



# CRYPTORCHIDECTOMY

Taken from:

Turner and McIlwraith's Techniques in Large Animal Surgery



# Equipment

1. General Surgery Pack
2. Sponge forceps
3. Emasculator
4. Spay hook

# Techniques

1. Cryptorchidectomy by:
  1. *Inguinal Approach*
  2. *Parainguinal Approach*
  3. *Standing Flank Approach*
2. Laproscopic Cryptorchidectomy

# Anesthesia and Surgical Preparation

The horse should be placed under general anesthesia for the inguinal and parainguinal approach and positioned in dorsal recumbency.

General Anesthesia can be induced with xylazine and ketamine and maintained using “triple drip”.

The inguinal area is prepared for aseptic surgery in a routine manner and draped

# Procedure- Inguinal Approach

The horse is anesthetized and placed into dorsal recumbency. A 12-15cm skin incision is made over the external inguinal ring and is continued through the superficial fascia.

Sharp dissection is then abandoned in favor of blunt dissection with fingertips to separate the subcutaneous inguinal fascia and to expose the external inguinal ring.

Ensure to avoid trauma to the external pudendal vein.

Continue dissection beyond the external inguinal ring and through the inguinal canal until the vaginal ring is located with the finger.

In inguinal cryptorchids, the testis contained within the common vaginal tunic would be located in the canal.

Isolate the testis and remove it as it is done for normal castration. (closed castration technique is generally used)

For an abdominal cryptorchid, the testis would not be obvious. The procedure is as follows:

The vaginal ring is located and curved sponge forceps are introduced through the inguinal canal so that the jaws are placed through the vaginal ring into the vaginal process.

The partially opened jaws of the forceps are pressed against the vaginal process and are closed. The forceps grasp the vaginal process and associated gubernaculum testis and the forceps are then withdrawn. Note that excessive force ruptures the vaginal process.

The cordlike gubernaculum may then be palpated within the everted vaginal process by rolling it between the thumb and forefinger.

When the gubernaculum is identified, the vaginal process is opened with Metzenbaum scissors and the gubernaculum is grasped with Ochsner forceps.

Traction on the gubernaculum causes the tail of the epididymis to be presented, gentle traction on the epididymis pulls the testis through the vaginal ring. Pushing around the vaginal ring with fingers at the same time should deliver the testis, if not manual dilation of the vaginal ring can be done.

Now, that the testis is positively identified, it can then be emasculated.

Closure of the external inguinal ring is done using a large diameter synthetic absorbable suture material in either a preplaced interrupted pattern or a simple continuous pattern.

Dead space is then closed using a no.2-0 synthetic absorbable suture material.

The skin is now closed with a synthetic adsorbable suture, either in a continuous pattern or with simple interrupted sutures with long ends.

#### CONSIDERATIONS:

This technique cannot be used in instances of accidental rupture of the vaginal process, vaginal ring or medial wall of the inguinal canal, resulting in the loss of vital landmarks or when the horse has been subjected to a previous unsuccessful attempt at surgery.

# Procedure- Parainguinal Approach

To perform this procedure, the horse is anesthetized and placed in dorsal recumbency.

The ventral abdomen is aseptically prepared and draped to allow access to the inguinal areas.

A 10cm incision is made to allow access to the inguinal areas.

A 10cm incision is made through the skin parallel to and 4cm axial to the inguinal canal.

The inguinal canal is explored as for the inguinal approach, to assess the presence of an inguinal testis. Identification of an inguinal testis allows removal as described for the inguinal approach.



If no Inguinal testis is identified,

Make an incision of similar length into the external rectus sheath using a scalpel blade. The incision should be deeper than the sheath.

The rectus abdominus muscles is bluntly divided and the internal rectus sheath is bluntly penetrated along with the peritoneum.

A spay hook is placed through the incision into the peritoneal space. The tip of the spay hook is swept through the region of the vaginal ring to pick up the gubernaculum. The gubernaculum is removed from the abdomen and traction is placed until the testis is removed from the abdomen.

The testis is emasculated.

The external rectus sheath is closed in a simple continuous pattern using no.1 polyglyconate.

The subcutaneous tissue and skin are closed respectively using a no.2-0 synthetic absorbable suture material using a simple continuous pattern.

# Procedure- Standing Flank Approach

The horse should be sedated and placed into standing stocks.

The location of the retained testis in either side of the abdomen should be predetermined.

The flank of the appropriate side is clipped and aseptically prepared for surgery.

The skin and flank musculature is anesthetized with local anesthetic in either an inverted L pattern or as a line block.

A 15cm skin incision is made in the midportion of the paralumbar fossa through the skin and external abdominal oblique muscles, centered at the level of the most distal portal that is used for the laproscopic approach.

The internal abdominal oblique and transverse abdominus are penetrated along their fibers in a grid fashion. The testis is identified and exteriorized from the incision and emasculated. The external abdominal oblique fascia is closed with an absorbable suture material in a continuous pattern.

The skin is closed with a nonabsorbable suture material in a continuous pattern.

# Post operative Management for Cryptorchidectomy

- Tetanus immunization
- Remove gauze packing 24 hrs post-operation, if placed.
- If suture closure of the inguinal ring is performed, the horse should be hospitalized for 72 hours.
- Begin exercise in 2 weeks.

# Procedure-

## Laparoscopic Cryptorchidectomy

### Equipment:

- General surgery pack
- 3-4 surgical drapes
- Additional towel clamps
- Telescope
- Light source with attached light cord
- Male urinary catheter
- Veress needle, test cannula or trocar catheter
- Sharp and blunt trochars
- 3-6 cannulas, 10mm diameter and 15-20 cm long
- 10mm serrated laparoscopic scissors
- 1-2 10mm acute claw graspers
- Laparoscopic injection needle
- Knot pusher
- Endoscopic suture materials
- Laparoscopic video camera (optional)

Make a 1cm incision in the appropriate flank (left for left-sided of bilateral cryptorchids, right for right-sided cryptorchids) at the base of the tuber coxae, midway between the tuber coxae and the last rib including the skin and the fascia of the external abdominal oblique muscle.

Place a mare urinary catheter or a 10mm diameter, 20cm long cannula with a blunt trochar through the incision, directed upward toward the opposite stifle and inserted through the body wall in one continuous motion.

Confirm presence in the peritoneal space by listening for air being drawn into the abdomen.

Attach insufflation tubing to the cannula and begin insufflation with CO<sub>2</sub>. Insufflate the abdomen to a pressure of 12-15mmHG. Please second and third portals 10cm dorsal and slightly rostral and 10cm ventral, respectively to the first portal. The laproscope is placed in the dorsalmost portal and the abdomen explored.

Instruments can be placed in the middle or ventral portals to lift the small colon to observe the opposite inguinal area and determine the location of the testes.

The ipsilateral testis is identified and grasped, and the mesorchium is infiltrated with 2% lidocaine using a laparoscopic injection needle.

A laparoscopic slipknot in a knot pusher is placed into a 5mm reducing cannula and inserted in the middle cannula. The loop is advanced into the abdomen and acute claw grasper is placed into the ventral cannula through the loop and the testis is grasped.

The loop is placed over the testis onto the mesorchium and tightened. The long end of the suture is cut and the mesorchium transected distal to the knot. The pedicle is assessed for bleeding.

A single ligature is generally sufficient, though a second one can be placed if necessary.

In cases of bilateral cryptorchids,

The right testis is removed from the left side after placing a 4<sup>th</sup> cannula in the left flank and lifting the small colon.

After amputation of the testis, the ventralmost incision is enlarged and the testis is removed. The external abdominal oblique fascia is closed in the enlarged incision using a no.0 polyclyconate in a simple continuous pattern.

The skin is closed with a synthetic, nonabsorbable suture material.

# Postoperative management for Laparoscopic Cryptorchidectomy

- The horse should be kept in confinement for 3 days then may be returned to full-exercise.
- If one testis was abdominal and the other removed via standard castration, the horse should be hand-walking at 24 hours postsurgery.

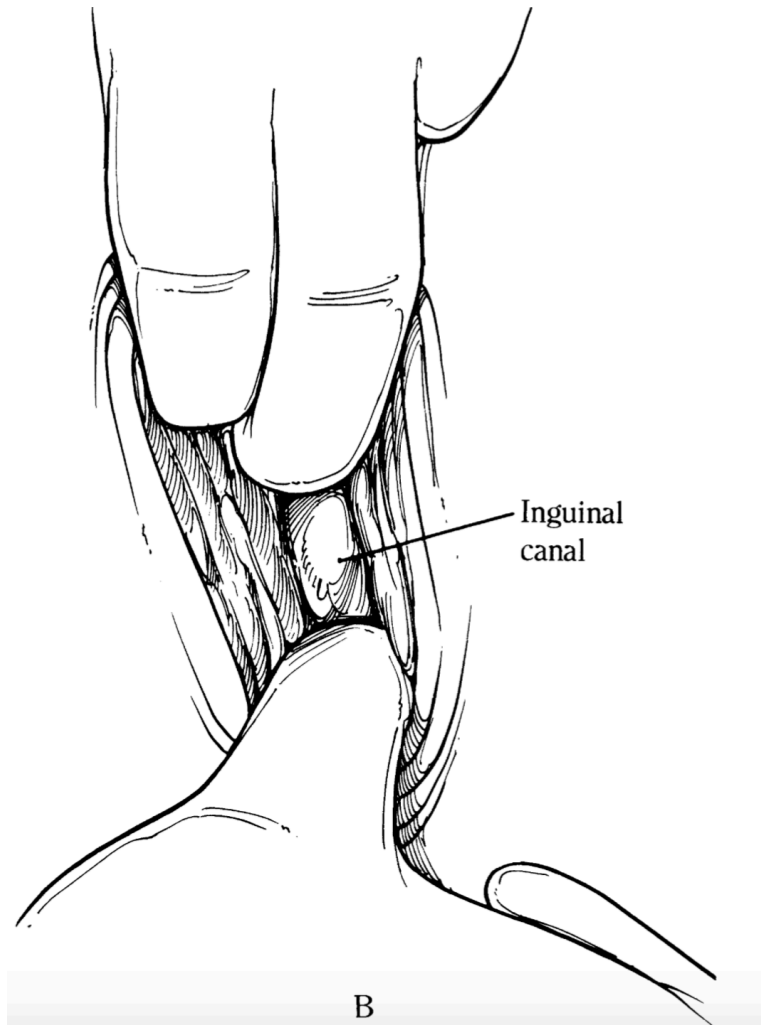
# Inguinal Approach



A

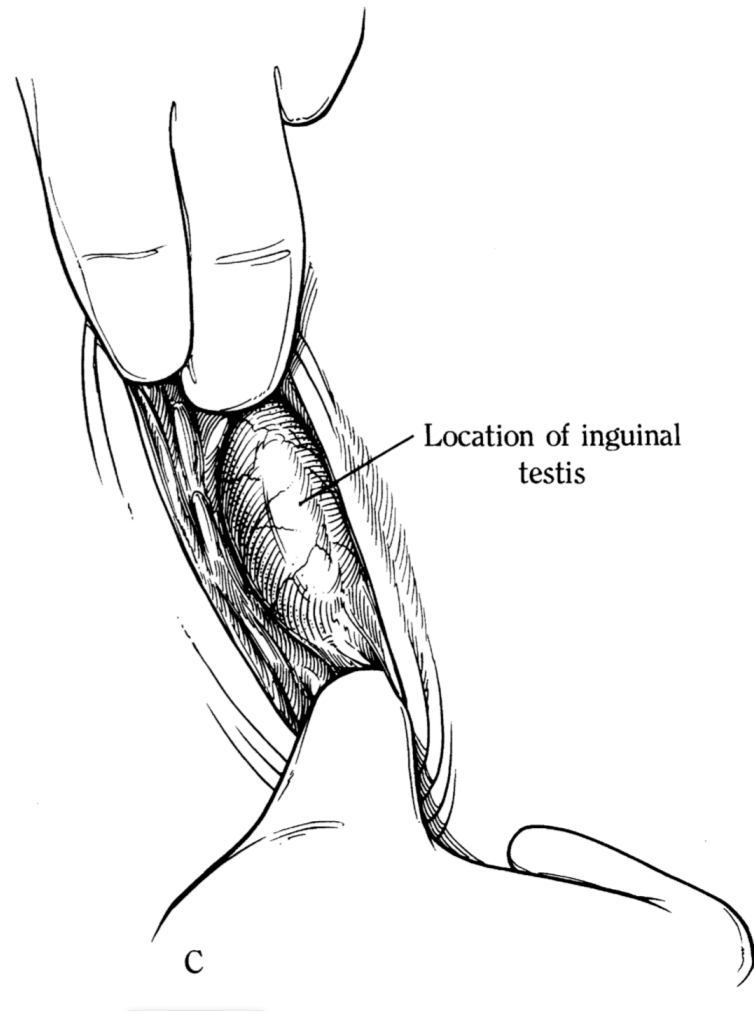
Screenshot

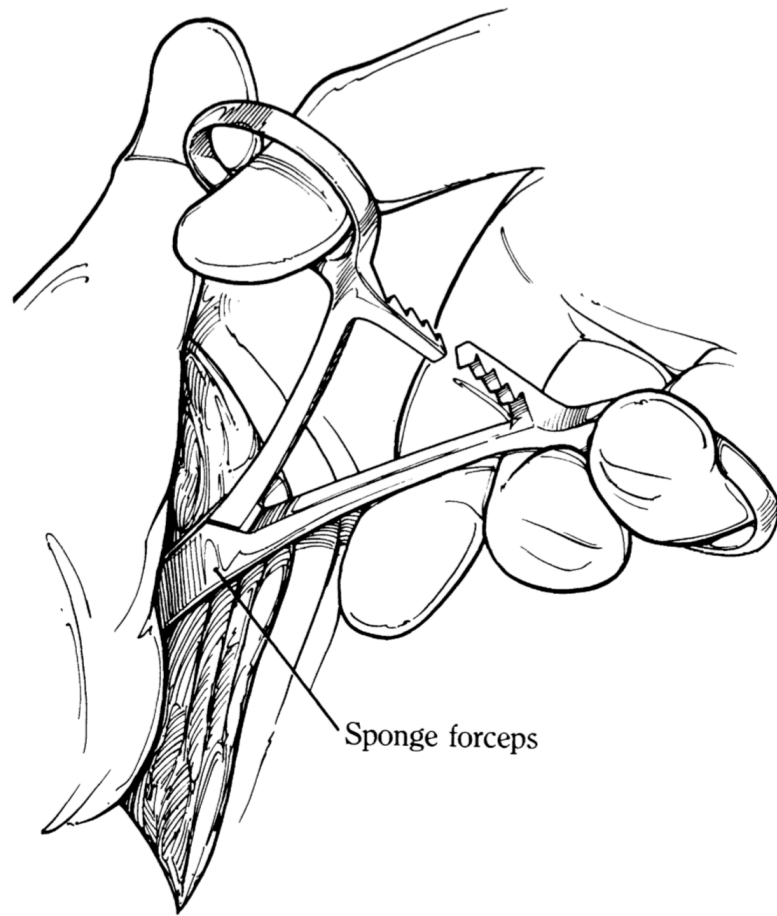




Inguinal canal

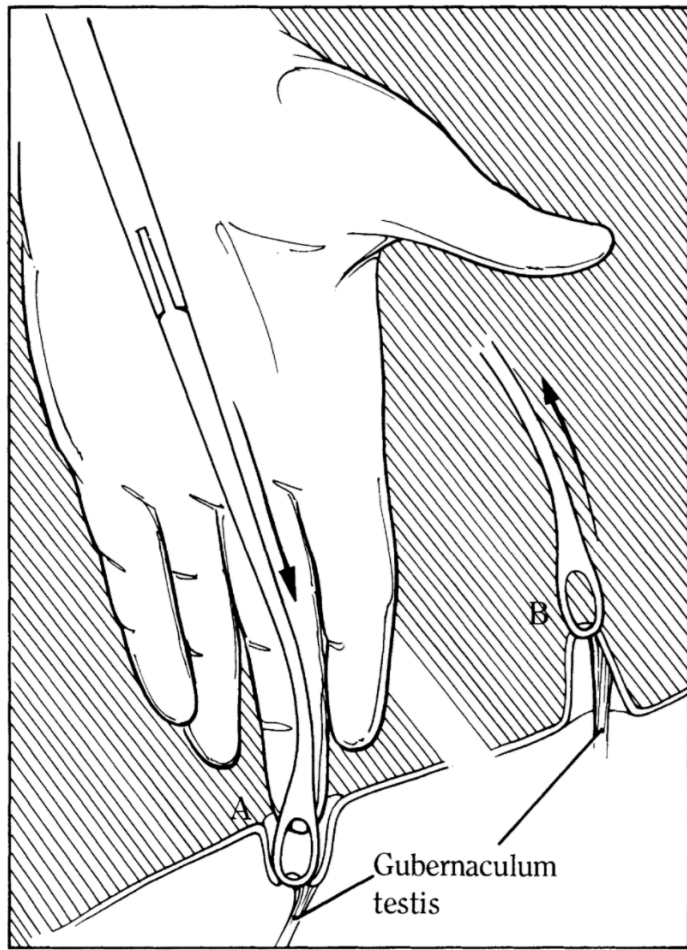
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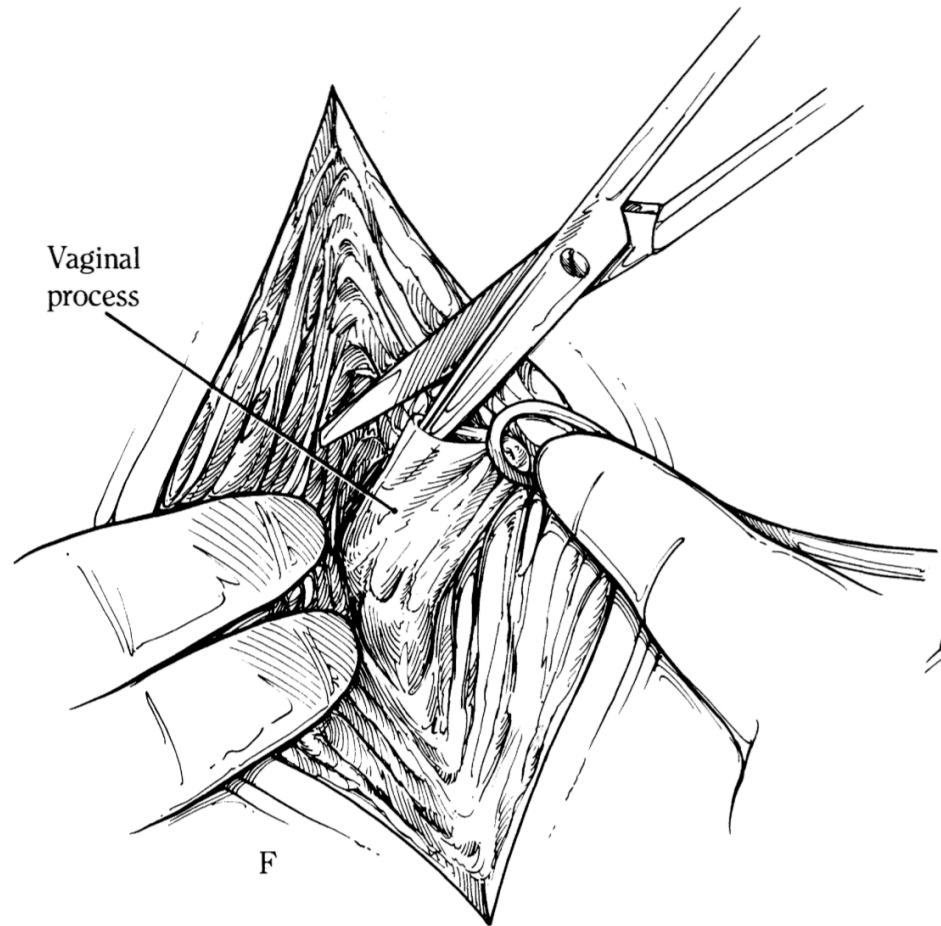
Sponge forceps

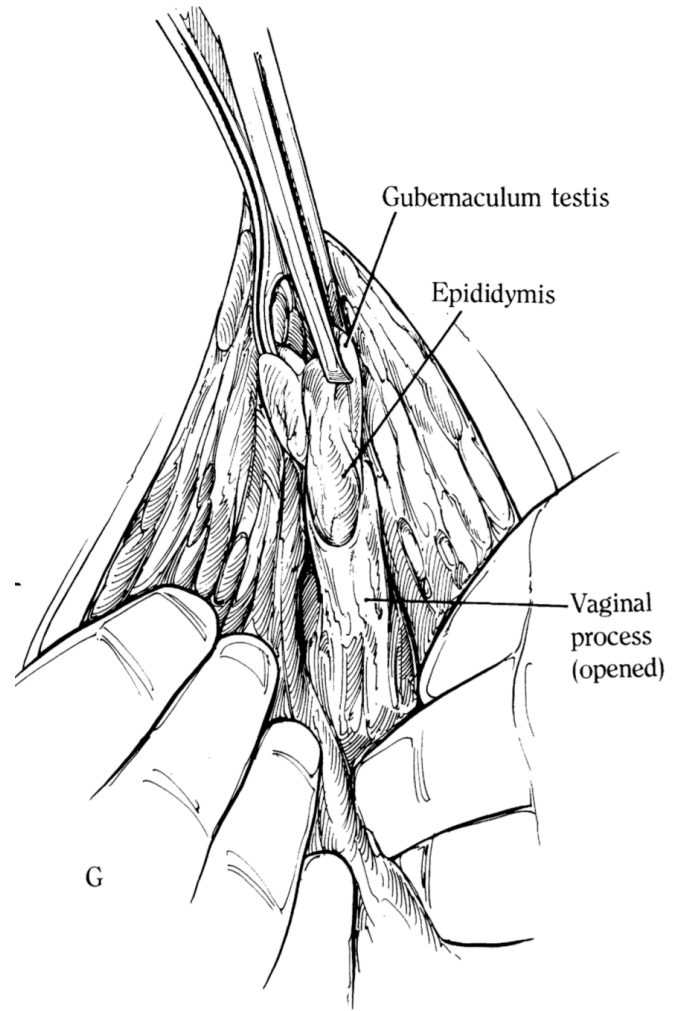
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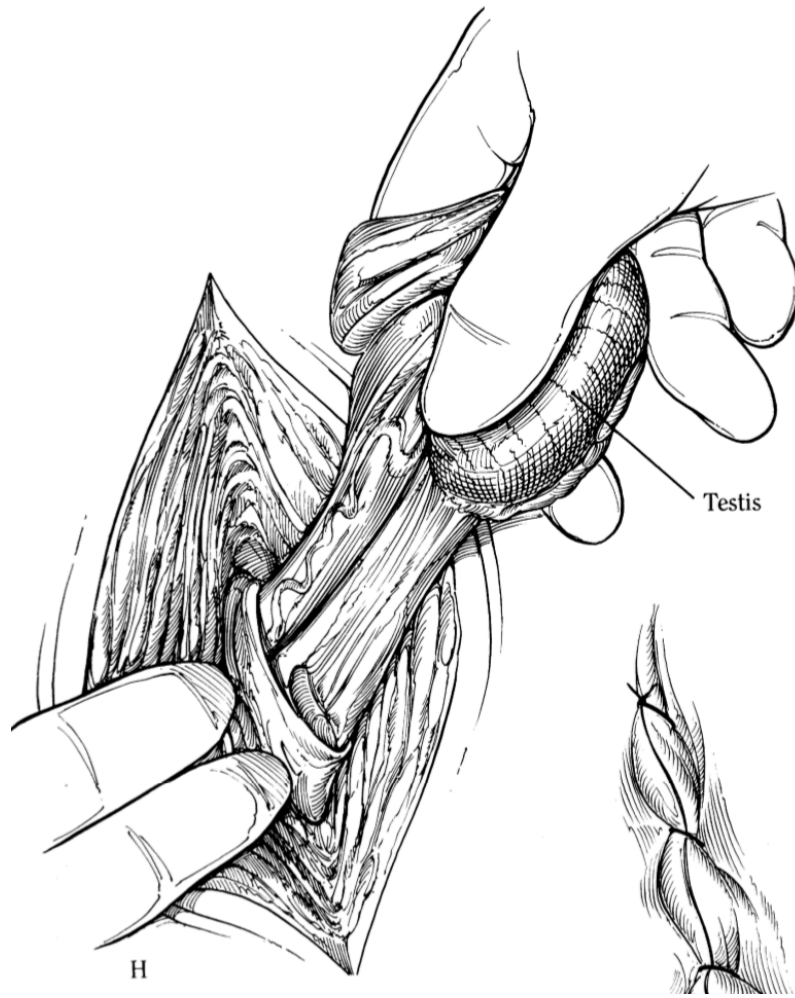


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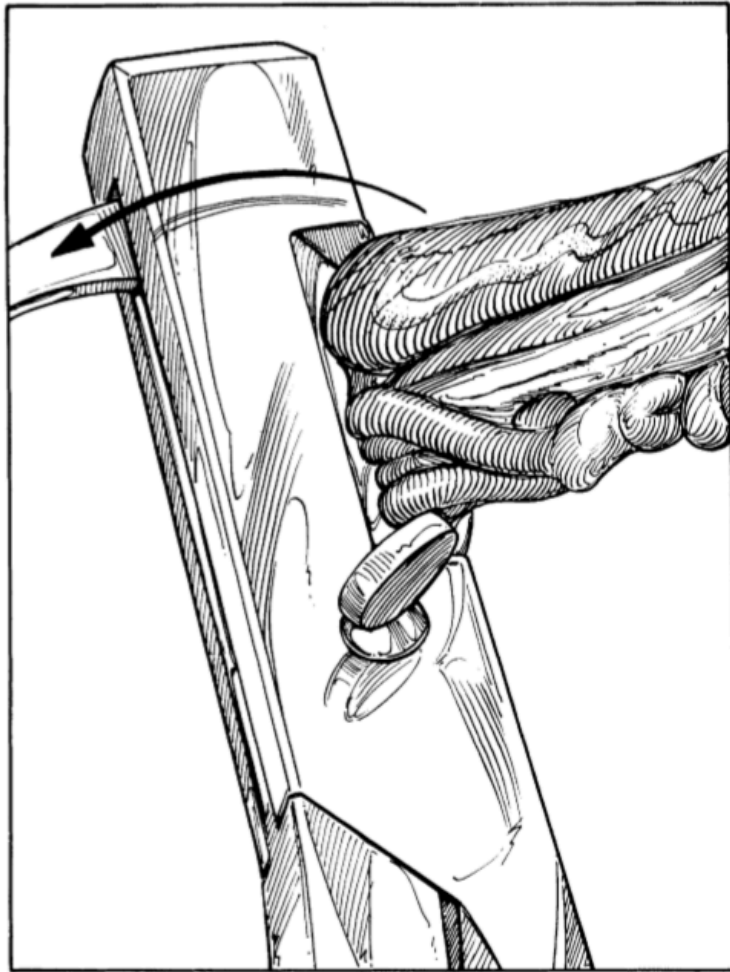






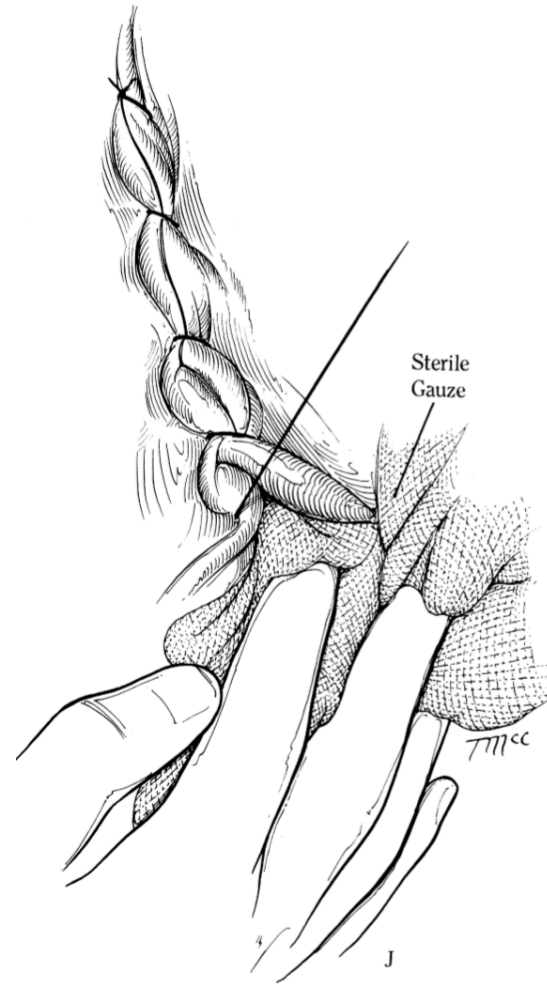
Testis

H

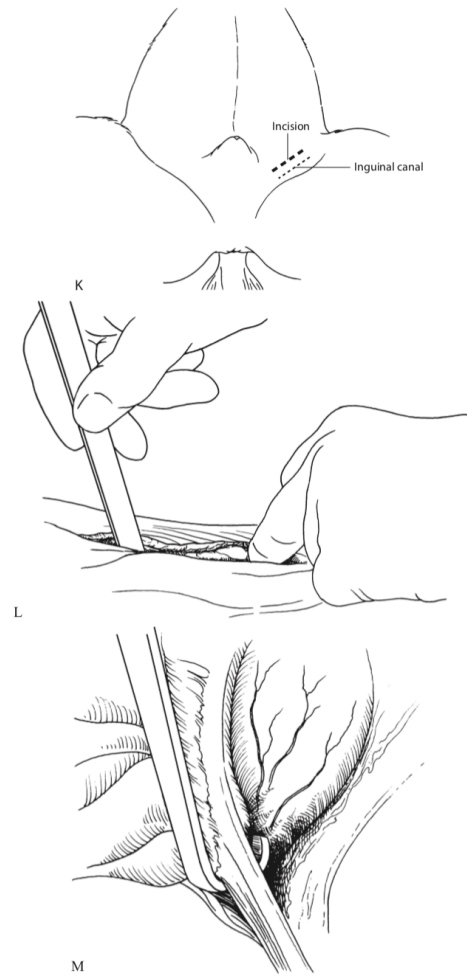


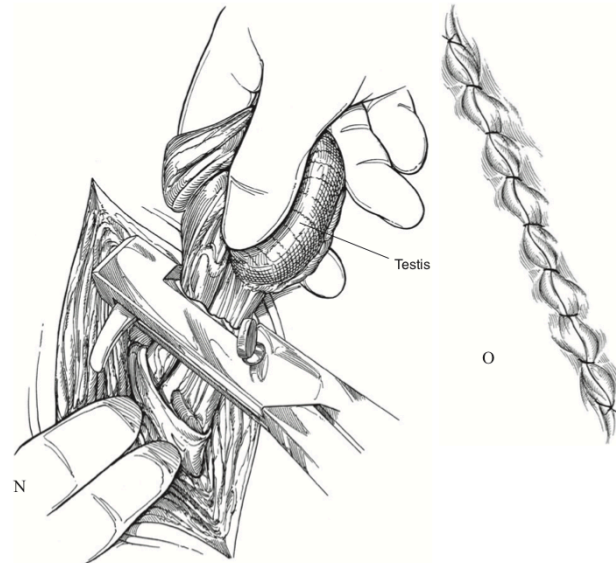
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# Parainguinal Approach





## Incisions for Laparoscopic Technique

