

# Robotics in hospital

*J.H. Roelink urologist UCT*

19 March 2024

# Disclosures

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- None
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# Open surgery

## Advantages

- Longest experience
- Haptic feedback
- Broad 3d vision
- Short(er) learning curve
- Cheap operation
- Often faster

## Disadvantages

- Significant more blood loss
- Largest trauma
- Longer p/o recovery
- Indirect costs
- Less intraoperative novelties
- Poor ergonomics



# Laparoscopy

## Advantages

- Vision on spot
- Less morbidity
- Less blood loss
- Less adhesions
- Less inflammatory reaction
- Faster recovery
- Cosmetics
- Cheaper?

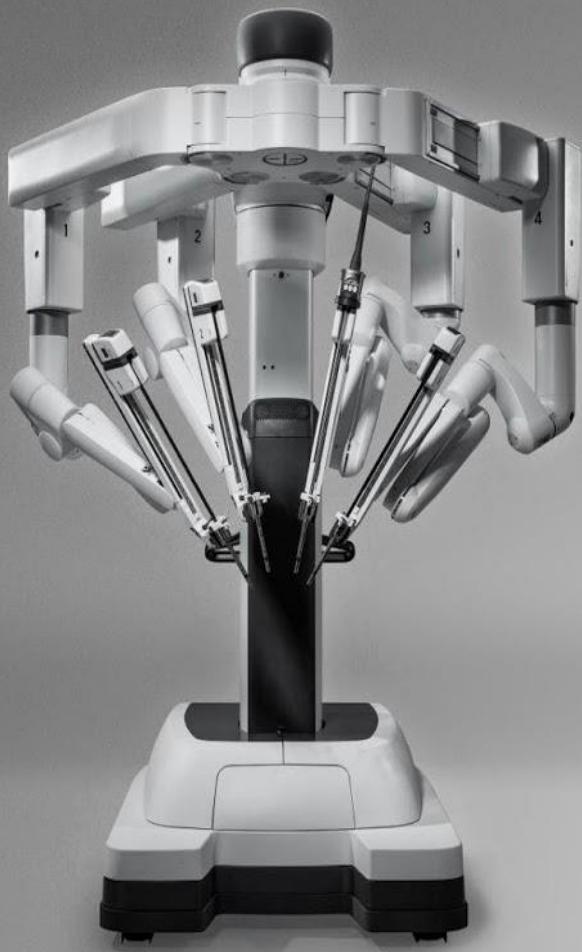
## Disadvantages

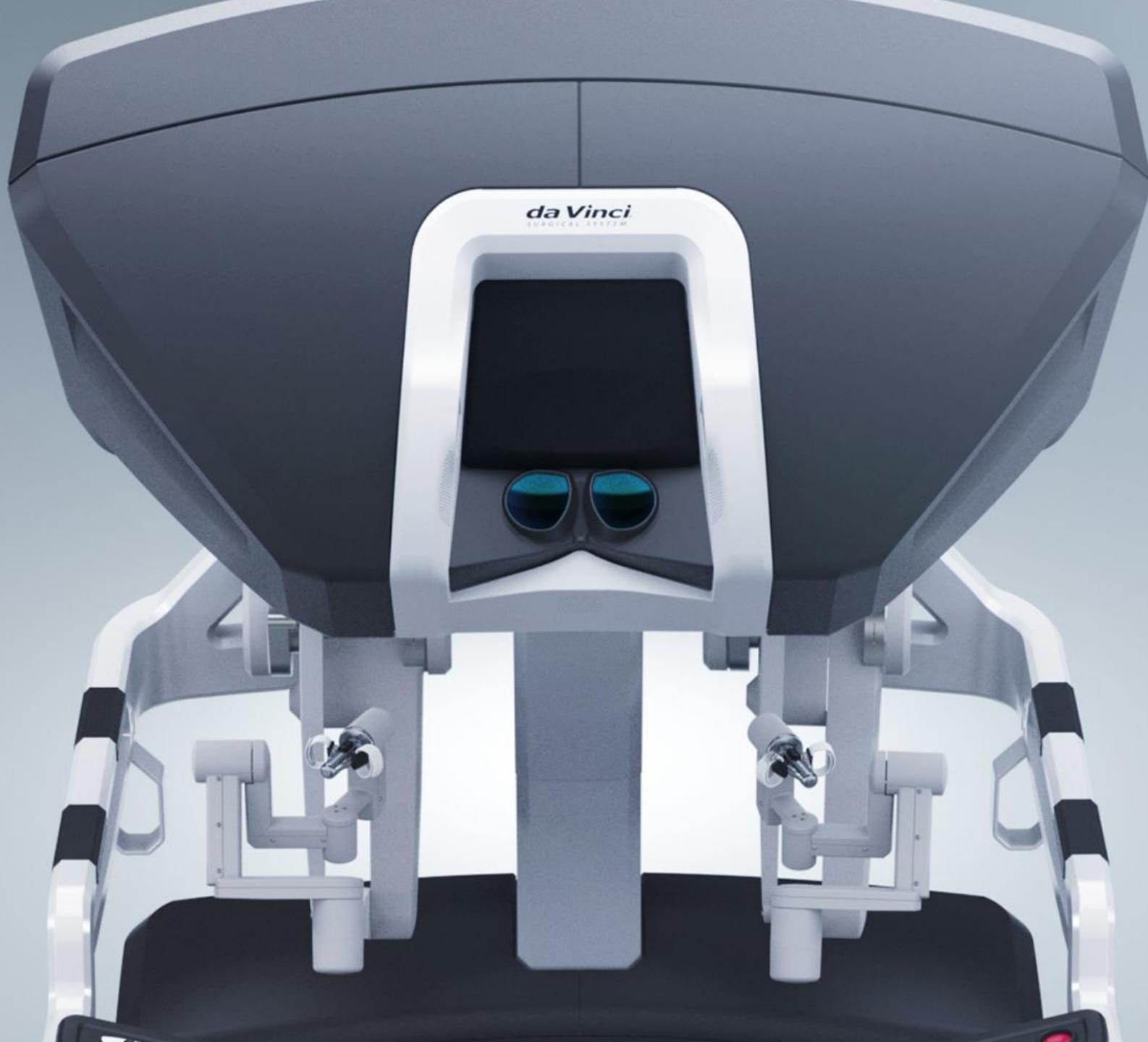
- Even worse ergonomics
- Difficult learning curve
- Crossing and scaling
- Less haptic feedback
- Direct costs
- Time consuming

# Robot assisted surgery

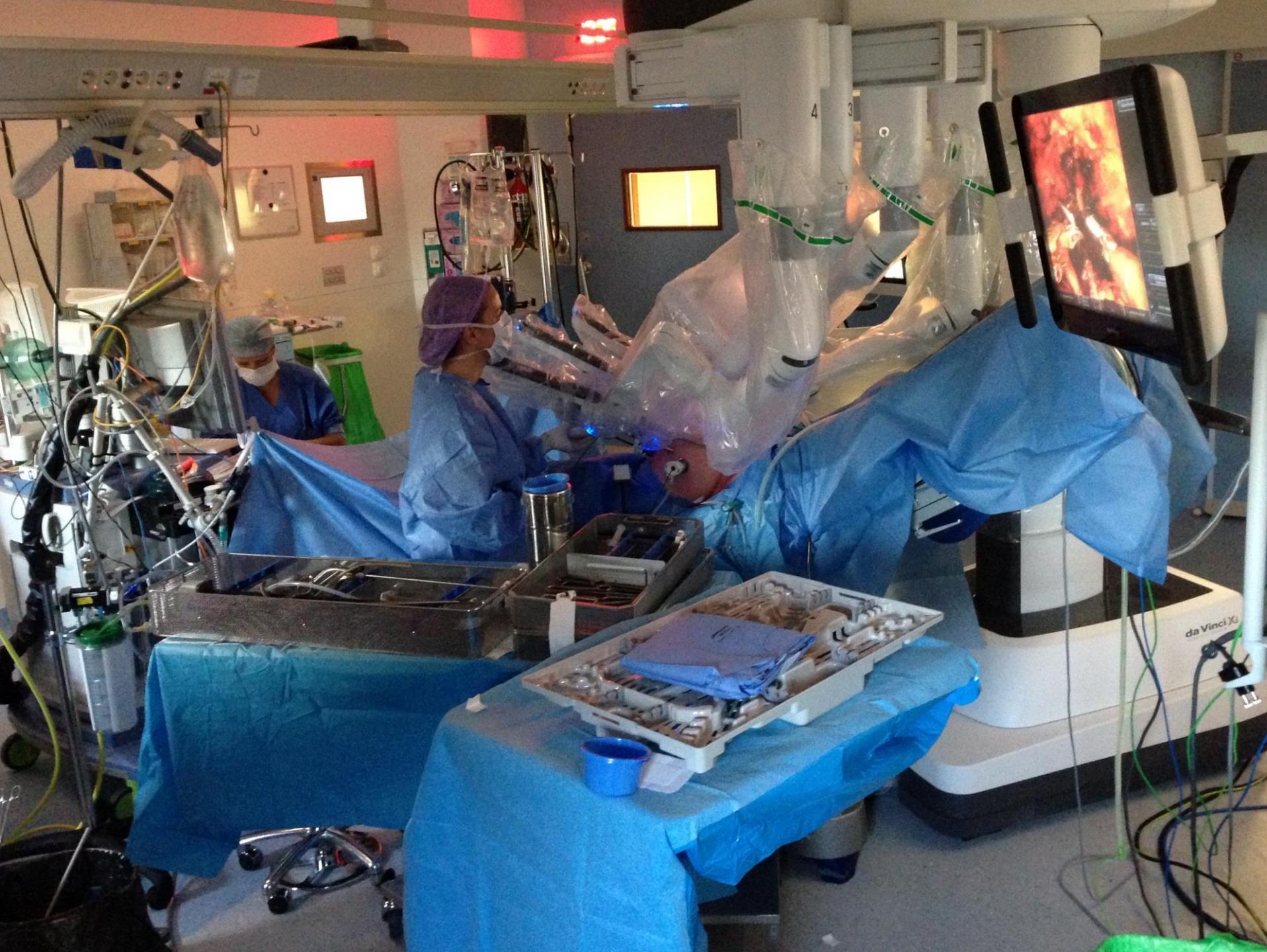
- Meester-slave configuration
- ...it makes laparoscopy (very much) easier...
  - Superior ergonomics compared to open or laparoscopic surgery
  - 3-D vision (a better cameraman)
  - Articulating instruments
  - 1 surgeon with 4 hands
  - Reversed scaling
  - The safest way to teach and learn laparoscopy
- Simplifies difficult, physically heavy laparoscopic operations
- Enables laparoscopy without most of te disadvantages of laparoscopy
- Quite an investment...











# Teaser da Vinci Xi system

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<https://youtu.be/9IAYRZ9qz44>

- <https://www.zgt.nl/patienten-en-bezoekers/onze-specialismen/urologie/liveoperatie-prostatectomie-compilatie/>
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# Early continence after urethrasparing robotassisted laparoscopic prostatectomy



*K. Hulshof M. Vermeer E.B. Cornel J.H. Roelink S.P. Stomps*

8 april 2022

# Incontinence after RALP

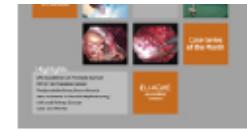


Heavy impact on quality of life

Dutch RALP-database 2017:  
20% incontinence 1 jaar postoperative

Recent investigation healthinsurance  
compagnies: 30% of patient still buy incontinence  
pads

# Urethrasparende techniek 2011



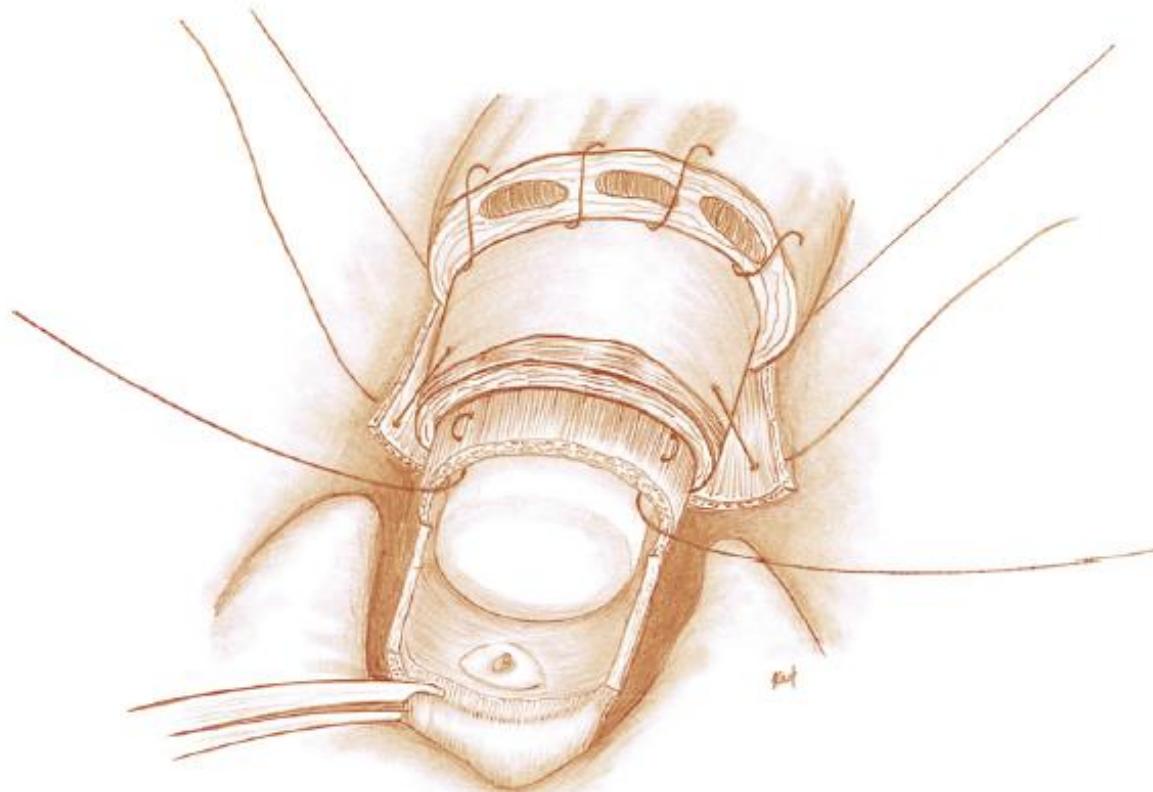
Surgery in Motion

## Full Functional-Length Urethral Sphincter Preservation During Radical Prostatectomy

*Thorsten Schlomm \*, Hans Heinzer, Thomas Steuber, Georg Salomon, Oliver Engel, Uwe Michl, Alexander Haese, Markus Graefen, Hartwig Huland*

*Martini-Clinic, Prostate Cancer Centre, University Medical Centre Hamburg-Eppendorf, Hamburg, Germany*

# Urethra-saving technique



Bron: artikel Schlomm et al.

# Urethra-saving technique

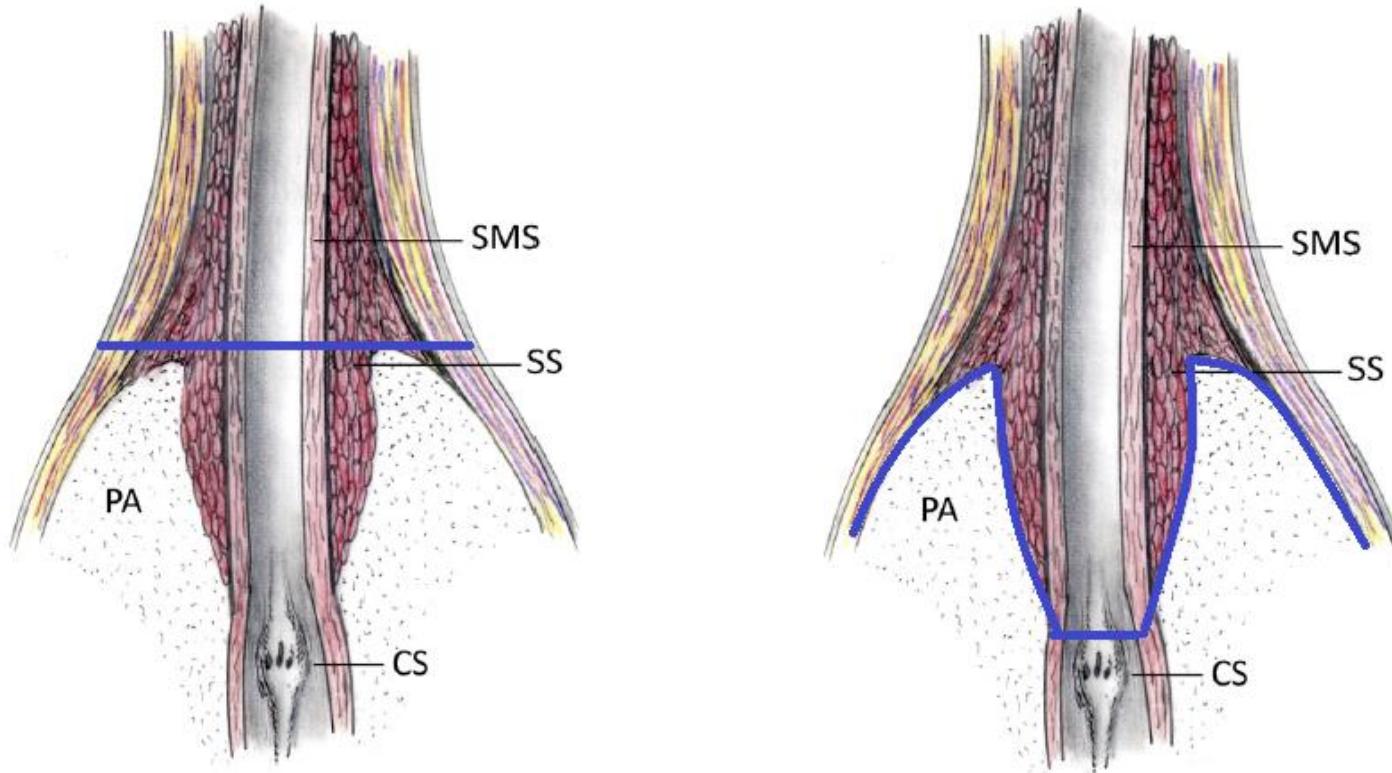
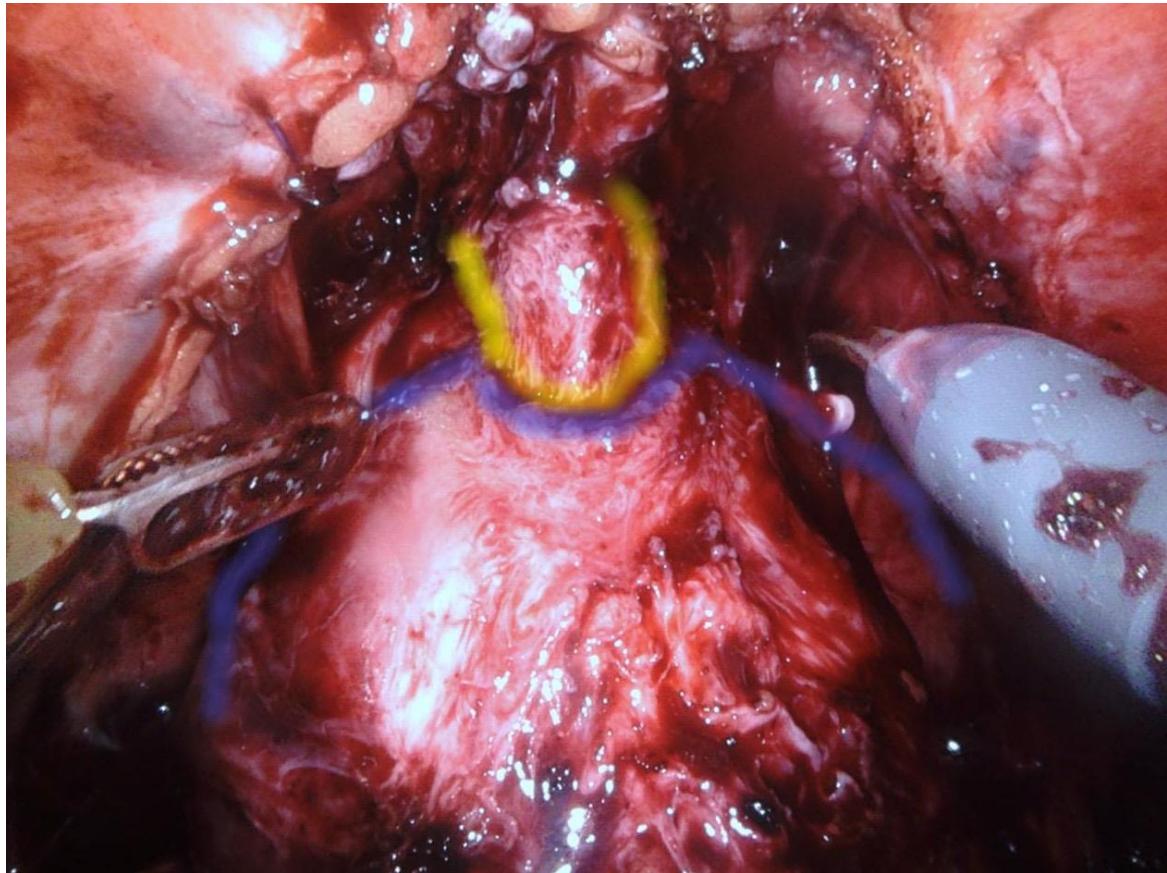
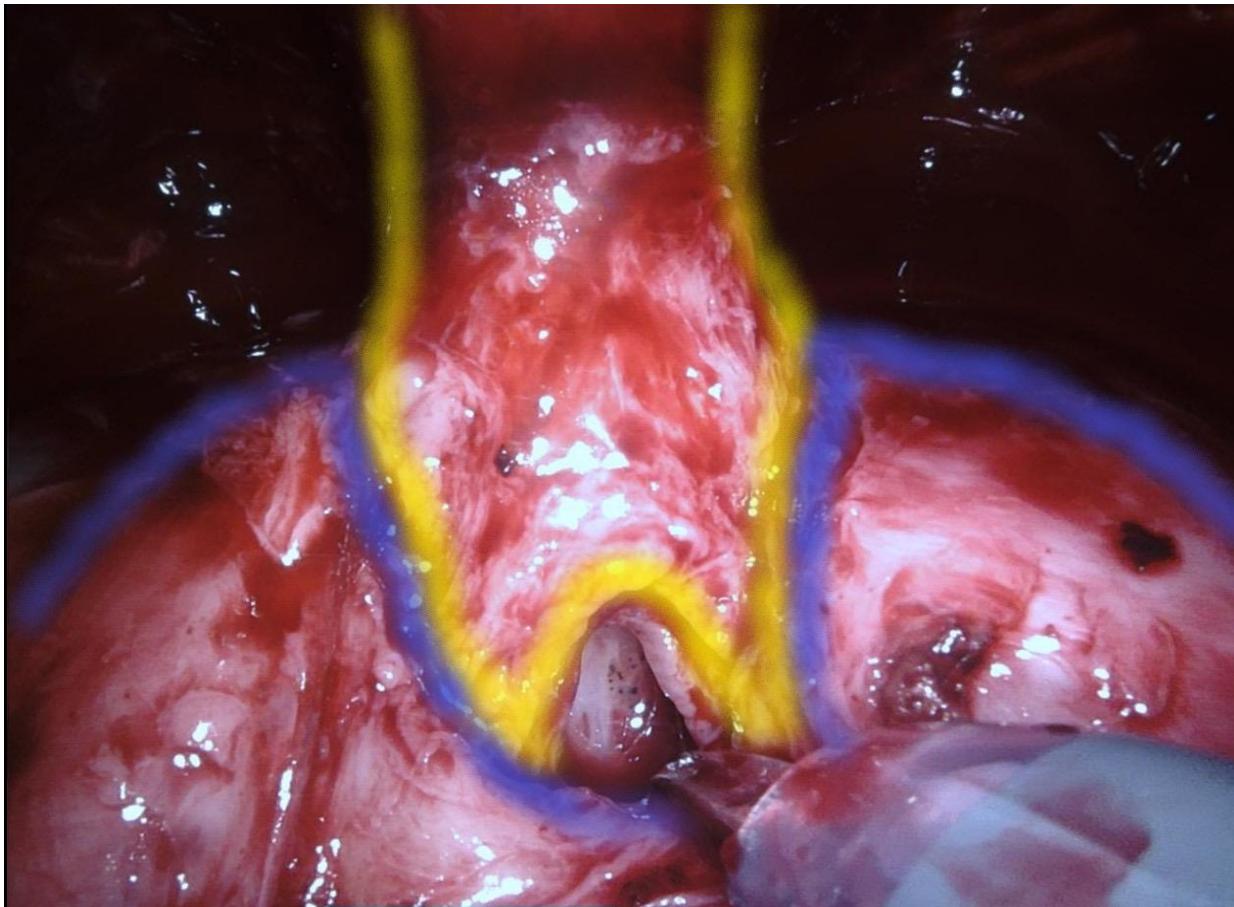


Fig. 1 – Transversal section of the prostatic apex. A considerable part of the urethral sphincter is located intraprostatically between the prostatic apex and the colliculus seminalis.

SMS = smooth muscle sphincter; SS = striated sphincter (rhabdosphincter); CS = colliculus seminalis; PA = prostatic apex.

Bron: artikel Schlomm et al.







# Materiaal en methode

Continentie 6 weken, 3 en 6 maanden postoperatief

- PAD-test

Continent:

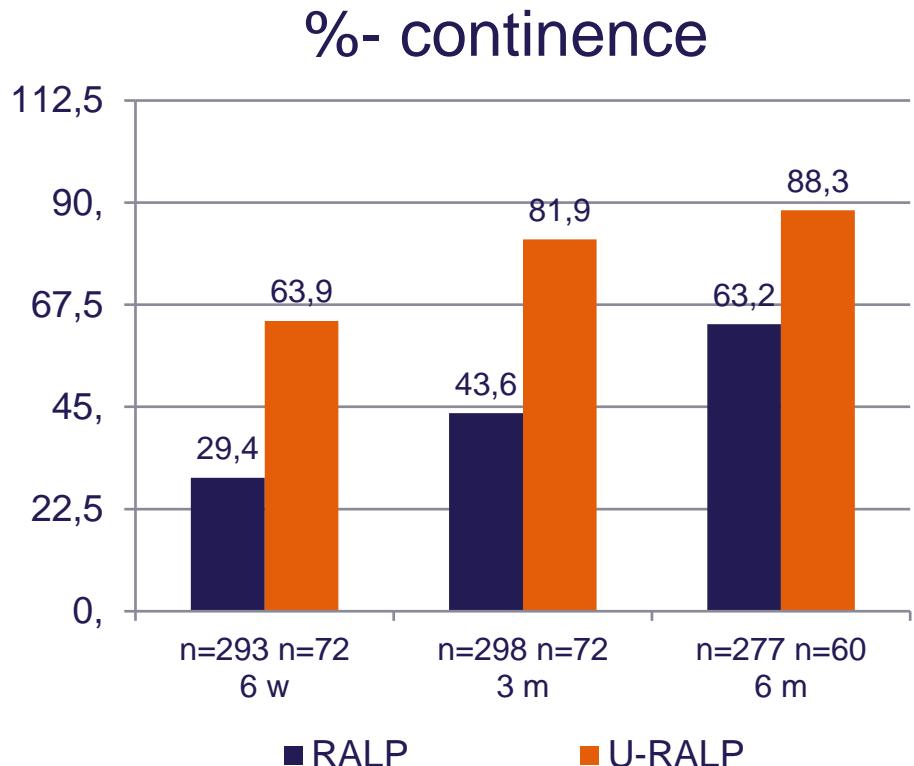
- Maximaal één pad/24 uur
- <10 mL/24 uur verlies



# Results

## Continence

	RALP	U-RALP	P-waarde
6 weeks	29,4%	63,9%	< 0,001
3 months	43,6%	81,9%	< 0,001
6 months	63,2%	88,3%	< 0,001



## Surgical margins

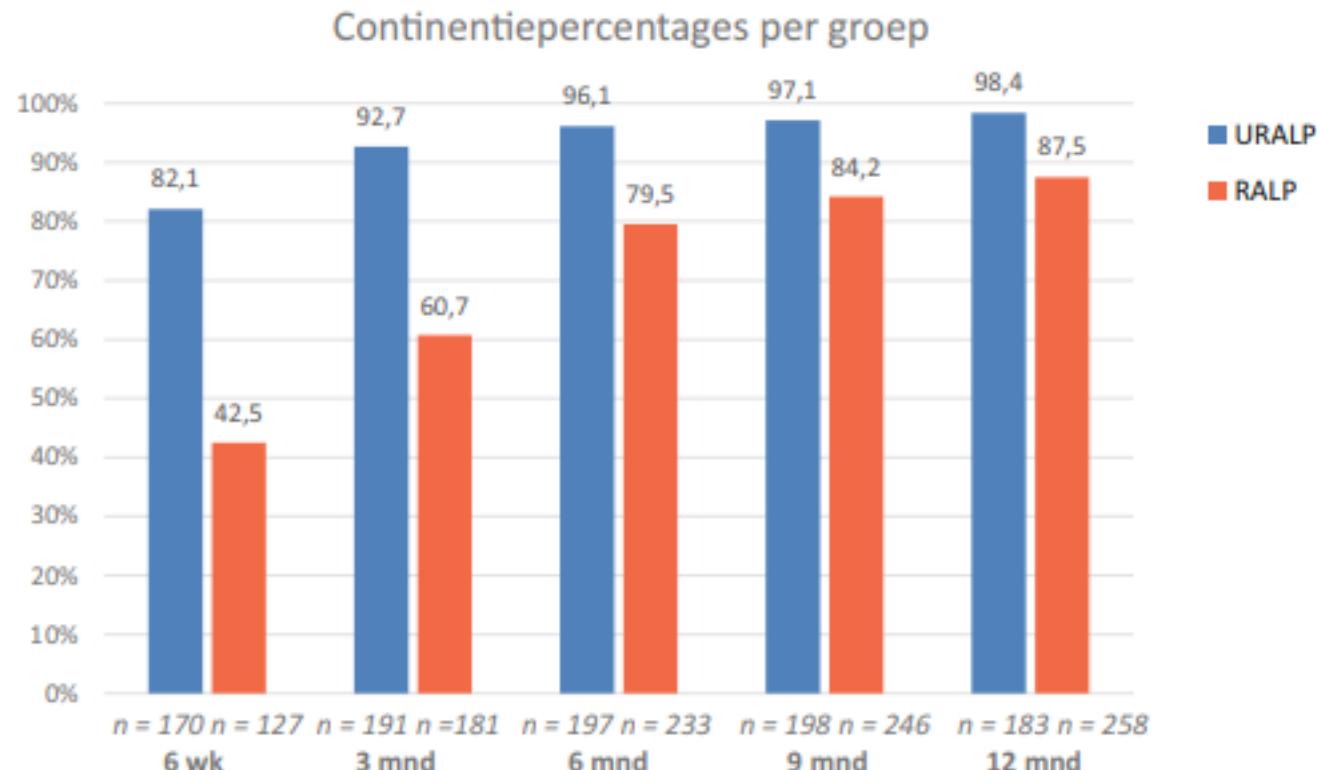
	RALP	U-RALP	P-waarde
R+	33,0 %	27,8%	0,394

## Verbetering van continentie door urethrasparende robotgeassisteerde laparoscopische prostatectomie

Kim Hulshof · Niek F. Casteleijn · Marloes Vermeer · J. Herman Roelink · Erik B. Cornel · Saskia P. Stomps

### Artikel

**Figuur 2** Postoperatieve continentiepercentages van URALP en RALP



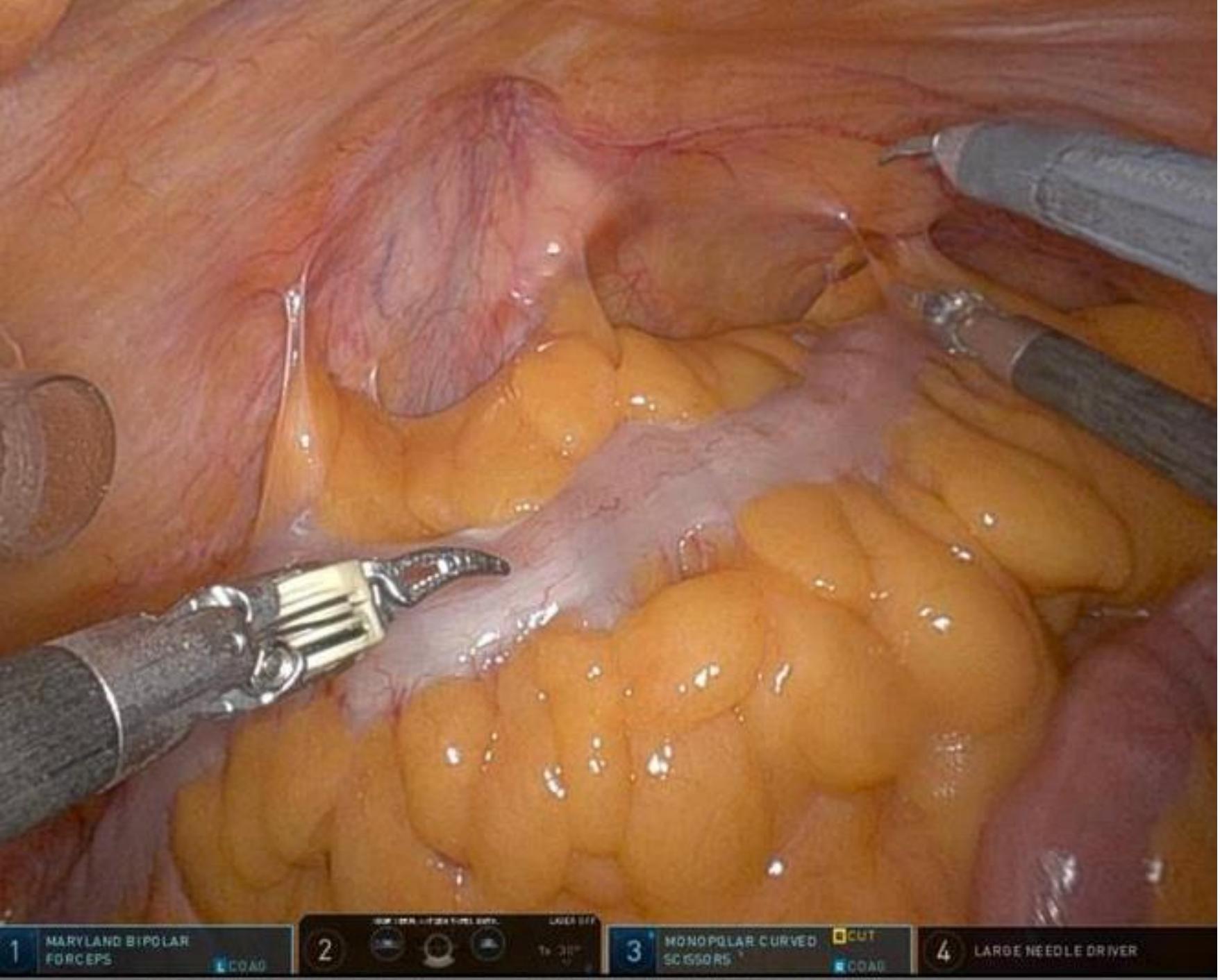
# In Conclusion

## What did robot surgery bring us?

- We trained 2 more urologists in laparoscopic prostatectomies
- We became expert centre in our region
- Performed 60 laparoscopic prostatectomies in 2014
- Performed 172 RA laparoscopic prostatectomies in 2023
- Introduced urethra sparing surgery with rapid decrease in incontinence
- We can (re)start RA laparoscopisc cystectomies
- Fewer musculoskeletal problems for surgeons and OR assistants
- Happy patients and therefore...
- Happy doctors

# Questions?





1 MARYLAND BIPOLAR  
FORCES E COAG

2 LASER OFF  
CO2 LASER 1064 NM  
1x 30°

3 MONOPOLAR CURVED  
SCISSORS CUT  
E COAG

4 LARGE NEEDLE DRIVER

Web gebaseerde beeld distributie is niet bedoeld voor diagnostische doeleinden.

MARYLAND BIPOLE  
FORCES

E COAD

2



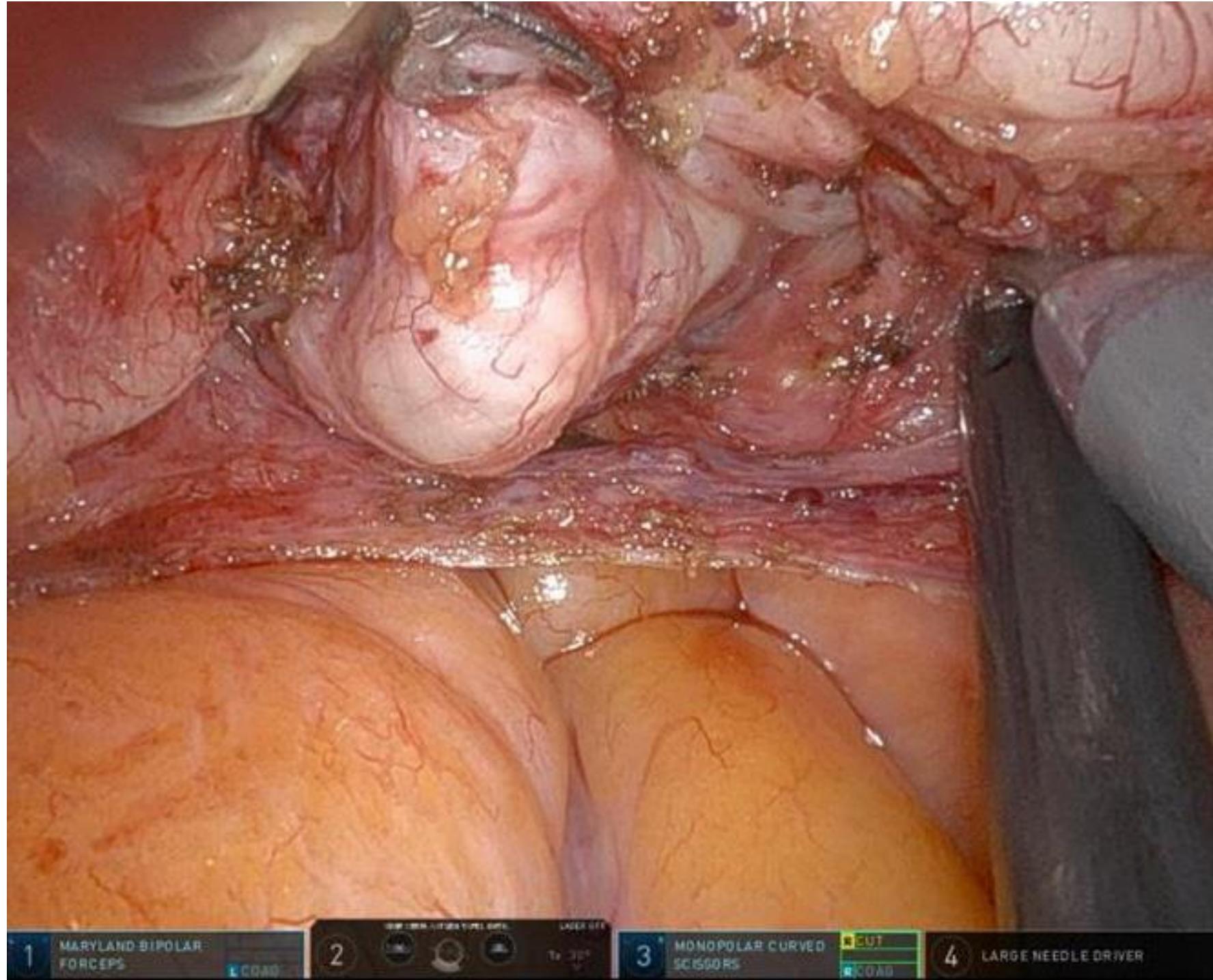
3

MONOPOLAR CURVED  
SCISSORS

CUT  
COAG

4

LARGE NEEDLE DRIVER



1 MARYLAND BIPOLAR  
FORCES

L LOAD

2 3.0 mm x 150 mm  
MONOPOLAR CURVED  
SCISSORS

LARGE NEEDLE  
DRIVER

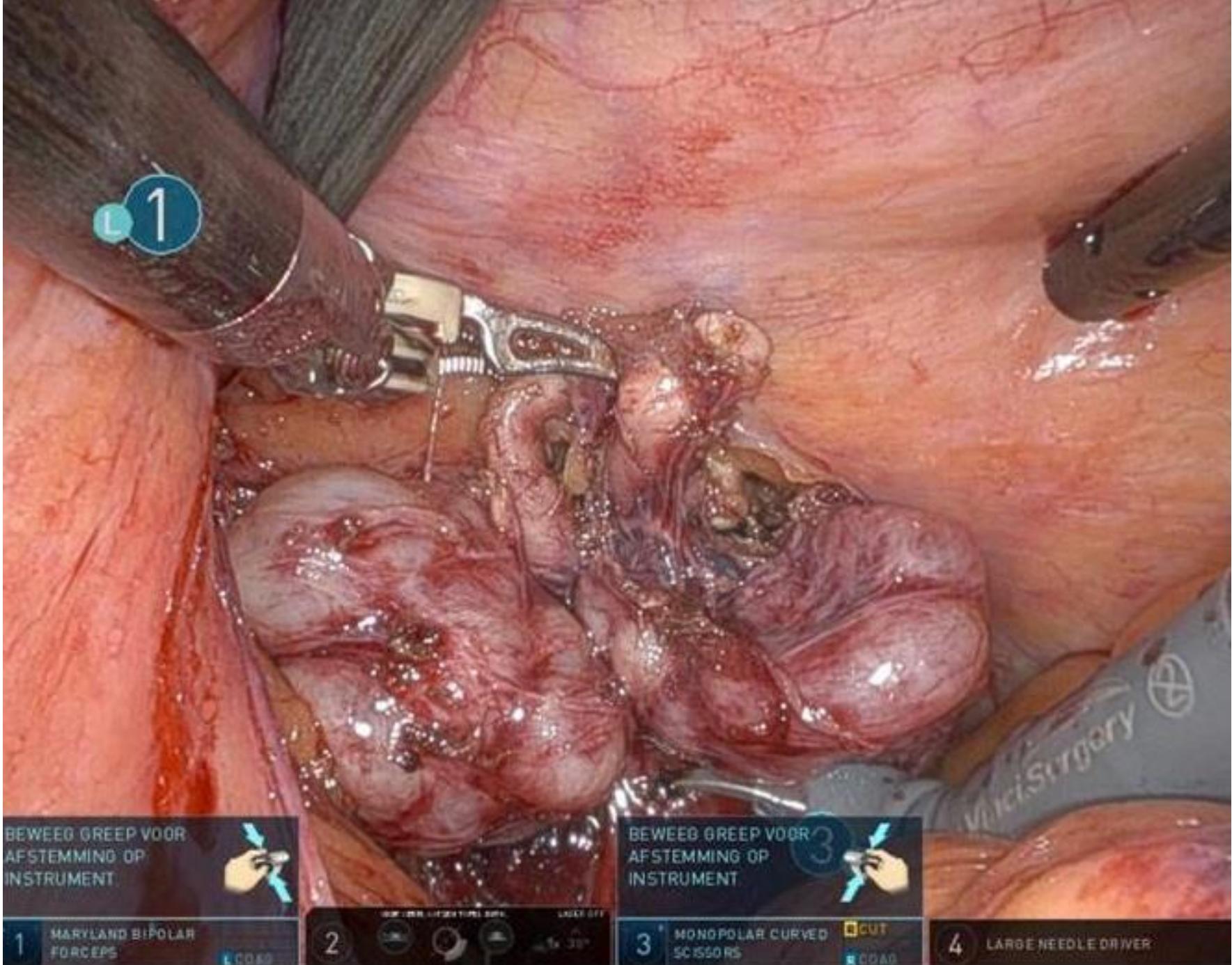
R LOAD

3 MONOPOLAR CURVED  
SCISSORS

CUT  
R LOAD

4 LARGE NEEDLE DRIVER

L 1



BEWEEG GREEP VOOR  
AFSTEMMING OP  
INSTRUMENT



1 MARYLAND BIPOLE  
FORCES

0.040

BEWEEG GREEP VOOR  
AFSTEMMING OP  
INSTRUMENT



3 MONOPOLAR CURVED  
SCISSORS

CUT  
COAG

2

MONOPOLAR CUTTING  
SCISSORS

COAG

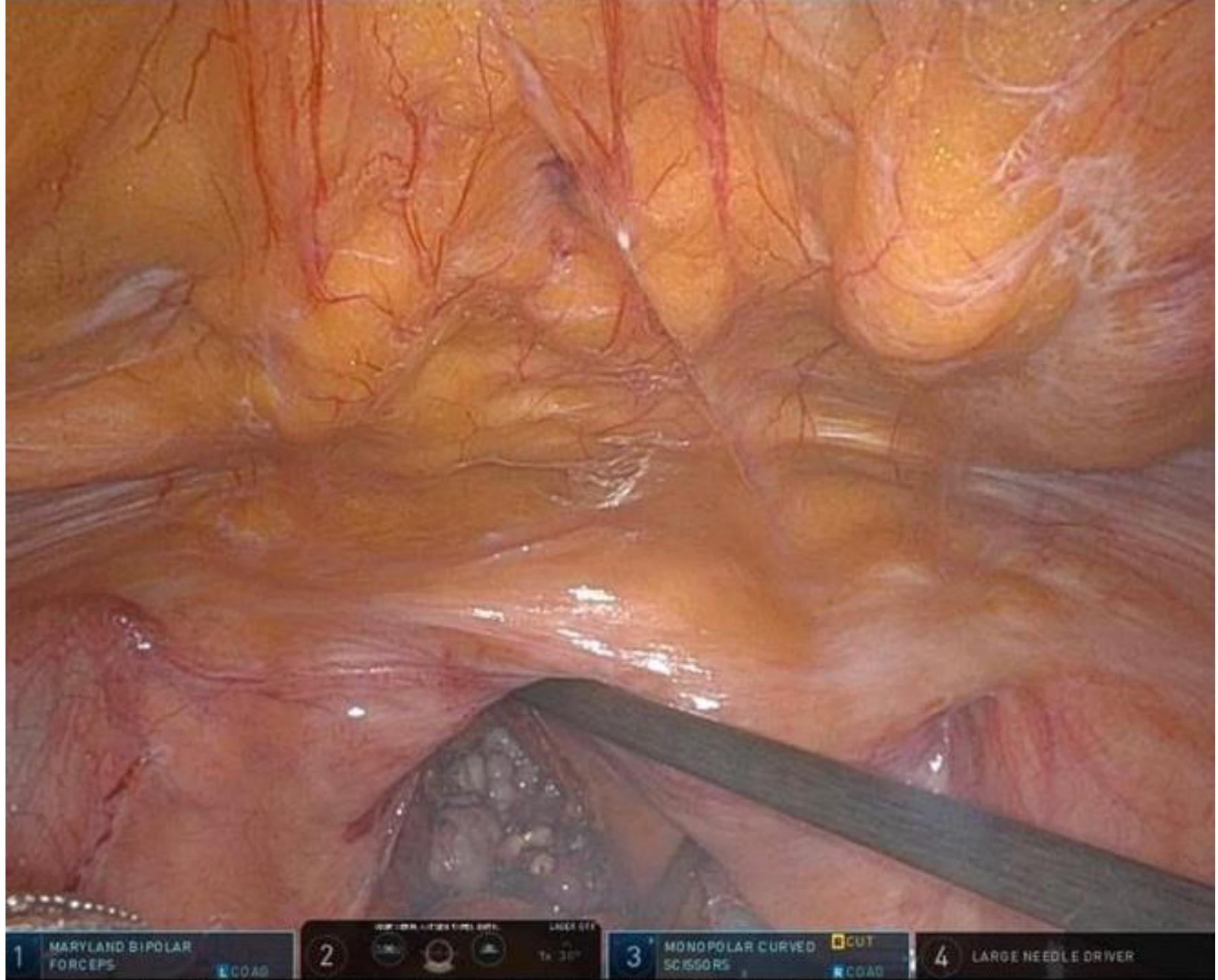
3

MONOPOLAR CURVED  
SCISSORS

CUT  
COAG

4

LARGE NEEDLE DRIVER



1 MARYLAND BIPOLEAR  
FORCEPS

RELOAD

2



LARGE NEEDLE  
DRIVER

TA 30°

3

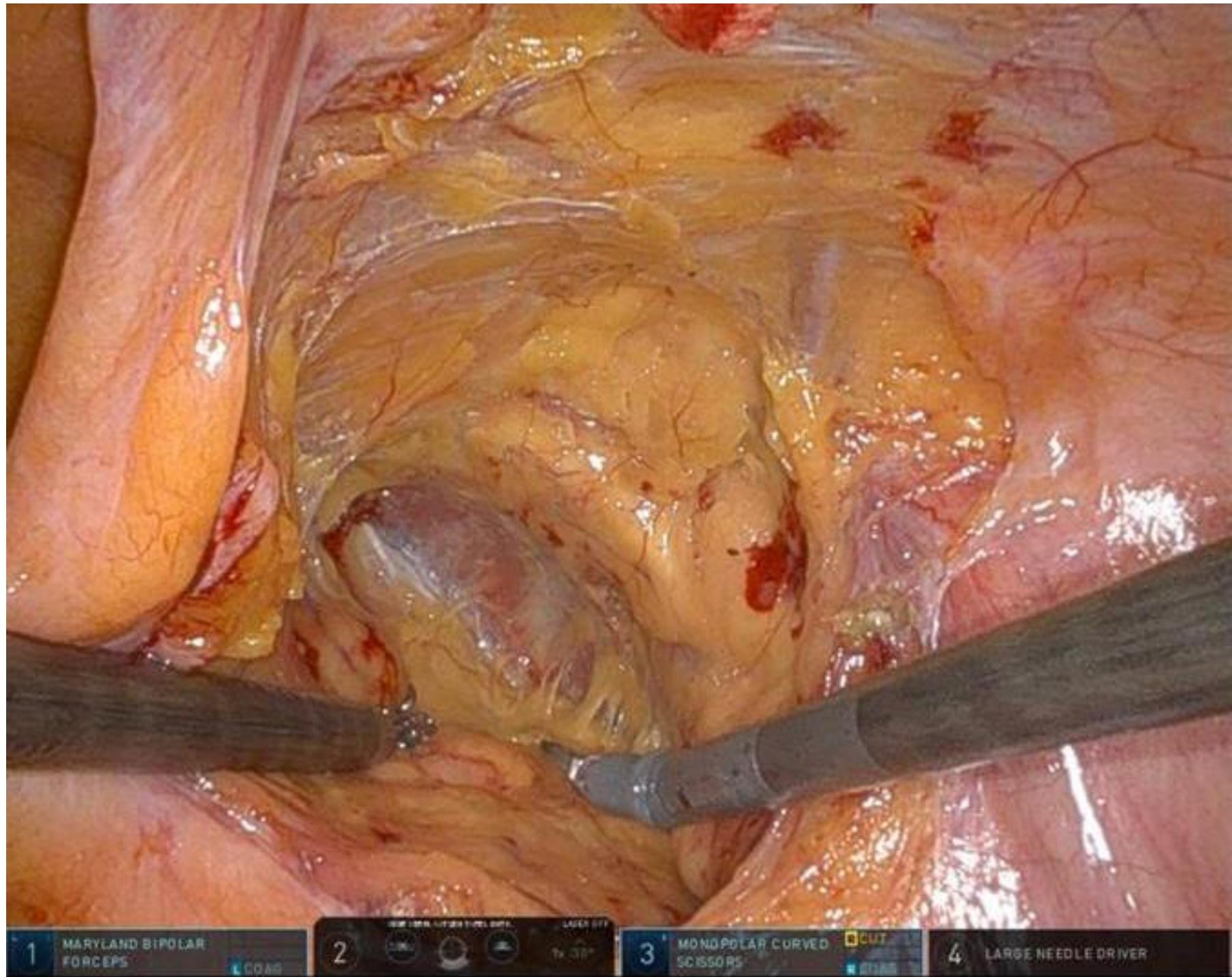
MONOPOLAR CURVED  
SCISSORS

CUT

RELOAD

4

LARGE NEEDLE DRIVER



1 MARYLAND BIPOLE  
FORCES

LOAD

2

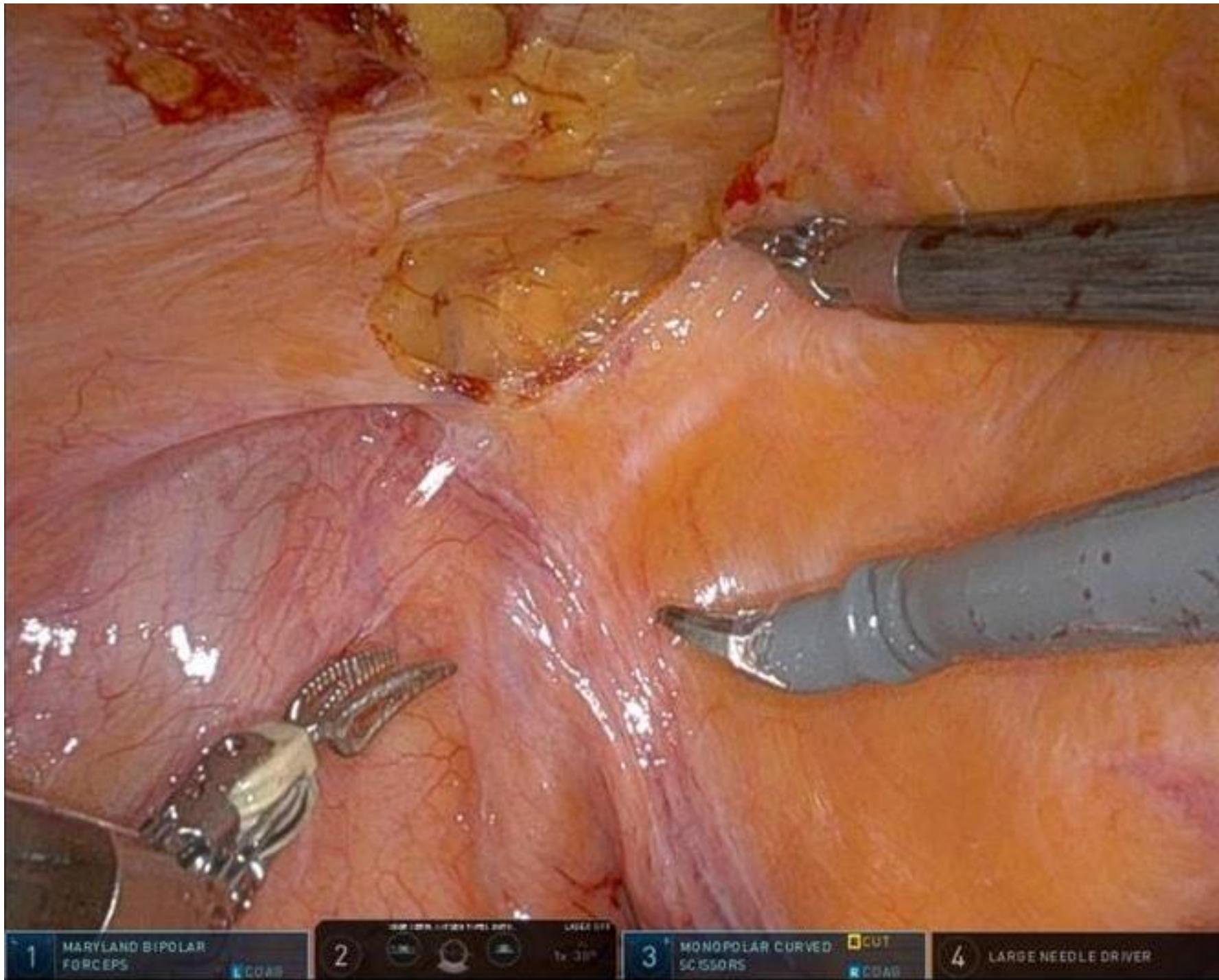
LOCK OFF  
TH GRIP

3

MONOPOLAR CURVED  
SCISSORS

4

LARGE NEEDLE DRIVER



1 MARYLAND BIPOLAR  
FORCEPS

E COAG

2



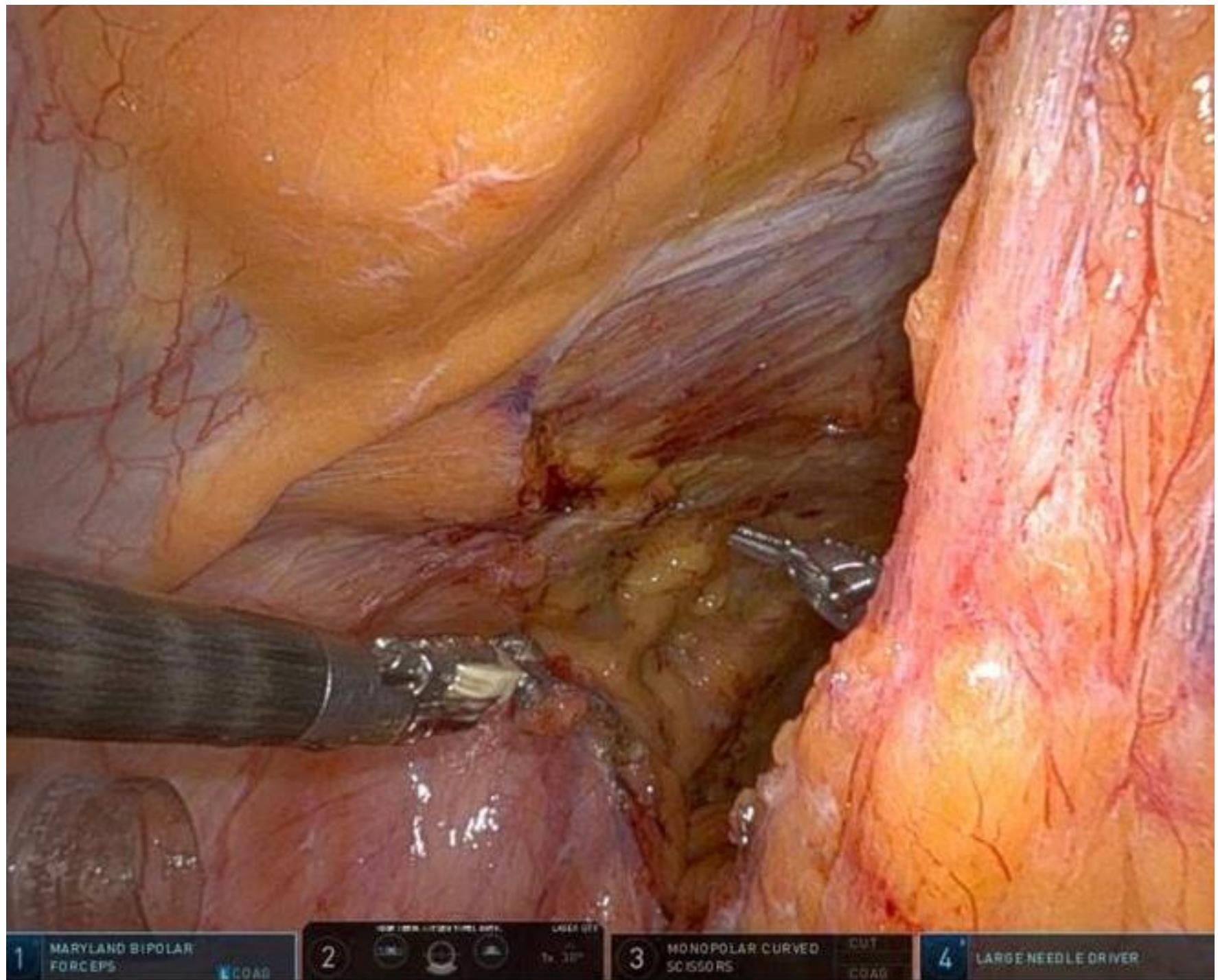
3x 30°  
LARGE CUT  
E COAG

3

MONOPOLAR CURVED  
SCISSORS  
CUT  
E COAG

4

LARGE NEEDLE DRIVER



1 MARYLAND BIPOLE  
FORCEPS

ECOGAS

2



3x 30°  
LARGE GEAR

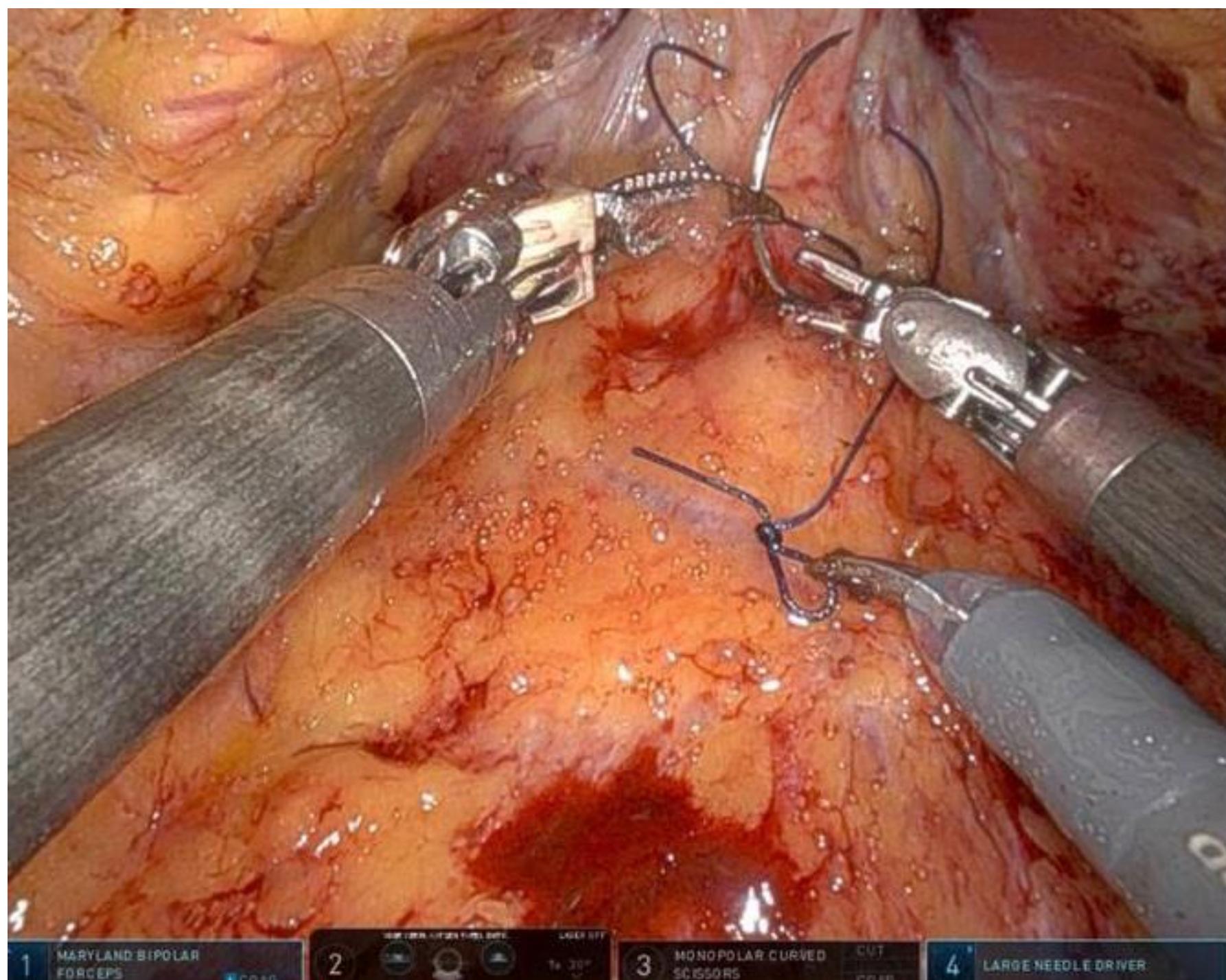
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MONOPOLAR CURVED  
SCISSORS

CUT  
COAG

4

LARGE NEEDLE DRIVER



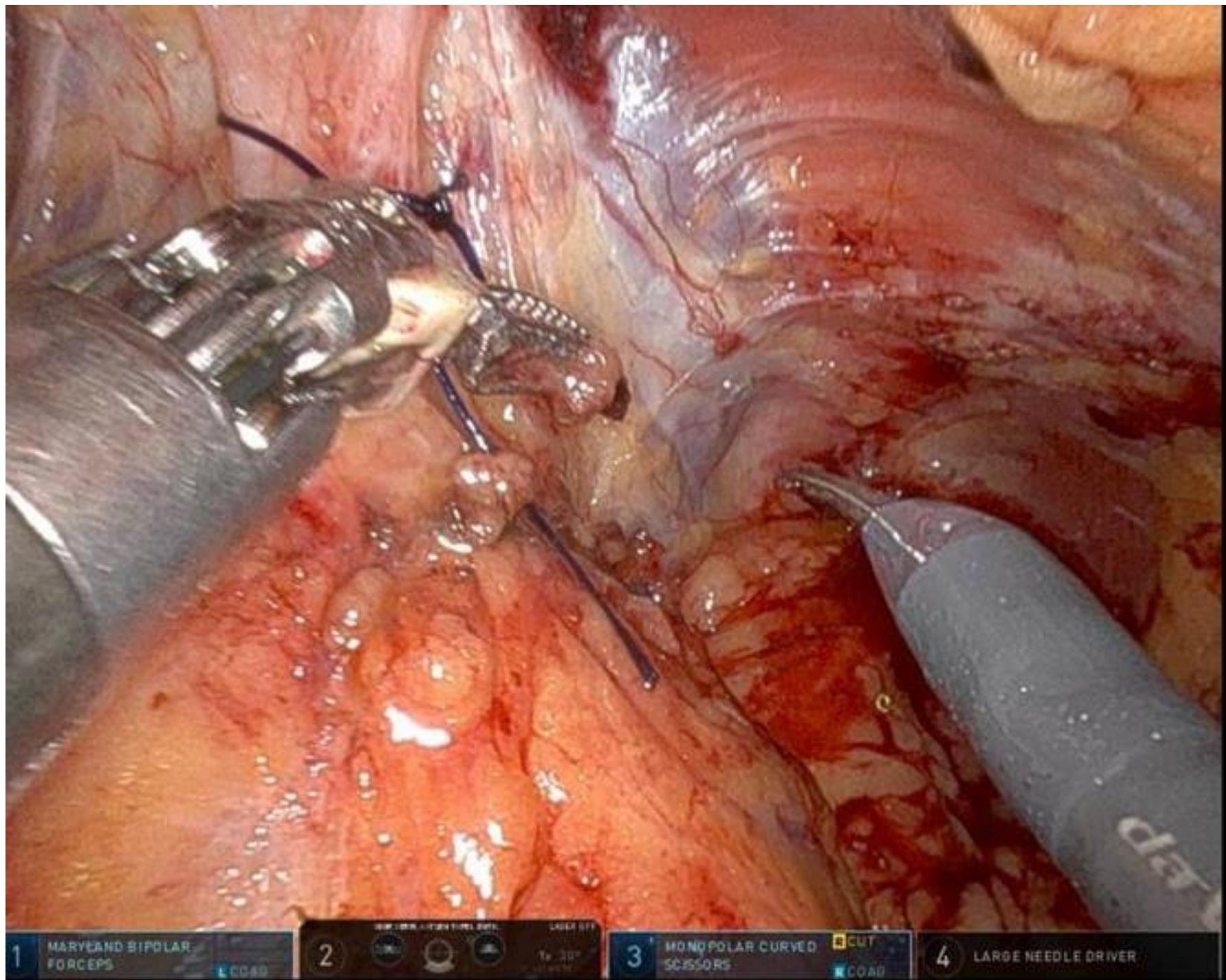
1 MARYLAND BIPOLE FORGESS

2 30° LASER OFF

10-30°

3 MONOPOLAR CURVED SCISSORS CUT

4 LARGE NEEDLE DRIVER



1 MARYBIPOLAR  
FORCES

LCOAD

2

LARGE CUT  
10-20°

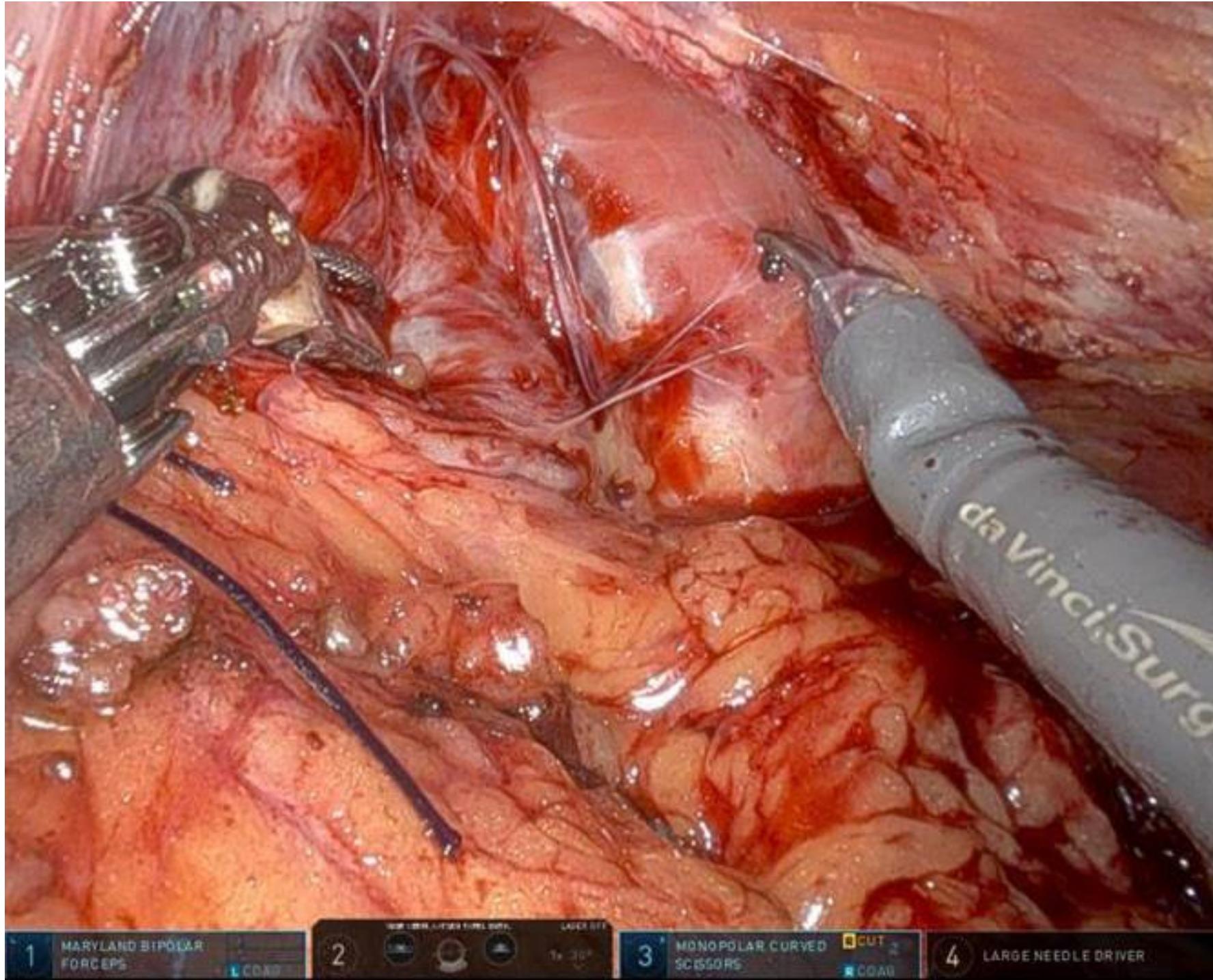
3

MONOPOLAR CURVED  
SCISSORS

CUT  
SCISSORS

4

LARGE NEEDLE DRIVER



1

MARYLAND BIPOLEAR  
FORCEPS

LC000

2

NEW 100% LIQUID COAGULANT

LAYER 100%

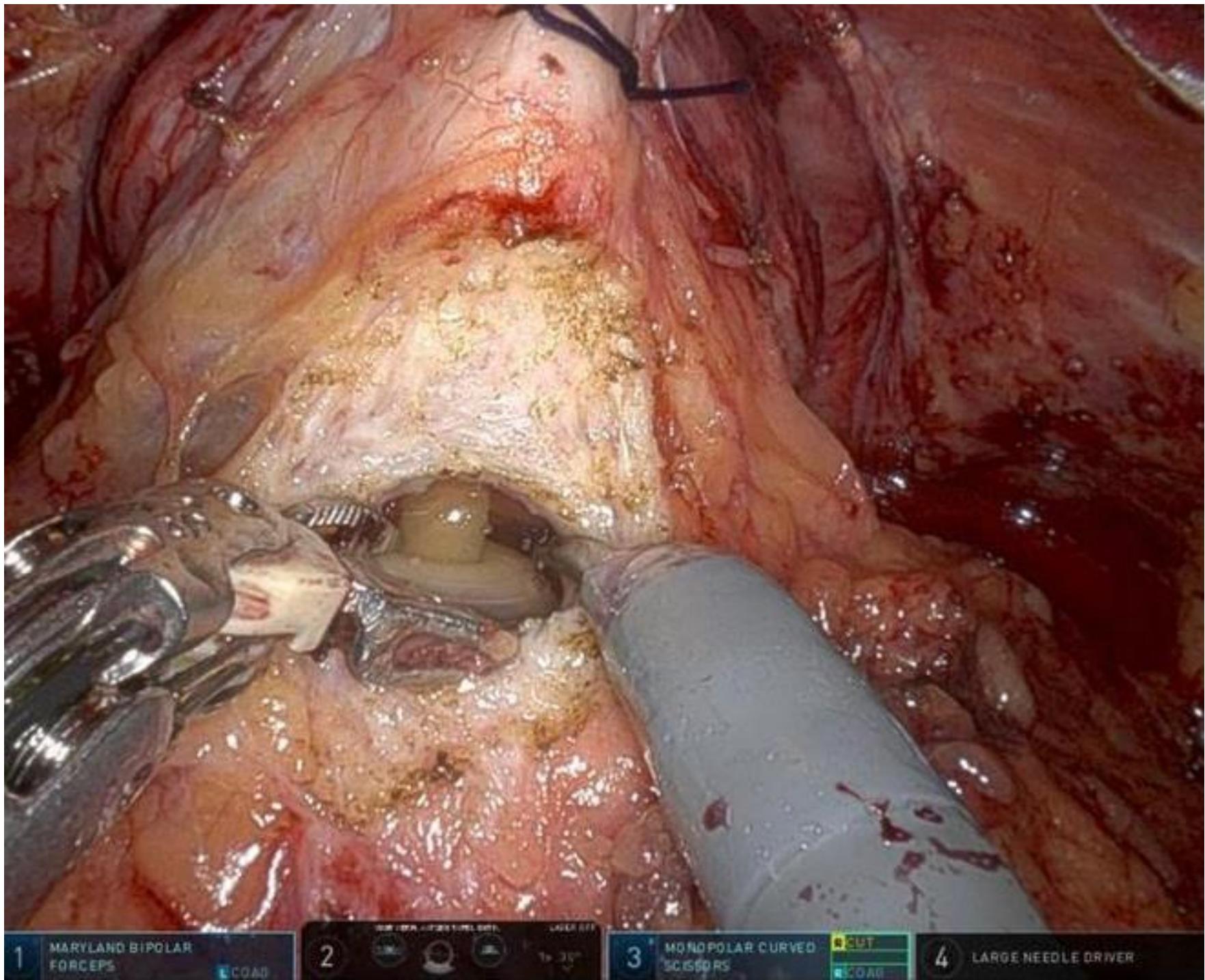
Tx 300

3

MONOPOLAR CURVED  
SCISSORSCUT  
COAG

4

LARGE NEEDLE DRIVER



1 MARYLAND BIPOLAR  
FORCES

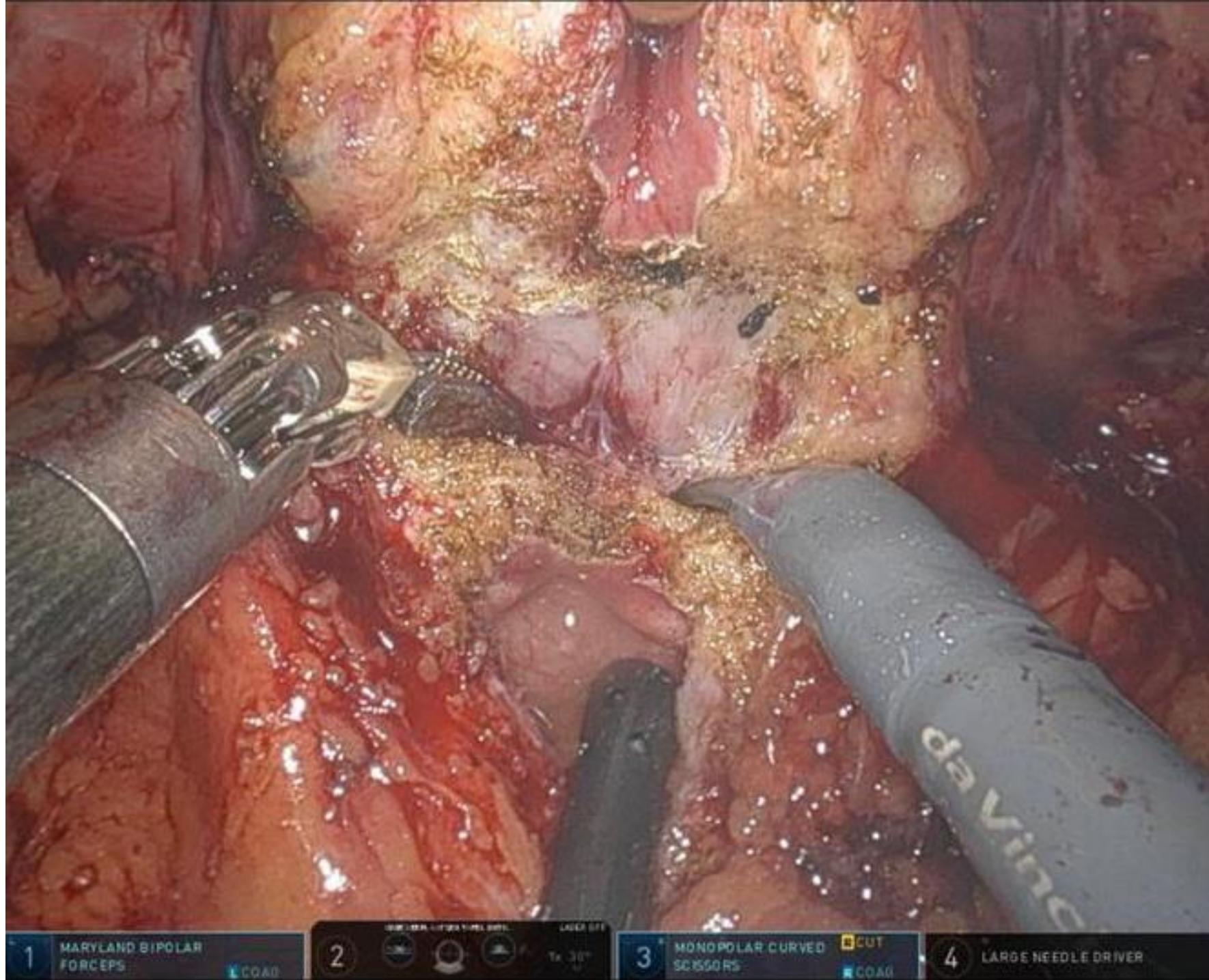
ECOAB

2 30° 30° 30°  
LAYER OFF  
To 35°

3 MONOPOLAR CURVED  
SCISSORS

CUT  
ECOAB

4 LARGE NEEDLE DRIVER



1 MARYLAND BIPOLAR  
FORCEPS

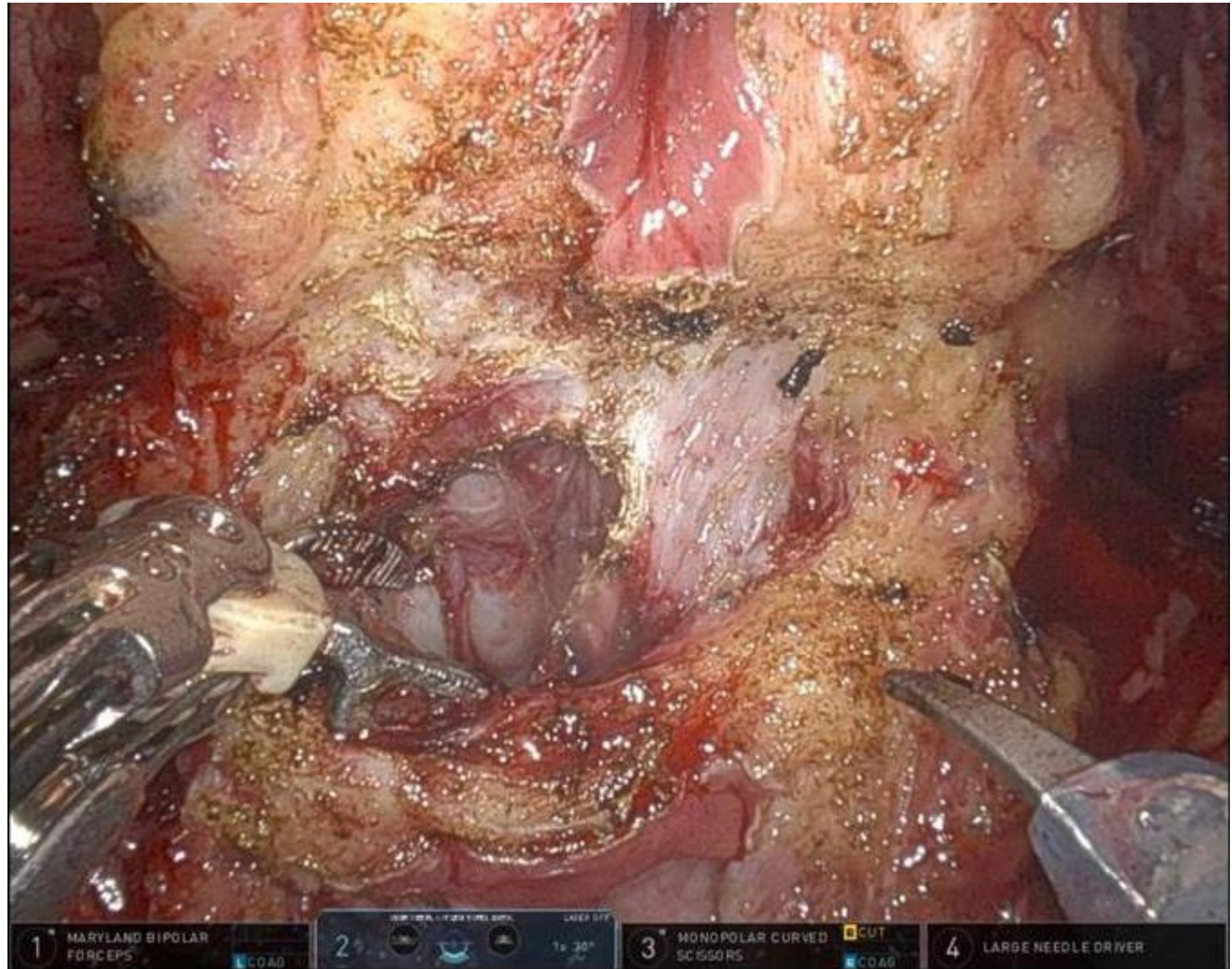
2 LOAD

3.0 mm 100 mm 2.0 mm  
LOAD OFF

TX 30°

3 MONOPOLAR CURVED  
SCISSORS CUT  
LOAD

4 LARGE NEEDLE DRIVER



1 MARYLAND BIPOLE  
FORCES

LOAD

2

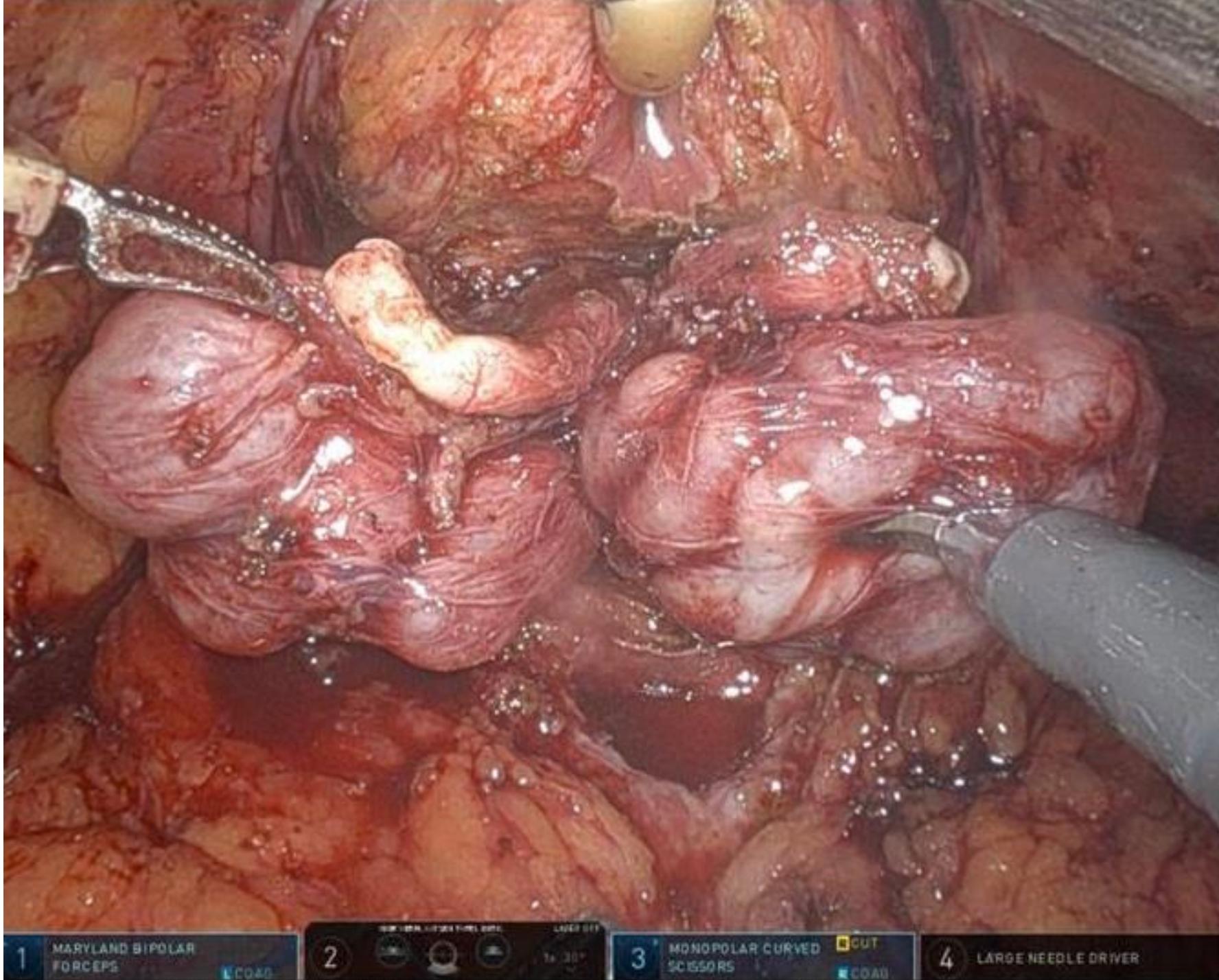


LAYER OFF  
T<sub>0</sub> 30°

3 MONOPOLAR CURVED  
SCISSORS

CUT  
LOAD

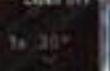
4 LARGE NEEDLE DRIVER



1 MARYLAND BIPOLE  
FORCES

E COAD

2



1x 30°

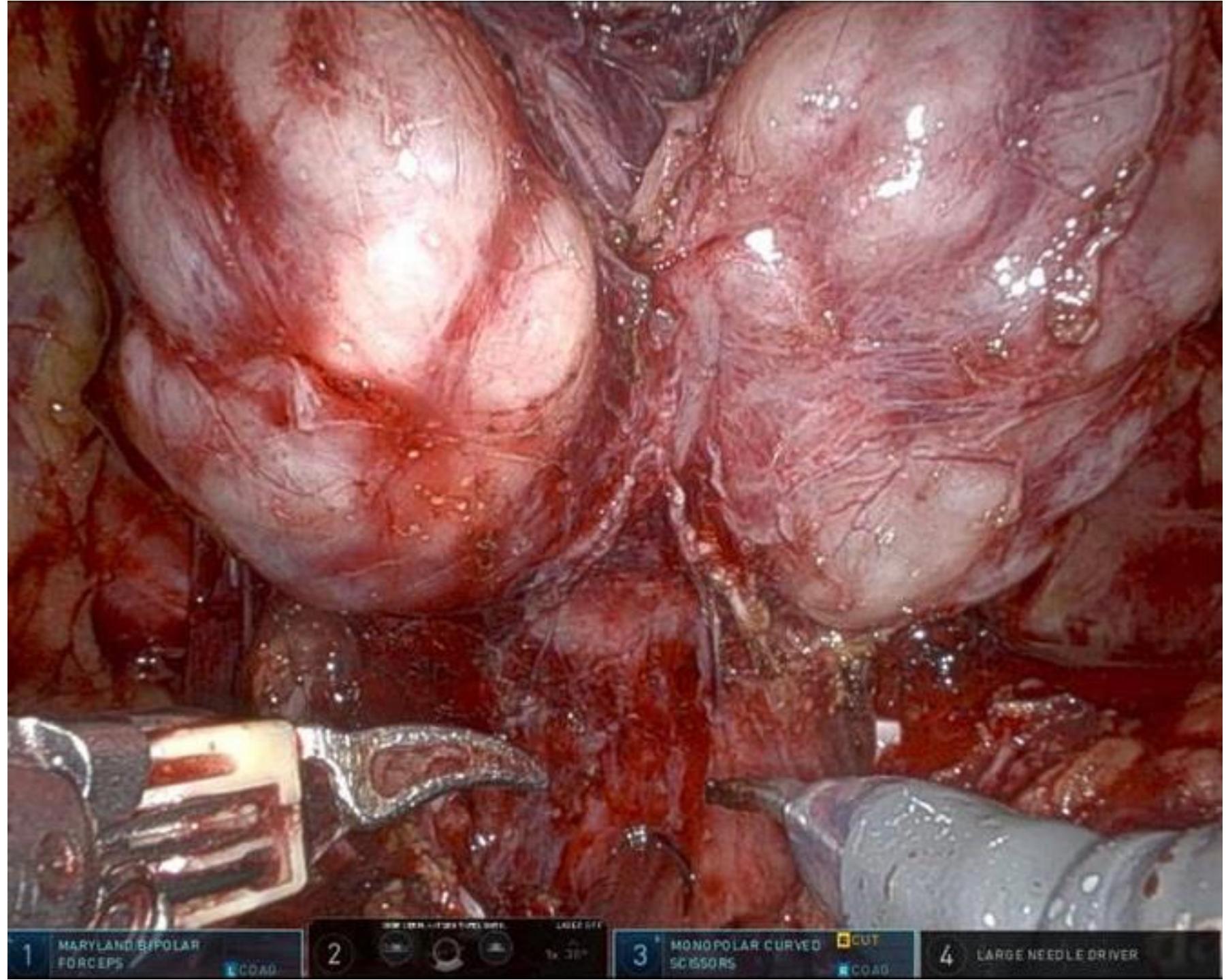
3

MONOPOLAR CURVED  
SCISSORS

E COAD

4

LARGE NEEDLE DRIVER



1 MARYLAND BIPOLAR  
FORCEPS

L COAD

2

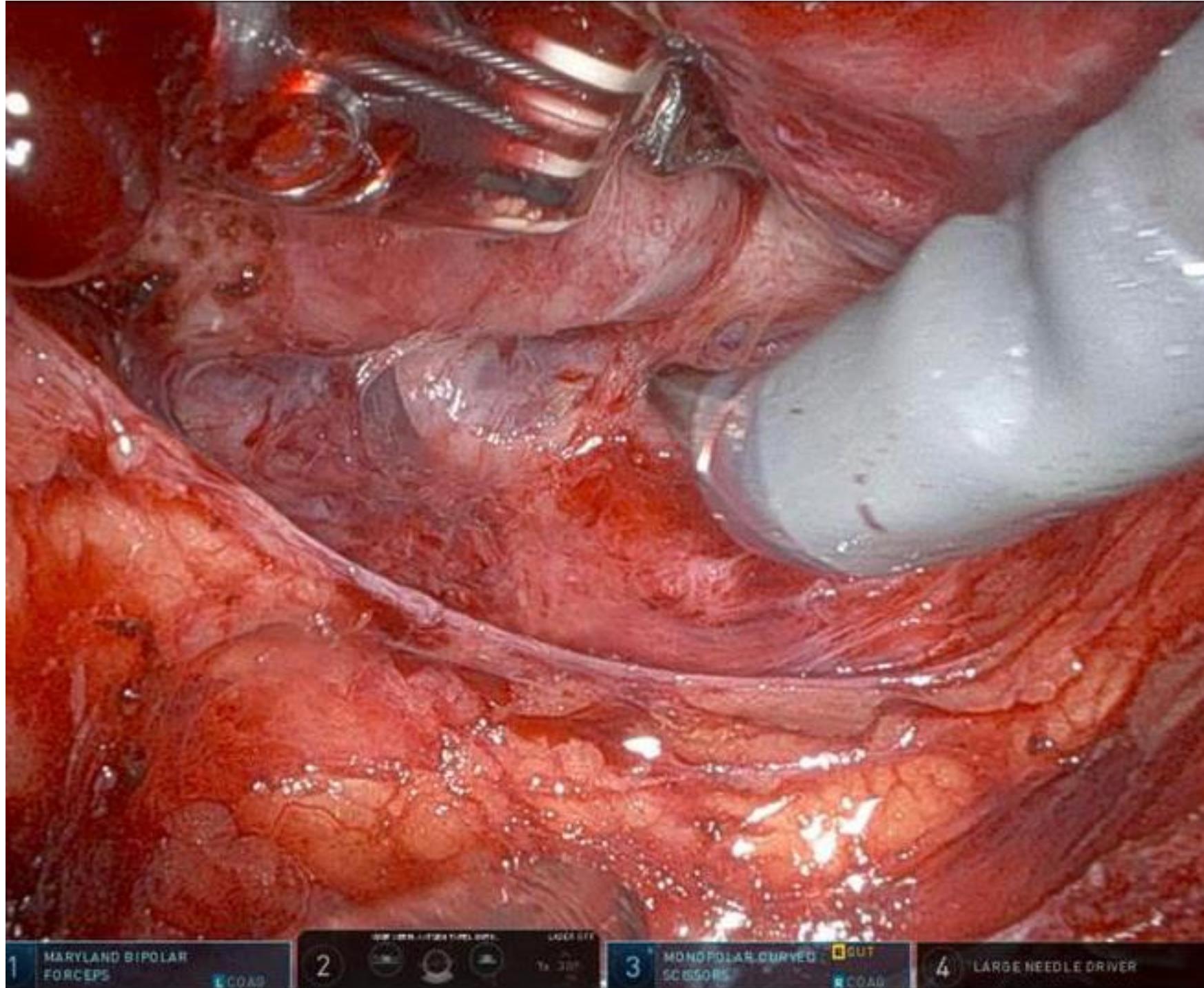
SHARP CUTTING, AUTOMATIC HOLD, 10MM GRIP  
1x 30°

3

MONOPOLAR CURVED SCISSORS  
CUT  
L COAD

4

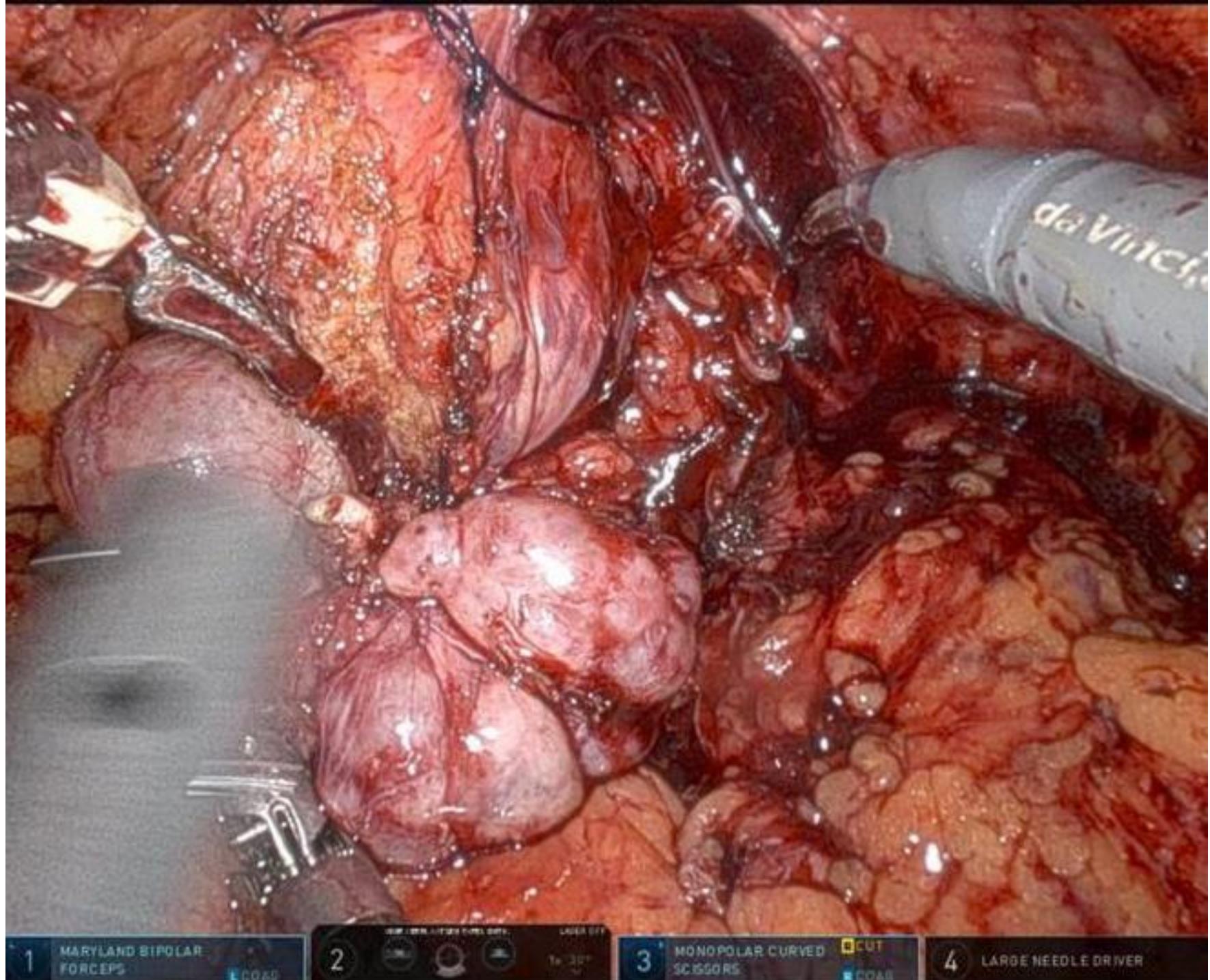
LARGE NEEDLE DRIVER



1 MARYLAND BIPOLE  
FORCES

2 HIGH DEFINITION TUBE 0.85MM  
LARGE STY  
3 MONOPOLAR CURVED  
SCISSORS

4 OUT  
COAG  
LARGE NEEDLE DRIVER



1 MARYLAND BIPOLEAR  
FORCEPS

L LOAD

2

CUTTING COTTON COAG

LAYER CUT  
To 30°

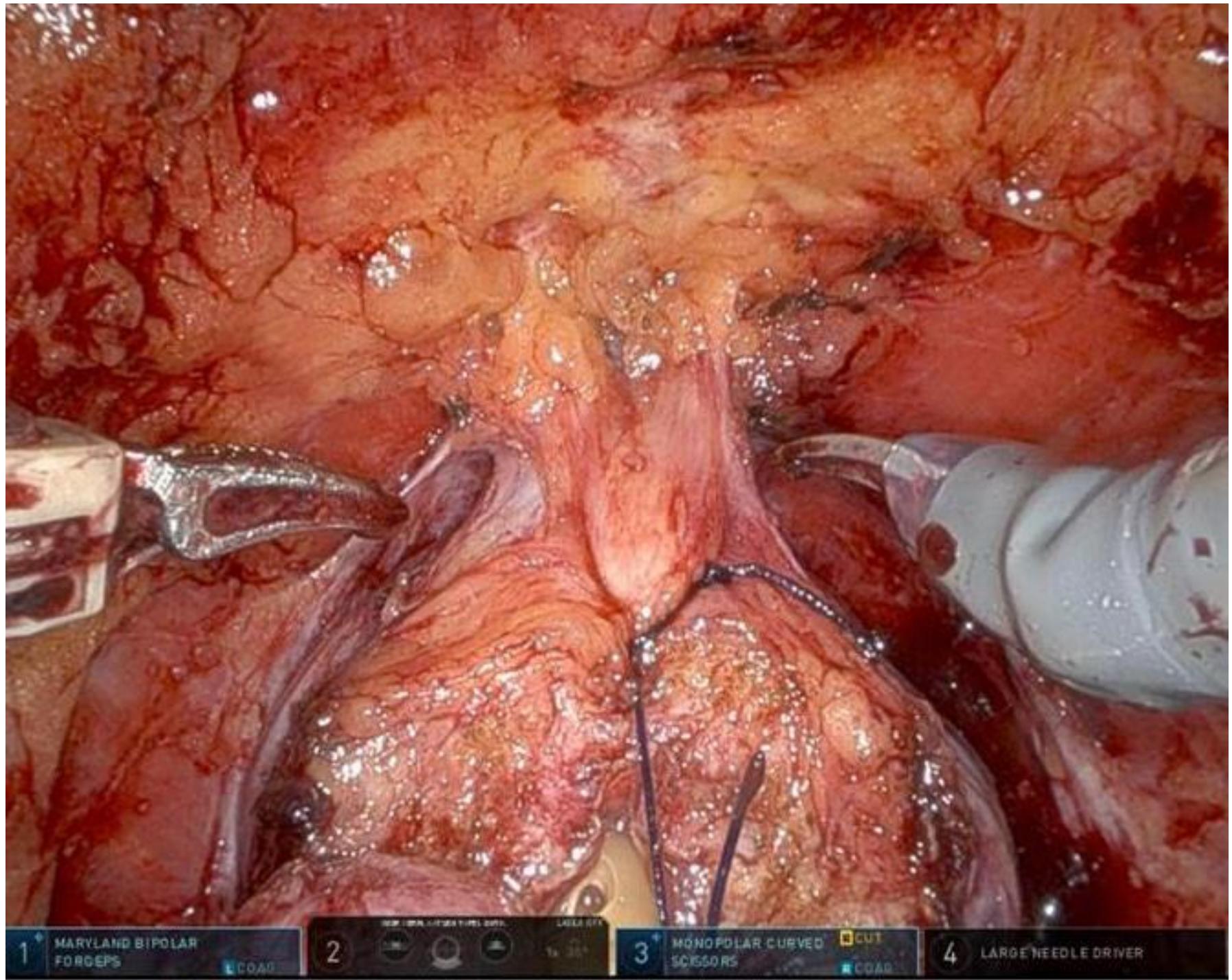
3

MONOPOLAR CURVED  
SCISSORS

CUT  
COAG

4

LARGE NEEDLE DRIVER



1 MARYLAND BIPOLEAR  
FORCES

L COAG

2



LARGE

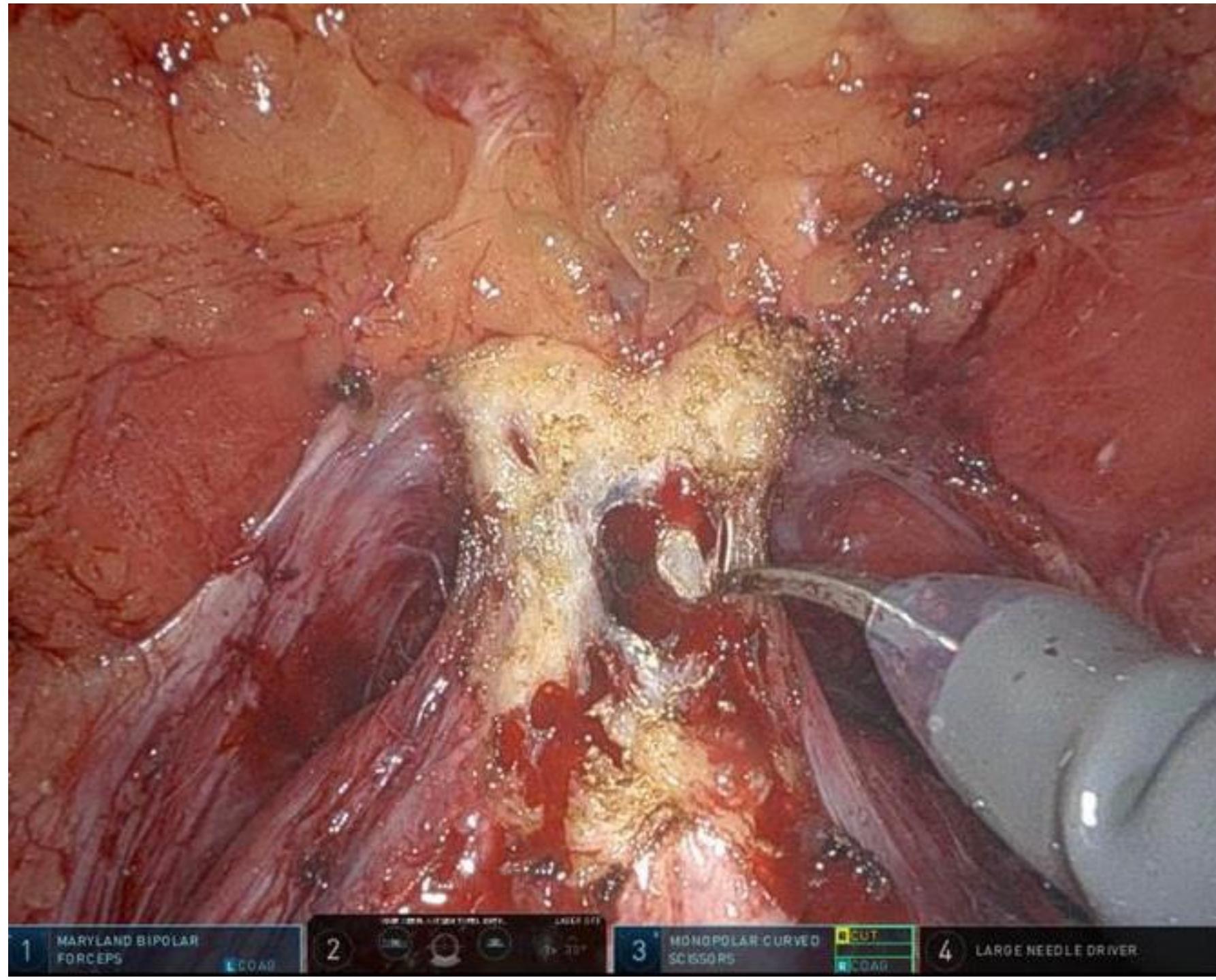
3

MONOPOLAR CURVED  
SCISSORS

CUT  
COAG

4

LARGE NEEDLE DRIVER



1 MARYLAND BIPOLAR  
FORCEPS

E-COAG

2



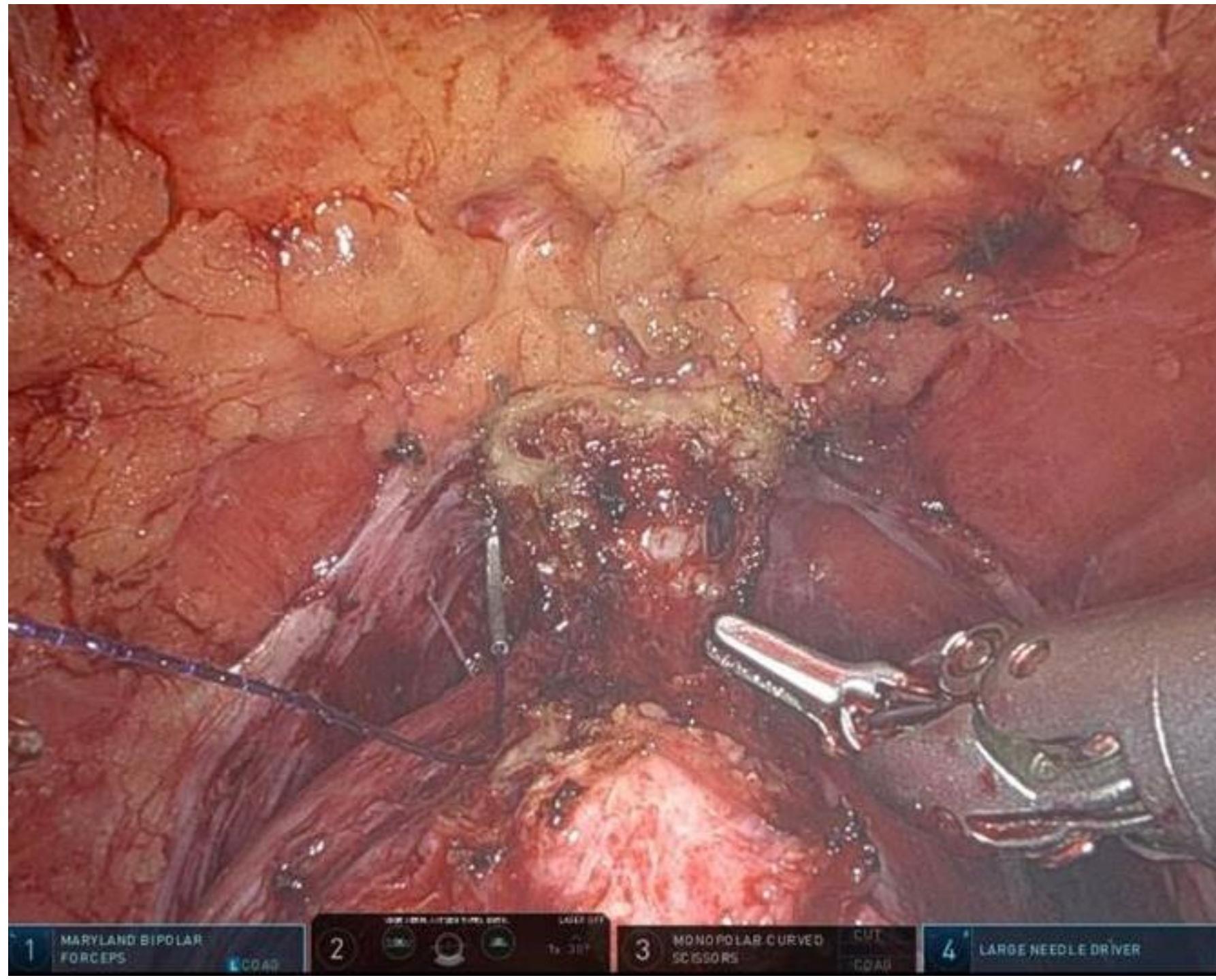
3

MONOPOLAR CURVED  
SCISSORS



4

LARGE NEEDLE DRIVER



1 MARYLAND BIPOLAR  
FORCES

LCO 40

2



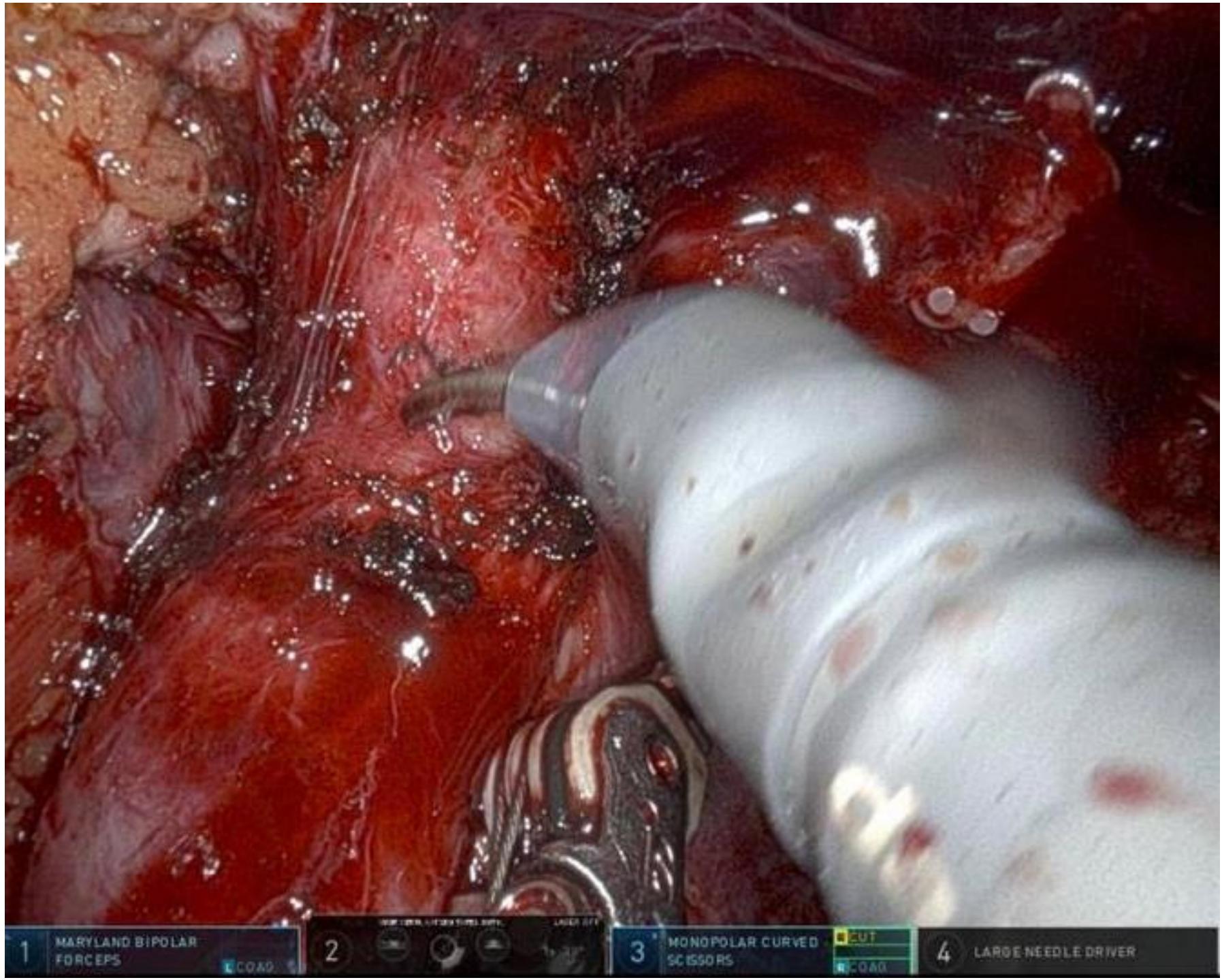
CUT  
COAG  
TISSUE

3 MONOPOLAR CURVED  
SCISSORS

CUT  
COAG

4

LARGE NEEDLE DRIVER



1 MARYLAND BIPOLAR  
FORCEPS

2

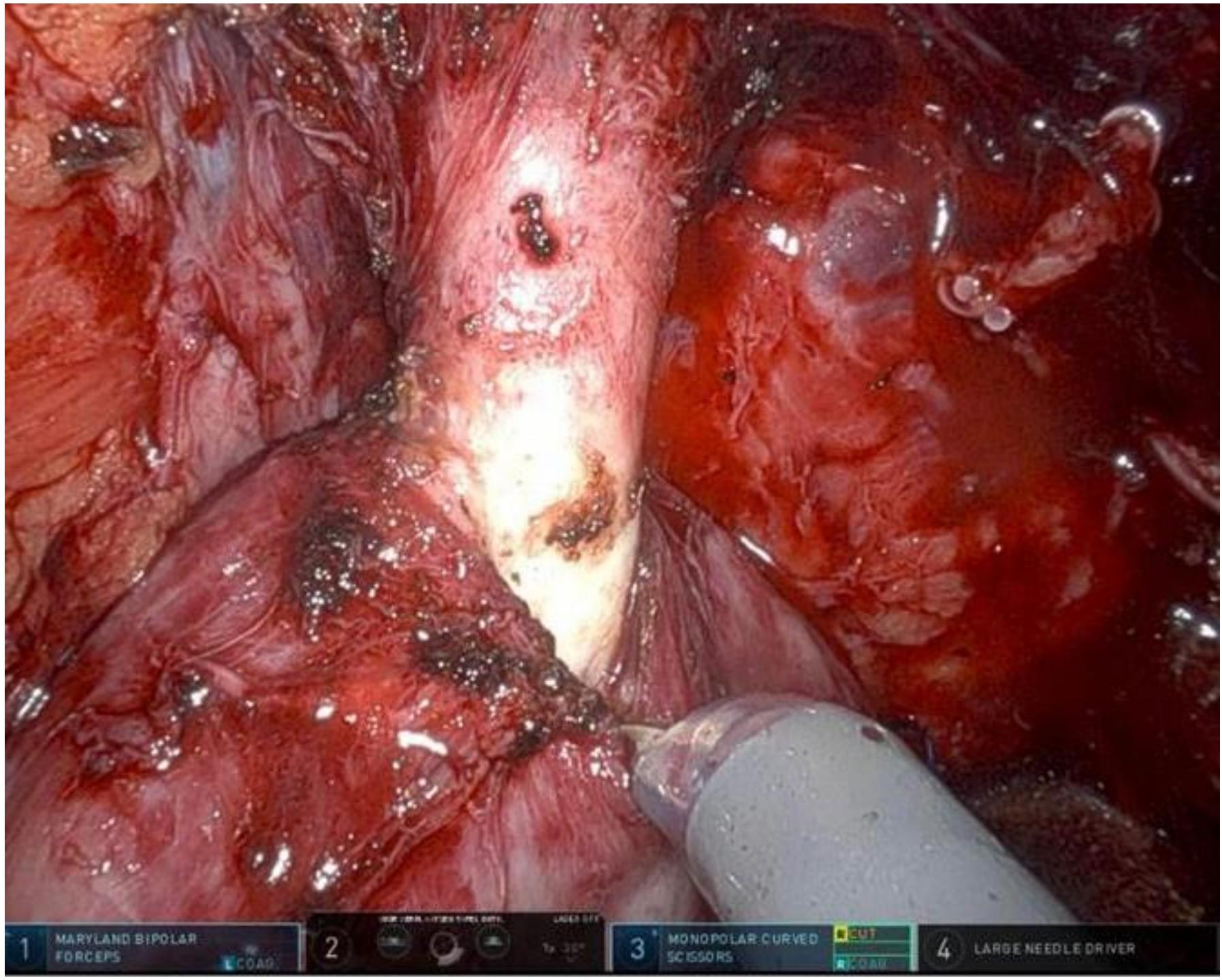
30WATT 100% SUPPLY  
LARGE RIF

2

3 MONOPOLAR CURVED  
SCISSORS

CUT  
RELOAD

4 LARGE NEEDLE DRIVER



1 MARYLAND BIPOLE  
FORCES

E COAG

2

MONOPOLAR CURVED  
SCISSORS

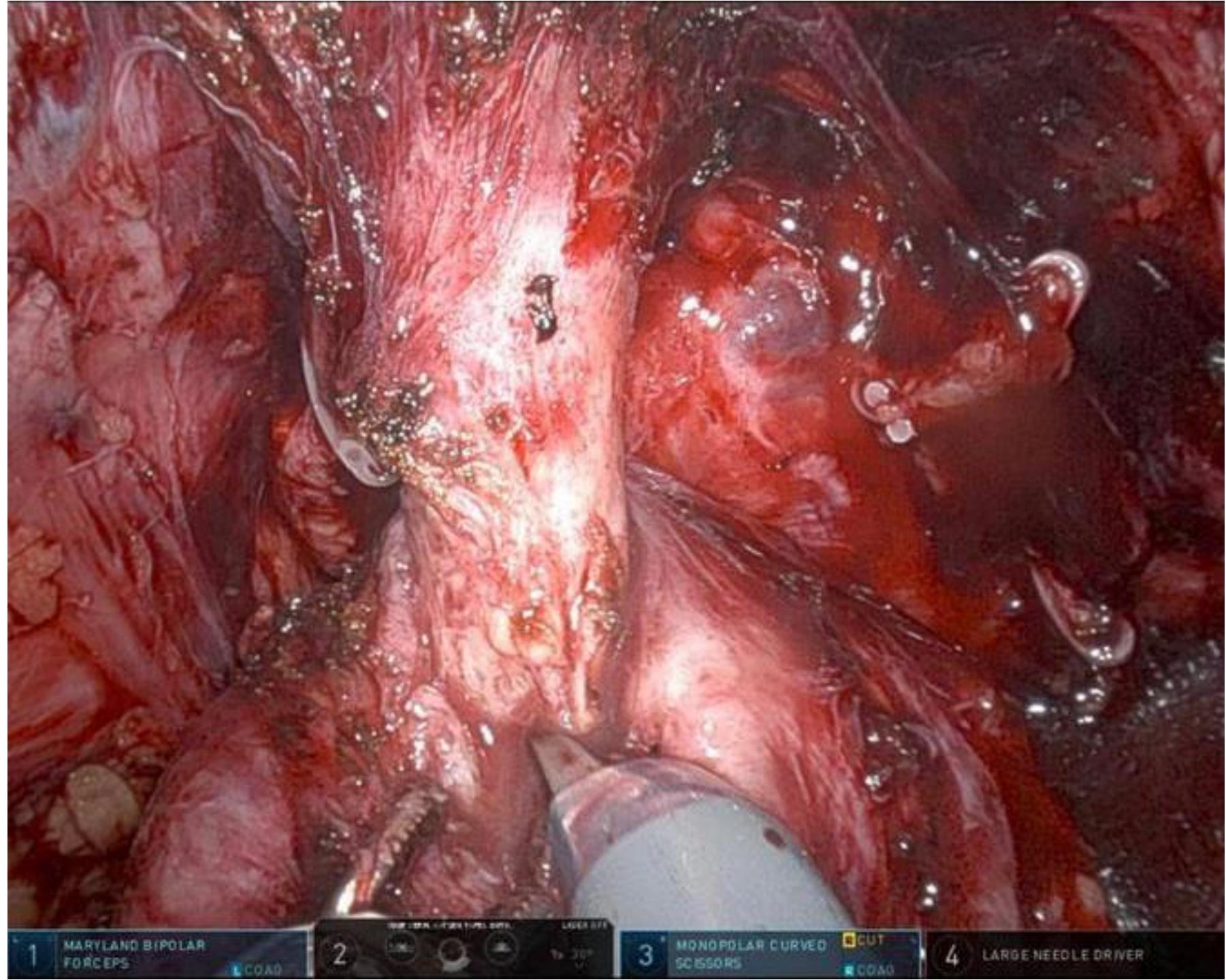
3 E CMT  
E COAG

3

MONOPOLAR CURVED  
SCISSORS

4

LARGE NEEDLE DRIVER

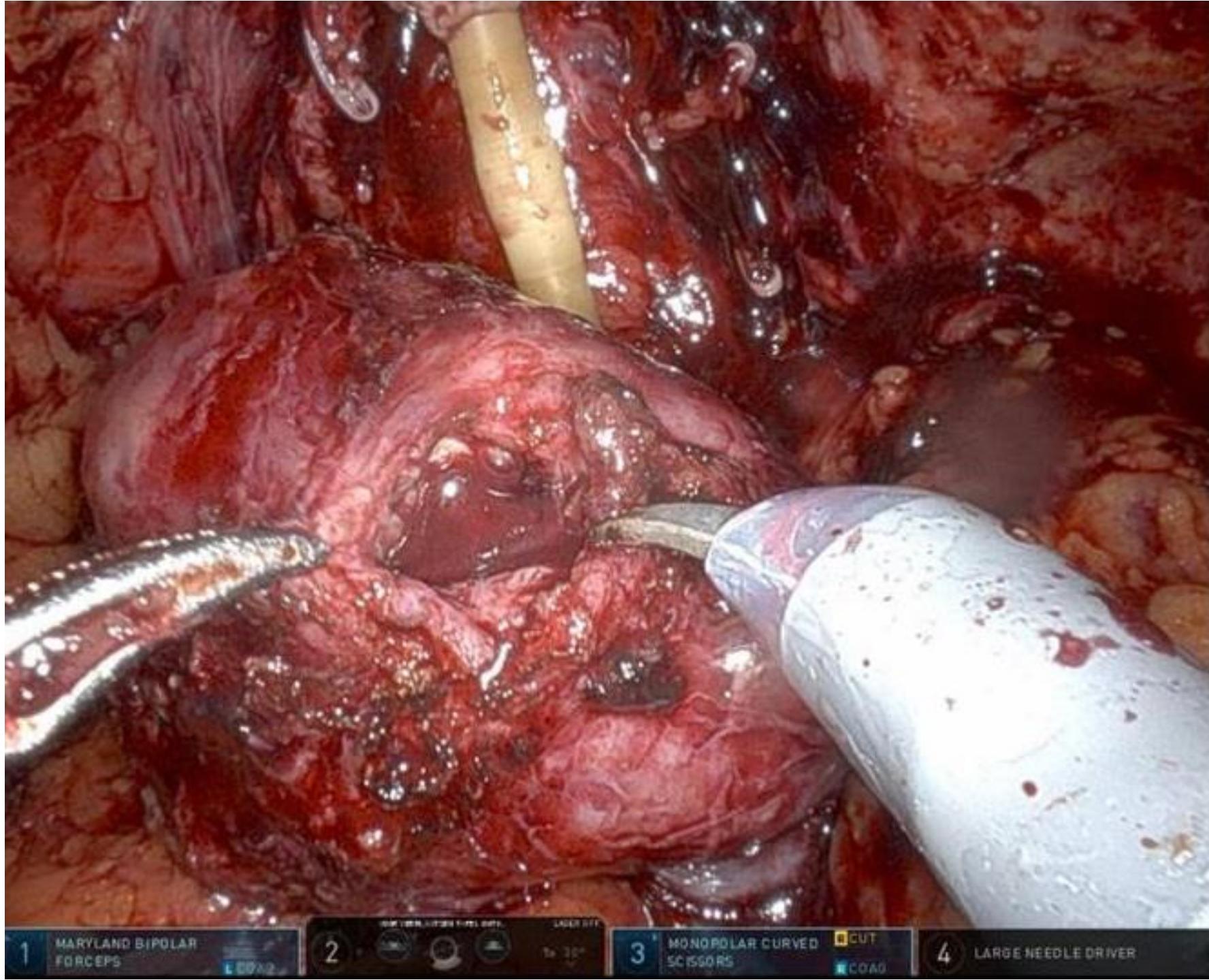


1 MARYLAND BIPOLAR  
FORCESPS

2 LOAD

LASER SITE  
TO 30°  
3 MONOPOLAR CURVED  
SCISSORS

CUT  
COAG  
4 LARGE NEEDLE DRIVER



1 MARYLAND BIPOLAR  
FORCES

E COAG

2

LIVER SITE

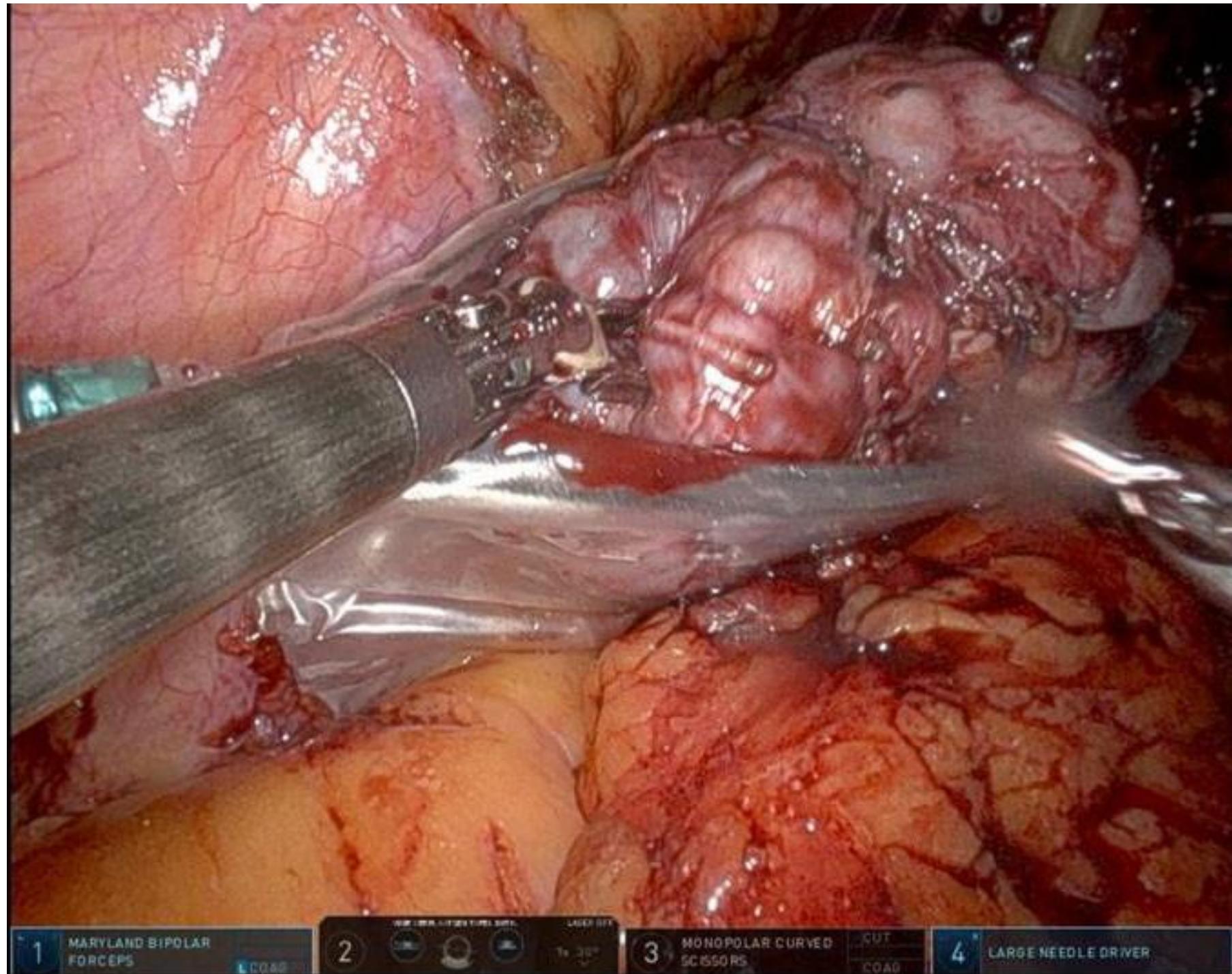
3

MONOPOLAR CURVED  
SCISSORS

CUT  
COAG

4

LARGE NEEDLE DRIVER



1 MARYLAND BIPOLE  
FORCES

E COAG

2

MONOPOLAR CURVED  
SCISSORS

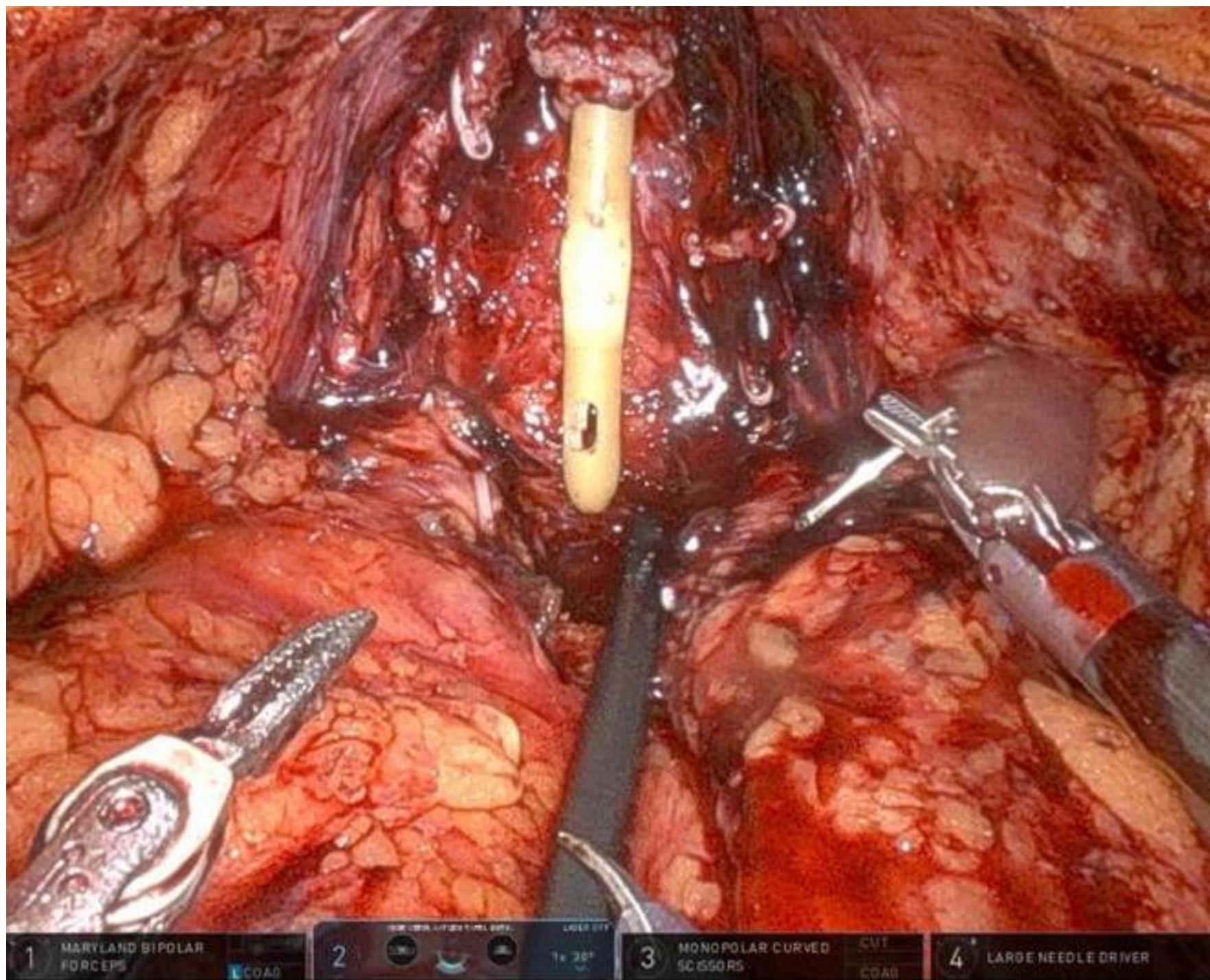
CUT  
COAG

3 MONOPOLAR CURVED  
SCISSORS

CUT  
COAG

4

LARGE NEEDLE DRIVER



1 MARYLAND BIPOLAR  
FORCEPS

L LOAD

2



30°  
T = 20°

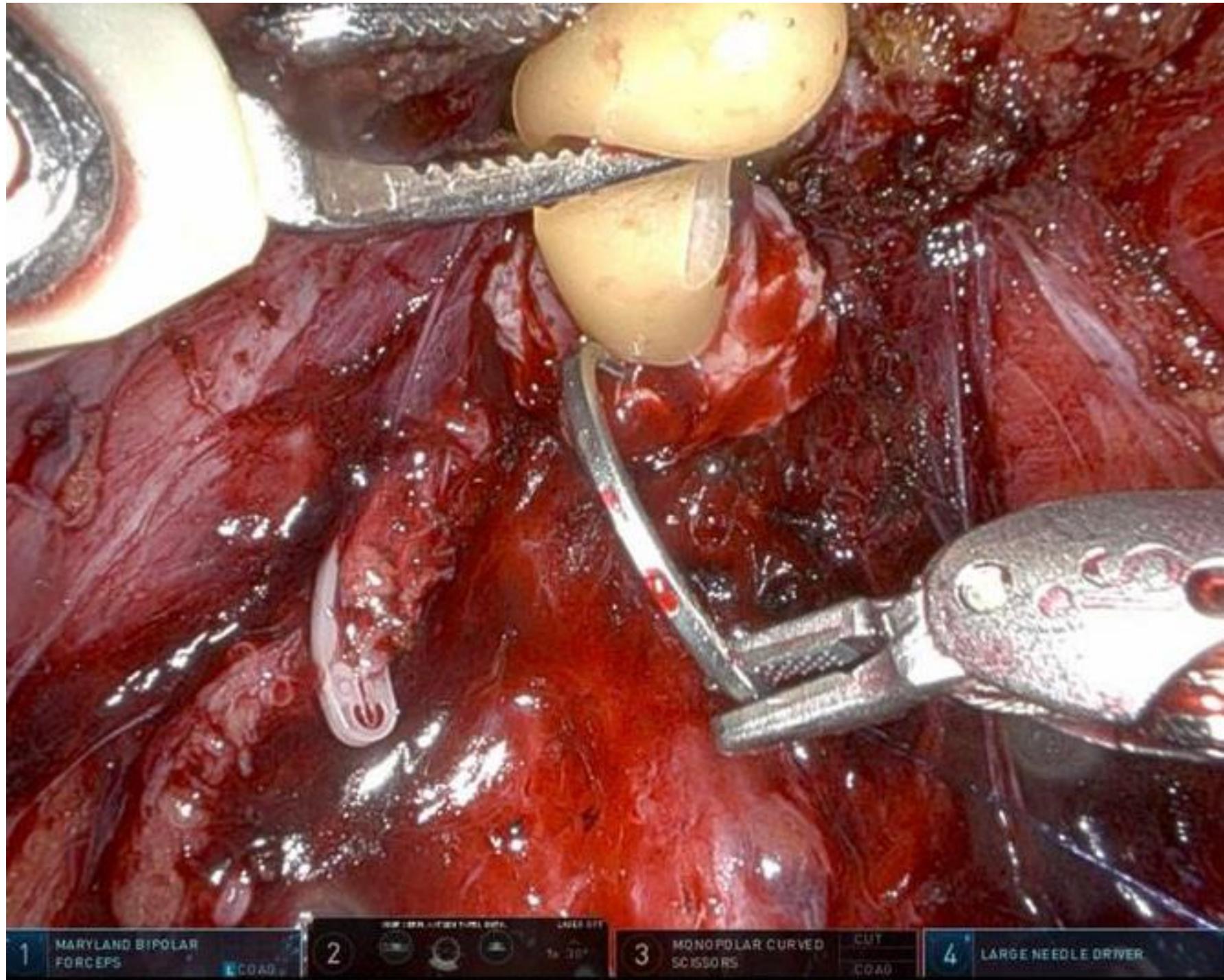
3

MONOPOLAR CURVED  
SCISSORS

CUT  
LOAD

4

LARGE NEEDLE DRIVER



1 MARYLAND BIPOLAR  
FORCEPS

E LOAD

2



LARGE  
BIPOLAR  
FORCEPS

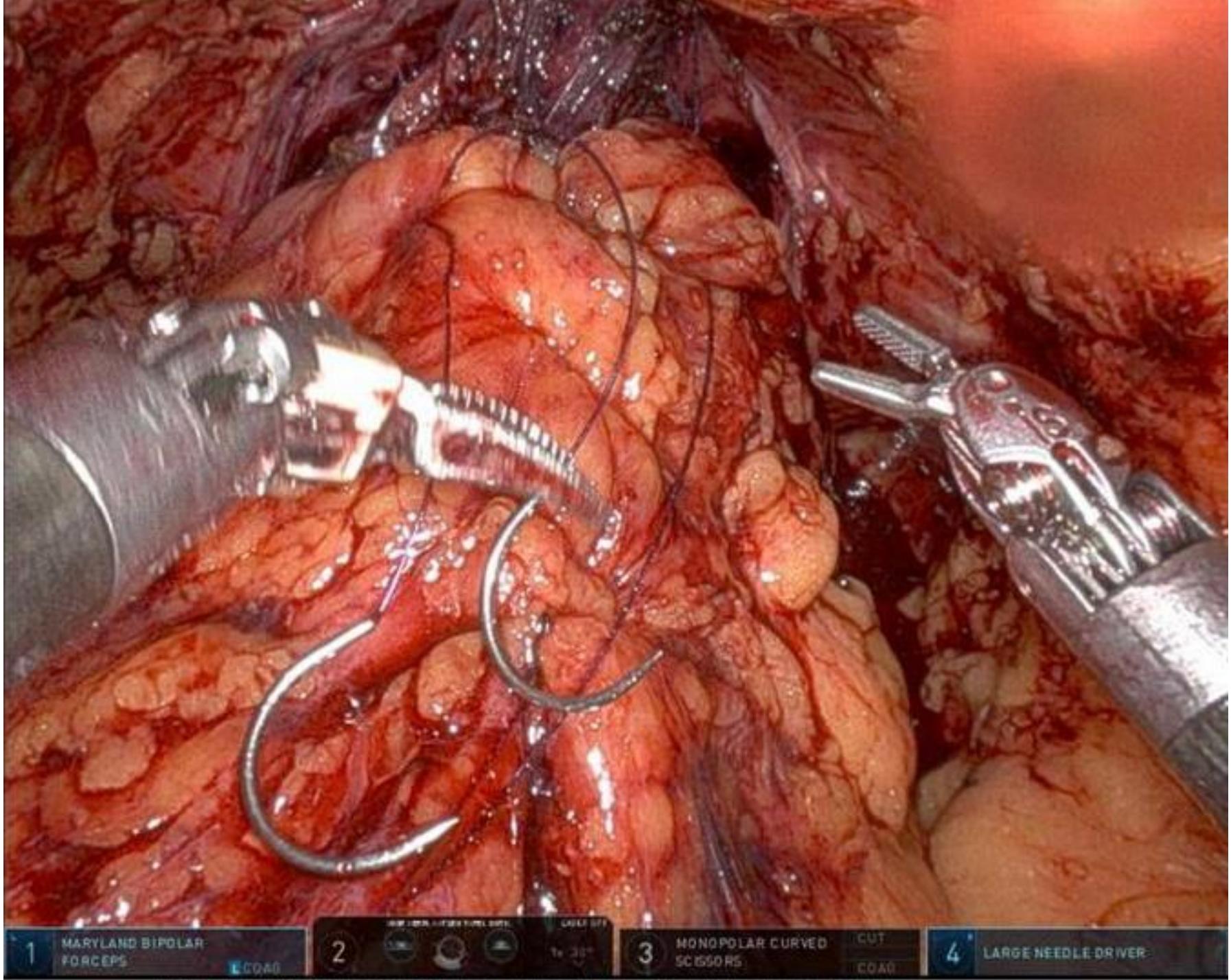
3

MONOPOLAR CURVED  
SCISSORS

CUT  
LOAD

4

LARGE NEEDLE DRIVER



1 MARYLAND BIPOLAR  
FORCES

LOAD

2

LAYER OFF  
CUT

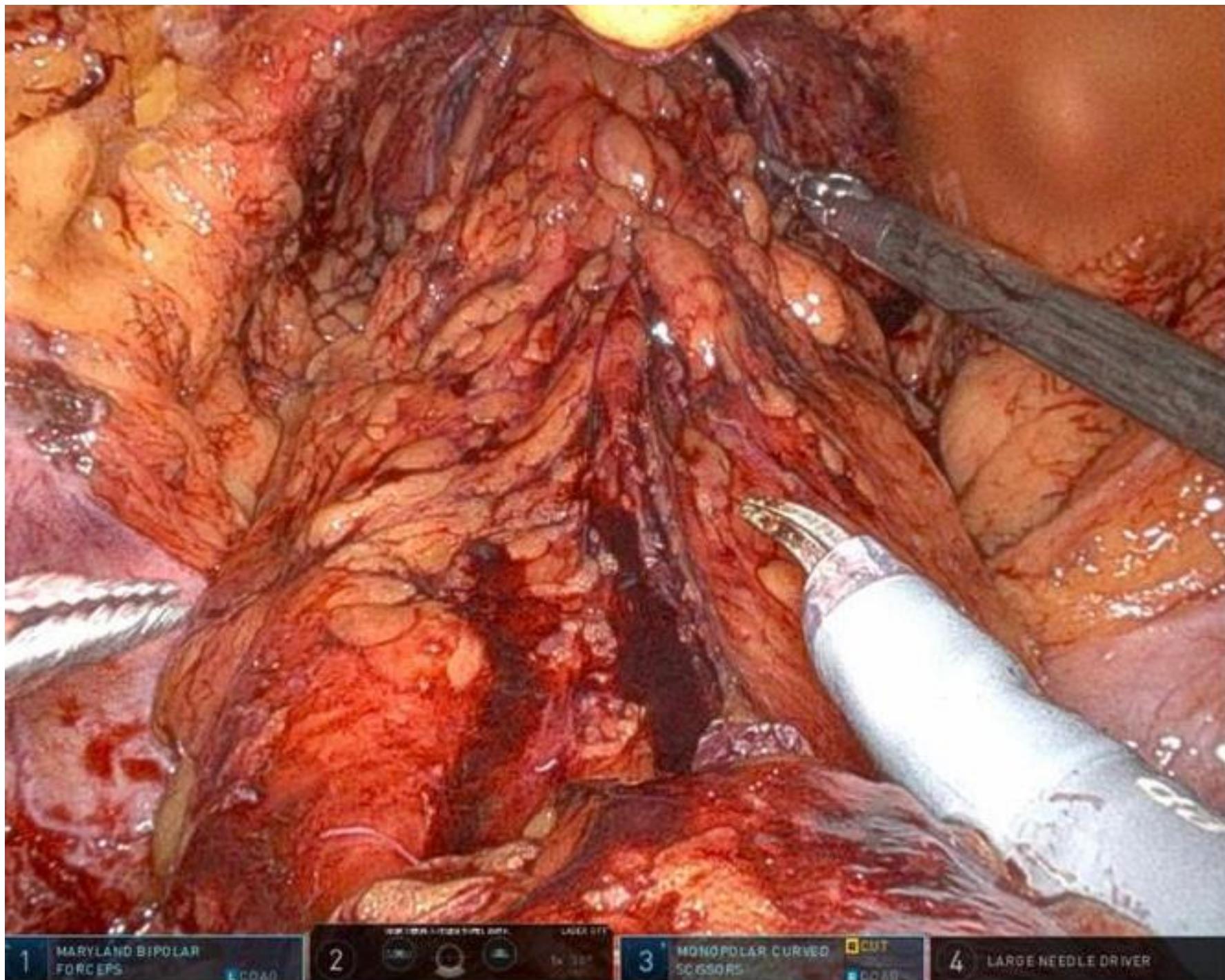
3

MONOPOLAR CURVED  
SCISSORS

CUT  
LOAD

4

LARGE NEEDLE DRIVER



1 MARYLAND BIPOLEAR  
FORCES

L LOAD

2

Laser off  
Laser on

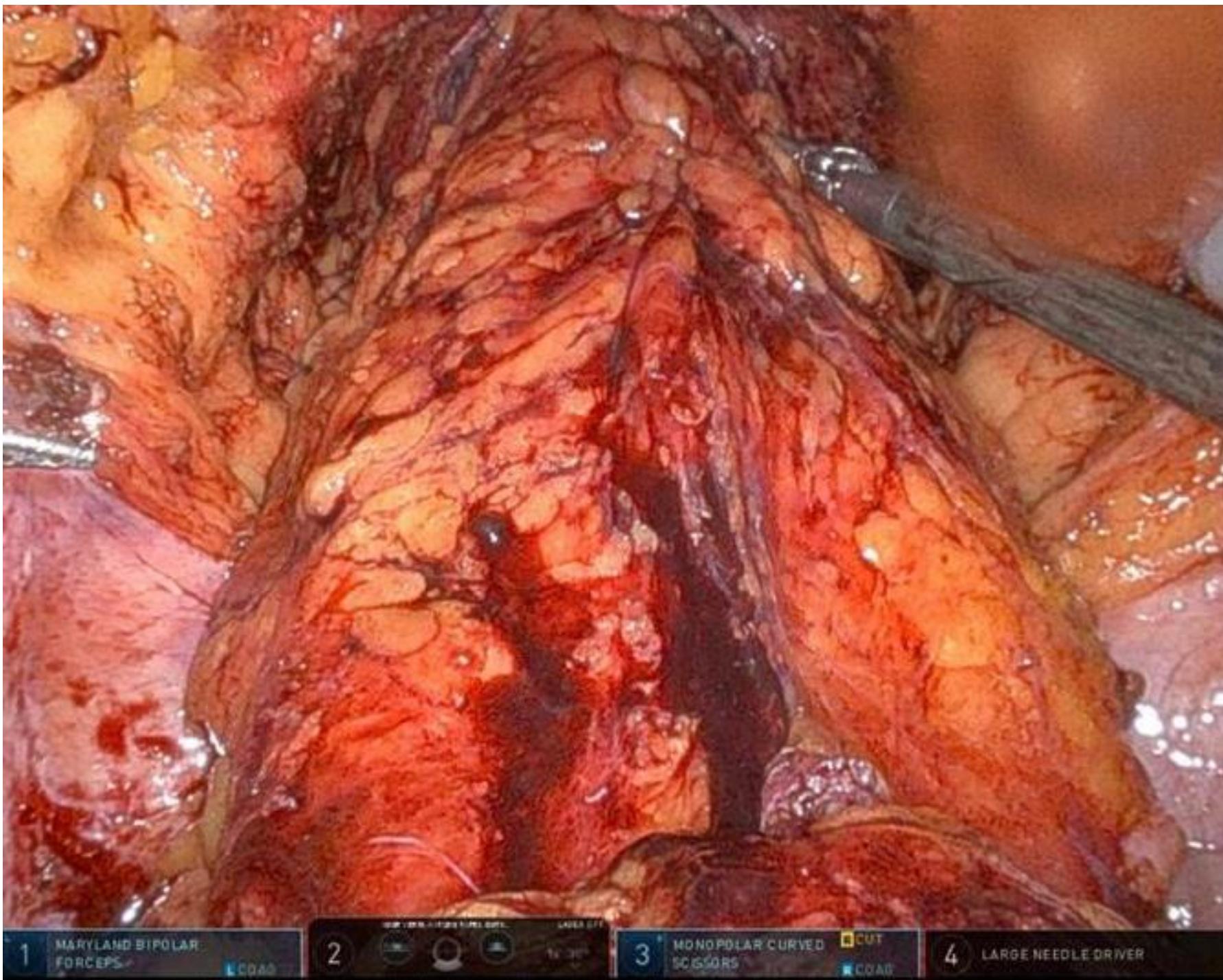
3

MONOPOLAR CURVED  
SCISSORS

CUT  
LOAD

4

LARGE NEEDLE DRIVER



1

BEWEEG GREEP VOOR  
AFSTEMMING OP  
INSTRUMENT



1 MARYLAND BIPOLAR  
FORCES

E LOAD

2

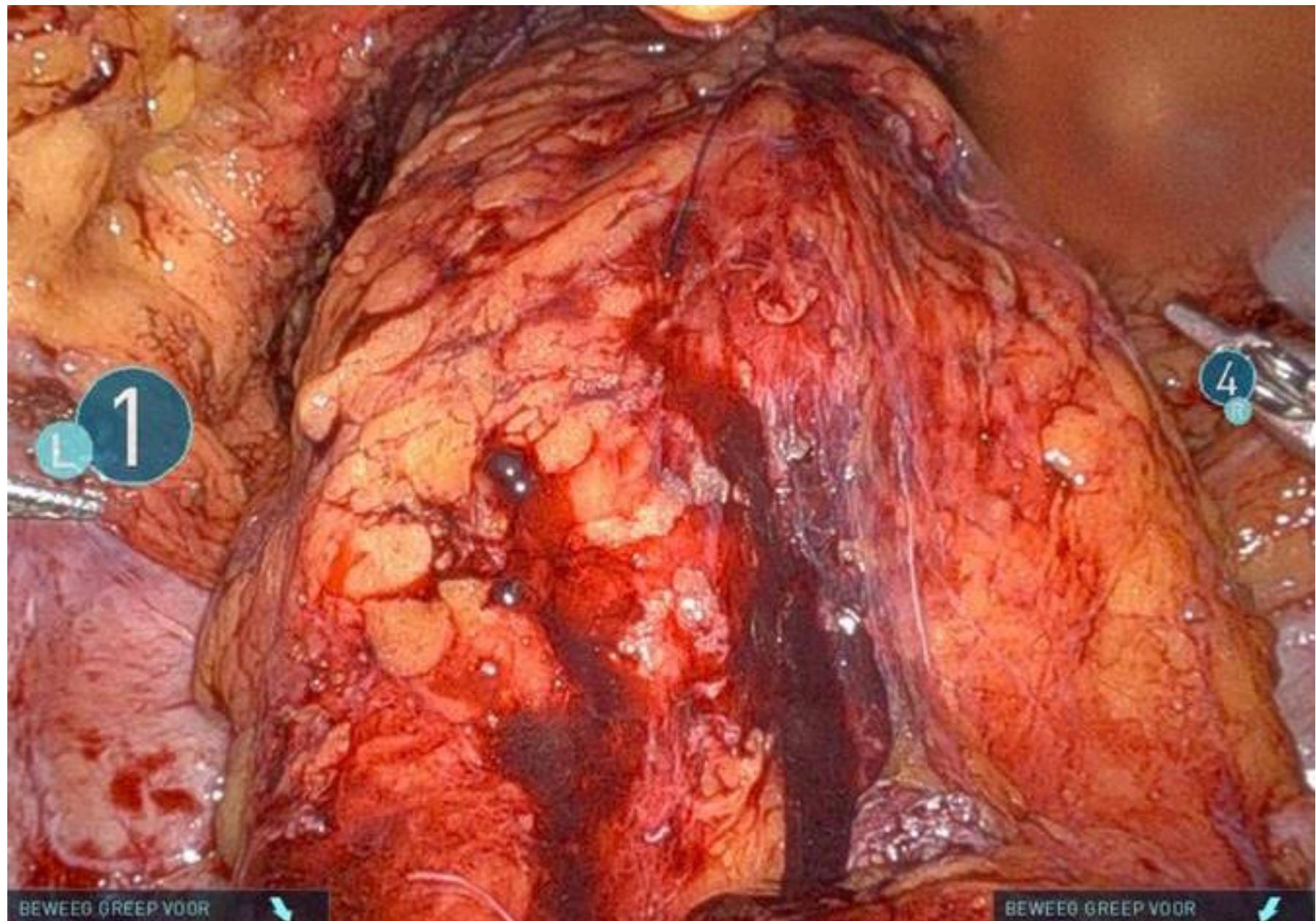
MONOPOLAR CURVED  
SCISSORS

3

CUT  
COAG

4

LARGE NEEDLE DRIVER



BEWEEG GREEP VOOR  
AFSTEMMING OP  
INSTRUMENT



1 MARYLAND BIPOLEAR  
FORCES

ECOAB

2



LARGE NEEDLE

3 MONOPOLAR CURVED  
SCISSORS

CUT  
ECOAB

4

LARGE NEEDLE DRIVER

