

# Sterilization: Female and Male

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# U.S. Contraceptive Use

METHOD	WOMEN (ages 15-44)
<b>TUBAL LIGATION</b>	<b>28%</b>
Oral contraceptives	27%
Male condom	21%
<b>VASECTOMY</b>	<b>11%</b>
Injectable	3%
Diaphragm	2%
IUD	1%

Piccino et al. Fam Plann Perspect. 1998

# Contraceptive Efficacy

Method	Pregnancies per 1000 women (5-year)
IUD - Mirena®	5
<b>VASECTOMY</b>	<b>10</b>
<b>TUBAL LIGATION</b>	<b>13</b>
IUD - ParaGard®	14
Injectable	32
Oral contraceptives	70
Male condom	90
Periodic abstinence	198

# Tubal Ligation

- Timing
  - Post-partum
  - Post-abortion
  - Interval (unrelated to pregnancy)
- Approaches
  - Mini-laparotomy
  - Laparoscopic
  - Hysteroscopic
  - Transvaginal (colpotomy)
  - Chemical sclerosing agent - Quinacrine

# Tubal Ligation

## ■ Anesthesia

- General
- Regional

## ■ Contraindications

- Anesthesia
- Severe adhesions
- Severe dysmenorrhea

## ■ Voluntary

- Mental disabilities
- Teenagers
- Medicaid

# Informed consent

- Explanation of procedure, including anesthesia
- Benefits
  - Highly effective
  - Reduction in risk of ovarian cancer (OR 0.3-0.9) and PID
- Alternatives
  - Other forms of contraception
  - Vasectomy
- Potential risks
  - Operative
  - Failure
  - Ectopic pregnancy
  - No change in menstruation, sexual desire or pleasure

# Post-sterilization regret

- Overall 3-10%
- Associated with:
  - Young age at time of sterilization
  - Change in marital status
- Not associated with:
  - Religious background
  - Socioeconomic status
  - Educational level
  - Low parity
  - Postpartum or post-abortion sterilization
- 1-2% seek reversal

# Mini-laparotomy

## ■ Advantages

- Postpartum
- Local anesthesia
- Partial salpingectomy
  - Lower failure rate
  - Tissue to pathology

## ■ Disadvantages

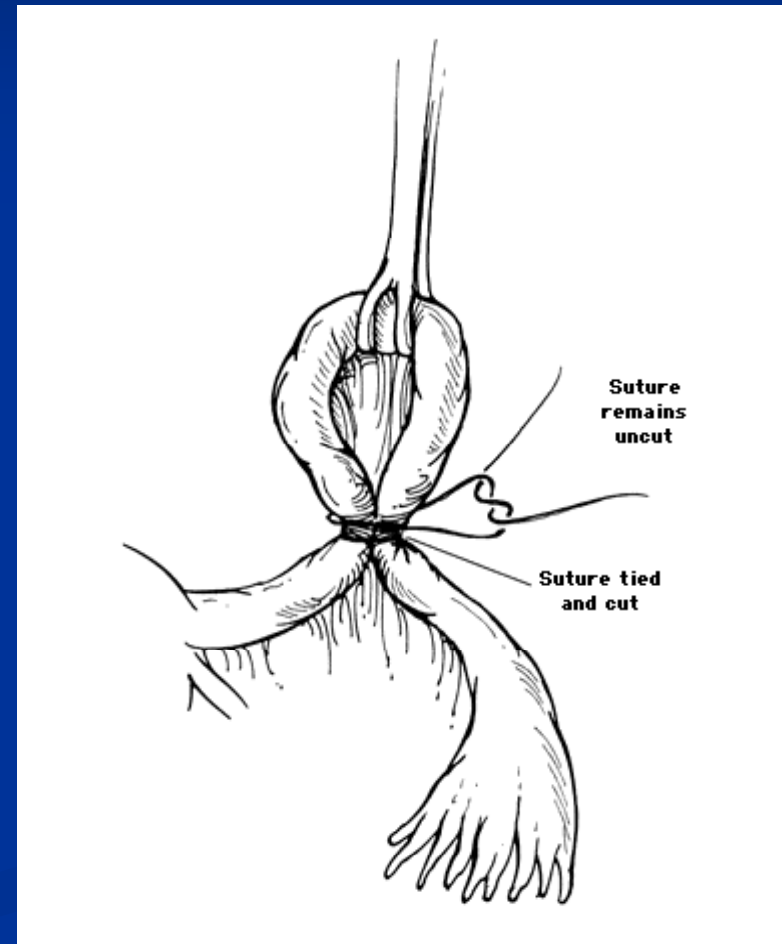
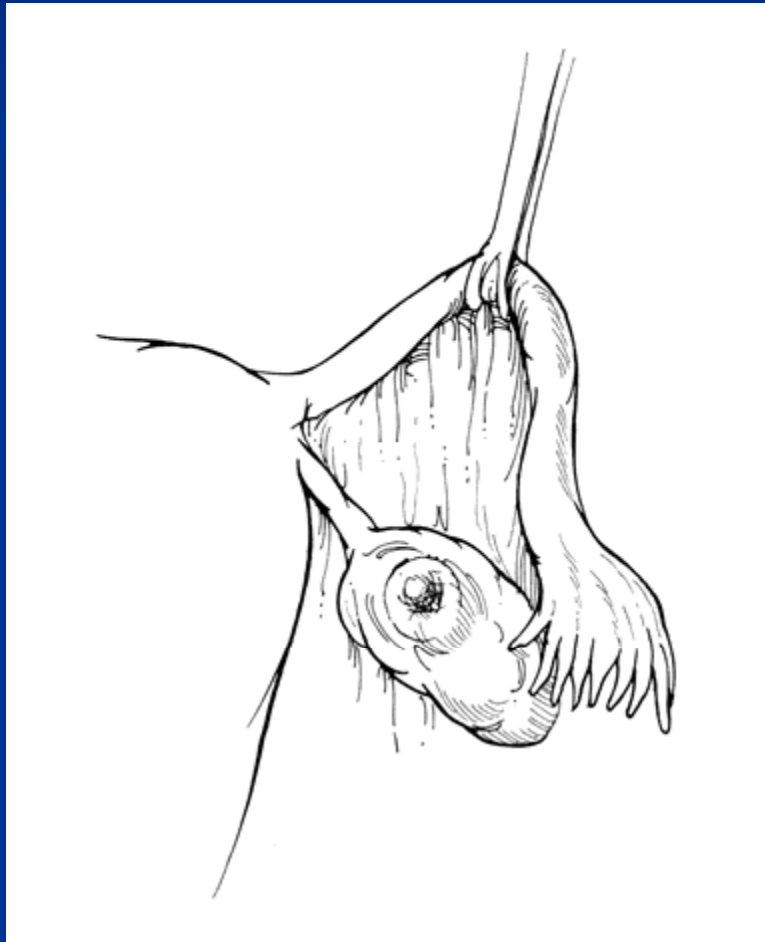
- More post-op pain
- Longer recovery
- Wound healing

## ■ Methods

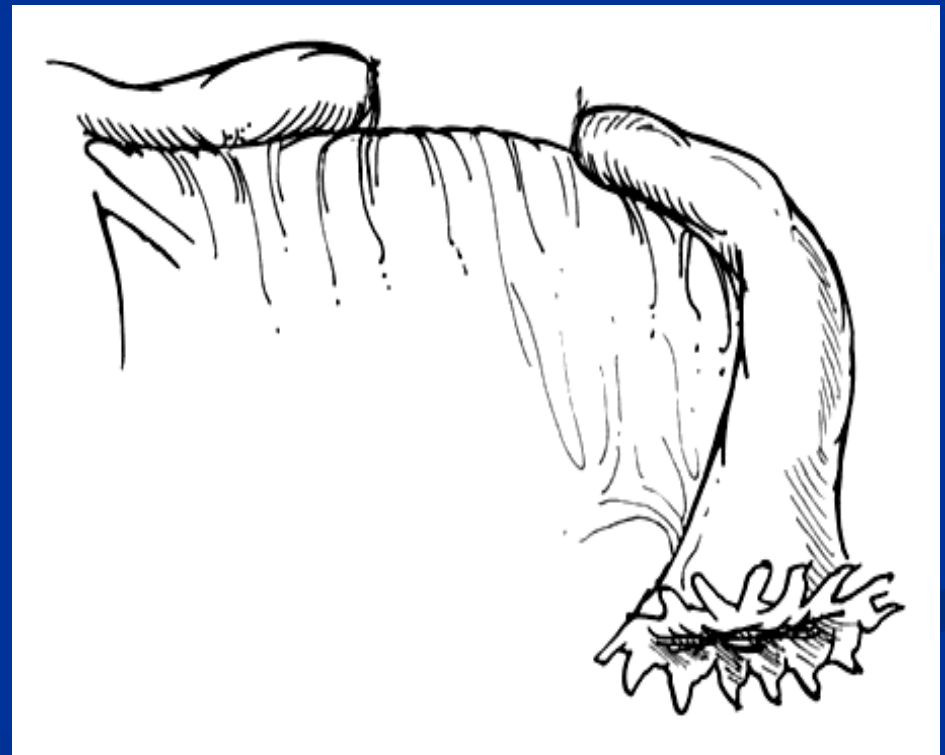
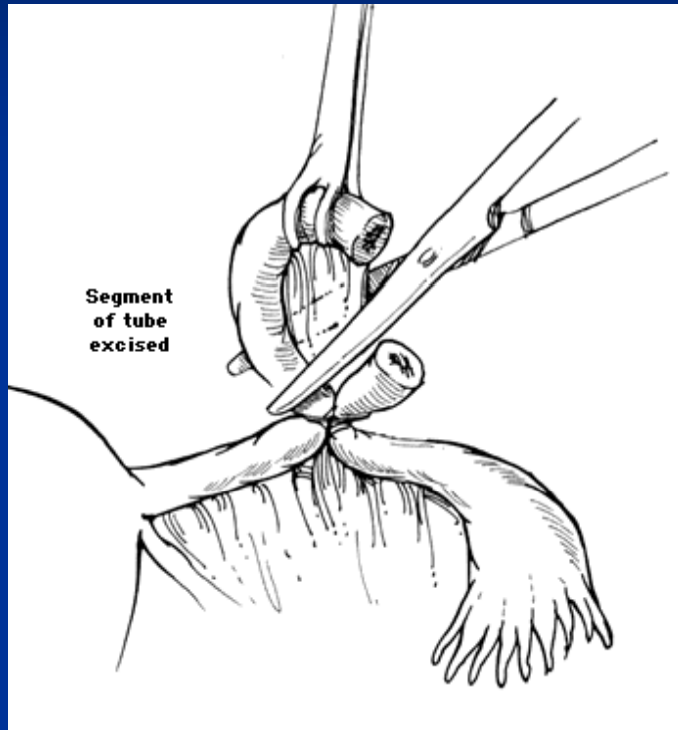
- Pomeroy
- Parkland
- Irving
- Uchida
- Madlener
- Oxford
- Kroener
- Aldridge



# Pomeroy method



# Pomeroy method



# Laparoscopic Techniques

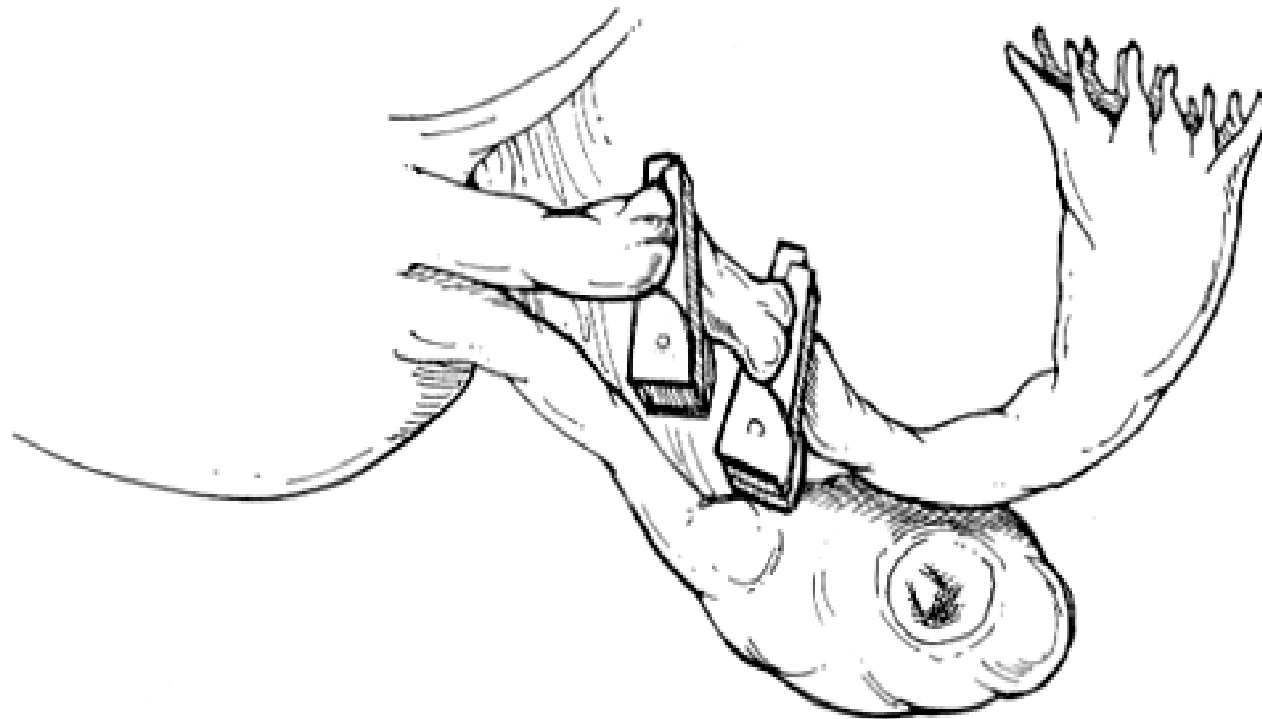
## ■ Advantages

- Opportunity to inspect abdomen
- Barely visible incision scar(s)
- Rapid recovery

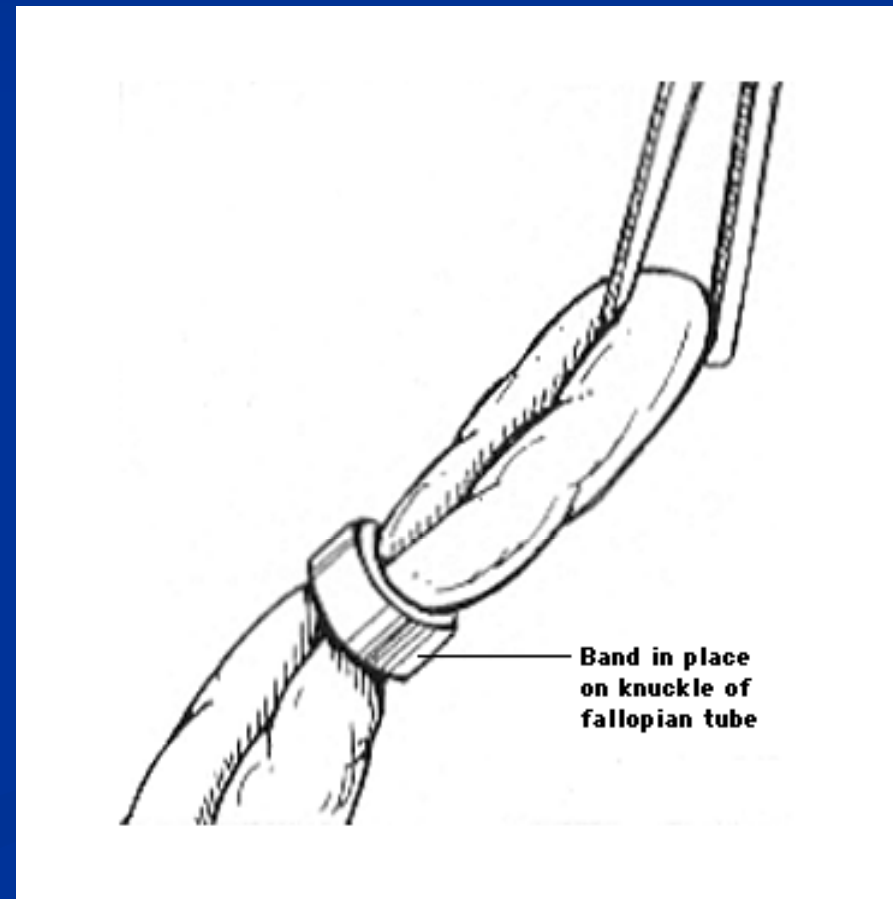
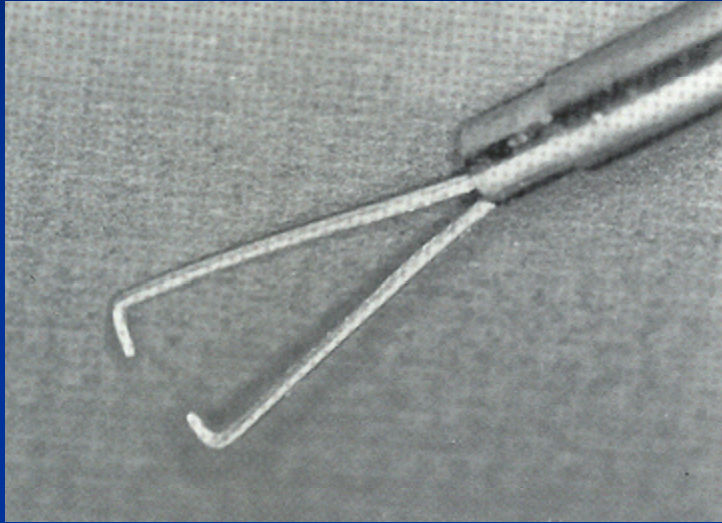
## ■ Disadvantages

- Operative risks
- Anesthesia risks
- Cost
  - Equipment
  - Training

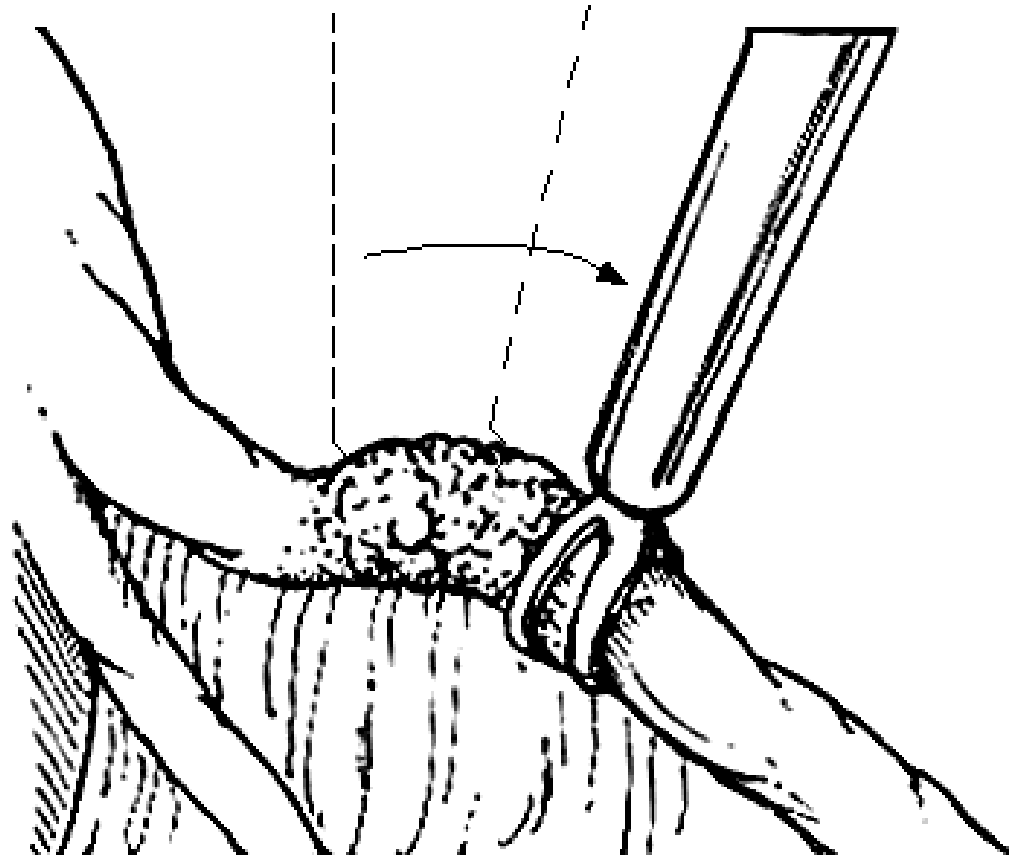
# Filschie® Clip



# Falope® Ring



# Bipolar cautery



# CREST Study

- Collaborative Review of Sterilization Study
- 10,685 women
- Prospectively enrolled cohort
- Followed 8-14 years
- Outcomes (cumulative over 10 years)
  - 18.5 pregnancies per 1000 procedures
  - 7.3 ectopic pregnancies per 1000 procedures

# CREST: Failure by Method

Method	Pregnancies per 1000 procedures
PP partial salpingectomy	7.5
Unipolar coagulation	7.5
Falope ring	17.7
Interval partial salpingectomy	20.1
Bipolar coagulation	24.8
Hulka® clips	36.5
All methods	18.5



# Reasons for Failure

- Surgeon failure
  - Misidentification of structures
  - Technical failure
- Method failure
  - Recanalization
  - Fistula formation
- Postpartum vs. Interval
  - Method
  - Loss to follow-up

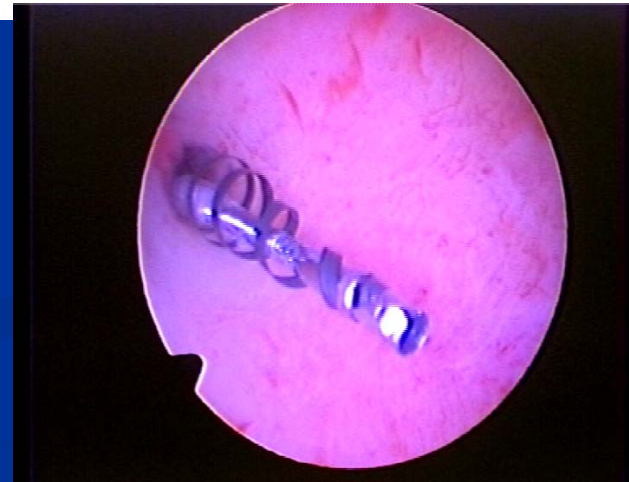
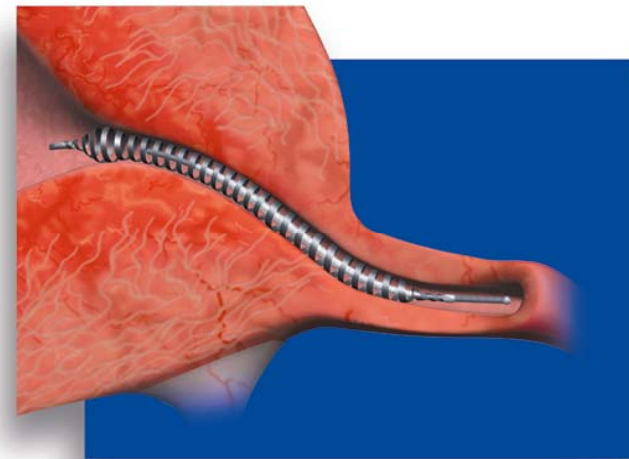
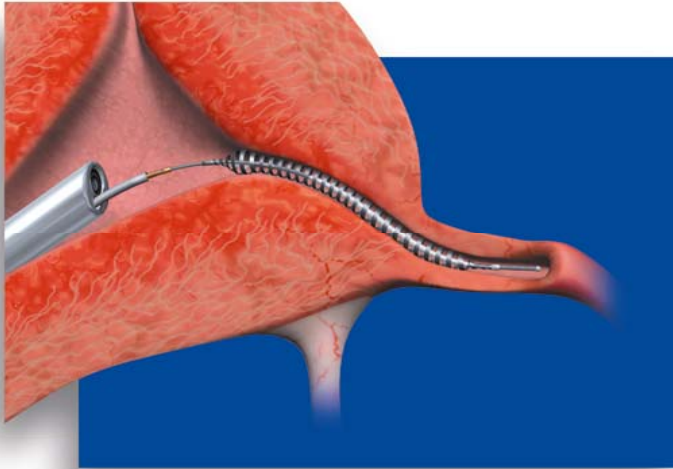
# Essure® Procedure

- Non-incisional, transcervical permanent tubal occlusion
- Micro-inserts are placed in the fallopian tubes
- Introduced with standard hysteroscopic approach with tubal cannulation
- Can be performed in outpatient setting without general anesthesia

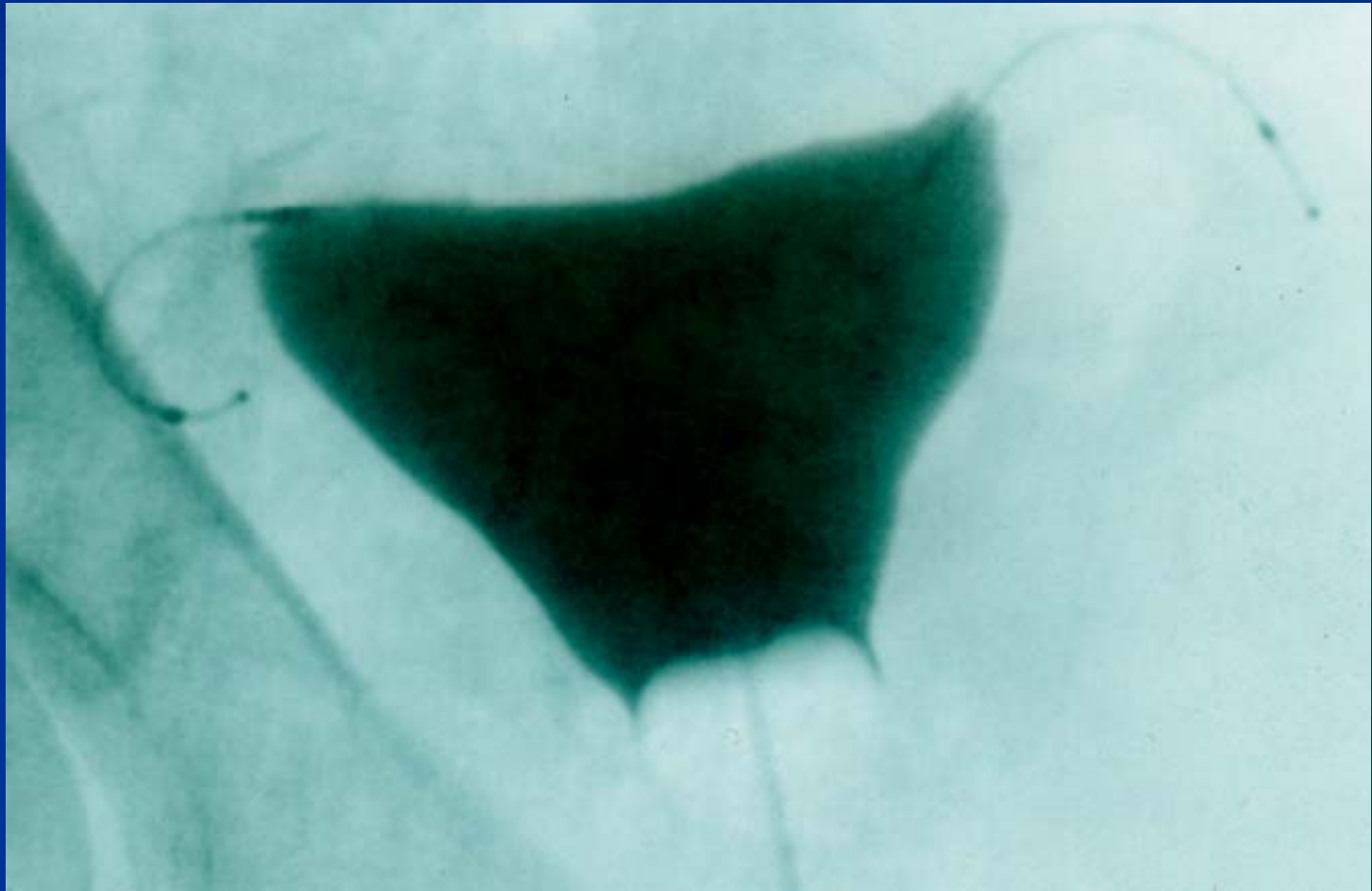
# Essure® Delivery System



# Essure® Procedure

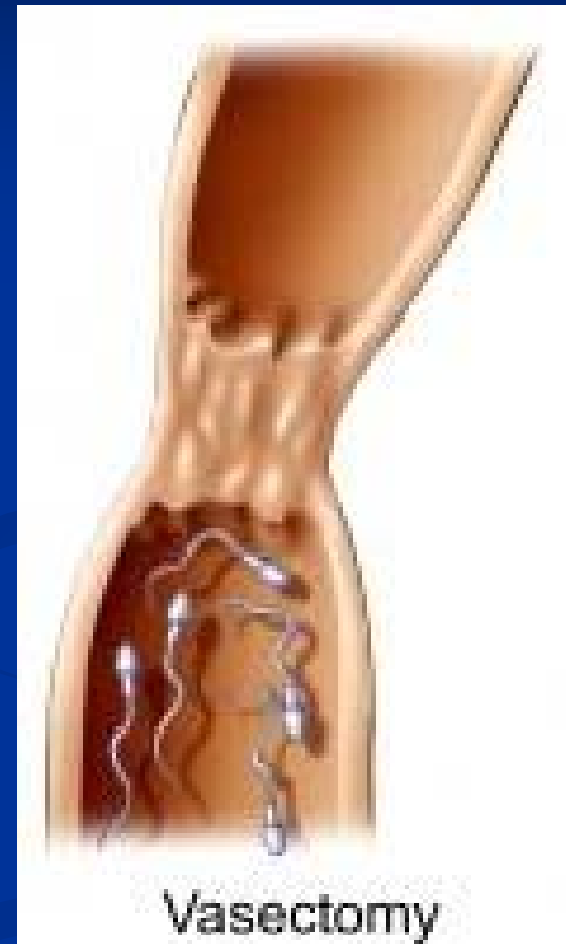


# 3-month Hysterosalpingogram



# Vasectomy

- Worldwide
  - 5% of married couples
  - New Zealand – 23%
  - Netherlands – 11%
  - China – 8%
  - India – 7%
- U.S.
  - 11% (500,000 per year)



# Vasectomy

- Performed by
  - Urologists (71.1%)
  - Family practitioners (15.4%)
  - General surgeons (12.9%)
- Safer than tubal ligation
  - Less invasive
  - Local anesthesia
- Cost-effective
- Failure rate <1%

# Follow-up

- Semen analysis after 20-25 ejaculations
  - 95% men azoospermic by 23 ejaculations
- Failure
  - User failure
  - Practitioner experience/technique
  - Early recanalization
  - Late recanalization - motile sperm reappear



# Vasectomy methods

- Incisional method
- No-scalpel (non-incisional) vasectomy
- Occlusion methods
  - Suture
  - Cautery
  - Clips
  - Combination
- Closed vs. open-ended
- Interposition of fascia between cut ends

# Sterilization reversal

- 1-2% request
- Why?
  - Divorce or death of spouse
  - Death of child
- Methods
  - Tubal reanastomosis
  - Vasovasotomy
  - Vasoepididymostomy
  - IVF/ICSI

# Tubal reanastomosis

- Success depends on:

- Patient age

15-30 years	73%
30-33 years	64%
34-49 years	46%

- Sterilization technique

Electrocautery	41%
Pomeroy	50%
Rings	75%
Clips	84%

# Vasectomy reversal

- Success depends on:

- Time interval between vasectomy and reversal

Time interval	Patency	Pregnancy
<3 years	97%	76%
3-8 years	88%	53%
9-14 years	79%	44%
>15 years	71%	30%

- Anti-sperm antibodies (50%)

Belker et al. J Urol. 1991.

# Key points

- Sterilization is safe and effective
- Meant to be permanent
  - Failure rate
  - Reversal
- Counseling – regret risk factors
- Tubal ligation – ectopic risk
- Vasectomy – safer and more effective