

Female Sterilization

Background

1. General information

- Second most common method of contraception in the US after oral contraceptive pills (17% of women of reproductive age)
- Laparoscopy/laparotomy for tubal ligation or hysteroscopic tubal occlusion (Essure)

Patient Selection and Counseling

1. Informed consent is very important

2. Medicaid recipients must wait 30 days from the time of signed consent

3. Patients must understand that it must be considered a permanent method

4. Reversal may be successful (requires major surgery, expensive and may not be covered by medical insurance)

5. Risks/benefits

- Regret - 7/100 at 5 years
 - Younger women
 - Relationship conflict/change in marital status
- Morbidity and mortality
 - Mortality 4/100,000 - mainly anesthesia complications
 - Major complications
 - Ectopic pregnancy (0.1%)
 - Bleeding (1%)
 - Injury to adjacent organs (0.6%)
 - Anesthesia complications (1-2%)
 - Minor complications
 - Infection (1%)
 - Bleeding (0.6%)
 - Uterine perforation (0.6%)
- Procedure failure (pregnancy)
 - Overall risk at 10 years is 18.5/1000, compared with 11.3/1000 at 5 years for vasectomy
 - Pregnancy risk is higher in younger women (< 28 yrs)
 - Risk is higher with bipolar coagulation and Hulka-Clemens clip application (10 year data on Filshie clips is not available)
- Ectopic pregnancy
 - About 1/3rd of post sterilization pregnancies are ectopics
 - Higher rate in women < 30 yrs
 - May occur years after sterilization
 - Risk is 7/1000 women after 10 years
 - Highest risk with bipolar coagulation and lowest risk with postpartum partial salpingectomy
- Not associated with higher rate of menstrual problems
- Sexual desire/function are not affected by the procedure
- Associated with decreased risk of ovarian cancer
- Associated with higher rates of hysterectomy

- Women who choose surgical sterilization may also prefer surgical treatment for menstrual disorders
- Reduction in hospitalization for pelvic inflammatory disease
 - Possibly the tubal sterilization reduces the migration of bacteria through fallopian tubes into the peritoneal cavity
- Risk of "post-ablation tubal sterilization syndrome" in women who have had a tubal ligation and then undergo endometrial ablation
 - New/worse cyclic pelvic pain after ablation (21% vs. 6-10%)
 - Thought to be related to hematosalpinx from blocked Fallopian tubes

Timing of Procedures

1. Postpartum

- 50% of sterilizations are performed postpartum
- Usually done by minilaparotomy under regional anesthesia
- Can also be done at the same time as Cesarean delivery
- Partial salpingectomy has lower failure than Filshie clips
- Can be performed immediately after delivery to within first seven days – usually within 48 hrs
- When performed later:
 - Chance of infection is higher
 - Procedure is technically more difficult, secondary to uterine involution
 - Associated with increased analgesic requirement and larger surgical incision

2. Postabortion - uncommon in the U.S.

3. Interval procedure (unrelated to pregnancy):

- Chance of luteal phase pregnancy reduced by:
 - Alternate form of contraception for one month prior to surgery
 - Performance of the procedure during the menstrual or proliferative phase of the cycle
 - Detection of a luteal phase pregnancy using sensitive urine or serum pregnancy test on the day of the procedure
- Approach is usually laparoscopic under general anesthesia
 - Lower morbidity than mini-laparotomy
 - Requires more skill and equipment
 - Decreased hospital stay, less postoperative pain
- Filshie clips and bipolar cautery have lower failure rates

4. In conjunction with another surgical procedure

Different Surgical Approaches

1. Minilaparotomy

- Primarily Pomeroy or Parkland techniques
 - Ligation and resection of a tubal segment
- Irving and Uchida techniques
 - Ligation and resection of a tubal segment, proximal tube is sutured to the back of the uterus and distal tube is buried in connective tissue
 - Less common in U.S.

2. Laparoscopic:

- Bipolar cauterization

- Banding: Falope ring
 - Clips: Hulka-Clemens clip and the Filshie clip
3. Hysteroscopic tubal occlusion
- Involves insertion of metal coils into the fallopian tubes, causing scarring and tubal occlusion
 - Must be verified in 3 months by hysterosalpingogram; patients must continue to use contraception until then
 - 85-92% will have successful placement of implants
 - Pregnancy rate at 2 years is 2/1000
 - Advantages:
 - Less expensive, avoids general anesthesia risks, shorter recovery time
 - Disadvantages:
 - Newer procedure/ less data, more difficult to reverse, requires follow-up HSG
 - Contraindications to use:
 - <6 weeks post-partum
 - Active or recent pelvic infection
 - Nickel or contrast medium allergy
 - History of tubal surgery or hydrosalpinx
 - Uterine abnormalities which interfere with visualization of tubal ostia
4. Vaginal approach
- Not used in U.S. due to higher risk of complications: infection, rectal injury, and inability to complete the procedure vaginally

References

1. Mosher WD, Martinez GM, Chandra A, Abma JC, Wilson SJ. Use of Contraception and Use of Family Planning Services in the United States: 1982-2002. *Advance Data from Vital and Health Statistics* 2004; 350: 1-46.
2. Nardin JM, Kulier R, Bouvain M. Techniques for the interruption of tubal patency for female sterilization. *Cochrane Database of Systematic Reviews*. 2, 2007.
3. Peterson HB, Xia Z, Hughes JM, et al. The risk of ectopic pregnancy after tubal sterilization: Findings from the U.S. Collaborative Review of Sterilization (CREST). *Am J Obstet Gynecol* 1996;174:1161-1170.
4. Royal College of Obstetricians and Gynaecologists (RCOG). Male and female sterilisation. London (UK): Royal College of Obstetricians and Gynaecologists (RCOG); 2004 Jan.
5. Guido RS, Stovall DW: *Hysteroscopy: UpToDate Version 15.2*
6. Stovall TG, Mann WJ: *Surgical Sterilization of women: UpToDate Version 15.2*
7. Gabbe: *Obstetrics: Normal and Problem Pregnancies*, 5th ed (Copyright © 2007 Churchill Livingstone, an Imprint of Elsevier)
8. Hendrix NW, Chauhan SP, Morrison JC. Sterilization and Its Consequences. *Obstet Gynecol Surv* 1999; 54(12): 766-77.
9. Pati S and Cullins V. Female Sterilization. *Obstetrics and Gynecology Clinics of North America* 2000; 27(4): 859-99.

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