IUD
Real risks or misconceptions?

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No conflict of interest

Mechanism of action

- Inflammatory reaction in the uterus with a significant increase in concentration of macrophages, prostaglandins, leucocytes and others enzymes.
- Toxic effect on sperm, and egg and interfere with sperm transport
- Probably the effects on endometrium prevent implantation

Excellent effectivness

WHO. Criteria of eligibility 2009

- Copper IUD or LN- IUD -
  Over the first year, less than 1 pregnancy per 100 women (6 to 8 per 1000 women)

- Over 10 years of copper IUD use: 2 pregnancies per 100 women

- Over 5 years of LNG-IUD use : less than 1 pregnancy per 100 women(5 to 8 per 1000 women)

- In case of pregnancy
  - Remove the IUD if strings visible (20% of miscarriage)
  - Spontaneous miscarriage 48 to 75%

IUD and ectopic pregnancy

No real risk but conditional risk

Risk of ectopic pregnancy without any contraception	Risk of ectopic pregnancy with copper-IUD	Risk of ectopic pregnancy with a LNG-IUD
1/150	1/2500	1/150 In a more recent study, no difference between copper and LNG-IUD FFPRHC Guidance (April 2004)

Fear and barriers

- Pelvic infection disease and the consequences on fertility

- For nulliparous, difficulties of insertion and bad tolerance

Pelvic inflammatory disease (PID) and IUD

- Ferguson 1992 (WHO)
  22.908 women (51.399 of woman-years of exposure)

Prevalence of PID: 1,54 cas per 1000 wy, same as women without IUD

Incidence of PID 6 time more in the first 20 days after the insertion then same, constant and low rate during the following 8 years.

The rate of PID was different from one country to another (high in Africa, low in Asia) depending of the IST prevalence

Pelvic inflammatory disease (PID) and IUD

- 1996, Beerthuizen study comparing different contraception method

PID Prevalence : 1,38 per1000 wy,

More frequent:
- in the 20 days after the insertion: 9,66 per 1000 wy
- In the group of young women with multiple partners

- A study in 2012, including 57 728 IUD insertion does not find the increase of risk after the insertion when women have low risk of STI

Beerthuizen RJ. Pelvic inflammatory disease in intrauterine device users. Eur J Contracept Reprod Health Care 1996 .
Sufrin C and all., Neisseria gonorrhea and Chlamydia trachomatis screening at intrauterine device insertion and pelvic inflam matory disease. Obstet Gynecol.2012

Pelvic inflammatory disease (PID) and IUD

In a retrospective cohort of 90,489 women with an IUD (copper and LNG) looking on complication regarding age::

- Serious complications (ectopic pregnancy, PID) are found in less than 1% regardless the age and the type of IUD

- The 15-19 group has more:
  dysmenorrhea (RR=1,4 [CI] 1.1–1.6))
  amenorrhea (RR =1.3, CI 1.1–1.5),
  normal pregnancies(RR =1,4 [CI] 1.4–1.8)

] Berenson A, Tan A, Hirth J, Wilkinson G. Complications and continuation of intrauterine device use among commercially insured teenagers. Obstet Gynecol 2013

Pelvic inflammatory disease (PID) and IUD

A retrospective study including more than 2500 women 13 à 35 years old found out that the cervicite rate is correlated with age (13% in the youngest group), the PID risk is low (2%) and not correlated with age

Aoun J et al. IUD effects of age, parity, and device type on complications and discontinuation of intrauterine devices. Obstet Gynecol 2014

Impact on fertility(tubal sterility)

- No recent and good methodology studies (only case –control studies)
- Contradictories results:
  2 studies found out a weak or limit link between tubal infertility and IUD
  4 studies : no link

Cramer DW, et al. Tubal infertility and the intrauterine device. N Engl J Med 1985
Daling JR, and all. . Primary tubal infertility in relation to the use of an intrauterine device. N Engl J Med 1985.
Daling JR, Weiss NS, Voigt LF, McKnight B, Moore DE. The intrauterine device and primary tubal infertility. N Engl J Med 1992.
Sundby J, Olsen A. The influence of education, age at sexual debut, use of intrauterine device and number of sex partners on tubal factor infertility. J Psychosom Obstet Gynaecol 1992.
Hubacher D and all . Use of copper intrauterine devices and the risk of tubal infertility among nulligravid women. N EnglJ Med August 23, 2001.

Return delay of fertility

6 cohort surveys conclude that fertility comes back in

- 72 to 92% in the year after the removal of the IUD
- 92 to 100%, 2 years after the removal.
- Pregnancy rate is the same regardless of the contraceptive method used, for nulliparous as well than for the multiparous

Return delay of fertility

- Comparison of the fertility after stopping different contraception method (Vessey, 83, Doll 2001)
  - Time to onset a pregnancy same for IUD and CO
  - Shorter after barriers methods

  But 36 months after, the pregnancy rate is the same for all methods

- Meta analysis in 2008 (Skjeldestad) conclude that after an IUD removal,
  - the time to onset a pregnancy, the preterm rate, the infant weight, the sex ratio

  are exactly the same after an IUD than in the general population
  - Same management of infertility

Systématic screening before IUD insertion of STI (Chlamidiae, Gonorrhea)

- Mohllajee et all, 2006 :
  Increase risk of PID in the group who carries STI (Chlamydia et gonorrhea)
  0-5 % vs 0-2 % low rate anyway

- Sufrin et all: 57 000 femmes,2012 :
  - After one year, no difference on occurrence of PID between the group with or without screening
  - No difference in the group less than 26 years old

- Wang, 2014 :
  No difference on occurrence of PID between the group screened with STI and the group without STI IUD inserted as EC same day as the screennng résultat).

Systematic screening of STI (Chlamidiae, Gonorrhea) before IUD insertion

Recommendation

- Without symptoms and
- Without risk factors (<26 years old, new partner, more than 1 partner the past 12 months , history of STI)

No systematic screening is recommended before IUD inse

IUD is not a risk factor of infection

For WHO, even in case of excess STI risk, benefits outweigh the risks.

The majority of high risk women will not have infection.

Systematic screening of other agents than Chlamidiae et gonorrhea (including genital mycoplasmas, both aerobic and anaerobic endogenous vaginal flora, and aerobic streptococcus).

- Not enough current evidence is available to support routine screening for bacterial vaginosis at the time of insertion in asymptomatic women. (WHO and Canadian guidelines)

- *Actinomyces israelii* (commensal of vaginal flora) found in 7% of pap test in women with IUD. Give very rare but serious infection (tubo ovarian abscess).
  - Asymptomatic : No Antibiotic and IUD left
  - Symptomatic : removal of IUD and AB

Westhoff C. IUDs and colonization or infection with Actinomyces. Contraception 2007Jun; 75(6 Suppl):S48-50.
Serfaty D. Conduite à tenir chez les utilisatrices de dispositifs intra-uterins (DIU) ayant des frottis cervicaux de dépistage positifs pour actinomyces. Mises à jour en GynécologieMédicale. Vigot 2008

Screening for infection

- All women requesting an intrauterine device should be screened by both history and physical examination for their risk of sexually transmitted infection.
- Women at increased risk should be tested prior to or at the time of insertion;
- however, it is not necessary to delay insertion until results are returned.

Antibiotic prophylaxis before insertion

Consensus : NO ANTIBIOTICS PROPHYLAXIS

- 1999, Méta-analysis
  No significant difference in occurrence of PID with or without AB
- 2010, Grimes, Cochrane
  Same result
- 2012 CNGOF
  Recommendation :No Antibioprophylaxy

-Grimes DA, Schultz KF. Prophylactic antibiotics for intrauterine device insertion: a meta-analysis of the randomized control trials.Contraception 1999 August;60(2):57-63.
-Grimes DA, Lopez LM, Schulz KF. Antibiotic prophylaxis for intrauterine contraceptive device insertion. Cochrane Database Syst Rev 2010;1-16.
-CNGOF. Recommandations pour la pratique clinique. Les infections génitales hautes. Paris: CNGOF; 2012, http://www.cngof.asso.fr.

Tolerability of IUD on nulliparous

Abbey B. Berenson,, Alai Tan,, Jacqueline M. Hirth,,and Gregg S. Wilkinson,; Complications and Continuation of Intrauterine Device Use Among Commercially Insured Teenagers; Obstetric and gynecology May 2013

In a retrospective cohort of 90,489 women with an IUD between 2002 and 2009

- Continuation rate are less good in 15/19 years old girls compared to 24/44 years for copper-IUD but is better than for any other contraception
- Same continuation rate in the15/19 years old group versus the 24/44 group for the LNG-IUD.
- Dysmenorrhea more frequent in the group15/19 (OR:1,3 compared to the 20/24)

Inserting the IUD

- Simplifying insertion:

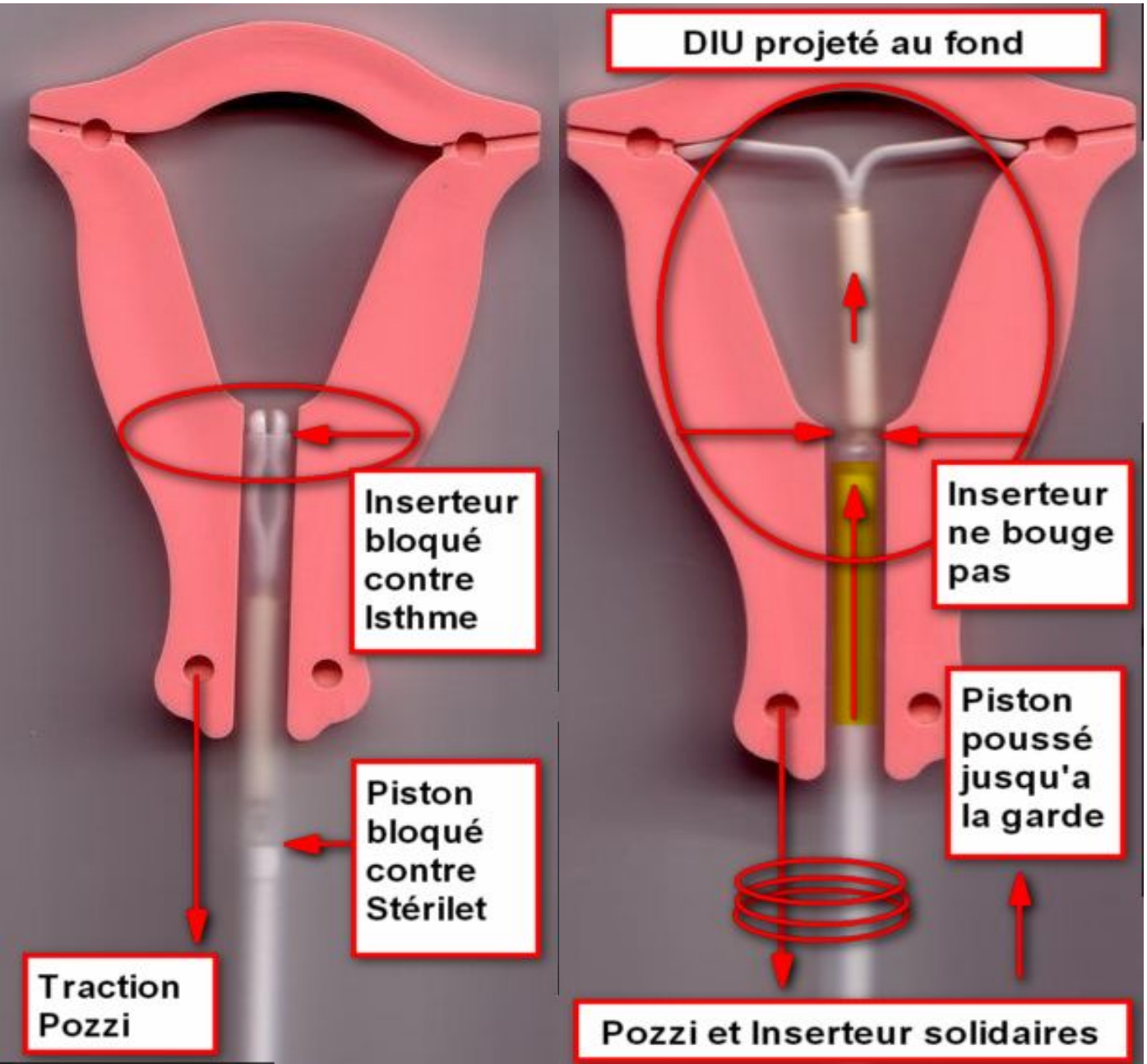
- No need an hysterometry. It is done when we insert the device

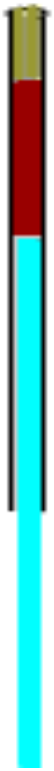
- No need (sometimes) Pozzi tenaculum when cervix open

- **Expulsion** (2 to 7 p 100 women years)

- Vidéo http://www.steriletmonalisa.com
  Identifiant : Stérilet Mdp : monalisa
  https://onedrive.live.com/redir?resid=953F2A97A73F74DE!6473&authkey=!AI13AKnvIw-TBuw&ithint=video%2cavi

Méthode « de la torpille » ou de Bonneau-Cristalli





Failed IUD insertion

- **Failed IUD insertion (**Few data)

Dermish AI, et al; Failed IUD insertions in community practice: an under-recognized problem?. Contraception. 2013

Survey on 198 women with a T380 inserted in emergency contraception by seniors providers

27/138 (19%) failed IUD insertion on nulliparous

8/59 (13%) on multiparous

- **Pain and vaso-vagal reaction after the insertion**

Frequent (no data)

NSAI helpful for the hours after the insertion

Misoprostol before the inserting ?

Contradictory studies

Pros:

- Sääv, A. Aronsson, and all. Cervical priming with sublingual misoprostol prior to insertion of an intrauterine device in nulliparous women: a randomized controlled trial; Hum. Reprod. 2007
- Scavuzzi A, Souza AS, Costa AA, Amorim MM. Misoprostol prior to inserting an intrauterine device in nulligravidas: a randomized clinical trial.Human reproduction 2013

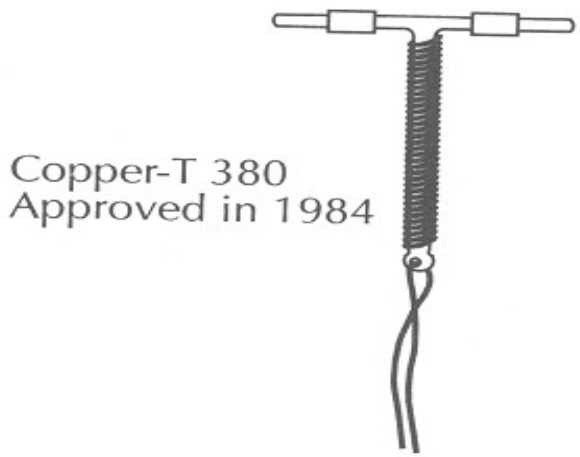
Cons:

- Espey E, Singh RH, Leeman L, Ogburn T, Fowler K, Greene H. Misoprostol for intrauterine device insertion in nulliparous women: A randomized controlled trial. Am J Obstet Gynecol. 2013
- Lathrop E, Haddad L, McWhorter CP, Goedken P. Self-administration of misoprostol prior to intrauterine device insertion among nulliparous women: a randomized controlled trial. Contraception. 2013

Which IUD ?
Menstruations or not menstruations?

- Copper-IUD

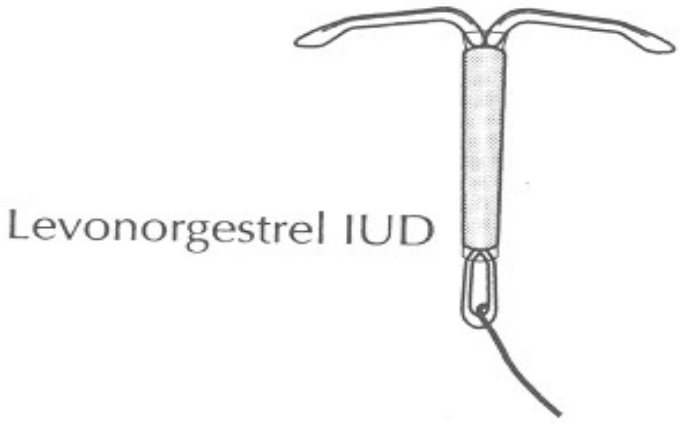
Changes in bleeding patterns +/-
- More prolonged and heavy menstruation
- More dysmenorrhea



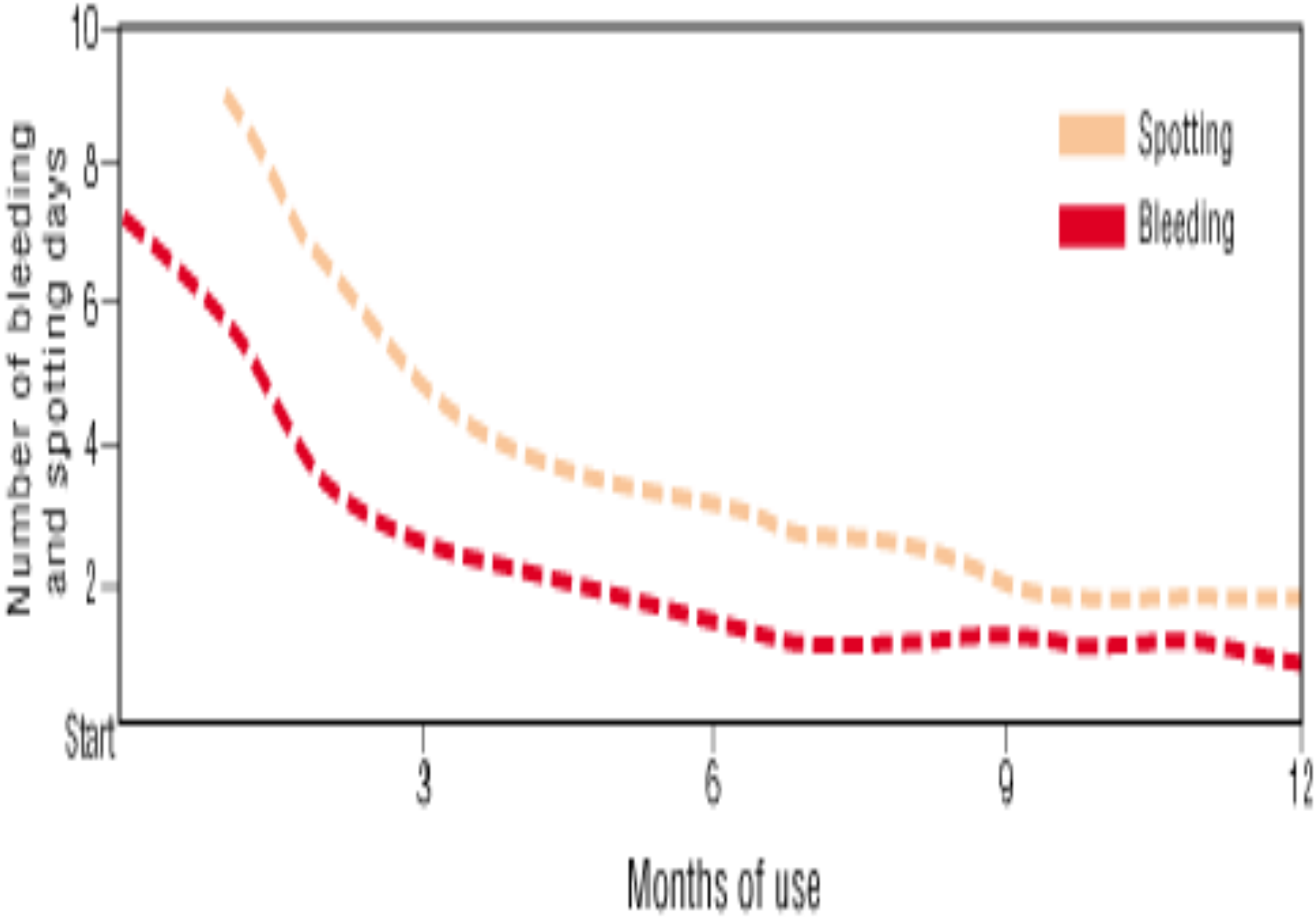
- Levonorgestrel-IUD

Changes in bleeding patterns

- Amenorrhea 20%
- Spotting 20%



Bleeding patterns for LNG-IUD
20 % of amenorrhea



When to insert an IUD?

Having menstrual cycles No need back up method	• The first 12 days of the cycle • Anytime if it is reasonably certain she is not pregnant (no sex since LMP)
Switching for an hormonal method No need back up method	• Any time if she takes correctly pills, ring, patch • Any time if she had an injectable since less than 3 months • Anytime if she has an implant (can be removed the same day)
Changing for a new IUD No need for back up method	• Anytime. Removal and insert the IUD the same day
Post partum No need for a back up method	• 4 to 6 weeks after normal delivery or C-section
Post abortum No need for a back up method	• The day of the surgical procedure • When the uterus is empty after a medical abortion

Removal or Switching from IUD to another method

She wants a child	She does not want a child
Any time	Not after the 7 first days of the cycle Need protected sex immediately after removal

To switch to an hormonal method	
If she is at the first 5 days of the cycle	IUD can be removed and Hormonal contraception can be started
If she is after the first 5 days of the cycle and had sex less than 5 days before	Start hormonal contraception, wait 7 days then remove the IUD

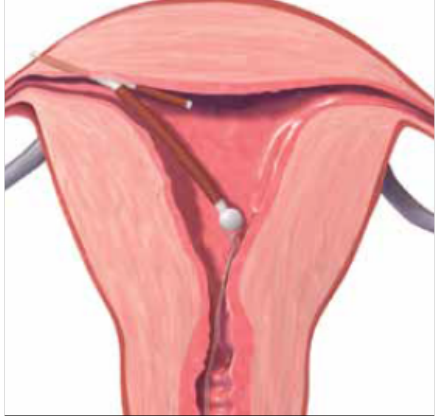
Missing strings

- Check for the strings in the cervical canal with a little forceps (more than 50% of missing strings
- Check with Ultrasound if not found in the cervical canal
- If it is in the uterus , removal can be done under ultrasound supervision
- In rare cases, hysperoscopy is needed.

How many often do we need to change an IUD?

Labeled duration	**Wu, 2014 but data only for women more than 25 years old**
• T380 10 years	12 years
• ML380 5 years	5 years
• LNG-IUD Mirena 5 years • Jaydess 3 years	7 years No data
After 35 years old	No need to be changed until menopause (WHO, 2009)

IUD Complications

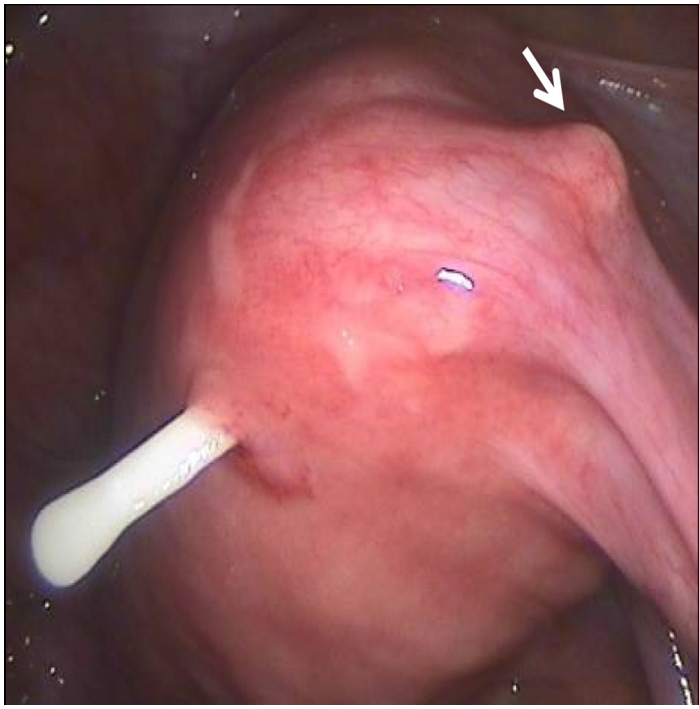


- **Perforation** (0,67 to 3,37 per 1000 insertion)

- Secondary migration

- Spontaneous migration with contractions

- Myometrial perforation at insertion then secondary migration



Risk factors of perforation

- Post partum (55% post partum < 6 mois in Finnish data)
- Breast finding (32% in Finnish data*)
- Retroverted uterus

No difference regardless

- the type of IUD
- Age
- post abortum

* Kaislasuo J et al : Intrauterine contraception: incidence and factors associated with uterine perforation--a population-based study Hum Reprod. 2012 Sep;27(9):2658-63.

Provider experience

Prospective survey in New Zéland
17 469 copper-IUD inserted between 1991 and 2011

Insertions /docteur	Nombre d'insertions	Nombre de perforations	Taux de perforation (p 1000)
1 - 9	3634	11	3.0
10 - 49	8297	11	1.3
50 - 99	2402	1	0.4
> 100	2982	5	1.7

Harrison-Woolrych M et al . Uterine perforation on intrauterine device insertion: is the incidence higher than previously reported? Contraception. 2003 Jan;67(1):53-6

Symptoms and management of perforation

- Asymptomatic, non visible strings
- pregnancy
- Pelvic pain
- Exceptional symptoms linked to perforation of bladder or bowel

Management:

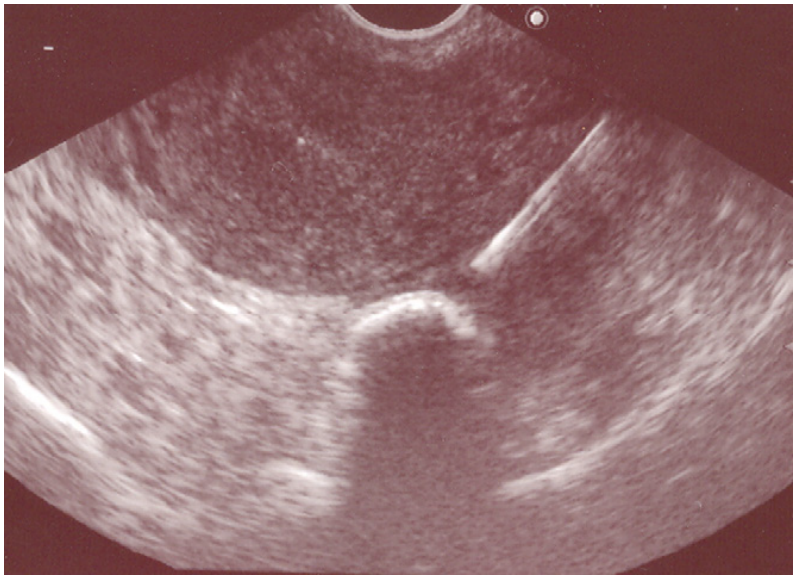
Laparoscopy or laparotomy

Can be left if asymptomatic

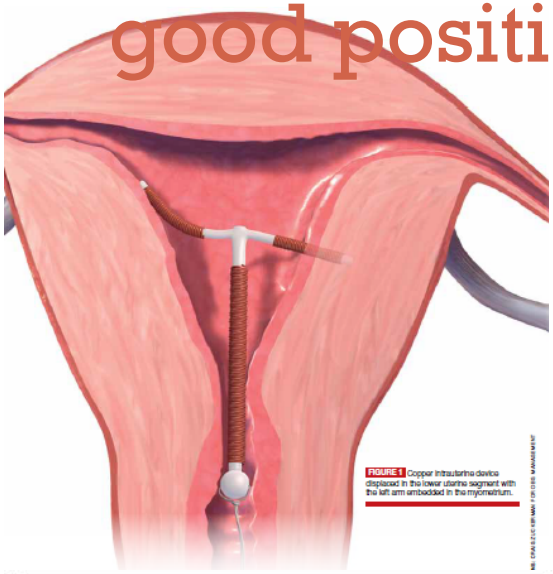
LNG-IUD has to be removed if the women wants a pregnancy

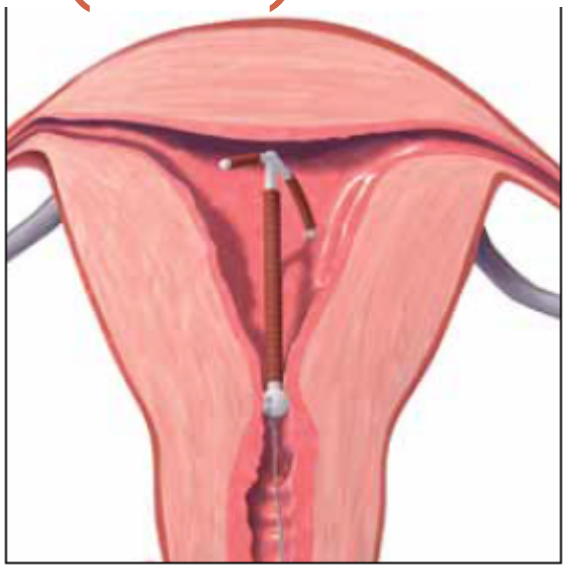
	Localisation du DIU N	Adhérences N
Epiploon	**44/68**	**15/68**
Cds de Douglas	**10/68**	**2/68**
Près des ovaires	**13 /68**	**3/68**
Cds vésico utérin	**1/68**	**1/68**

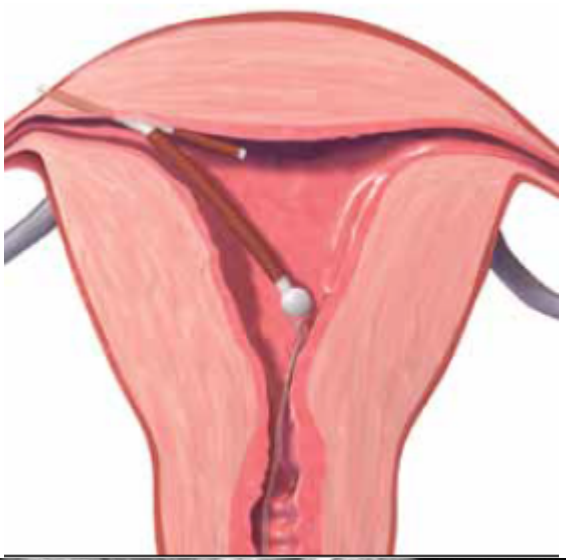
Kaislasuo J et al. Uterine perforation caused by intrauterine devices: clinical course and treatment Hum Reprod 2013 Jun;28(6):1546-51

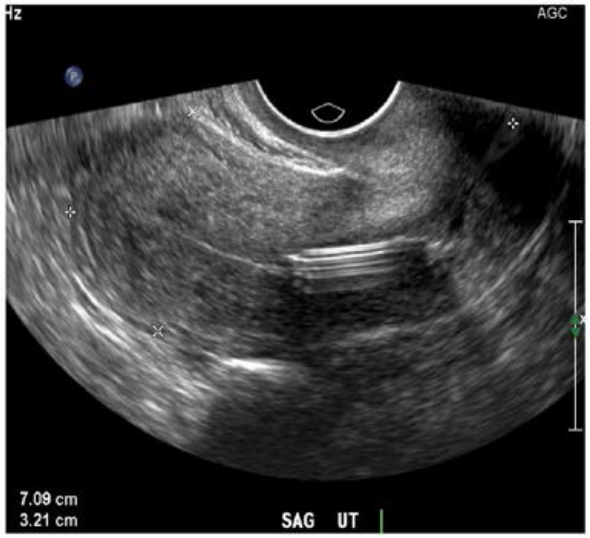


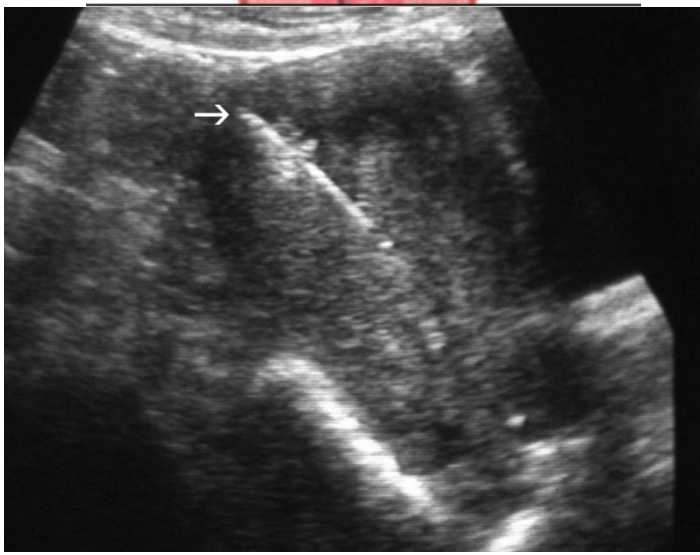
When IUD is in the uterus but not in a good position (10%)











Mirena IUD in lower uterine segment

Boyon C et al . Diagnosis and management of uterine perforations after intrauterine device insertion: a report of 11 cases. Gynecol Obstet Fertil. 2013 May;41(5):314-21

Management

- Removal if symptoms
- If asymptomatic, few data
- If in lower uterus segment, can be left
  If in the cervix, removal
  Can be pushed (no data)
- For LNG-IUD , no difference in pregnancy rate whatever the position is.
  For copper IUD: no data
- When pregnancy: difficult to know if the pregnancy is linked to the position or if the position is the consequence of the pregnancy

Is Ultrasound helpful to insert IUD?

- Reassuring but not recommended when insertion goes easily
- At the follow up visit ?

The value of transvaginal ultrasound to monitor the position of an intrauterine device after insertion. A technology assessment study

	Position inadéquate selon l'échographie	Position correcte selon l'échographie
Position inadéquate selon l'examen clinique	**12**	**8**
Position correcte selon l'examen clinique	**3**	**173**

à 6 semaines

	Position inadéquate selon l'échographie	Position correcte selon l'échographie
Position inadéquate selon l'examen clinique	**6**	**7**
Position correcte selon l'examen clinique	**0**	**160**

de Kroon CD et al. Hum Reprod. 2003 Nov;18(11):2323-7.

Conclusion

- IUD is not a risk factor of infection and infertility and complications are rare
- Use of IUD is recommended regardless age or parity.
- Long acting contraception is very effective to prevent unwanted pregnancy specially for young and very fertile women

Type of contraception	Pregnancy rate
Group Pill,ring, patch, injectables < 21 years	4,55 per 100 women in one year 8 pour 100 women in one year
Group LARC (implant, IUD)	**0,27 per 100 women in one year**

Effectiveness of Long-Acting Reversible Contraception (LARC) Brooke Winner, M.D., Jeffrey Fand all ; N Engl J Med 2012