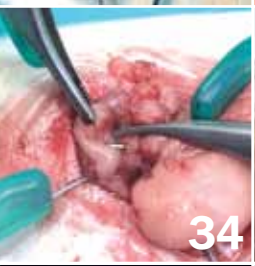
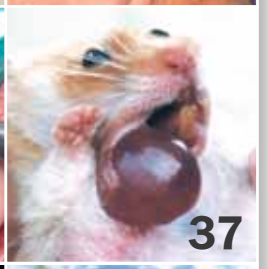
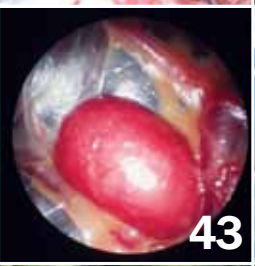
The Best of EXOTIC DVM
VOLUME 12
ISSUE 4

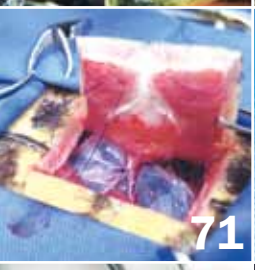
Selected Practical Peer-reviewed Papers for Clinicians

Exotic Animal Medicine & Surgery









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Flank Approach to Elective Ovariectomy in Guinea Pigs

Vittorio Capello, DVM, Dip ECZM (Small Mammal), Dipl ABVP (ECM)

The lateral flank approach for elective ovariohysterectomy has been extensively described in dogs and cats but its routine use is uncommon, possibly because the ability to perform a complete exploratory laparotomy is hampered.[2] This approach has been reported in rabbits and rodents as well,[1] both in the literature and anecdotally, but it is likely underutilized. The lateral flank approach is worthy of consideration for elective ovariectomy or ovariohysterectomy in some species, such as guinea pigs and chinchillas. Elective ovariohysterectomy in these rodent species can be challenging due to certain anatomic features, such as long and thin uterine horns, fragile salpinges and the exceptionally short ovarian suspensory ligament.[3]

Advantages and disadvantages of the surgical approach from the flank compared with the traditional approach through the ventral midline are summarized in Table 1. The flank approach may be helpful to treat ovarian cysts, if the cysts are not too large or if they can be drained of fluid prior to the procedure. Contraindications for this approach include diagnosed or suspected ovarian and/or uterine disease.

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Table 1. Advantages and Disadvantages of the Flank Approach for Ovariectomy in a Guinea Pig

FLANK APPROACH	
Advantages	**Disadvantages**
• Smaller incisions • Position of the suture: easier to check and medicate if necessary, and less likely to be contaminated from soiled bedding and environment in that location • Reduced manipulation of the abdominal viscera; therefore, less risk of adhesions being formed and post-surgical complications, such as ileus • Reduced postoperative pain • Reduced risk of dehiscence of the incision and potential evisceration • Possibility for the sow to nurse young after surgery • Easier exteriorization of ovaries • Shorter procedure	• Does not allow exploratory laparotomy • Two incisions are needed • Indications are limited to elective not therapeutic ovariectomy • In the author's experience only partial hysterectomy is possible because it is difficult or impossible to reach the uterine cervix through the flank incision

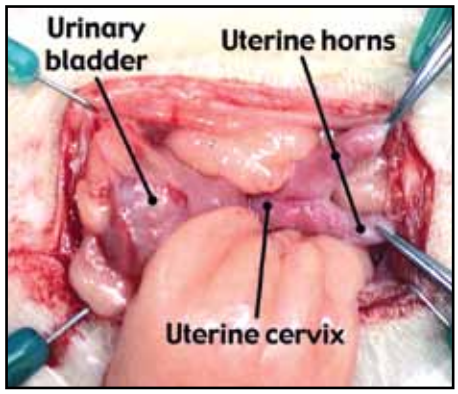

Fig 1. Shown is the appearance of the distal tract of the uterine horns and the uterine cervix in a guinea pig through the ventral midline approach.

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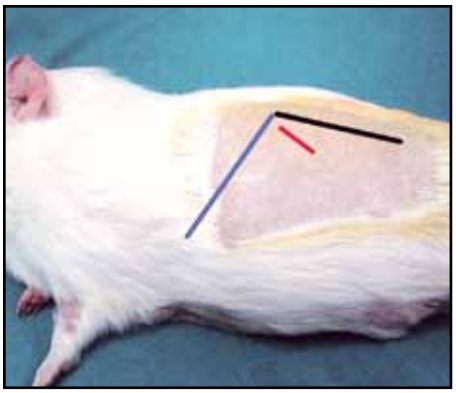

Fig 2. For induction of anesthesia, the author prefers a combination of injectable medetomidine (70 mcg/kg IM) and ketamine (20 mg/kg IM), but other anesthetic protocols have been reported as well. Analgesia is provided by butorphanol (0.3 mg/kg SC). The proper surgical plane is maintained with 1-3% isoflurane via face mask. Alternatively, endotracheal intubation with the "over-the-top" endoscopic technique can be performed for safer control of a potential anesthetic emergency. The patient is shaved over the entire flank and lateral abdominal wall and scrubbed routinely. The points of reference for incision of the skin (red line) and the abdominal wall are represented cranially by the edge of the last cartilaginous ribs (blue line) and dorsally by the line of the lateral vertebral processes (black line).

Fig 3. The patient is draped routinely. The author prefers transparent adhesive drapes for a clear view of the patient and points of reference. The initial skin incision may be slightly more difficult in this area, as the skin is relatively thick and the lateral abdominal wall is relatively thin and delicate. For this reason, scissors may be preferred to a blade. The ideal skin incision is slightly oblique in a craniocaudal/dorsoventral direction in order to align with the incision of the muscular wall.[4] The subcutaneous tissue is bluntly dissected until the external oblique abdominal muscle is exposed.

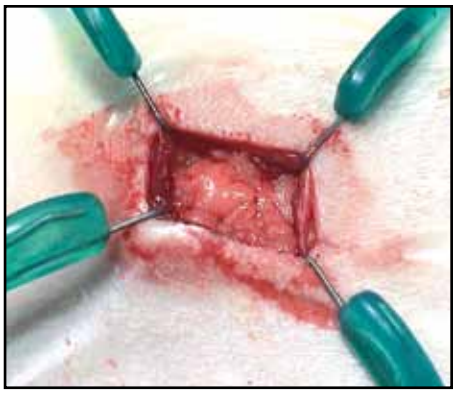

Fig 4. The incision of the muscular wall is performed as described for the skin in order to align with the direction of the fibers of the external oblique abdominal muscle. The internal and transverse laminar abdominal muscles are bluntly dissected with scissors until the abdominal cavity is entered and fat tissue is exposed. Positioning of the Lone Star Retractor is useful, especially if the surgeon works without an assistant. Both the skin and laparotomy incisions are smaller than those of the standard approach through the ventral midline.

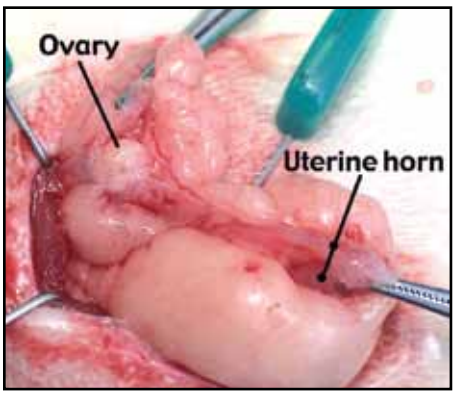

Fig 5. The ovary, the salpinges and the proximal tract of the uterine horn are easily exposed with gentle traction of the exposed fat. This is a clear advantage when compared to the approach through the ventral midline because much less traction is required to expose those fragile tissues.

Fig 6. Ligation of the ovarian artery is performed as routine. The use of hemostatic clips (Hemoclips or Ligaclips) is quick and effective.

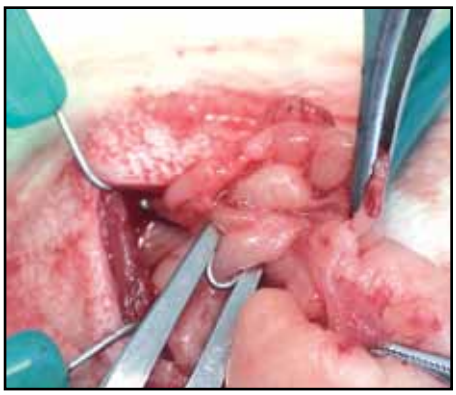

Fig 7. A second clip is placed at the proximal end of the homolateral uterine horn.

Fig 8. The ovary is dissected free from the surrounding fat tissue using blunt scissors.

Fig 9. The fat tissue and proximal end of the uterine horn are repositioned into the abdominal cavity. The muscular wall is sutured in one layer using a single 3-0 absorbable suture, such as Monocryl. The approach from the flank provides the advantage of reduced pressure on the muscle suture compared with the approach through the ventral midline. Therefore, the risk of dehiscence of the muscular wall incision is highly reduced. The skin is sutured routinely. The author prefers a non-absorbable suture material (see also Fig 14).

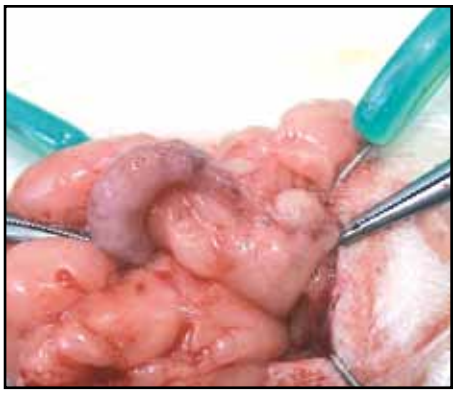

Fig 10. The surgical approach is repeated on the contralateral flank. Although exteriorization of the contralateral ovary through the same incision has been reported in the cat as well as anecdotally in the rabbit, rat and guinea pig, the author performs a separate surgical approach on each flank. Figs 10-12 show the ovariectomy and partial hysterectomy.

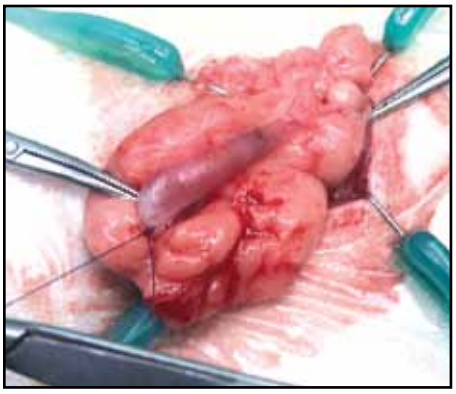

Fig 11. The homolateral uterine horn is gently pulled through the incision and ligated distally. Even though a complete ovariohysterectomy via this technique has been anecdotally reported, in the author's opinion and experience, it is difficult or impossible to perform a complete hysterectomy very close to or including the uterine cervix unless the incision of the muscular wall is extended much more caudally, which negates the advantages of the flank approach. Additionally, a longer flank incision would involve more muscular tissue than the ventral aponeurotic linea alba. Therefore, only a partial (ovario)hysterectomy is feasible through the approach from the flank.

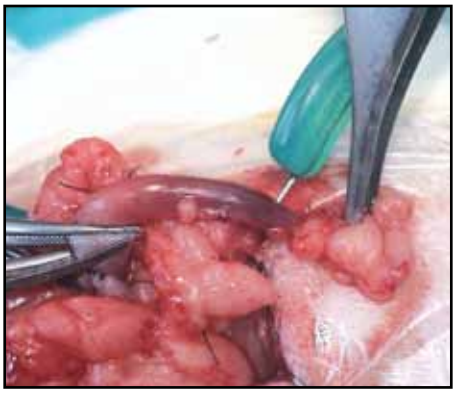

Fig 12. The uterine horn is double clamped and ligated in a location as distal as possible.

Fig 13. Shown is the appearance of the skin suture and follow up 8 days post surgery just prior to suture removal.

Postoperative Care

Postoperative analgesia is important for all routine surgeries in this species. The author's preferred protocol is post-surgical administration of butorphanol (0.2 mg/kg SC once), then carprofen (2 mg/kg PO) or meloxicam (0.2 mg/kg IM once, then PO) q12h for 3-4 days. The oral meloxicam is available as a liquid so it is easier to administer than carprofen tablets. Because the surgical approach from the flank results in less postoperative pain than the procedure performed from the ventral midline, this analgesia protocol is sufficient.

References and Further Reading

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