Cervical incompetence and the use of cervical cerclage in women with uterine anomalies

Dr Kirsty Dundas
Consultant Obstetrician and Gynaecologist
Royal Infirmary of Edinburgh and University of Edinburgh

Cervix Role

- Menstrual flow
- Passage semen/capacitation
- Maintain fetus
  - Mechanical
    - Even first trimester decreases strength and increase in canal diameter (Johnstone)
    - By 28 weeks shortening occurs in normal pregnancy
  - Anti-bacterial by the operculum
- Rapidly dilate/shorten

  decrease collagen, increase water, inflammatory role

Cervix Structure

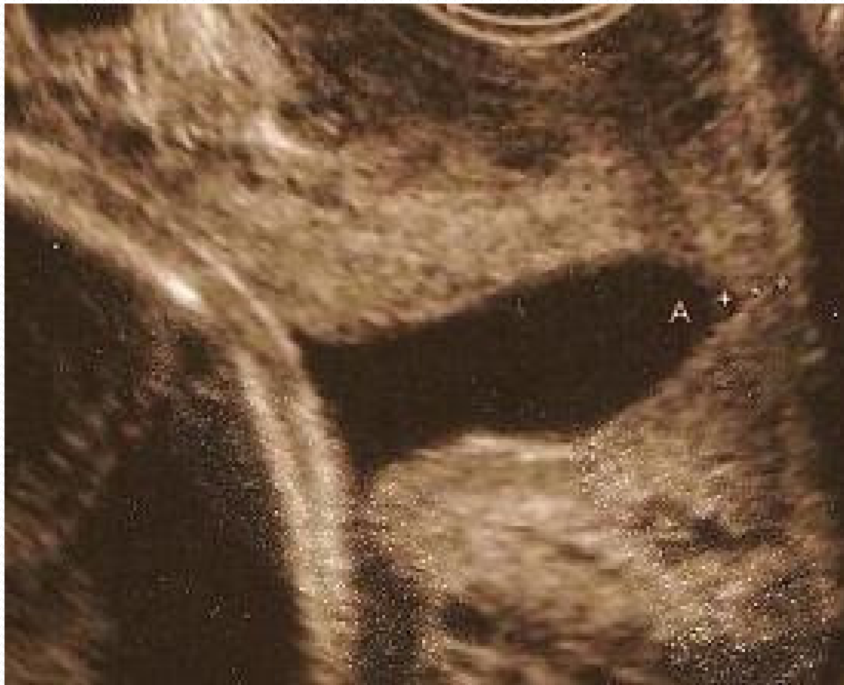
- Isthmus /Corpus/cervix
- Danforth 1947
  - Uterus is two parts with abrupt change
    - corpus chiefly muscular
    - cervix chiefly fibrous
- Stroma is collagen which confers rigidity
  - embedded in ground substance
- Small amount elastin component
- Muscle component
- Progesterone inhibits collagenase (Jeffrey et al)

Cervix structure and role

- Mechanical role
- Hormonally influenced
- Susceptible to inflammatory effect including infection

- complex

Insufficiency/incompetence



- Inability to retain a pregnancy in the absence of contractions or labour.

Cervical Incompetence/Insufficiency

- Controversial
- Aetiology obscure
  - Maybe congenital or acquired deficiency
- Difficult to diagnose
  - After poor outcome

Uterine Anomaly association

- Arcuate – no
- Unicornuate
  - 1/3 preg end in miscarriage
  - Increase CS rate
  - No clear evidence
- Uterus didelphys
  - 67% two vaginas, thin wall
  - Usually two cervices
  - 20% misc, 24.4% PTL, increase CS – dystocia/malpres
- Bicornuate –up to 55% incidence CI(Golan)
- DES – 50% structural cx defect, hypoplastic

Diagnosis

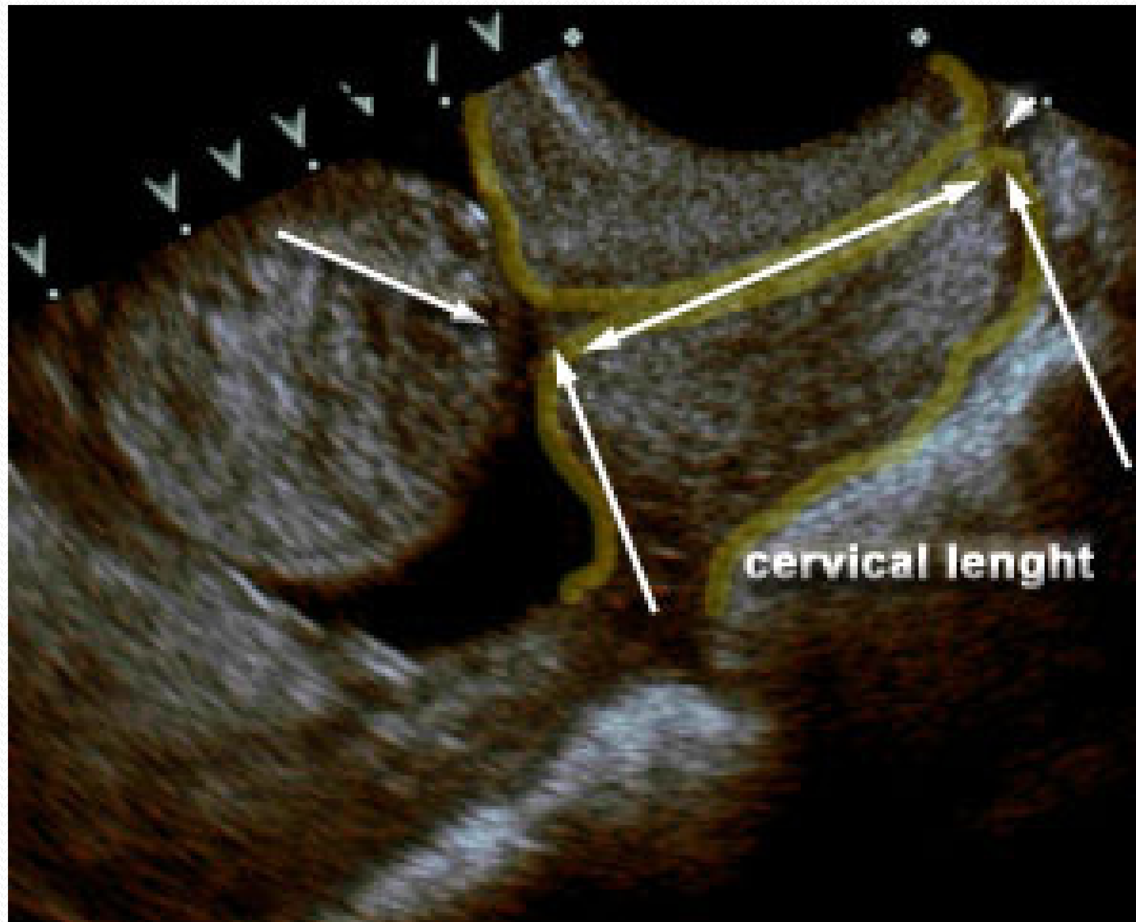
- History
  - Recurrent midtrimester loss/preterm birth
  - Classical painless dilatation and effacement
  - No infection, bleeding, preterm rupture membranes
- Cervical resistance studies
  - No resistance to passage of 9mm Hegar dilator
  - Low Cervical resistance index
- USS effacement and funneling
  - screening
  - Coincidental findings
- HSG
- Light induced fluorescence

Cervical Resistance Studies

Cervical Resistance Score

- Calder and Anthony. Euro J Obs & Gynae & Repro Biol.134(2); 174-8 2007
  - 175 Women ≥1 mid trim loss compared with 123 gynae
  - 6 Dilators from 3-8mm, read resistance score
  - Median CRI 17 versus 38.26 Newtons
    - 62(35%) variance with history
  - Cerclage in group affected with history and low CRI (<22N)improved outcome significantly
    - Pre-486 pregs in 175 (27% successful outcome)
    - Post-94 pregs in 148 (76% successful outcome)
- Non pregnant women with preg loss have lower CRI than woman with successful pregnancy history.
- Predictive interpregnancy test

USS Measurement



USS (Berghella BJOG 2009)

- Cervical length by TV USS predicts preterm birth
- One off test at approx 16- 22 weeks
  - <25mm (10th)
  - <15mm (2nd)
- Serial test e.g. fortnightly from 16 weeks
- First do no harm
  - Safe and may avoid intervention
- Unplanned pregnancy
- Proven in various goups including Mullerian anomaly
- Women with previous Preterm birth and short cx will benefit from cerclage (Berghella et al Obstet Gynecol 05)

Light induced Fluorescence

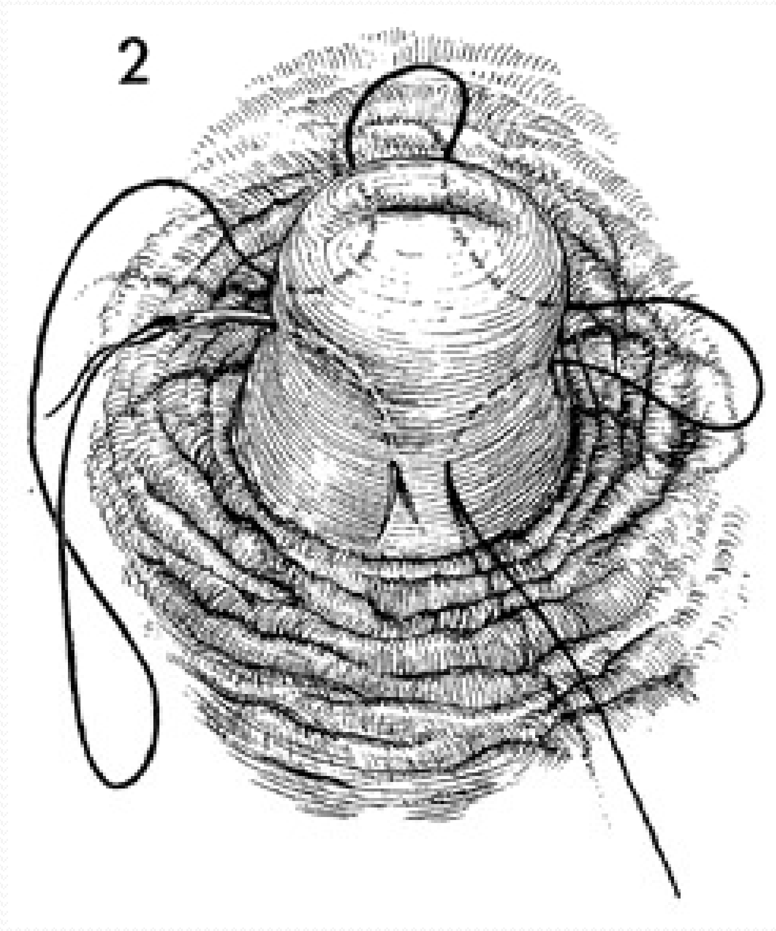
- Collascope
  - Non-invasive measurement using LIF to assess cx ripening by measuring the natural flourescence of non-soluble collagen
  - Low in cervical insufficiency
  - Predicitve of time to delivery interval

- Observation
- Bed rest
- Suture
  - McDonald
  - Schirodkar
  - Transabdominal
    - Laparoscopic

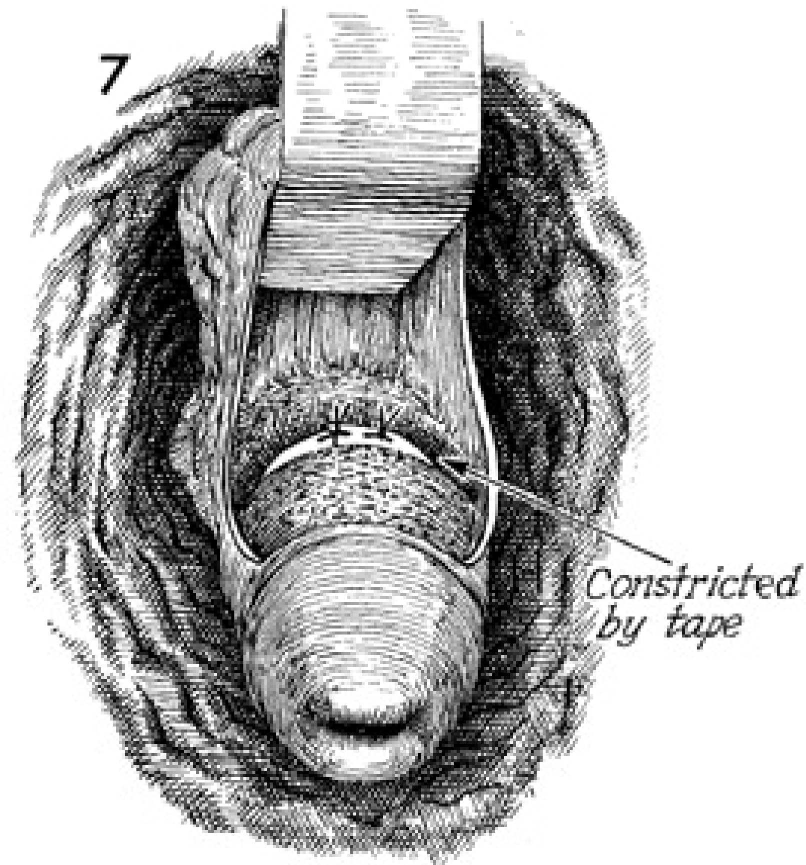
- Masterly inactivity

- Schirodkar 1955
- Initially emergency, later elective
- Indications remain unclear

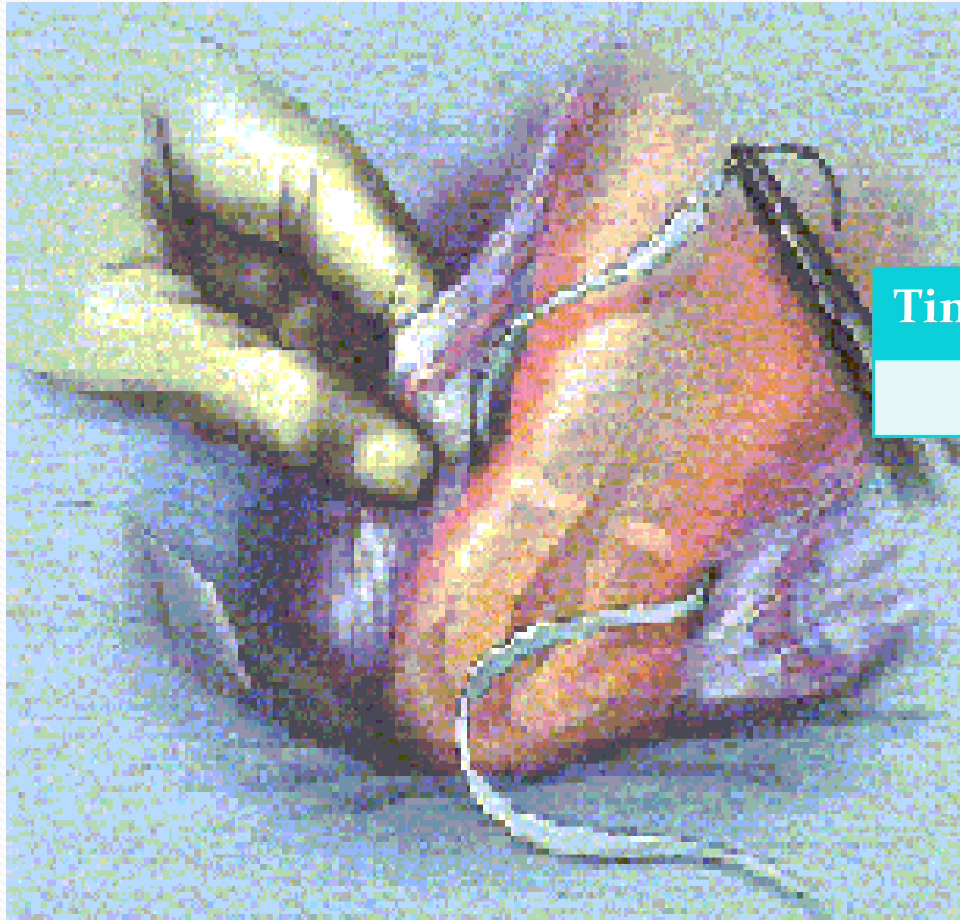
McDonald Suture



Schirodkar Suture



Trans-abdominal Cerclage



Timing	Pre-preg
	Intra-preg

Laparoscopic Transabdominal Cerclage

- Mingione et al. 2009. 18(8):1716: Human Reproduction
- 11 patients had interval procedure
  - One case was DES exposure
  - One small intestine injury
  - Mean EBL 40ml
  - 10 patients have conceived 12 pregnancies
    - 2 8week miscarriage
    - 2 CS at 34 weeks
    - 8 ELCS at 38 week or more

- Timing
- Indomethacin
- Antibiotics

Evidence

- Cochrane Collaboration
  - MRC/MRCOG trial
  - CIPRACT
- Uterine anomaly evidence

General Evidence

- MRC/MRCOG Working Party 1993
  - 1292 women obstetricians in equipoise
  - Randomised – cerclage or not cerclage
    - PTL 26% versus 31%
    - Delivery <33 weeks 13% v 17%
  - Benefit to women ≥ 3 midtrim loss/ptl
  - Benefit to 1/25 women but increased complications
- CIPRACT TRIAL Am J Obstet Gynecol 2001;185:1106-12.
  - Symptoms or risk factors for preterm delivery (previous delivery <34/40, SRM <32/40, cold knife cx bx, uterine anomaly) and short cx of <25mm at <27 weeks
  - Randomised to cerclage or bed rest, indomethacin to cerclage
  - Reduction in delivery under 34 weeks and neonatal morbidity
    - No preterm birth <34 weeks in 19 women with suture and bed rest

General Evidence 2

- Cochrane
  - 6 trials
  - 2175 women – hx or CRI
  - 4 – prophylactic cerclage v no cerclage
    - No reduction in preg loss/PTL
    - Small reduction in births under 33 weeks
    - SE of mild pyrexia, tocolytics, hospital admissions
  - 2- cerclage in short cx
    - no reduction in loss/preterm delivery <34 or 28

- Cervical suture should not be offered to women at low/moderate risk regardless of cx length on USS

Evidence in uterine anomalies 1

- Heinonen PK et al. Acta Obstet Gynecol Scand 1982:Vol 61(2); 157-62.
  - 182 women over 18 years
  - 126 had 265 pregnancies
    - 66% fetal survival
    - 8%PNM
    - 23% PTL
- Outome
  - Complete septate 86% survival
  - Complete Bicornuate 50%
  - Complete unicornuate 40%
- Cerclage mostly applied in partial bicornuate
  - 53% fetal survival before op/100% after

Evidence 2

- Seideman et al. Surg Gynecol Obstet 1991;173:384-6.
- Observational
  - 86 pregs in ut anomalies (67 cerclage)
  - 106 pregs in structurally normal (29 cerclage)
    - 23% HSG proven CI in both groups
  - 88% of cerclage had viable baby v 47% non cerclage
  - No benefit in normal group

Evidence 3

- Golan et al. Int J Fertility 1990 May- June;35(3):164-70
  - 98 women with uterine anomaly
  - 29 CI on HSG (30%)
    - Bicornuate group 55% CI
  - Overall 68% preterm labour/miscarriage
  - Post suture
    - Term delivery increase 26% to 63%

    Conclusion: all women with a bicornuate uterus should have cervical cerclage and all women with uterine anomaly should be considered for cerclage

Case history JR 2009

- Para 0+2
  - 12/40 miscarriage 2006
  - 7/40 MTOP 2007
  - Never had a smear
  - BMI 20
  - Generally well

- Booked at 13/40: bicornuate uterus, viable pregnancy in left uterine horn

Case history 2

- 20/40 referred to Obstetrician
  - Clinically cervix long and closed
  - Plan USS at 22 weeks
- 21+6/40 USS shows cx is 16 mm closed
  - Options discussed
  - Returns for transvaginal cervical McDonald cerclage
  - No evidence infection
- 28/40 USS shows GM normal

Case history 3

- 34/40 tightening and bleeding
  - Suture removed
  - Cx long and only fingertip dilated
  - 3cm effaced defect to right of cx os with bulging membranes

35/40 rapid labour, HFFD DOP under pudendal

Delivered through the defect

EUA in theatre "bucket handle tear"

2.43Kg A and W.

- What next time?

Best advice

- Women with >2 pregnancy losses or preterm labour should have suture
- Women with a uterine anomaly but no previous losses should be monitored with USS.
- Consider cervical resistance studies
- RCTs needed

Current Research

Prof Andrew Shennan

MAVRIC

- Contact: Prof Andrew Shennan
- E-mail: andrew.shennan@kcl.ac.uk
- Contact: Dr Manju Chandiramani
- E-mail: manju.chandiramani@kcl.ac.uk Top