Examining anesthesia protocols

You know the name, but do you recognize the possibilities? Learn how you can incorporate Telazol® into your current anesthetic protocols for safe, predictable results with one convenient injection.

Your anesthesia protocols should be as varied as the procedures themselves, says Dr. Jeff Ko, DACVA. Just as practitioners employ different surgical instruments and techniques, they should choose different anesthetic agents based on the procedure.

“Anesthesia is dynamic. Unfortunately, a lot of clinics develop one protocol to fit all of their procedures,” says the associate professor at Oklahoma State University’s School of Veterinary Medicine. “That one protocol may be too light for invasive surgery or too deep for a diagnostic procedure.”

Dr. Ko says many practitioners routinely employ Telazol® for its versatility in the exam room and the surgery suite. The only FDA-approved product of its kind, Telazol® is a combination of equal parts of tiletamine, a dissociative anesthetic, and zolazepam, a benzodiazepine tranquilizer and muscle relaxant. Whether practitioners need quick restraint or profound general anesthesia, Telazol®—delivered either intramuscularly or intravenously—adapts to a myriad of procedures (Table 1).

“Telazol® is such a versatile drug in that it can be used for sedation, induction, and total injectable anesthesia in dogs and cats,” says Dr. Ko. “And no mixing (although it does require reconstitution) means you reduce your chances of making a mistake.”

Uses for Telazol

Consider how you can use Telazol® to optimize and personalize anesthetic protocols:

Rapidly immobilize aggressive patients.

The beauty of Telazol’s® intramuscular (IM) administration is that fractureous cats or aggressive dogs can be rapidly immobilized or anesthetized with just a small volume—which means quick administration. Onset of action occurs between two to six
minutes after IM injection (and as fast as 10 to 30 seconds with intravenous [IV] injection). Telazol® also can be used as a sedative before euthanasia, which is a protocol routinely employed by practitioners.

“A small volume of Telazol® IM quickly eases the handling of animals, and because it doesn’t constrict the blood vessels, it greatly facilitates venous access for blood sampling or for intravenous catheterization, and intravenous drug administration,” says Dr. Ko. “Delivering 6.6 mg/kg to a 50-lb dog only requires 1.5 ml of Telazol®.”

**Restrain patients and perform minor procedures.** Delivered intravenously, Telazol® is ideal for outpatient diagnostic procedures of approximately 30 minutes that require restraint and mild to moderate analgesia, including radiography, orthopedic exams, dental procedures, laceration repair, and wound debridement. And unlike acepromazine, Telazol® won’t affect the results of skin testing.

**Deliver fast, predictable induction.** Telazol® is compatible with many other anesthetics and analgesic agents. Dr. Ko recommends using it alone for anesthesia induction in dogs and cats followed by inhalant anesthesia maintenance with halothane, isoflurane, or sevoflurane (Table 2).

Alternatively, animals premedicated with acepromazine, xylazine, or medetomidine with or without opioids can be induced with Telazol® intravenously for endotracheal intubation and maintenance on inhalant anesthetics.

“When potent analgesics, such as butorphanol, morphine, hydromorphone, and buprenorphine, are used with Telazol®, they produce a marked sparing effect,” adds Dr. Ko. “As a result, the Telazol® dosage should be reduced to minimize the potential for prolonged recovery.”

For busy practices, Telazol®’s rapid onset allows one technician to induce and prep each patient for surgery, and get them into the operating room with one simple IM or IV administration.

**Induce safe, profound sedation.** With pain management in mind, Dr. Ko has developed a Telazol® combination called TTD (Telazol®-Torbugesic®-Domitor®) (Table 3). To make the TTD combination, Telazol® powder is reconstituted with 2.5 ml of butorphanol (Torbugesic®, 10 mg/ml) and 2.5 ml of medetomidine (Domitor®, 1000 μg/ml). The total volume following reconstitution is 5 ml. The drug concentration following this method of reconstitution is 100

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**Table 1** Manufacturer-Recommended Dosages for Telazol®*

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Dosage for Dogs</th>
<th>Dosage for Cats</th>
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<tbody>
<tr>
<td>Diagnostic procedures</td>
<td>6.6–9.9 mg/kg IM</td>
<td>9.7–11.9 mg/kg IM</td>
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<tr>
<td>Minor surgical procedures of short duration (e.g., laceration repair, castration)</td>
<td>9.9–13.2 mg/kg IM</td>
<td>10.6–12.5 mg/kg IM</td>
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</tbody>
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*Maximum allowable dose for supplementation of increment sedation or total anesthesia is 26.4 mg/kg IM for dogs and 72 mg/kg IM for cats.

**Table 2** Useful Telazol® Dosages for Anesthesia Induction

<table>
<thead>
<tr>
<th></th>
<th>Dogs</th>
<th>Cats</th>
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<tbody>
<tr>
<td></td>
<td>2–3 mg/kg IV</td>
<td>2–4 mg/kg IV</td>
</tr>
<tr>
<td>6–8 mg/kg IM</td>
<td>8–10 mg/kg IM</td>
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*Table 2*
mg/ml of Telazol®, 5 mg/ml of butorphanol, and 500 µg/ml of medetomidine.

To induce profound sedation in healthy dogs and cats, Dr. Ko recommends using the TTD combination at 0.01 ml/kg to 0.015 ml/kg IM. This dose rate of TTD corresponds to 1 to 1.5 mg/kg of Telazol®, 0.05 to 0.075 mg/kg of butorphanol, and 5 to 7.5 µg/kg of medetomidine. For dogs, coadministering atropine at 0.05 mg/kg or glycopyrrolate at 0.007 mg/kg IM will prevent bradycardia induced by medetomidine in this TTD combination. It is not necessary to coadminister anticholinergics to cats since their response to medetomidine is different from dogs.

“Most dogs and cats can be intubated with this dose of TTD,” says Dr. Ko. “If they are too light to be intubated, mask induction with isoflurane or sevoflurane is smooth and fast and allows endotracheal intubation. This dose is sufficient for such surgical procedures as castration in dogs and cats.”

For aggressive dogs or cats, 0.02 to 0.05 ml/kg IM of TTD will cause recumbency within three to five minutes, and endotracheal intubation can be easily performed. For ovariohysterectomies in dogs and cats and for declawing cats, the dose of TTD should be 0.02 ml/kg IM (Table 3).

“This combination is effective and economical for use in dogs and cats,” says Dr. Ko. “The TTD combination provides better narcosis, muscle relaxation, and analgesia than TKX (Telazol®-ketamine-xylazine).”

At the end of the procedure, medetomidine can be reversed to shorten the recovery, and the analgesia is still present with residual butorphanol and tiletamine.

**Combine for comfortable recovery**

It’s important to understand that dogs and cats metabolize Telazol® differently. Dogs metabolize both tiletamine and zolazepam much more quickly than cats. Studies have shown when dogs and cats received 20 mg/kg IM of Telazol®, the metabolic half-life of tiletamine is 1.3 hours in dogs and 2.5 hours in cats (Table 4).

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“Because dogs metabolize zolazepam more rapidly than tiletamine, tiletamine is dominant during recovery and may induce rough recoveries in some dogs, which are characterized by salivation, vocaliza-
tion, head shaking, muscle rigidity, and tremors,” says Dr. Ko. “If this occurs, the tiletamine-dominant signs can be alleviated by administering diazepam (0.2 to 0.4 mg/kg IM or IV).”

Cats, on the other hand, metabolize zolazepam much more slowly than tiletamine. This accounts for prolongation of the recovery period.

**Anesthesia combinations**

Telazol’s® safety was demonstrated in dogs when the product was repeatedly administered at twice the therapeutic dose for eight successive days. But how does it compare with other anesthetic-tranquilizer combinations?

“Telazol’s® unique combination, tiletamine and zolazepam, is similar to ketamine and diazepam. However, there is no need for drug mixing, which increases safety and helps reduce the number of controlled substances in your inventory,” says Dr. Ko. “Telazol® is more versatile than ketamine-diazepam or ketamine-acepromazine since Telazol® can be given either IV or IM. Injection volume of Telazol® is small, and predictable onset of action takes place within seconds to minutes.”

When comparing Telazol® with medetomidine combinations, Dr. Ko says he has observed dramatic differences in heart rate and degree of vasoconstriction. “Most medetomidine combinations produce bradycardia and vasoconstriction, which makes cardiovascular monitoring difficult (vasoconstriction alters the accuracy of pulse oximeter readings),” he says. “On the other hand, Telazol® maintains normal mucous membrane color and allows easy access to the blood vessels because there is less vasoconstriction.”

Telazol® is far more versatile than thiopental and propofol, says Dr. Ko, since thiopental and propofol have to be administered intravenously to be effective—a challenge when dealing with aggressive patients. Furthermore, perivascular injection of thiopental can damage tissues and result in sloughing.

The bottom line: Telazol®’s versatility makes it an essential ingredient in your anesthetic protocol.