Ultrasound in Contraception

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Contraception - Overview

- **COC**: Combined Oral Contraceptive
- **IUD**: Intrauterine Device; Synthetic material, Cu
  - **IUC**: Intrauterine Contraceptive; Cu
  - **IUS**: Intrauterine System; LNG
- **PBCD**: Permanent Birth Control Device
- **HRI**: Hormone Releasing Implant; ENG
- **CR**: Contraceptive Ring; EE & ENG
Combined Oral Contraceptive

COC
COC – Case 1

Resting ovaries
COC – Case 2

Resting ovaries?!

Diam > 12mm
COC – Case 3

OH, incorrect intake! SST, instructions, condom use until next mens ...

... after 3 months
Intrauterine Device / Contraceptive / System

IUD / IUC / IUS
Curved Cu-IUC
Curved Cu-IUC - Correct Placement

Median sagittal plane

Paramedian sagittal plane
LNG IUS 52
LNG IUS 52

3D

3D shadow

LNG IUS 52 in correct position
LNG IUS 19.5
LNG IUS 13.5 vs 19.5 – How to Differentiate?

LNG IUS 13.5 (Jaydess®)

LNG IUS 19.5 (Kyleena®)
Tipps & Tricks für die Praxis

Die LNG IUS im Ultraschall
Pre-Placement
Contra-Indication: CUA ...
IUC / IUD / IUS

Placement
Fear of pain on IUC placement affects a vast number of women, especially nulliparous women.

Up to 90% of all OP experienced moderate to severe pain, but also 10% of P described this intervention as very painful.

Most important risk factor to experience IUC placement as painful is fear of pain before placement!

Gemzell-Danielsson K, Mansour D, Fiala C, Kaunitz M, Bahamondes L.
*Management of pain associated with the placement of intrauterine contraceptives.*
## Possible Causes of Pain During IUC Placement

<table>
<thead>
<tr>
<th>Intension</th>
<th>Possible cause of pain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decision regarding IUC</td>
<td>Anxiety</td>
</tr>
<tr>
<td>IUC placement</td>
<td>Fear of pain, anxiety</td>
</tr>
<tr>
<td>Stabilizing uterus</td>
<td>Grasping cervix</td>
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<tr>
<td>Stretching flexion angle</td>
<td>Pulling uterus</td>
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<tr>
<td>Searching for the right path</td>
<td>Pushing inserter against myometrium</td>
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<tr>
<td>IUC replacement in lost threads</td>
<td>Tactile search, touching and grasping myometrium</td>
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## Possible Causes of Pain During IUC Placement

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<td>Overcoming high friction</td>
<td>Stiff cervix</td>
</tr>
<tr>
<td></td>
<td>Separate cervical dilation</td>
</tr>
<tr>
<td>Struggling with resistance</td>
<td>Wrong path</td>
</tr>
<tr>
<td>Correct positioning</td>
<td>Forcing IUC into intended position and/or shape</td>
</tr>
<tr>
<td>Advancing procedure</td>
<td>Working at excessive speed</td>
</tr>
</tbody>
</table>
The Three Pillars of Pain Reduced IUC Placement

- Verbal guidance / distraction
- Optimised placement technique
- Training
Basic Principles of Pain Reduced IUC Placement

Don’t do unnecessary things

a.o. Christiaan Barnard, 1967

Use ultrasound guidance, done by the woman herself, speculum and inserter
“Normal” – most common: ante-version (av), ante-flexion (af)

Angles:
- 0° - 179°: ante
- 180°: straight
- 181° - 360°: retro
Version & Flexion – What is Visible?

Speculum inspection (front view)

0-para
Para

Speculum inspection (lateral view)

Visible part: portion with external uterine orifice, not more!
Version & Flexion – Ante & Retro – Any Combination Does Exist!

ante-version ante-flexion

ante-version straight

ante-version retro-flexion

completely straight

retro-version ante-flexion

retro-version straight

retro-version retro-flexion
Steep Anteflexion

Straight!
Steep Retroflexion

Av, rf after: danger zone of perforation!
«Hanging drop» - How to reach this cavity?
Insertion Technique

Establish alignment!

Most useful are ...

- moderate bladder filling &
- TAS guidance & compression &
- speculum navigation
TAS Patient Guided IUC Placement, TVS Check
TAS Patient Guided IUC Placement

Optimal bladder filling. Patient guides the ultrasound probe. The portio is caught by speculum and moved towards straight position. The loaded 52 LNG IUS inserter is introduced into the cavity near to the fundus, were the IUS is released. First the wings are liberated and again, the IUS is softly advanced towards the fundus. Finally, the shaft is released and the empty inserter is completely retracted.
TAS Patient Guided IUC Placement

... after two C-sections.
Incomplete Unfolding in T-shaped IUD
LNG IUS Insertion With Y-Shaped Unfolding

At insertion Y-shaped unfolding ...

... 1 week later spontaneous complete T-shaped unfolding
Extraction
Lost Threads – TAS Patient Guided IUC Extraction

Special IUC grasping alligator forceps: diameter: 3.5 mm, length: 23.2 cm
Lost threads. The 52 LNG IUS is extracted successfully from the cavity with a 3.5 mm alligator forceps under TAS guidance by catching the lower pole in the third attempt.
“Routine Transabdominal Ultrasound Guidance is an Important Element to the Painless IUC Placement”

- To explore the ultimate pain reduction achievable by the use of ultrasound guidance combined with further measures to optimize women’s comfort during routine IUC insertion (design: 1:1:1 study)

- 290 IUC insertions
- All 183 insertions and 107 replacements successfully completed
- **Average pain score (scale 0 to 10) overall 0.55**

- In routine IUC insertion by an expert, TAS guidance was the key to effectively managing women’s discomfort and achieving an average pain score clearly below 1.00.

Own data
Period 1  \((n = 133)\)
Average pain score (scale 0 to 10): \(0.62\)

Period 2  \((n = 157)\)
Average pain score (scale 0 to 10): \(0.50^*\)

Own data
IUC Placement Training – PelvicSim™

Virtual Reality Training

Regelmässig am SGGG Jahreskongress
Displacement
Curved Cu-IUC - Displacement

< 5mm  normal
6-10mm gray zone
> 10mm displacement

Merki-Feld GS, Schwarz D, Imthurn B, Keller PJ.
Partial and complete expulsion of the Multiload 375 IUD and the levonorgestrel-releasing IUD after correct insertion.
Curved Cu-IUD - Displacement
Korrekt liegt ein IUS wenn es vollständig intrakavitär liegt sowie vollständig (T-förmig) entfaltet ist

- Liegt das IUS teilweise oder vollständig im Zervikalkanal, soll es entfernt beziehungsweise ersetzt werden.

- Ist das IUS nicht vollständig entfaltet, ist eine zusätzliche Verhütung einzuleiten und die Patientin kurzfristig zu kontrollieren (2 oder 4 Wochen). Bei Fortbestehen der Probleme soll das IUS entfernt bzw. ersetzt werden.

- Beklagt die Patientin zunehmende Blutungen und Schmerzen, so könnte dies auf eine inkorrekte Lage des IUS hinweisen. Es ist eine vollständige gynäkologische Untersuchung inklusive Schwangerschaftstest vorzunehmen.
LNG IUS 52 - Displacement

Six weeks check up: dislocation into the cervix
Case 1
Cu IUD (ML 375), Position?
IUD placement (outside) with painscore VAS 10 (0-10)!
LNG IUS 13.5 - Position ?
Cu IUD

Pain score 1
Case 2
LNG IUS 13.5, Position?
Sagittal / para-sagittal: left > right > left
LNG IUS 13.5 - Incorrect Position!

cranial

right

left

caudal
LNG IUS 13.5 – Extraction from Incorrect Position!
Failure
IUC correctly placed & early intrauterine pregnancy
Cu-IUC – Case 2

IUC incorrectly placed & early intrauterine pregnancy
Displaced IUC: 50% of “failure pregnancies” are ECP!
Tubal Ectopic Pregnancy
Difficult Placement
Steep Anteversion – How to Reach Alignment?

Ass: optimum pressure from abdominal site
Doc: optimum navigation with spec, alignment ...

... using «inner splinting» by inserter

© M. Bajka
“Hanging Drop” – Playing with Viscoelasticity

I. Alignment

Alignment of CC and cavity by alligator forceps

STARTING POSITION

ALIGNMENT reached by inner splinting
"Hanging Drop” – Playing with Viscoelasticity

II. Placement

Retraction of the aligning alligator forceps & immediate placement of the new LNG IUS 52

STABILIZATION by alligator forceps

FINAL IUS position
Hormone Releasing Implant

HRI
ENG Implant

- Elastic stick, 40mm long, diameter 2mm
- Etonogestrel (ENG) 68 mg
- Bariumsulfat 15 mg (since 2012)
- Ethylen-Vinylacetat-Copolymer, covered
- Pearl-Index <0,1
ENG Implant
Non-palpable, rod-shaped implant inserted under the skin in fatty tissue (white arrow). The ends are marked by the transition of shadows light to dark (black arrows).
Lost ENG Implant – Case 2

Non-palpable, rod-shaped implant that has penetrated the muscles (white arrow). The ends are marked by the transition of shadows light to dark (black arrows).
Lost ENG Implant – Position – Case 1&2

In fatty tissue

In muscle!
Lost ENG Implant – Case 2

Red circle: original insertion side

Extraction from intramuscular position!
Lost ENG Implant – Case 3

Special Case

When an Arm Tells a Story...
Lost ENG Implant – Case 3

- Insertion (nr.1,2,3)
- Excision (nr.1,2)
- Loss Implanon (nr.3)
- Insertion (nr.4)
- Implanon (nr.4)
- Lost Implanon (nr.3)
- Implanon (nr.4)
Vielen Dank für Ihre Aufmerksamkeit!