



The American College of  
Obstetricians and Gynecologists  
WOMEN'S HEALTH CARE PHYSICIANS

# Tissue Handling and Dissection Techniques

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Developed in association with



**Society of Gynecologic Surgeons**

# Introduction

- The core skills of a surgeon include:
  - Knowledge of relevant anatomy
  - Safe exposure of the anatomy
- Assuming knowledge of structural anatomy and skills in surgical dissection and tissue handling enables the surgeon to reveal anatomy without disrupting its structural and functional integrity
- The techniques listed in this presentation are universal skills, adaptable to the following approaches:
  - Abdominal
  - Laparoscopic
  - Robotic
  - Vaginal

# Introduction

Applying surgical dissection techniques and good tissue handling learned from expert mentors will allow the student surgeon to develop into a sound surgeon, minimizing complications and excessive blood loss.

*One cannot expect good surgical outcomes without good surgical dissection.*

# History of Surgical Dissection

Halsted's tenets:

- Gentle handling of tissue
- Meticulous hemostasis
- Preservation of blood supply
- Strict aseptic technique
- Minimum tension on tissues
- Accurate tissue apposition
- Obliteration of dead space

# Surgical Dissection

## Purpose

- Expose anatomic structures
- Safeguard structural and physiologic integrity

## Goals

- Maintain correct orientation and direction of dissection
- Minimize bleeding
  - Allows for full visualization of tissues and relevant structures
  - Excessive bleeding may indicate wrong tissue plane
- Thin out visceral connective tissues
  - Allows for identification of structures by sight or palpation
- Maintain flexibility by reassessing the dissection site constantly and switching to the most suitable technique, perspective and the instruments as necessary

# Surgical Movements

- Dissection should be performed millimeter by millimeter
- Gradual, deliberate, and controlled movements are essential for thinning out of connective tissues and revealing the structures within

# Surgical Instrumentation: Scalpels

## 10 blade



This scalpel has a long broad cutting surface. The belly of the blade is the proper cutting surface. It is often utilized to make skin incisions or surgical dissection of planes in a straight line. It is best held as a violin bow.

## 15 blade



The blade of this scalpel is narrower and smaller and the curved tip is the primary cutting surface. It is utilized for shorter or angled incisions. It is best held as a pencil.

## 11 blade



This blade has an angled, pointed tip. It is primarily used to make a stab-type incision and can also be used in a sawing fashion. It is best held as a pencil.

# Surgical Instrumentation: Scissors

## **Metzenbaum or tenotomy**

These scissors are primarily used for both blunt and sharp dissection. Techniques include spreading the tips for blunt dissection (“push and spread”) and closing the tips for sharp dissection.

## **Mayo**

These scissors have a broader blade and wider spread. They may be curved or straight. Techniques are similar to those described above.





# Surgical Instrumentation: Forceps

In general, forceps should be used as extensions of the index finger and thumb (like holding a pencil or fork), to permit optimal grasp and control.

**Adson:** Small fine forceps, with or without teeth, for handling skin edges or fragile structures



**DeBakey:** Longer but still fine forceps without teeth. Used for handling structures such as vessels or nerves



**Forceps with teeth:** Long or short, used for handling fascia, muscle, etc.



# Techniques of Expert Dissection

Five operating techniques of expert dissection are:

- “Grasp and Tent”
- “Push and Spread”
- “Traction Countertraction”
- “Gentle wiping and teasing”
- Hydrodissection

# “Grasp and Tent”

- Operator elevates the tissue to be incised away from vital structures such as ureter, artery, vein, bowel, bladder and nerves
- Aids in thinning out grasped tissue to improve visualization

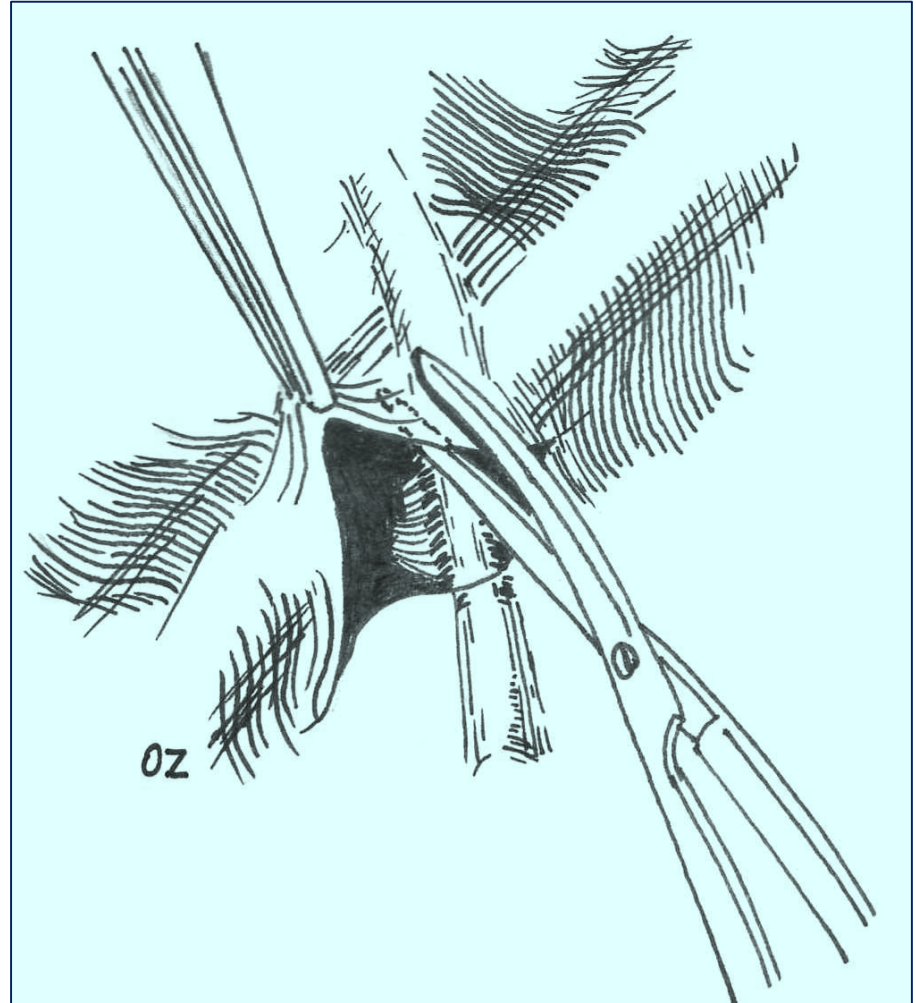


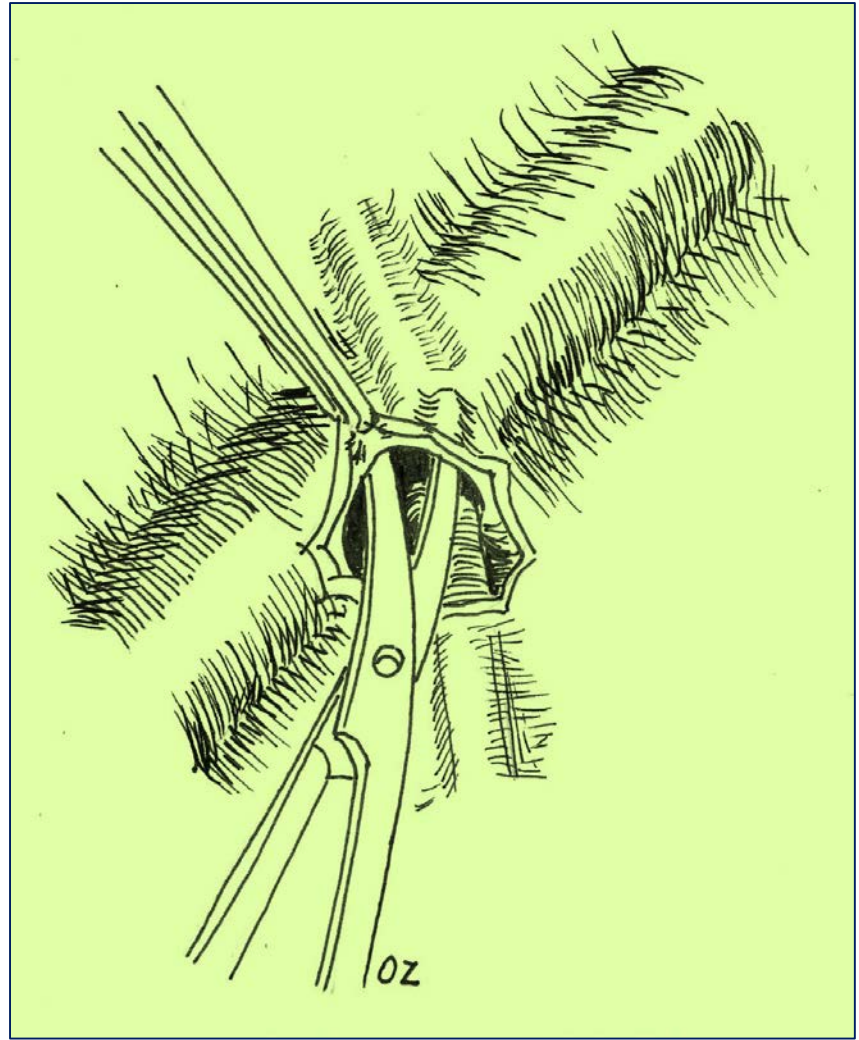
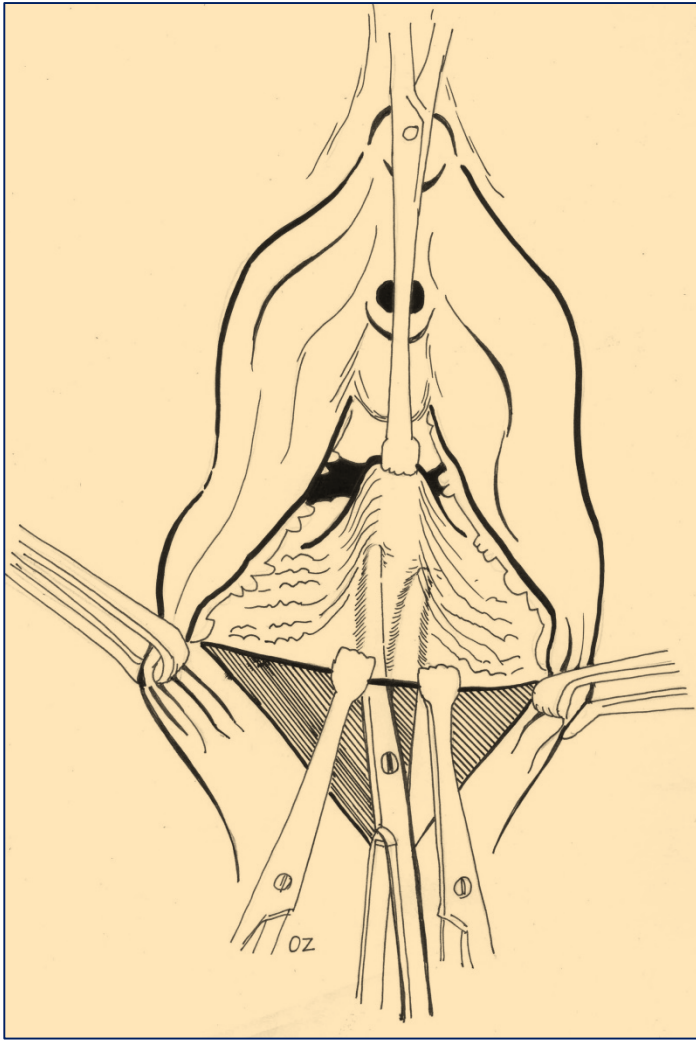
Image courtesy of Oz Harmanli, MD, Department of Obstetrics-Gynecology, Baystate Medical Center.

# “Push and Spread”

The Push and Spread technique

- is also known as “Poke and Open”
- further thins out connective tissue and releases scarring
- is aided by “Traction Countertraction” and “Grasp and Tent” techniques

# “Push and Spread”



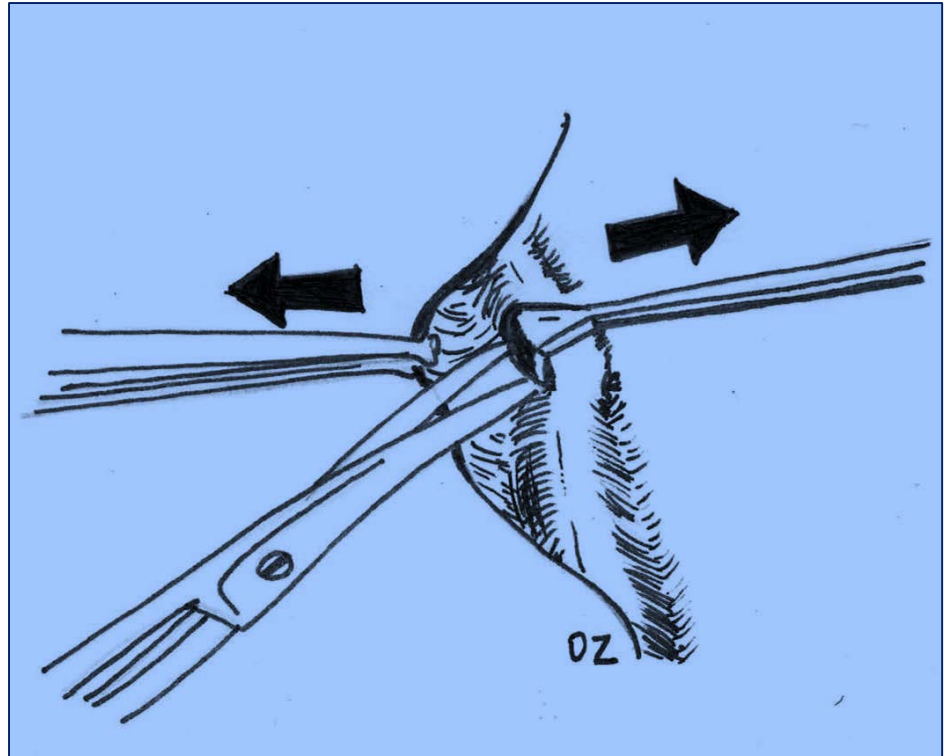
Images courtesy of Oz Harmanli, MD, Department of Obstetrics-Gynecology, Baystate Medical Center.

# “Traction Countertraction”

Traction Countertraction is

- a gentle pulling technique which separates vital structures in the surgical field and allows for evolution of the surgical plane
- typically performed by a surgeon with the assistance of another member of the surgical team

# “Traction Countertraction”



Images courtesy of Oz Harmanli, MD, Department of Obstetrics-Gynecology, Baystate Medical Center.

# “Gentle Wiping and Teasing”

- Proceed gently, millimeter by millimeter
- Further thins out connective tissue
- Use this technique only when the tissue plane is clearly identified
- Avoid blunt, quick strokes, which may cause unwanted damage to viscus or vessels
- May use scissors, a peanut, sponge or simply fingers
- A peanut or sponge may also help clear blood from the field

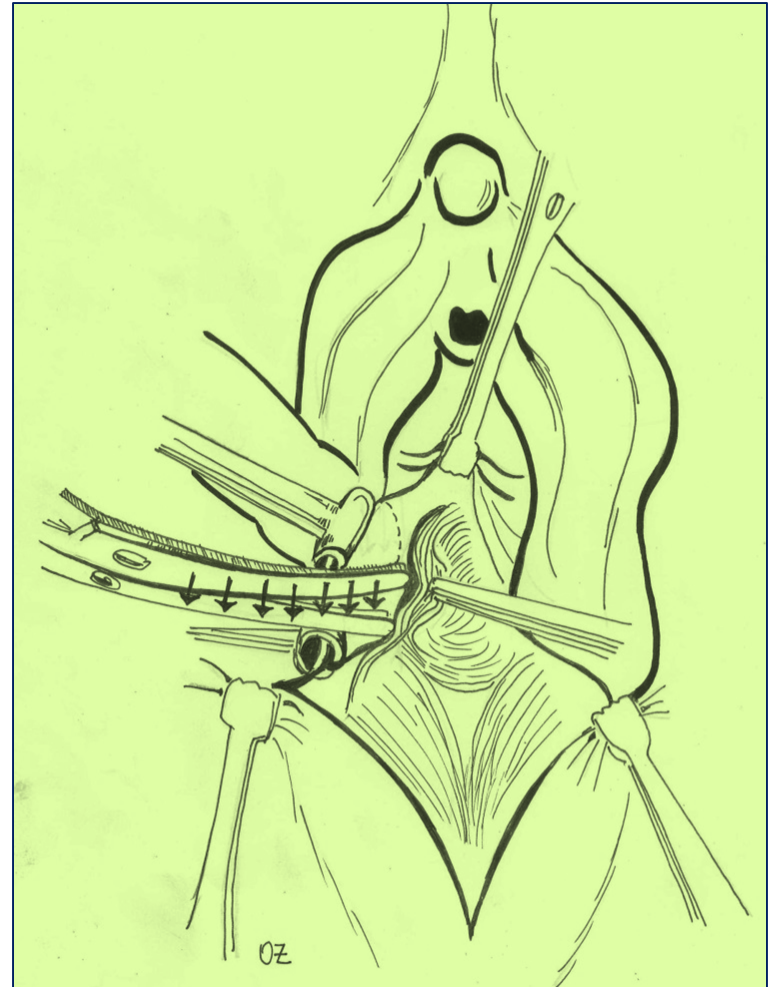


Image courtesy of Oz Harmanli, MD, Department of Obstetrics-Gynecology, Baystate Medical Center.



# Hydrodissection

## Hydrodissection

- is the injection of sterile fluid into the surgical field to tent and thin out the connective tissue fibers
- is helpful for opening potential spaces such as pararectal and paravesical spaces
- with a suction-irrigation device is useful during laparoscopic surgery along the pelvic sidewall
- may also facilitate vaginal dissection

# Hydrodissection



Example of hydrodissection. Image courtesy of Oz Harmanli, MD, Department of Obstetrics-Gynecology, Baystate Medical Center.

# Skeletonizing

Skeletonizing is:

- a combination of dissection techniques
- the thinning out of visceral connective tissues enveloping structures, such as blood vessels, via 'push and spread' and 'gentle wipe/tease' techniques, to render these structures clearly identifiable
- a technique done in which the operator
  - holds the scissor tips slightly open
  - gently brushes the tissue
  - uses care to not cut unintentionally

# Skeletonizing

The technique is

- typically performed with Metzenbaum scissors
- ideal for separating adhesions, broad ligament dissection, and cleaning connective tissue

One example of skeletonizing is the clearing the tissue overlying vessels such as when the uterine artery is dissected during a hysterectomy.

# Additional Surgical Pearls

- Optimize visualization
  - Appropriate incision and port site selection
  - Lighting
  - Loupes
  - Adequate retraction
  - Irrigation
- Proceed from easy to difficult dissection
  - “Path of least resistance”
- Proceed from normal to abnormal anatomy

# Additional Surgical Pearls

- Do not rush!
- Heed warning signs
  - Bleeding indicates wrong plane
  - Assess the sight and feel of correct plane
- Maintain flexibility
  - Be prepared to change the technique, the tools and the direction of dissection
  - Think outside the box

# Proper Dissection Technique

Less blood loss

+

Less trauma to tissues and  
surrounding structures



Better surgical outcomes

# References

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