

# **The management of flexible endoscopes**



## Covered in 2023

1

Why is this topic so important

2

What guidelines are there

3

Updates international guidelines

4

Updates to SA guidelines

5

Sustainability

# Key points

- Published papers
- **In 2023 – downloaded 14**
- Resistant infections linked to Gastrosopes

Why is this topic important



- Competency assessment
- Automated
- Verification
- Track and Trace

International Guidelines

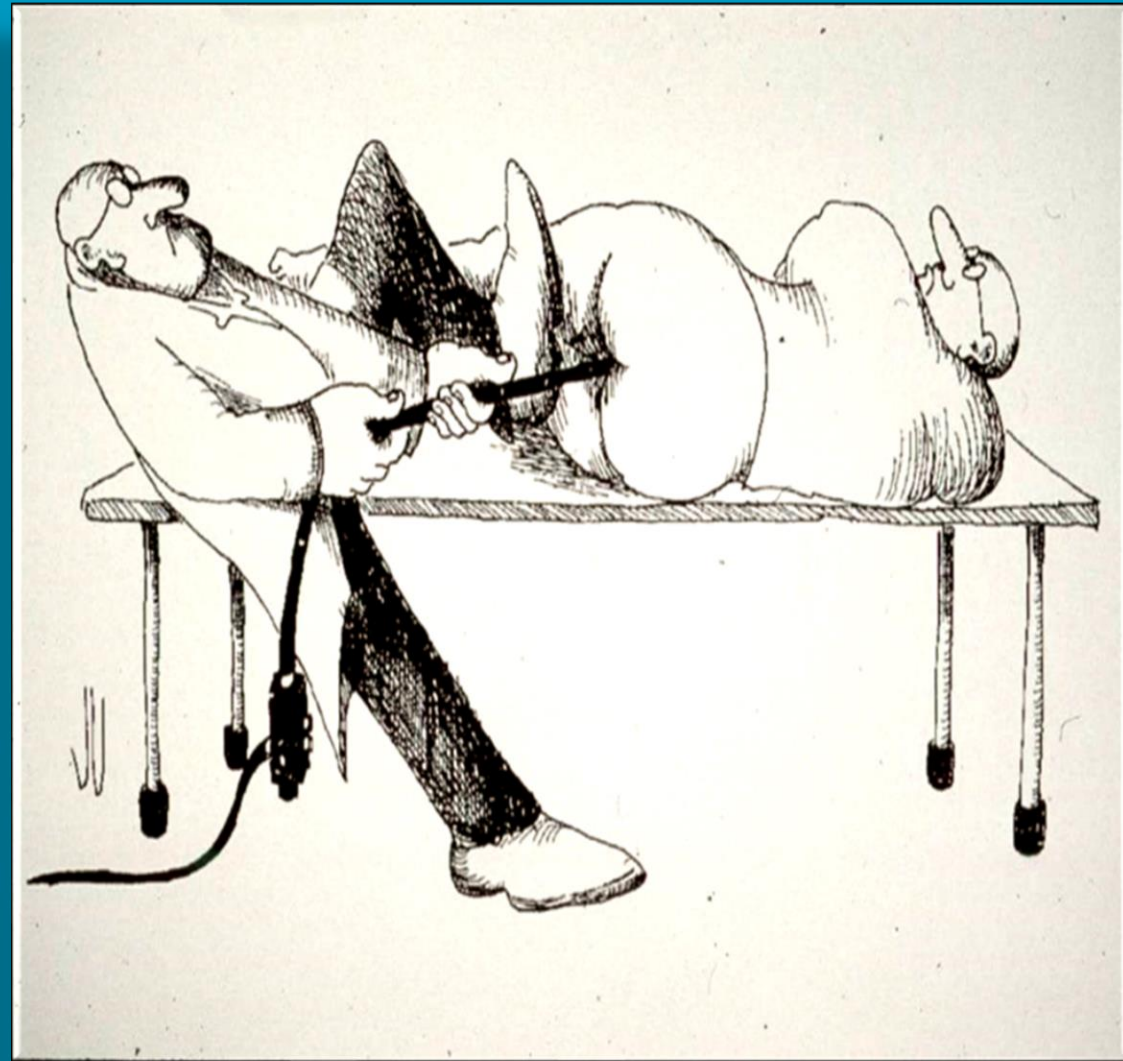


## **SANS 373:2023**

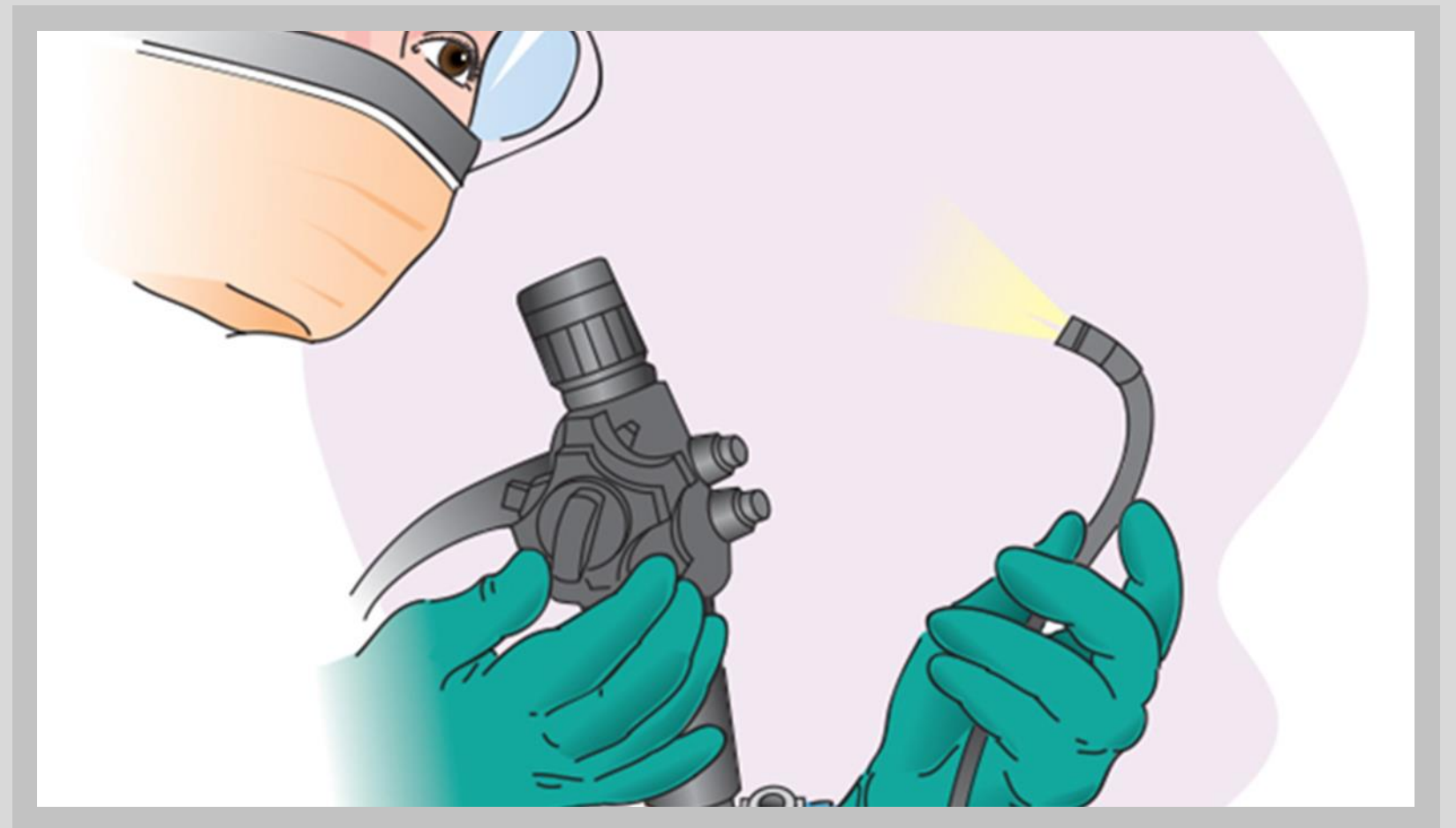
- Competency assessment
- Automated
- Verification
- Track and Trace

SA Updates





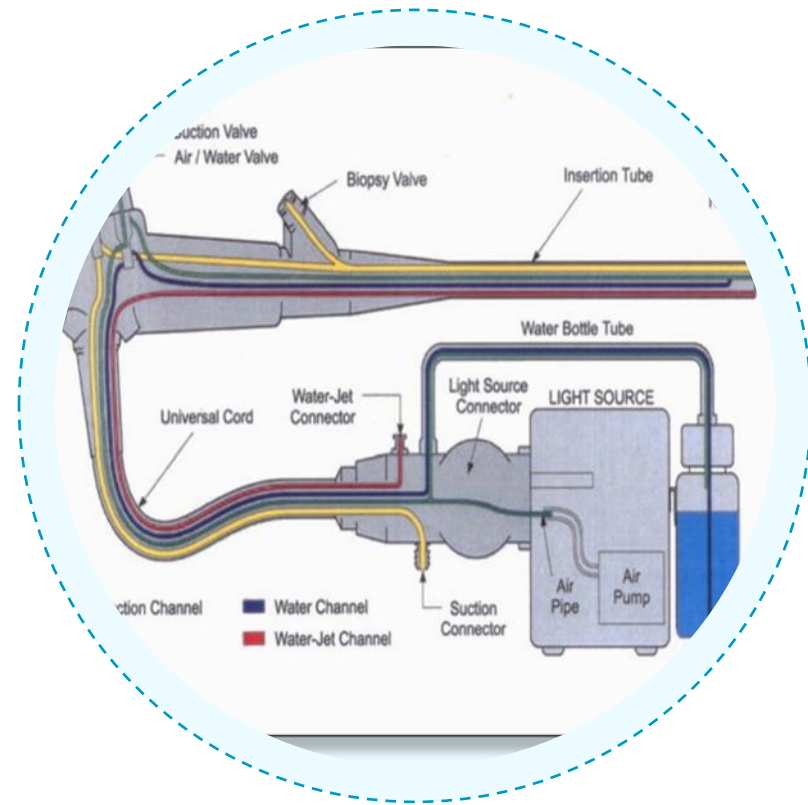
Because flexible endoscopes enter body cavities, they may acquire high levels of microbial contamination



Organic material (e.g., blood, faeces, respiratory secretions) that collects in the channels and ports of the endoscope can be difficult to remove.

Bashaw M.A, 2016 Guideline Implementation: Processing Flexible Endoscopes. AORN Journal, 104, No. 3

# Unique about reprocessing flex endoscopes



Complex design



Human error



Heavily soiled



Inspect / Verify

# Cover Today

## 4. Verification



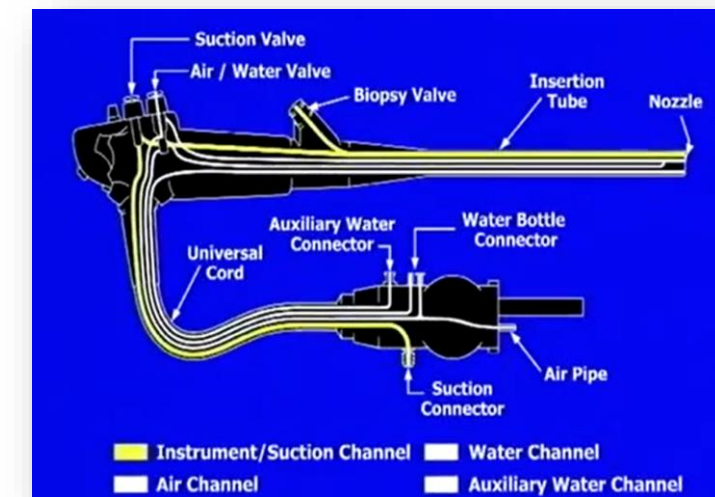
## 3. Reprocessing Steps

### Reprocessing Steps:

- 1 – Precleaning
- 2 – Leakage Testing
- 3 – Manual Cleaning
- 4 – High Level Disinfection or Sterilization



## 1. Anatomy



## 2. Accessories



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**DISCLAIMER**

# Demo



# Demo



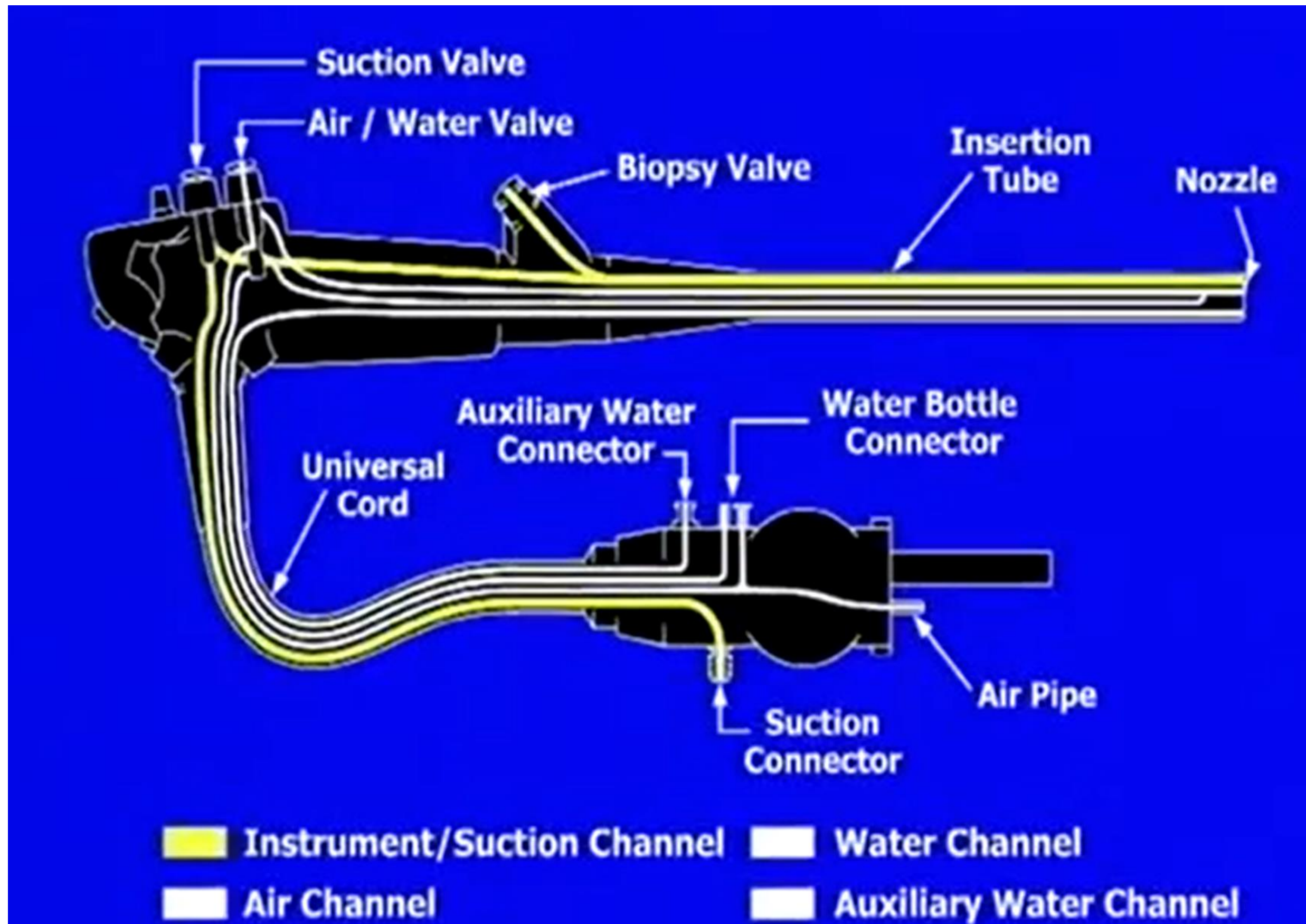
# Video – Handling

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## Endoscope Handling Guidelines

Operation Manual Reference Video

# Channels – Diagram



Olympus You Tube Video  
[https://www.youtube.com/watch?v=1P\\_NgmNQwD4](https://www.youtube.com/watch?v=1P_NgmNQwD4)

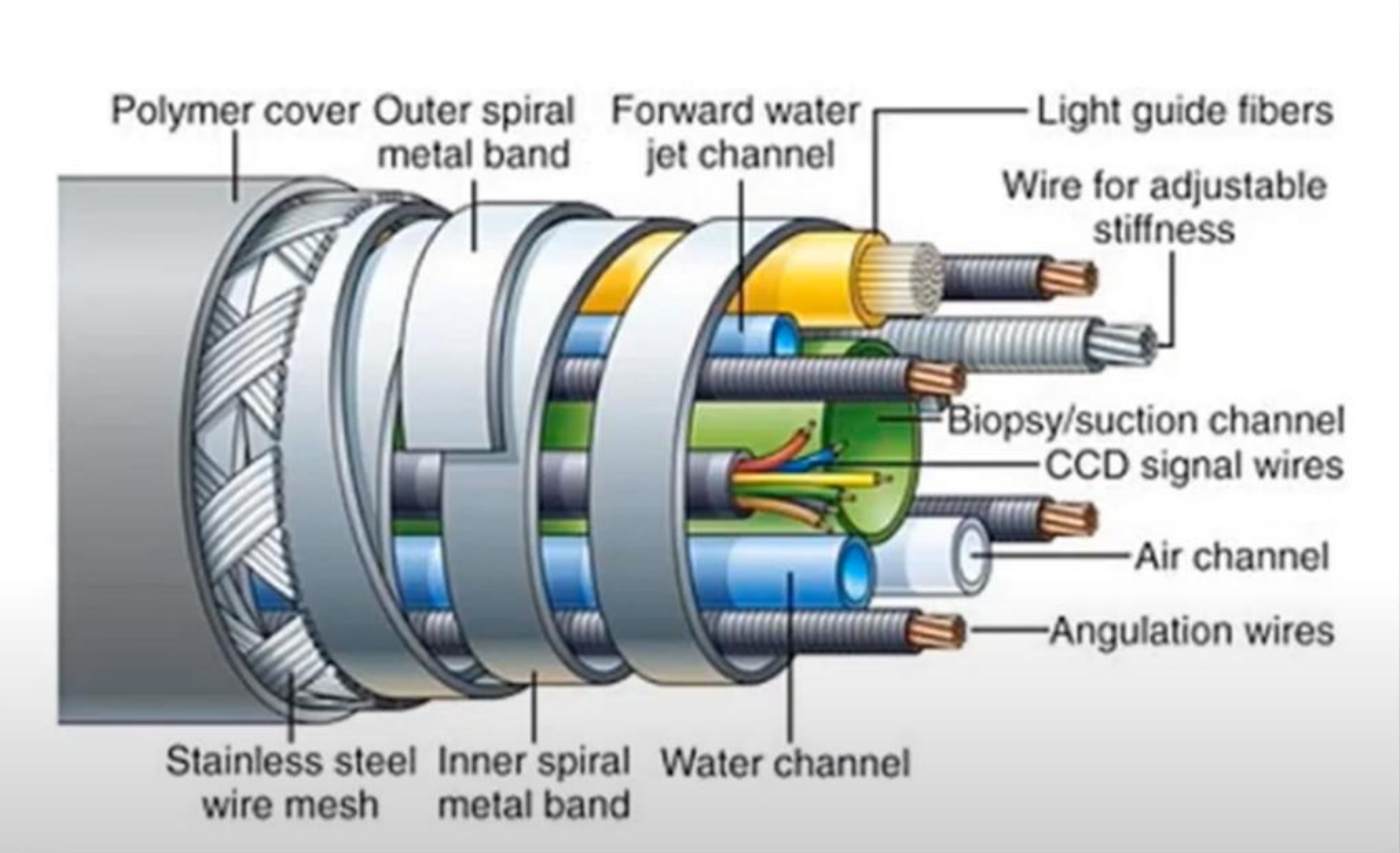
# Channels – Video

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Olympus You Tube Video  
[https://www.youtube.com/watch?v=1P\\_NgmNQwD4](https://www.youtube.com/watch?v=1P_NgmNQwD4)

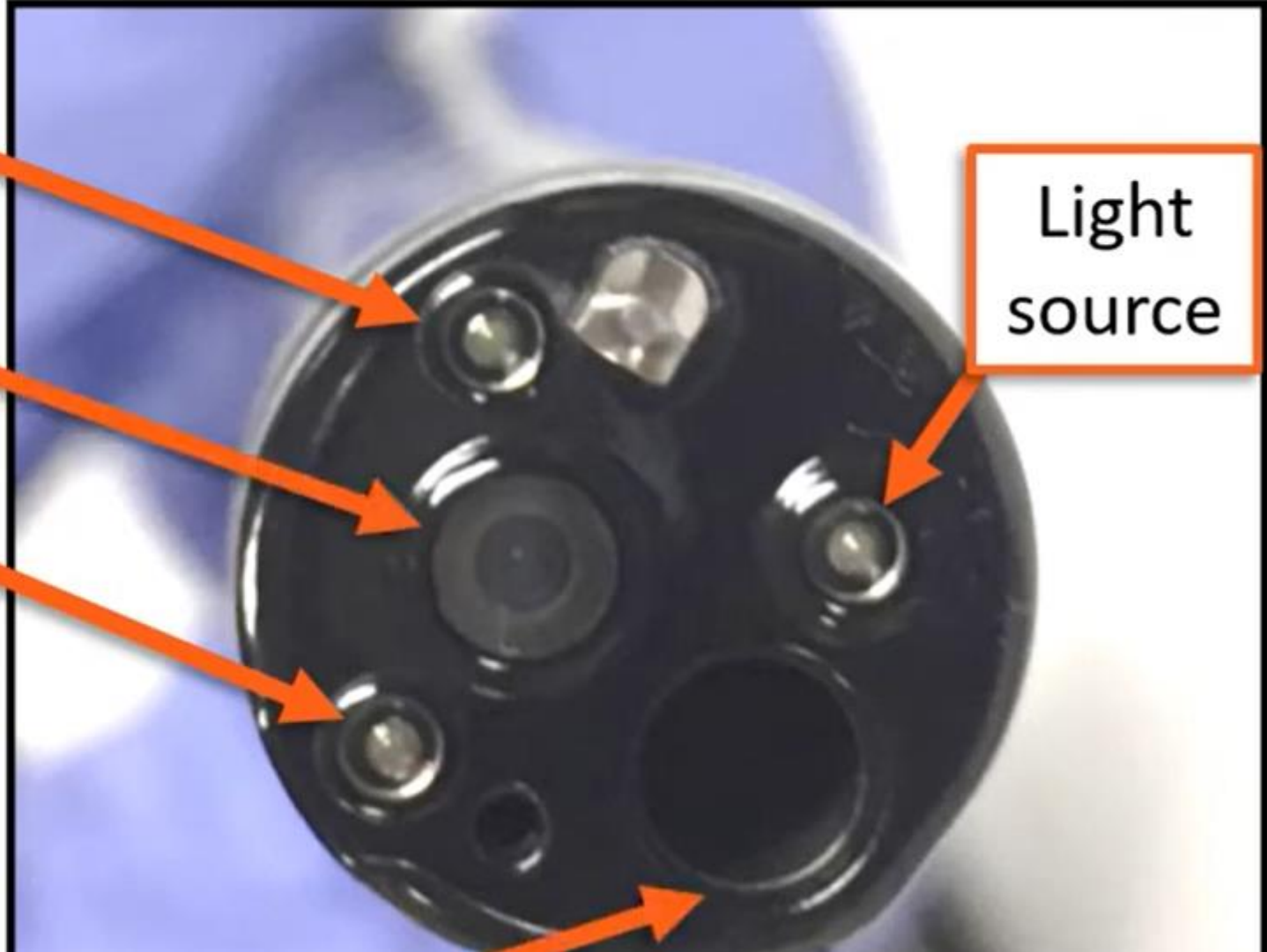
# Inside the endoscope



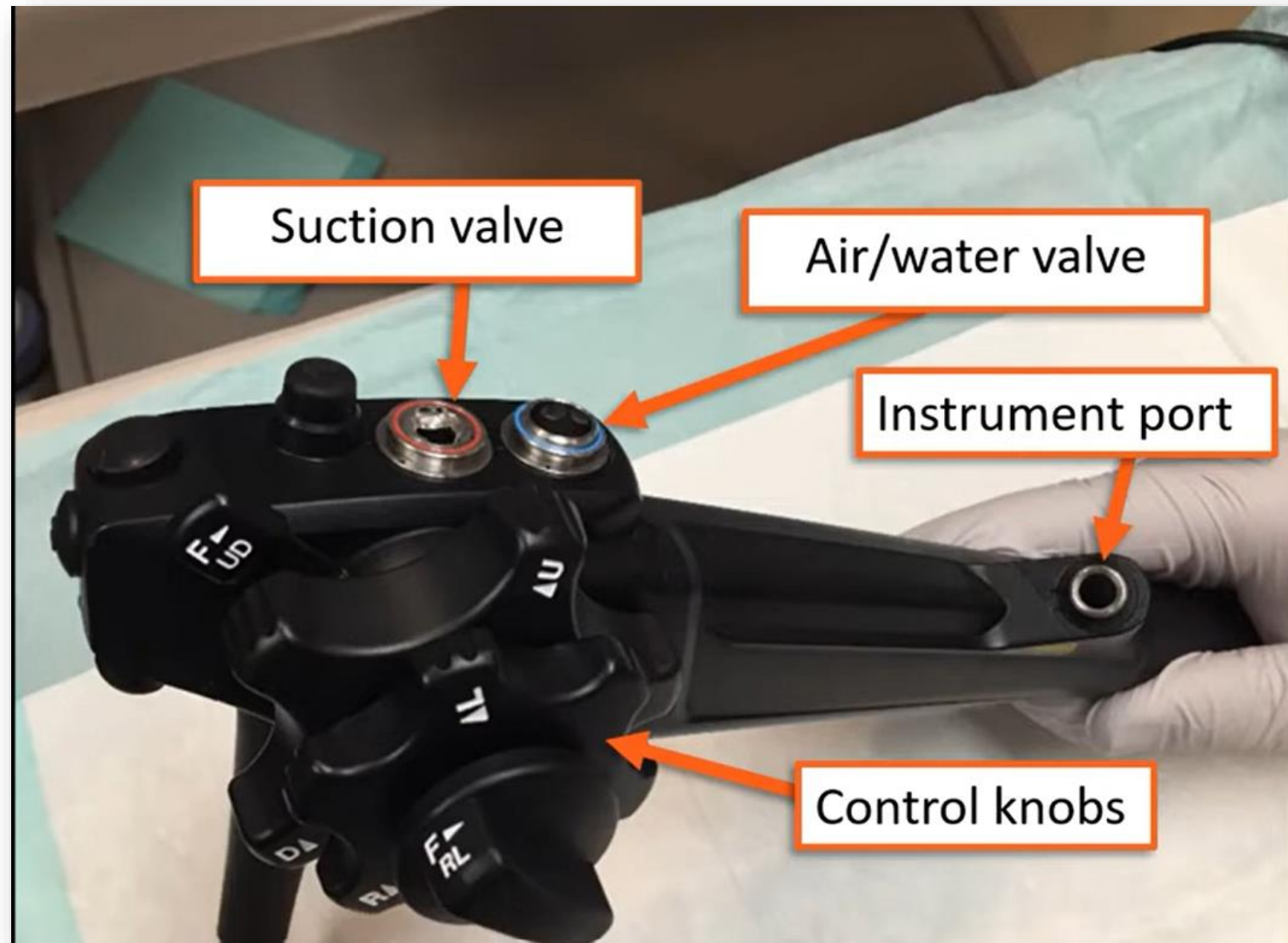
# Distal tip

## Bronchoscope

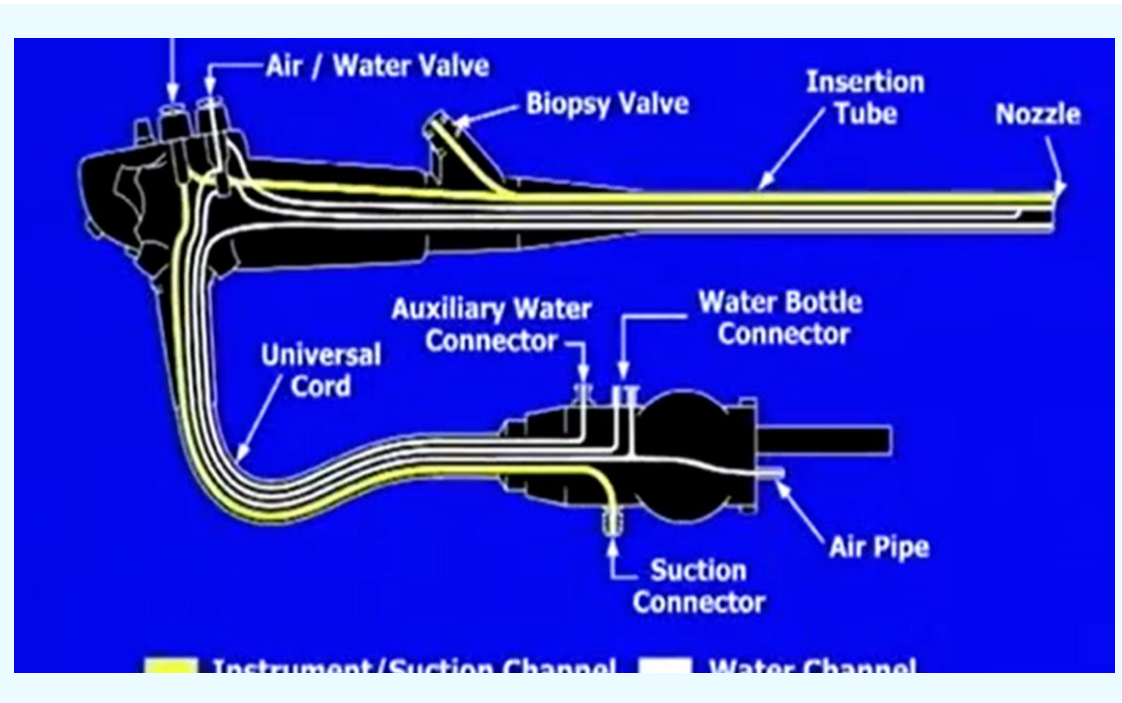
## Colonoscope



# Close up of valves and valve port



# In summary - anatomy of a flex endoscope



## Outside

Control Body

Angulation knobs

Air/water suction valves / ports

Biopsy port / cap

Bending section

## Inside

Water channel

Suction channel

Air channel

Working / Biopsy channel

Camera / light / wires

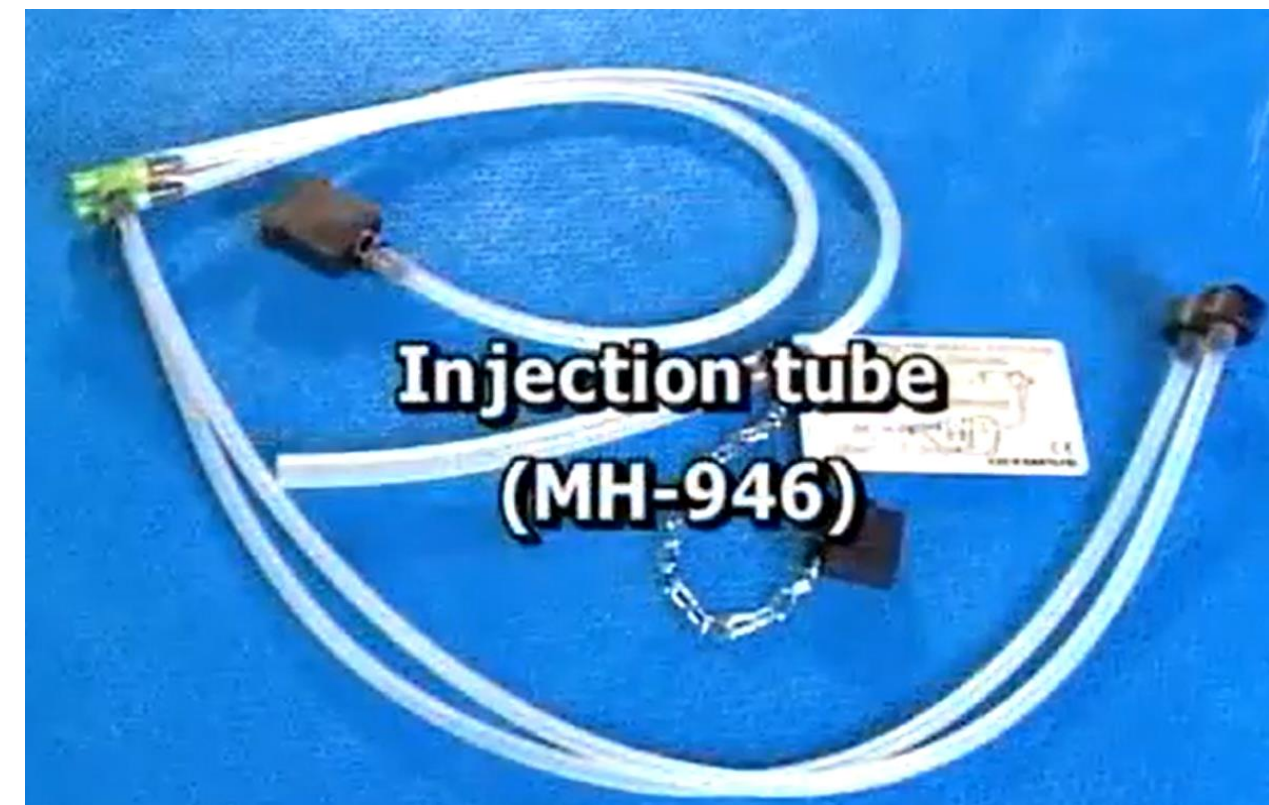
## Distal Tip

Lens –camera

Light

Working / Biopsy channel

# Cleaning Accessories



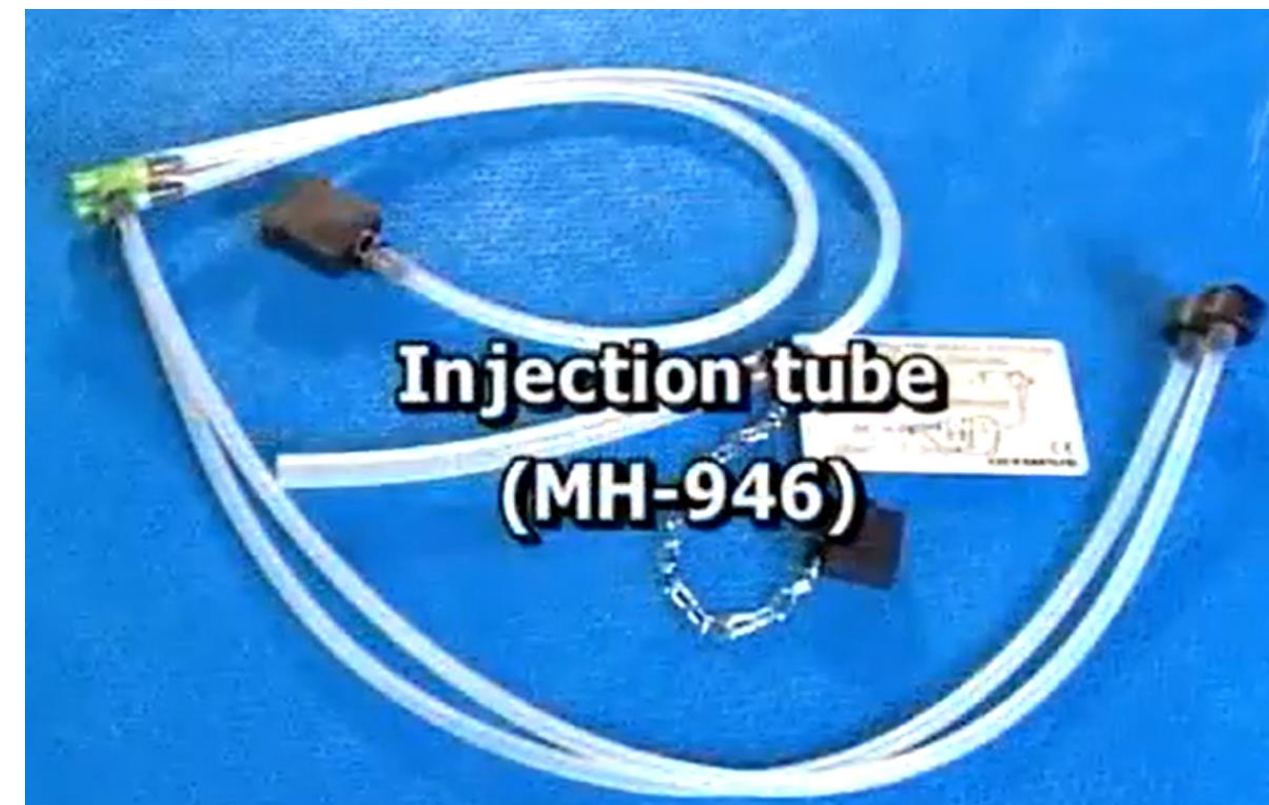
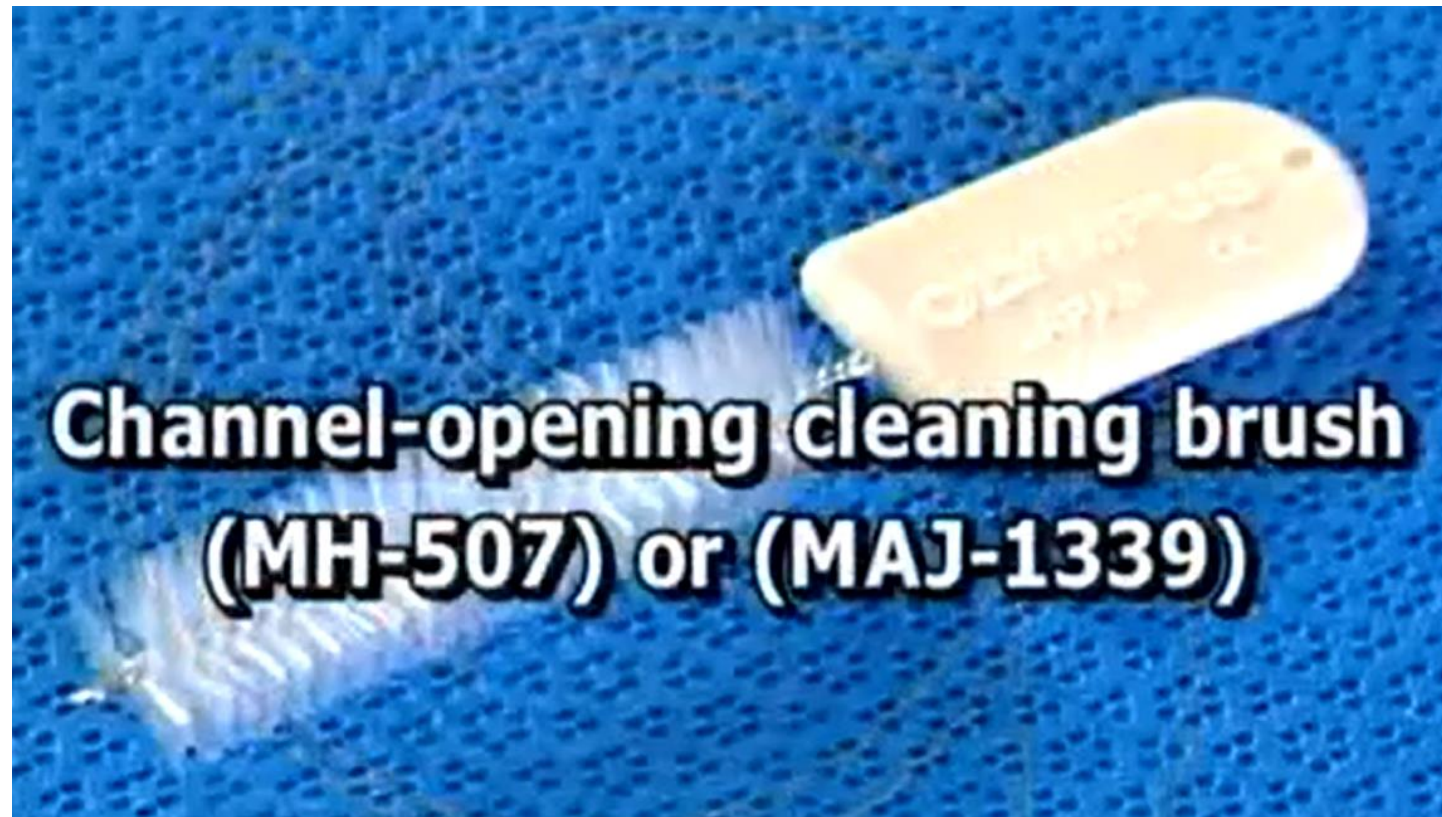
# Cleaning Accessories – Video

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Olympus You Tube Video [https://www.youtube.com/watch?v=1P\\_NgmNQwD4](https://www.youtube.com/watch?v=1P_NgmNQwD4)

# Cleaning Accessories



# 4 Main Reprocessing Steps

## Reprocessing Steps:

- 1 – Precleaning**
- 2 – Leakage Testing**
- 3 – Manual Cleaning**
- 4 – High Level Disinfection  
or Sterilization**



# Anatomy question



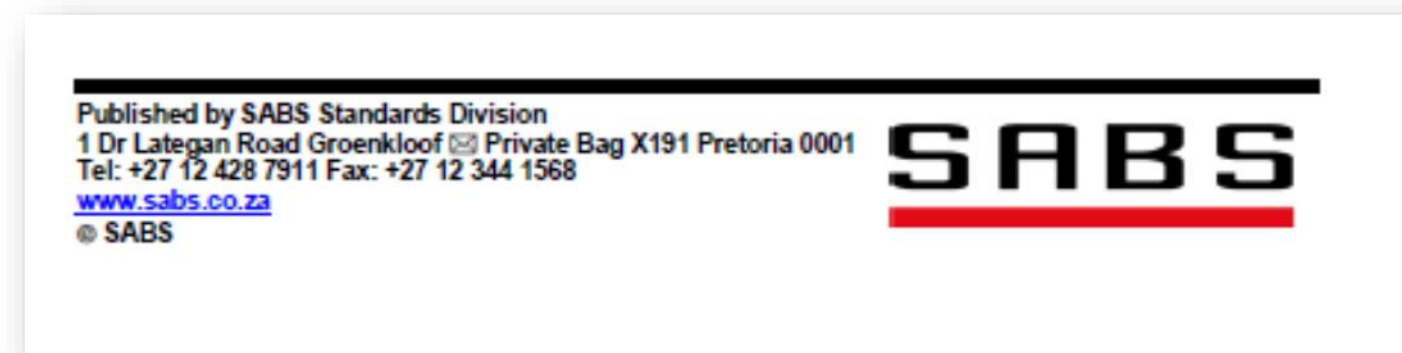
# Reprocessing Steps



MIFU



SANS 373



# SANS 373 Pre-Cleaning – Demo

Step	Pre-Cleaning - Scope attached to system
1	Wipe exterior –lint free cloth – dampened with cleaning solution
2	Submerge distal end in the cleaning solution
3	Depress suction valve for 10 seconds (suck through cleaning solution)
4	Depress air/water valve 10 seconds (flush)
5	Detach endoscope transport to reprocessing area
6	Inspect external surfaces for bite marks or irregularities

**NEXT** Leakage Testing – manual – EWD endoscope washer disinfector

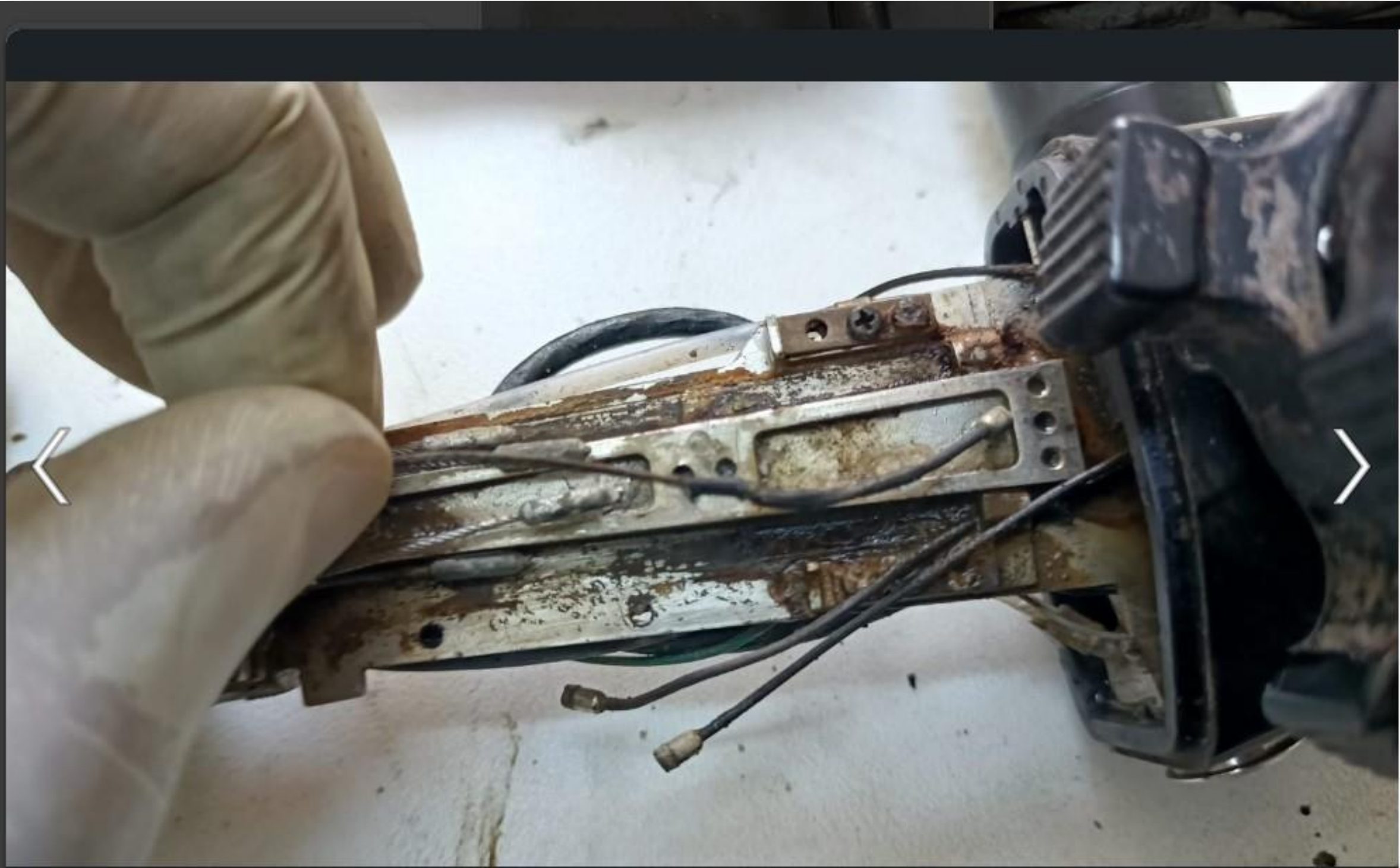





# Leakage testing– Video

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# Internal Leak LinkedIn



 Eng./ Mohamed Abd E... • 2nd  
Endoscopes maintenance manager [+ Follow](#)   
1w • 

Pentax Colon scope EC-380LKP has internal leak in biopsy channel led to high corrosion in control body, no image , knob system highly corrosion

 Nancy Steenbakkers and 23 others

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# SANS 373 Manual Cleaning

Step	Manual Cleaning
1	Attach model specific watertight caps and cleaning adaptors
2	Immerse <b>entire</b> endoscope in cleaning solution
3	Detach suction air/water valve
4	Brush distal tip
5	Wash exterior while submerged
6	Brush all channels (single use brush-correct size)
7	Use brush to clean the suction valve and port openings
8	Flush channels thoroughly (using the adaptors/syringe)



**NEXT**

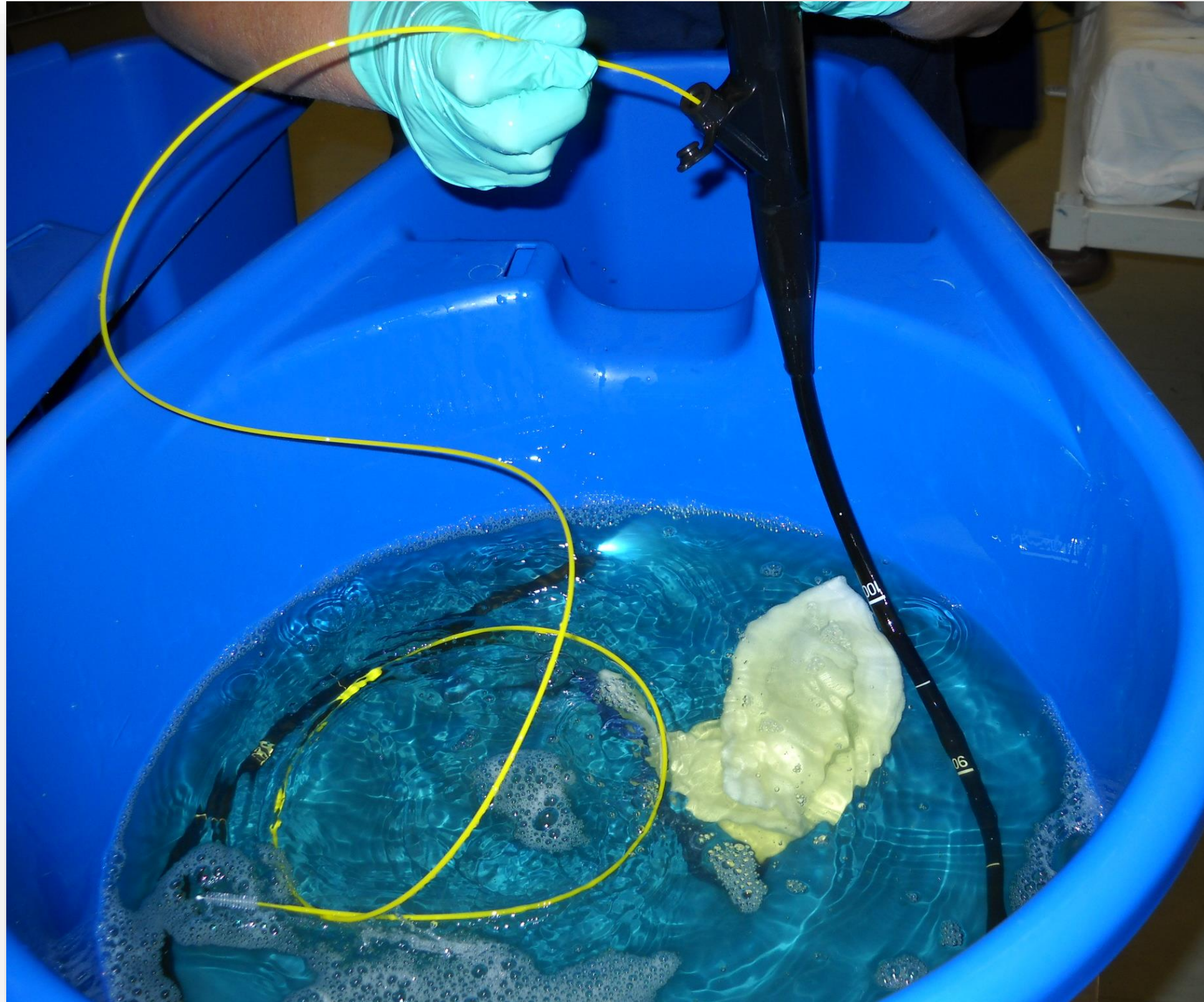
**Rinsing**

# Manual Cleaning

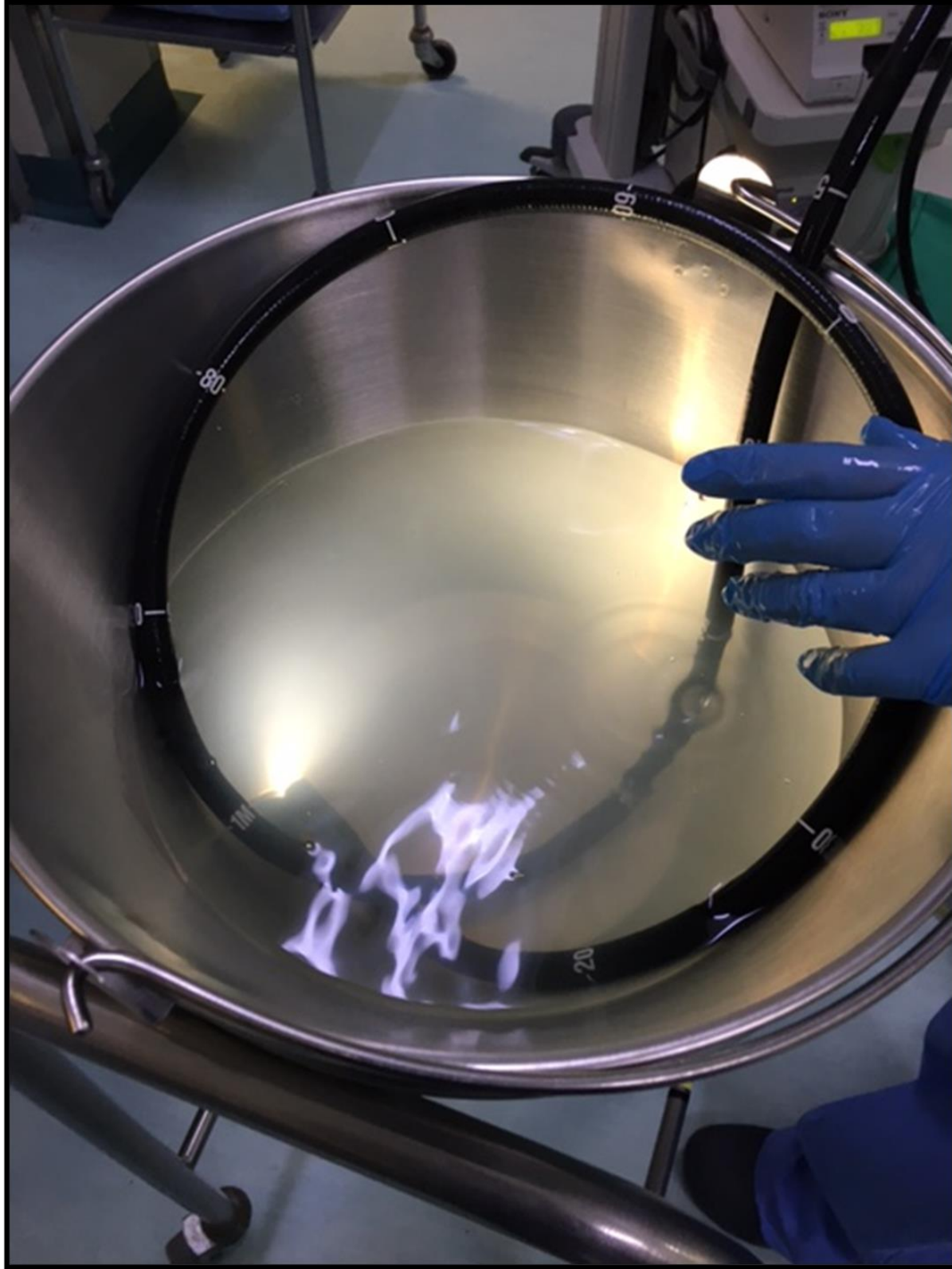


# Manual Cleaning

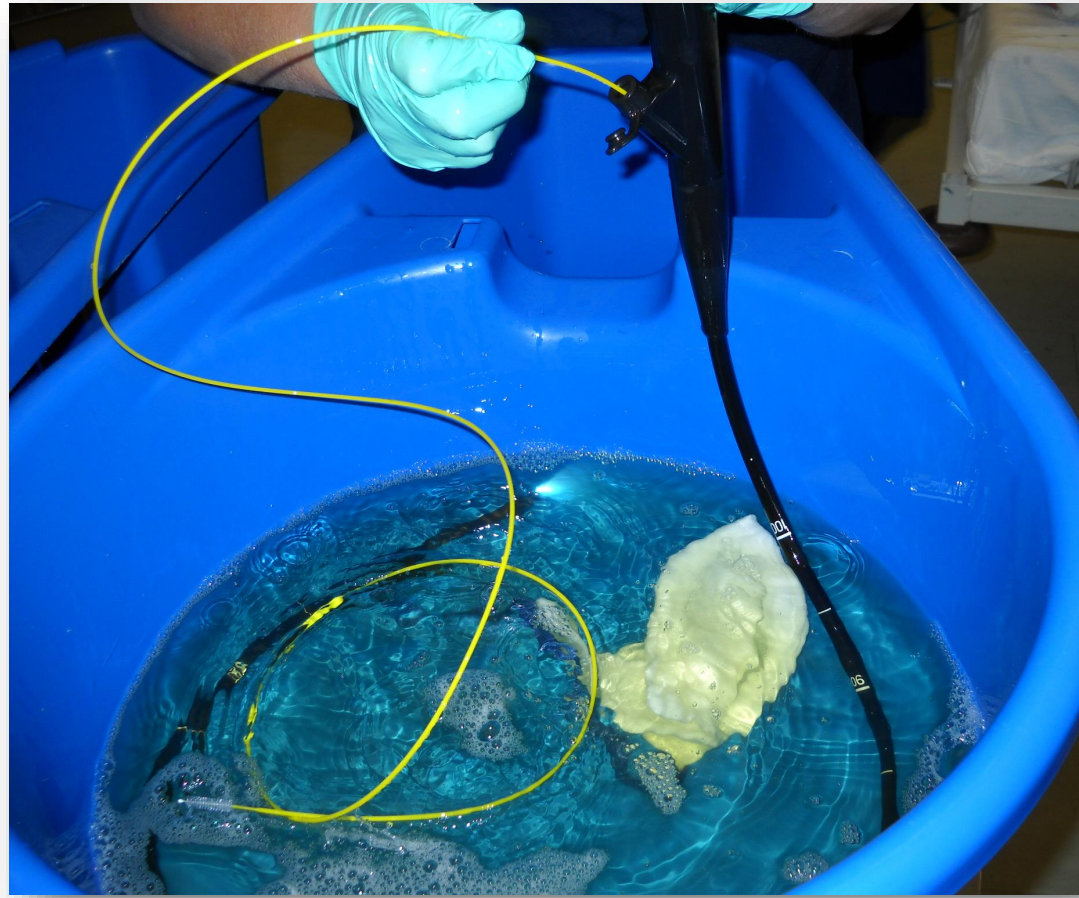
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# Resources



# Manual Cleaning – Disinfection



# Manual Cleaning

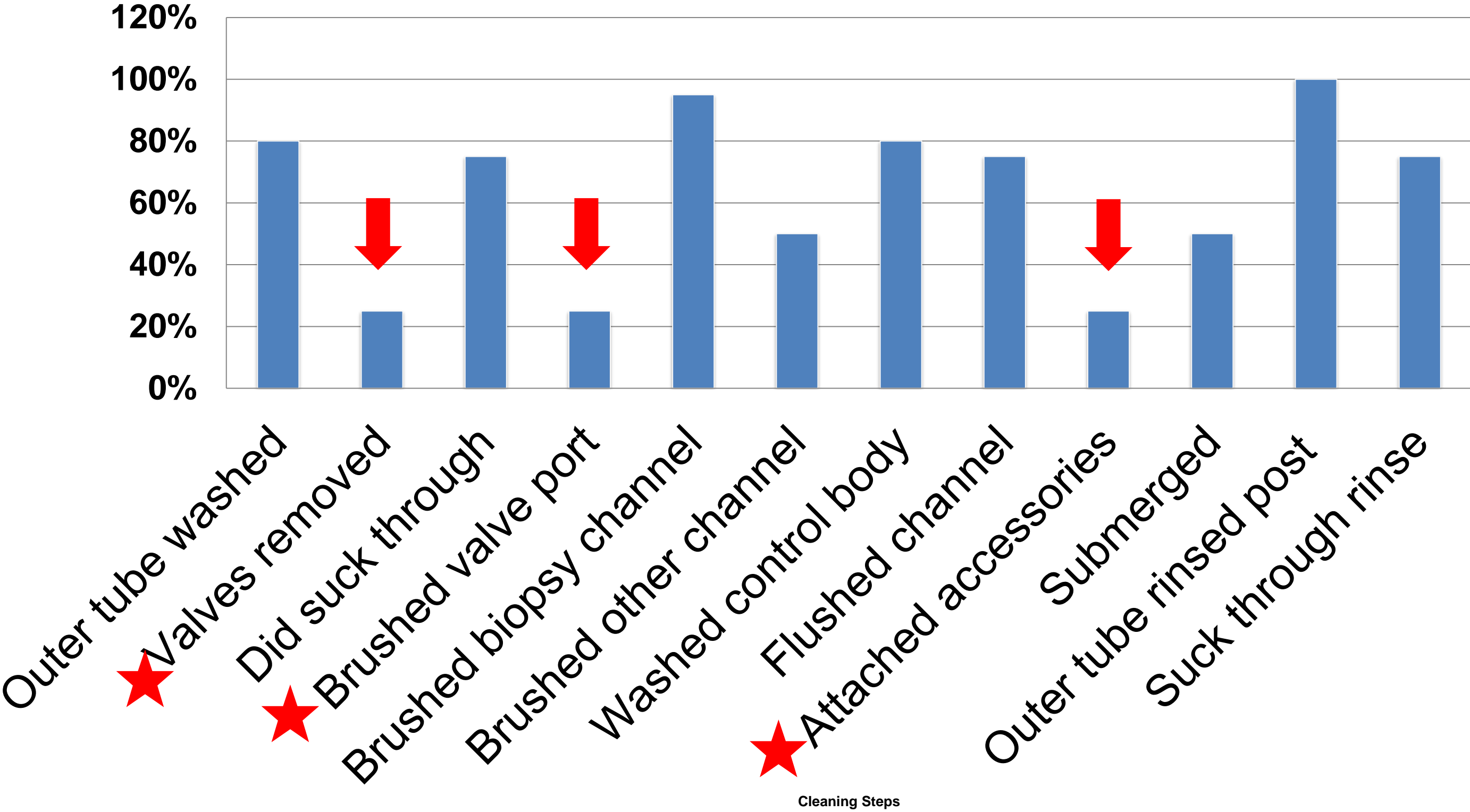


# Manual Cleaning - Video

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# Research results in SA

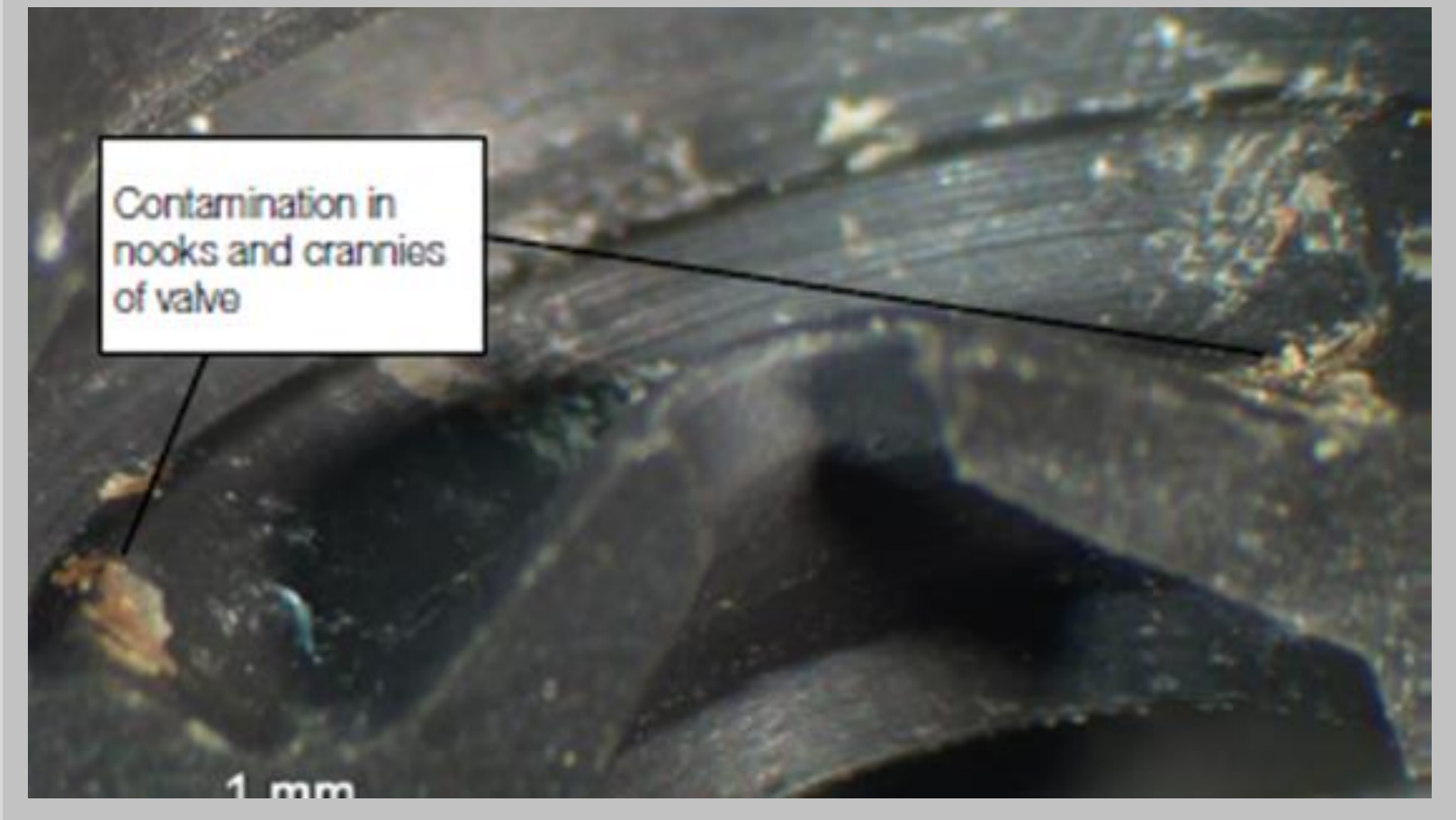


Jardine S.J. Inspection of Selected Medical Device Routine Cleaning Procedures: Detection of Residual Proteins in the Clinical Setting in Gauteng Hospitals. Johannesburg. University of Witwatersrand, 2015.

## Could biopsy port valves be a source for potential flexible endoscope contamination?

Parente, David M., B.S., B.A., MBA, NAMSA Advisory Services, Consulting and Testing Services Group  
Atlanta, Georgia

# Biopsy Port Valves could Transmit Disease?



53.3% biopsy port valves exhibited some form of debris or potential contamination on ready to use flexible endoscopes. Confirmed debris was proteinaceous.

# What hinders proper reprocessing?

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Layout room?  
Where scopes are reprocessed?



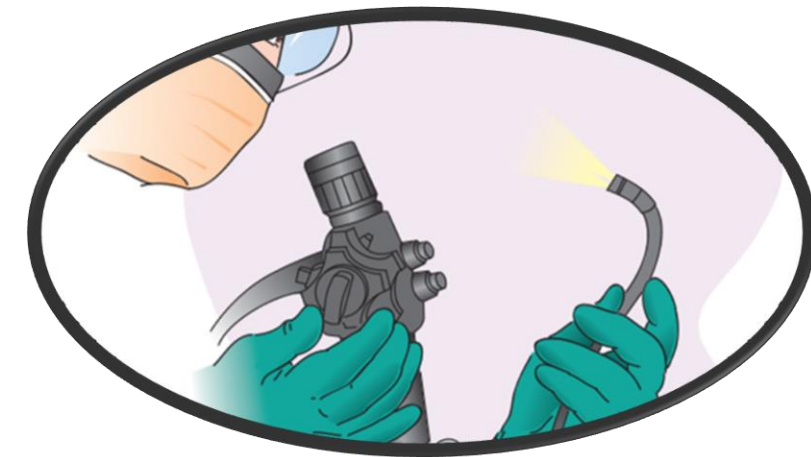
Turnaround time?

Lack of inventory?

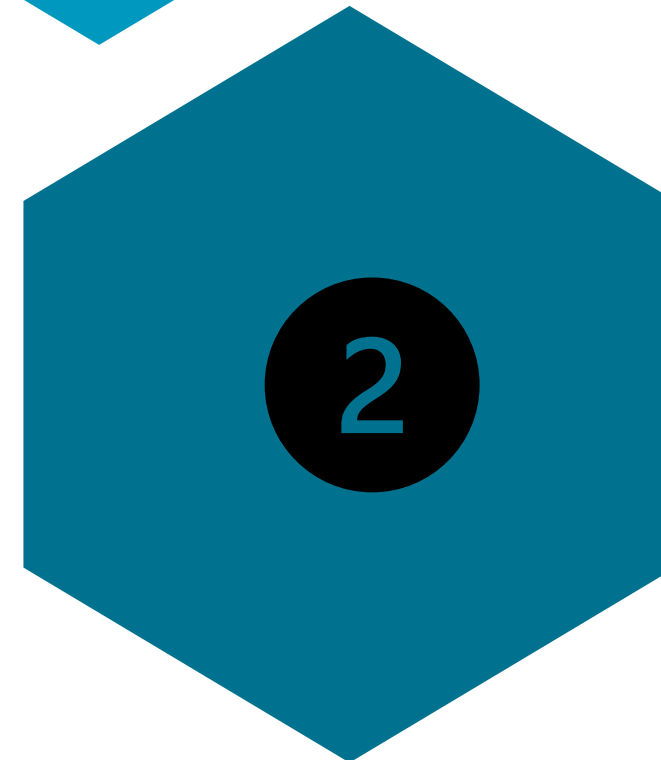
Lack of training?  
Lack of competency assessment?

# SANS 373 Verification of cleaning (Quality Control)

Visual Inspection



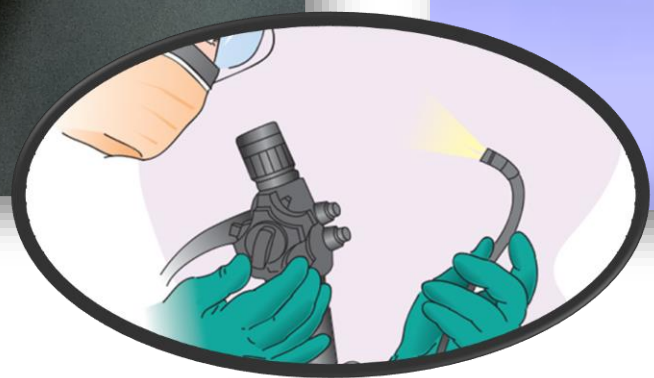
Cleaning verification tests



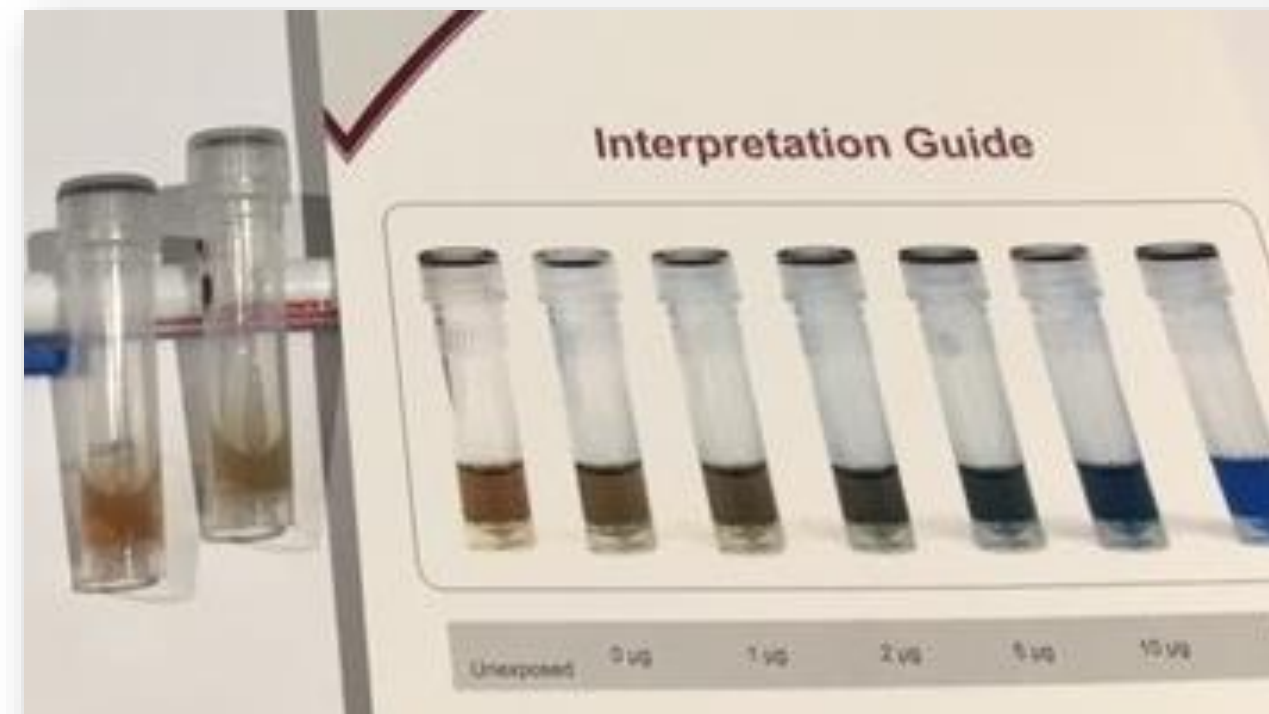
Biological Monitoring



# 1. Visual inspection



## 2. Cleaning verification tests



## 2. Cleaning verification test- Demo-in the box



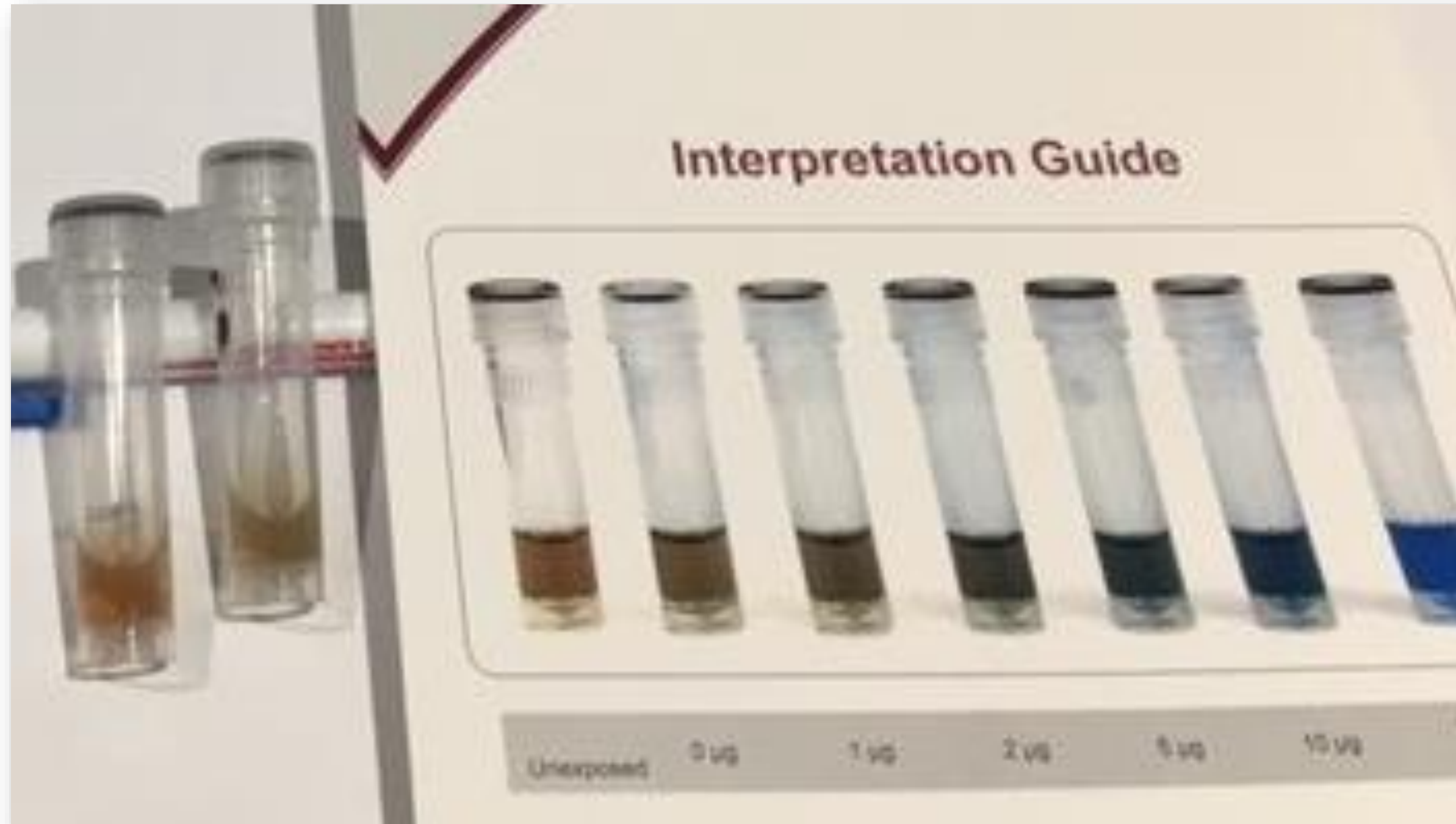
## 2. Cleaning verification test – Batch Control



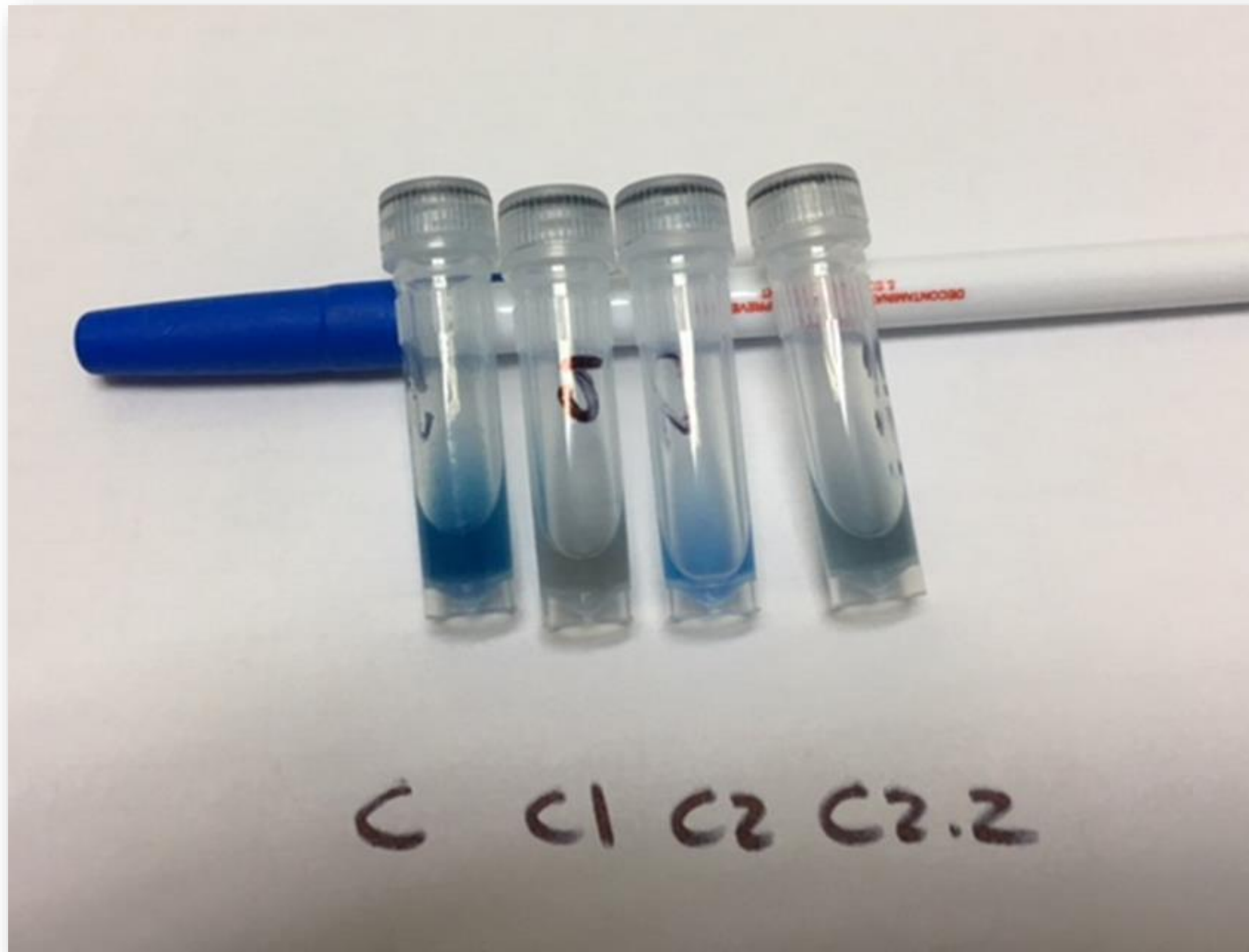
## 2. Cleaning verification test – Test endoscope



## 2. Cleaning verification test – Test endoscope



## 2. Cleaning verification test – Test endoscope



## 2. Cleaning verification test – Test endoscope

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# Endoscopes Repetitive use : Images from Ofstead

American Journal of Infection Control 43 (2015) e13-e17

Contents lists available at ScienceDirect

 American Journal of Infection Control

journal homepage: [www.ajicjournal.org](http://www.ajicjournal.org)

Major article

Increasing potential risks of contamination from repetitive use of endoscope

Dae-Hyung Lee MS<sup>a</sup>, Dong Bin Kim PhD<sup>b</sup>, Hyun Yong Kim MS<sup>a</sup>, Hyun Sook Baek MS<sup>a</sup>, Soon-Young Kwon MS<sup>b</sup>, Mi Hee Lee PhD<sup>b</sup>, Jong-Chul Park PhD<sup>a,b,\*</sup>

<sup>a</sup> Medical Technology and Quality Evaluation Center, Severance Hospital, Seoul, Korea  
<sup>b</sup> Cellbiocontrol Laboratory, Department of Medical Engineering, Yonsei University College of Medicine, Seoul, Korea

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 American Journal of Infection Control

journal homepage: [www.ajicjournal.org](http://www.ajicjournal.org)

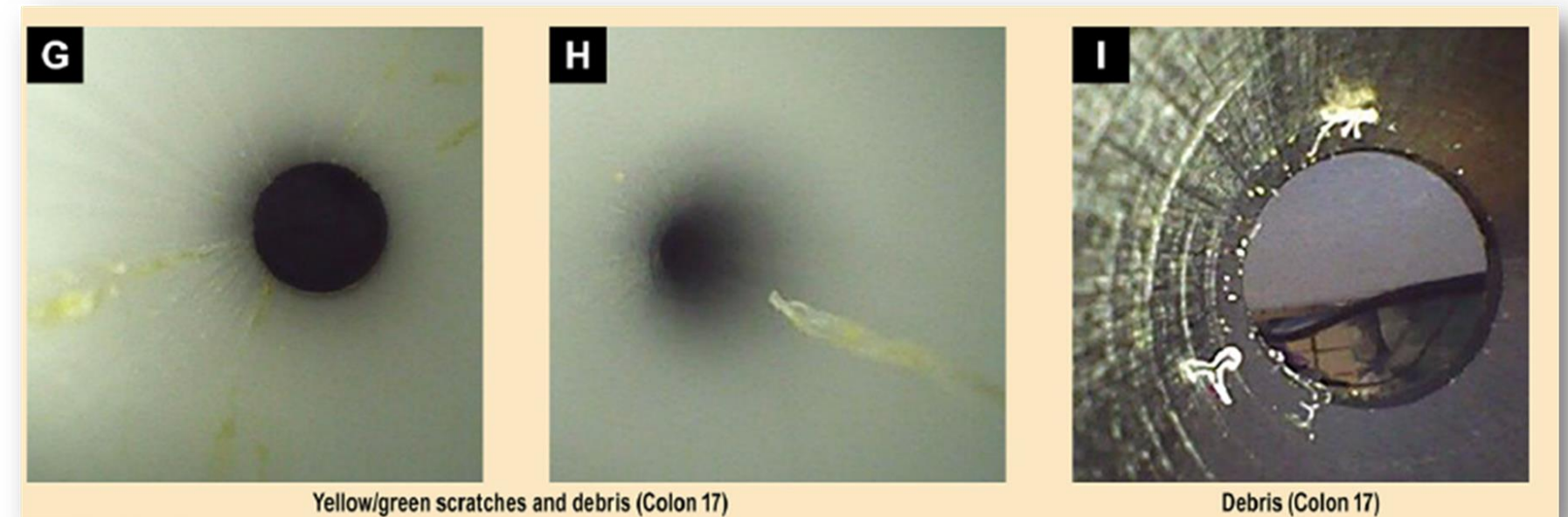
Major Article

The utility of lighted magnification and borescopes for visual inspection of flexible endoscopes

Cori L. Ofstead MSPH<sup>\*</sup>, Abigail G. Smart MPH, Krystina M. Hopkins MPH, Harry P. Wetzler MD, MSPH

Ofstead and Associates, Inc.; St. Paul, MN

- Repeated use results in alternation and damage
- Greater chance of build of microorganisms and biofilms in scope
- Typical lifespan of a flexible scope 5-10 years



Dae-Hyung Lee, M.. et al. 2015.Increasing potential risks of contamination from repetitive use of endoscope AJIC Vol 43

Ofstead, C.L. et al. 2022.The utility of lighted magnification and borescopes for visual inspection of flexible endoscopes. AJIC

# In Summary

## 4. Verification



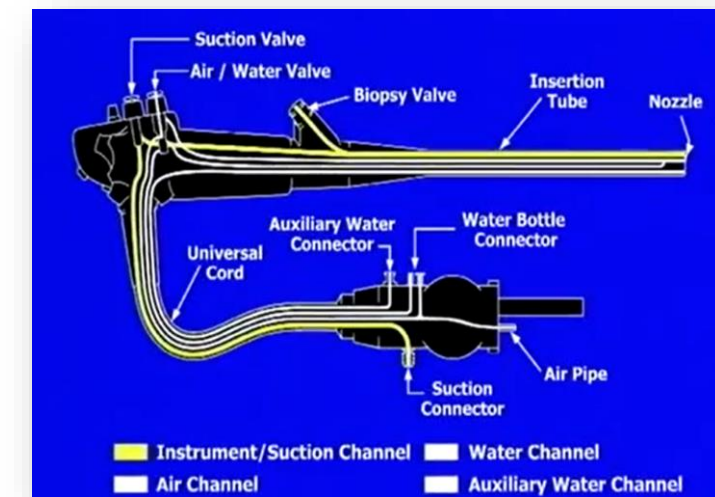
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## 1. Anatomy



## 2. Accessories

