Lecture 2

Advanced Hysteroscopic Surgery

Dubai BSGE Approved Course

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Queen Charlotte’s & Chelsea Hospital
Advanced Hysteroscopic Surgery

- Case Selection
- Pre-surgical work up
- Diagnostic Hysteroscopy
- Operative Hysteroscopy

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Diagnostic Tests

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Advanced Hysteroscopic Surgery

• Diagnosis
  • USS / HSG / MRI
  • Hysteroscopy + Laparoscopy
  • 3D ultrasound
Saline instillation scan
large sub-mucous fibroid
Normal uterus
3D scan
Septate uterus
3D scan

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Septate uterus
3D scan
Septate uterus
3D scan
Hysterosalpingography

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Hysterosalpingography
Bicornuate uterus

Figura 3. Útero bicornu unicolis.
Uterine Fibroids

MRI Scan:

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Bicornuate Uterus

MRI Scan:

Axial T2-weighted MRI section through the pelvis, showing a bicornuate uterus.

Two uterine horns are seen entering a single endocervical canal.
Diagnostic Hysteroscopy

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Essentials for diagnostic hysteroscopy

- Hysteroscope - Hamou 2.9 (3.7mm sheath) or 4mm (4.5 sheath)

- Light source - Xenon

- Irrigation system - Hamou Endomat

- Distention medium
  - Saline
Essentials for diagnostic hysteroscopy

- Camera (Storz single chip)
- Monitor (2 Sony)
- Recording equipment
  - Storz AIDA system
  - DVD recorder
OP Hysteroscopy – type 1 submucous fibroid
Type 2 - submucous fibroid
>50% in wall
Cornual Polyp

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OP Hysteroscopy – fine synechiae left ostium

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Uterine septum

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Unicornuate Uterus

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Interventions
Hysteroscopic Surgery

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Requirements for operative hysteroscopy

- Resectoscope
  - Mono/bipolar
- Diathermy
  - Electrosurgery
- Versapoint
  - Twizzle / Spring
- Cold instrumentation
  - Semi-rigid instruments
- Hysterommat
  - Glycine (mono) / saline (bipolar)

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Uterine malformations

Figure 2: a) Upper left - Septate Uterus, Upper right - Unicorne Uterus c) Middle - Arcuate Uterus, d) Lower left - Bicornuate Uterus, a) Lower right - Didelphic Uterus

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Uterine malformations

Background

- Uterus forms by fusion of paramesonephric ducts @ 10/40

- Abnormalities in resorption of the fused midline tissues by 20/40 can result in formation of septae of various lengths and position

- Partial septum limited to uterine fundus; complete septum down to Cx canal or Vagina

- May be double cervix and urological tract anomalies (10-20%)
  - AFS classification Fertil Steril 1998
Uterine malformations

Background

• Congenital malformations are associated with a poor reproductive outcome
  • 1st and 2nd trimester miscarriage
  • Pre term labour
  • Poor placentation / Placental abruption
  • IUGR
  • Fetal / maternal death
Uterine malformations

Background

• 0.06 – 10.0 % of women
  - Israel & March 1984 Am J Obstet Gynecol

• 80 – 90% of uterine anomalies are uterine septae

• Pregnancy loss with uterine septae reported to be as high as 90% after exclusion of other causes
  ◆ Kamm Obstet Gynecol 1962
Uterine malformations
Surgical intervention

• Removal of uterine septum first reported in German literature 1884

• 1907 Strassman procedure described modified by Jones & Jones in 1953 and by Tompkins (metroplasty) in 1962

• Good outcome with open procedures but long post operative recovery and c/s required
Hysteroscopic surgery of uterine malformations

- Hysteroscopic Management
  - Edstrom (1974) 1st proposed hysteroscopic management of septae
  - De Cherney (1986) Fertil Steril Resectoscopic management of mullerian fusion defects
**Uterine Septum**

- **Surgical division**
  - Semi rigid instruments (5 or 7 French Guage) – small septae
  - Resectoscope blade with cutting current of 30 to 40W/sec – low current to minimise thermal damage to endometrium
  - Laser (KTP/532nm or Argon Nd:YAG) with 0.6 micron glass fibres

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Key points: division of septum

General principles

• Endometrial preparation with GnRH analogues helpful

• Control laparoscopy essential

• Second-look hysteroscopy is advisable to confirm integrity of cavity
  • Can be performed as OP hysteroscopy

• A two stage procedure may be required
  • Better to resect less at first attempt if any doubt re depth of resection

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Pre division laparoscopy
Vital to confirm septum (rather than bicornuate uterus before division!)
Incision of uterine septum 1
Incision of uterine septum 2

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Key points: division of septum
Degree of resection

- Look for change from avascular white tissue of septum to vascular pink myometrial tissue
- Relationship of resection to tubal ostia
- Proximity of the resection to the uterine serosa as judged by control laparoscopy
- Aim to leave more rather than less myometrium (2cm depth) to minimise risk of subsequent uterine rupture in pregnancy
Key points: division of septum
Degree of resection

• Incision rather than resection

• Minimises endometrial trauma / subsequent risk of Ashermans

• Incised ends usually overgrown by endometrium
**Key points: division of septum**

- **Immediately post procedure**
  - IUCD insertion – 2 to 3 months
- Antibiotics – 1 to 2 weeks
- Hormone therapy – 3 cycles
  - not entirely supported by the evidence base!
Division of septum
Fertility Outcome

- Yılmaz et al Arch Gynaecol Obstet 2003 (Turkey)
  - 361 women with septate uterus 18 month post op analysis over previous 10 years following resectoscope incision of septum
    - 101 total septate
    - 231 sub total septate
    - 29 total septate with double cervix

- Pregnancy rate 0.4% - 65%
- Miscarriage rate 94.3% - 16.1%
Division of septum
Fertility Outcome

• Pabuccu & Gomel  Fertil Steril 2004 (Turkey)
  • 61 women with septate uterus and otherwise unexplained primary subfertility

  • Prospective observational study

  • 25 (41%) conceived within 14 months

  • 18 (29.5%) had live births (13 carried to term and 5 pre term)
    7/25 had spontaneous miscarriage

  • 12/18 (66%) had c/s
Division of septum
Fertility Outcome

• Litta et al. J Reprod Med 2004 (Italy)
  • 36 women with septae
  • 20/35 had had one or more pregnancy loss
  • 18/20 (90%) achieved pregnancy with 15/18 (83%) having term deliveries

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Division of septum
Fertility Outcome

• Hollet Caines J Obstet Gynecol Can 2006
  • Hysteroscopic metroplasty in 26 women
  • Versapoint 23% and resectoscope knife electrode in 77%
  • Pregnancy rate 95% and live birth rate 72% in the women with recurrent miscarriage

• Conclude that procedure is “safe and effective”

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Division of septum
Fertility Outcome

• Case Series – outcome following conservative management
Division of septum
Fertility Outcome

• Heinonen P  Fertil Steril 2006 (Finland)
  • Retrospective analysis of records from 1962 - 2000 of 67 women with complete septum including cervix and longitudinal vaginal septum

  • Most cases picked up at gynaecological examination not infertility / miscarriage clinics

  • Metroplasty had been performed in only 4 cases

  • 49 women managed conservatively achieved 115 pregnancies with
    • miscarriage rate of 27%,
    • pre term delivery 12%
    • and live birth rate 72%

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Division of septum
Fertility Outcome

• Heinonen P  Fertil Steril 2006
  • Complete septate uterus was not associated with primary sub fertility
  • Pregnancy may progress successfully without surgical treatment
  • “Results do not support elective incision of uterine septum before first pregnancy”

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Division of septum
Fertility Outcome

• The controversy
Uterine malformations
Septae diagnosed in women prior to reproductive loss

- For Surgery
  - Known high pregnancy wastage with septae
  - Pregnancy and miscarriage rates after metroplasty similar to women without uterine anomalies

- Against Surgery
  - Successful pregnancies documented in women with septae
  - Individual’s risk of 1st pregnancy loss unknown

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Division of septum
Fertility Outcome

• Similar dilemma with intramural fibroids
Monash Study

• Compared
  • 106 cycles ART in 88 women with fibroids
  • 318 age matched controls - No fibroids

• Results (Pregnancy rate Implantation rate)
  • Subserosal fibroids 34.1% 15.1%
  • Intramural fibroids 16.4% 6.4%
  • Submucosal fibroids 10.0% 4.3%
  • No fibroids 30.1% 15.7%
Division of septum
Fertility Outcome

• The way forward!
Conclusions

Lecturer’s opinion

• Simplicity of hysteroscopic metroplasty and 70-80% quoted rates of miscarriage in women with septae weighs argument in favour of recommending surgery for now
The Way Forward

• BUT....

• Women have acted as their own controls in studies thus far

• Prospective RCTs are needed to confirm benefits of septum resection v conservative management after definitive diagnosis of septum
  • in women with and
  • in women without pre diagnosis pregnancy loss

• Improved imaging will avoid the need to confirm diagnosis by laparoscopy prior to randomisation

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Conclusions – Septae

- Vital to make correct diagnosis initially
  - Division of bicornuate uterus would have disastrous consequences!

- Hysteroscopic metroplasty is now the surgical method of choice for uterine septae?instrument (RCT data needed)

- Cases should be carefully audited?major centres only performing procedures to gain experience

- Data suggest significant improvement in reproductive outcome following septum removal

- Now time for a multinational randomised prospective study to confirm benefits of resection v conservative management

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Synechiae

- **Surgical division**
  - Blunt dissection with hysteroscope
  - Semi rigid scissors (5 guage esp in OP)
  - Resectoscope blade with cutting current of 30W/sec
Synechiae

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Synechiae – blunt division
Asherman’s

• Video
**Key points:** division of septum / synechiae

- Immediately post procedure
  - IUCD insertion
  - Antibiotics
  - Hormone therapy
Uterine Fibroids

• Implantation failure
• Recurrent miscarriage
• Obstetric complications
• Pain
• Dysmenorrhoea
Fibroids and Fertility

• Is surgery necessary?
  • Treatment of symptoms
  • Easier to treat whilst small
  • Earlier treatment more likely to be completed laparoscopically
  • Monash Study
Monash Study

• Compared
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• Results (Pregnancy rate  Implantation rate)
  • Subserosal fibroids  34.1%  15.1%
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  • Submucosal fibroids  10.0%  4.3%
  • No fibroids  30.1%  15.7%
Prospective study: Intramural fibroids in IVF

Hart et al: ESHRE 2000; St Thomas’ Hospital

Fibroids 104 pts vs 308 controls

• No sig diff in FSH, foll number, oocyte number

• PR control 30.2% vs fibroid 16.3%
  \[ p=0.007 \]

• IR control 16.2% vs fibroid 8.7%
  \[ p=0.013 \]

Fibroid data:
• Mean no: 1.3
• Mean size: 2.6 cm
Hysteroscopic Myomectomy
Case Selection

• Submucous fibroid – type 0 / 1
  • type 2 (selected cases [<80% intramural])

• Max 5cms diameter (esp if type 2)
Hysteroscopic Myomectomy
Case Selection

- Pre-treatment with GnRH-a (2 months minimum)
- Electrosurgical resection (9.5 or 7.0mm resectoscopes)
- Type 2 fibroids
  - Extrusion of fibroid into cavity
  - Usually 2nd look procedure required
Type 1 Submucous Fibroid

Superficial site
Type 2 Submucous Fibroid

Myometrial tone extrudes fibroid
Hysteroscopic Myomectomy

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Hysteroscopic Myomectomy

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Reduction of menstrual flow after hysteroscopic myomectomy
Recovery following hysteroscopic myomectomy (days)

• Postoperative bleeding 5.7 (1-14)

• Postoperative discharge 0.4 (0-4)

• Return to normal activities 6.1 (1-14)

• Return to work 8.1 (1-21)

* Broadbent & Magos Gyn Endosc 1995

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TCRE

Patient selection criteria

• Family complete

• Uterus smaller than 12 week size

• Fibroids < 5cm diameter

• Adenomyosis (limited or absent)

• Endometriosis (limited or absent)

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TCRE Technique

• Rollerball tubal ostia +/- fundus

• Resect posterior wall then rotate in clockwise fashion to rt lateral, anterior and lt lateral aspects

• Either one stage or two stage initially to mid body of uterus

• Resect up to internal cervical os
• Video
Operative OP Hysteroscopy

Equipment

• Operative
  • Bettocchi 2.9mm Storz hysteroscope
    - 4.3mm single flow oval operating sheath
    - 4.9mm dual flow oval sheath
  • Versascope with operating sheath
  • Mini resectoscope 5.5mm (2.0mm scope)
  • 5 French gauge semi-rigid instruments
    - Scissors – blunt & sharp
    - Biopsy forceps – spoon & punch
    - Graspers
    - Polypectomy loop (monopolar)
    - Myoma fixation screw
Operative OP hysteroscopic procedures

• Endometrial biopsy
• Polypectomy
• IUCD retrieval
• Division of synechiae & septae
• Hysteroscopic myomectomy
• Hysteroscopic Sterilisation
OP Hysteroscopy – posterior wall polyp
removal 1: Semi – rigid 5F gauge scissors
OP Hysteroscopy – posterior wall polyp
removal 2: Semi – rigid 5F gauge scissors
OP Hysteroscopy – posterior wall polyp
removal 3: Semi – rigid 5F gauge scissors
OP Hysteroscopy – rt cornual polyp
OP Hysteroscopy – cornual polyp
Semi – rigid 5F gauge scissors
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Diagnosis & Management of Uterine Abnormalities

Conclusions

• Vital to make correct diagnosis initially i.e.

• fibroid type (if majority intramural better to perform open myomectomy)

• Septae (division of bicornuate uterus would have disastrous consequences)
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General Conclusions

• Initial work up and case selection vital to ensure success of procedure

• Know your own limitations – refer or ask for supervision if unsure

• Familiarise yourself with one set of equipment that you know works for you

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Thank you for your attention