

# Proper use of endoscopic devices for polypectomy/EMR/ESD

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# Summary

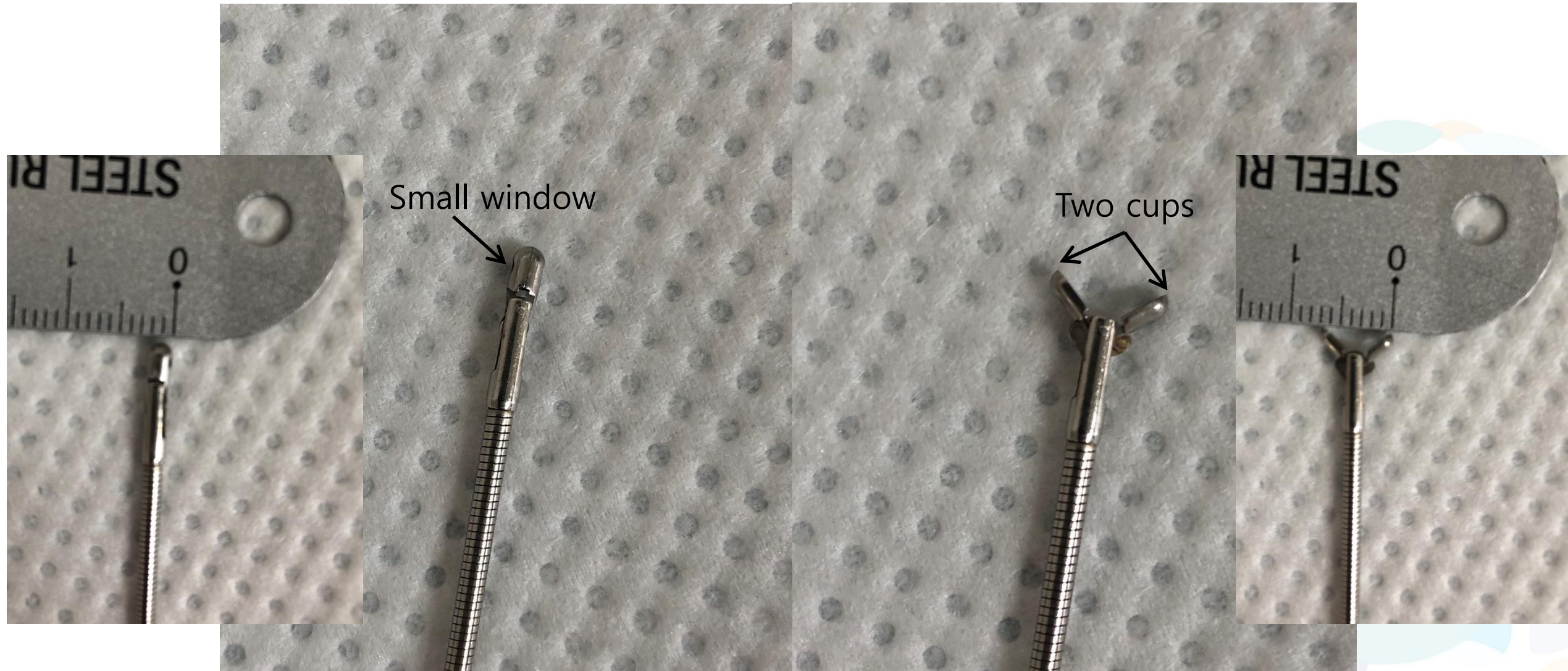
- ✓ For optimal selection of endoscopic resection technique, familiarity with available polypectomy, EMR, and ESD devices and proper use of them is the first step.
- ✓ Cold biopsy forceps is simple and safe to use for polyps  $\leq 5$  mm in size, but rarely used in removing neoplastic lesions in upper GI tract.
- ✓ Hot biopsy forceps is no longer recommended for routine polypectomy, but instead can be used for avulsion technique.
- ✓ Snares are the main devices for polypectomy and EMR and have various shapes and sizes.
- ✓ Cold snare polypectomy can be used for removing small duodenal nonampullary adenomas.

# Summary

- ✓ ESD knives are the main devices for ESD.
- ✓ The most popular ESD knives include IT knife, Hook knife, and Dual knife, and many new knives including hybrid knives have been developed.
- ✓ ESU supplies the high frequency electrical current to endoscopic devices to generate cut and/or coagulation effects.
- ✓ Various modes are available to be used properly in various procedures.

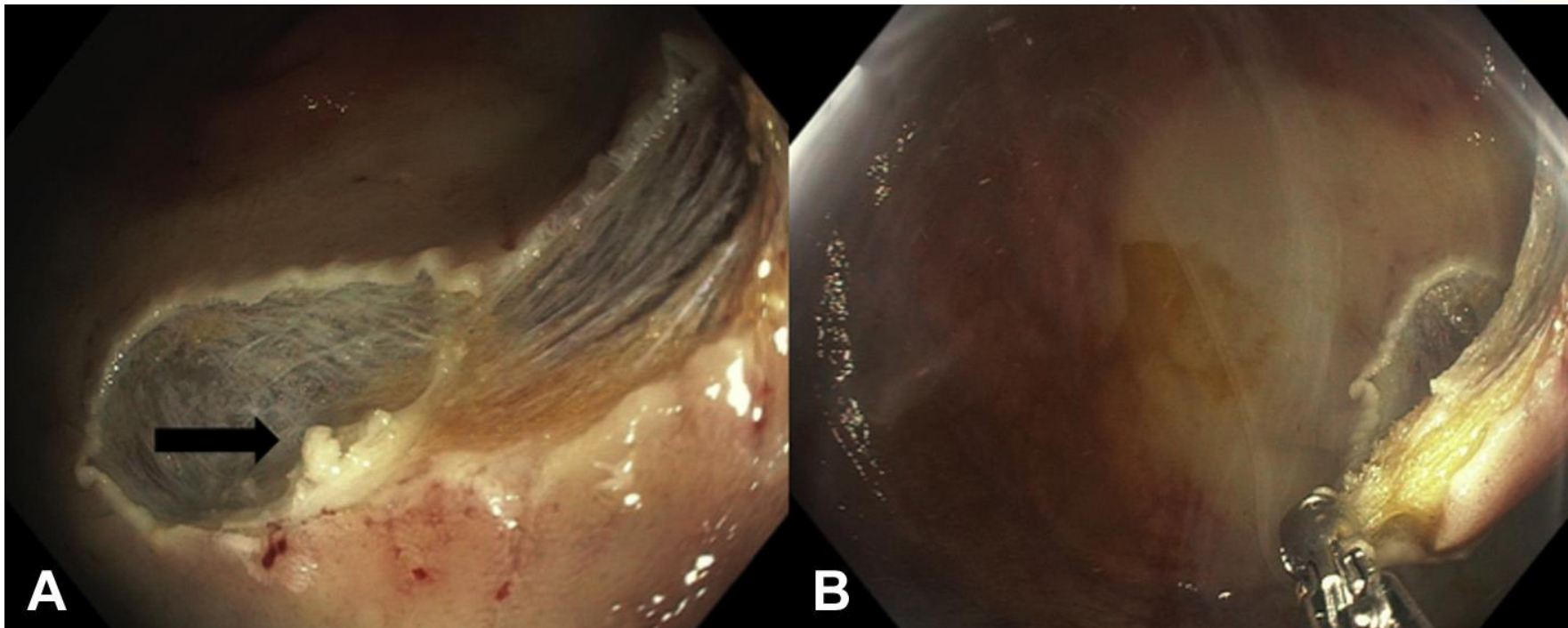
# Cold biopsy forceps

- Basic structure



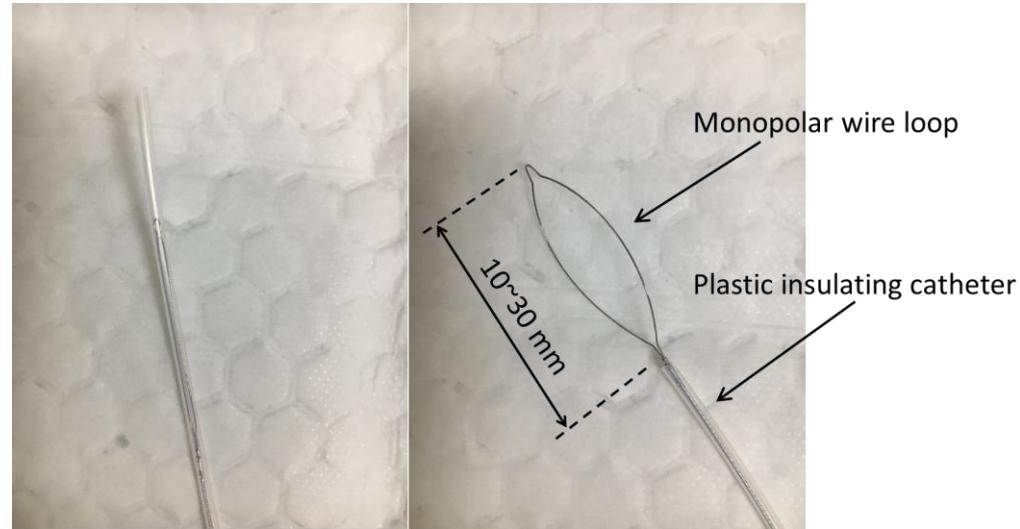
# Hot biopsy forceps

- HBF polypectomy: not currently recommended
- Avulsion technique: removing visible lesions during EMR/ESD
  - Grasping residual tissue with hot biopsy forceps
  - Gentle mechanical traction (rather than tenting) is made
  - Simultaneously with low-voltage cutting current (rather than coagulation current)



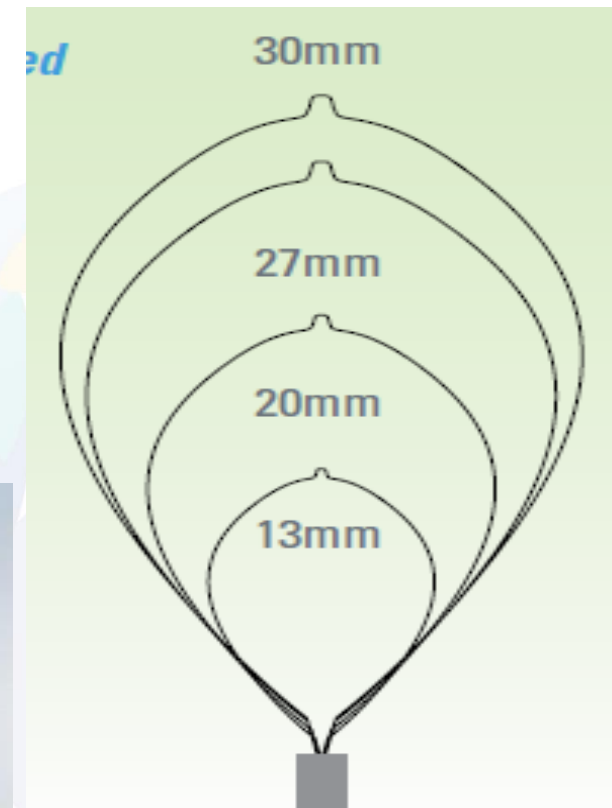
# Snare

- Basic structure



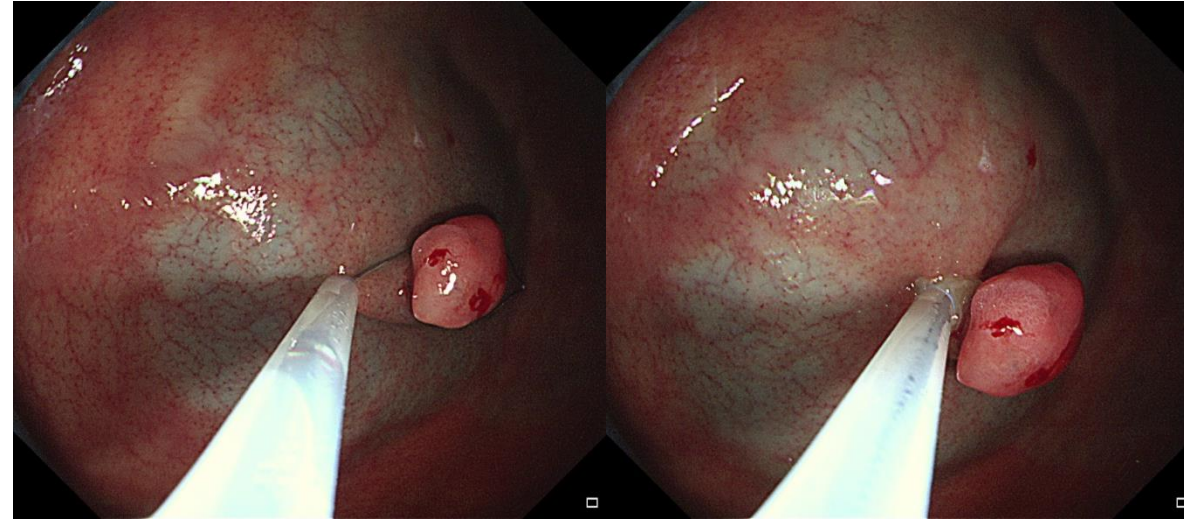
- Various types of snare

- Braided vs. monofilament, Oval, Crescent, Hexagonal, Thorns

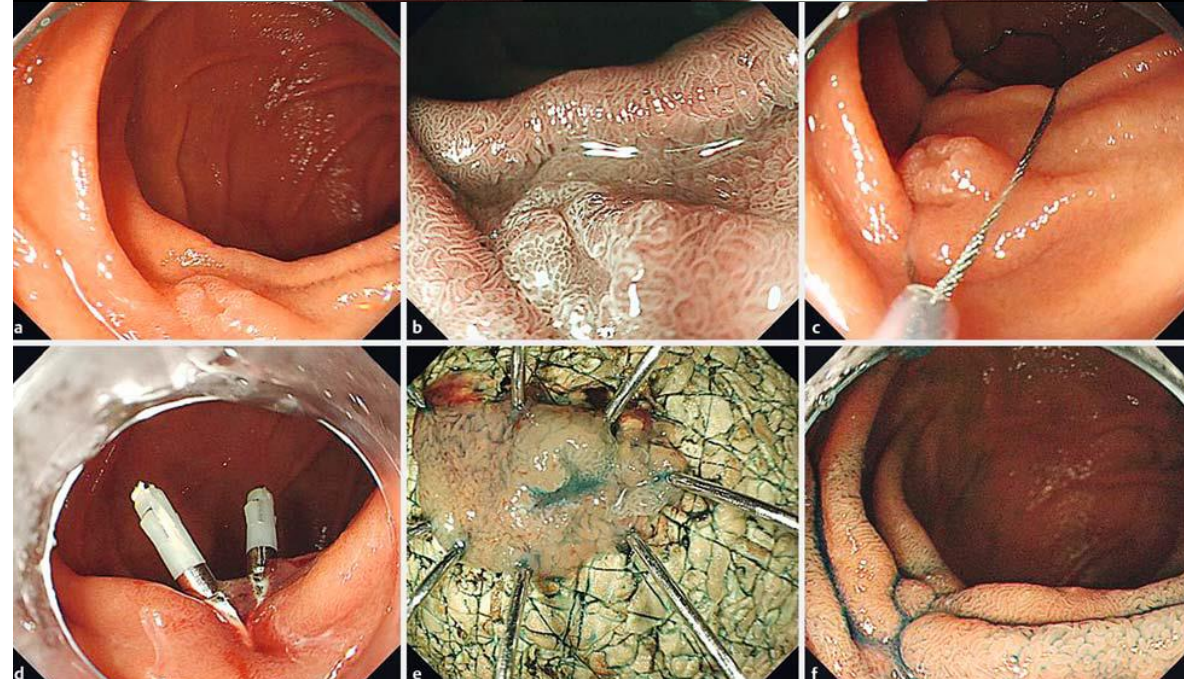


# Hot vs. cold snare polypectomy

- Hot snare polypectomy

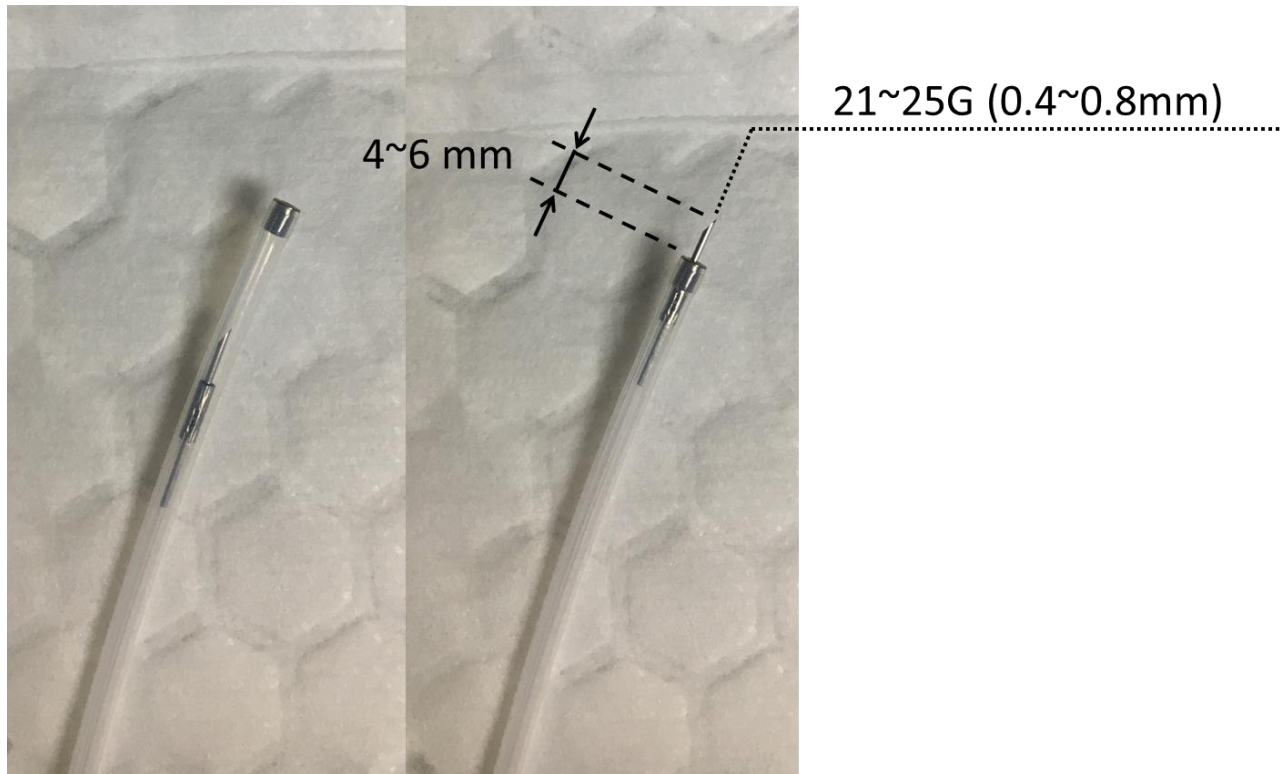


- Cold snare polypectomy



# Injector

- Basic structure



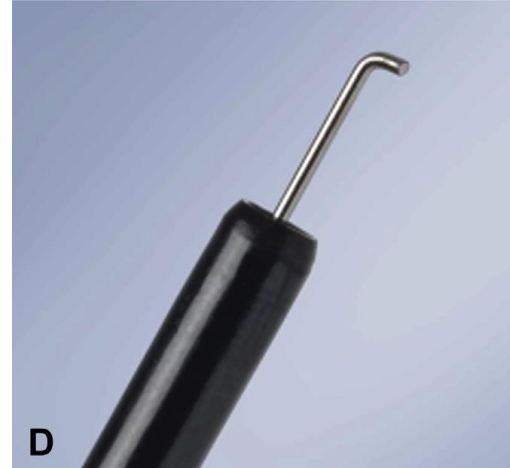
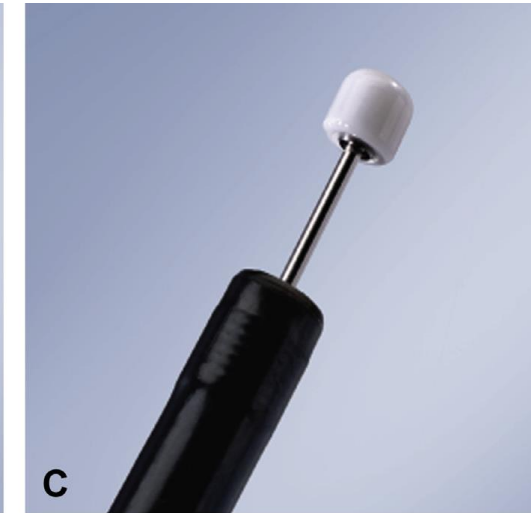
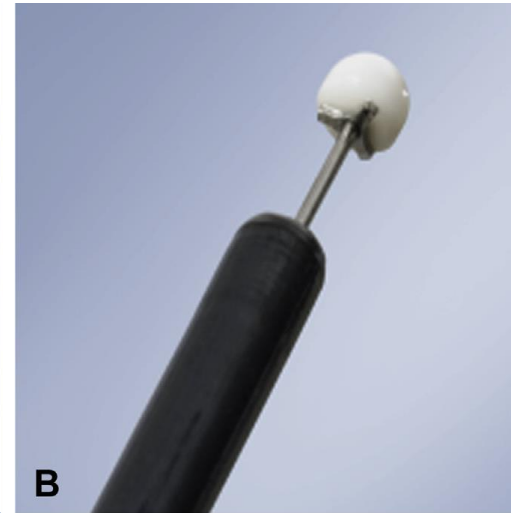
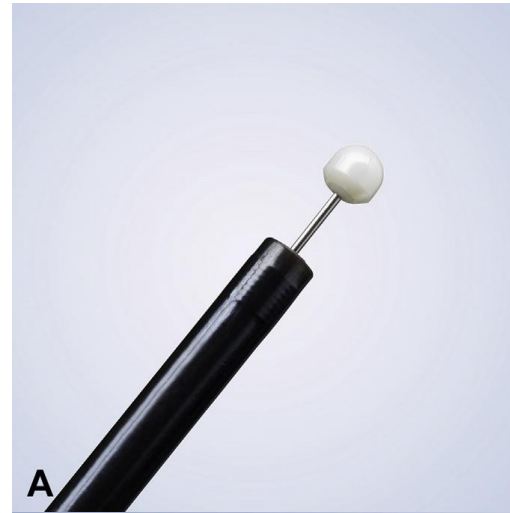
- Agents for submucosal injection

- Normal saline
  - Mixed with indigo carmine
  - Mixed with epinephrine
- 3% saline
- 50% DW
- Glycerol mixture
- Hyaluronic acid mixture



# ESD knife

- The main device for ESD, specialized for submucosal dissection
  - IT knife
  - Hook knife
  - Dual knife
  - Flex knife
  - Triangle tip knife
  - Hybrid knife



# ESU, electrosurgical unit

- Supplies the high frequency electrical current to endoscopic devices
- Electrical currents
  - ESU → active electrodes → patient body → neutral electrode → back to ESU
- High frequency electric current → heat
  - Cut effect: Rapid heating of cellular water → cell explosion
  - Coagulation effect: Low or interrupted heating → cell dehydration/shrinkage

