



Dog castrations in the field – opportunities and challenges for animal and public health and welfare

**Workshop October 8-10, 2018, in Terat and Loiborsoit,
Simanjiro Province, Tanzania**



Photo: MAWO



Workshop: Dog castrations in the field – opportunities and challenges for animal and public health and welfare, October 8-10, 2018, in Terat and Loiborsoit, Simanjiro Province, Tanzania. One day of lectures/discussions, two days of practical training.

Aim

The aim of this workshop was to discuss different aspects of field castrations and rabies vaccinations of dogs with experiences and perspectives from Tanzania, Malawi and Sweden, identifying similarities and differences, benefits and challenges. The theoretical part of the workshop was held in Terat on October 8 and included the following subjects: dog population management and rabies control, hygiene, castration techniques, anaesthesia, pain relief and antibiotics, handling of dogs, health issues, and logistics and outreach. Each subject included a presentation and discussion, and identified action plans adapted for MAWO's field activities. Two days of practical training followed on October 9 and 10 in Loiborsoit, where male and female dogs were castrated in a mobile clinic set up by MAWO. During the practical part, routines and techniques were discussed and identified health issues were treated.

Organization

This workshop was a collaboration between Meru Animal Welfare Organisation (MAWO), Lilongwe Society for the Protection and Care of Animals (LSPCA) and Veterinarians without Borders (VSF)-Sweden.

Funding

The workshop was funded by VSF-Sweden.

Participants

MAWO: Dauson Katuritsa, Johnson Lyimo, Farihiya Msangi, Adventa Ngunda and Nicholous Mushi.

LSPCA: Tinotenda (Tino) Razemba.

VSF-Sweden: Johan Lindsjö, Eva Mirlas, Lisa Schlanger, Marianne Tenger, and Elina Åsbjer

Governmental: Godfrey Laizer, Swalehe Masaza and Peter Mejooli.

Acknowledgements

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February 2019,

Johan Lindsjö, VSF-Sweden, Johnson Lyimo, MAWO, and Tino Razemba, LSPCA



Contents of the report

This report includes summaries of the presentations, discussions and action plans adapted for MAWO's field work, based on the theoretical and practical parts of the workshop.

The theoretical part of the workshop in Terat on October 8 consisted of short presentations and interactive discussions, 30-45 minutes per lecturer, as follows:

- Dog population management and rabies control - Elina Åsbjer
- Hygiene - Marianne Tenger
- Castration techniques in male and female dogs - Lisa Schlanger
- Castration-anesthesia, pain relief and antibiotics - Johan Lindsjö
- Catching, handling, postoperative care and release of stray dogs - Tino Razemba
- Health issues identified during the castration campaign, and implications for the field work - Dauson Katuritsa
- Logistics and outreach for the castration campaigns - Johnson Lyimo



The workshop participants in Terat. Photo: MAWO



Summaries of presentations, discussions and action plans for MAWO

Conclusion, action plans - priority

- Focus on small, well-defined areas, aim for 70% reproductive control and vaccination goal in each area. Make sure there are enough people for the task.
- Awareness of good hygiene throughout all field procedures (castrations, vaccinations and other treatments).
- Ensure that all ovarian tissues are removed during female castrations.
- Minimize pain throughout and after surgical procedures.
- Avoid broad-spectrum antibiotics if not needed.
- Regular post-operative monitoring of dogs.
- Trained persons facilitate the capture and handling of the dogs.

Dog population management and rabies control

Initial data collection is important both for reproductive control and rabies control. Information need to be gathered about the dog population, such as number and distribution of dogs, sex rate, turn-over rate, reproductive capacity, sources of strays, etc. This could be done by counting dogs in specific blocks, doing household surveys or by capture - mark - recapture counting.

Reproductive control means balance between “supply and demand” for dogs. When starting a neutering program one need to think about which dogs to give priority: Owned dogs or unowned dogs? The most reproductive individuals (those with good welfare, which also can support their puppies) vs individuals with poor welfare and higher puppy mortality (less puppies will survive, but also suffer more)? Dogs for which puppies are more likely to be free roaming? Females vs. males? Females are usually the limiting factor in the reproductive capacity. To have a successful program, approximately 70% of the females need to be castrated.

Rabies control should contain three basic elements: epidemiological surveillance, mass vaccination and population control. It is important to reach a certain vaccination coverage; WHO recommends 70 % in areas where rabies is endemic. A high density of dogs and a population with high birth and death rates (turn-over rate) require a higher vaccination



coverage and more frequent vaccination campaigns. Priority should be given to roaming dogs. If rabies cases emerge in a previously vaccinated area– revaccinate!

How to handle sick or dogs with impaired general condition when it comes to vaccination? Dogs cannot contract the disease from the vaccine as long as the vaccines are inactivated (killed), which is the case for rabies vaccines. The immune system can handle many antigens at the same time, so if not very sick it's still possible to vaccinate the dog. Animals on antibiotics can also be vaccinated since antibiotics do not interfere with the vaccine.

Discussion

1. Counting dogs – how? LSPCA: difficult because old census numbers are used in Malawi, MAWO: no stray census. Focus is on owned population in both countries.
2. In Malawi, free-roaming dogs are kept separate from owned dogs in the census.
3. Census should also involve diseases, such as transmissible venereal tumor (TVT). Prioritize castration of males in areas with high numbers of TVT or focus on reproduction, i.e., females?
4. LSPCA (including 3 vets) performs annual vaccination campaigns in defined areas, involving several thousand dogs, reaching close to 70% of the populations in the defined areas.
5. LSPCA vaccinates dogs as early as 4 weeks, irrespective if the female is vaccinated or not.

Action plan

1. Focus on small, well-defined areas, aim for 70% reproductive control and vaccination goal in each area.
2. Census bomas/villages (up to 7 households per boma, 2-3 bomas per leader). Create a census protocol, including health controls. Use volunteers, student project (VSF Minor Field Study project?) Start small.
3. Perform regular check-ups to assess turnover rate.
4. Castration: *Focus on females* (NB if significant TVT, also focus on males), owned dogs.
5. Vaccination: Annual vaccination (initially), but in some areas with high density and turn over vaccinate every 6-10 months. *Prioritize stray dogs.*
6. Also vaccinate young pups, as early as 4 weeks OK.
7. In case of rabies outbreak in an area – revaccinate!
8. Mark animals with colour (if spray, use non-antibiotic) and/or with tattoo if anesthetized.



Hygiene

Hygiene refers to conditions and practices that help to maintain health and prevent the spread of diseases. Hand hygiene is the most important measure to avoid the transmission of harmful germs and prevent healthcare associated infections. Examples of different ways to perform hand hygiene in medical practice were discussed. No jewelry (rings, bracelets), wristwatches, nail polish or fake nails should be worn. Nails should be kept short and clean. Use examination gloves when in contact with a presumably contagious animal. If using gloves when handling dogs, it is important to change gloves between every patient to avoid spreading disease.

When performing any kind of surgical procedure you need to use sterile surgical gloves that should not be contaminated. We also went through the routine on how to perform a surgical scrub.



Washing hands is an important part of hygiene during surgical procedures. Photo: MAWO

Discussion

1. Use of examination gloves:

Examination gloves normally are not necessary during the initial handling of seemingly healthy dogs, only if contagious disease is suspected. If gloves are used initially, it is important to change between the initial “dirty” handling of the dog and preparation/cleaning of surgical site. Gloves need to be changed again if assisting the surgeon. The assistant should wear sterile gloves if touching sterile equipment and the wound and if so, touch nothing else.

2. Preparation of surgical site:

With dog off the surgical table: Important to scrub surgical areas with soap and water, finalize with cleaning from the centre and out. If lifting the dog onto the surgical table – change gloves before next step.



After moving the dog to the surgical table, finalize with alcohol in the same “centre to periphery”-pattern.

Let surgical site dry before surgery is initiated.

3. Sterile equipment:

Use sterile drapes, instruments and swabs, and keep it sterile.

If not possible to use pre-sterilized equipment, boil equipment on site, use alcohol bath between dogs (LSPCA: max 3 dogs per surgical kit). Clean instruments from blood, etc. first with cold water and soap, then boiling water if possible (keep in thermos) before putting the instrument in alcohol. The water should not become lukewarm.

4. Surgeon:

Important to thoroughly wash hands and forearms with soap and water, including thumbs and nails, and finish with alcohol. Use sterile gloves at surgery.

Action plan

1. Buy a pressure cooker and autoclave paper, sterilize surgical kits in drapes, also sterilize drapes and swabs.

2. Establish a routine for preparation and cleaning of surgical site. Use clean non-sterile gloves when washing surgical site. If you use gloves when you handle the dog initially, do not use the same gloves when you wash the surgical site, i.e. change to clean non-sterile gloves.

Castration techniques in male and female dogs (and cats)

The anatomy and different surgical castration techniques of the male dog were presented. Pre-scrotal incision and scrotal ablation, and advantages/disadvantages of open or closed castration were presented. Use of different absorbable suture materials and use of local anesthesia at incision site and in testicle, which is recommended, was discussed. Information was shared on risks of complications as infections, hemorrhage, hernia and suture reactions.

The anatomy of the female dog and surgical techniques in female castrations were presented. The importance of removing all ovarian tissues was stressed. Ovarian remnants can cause estrus behavior with higher risk of contracting genital infections (TVT). There is also a higher risk of stump abscess because of remaining hormonal production from ovarian tissue.

Regarding cats, similar techniques are used for females, but for male cats open castration is used.

Discussion

1. Incision site:

Pre-scrotal incision in males and midline incision in females are the most common techniques used by the three organizations.



2. Castration techniques:

Different castration techniques are used; often open (MAWO, LSPCA), closed (MAWO, VSF) or a mix (VSF), with (VSF) or without (MAWO, LSPCA) anchored suture.

3. Removing of female reproductive tissue:

LSPCA: Small incision, removing ovaries + small piece of uterus. MAWO and VSF: Removing the ovaries and the whole uterus.

4. Benefits of local anesthesia:

It is beneficial to use local anesthetic in skin (pre-scrotal and midline incision area), testicles and mesovarium.

Action plan

1. Use of local anesthesia in skin, testicle and ovarian ligaments (mesovaria), which benefits animal welfare.

2. Ensure that all ovarian tissue is removed.



*Different castration techniques were demonstrated during the practical sessions in Loiborsoit.
Photo: MAWO*

Anesthesia, pain relief and antibiotics

Anesthesia

Different methods of anesthesia were presented; A mixture of xylazine and ketamine (xylazine followed by ketamine) administered intramuscularly is very common in field practice, sometimes in combination with a benzodiazepine (e.g. diazepam) or an opioid. It is important with a health check before (body condition, hydration, diseases, etc.), health



monitoring during (heart and respiratory rate, mucous membranes, body temperature, anesthetic depth, etc.) and after the surgery. Intravenous fluid administration is important in debilitated, dehydrated or bleeding animals, or when the procedure is prolonged.

Discussion

1. Suggested doses for anesthesia: xylazine 1-2 mg/kg body weight (bw), ketamine 2.5 mg/kg bw.
2. Manual health monitoring most common and feasible. Equipment such as pulsoximeter and esophagoscope are not used in the field (MAWO, LSPCA).
3. Intravenous fluids are routinely administered during surgeries (LSPCA).

Action plan

1. Keep the dog on a soft and warm area from the start of the sedation until the dog is awake after surgery, check body temperature regularly, keep the dog warm with warm water bottles (NB! Not too hot!).
2. Careful monitoring during anesthesia, check consciousness through reflexes, immediate top-up if needed.
3. Keep fluids for intravenous administration if needed. Be prepared to insert IV catheter (however, preferably done initially on all dogs).
4. Having an endotracheal tube available is important to free blocked airways or if oxygen (air) needs to be administered into the airways.
5. It is important to have emergency drugs available, such as epinephrine and antidote to xylazine (yohimbine or atipamezol).

Pain relief (analgesia)

Effective pain relief should act on several levels, both centrally and peripherally. Anesthetic agents in combination with NSAIDs and local anesthesia, and an opioid if available, have a synergistic effect and also counteract sensitized wound area (wind up). Careful use of NSAIDs if bleeding abnormalities, and compromised kidney and liver function (if this is known). Pain assessment (position, immobility, vocalization, etc.) was presented. The NSAID meloxicam is safe for scavenging birds! Important to minimize pain – welfare, healing process and smoother introduction to the pack.

Discussion

1. Reaction when handling tissue, e.g. pulling ligaments, testicles – pain (brain) or withdrawal reflex (spinal cord)? Difficult to tell apart. Better safe than sorry!
2. Administer NSAIDs together with sedation for a quicker pain relieving effect.
3. Dose for meloxicam: 0.2 mg/kg bw subcutaneously or intravenously once a day.



4. Administration of local anesthesia: The surgeon may want to wash hands and forearms between administration of local anesthesia and incision.

Male dog (skin incision site + testicle) - wait 3 minutes before surgical procedure.

Female dog (skin incision site and mesovarium, respectively) - Wait 1 minute before performing surgical procedure in the respective tissue.

5. Less pain if tissue is handled gently.

Action plan

1. Use a combination of anesthetic drugs, NSAIDs and local anesthesia (and opioids if available) for best analgesia.
2. Monitor post-surgical pain and re-administer NSAID the day after surgery if needed and dog still in your care.
3. Use needles with the highest feasible gauge number (smallest diameter) to minimize pain.



Local anesthesia is an important part of surgical analgesia. Photo: MAWO

Antibiotics

Antimicrobial resistance is a worldwide problem. Good hygiene prevents infections and overuse of antibiotics. Long-acting (LA) broad spectrum antibiotics are used in many countries instead of narrow spectrum antibiotics, such as penicillin, and this is unnecessary.

Discussion

1. LSPCA does not use prophylactic antibiotic if castrations are performed in clinic, but uses LA amoxicillin in the field. MAWO uses short or LA penicillin + streptocillin. Less broad antibiotics are not easily available in the pharmacies in Arusha, but can be ordered.
2. Public health vs. animal welfare (antibiotic use to prevent infections)? Good hygiene to avoid infections!

Action plan

1. Use as narrow spectrum antibiotics as possible, LA (long-acting) for a significant effect.
2. MAWO can order LA amoxicillin through pharmacy or with the help of LSPCA.



Capture, handling, postoperative care and release of stray dogs

Capture should be as calm and free from stress and pain as possible. Big butterfly nets are used by LSPCA, sometimes snare-pole and remote darting have been tried. Also dog bait with sedative/anaesthetics (acepromazine, ketamine) can be used, as well as wooden box traps.

When handling the dog after capture the handlers safety is most important, as well as the dog's safety. Use a leash, muzzle or tourniquet. Protective gloves, covering the arm up to the elbow may sometimes be needed.

The recovery area should be warm, dry, clean, shaded and quiet with minimal human activity. Ensure the surgical site is clean, provide analgesia and antibiotics if needed, and fly repellent. Once dog is in sternal position it is transferred back into a crate.

The dog should be returned to a place that is as near as possible to the place of capture approximately 24 hours after surgery.

Discussion

1. Net capture: LSPCA: Several persons are needed to efficiently capture dogs in the nets. Butterfly nets are large, it is easy to confine the dogs within the net by twisting the net. MAWO use smaller nets with a closeable opening. It is, however, sometimes difficult to reach the dogs.
2. VSF: Good experiences from Indian project to feed dog treats (biscuits) whenever you arrive to a village, makes the dogs used to the organization's presence, easier to approach and capture. But this approach requires a regular presence in the villages. VSF tried feeding dogs in Loiborsoit; it was time consuming, but brought dogs closer to the person trying to vaccinate the dog.
3. Important to muzzle the dogs, both owned dogs and strays, to ensure handler's safety.
4. Important with regular surveillance of dogs in recovery area, release first when sure the dog is completely awake and post-surgical pain is minimized.

Action plan

1. Use the least invasive method to capture and handle dog, i.e., net capture instead of snare pole.
2. MAWO can purchase butterfly nets through LSPCA contacts.
3. Train more people to take part in the dog capture and how to handle the dogs in the most gentle way.
4. Train staff to monitor dog health in recovery area.



Capture with a locking net enables a less stressful and painful handling of the dog compared to snare poles. Photo: MAWO.



Health issues identified during castration campaigns, and implications for the field work

During the field clinics several health issues are identified. Tick-borne diseases (Babesiosis, Ehrlichiosis) may result in prolonged bleeding. Transmissible venereal tumour (TVT) is commonly seen and is easily spread throughout the dog population, but not to humans. Mange is a problem, emaciation another. Diarrhoea from endoparasites, such as Giardiasis, and Parvovirus (especially in puppies). Various endoparasites (without clinical symptoms) are also found. Distemper is seldom seen during the MAWO field clinics, neither is Rabies, however Maasai people don't report the disease. Dogs with decreased health are not castrated, and, especially in cases of TVT, euthanized to prevent further transmission of the disease.

Discussion

1. MAWO and LSPCA avoid castrations of seemingly unhealthy animals. Instead such dogs are treated or euthanized. It is more common with euthanasia in Malawi, uncommon in Tanzania, with the exception of TVT-affected animals.
2. Ecto- and endoparasites are routinely treated, mainly Ivomec and/or antiparasitic dips (MAWO).
3. Drugs for euthanasia, such as pentobarbital, are lacking in Tanzania, but are used by LSPCA in Malawi. Instead MAWO uses an intracardiac overdose of lidocaine on anesthetized animals.

Action plan

1. Avoid castrating dogs that are unhealthy or very thin/emaciated. Treat dogs if it is possible to follow-up, then perform castration. If the dog is in poor condition or satisfactory treatment not possible and/or risk of insufficient owner/caretaker compliance, consider euthanasia.
2. Check for TVT on all captured dogs. This will also indicate the number of affected dogs.
3. Expand field kit to enable treatment of more sick or injured animals.
4. Keep staff vaccinated against Rabies.

*Different health issues were discussed during the workshop.
Photo: MAWO.*





Logistics and outreach for castration campaigns

Information comes from the government if there are diseases in a certain area. Information from MAWO to children, they are bringing dogs for treatment, e.g. in schools. Medical records are copied to the government. The clinical examination form; one to the animal owner, one to the community, one to the government. There are different types of dogs: Dogs with owners, owners that say that the dogs don't belong to them, and stray dogs. Before arrival to an area/village, the organization informs livestock officer and leaders, church.

MAWO is performing boma to boma campaigning, which is challenging because of the interchange of dogs. The organization also spread their information through the radio station in Terat. Animal welfare clubs are held in schools, lectures also in colleges.

Discussion

1. LSPCA works with the government, district vet officer. The organization needs approval from the leaders, schools.
2. LSPCA use speaker phones (including music) from the car to attract people's attention to their campaigns.
3. To potentially increase the number of available dogs - better to keep the dogs in the bomas instead of bringing them to a centrally set up mobile clinic?

Action plan

1. When working in bomas, arrive early before the dogs are taken out to guard the livestock, ask the people to keep the dogs in an enclosure if possible.
2. Ensure enough people and time to enable castration and/or vaccination of enough dogs in a given area.