

# Suturing



Endoscopy in reproductive medicine  
2011

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## Objectives

- ✓ Understand the complexity of laparoscopic suturing and the rationale for training.
- ✓ Understand ergonomic principles.
- ✓ Understand extracorporeal knot, intracorporeal knot.



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## Training



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## Day 1

- ✓ Objective:
  - Evaluate skills status on individual basis
  - Suturing
  - Both hands use in laparoscopic surgery
- ✓ Practical part
  - Needle introduction
  - Needle orientation
  - Tissue approximation



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## Day 2

- ✓ Objective
  - Understand laparoscopic knotting
- ✓ Practical part
  - Extracorporeal knot
  - Intracorporeal knot



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## Day 3

- ✓ Objective
  - Master learned skills
  - Implementing trained skills in global surgical practice
- ✓ Practical part
  - Ergonomics
  - Tips and tricks
- ✓ Laparoscopic skill evaluation



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## Needle manipulation

1. Needle
2. Needle holder
3. Needle introduction - trocars
4. Loading the needle
5. Suture



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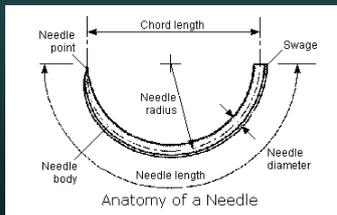
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## Needle's anatomy



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## Needle shapes

Shape: Straight  
Applications: gastrointestinal tract, nasal cavity, nerve, oral cavity, pharynx, skin, tendon, vessels

Shape: Half-curved  
Applications: skin (rarely used)

Shape: 1/4 Circle  
Applications: eye (primary application), microsurgery

Shape: 3/8 Circle  
Applications: aponeurosis, biliary tract, dura, eye, fascia, gastrointestinal tract, muscle, myocardium, nerve, perichondrium, pericosteum, peritoneum, pleura, tendon, urogenital tract

Shape: 1/2 Circle  
Applications: biliary tract, eye, gastrointestinal tract, muscle, nasal cavity, oral cavity, pelvis, peritoneum, pharynx, pleura, respiratory tract, skin, subcutaneous fat



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## Needle shapes



1/2 Circle

Shape: 5/8 Circle

Applications: anal (hemorrhoidectomy), cardiovascular system, nasal cavity, oral cavity, pelvis, urogenital tract (primary application)



5/8 Circle

Shape: Compound Curved  
Applications: eye (anterior segment)



Compound Curved



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## Needle holders



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## Needle holders



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## Rotation of wrist & fingers



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## Trocars



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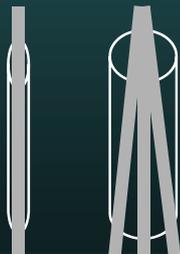
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## Instruments

- ✓ 3 mm trocars & instruments
- ✓ Fine suturing
- ✓ Congruence



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## Needle introduction

- ✓ 10 mm trocar



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## Needle introduction

- ✓ 5 mm trocar



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## Needle extraction

- ✓ 10mm trocar
- ✓ 5 mm trocar:
  - Straften the needle using 2 needle holders

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## Loading the needle

- ✓ Lay on tissue
- ✓ Koh technique
- ✓ Wattiez technique
- ✓ twist



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## Loading the needle

- ✓ Lay on tissue



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## Loading the needle

- ✓ Lay on tissue
- ✓ Koh technique



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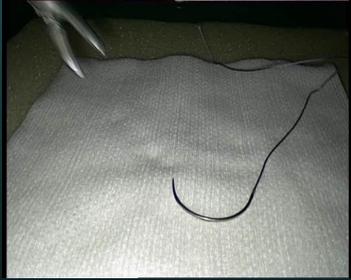
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## Loading the needle

- ✓ Lay on tissue
- ✓ Koh technique



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## Loading the needle

- ✓ Lay on tissue
- ✓ Koh technique
- ✓ Wattiez technique



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## Loading the needle

- ✓ Lay on tissue
- ✓ Koh technique
- ✓ Wattiez technique



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## Beware of errors !!

### ✓ errors



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## Loading the needle

- ✓ Lay on tissue
- ✓ Koh technique
- ✓ Wattiez technique
- ✓ **twist**



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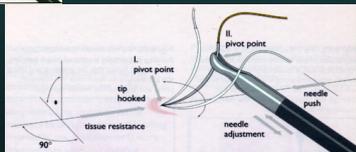
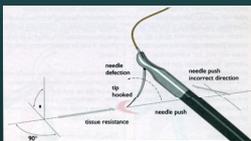
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## Suture

- ✓ Needle deflection v/s Needle rotation



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## Suturing

### ✓ Z line running suture

- Master rotation principle
- Train one hand at a time



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## Suturing

### ✓ Greek running suture

- Master using both hands
- Ambidexterity



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## Exercises

### ✓ Needle insertion through trocars

### ✓ Loading the needle

- Lay-on
- Koh
- Wattiez
- twist



### ✓ Suturing WITHOUT KNOTTING

- Z line
- Greek line

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