SMALL MAMMAL ENDOSURGERY

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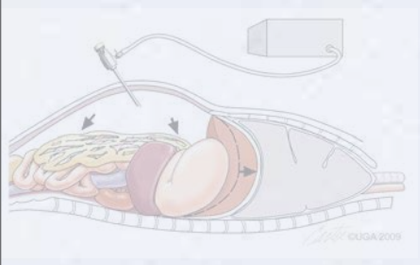
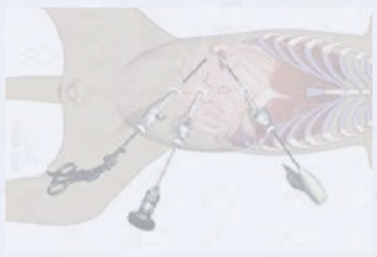
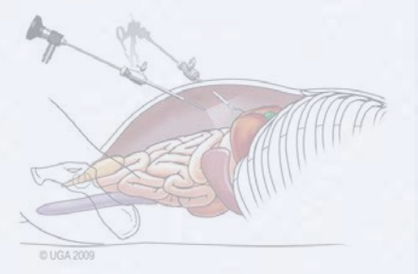
The University of Georgia

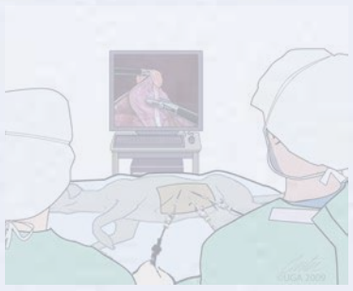
SUPREME
EXPERTS IN SMALL PETS

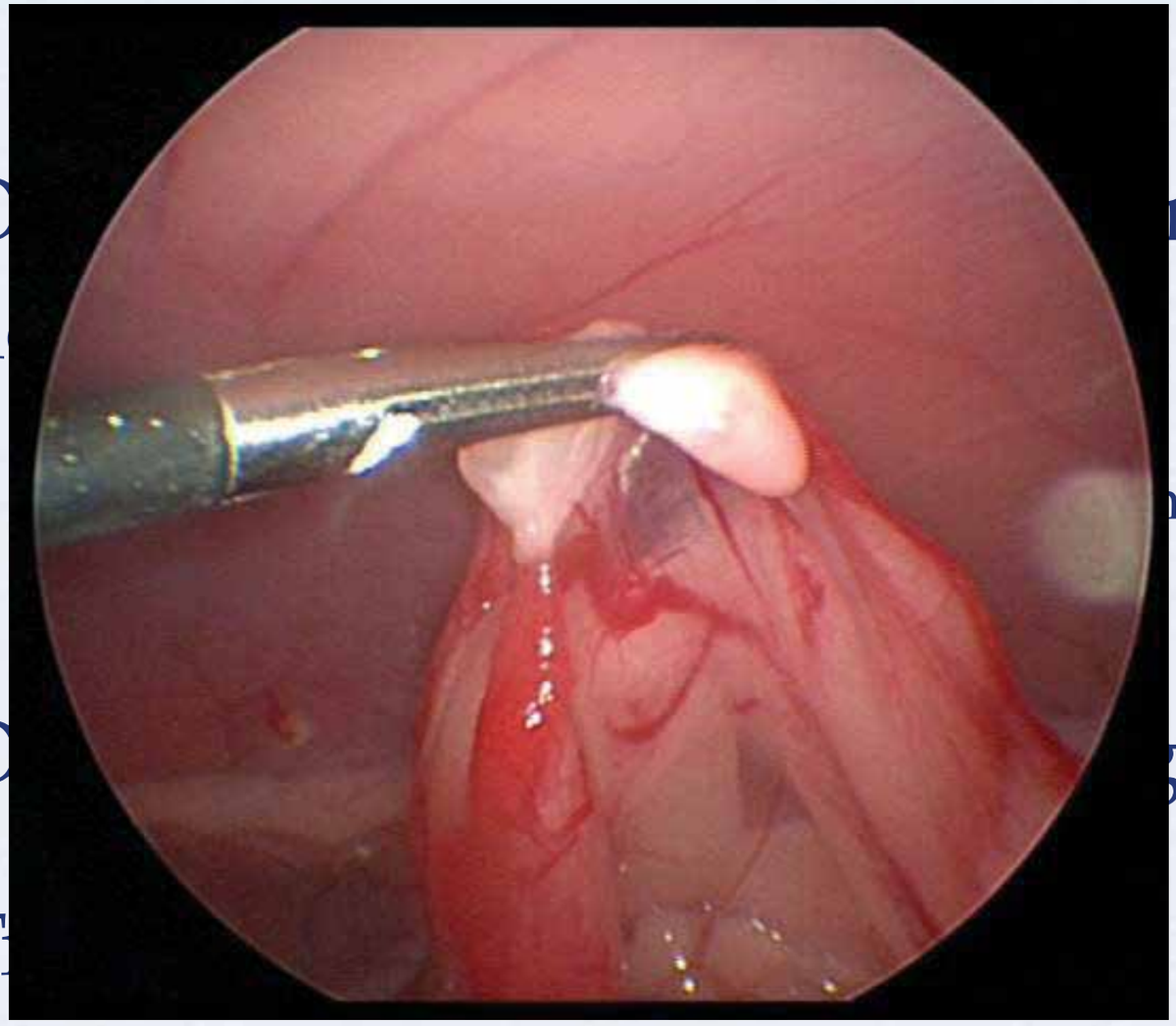
INDICATIONS











- C… …ncreas, lymph n…
  - …mpared with
- C… …gectomy
- T…
  - Gastropexy, cystopexy, urinary calculi removal, adrenalectomy, insulinoma resection, laparoscopic-assisted GI surgery

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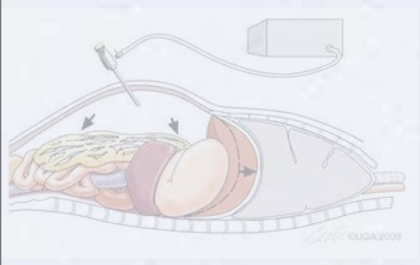

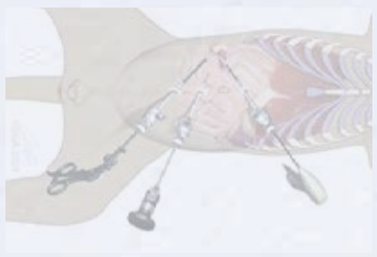

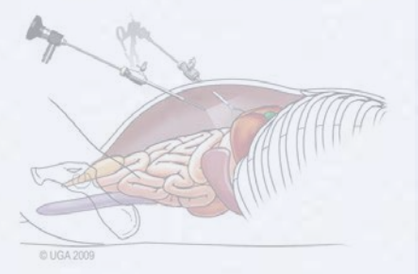

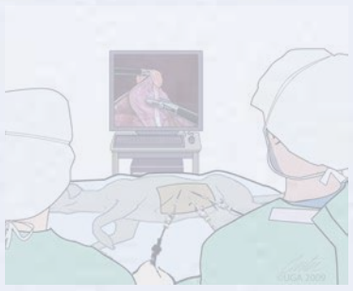

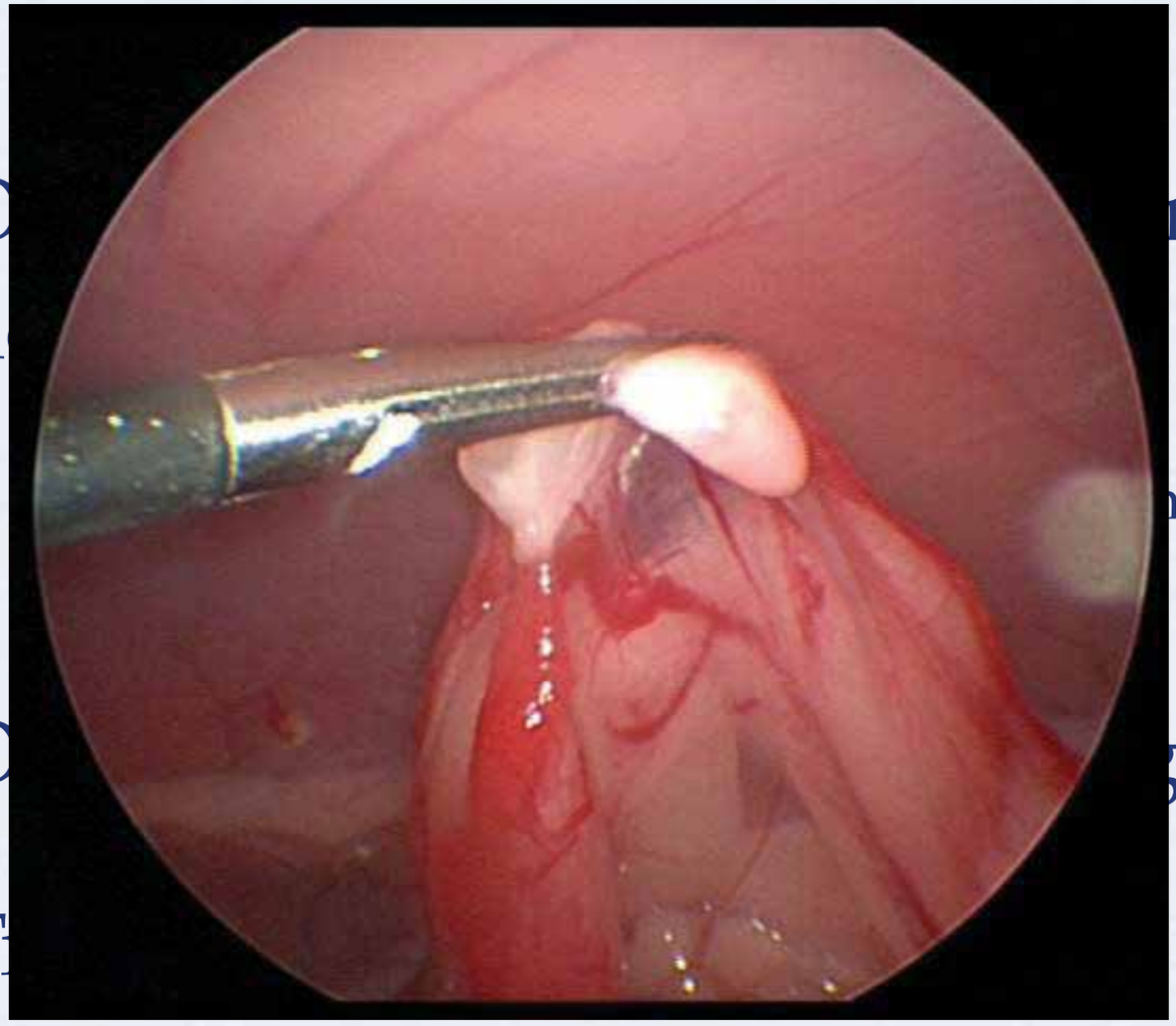

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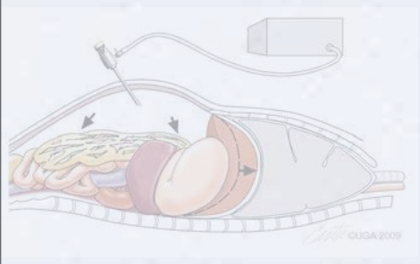

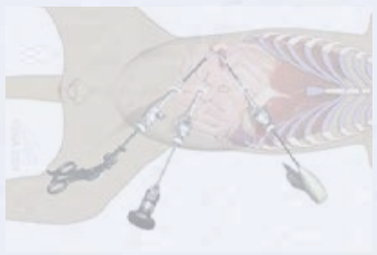

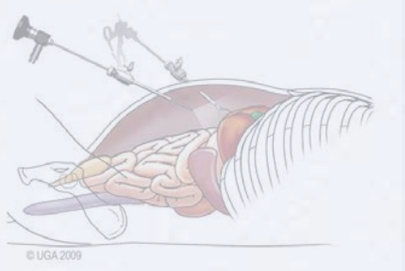

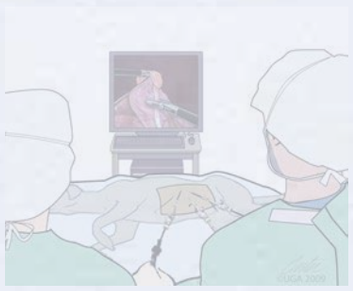

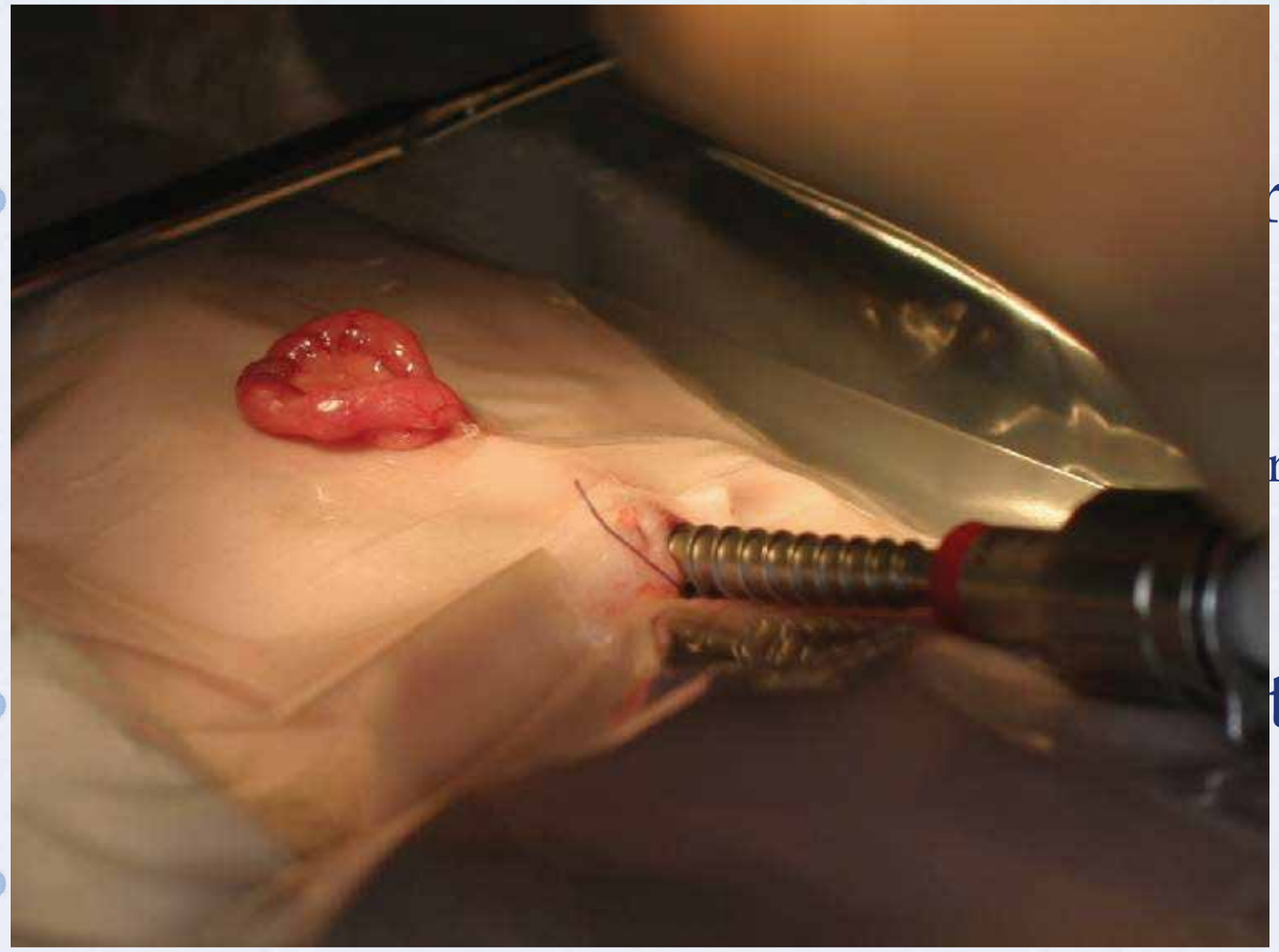

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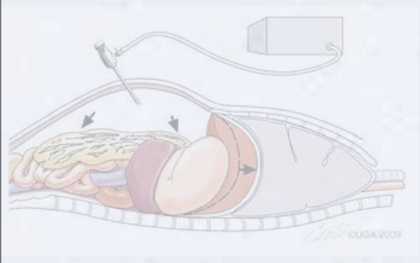

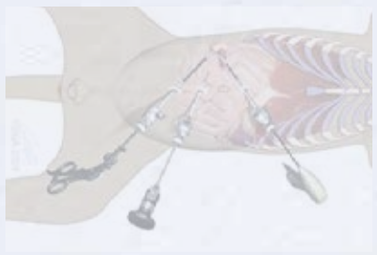

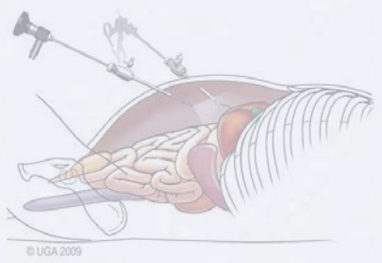

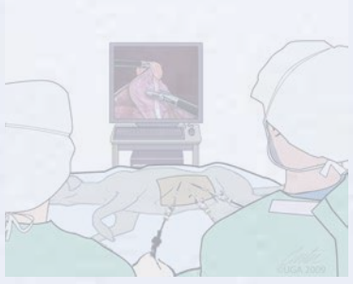

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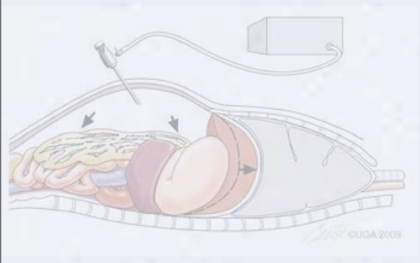
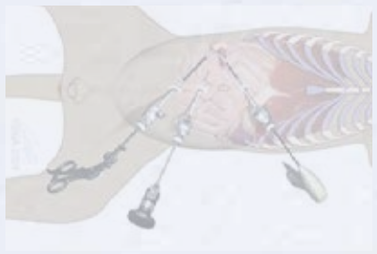
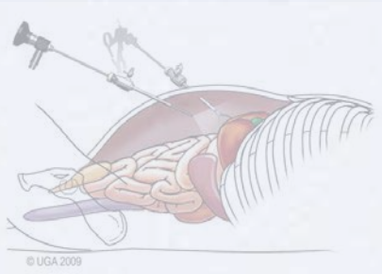
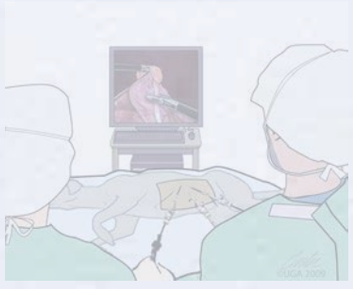
CONTRAINDICATIONS



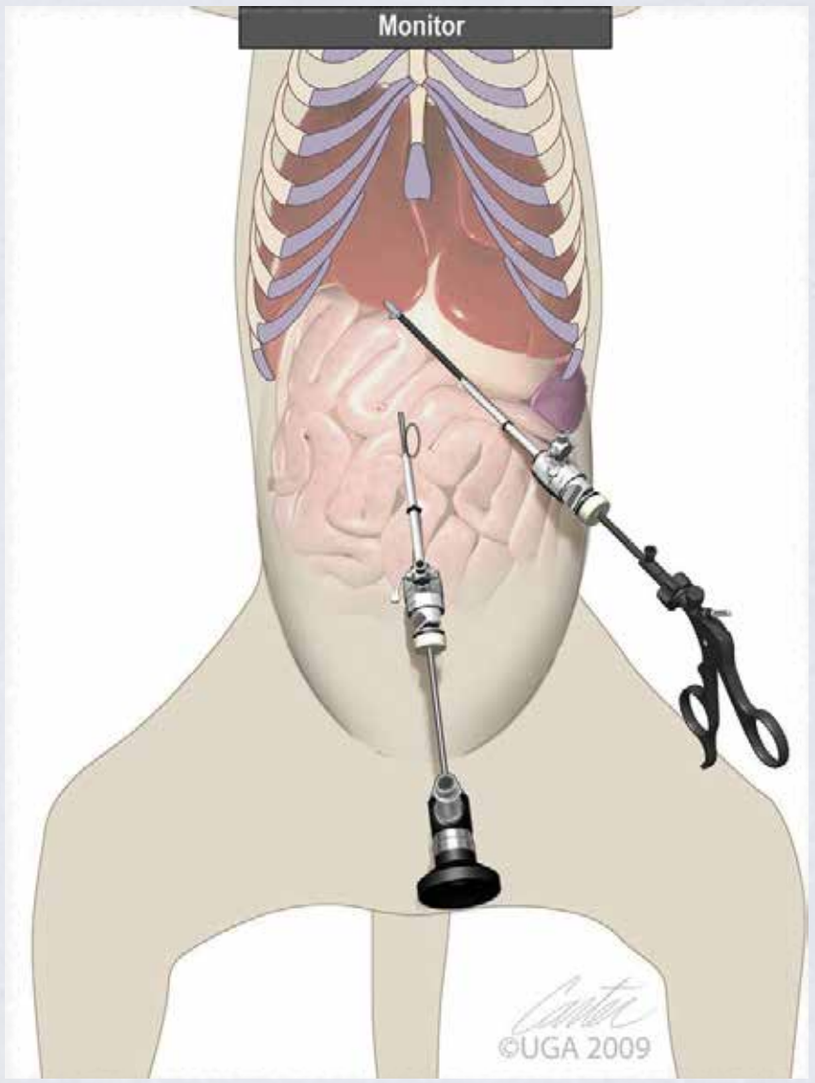






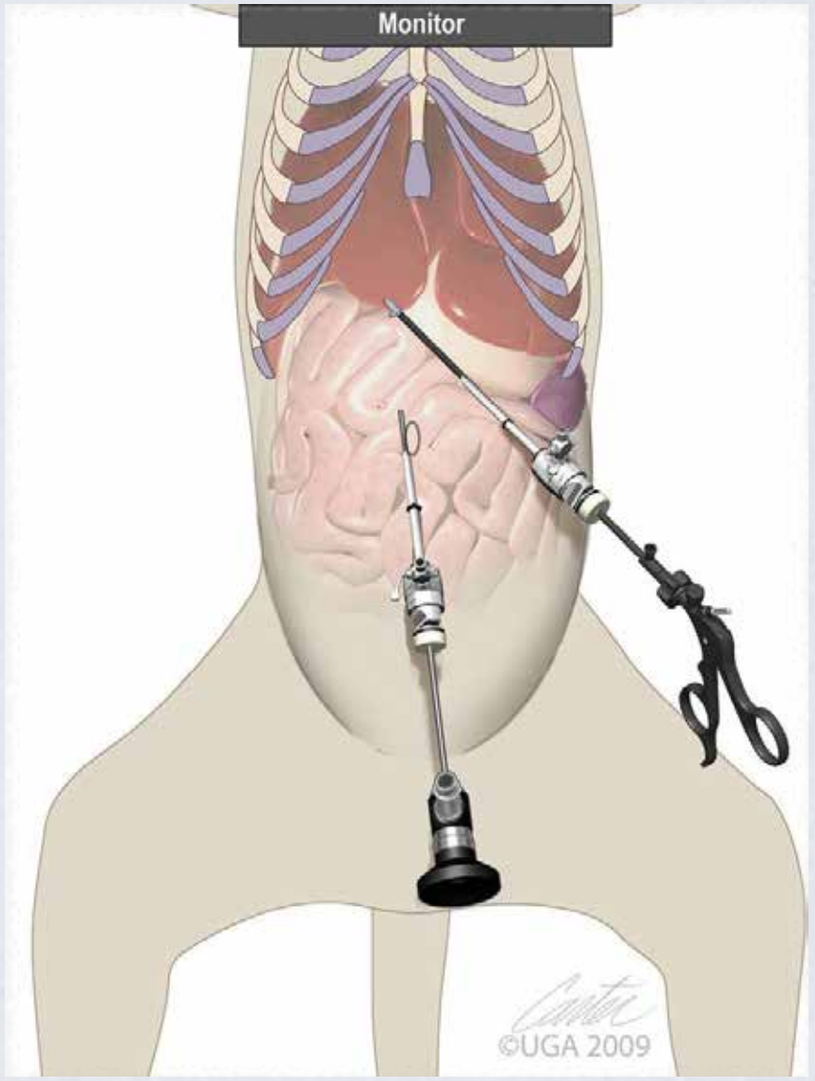
- Same as contraindications for laparotomy
- Lack of appropriate endoscopy equipment
- Lack of appropriate training and experience

PATIENT POSITIONING



PATIENT POSITIONING

- Aim to present the surgical site at the highest level
  - Raising the head (reverse Trendelenburg): Helps with cranial surgery (e.g. liver evaluation)



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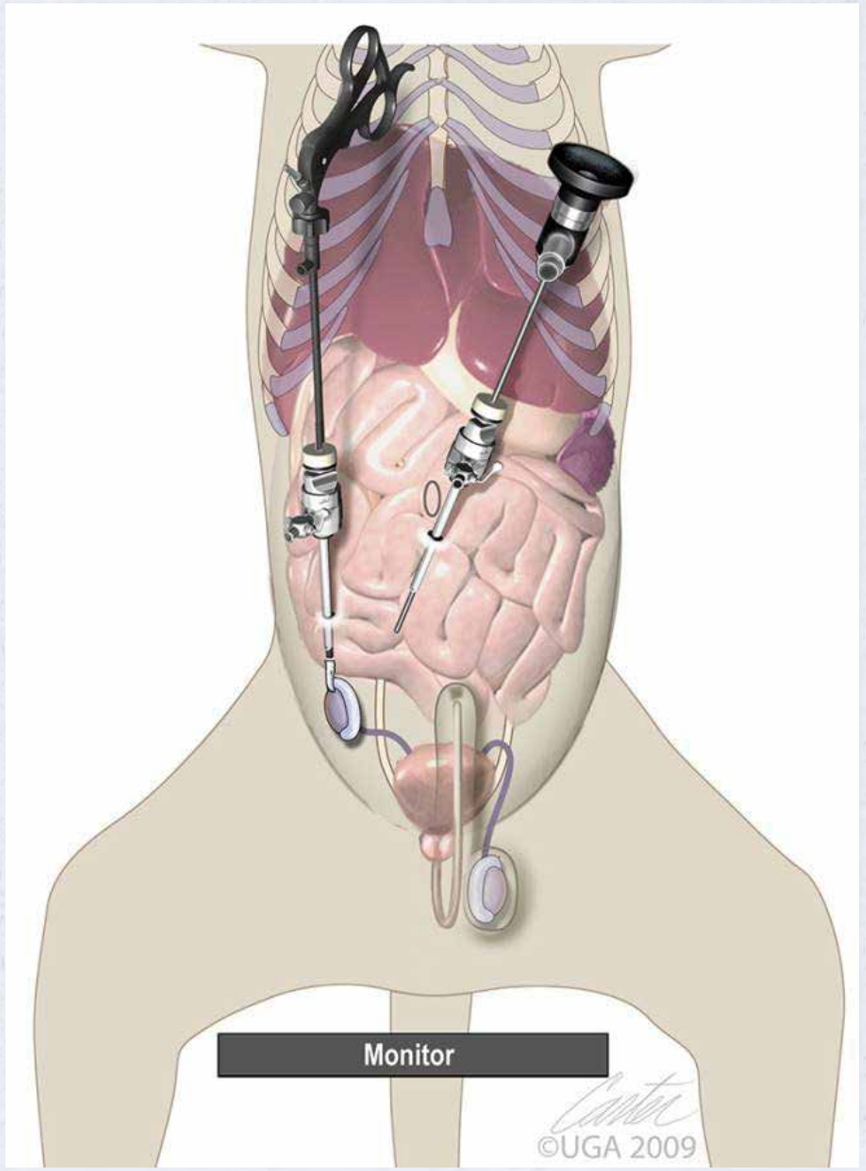
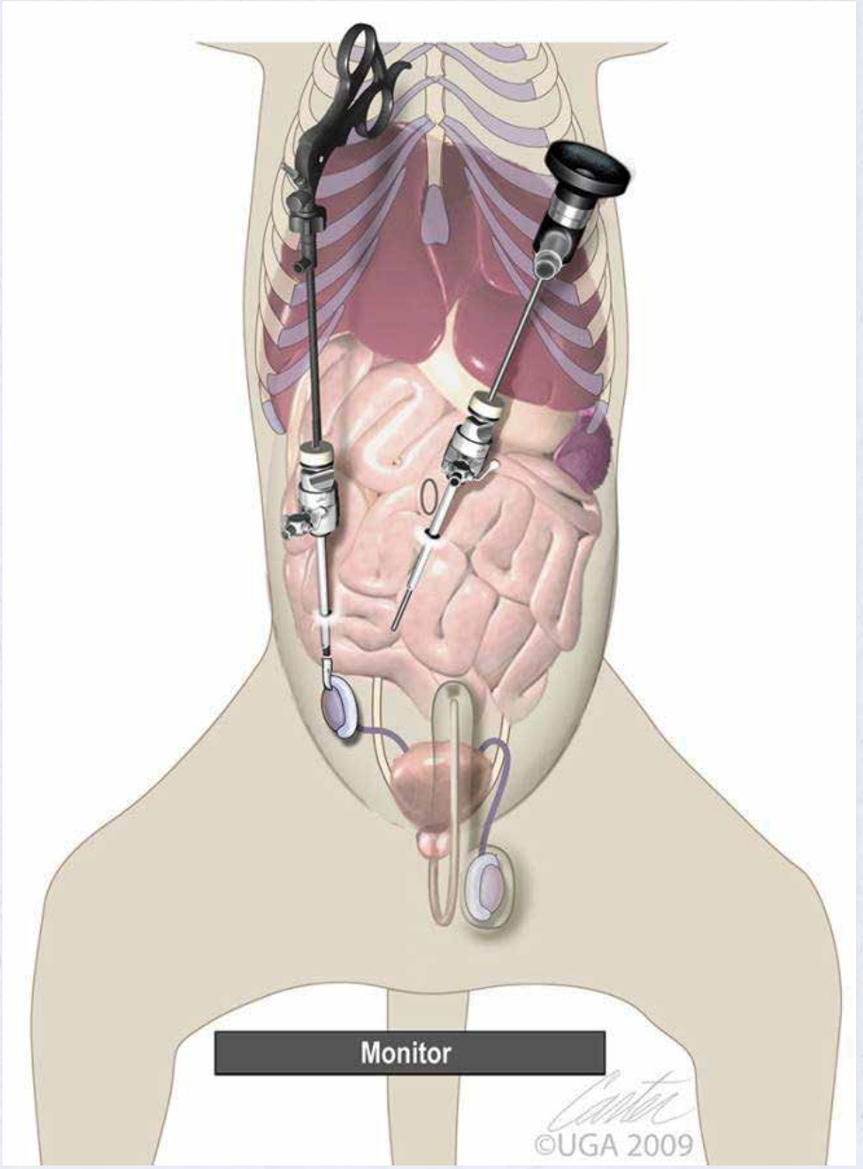


PATIENT POSITIONING

- Aim to present the surgical site at the highest level
  - Raising the head (reverse Trendelenburg): Helps with cranial surgery (e.g. liver evaluation)
- Lowering the head (Trendelenburg)
  - Helps with caudal surgery (e.g. bladder, retained testis)



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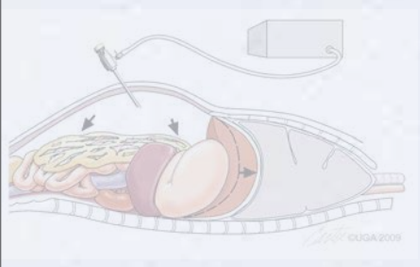
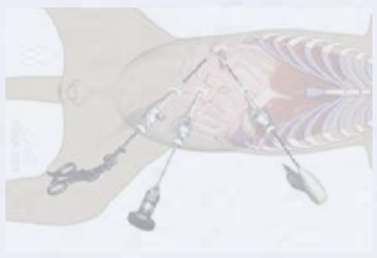
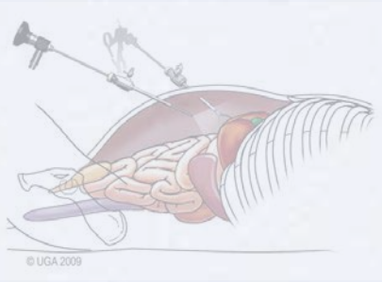
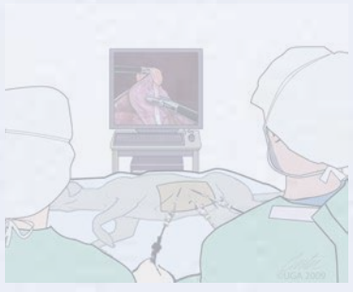


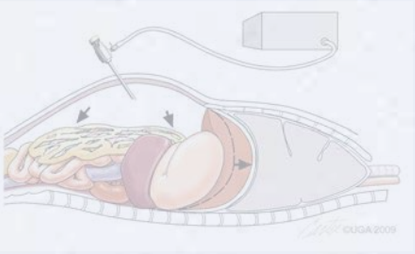


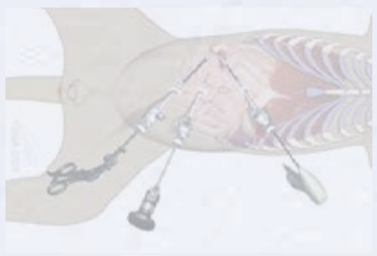


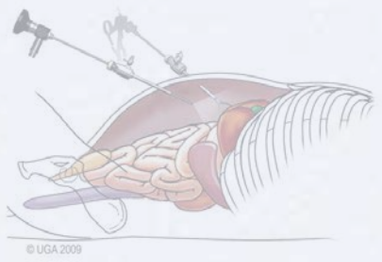


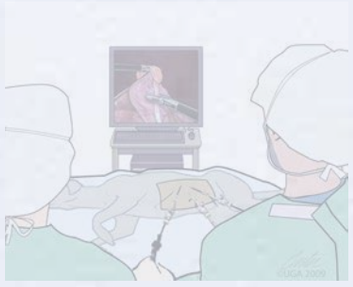
- Dorsal recumbency for ventral structures
  - e.g. liver, bladder, stomach
- Dorsolateral to lateral recumbency for dorsolateral structures
  - e.g. ovary, kidney, adrenal
- Tilting tables
- Positioners
- Towels and tape

PATIENT POSITIONING



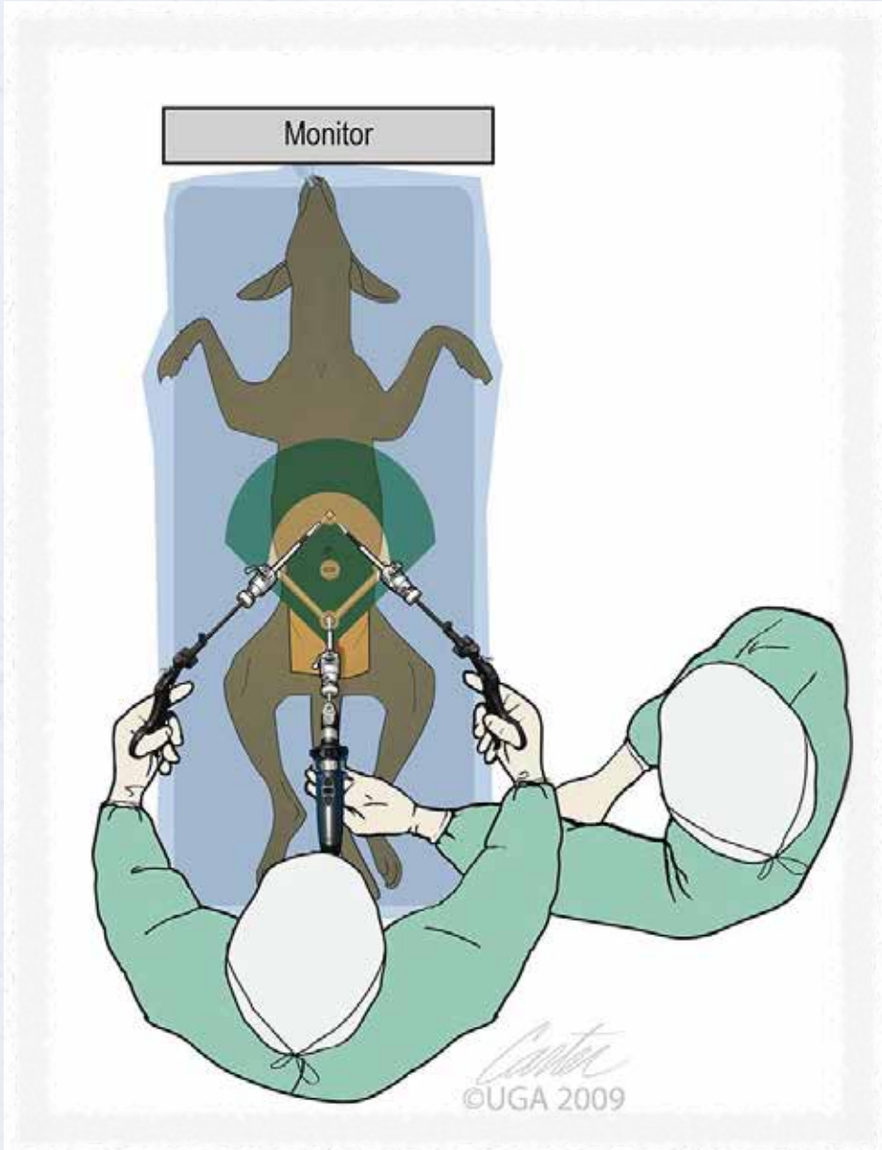






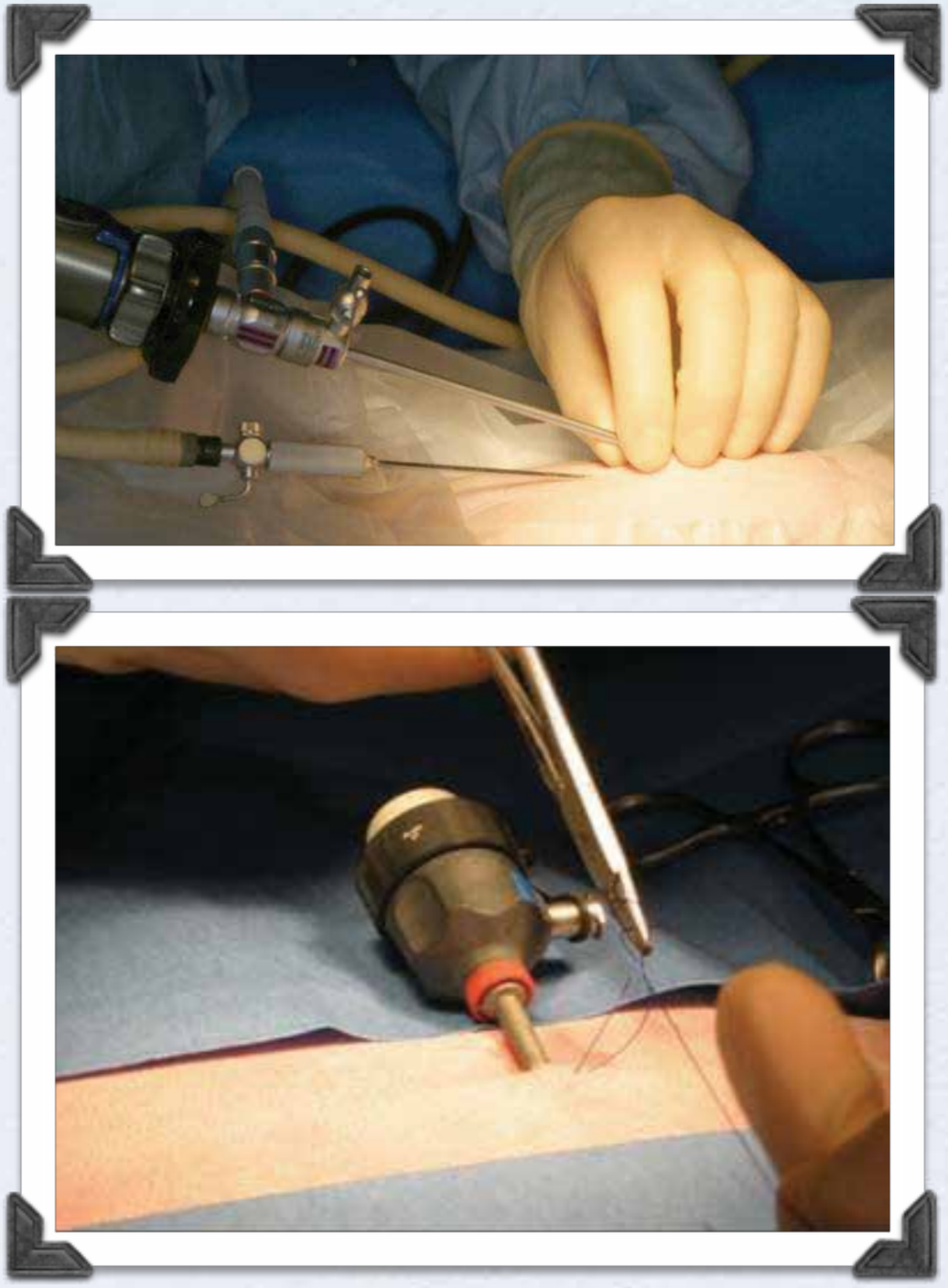
TELESCOPE-CANNULA ORIENTATION

- Patient preparation
- Classic base-ball infield orientation
  - Promotes triangulation
    - Avoids parallel instruments
    - Provides some depth perception
- Experienced endosurgeons can violate this principle
  - Tedious, fatiguing and frustrating!



TROCAR-CANNULA PLACEMENT

- **Two techniques for initial insufflation**
- Veress needle
  - Fast
  - Greater danger of GI perforation
- Hasson Technique
  - Slower and requires suture
  - Safer placement



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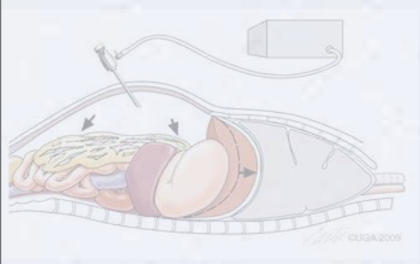
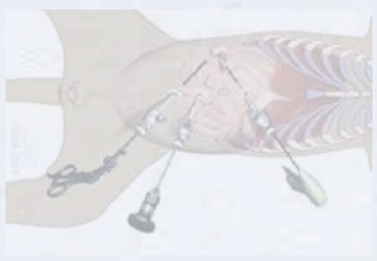
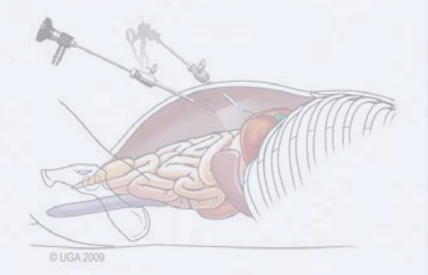
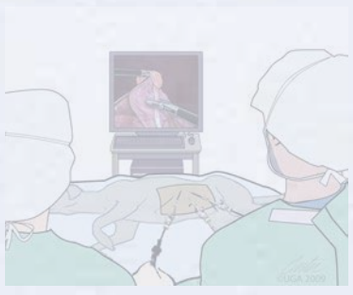
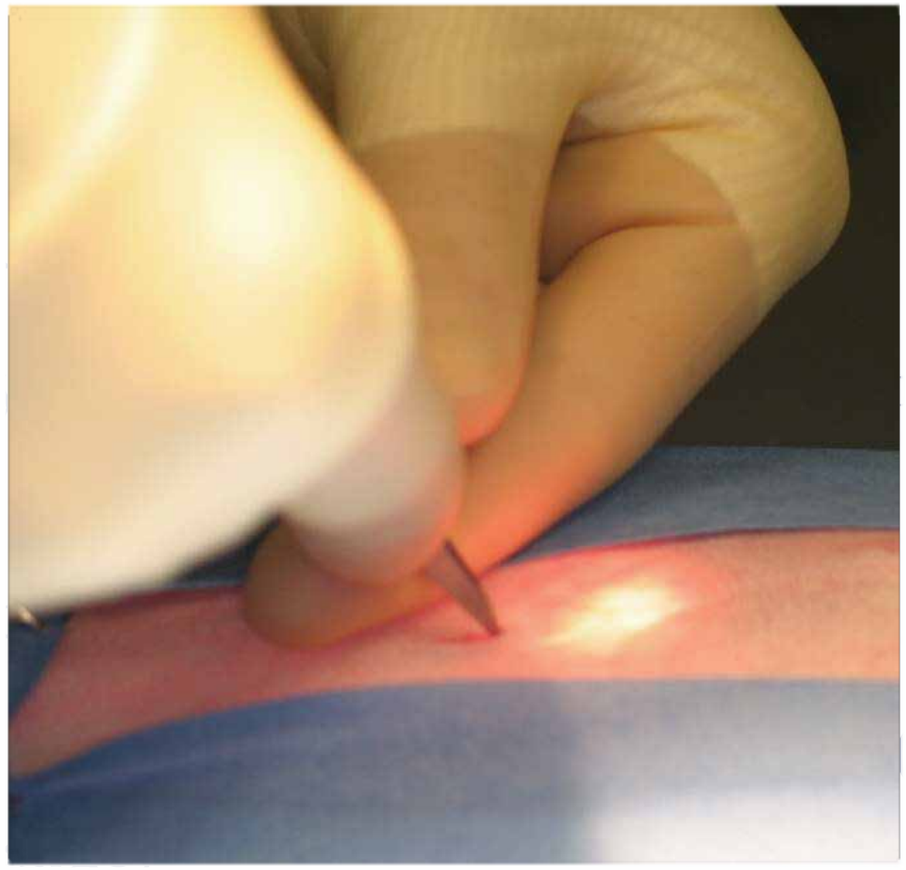








- **Hasson Technique**
  - 3 mm cannula and bl
  - 1 cm mini-laparotom ventral midline
    - Skin and SQ fat ir
    - Traction sutures p can be used to reduce lea
    - Elevation of linea alba and small incision
  - Use curved forceps to ensure peritoneal perforation
  - Replace with cannula, forced to right cranial quadrant



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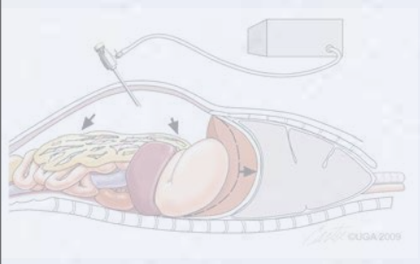

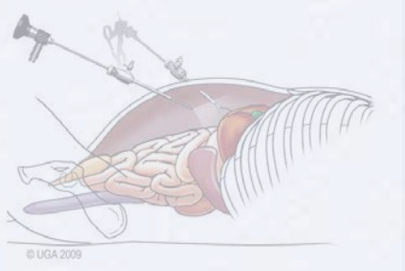

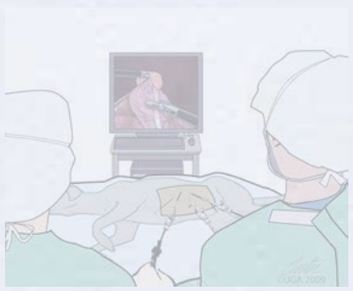

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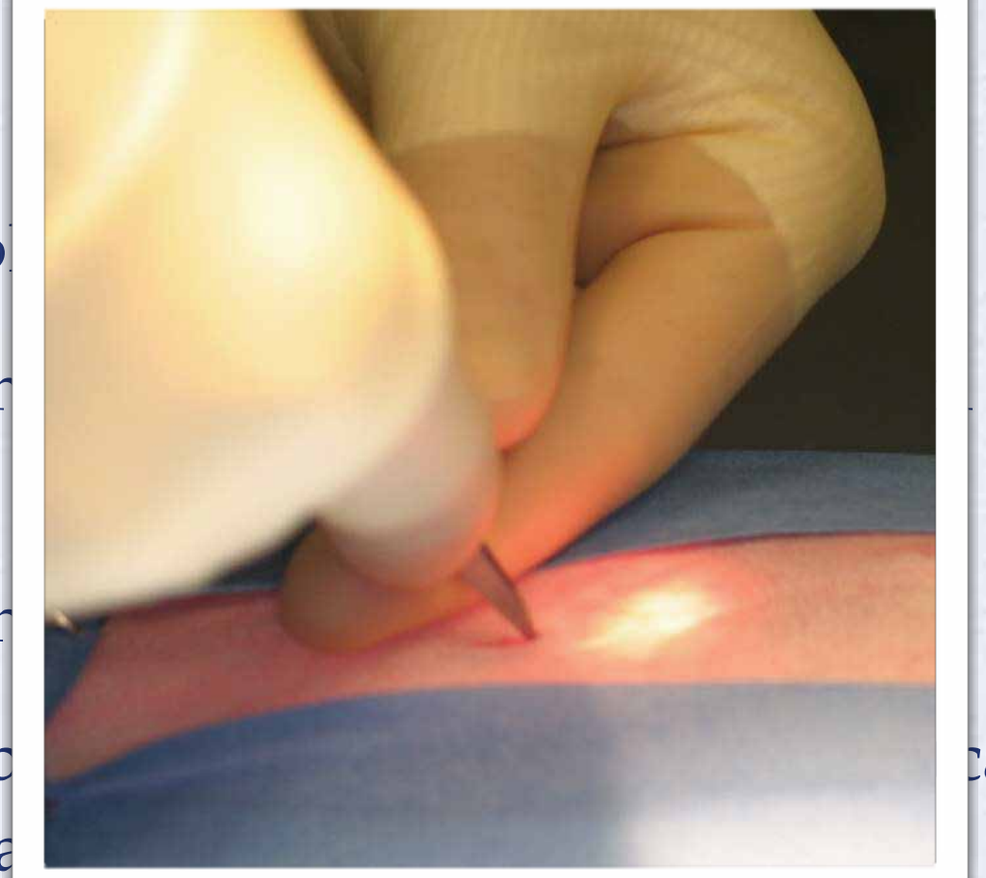

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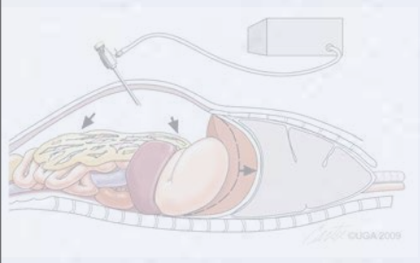

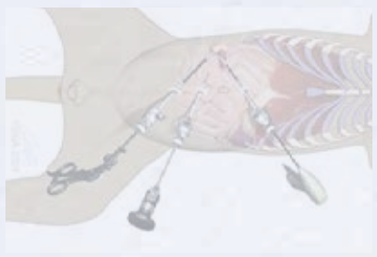

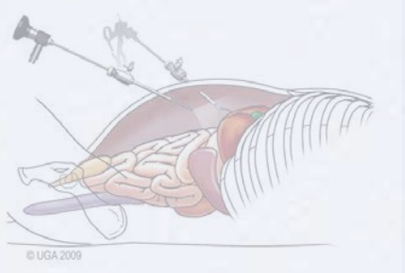

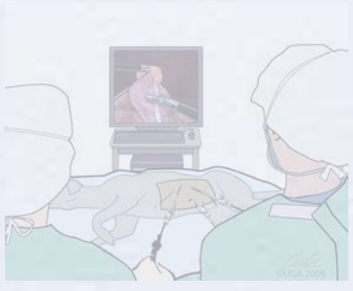

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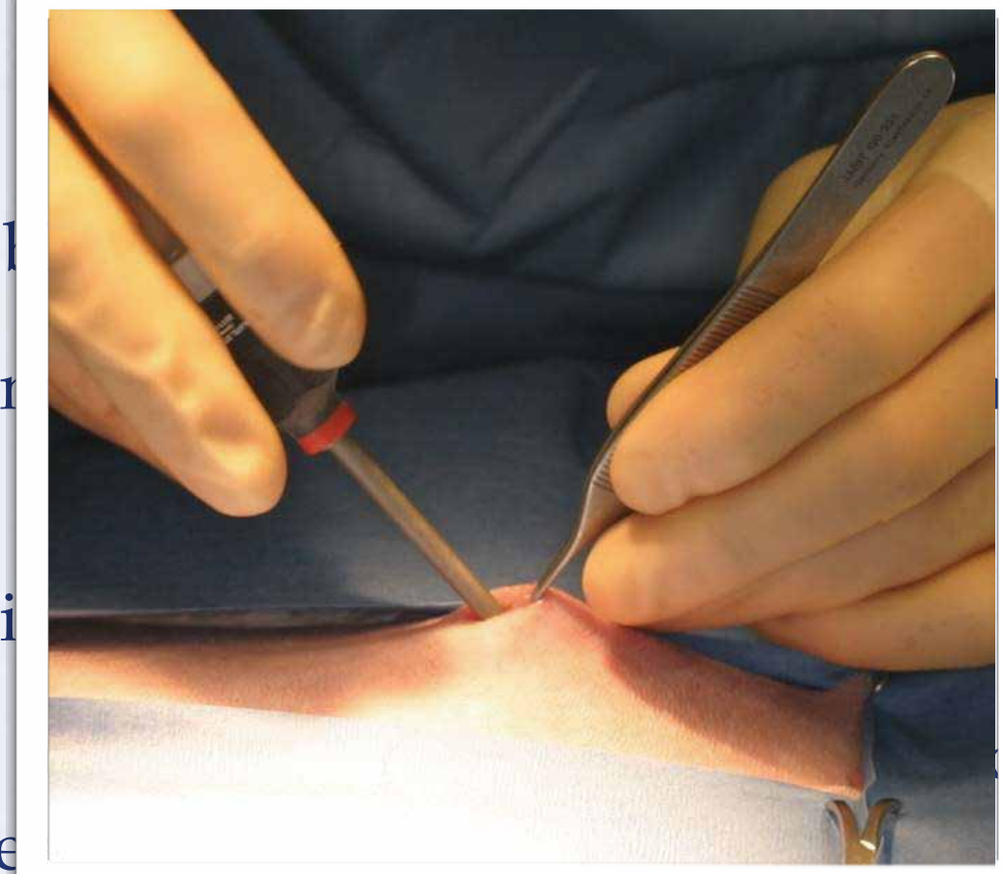
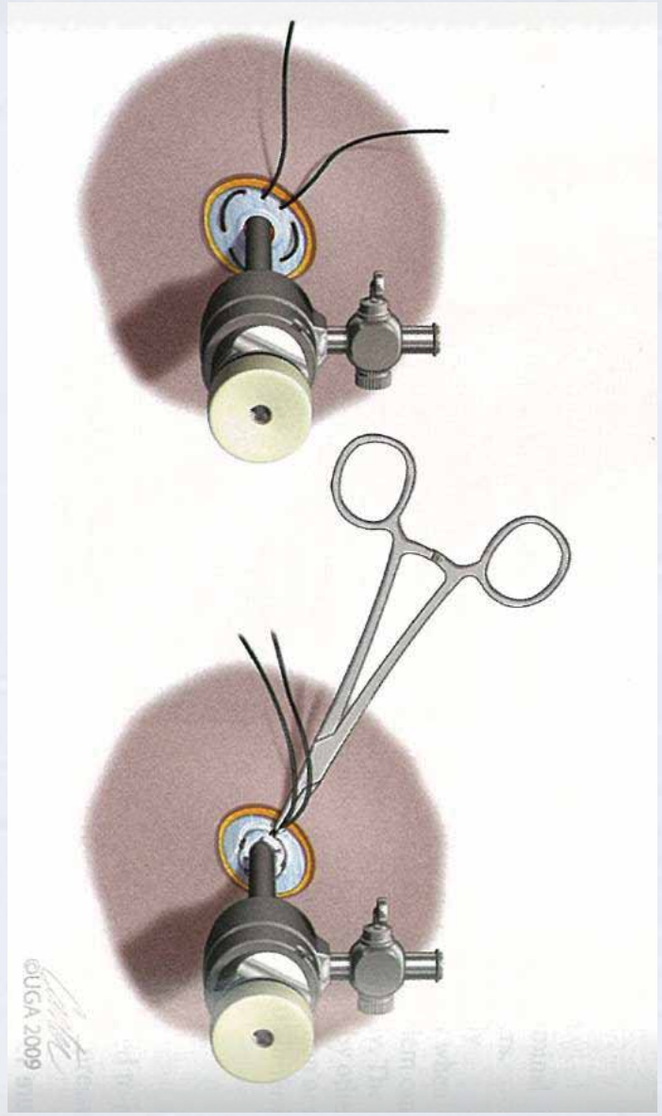
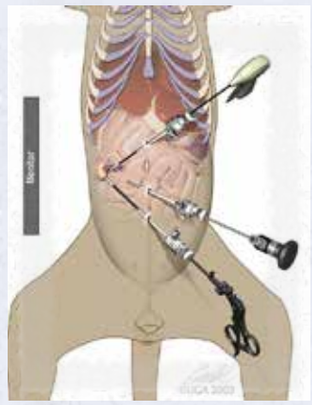
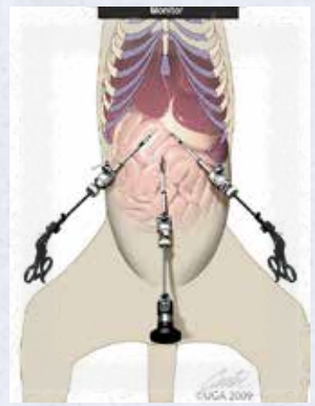


TROCAR-CANNULA PLACEMENT

- **Hasson Technique**
  - Place purse-string or mattress suture around cannula to improve security and air-tight seal
- Midline only

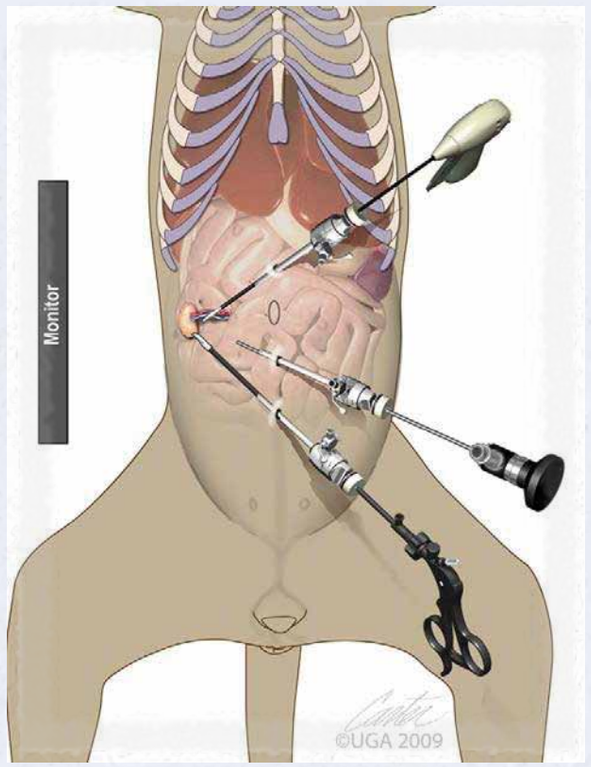




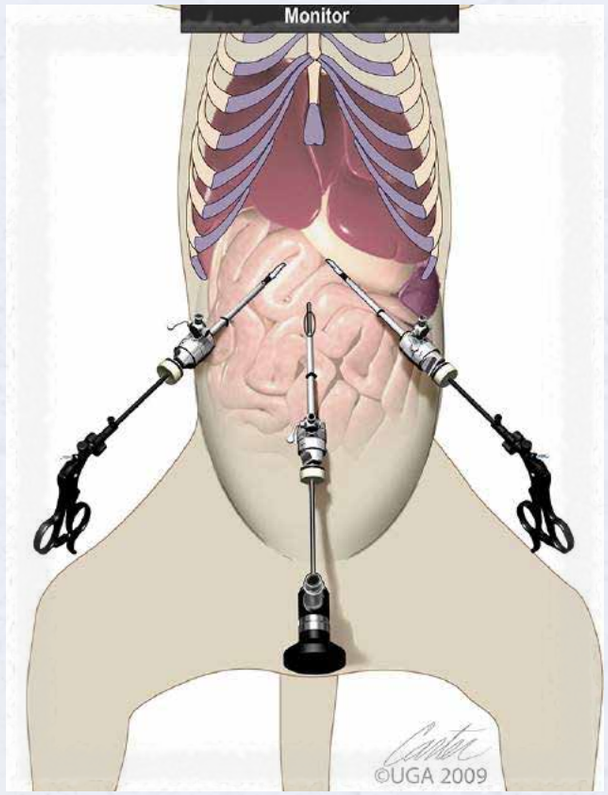


TROCAR- CANNULA PLACEMENT

- Second and third cannulae
  - Craniocaudal along midline
  - Useful for lateral structures (e.g. oophrectomy)

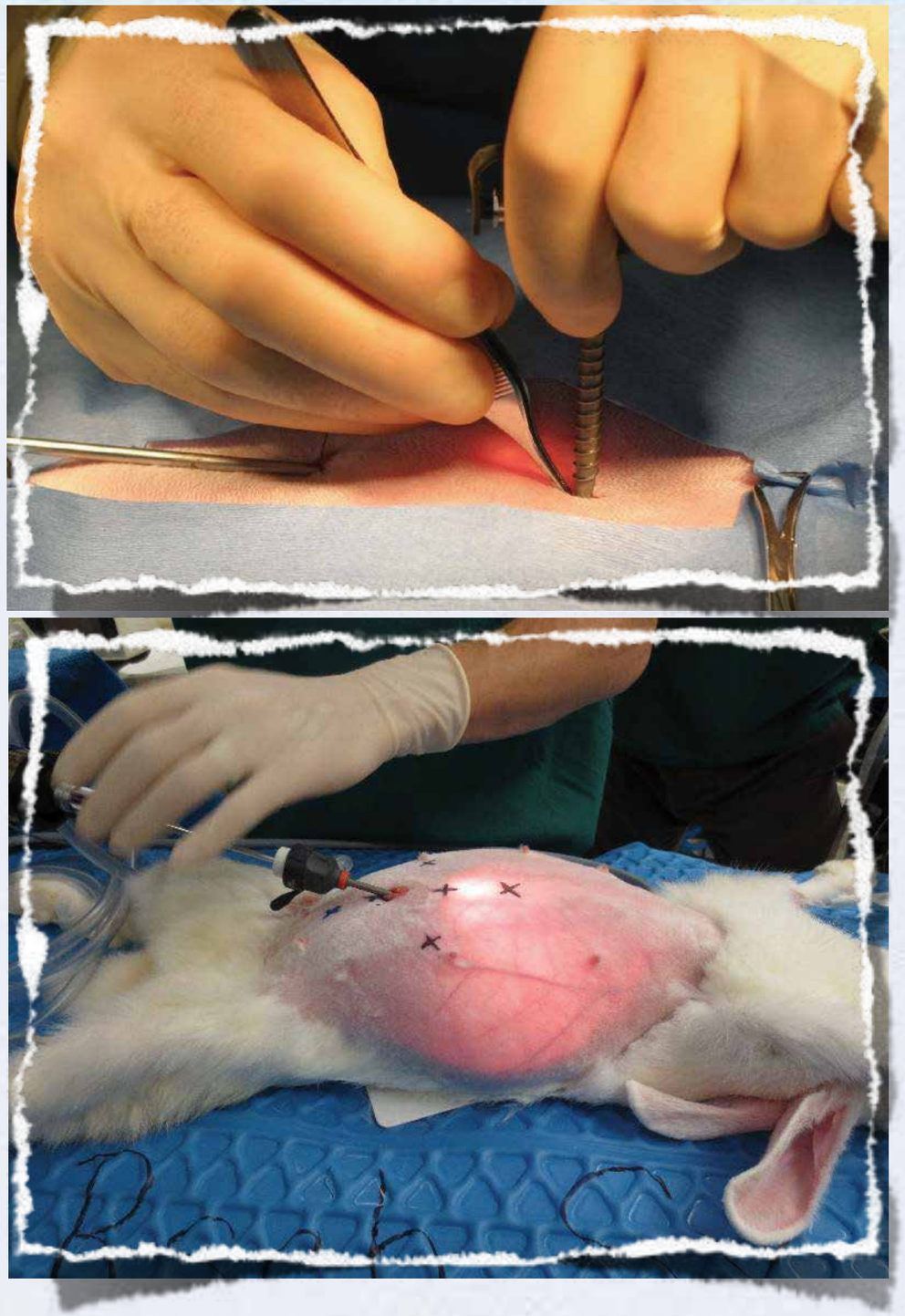


- Second and third cannulae
  - Transverse through muscles
  - Useful for cranial and caudal procedures (e.g. liver biopsy)



TROCAR-CANNULA PLACEMENT

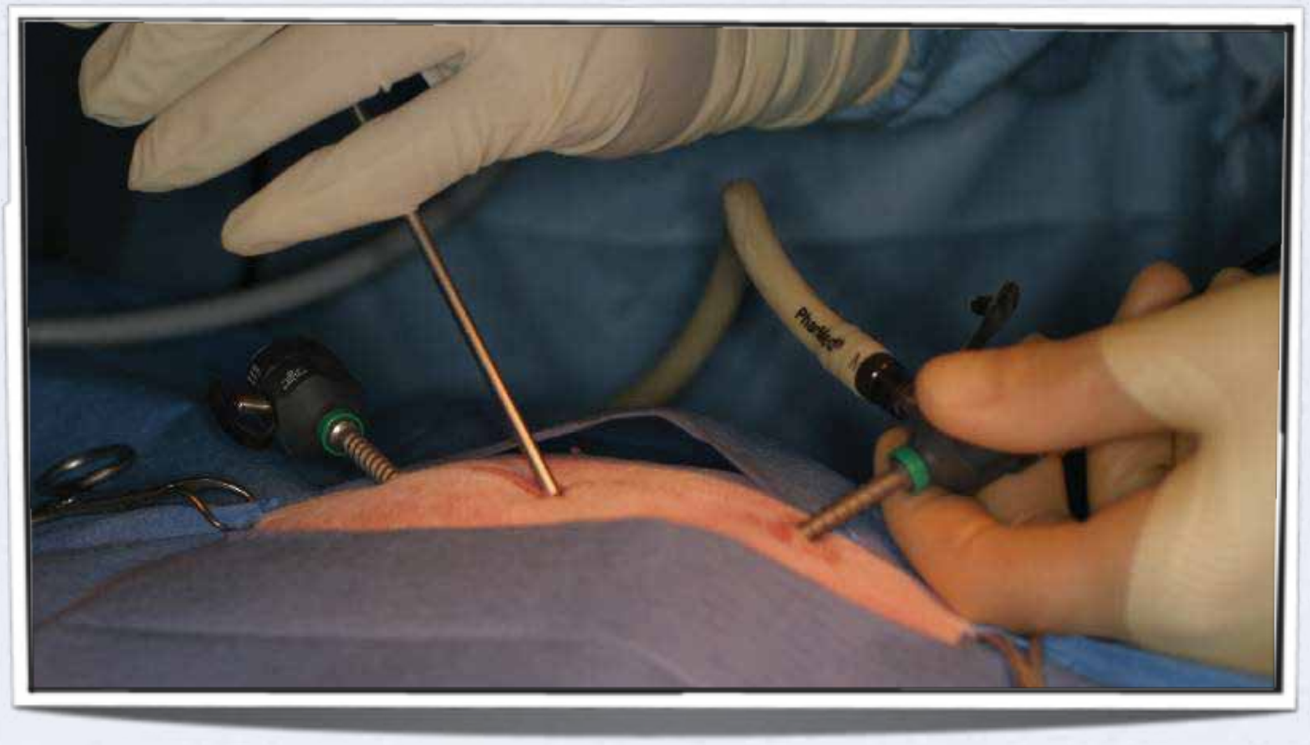
- Initial insufflation pressure set to 8-10 (12) mmHg
  - 1-2 L/min for rabbits
  - 0.1-0.5 L/min for rodents
- Creates a turgid abdominal wall that facilitates 2nd and 3rd trocar-cannulae placement under telescope guidance
  - Transillumination of skin/muscle helps avoid vessels



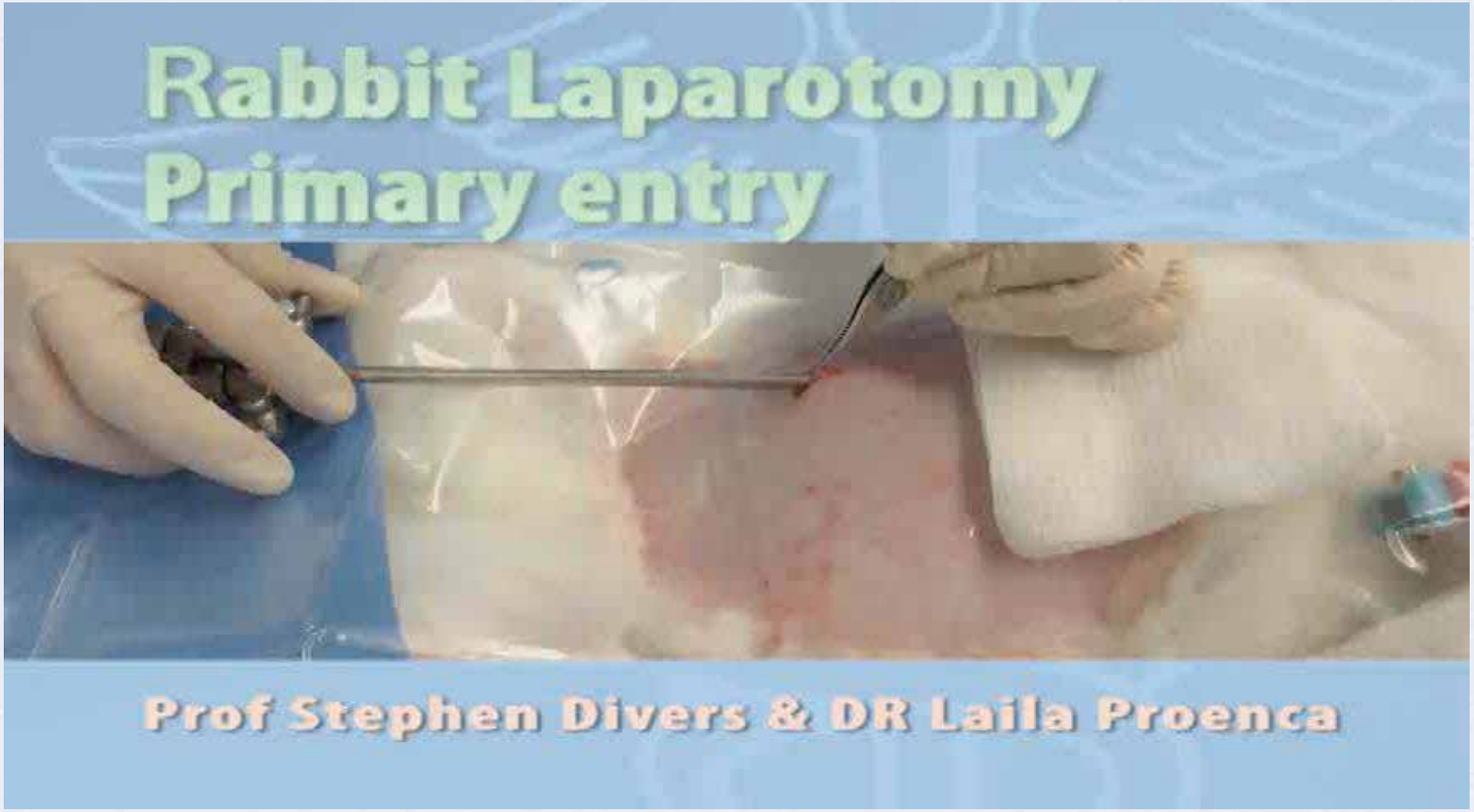
INSUFFLATION

- Once cannulae are in place reduce insufflation pressure to 8 mmHg

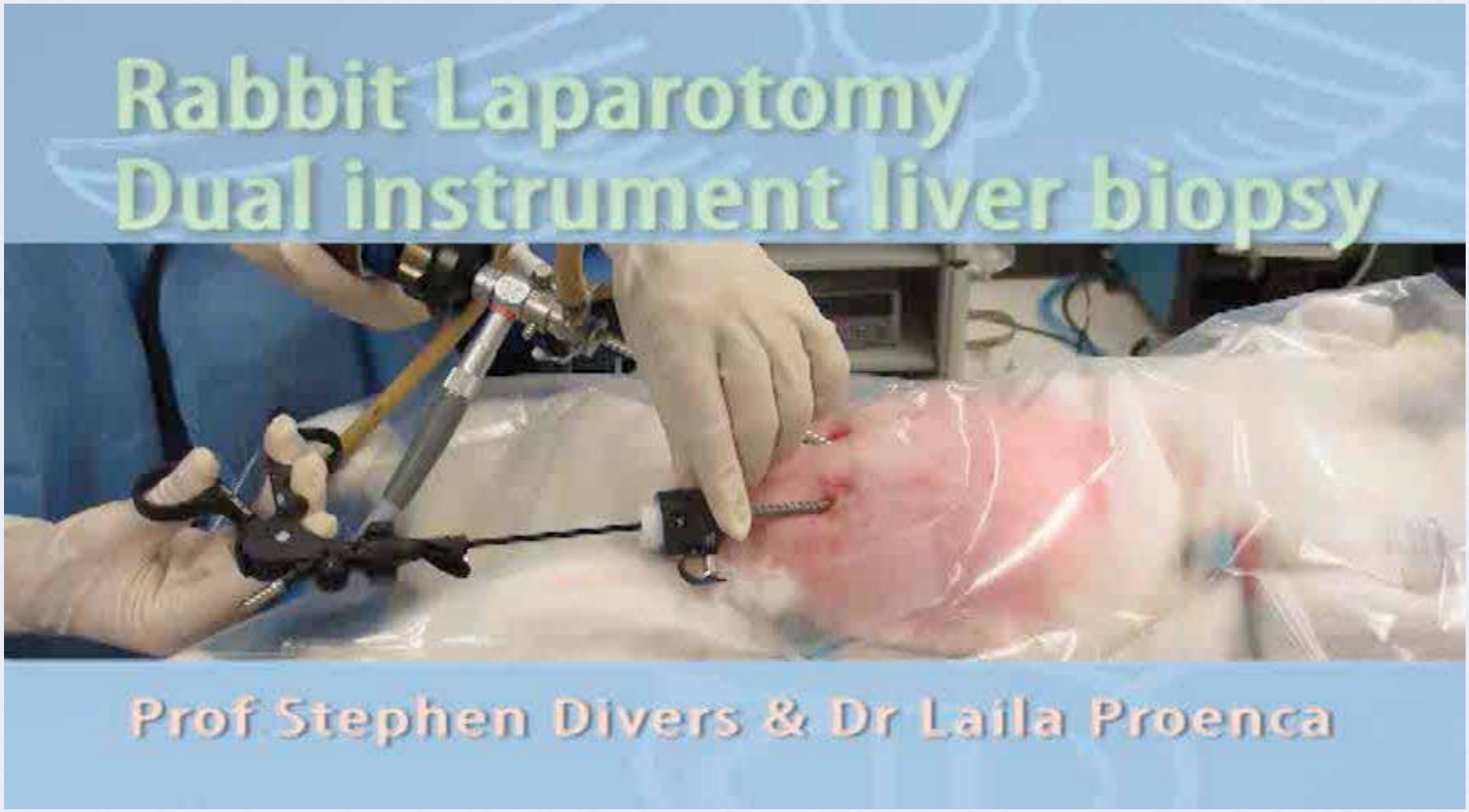
- Flow rates can also be reduced but are best controlled automatically using electronic endoflator



RABBIT LAPAROSCOPY - SINGLE PORT

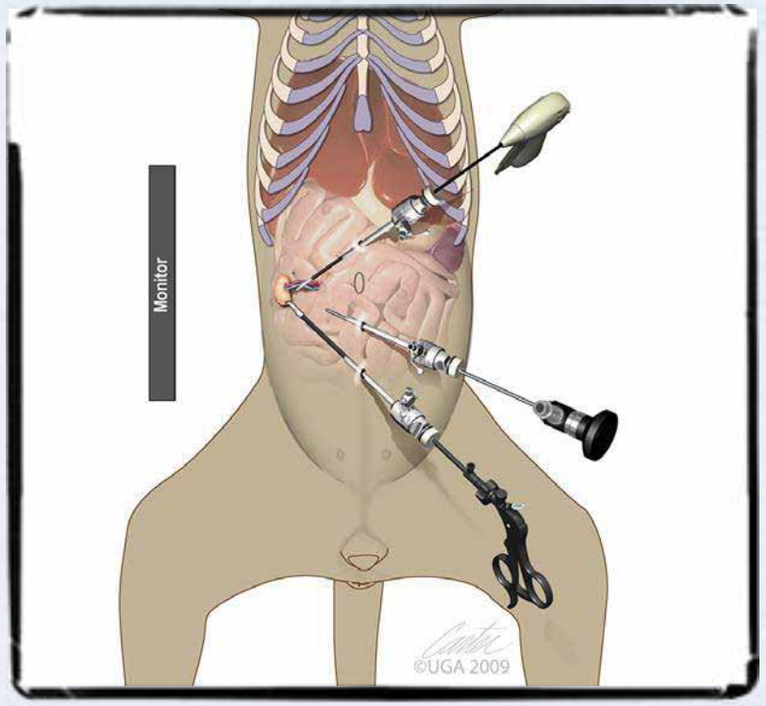


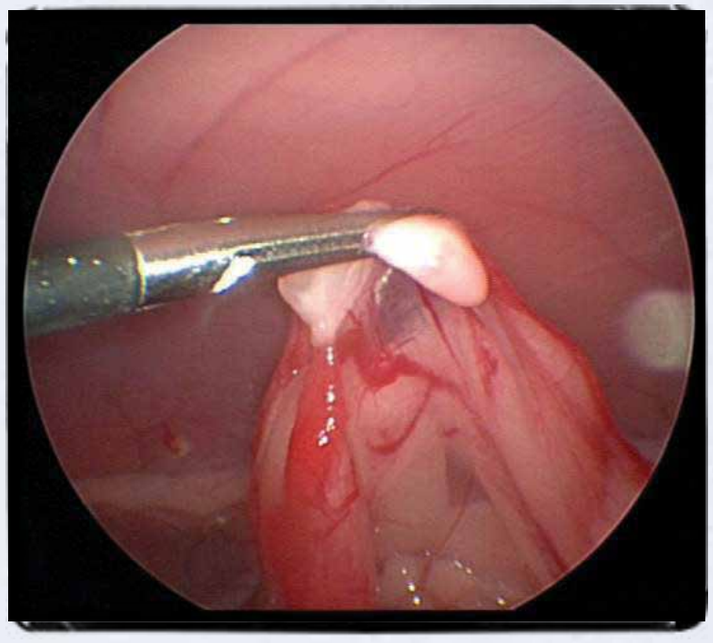
RABBIT LAPAROSCOPY - DOUBLE PORT



OOPHORECTOMY

- Three port technique
- Dorsolateral position
- Grasp ovary using inferior instrument (atraumatic forceps) and elevate
- Use bipolar forceps or monopolar scissors (superior instrument) to coagulate vascular supply
- Use monopolar scissors to dissect ovary free





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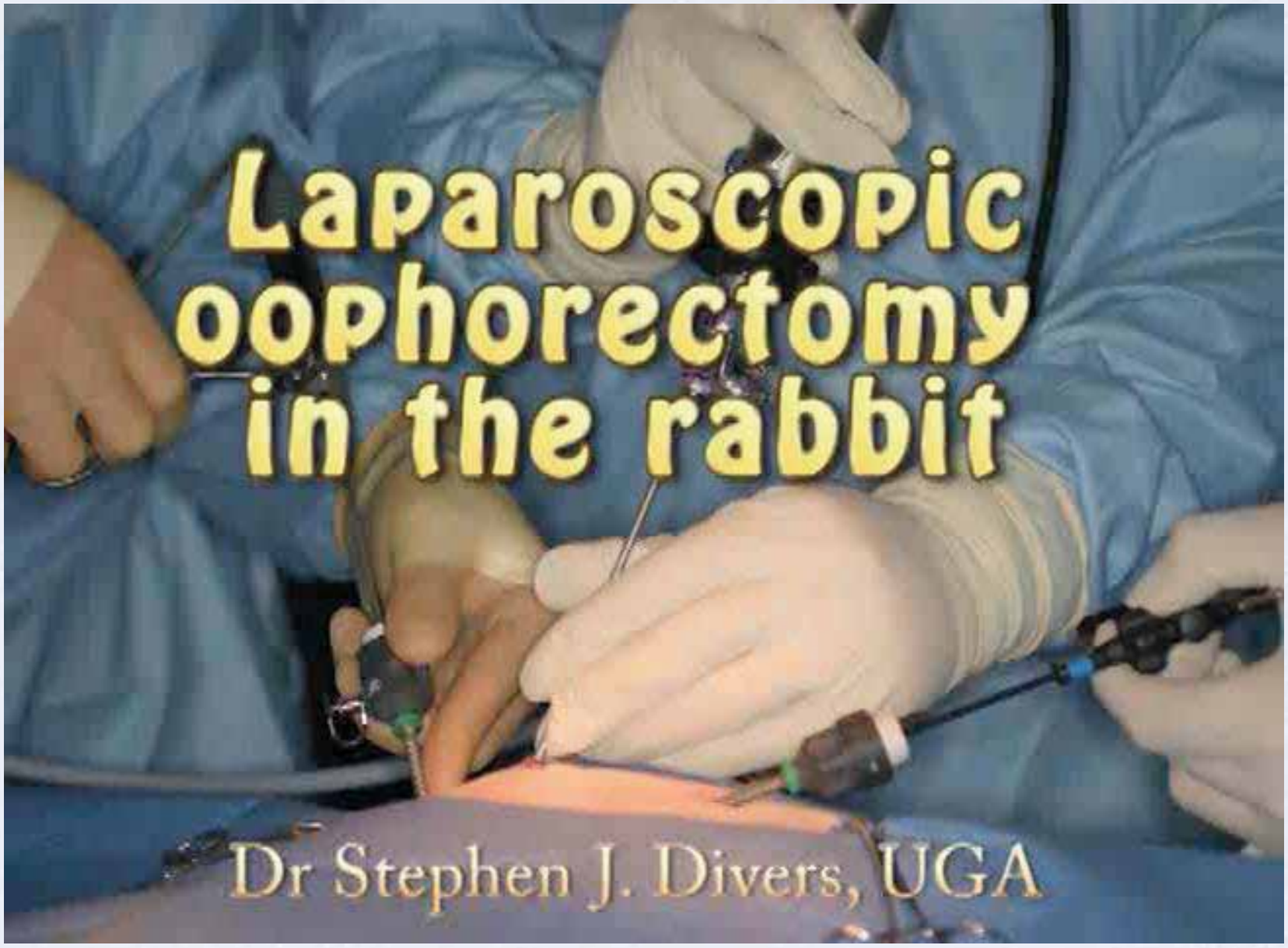
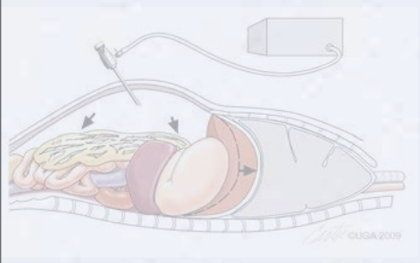
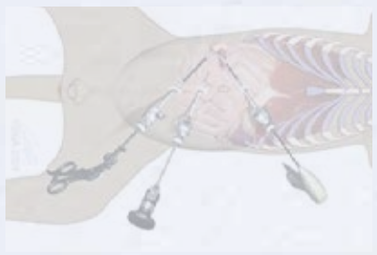
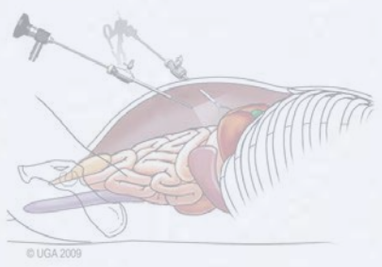
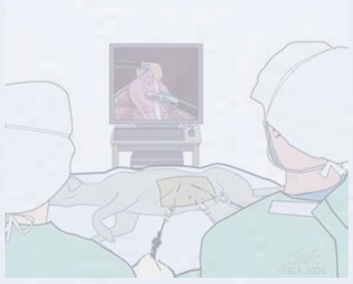


CLOSURE

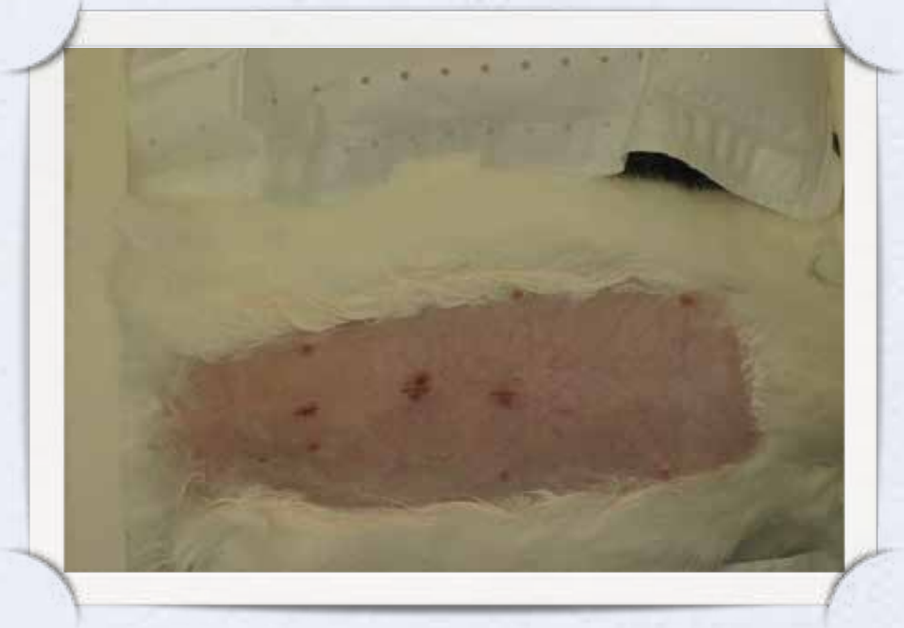




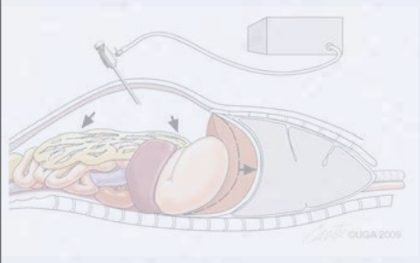


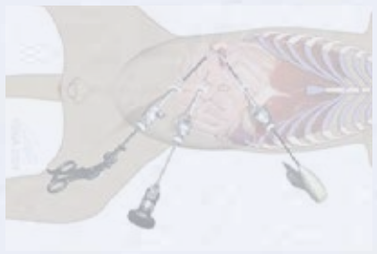


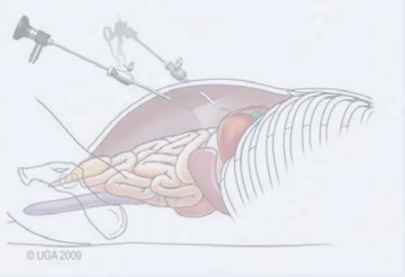
- Evacuation of all gas
- Skin closure
  - single suture
  - tissue adhesive
- Suture removal does not result in dehiscence or evisceration.

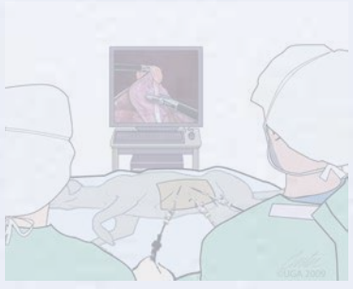


OUTCOMES









- **Advantages**
  - Less invasive
  - Less painful
  - Faster return to normal behaviors
- **Disadvantages**
  - Requires more equipment
  - Endosurgery often requires a 2nd surgeon or assistant

TRAINING & COMPETENCE

- **Endosurgery courses**
  - www.vet.uga.edu/mis
- **Literature**
  - Small Animal Endoscopy (Jan 2011)
  - Vet Clinic North America (May 2010)
- **Laparoscopy trainers**
  - Home-made
- **Give yourself options!**
  - Start with endosurgery but always retain the option to convert to traditional procedure!

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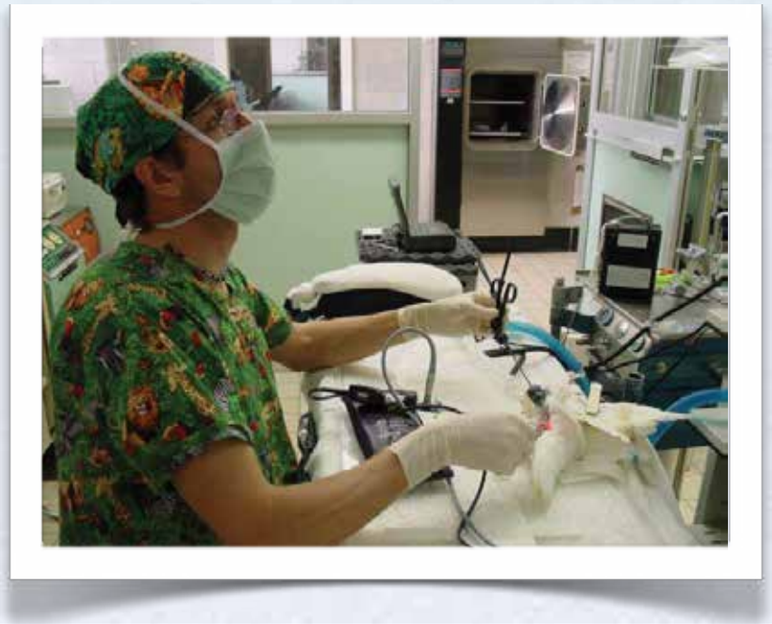
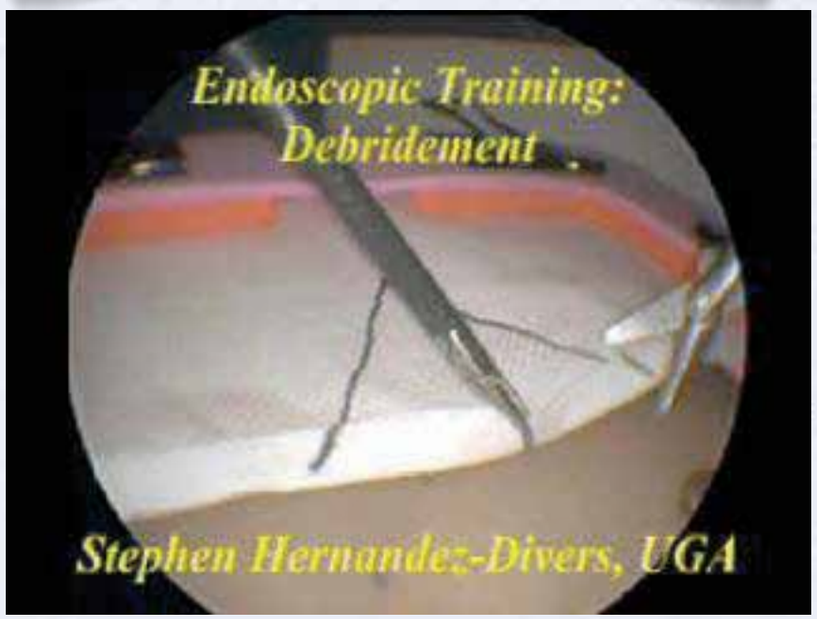




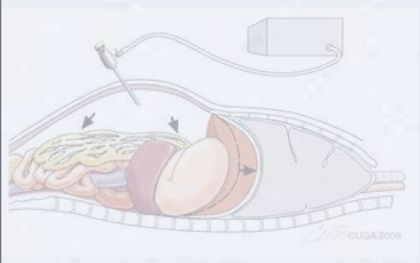
IN CONCLUSION…

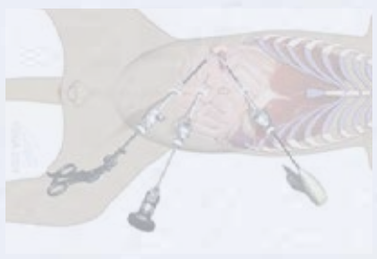
- Laparoscopy offers a minimally invasive approach to the abdomen of small mammals

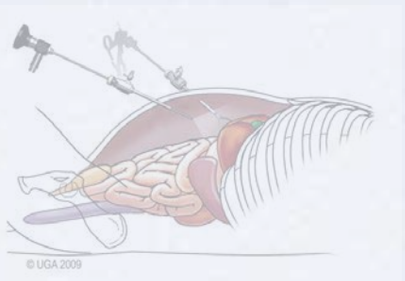
- Facilitates biopsy, remote injection techniques, tissue removal/resection

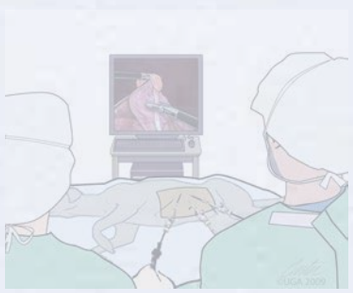
- With practice, laparoscopy times are shorter than laparotomy

ACKNOWLEDGEMENT









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