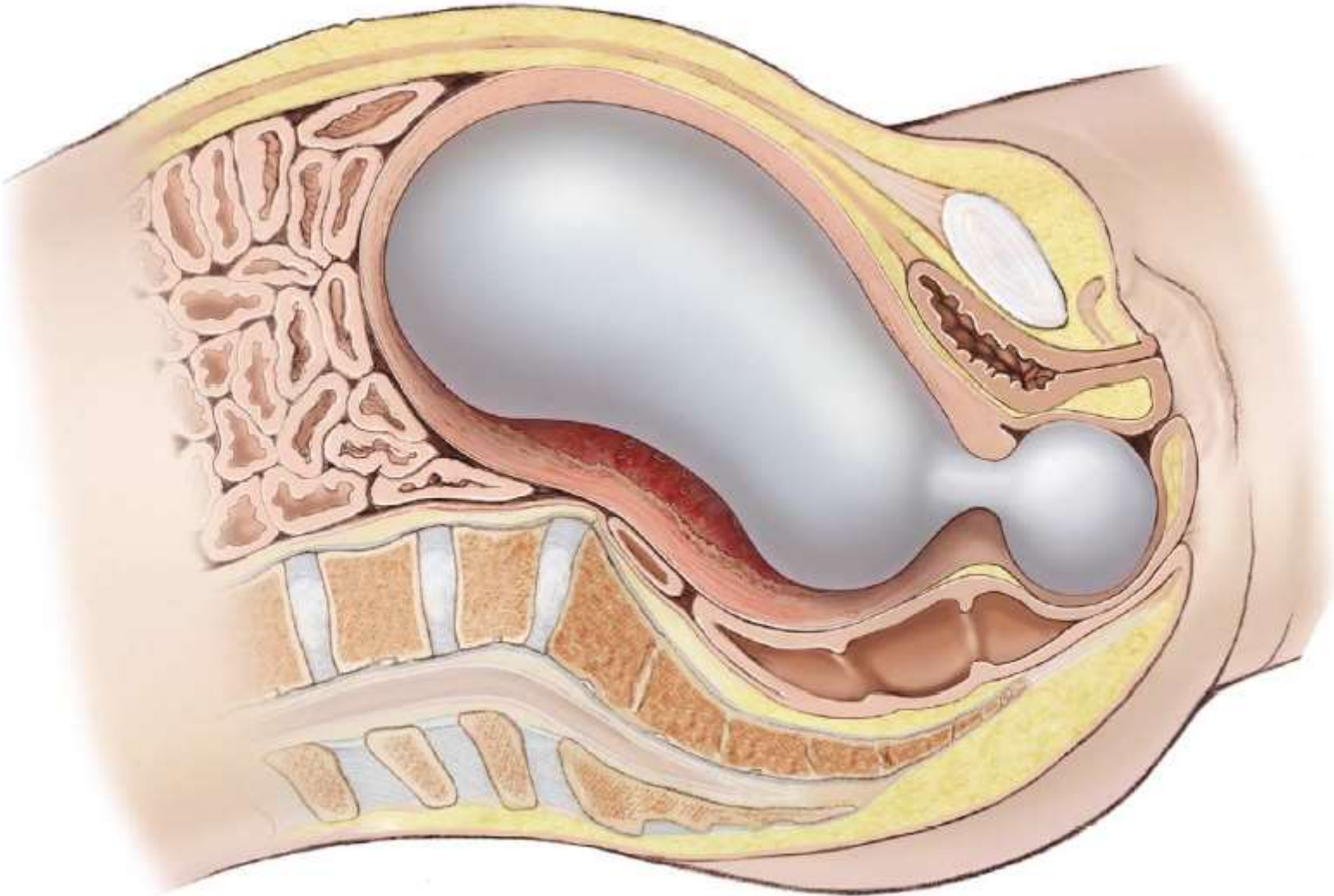


# What is the problem and is there a need for abdominal cerclage?

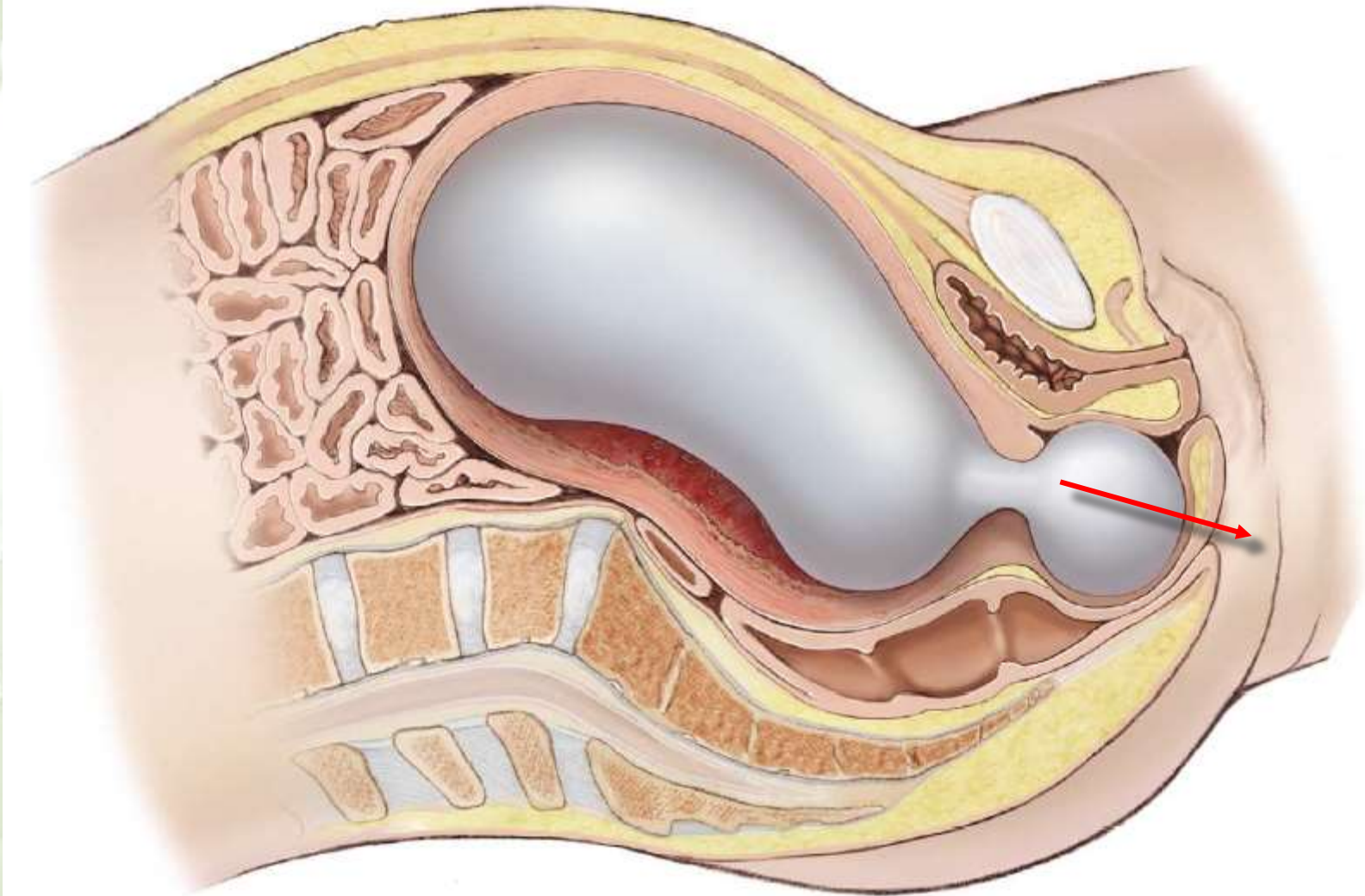
- Cervix is the purse string keeping the cervix closed
- During pregnancy - it keeps closed under pressure
- At term - it allows itself to be opened under pressure

# Problem of mid pregnancy

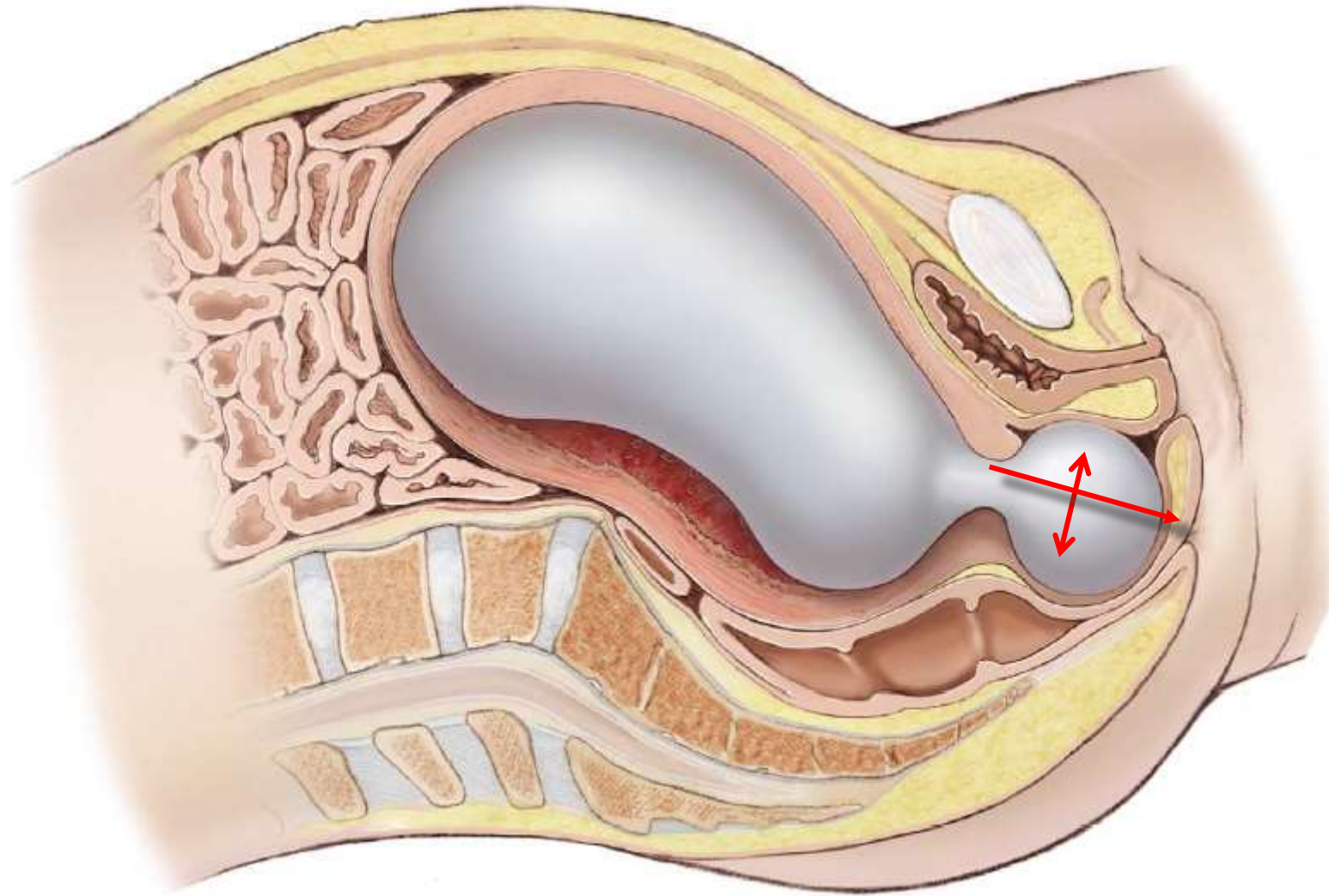




Harger JH *Obstet Gynecol* 100:1313-27 (2002)



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# Cervical Incompetence

- Incidence 0.1% to 1%
- Responsible for 15% of recurrent Mid- Trimester Loss
- Diagnosis and Management Controversial

# Cervical Cerclage

- Tracheloraphy was first described by Emmet in 1862

- Shirodkar VN 1955 VC

- Antiseptic J 52:299-300

- McDonald I 1957 VC

- J Obstet Gynaecol Br Emp 64:346-350

- Benson RC & Durfee RB 1965 TAC

- Obstet Gynecol 25:145-155

# Introduction

- Various approaches
  - Transcervical
    - McDonald, Shirodkar
    - Cervical Occlusion
    - Arabin pessary
  - Transabdominal
    - Benson and Durfee
  - Recent Advances
    - Laparoscopic approach pre-pregnancy

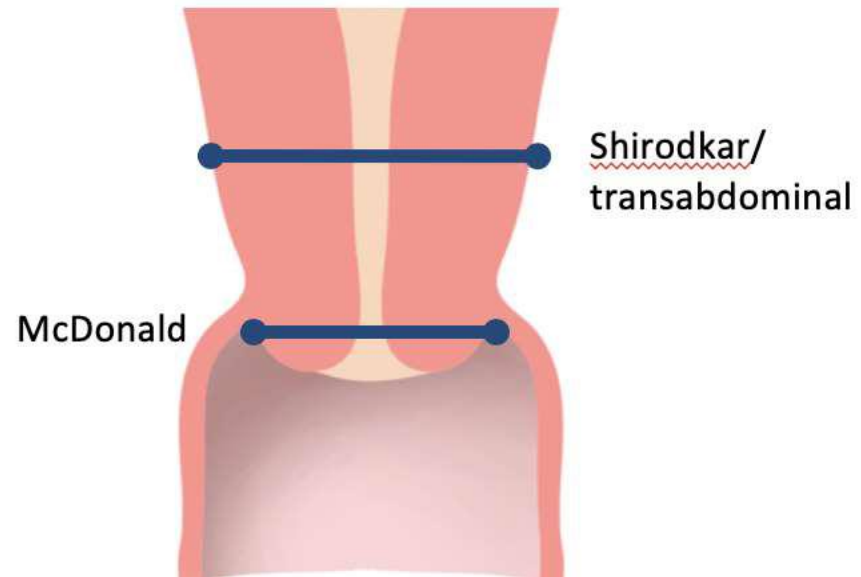
# Introduction

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# Cerclage – Type and Timing

## Cerclage

- Techniques
  - Shirodkar
  - McDonald
  - Transabdominal
- Timing
  - Elective
  - USS-indicated
  - Emergency



# McDonald's Cervical Cerclage

- MRC/RCOG Trial (1993)
  - Weak statistical benefit for Del <33 weeks
    - cerclage group (83 (13%) compared with 110 (17%),  $P = 0.03$ )
- Problems
  - Diagnosis
  - Placing of suture
  - Sepsis

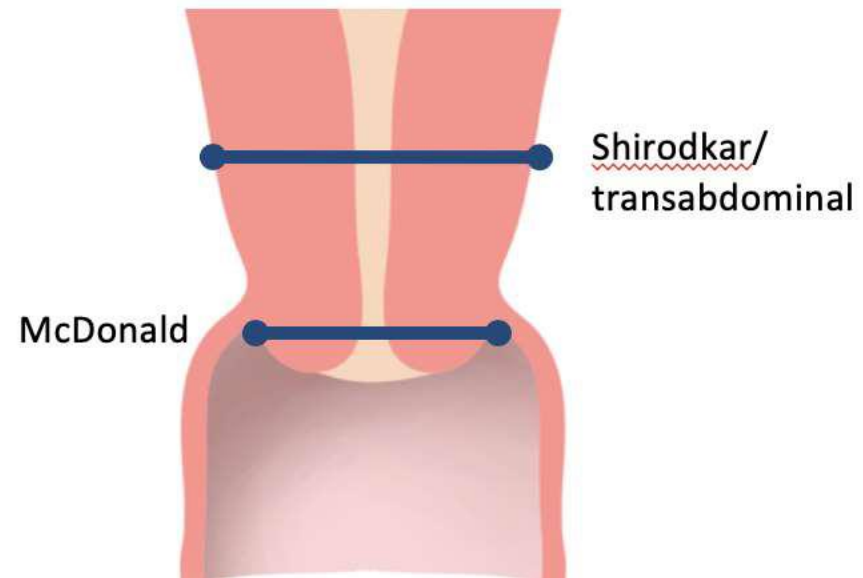
# Associated Infection



# Cerclage – Type and Timing

## Cerclage

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# Transabdominal Cervico-isthmic Cerclage

- Indications
- Failed Vaginal cerclage (65%)
- Cone biopsy
- Cervical amputation
- Scarred cervix
- Short cervix
- Low cervical resistance

# Cervical Resistance Studies

- A novel cervical dilatation force measurement instrument.
  - J Med Eng Technol 1989 13):220-221
  - Richardson W, Smith DC, Evans AL, Anthony GS
- A simple and robust instrument for cervical dilatation force measurement which measures axial insertion force but is not affected by lateral loads. The instrument is battery-powered, self-contained and displays actual axial force and peak axial force on digital liquid crystal displays.
- Cervical resistance in patients with previous spontaneous mid-trimester abortion.
  - Anthony GS, Calder AA, MacNaughton MC
  - Br J Obstet Gynaecol 1982 Dec;89(12):1046-1049

# Management of cervical weakness based on the measurement of cervical resistance index

George S. Anthony<sup>a,\*</sup>, Robert G. Walker<sup>b</sup>, James B. Robins<sup>a</sup>,  
Alan D. Cameron<sup>c</sup>, Andrew A. Calder<sup>d</sup>

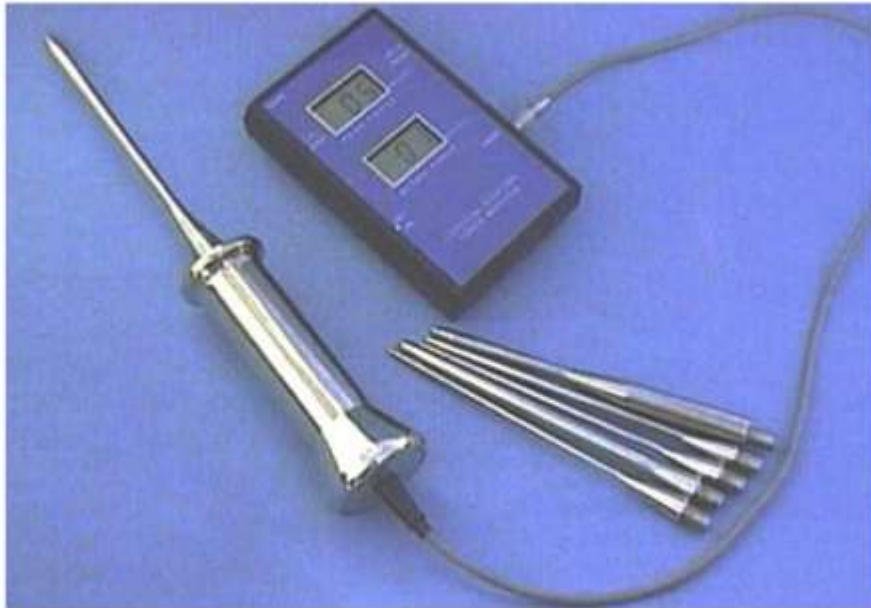


Fig. 1. Cervical resistance monitor.

Control vs. study group: age, CRI and pregnancy outcomes

	Study group (n = 175)	Control group (n = 123)
Maternal age (years) mean and range	28.85 (17–40)	39.9 (15–52)*
CRI (Newtons) mean and IQR	24.17 (4.5–34)	46.69 (21.4–64.9)**
Unsuccessful pregnancies	353	41
- 1st trimester loss	97	41
- 2nd trimester loss	256	0
- 3rd trimester loss	0	0
Live births	133	351
Total pregnancies	486	392
Successful outcome (%)	27.4	89.5

\*  $p < 0.001$  Chi-squared test.

\*\*  $p < 0.0001$  Mann–Whitney  $U$ -test.

## Association between CRI measurement and history

History	CRI		
	Incompetent	Competent	
Incompetent	73	30	103
Competent	32	40	72
Total	105	70	175

Yates corrected  $\chi^2$  statistic 11.26:  $p = 0.0008$ . Relative risk = 1.59 ( $1.2 < RR < 2.12$ ). Odds risk = 3.04 ( $1.55 < OR < 6.00$ ).

### Subsequent Pregnancies

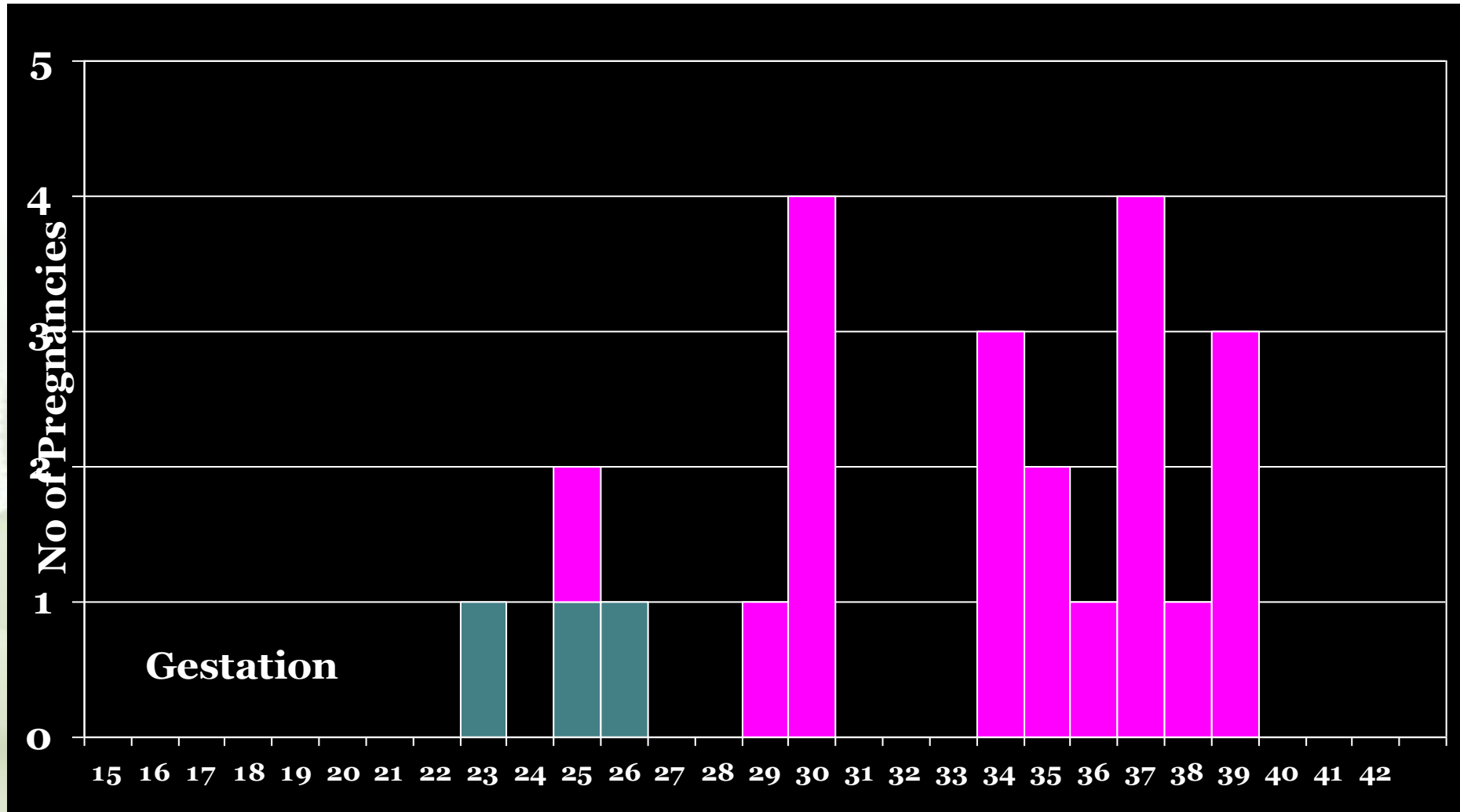
	1st Trimester	Midtrimester	Premature	Term	LB	total
Incompetent	12	14	2	72	72	100
Competent	6	5	17	20	28	48

## Transabdominal cervico-isthmic cerclage in the management of cervical incompetence

George S. Anthony <sup>a,\*</sup>, Robert G. Walker <sup>a</sup>, Alan D. Cameron <sup>b</sup>, John L. Price <sup>c</sup>,  
James J. Walker <sup>d</sup>, Andrew A. Calder <sup>e</sup>

The use of transabdominal cervico-isthmic cerclage is described in 13 patients with a diagnosis of cervical incompetence. The patients were recruited from seven Scottish Maternity Units over a period of 10 years. The 13 patients have had a successful pregnancy in 86.6% of pregnancies with this procedure compared with a success rate of 16% in their previous pregnancies. In carefully selected cases transabdominal cervico-isthmic cerclage is a worthwhile procedure in patients with cervical incompetence when the cervix is so damaged that it would be impossible to insert a vaginal suture or when a vaginal suture has previously failed.

# Post TAC Gestation



# TRANSABDOMINAL CERVICO-ISTHMIC CERCLAGE

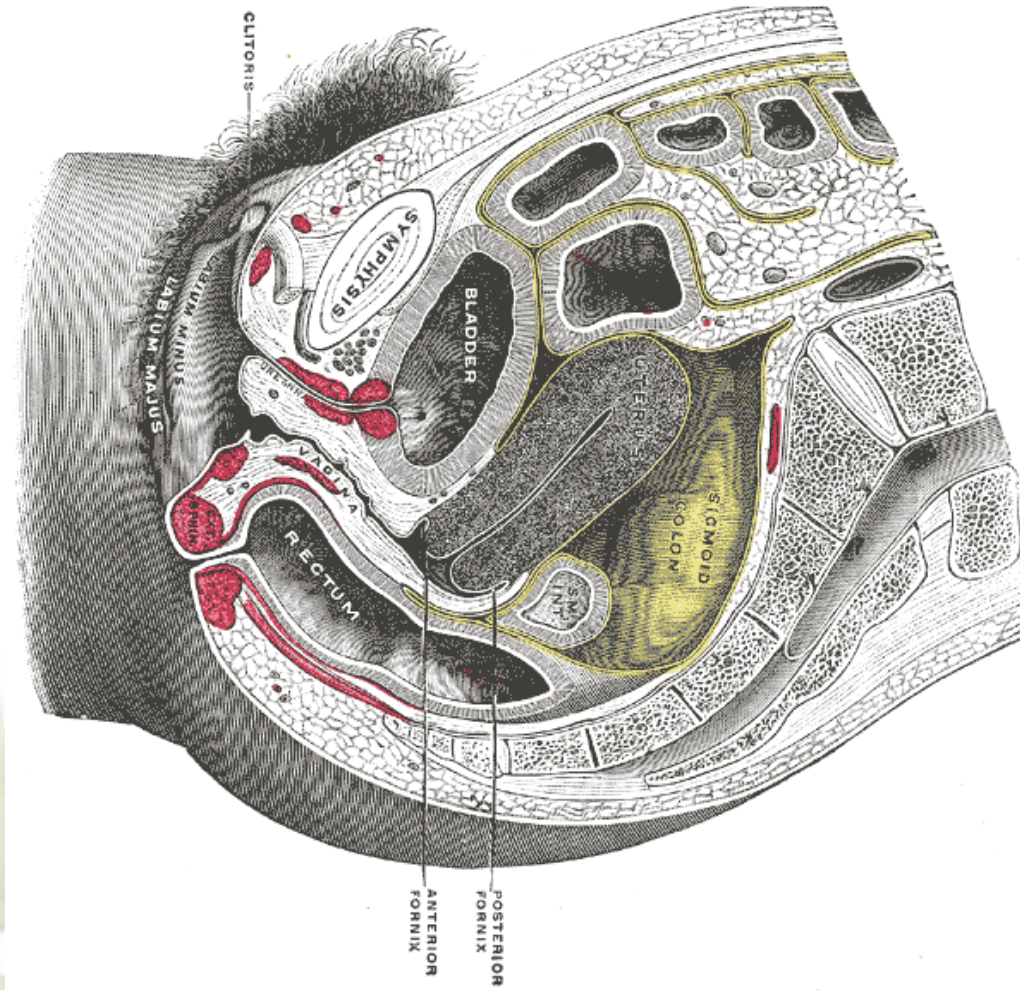
Year	Name	No	%PH	Preg	LB	%
2005	Walker	20	15	22	21	96
2003	Hole	13	-	13	10	77
2003	Groom	19	12	19	19	100
1998	Gibb	58	8	72	58	86
1998	Anthony	22	16	27	24	89
1997	Craig	12	13	14	10	71
1995	Cammarano	23	18	26	24	93
1995	Serrati	3	-	3	3	100
1991	van Dongen	16	36	16	15	96
1991	Novy	20	-	21	19	90
1991	Besio	6	-	6	5	83
1990	Borruto	54	-	48	43	90
1989	Lippi	2	-	2	2	100
1988	Herron	8	20	13	11	85
1987	Wallenburg	14	16	16	15	94
1982	Novy	16	24	22	21	95
1982	Olsen	32	12	35	32	91
1980	Loock	3	-	3	3	100
1978	Mahran	10	10	10	7	70
Total		351	14	398	348	89%

# Transabdominal Cervico-isthmic Cerclage

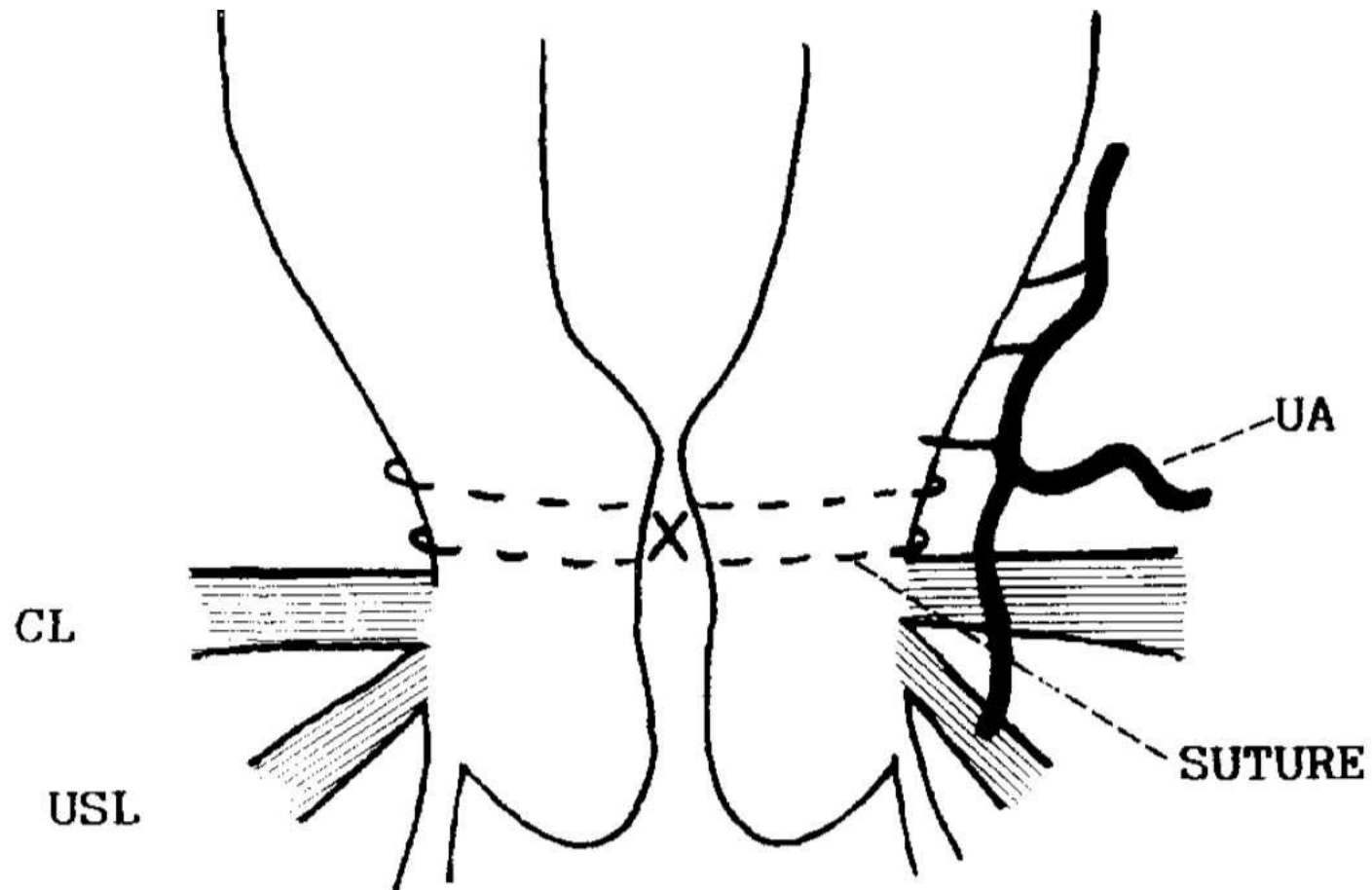
- Low transverse incision
- Enter abdominal cavity as normal
- Dissect down bladder from front of uterus
- Identify avascular space above the junction of the cervix and the uterine isthmus
- Insert a 5 mm wide Mersilene tape
- No dissection or tunnelling
- Tie suture at back of uterus
- Little operative blood loss



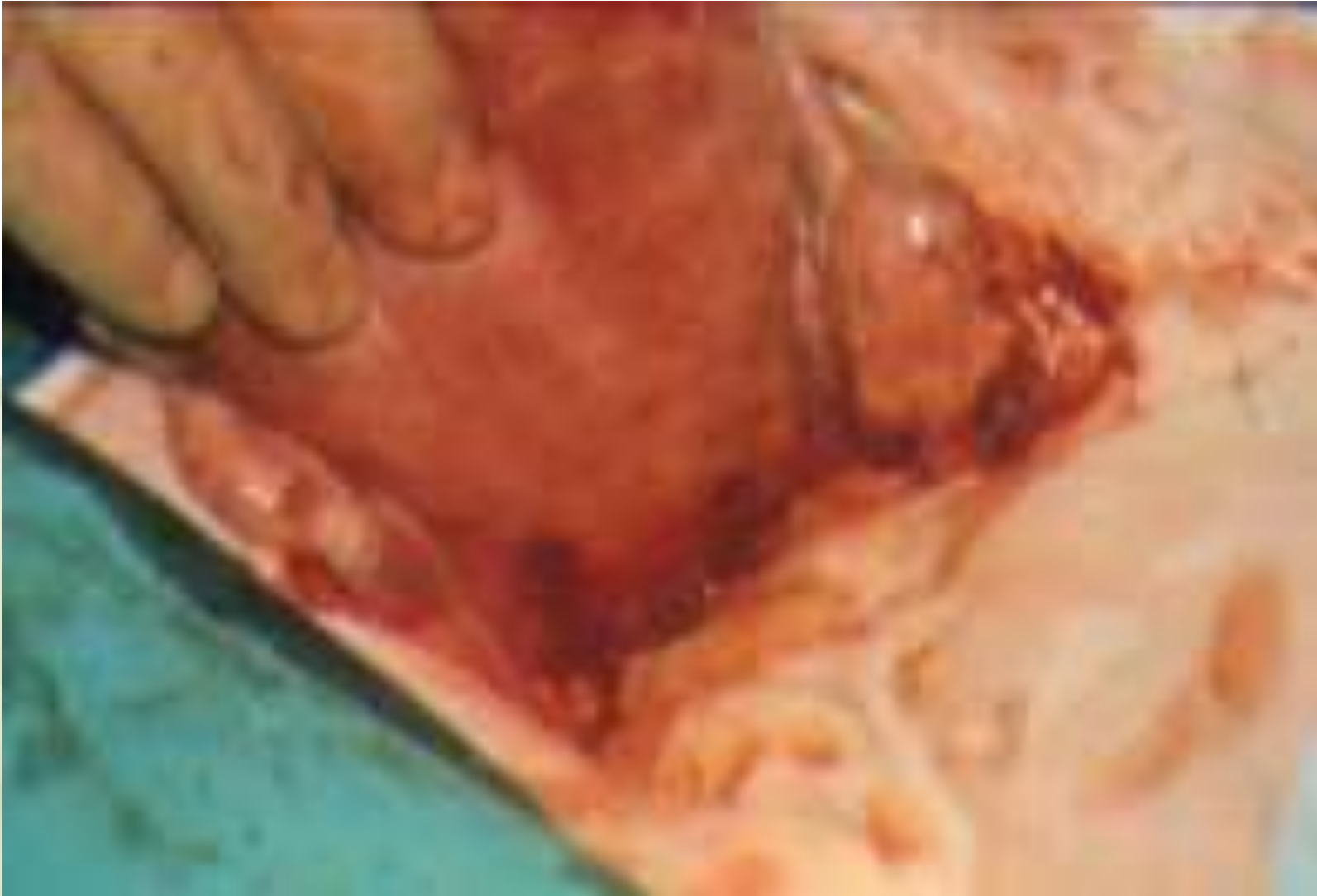
# Operative Approach



# Transabdominal/High Shirodkar



# Abdominal Cerclage - Back



# Abdominal Cerclage - front



# Patients with a prior failed transvaginal cerclage: a comparison of obstetric outcomes with either transabdominal or transvaginal cerclage.

- Davis G, Berghella V, Talucci M, Wapner RJ.
- *Am J Obstet Gynecol* 2000;183(4):836-9.

■ Suture	Mid Trim	<33	<35
■ TAC	8%	10%	18%
■ TVC	29%	38%	42%

- transabdominal cerclage is associated with a lower incidence of preterm delivery and preterm premature rupture of membranes in comparison with transvaginal cerclage.

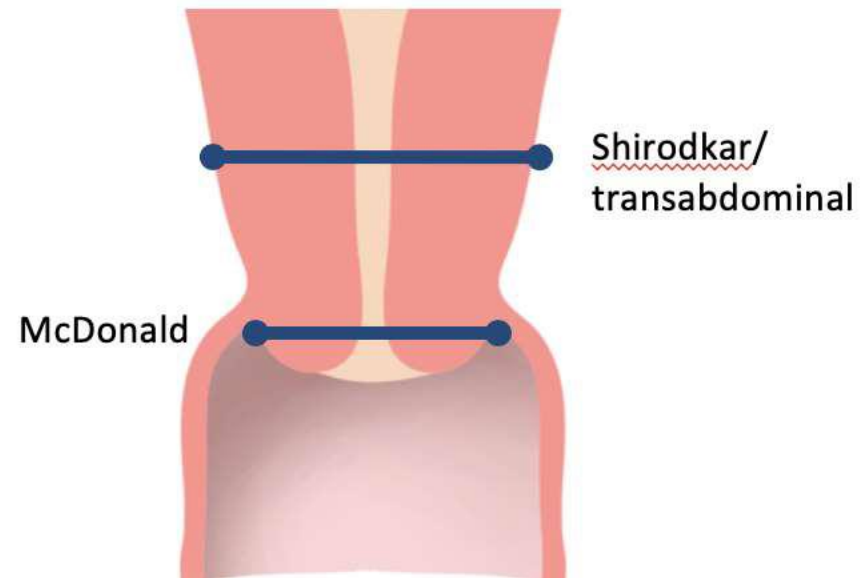
# Is there a need for abdominal cerclage?

- Yes - it works
  - Need training and experience
- Who for?
  - Previous failed TVC
  - Past history
    - Cervical damage
    - Short cervix

# Cerclage – Type and Timing

## Cerclage

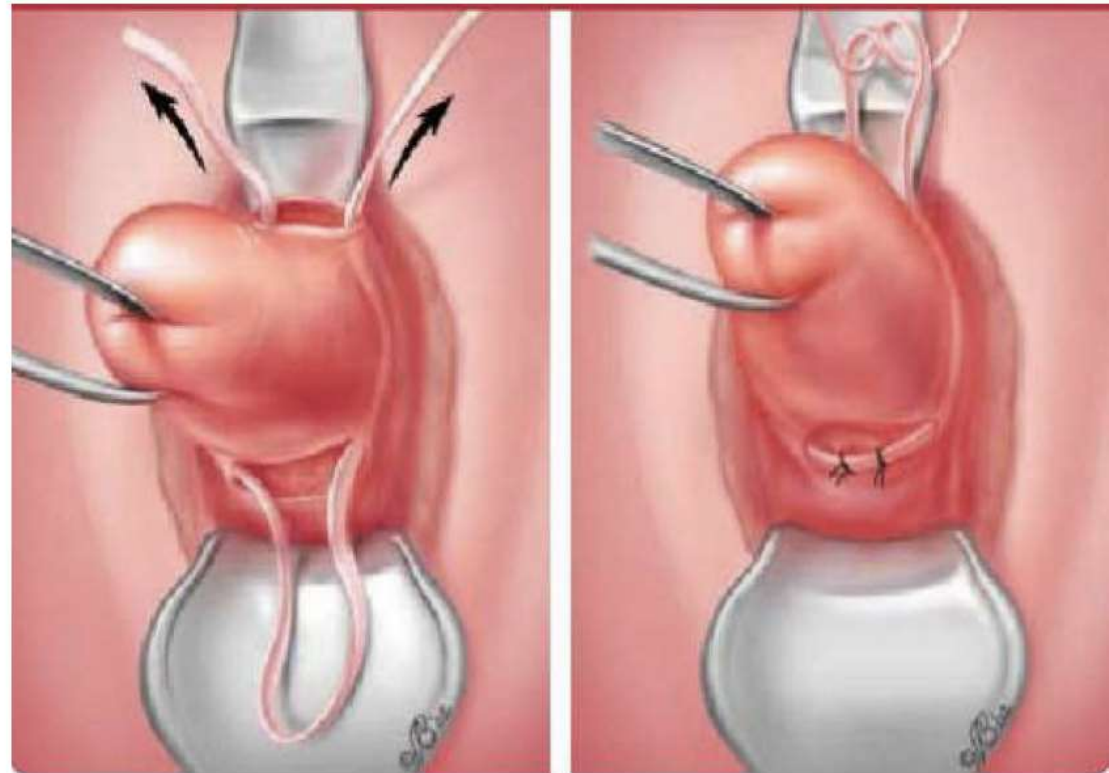
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# Modified High Shirodkar Suture

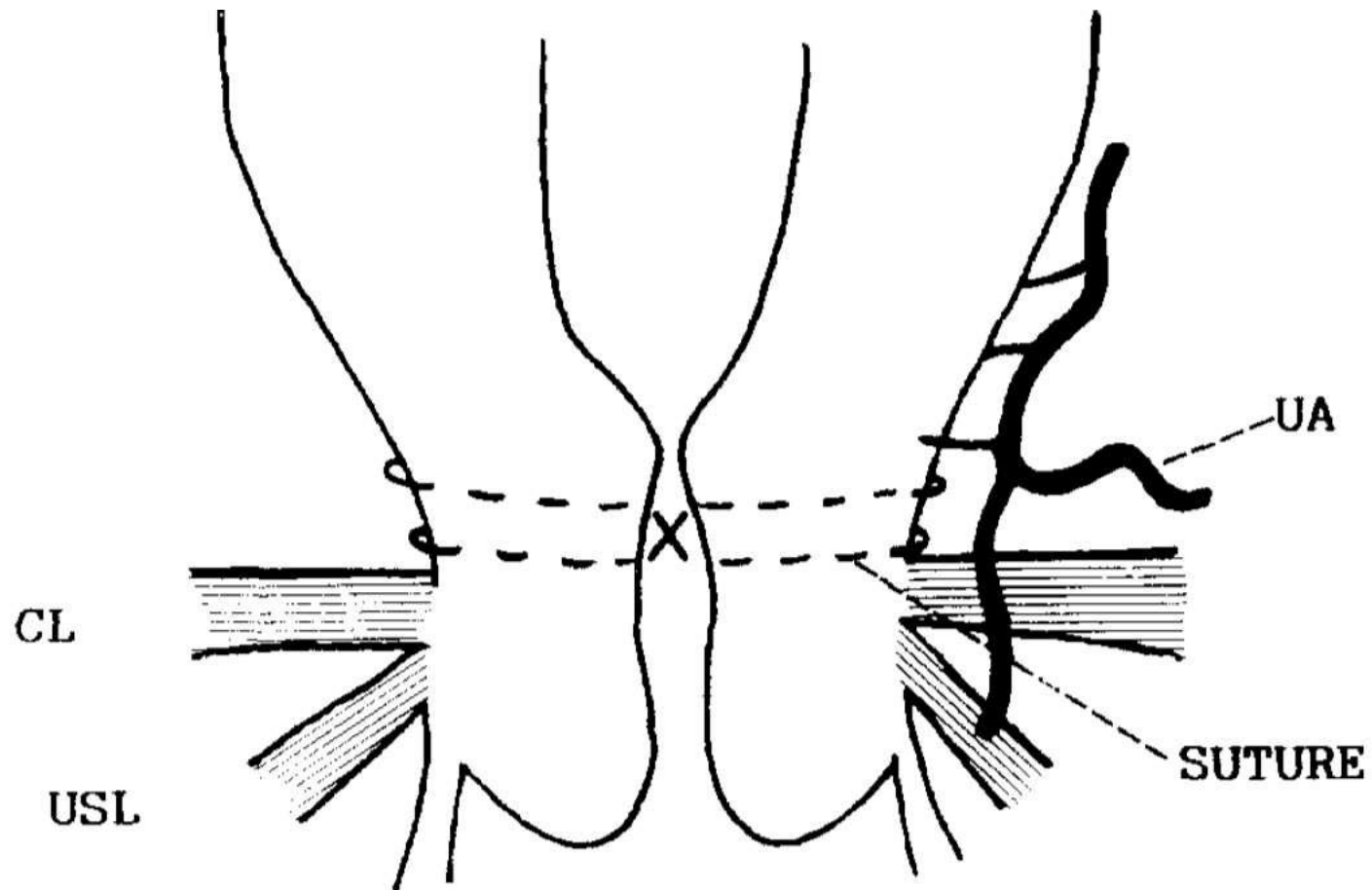
## The Shirodkar technique

- Regional anaesthetic
- Anterior and posterior colpotomies
- Bladder pushed high and Pouch of Douglas opened
- Mersilene tape used
- Knot tied anteriorly
- Knot buried with one long end left to aid removal





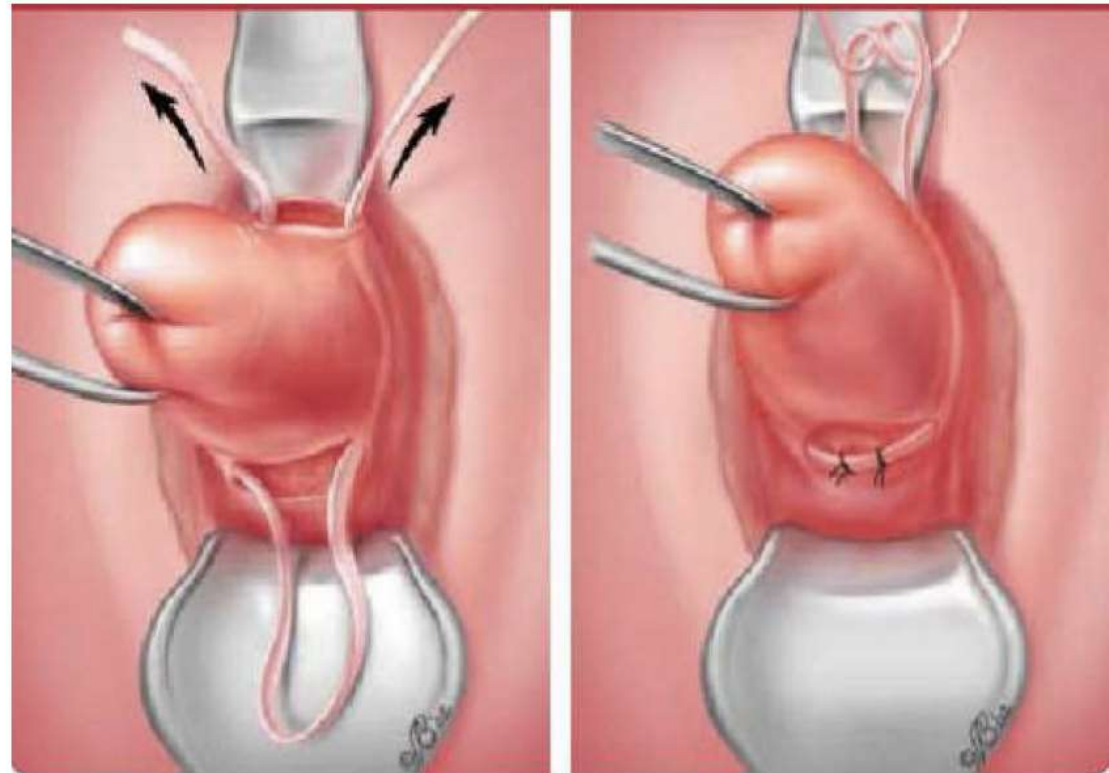
# Transabdominal/High Shirodkar



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# Methods

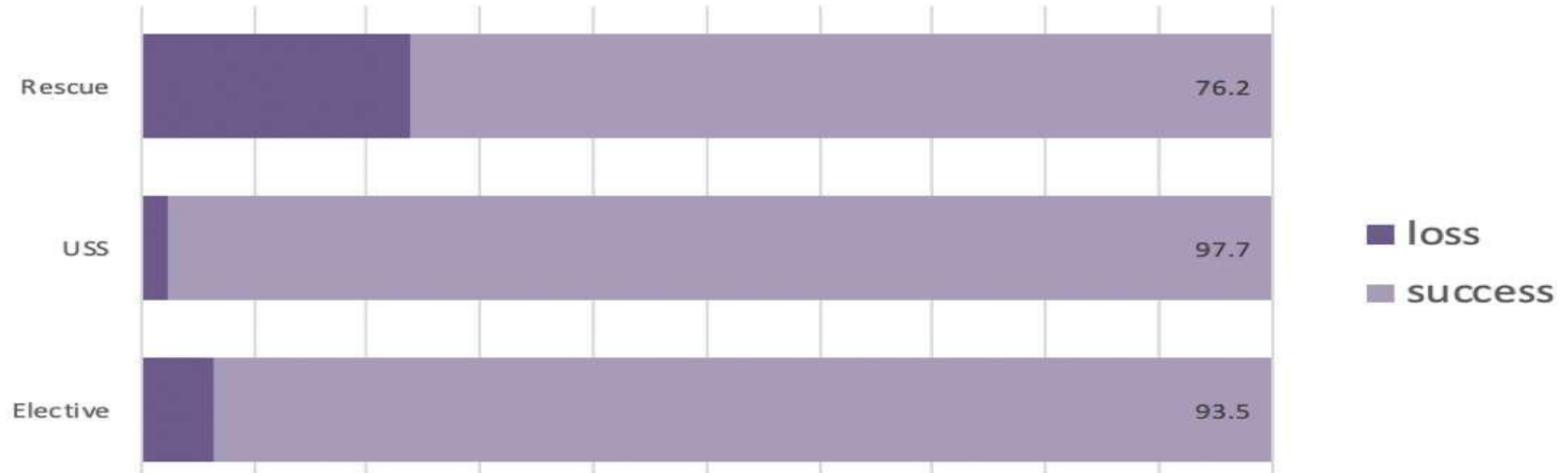
Retrospective review of 337 women who had Shirodkar sutures in Leeds between February 2005 and March 2016

- Data was analysed by indication:
  - **Elective cerclage** (n=230) was performed prior to 16 weeks in women with a recurrent history of mid-trimester loss or early preterm birth
  - **Ultrasound-indicated cerclage** (n=86) was carried out in asymptomatic women where transvaginal ultrasound examination revealed a short cervix (<20mm) with or without collapse of the internal os
  - **Rescue cerclage** (n=21) was undertaken where there were visible fetal membranes at the external cervical os or prolapsed within the upper vagina



# Outcomes

## Clic



## Gestation at delivery



# Elective cerclage vs. ultrasound-indicated cerclage in high-risk pregnancies

- A total of 90 patients were examined,
  - 43 treated by elective cerclage.
  - 47 that were managed expectantly with US
    - 59.6% (28/47) required a cervical cerclage because of US changes
- Delivery before 34 weeks' gestation
  - 14.6% (6/41) in elective cerclage group,
  - 20.9% (9/43) in the expectant group
    - Ultrasound Obstet Gynecol, 2002. 19:475-7

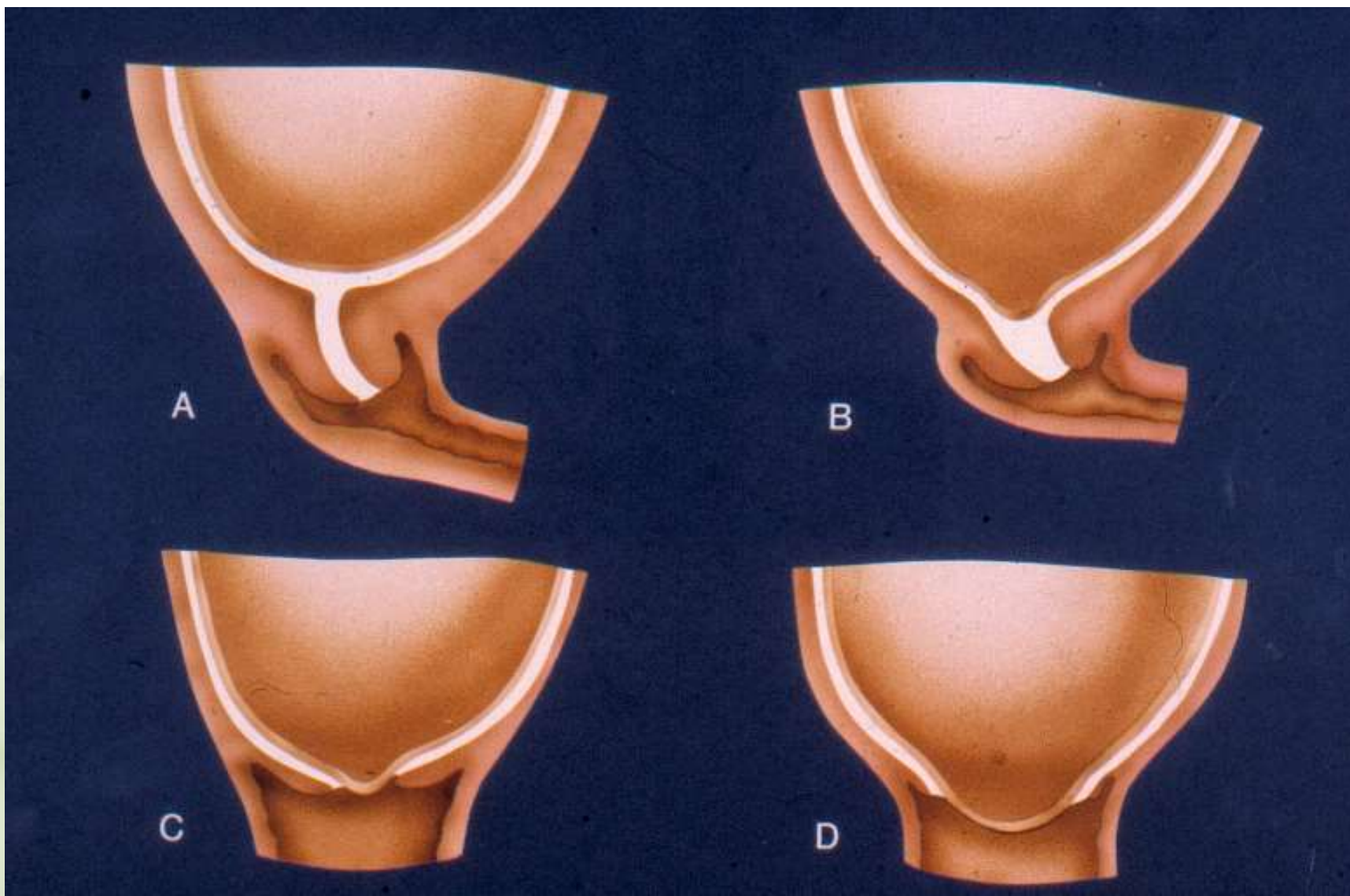
# Conclusions – Midtrimester loss

- Transvaginal cerclage is “safest”
  - Need to have some cervix present
  - In combination with Ultrasound
- Trans abdominal more successful
  - Failed vaginal suture
  - Badly scarred cervix
  - Very short cervix

# Preterm labour

- **What is the issue?**
- Cervical cerclage is a surgical procedure performed during pregnancy to place a stitch around the neck of the womb (cervix). The stitch is aimed to support the cervix and reduce risk of an early birth.

# Cervical Dilatation

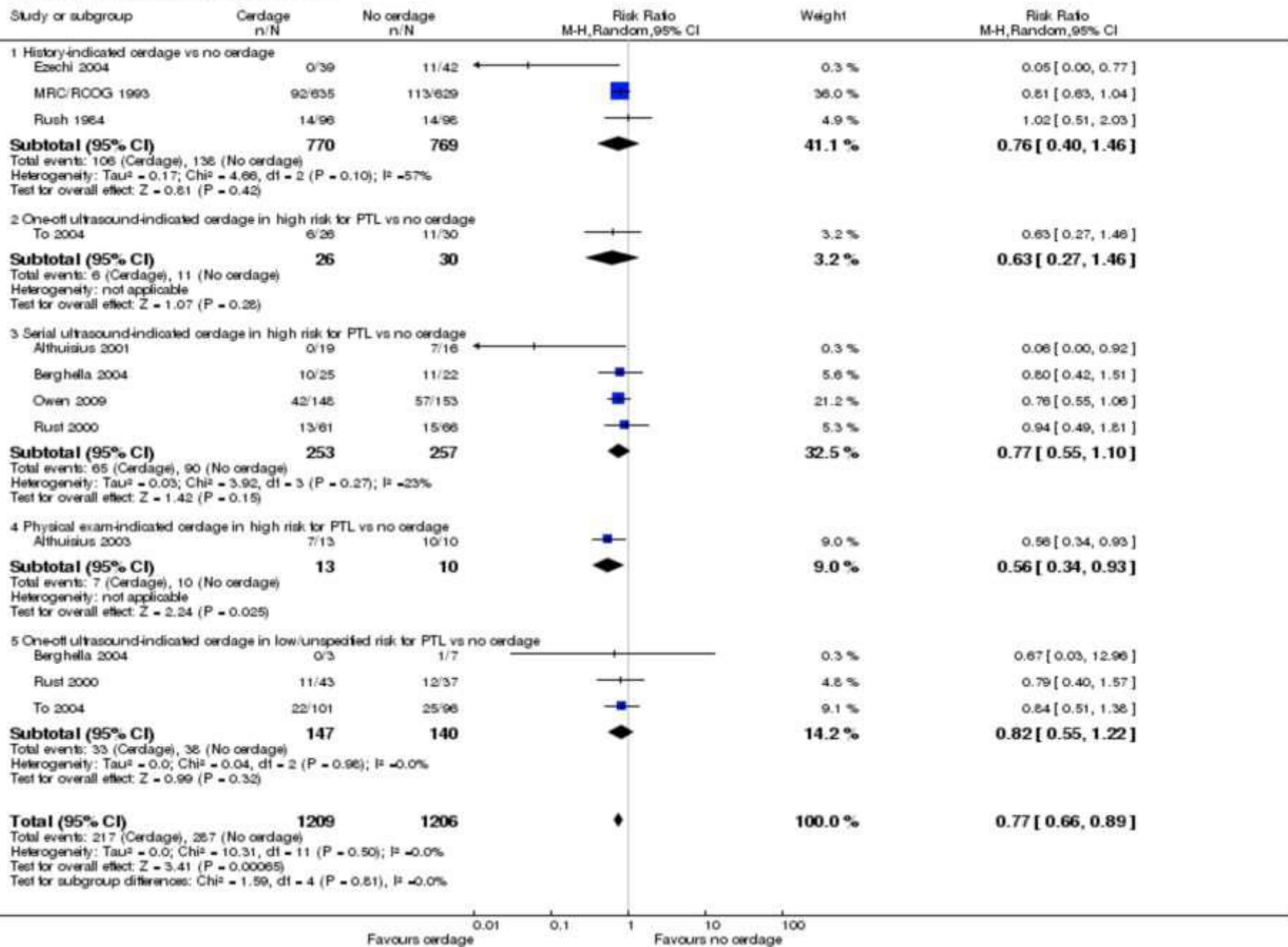




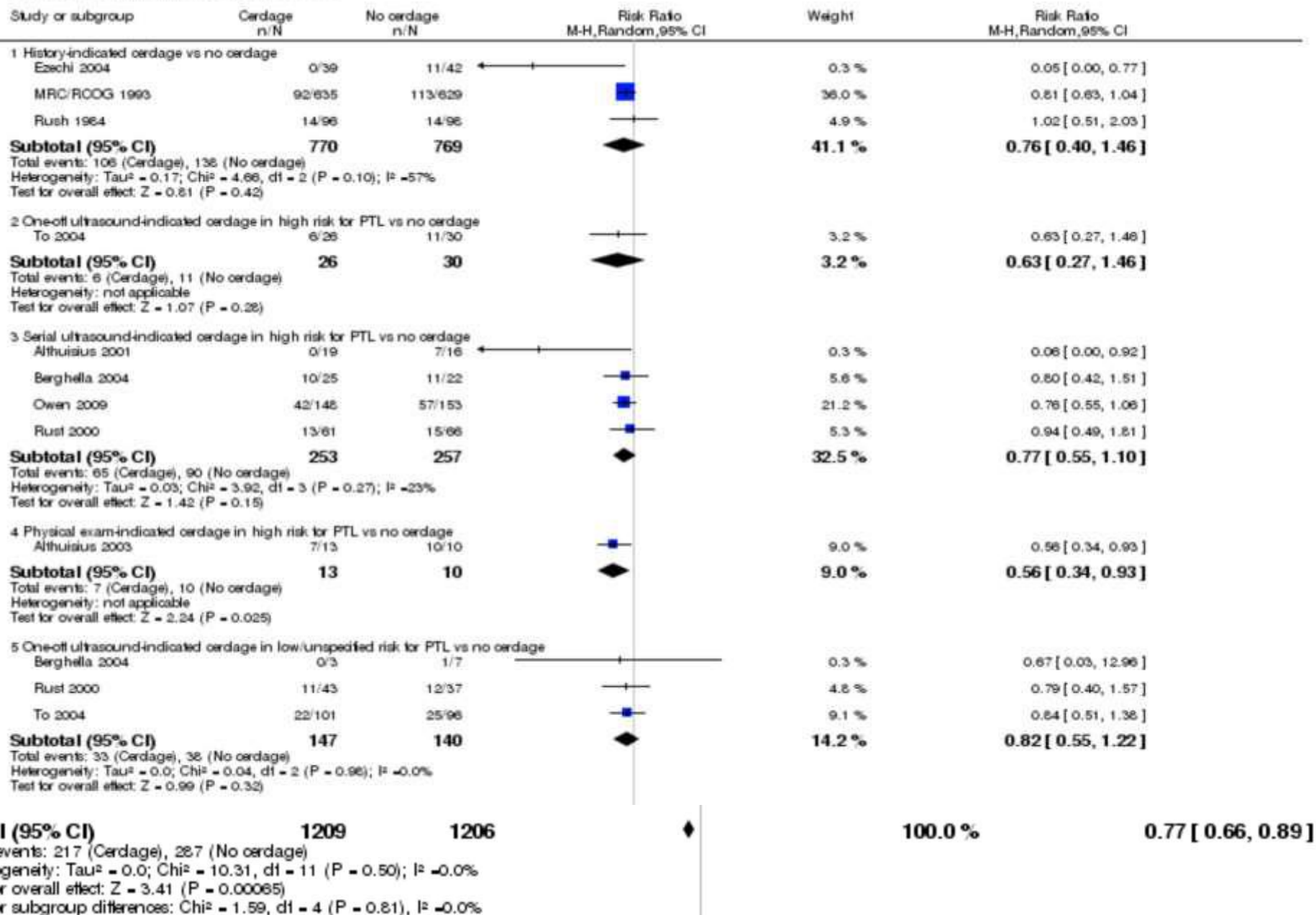
# Cervical Weakness

- Progression in labour
  - Contractions
  - Cervical strength/weakness
- Treatment
  - Progesterone
  - Cervical cerclage

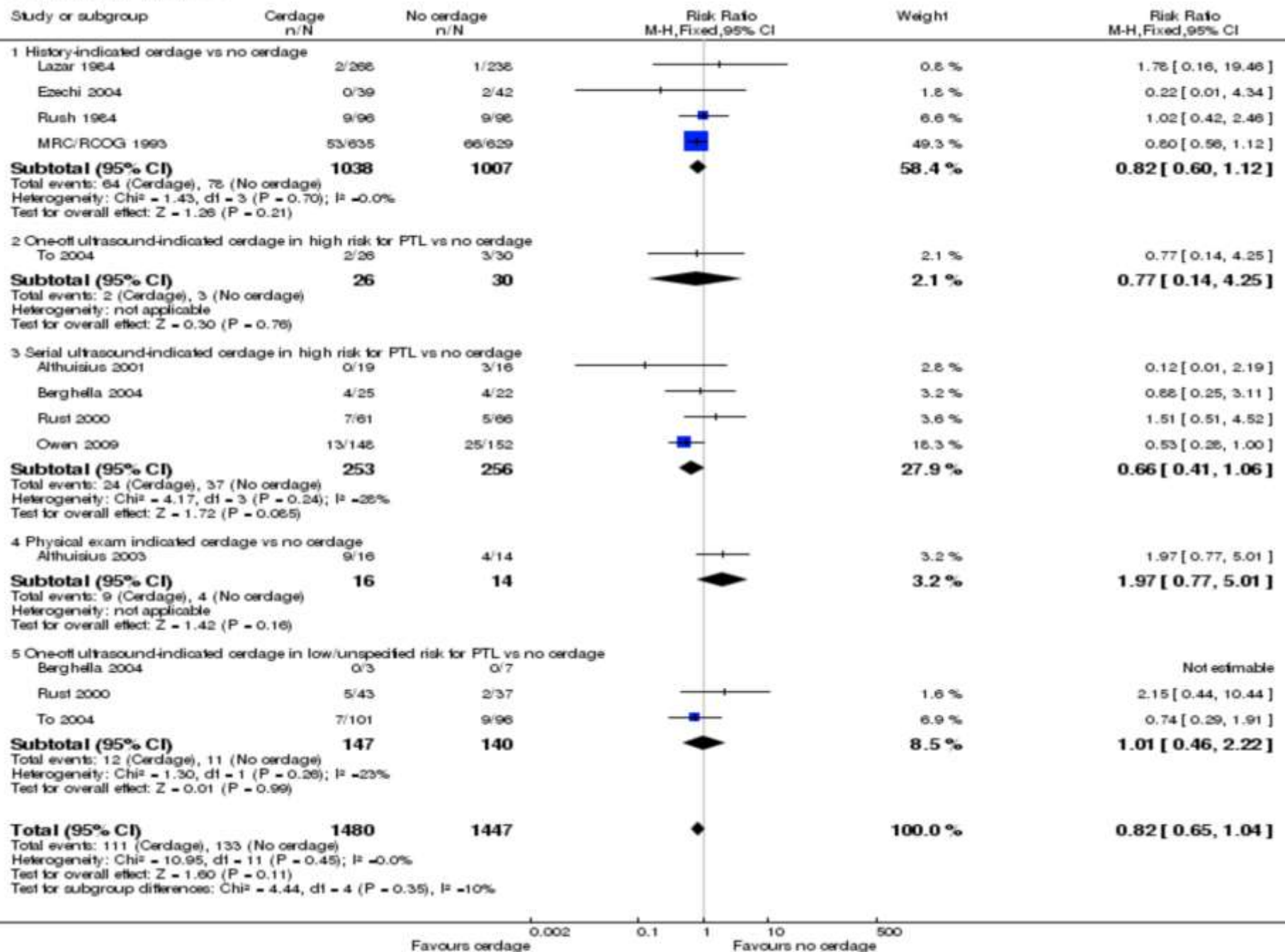
Review: Cervical stitch (oedage) for preventing preterm birth in singleton pregnancy  
 Comparison: 1 Cervidage versus no oedage  
 Outcome: 6 Preterm birth before 34 completed weeks



Review: Cervical stitch (oedage) for preventing preterm birth in singleton pregnancy  
 Comparison: 1 Cervidage versus no cervidage  
 Outcome: 6 Preterm birth before 34 completed weeks



Review: Cervical stitch (cerdage) for preventing preterm birth in singleton pregnancy  
 Comparison: 1 Cerdage versus no cerdage  
 Outcome: 1 All perinatal losses



# Can inserting a cervical stitch prevent early births of single babies?

## Authors' conclusions:

Cervical cerclage reduces the risk of **preterm birth** in women at high-risk of preterm birth and **probably reduces risk of perinatal deaths**.

There was no evidence of any differential effect of cerclage based on previous obstetric history or short cervix indications, but data were limited for all clinical groups.

**The question of whether cerclage is more or less effective than other preventative treatments, particularly vaginal progesterone, remains unanswered.**

# Conclusions - Cervical Cerclage

- Early pregnancy loss <16 weeks – No
- Midtrimester loss 16-22 weeks – yes
  - High Shirodkar
  - Transabdominal
- Premature labour >24 weeks – maybe
  - In combination with Progesterone
- No role in twin/multiple pregnancy

# Keeping the mother and baby safe

